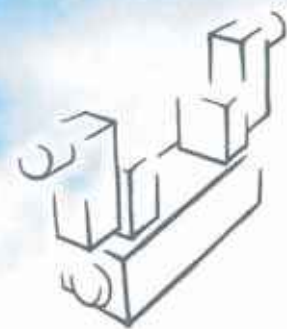


METAL[®] WORK

P N E U M A T I C



GENERAL CATALOGUE





“ Our team works
together, towards a
common goal: there
is nothing we have done
yesterday that cannot
be improved today. ”



A global company



Metal Work Concesio.



One of P Services, the Italian subsidiaries.



One of Metal Work subsidiaries abroad.

Metal Work was set up in 1967 for the production of push-in fittings for compressed air systems.

The company gradually extended its production and sales structure to become a leader in pneumatic systems for automation.

Now the production unit in Concesio has a staff of about 350, while the national and international sales organisation staff number around 450.

In 1992 Metal Work has obtained the ISO 9001 certification.

To the quality management one, in 2000 we have add the one related to the enviromental managment according the ISO 14001.

To these METAL WORK S.p.A. applied the OHSAS 18001 standard in 2007 to guarantee a Management System of Occupational Safety and Health.

All the certifications above mentioned have been released by the German certification body DEKRA ITS, accredited by TGA.

Products are distributed through 40 branches in Italy and abroad, which offer an efficient capillary before- and after-sales service.

The product quality and an efficient sales organisation are the basis on which Metal Work firmly stands and enable the company to meet all possible requirements in pneumatic systems for automation.





Quality Management
ISO 9001:2008

► Voluntary participation
in regular monitoring



Environmental
Management
ISO 14001

► Voluntary participation
in regular monitoring



Work Safety
OHSAS 18001

► Voluntary participation
in regular monitoring



Quality in design, production and distribution

Metal Work is a fully integrated manufacturing company. This system guarantees the customer a fully monitored production process and a consistently top quality product. Process engineering and product engineering come together in the constant quest for perfection.

Virtually all the products are manufactured at the company's own production site allowing the company to monitor the entire process from the selection of raw materials to final assembly, thus cutting wastage and lead times.

Production data and test results undergo critical analysis to enable the company to upgrade the products and the manufacturing process.

Company-wide quality control is a permanent feature at Metal Work.

Total quality

Metal Work obtained ISO 9001 certification in 1992 and ISO 14001 certification in 2000, and OHSAS 18001 certification in 2007, ample proof of our way of working and daily mission. Particular care is taken at all levels, from design to energy saving, and we can safely state that, compared with conventional products, the electrical power required to operate our valves has been cut by 75% over the last few years.

Certification covers not only the holding company but also the other companies in the Group, allowing both our products and our philosophy to gain world-wide recognition. All Metal Work products meet EC and other standards including electromagnetic compatibility (EMC certificate).

Metal Work engineers are on ISO, UNI and ASSOFIUID committees as product standardisation is always a guarantee of product quality.

A customer-oriented policy

The product is not Metal Work's only strong point. Great care is taken over customer service, with the aim of providing the best possible solution for a specific requirement within the allotted time and with the utmost safety.

The Metal Work or P Service sales personnel work in close co-operation with the customer, providing the necessary backup to solve any technical problems, and search for new materials or information.

Metal Work invests heavily in providing the customers with the necessary training.

Our range includes all types of special products suitable for use in a wide variety of applications.



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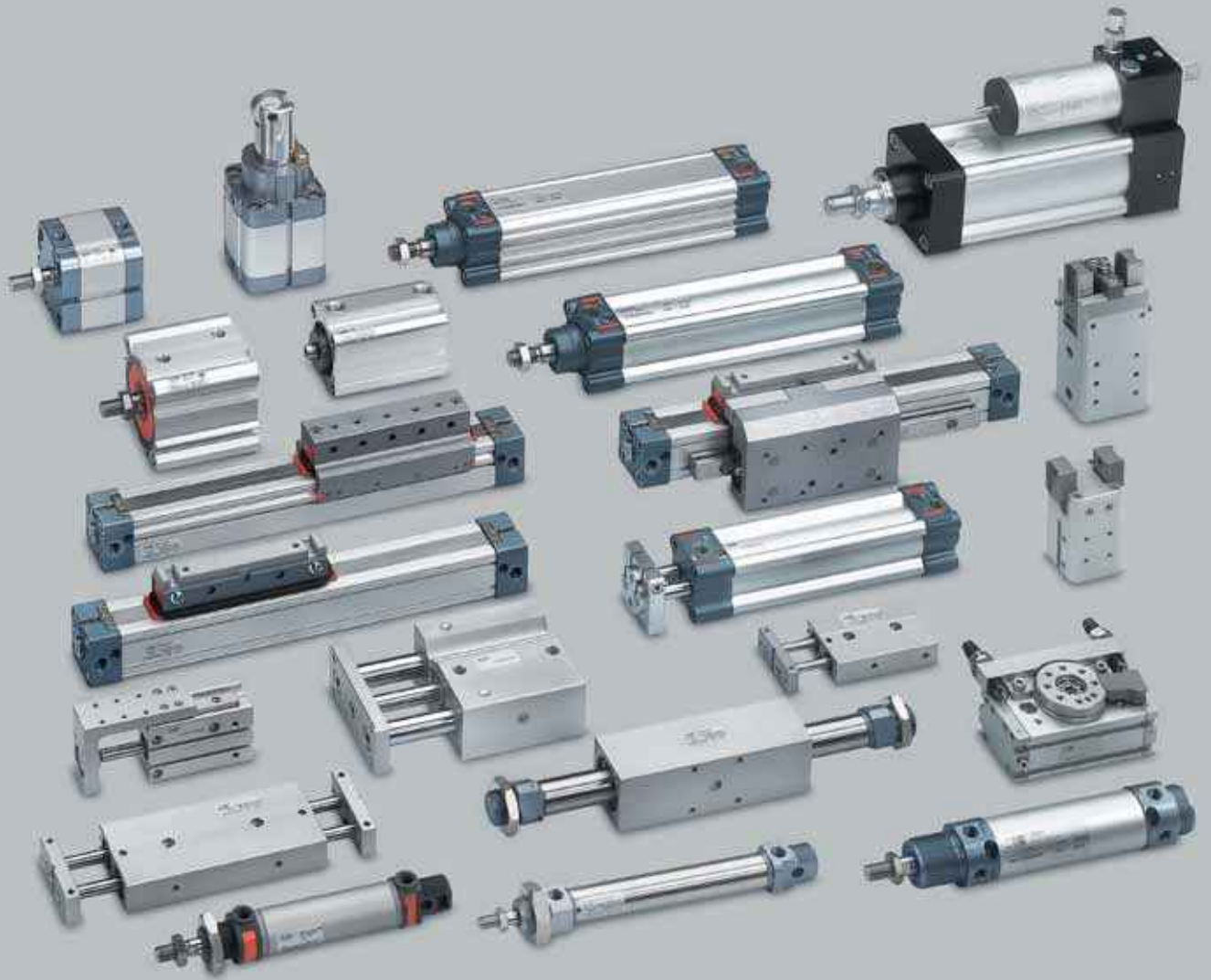
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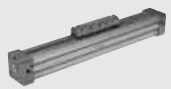
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GENERAL TECHNICAL DATA

Compressed air

The cylinders have been designed for use with unlubricated air, in which case no maintenance is required. If lubricated air is used, lubrication must be continuous because the additional lubrication removes the lubricant applied at the factory. With reference to ISO/DIN 8573-1, the compressed air to use is class 3-4-3, i.e.:

- Solid particle classe 3: 10.000 particles/m³ with $d \leq 1$ micron and 500 particles/m³ with $d \leq 5$ micron
- Humidity classe 4: Pressure dewpoint $\leq +3$ °C
- Oil classe 3: Concentration total oil ≤ 1 mg/m³

Gasket material

Please refer to page 6-7 of the technical documentation for compatibility data. Some families of Metal Work cylinders are available with gaskets made of different materials.

Polyurethane: the best in terms of long-life, resistance to wear and reduced friction.

Chemically compatible with:

- Pure aliphatic hydrocarbons (butane, propane, gasoline)
- Any impurities (moisture, alcohol, acid or alkaline compounds) can chemically attack polyurethane
- Mineral oil and grease (some additives can chemically attack the material)
- Silicone oil and grease
- Water up to +50°C
- Resistance to ozone and ageing

Not compatible with:

- Ketones, esters, ethers
- Alcohols, glycols
- Hot water, steam, alkali, amines, acids.
- Good elasticity down to -35°C (for low temperature PU version only).

NBR: These gaskets have a shorter life than polyurethane gaskets.

However, they are recommended for use in environments causing the formation of water condensate, such as tropical climates, where polyurethane gaskets may tend to deteriorate quickly due to hydrolysis.

Chemically compatible with:

- Methane, butane, propane, oily acids
- Aliphatic hydrocarbons
- Lubrication oils
- Gasoline

Not compatible with:

- Ozone and exposure to sunlight
- Good elasticity down to -35°C (for low temperature NBR version only)

FKM/FPM: Can withstand temperatures as high as 150°C.

This makes them ideal for use on rodless cylinders, high-speed applications, involving high temperatures at the sliding lips.

Chemically compatible with:

- Mineral oil and grease, slight swelling with oil grade ASTM no. 1 and 3
- Silicon oil and grease
- Animal and vegetable oil and fat
- Aliphatic hydrocarbons (gasoline, butane, propane, natural gas)
- Aromatic hydrocarbons (benzol, toluene)
- Chlorinated hydrocarbons (tetrachloroethylene)
- Fuels
- Ozone, atmospheric agents, ageing

Not compatible with:

- Polar solvents (acetone, methylethylcheton, diethyl ether, dioxane)
- Glycol-based brake fluids
- Ammonia gas, amines, alkali
- Superheated water vapour
- Low molecular organic acids (formic and acetic acid)

No-stick-slip cylinders

Standard cylinders are designed to ensure trouble-free operation under any conditions, particularly at high speed. Operation tends to be irregular and jerky at very low speeds in the presence of side loads. In this case, no-stick-slip cylinders are recommended as they allow smooth operation. These versions feature specific tribological properties and preferably polyurethane gaskets.

Radial oscillation of the piston rod

These cylinders have been designed to apply forces in the direction of the axis and not to withstand side loads. If you intend to use the cylinder piston rod with side loads, the play between the piston rod and guide bushing must be taken into account. Indicatively, each 100-mm stroke corresponds to 1-mm radial oscillation measured at the end of the piston rod.

Cylinder operating life

The life of cylinders depends on numerous factors including axial and radial loads, speed, frequency of use, temperature, shocks, air loss (limits).

Below are a few factors that must be taken purely as a reference.

They are not binding or guaranteed due to the variability of different factors. Without radial load:

ISO 15552 cylinders and round cylinders with polyurethane gaskets: 15.000 km.

ISO 15552 cylinders and round cylinders with NBR gaskets: 8.000 km.

ISO 6432 cylinders, SSC cylinders and compact cylinders with polyurethane gaskets: 30 million cycles.

ISO 6432 cylinders and SSC cylinders with NRB gaskets: 15 million cycles.

Rodless cylinders: 5.000 km.

Stroke tolerances

The actual cylinder stroke has a tolerance with respect to the nominal stroke, in compliance with any applicable laws, within the following ranges:

• ISO 15552 cylinders	32 - 50	-0	+2	mm
	63 - 200	-0	+2.5	mm
• ISO 6432	8 - 25	-1	+1	mm
• Round cylinders	32 - 50	-0.5	+1.5	mm
• SSC cylinders	12 - 50	-1	+1	mm
	63 - 100	-1	+1.5	mm
• Compact cylinders	12 - 100	-0.5	+1.5	mm
• Compact cylinders ISO 21 287	20 - 100	-0.5	+1.5	mm
• Rodless cylinders	16 - 40	-1	+2	mm

Air loss

All the cylinders have air losses, mainly around the gaskets.

ISO 10099 establishes the maximum loss allowed in a new cylinder (see table below):

Cylinder diameter	8-10-12	16-20-25	32-40-50	63-80-100	125-160-200
Loss (Nl/hour)	0.6	0.8	1.2	2	3

Metal Work's own standards are more rigorous than ISO standards, but air loss still occurs.

Strokes exceeding the maximum value specified in the catalogue

Metal Work can supply cylinders with strokes greater than those specified in the catalogue, considering the production technological limits. The Metal Work Sales Department can provide you with full details. However, it is up to the end user to use these special cylinders properly, by guiding the piston rod, avoiding peak loads, etc.

Magnetic sensors

The magnetic field generated by permanent magnets housed in the piston assembly changes in shape and intensity depending on the presence of magnetic metal masses in the vicinity of the cylinder. These masses may prevent the sensors from switching correctly, in which case non-magnetic materials should be used. In particular, the tie rods of short-stroke and compact cylinders should preferably be made of stainless steel.

CALCULATING PEAK LOAD ON THE PISTON ROD

During operation, the piston rod of the cylinder behaves like a rod subjected to peak load (bending + compression).

In the case of long strokes, it is necessary to make sure the diameter of the piston rod is correct for the load applied and the type of cylinder and piston rod mounting. The following formulae can be used to do this.

A. Calculating the maximum force with a given stroke and piston rod diameter:

$$F \leq \frac{20.350 \varnothing^4}{C^2 \cdot K^2}$$

B. Calculating the minimum acceptable piston rod diameter with a given stroke and force:

$$S \geq \sqrt[4]{\frac{F \cdot C^2 \cdot K^2}{20.350}}$$

Where:

- F Force applied [N]
- ∅ Diameter of the piston rod [mm]
- C Stroke [mm]
- K Free length coefficient depending on the mounting – see diagrams

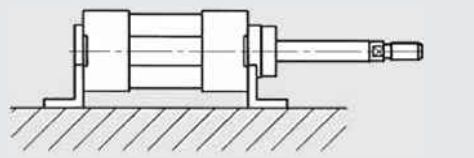
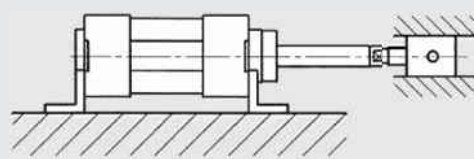
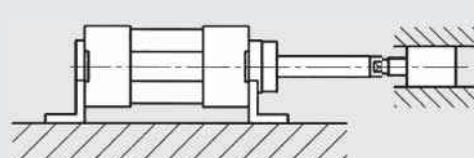
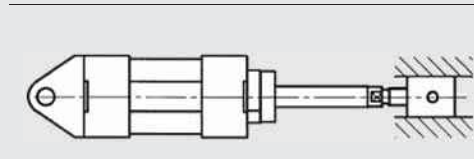
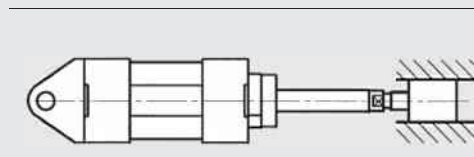
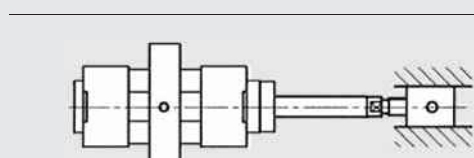
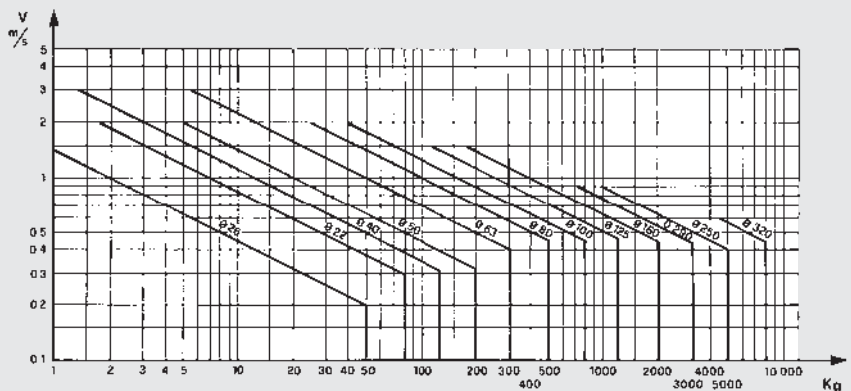
CONSTRAINT	K
	2
	0.7
	0.5
	2
	1
	1.5

CHART OF SPEED / MAXIMUM ABSORBABLE LOAD

For the cylinder to reach the end-of-stroke position without suffering damaging impact due to intensity and repetition, it is necessary to annul the kinetic energy of the moving mass and the relative work generated. The maximum absorbable load depends on the transference speed and the absorption capacity of the standard pneumatic cushion in the various cylinders. The chart gives the speed and absorbable mass in various diameters at a pressure of 6 bar, under the best regulation conditions and in a horizontal direction.



CONSUMPTION OF AIR IN THE CYLINDERS

Cylinder bore D mm	Piston rod diameter d mm	Motion	Useful area cm ²	Air consumption during thrust and traction in Nl/cm of stroke, depending on the working pressure P in bar at 20°C									
				1 bar	2 bar	3 bar	4 bar	5 bar	6 bar	7 bar	8 bar	9 bar	10 bar
12	4	thrust	1.13	0.0023	0.0034	0.0045	0.0057	0.0068	0.0079	0.0090	0.0102	0.0113	0.0124
		traction	1.00	0.0020	0.0030	0.0040	0.0050	0.0060	0.0070	0.0080	0.0090	0.0100	0.0110
16	6	thrust	2.01	0.0040	0.0060	0.0080	0.0100	0.0121	0.0141	0.0161	0.0181	0.0202	0.0221
		traction	1.73	0.0035	0.0052	0.0069	0.0086	0.0104	0.0121	0.0138	0.0156	0.0173	0.0190
20	8	thrust	3.14	0.0063	0.0094	0.0126	0.0157	0.0188	0.0220	0.0251	0.0283	0.0314	0.0346
		traction	2.64	0.0053	0.0079	0.0106	0.0132	0.0158	0.0185	0.0211	0.0238	0.0264	0.0290
25	12	thrust	4.91	0.0098	0.0147	0.0196	0.0245	0.0295	0.0344	0.0393	0.0442	0.0491	0.0540
		traction	3.78	0.0076	0.0113	0.0151	0.0189	0.0227	0.0264	0.0302	0.0340	0.0378	0.0415
32	12	thrust	8.04	0.016	0.024	0.032	0.040	0.048	0.056	0.064	0.072	0.080	0.088
		traction	6.91	0.014	0.021	0.028	0.035	0.042	0.049	0.058	0.063	0.070	0.076
40	16	thrust	12.56	0.025	0.038	0.050	0.063	0.076	0.088	0.100	0.113	0.126	0.138
		traction	10.55	0.021	0.032	0.042	0.053	0.063	0.074	0.088	0.095	0.106	0.116
50	20	thrust	19.63	0.039	0.059	0.079	0.098	0.118	0.137	0.157	0.177	0.196	0.216
		traction	16.49	0.033	0.050	0.066	0.082	0.099	0.115	0.132	0.149	0.165	0.181
63	20	thrust	31.16	0.062	0.093	0.125	0.156	0.187	0.218	0.249	0.280	0.312	0.343
		traction	28.02	0.056	0.084	0.112	0.140	0.168	0.196	0.224	0.252	0.280	0.308
80	25	thrust	50.24	0.100	0.150	0.200	0.250	0.301	0.351	0.402	0.452	0.502	0.552
		traction	45.36	0.091	0.138	0.181	0.227	0.272	0.318	0.363	0.408	0.454	0.500
100	32	thrust	78.54	0.157	0.238	0.314	0.382	0.471	0.549	0.628	0.706	0.785	0.862
		traction	70.50	0.141	0.211	0.282	0.352	0.423	0.493	0.564	0.635	0.705	0.775
125	32	thrust	122.66	0.245	0.368	0.490	0.613	0.736	0.859	0.981	1.104	1.226	1.349
		traction	114.67	0.229	0.344	0.459	0.573	0.688	0.803	0.917	1.032	1.147	1.262
160	40	thrust	201.06	0.402	0.603	0.804	1.005	1.206	1.407	1.608	1.809	2.010	2.211
		traction	188.49	0.377	0.565	0.754	0.942	1.130	1.319	1.508	1.696	1.884	2.073
200	40	thrust	314.15	0.628	0.942	1.257	1.571	1.885	2.199	2.513	2.827	3.145	3.456
		traction	301.59	0.603	0.905	1.206	1.508	1.810	2.111	2.413	2.714	3.016	3.318

FORCE OF SPRINGS IN SINGLE-ACTING CYLINDERS (THEORETICAL)

ISO 15552 SINGLE-ACTING CYLINDERS			
Bore mm	Force with spring compressed N	Max. stroke mm	Force with spring extended N
32	63	250	35
40	88	250	51
50	102	250	64
63	102	250	64

SSC SINGLE-ACTING CYLINDERS			
Bore mm	Force with spring compressed N	Max. stroke mm	Force with spring extended N
12	6	25	1.5
16	7	25	3
20	12	25	4
25	14	25	5
32	33	50	6
40	45	50	15
50	70	50	20
63	81	50	25

ISO 6432 SINGLE-ACTING CYLINDERS			
Bore mm	Force with spring compressed N	Max. stroke mm	Force with spring extended N
8	3	50	1
10	5	50	1
12	7	50	3
16	20	50	5
20	22	50	12
25	28	50	17

ROUND SINGLE-ACTING CYLINDERS			
Bore mm	Force with spring compressed N	Max. stroke mm	Force with spring extended N
32	86	250	34
40	95	250	50
50	108	250	62

$$P = P_1 + \frac{(P_2 - P_1)}{C_{max}} \cdot C_x$$

- P₁ = Force with spring extended
- P₂ = Force with spring compressed
- C_x = Required stroke
- C_{max} = Max stroke

SINGLE-ACTING CARTRIDGE CYLINDERS			
Bore mm	Force with spring compressed N	Max. stroke mm	Force with spring extended N
6	3.7	5	-
10	7.8	5	-
16	7.2	5	-
6	3.9	10	-
10	9.6	10	-
16	13.3	10	-
6	3.9	15	-
10	9.1	15	-
16	13.3	15	-

WEIGHT OF CYLINDERS

Micro-cylinder series ISO 6432				
Ø	Single-rod		Through-rod	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
8	40	0.234	55	0.334
10	41	0.257	59	0.371
12	77	0.419	111	0.635
16	93	0.491	133	0.708
20	181	0.732	233	1.121
25	241	1.100	334	1.722

Micro-cylinder ISO 6432 series TP				
Ø	Single-rod		Through-rod	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
16	66	0.377	101	0.604
20	94	0.628	131	1.03
25	144	0.908	207	1.536

Short-stroke cylinder series SSCY								
Ø	Single-rod		Through-rod		Non-rotating		Oscillating	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
12	45	1.24	52	1.47	64	1.35	-	-
16	63	1.65	72	2.05	88	1.6	-	-
20	91	2.14	104	2.75	126	2.37	-	-
25	144	3.04	167	3.65	189	3.25	-	-
32	185	4.14	200	4.72	260	4.56	272	4.14
40	275	5.05	295	5.94	373	5.49	386	5.05
50	412	7.09	437	8.9	592	7.89	620	7.09
63	587	9.32	621	10.91	854	10.57	889	9.32
80	393	14.41	1485	16.9	1740	25.87	-	-
100	673	21.94	2841	25.9	2692	30.77	-	-

Compact cylinder series CMPC								
Ø	Single-rod		Through-rod		Non-rotating		Through-rod non-rotating	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
12	96	1.59	104	1.82	105	1.90	114	2.12
16	105	1.51	124	1.90	109	1.81	129	2.20
20	171	2.35	204	2.95	181	2.78	214	3.39
25	201	2.73	233	3.32	220	3.15	252	3.76
32	246	3.17	282	4.05	306	3.96	343	4.84
40	370	4.41	408	5.29	457	5.20	495	6.08
50	552	6.42	605	7.98	709	7.64	768	9.21
63	779	7.34	656	8.90	977	8.56	1054	10.13
80	1468	12.57	1624	15.02	1851	14.33	2027	16.78
100	2988	16.11	3100	19.93	3710	17.87	3850	21.70

Cylinder series ISO 15552, ISO 15552 TWO-FLAT				
Ø	Single-rod		Through-rod	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
32	433	2.2	494	3.09
40	660	3.15	783	4.73
50	1087	4.57	1348	7.04
63	1443	5.03	1718	7.44
80	2815	7.49	3260	10.16
100	3897	8.79	4425	12.33
125	6988	13.42	8040	18
160	12979	22.92	13800	30
200	17000	28	18000	39

Cylinder series ISO 15552 type A, ISO 15552 type A TWO-FLAT				
Ø	Single-rod		Through-rod	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
32	460	3.09	576	3.98
40	716	4.08	916	5.66
50	1155	5.86	1513	8.33
63	1524	5.92	1945	8.33
80	2886	9.07	3520	11.74
100	3965	9.48	4779	13.02
125	7093	14.11	8642	18.69

Cylinder ISO 15552 series 3				
Ø	Single-rod		Through-rod	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
32	434	2.30	495	3.19
40	660	3.22	783	4.80
50	1079	4.50	1340	6.97
63	1427	4.78	1702	7.24
80	2774	6.73	3219	10.58
100	3836	7.726	4364	11.58
125	6529	11.63	7581	17.94

Cylinder ISO 15552 Ultra-low frictions		
Ø	Single-rod	
	Weight [g] Stroke = 0	Weight [g] each mm
32	504	1.64
40	774	2.09
50	1245	3.02
63	1697	3.36

Round cylinder series RNDC				
Ø	Single-rod		Through-rod	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
32	404	1.44	455	2.04
40	660	1.58	808	3.14
50	1235	3.59	1507	6.03

Compact cylinder series CMPC TWO-FLAT				
Ø	Single-rod		Through-rod	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
32	261	3.17	297	4.05
40	394	4.41	432	5.29
50	595	6.42	648	7.98
63	845	7.34	129	8.90
80	1524	12.57	1680	15.02

ISO 21287 cylinder series LINER				
Ø	Single-rod		Through-rod	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
20	98	2.49	110	3.10
25	119	2.63	133	3.24
32	182	3.62	197	4.50
40	228	4.09	243	4.98
50	330	5.67	355	7.25
63	461	6.52	487	8.10
80	991	10.11	1066	12.58
100	1869	13.78	2029	17.63

Twin-rod cylinder series TWNC				
Ø	Single-rod		Through-rod	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
32	725	2.57	790	3.79
40	945	2.81	1065	4.03
50	1499	3.96	1737	5.72
63	2360	5.72	2628	8.85
80	4300	9.59	4730	15.52
100	6270	10.89	6775	16.8

Rodless cylinder								
Ø	Standard		Series Double		with Guide		with Guide "V"	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
16	244	0.86	561	1.72	460	1.79	-	-
25	746	1.79	1607	3.58	1.421	2.99	953	1.98
32	1707	3.84	3737	7.68	3.025	5.04	2.150	3.21
40	2911	5.55	-	-	4.434	6.75	3.210	4.67
63 (Std)	7280	9.22	-	-	10.860	10.65	9.230	9.27
63 (Heavy)	-	-	-	-	13.275	14.02	-	-

Rodless cylinder series PU		
Ø	Weight [g] Stroke = 0	Weight [g] each mm
25	1009	2.54
32	1535	3.72

Rodless cylinder series MAGNETIC SLIDE		
Ø	Weight [g] Stroke = 0	Weight [g] each mm
16	490	0.262
20	795	0.325
25	1250	0.487

Hydraulic brake series BRK					
Speed adjustment		Adjustment + skip or stop		Adjustment + skip and stop	
Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
1290	4.2	1430	4.2	1570	4.2

Compact Stopper cylinder				
Ø x Stroke	Trunnion version		Roller version	
	Weight [g]		Weight [g]	
20x15	210		220	
32x20	420		460	
50x30	1.190		1.300	
80x30	-		4.500	
80x40	-		4.750	

Guide unit				
Ø	Type GDS		Type GDH and GDM	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
12	150	0.78	374	0.78
16	150	0.78	374	0.78
20	420	1.22	759	1.22
25	420	1.22	759	1.22
32	772	1.76	1200	1.76
40	1000	1.76	2000	3.13
50	1900	3.13	3300	4.9
63	2300	3.13	4750	4.9
80	3800	4.9	8500	7.26
100	7000	4.9	12000	7.26

Compact guided cylinder				
Ø	Non-cushioned (approximate)		Cushioned (approximate)	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
16	295	4.77	414	4.77
20	486	6.38	543	6.38
25	550	10.01	735	10.01
32	942	16.51	1.354	16.51
40	1028	18.04	1.479	18.04
50	1355	23.76	1.949	23.76
63	1900	32.56	2.714	32.56
80	3910	55.77	-	-
100	5710	73.48	-	-

ISO 6432 MINI-CYLINDERS SERIES STD

Mini-cylinders to ISO 6432 with a chamfered stainless steel barrel. The cylinder head dimensions have been reduced for some sizes so that they can be used where there are space restrictions. Can be used with different types of sensors.

Available in various versions with a wide range of accessories:

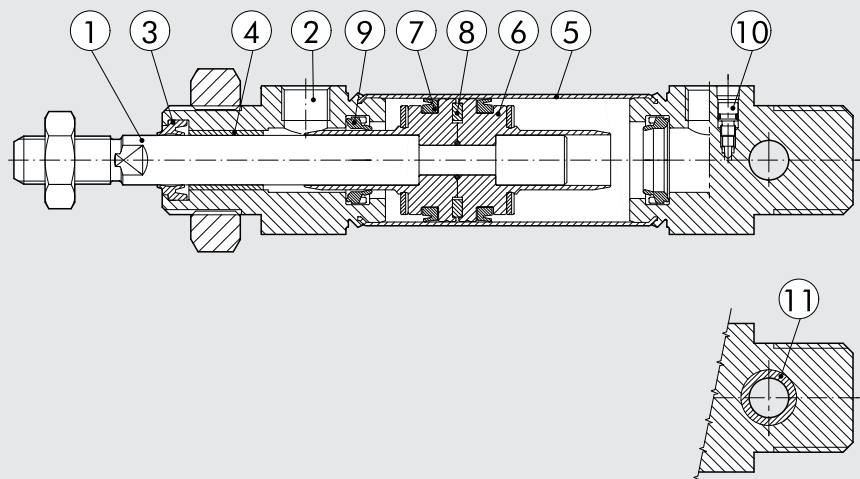
- with or without magnet
- single and double acting – single or through rod
- with pneumatic cushioning (Ø16-20-25)
- gaskets made of NBR, POLYURETHANE, and FKM/FPM (for high temperatures), and low-temperature gaskets
- special executions on request
- fixing accessories, guide units and mechanical rod locking



TECHNICAL DATA		Polyurethane	NBR	FKM/FPM	Low temperature
Max operating pressure	bar MPa			10 1	
Temperature range	°C	-10 to +80	-10 to +80	-10 to +150 (non-magnetic cylinders)	-35 to +80
Fluid		Unlubricated air. Lubrication, if used, must be continuous			
Bores	mm	8; 10; 12; 16; 20; 25			
Design		Chamfered barrel			
Standard strokes ⁺	mm	Single-acting: for bores Ø 8 to 25 strokes from 1 to 50 Double-acting: for bores Ø 8 to 10 strokes from 1 to 100 for bores Ø 12 to 16 strokes from 1 to 200 for bores Ø 20 to 25 strokes from 1 to 500 Double-acting, cushioned: for bores Ø 16 strokes from 1 to 300 for bores Ø 20 to 25 strokes from 1 to 500			
Versions		⁺ Maximum recommended strokes. Higher values can create operating problems Double-acting, Double-acting cushioned, Single-acting retracted piston rod, Through-rod, Through-rod cushioned, Version with piston rod block, no-stick slip* All versions come complete with magnet. Supplied without magnet on request.			
Magnet for sensors		Ø 8 to 12: 0.8 bar - Ø 16 to 25: 0.6 bar			
Inrush pressure		See page 1-7			
Forces generated at 6 bar thrust/retraction		See page 1-8			
Weights		See page 1-8			
Notes		*Using for speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only.			

COMPONENTS

- PISTON ROD: C45 steel or stainless steel, thick chromed
- HEAD: anodised aluminium alloy
- PISTON ROD GASKET: polyurethane, NBR or FKM/FPM
- GUIDE BUSHING: steel strip with bronze and PTFE insert
- BARREL: AISI 304 steel
- HALF-PISTON: acetal resin
- PISTON ROD GASKET: polyurethane, NBR or FKM/FPM
- MAGNET: plasteodymium
- CUSHIONING GASKET: NBR or FKM/FPM
- NEEDLE: OT 58 with needle out movement safety system even when fully open
- BUSHING (optional): self-lubricating bronze



KEY TO CODES

CYL	1 1 2 TYPE	0	16 BORE	0020 STROKE	C MATERIAL	P GASKETS				
	101 SE axial coupling	0 Standard	▼ 08	For the maximum suppliable strokes, look at the technical data	A C45 chrome rod, aluminium piston rod	P Polyurethane				
	102 DEM axial coupling	U Bronze rear head bushing	▼ 10		For the maximum suppliable strokes, look at the technical data	C C45 chrome rod, technopolymer piston rod	N NBR			
	104 SE through-rod	V Without head nut	▼ 12			For the maximum suppliable strokes, look at the technical data	Z Stainless steel piston rod and nut	● V FKM/FPM		
■	106 SE cushioned	S Non-magnetic	16				For the maximum suppliable strokes, look at the technical data	X Stainless steel piston rod and nut	● B Low temperature	
■	109 DEA	▲ G No stick slip	20					For the maximum suppliable strokes, look at the technical data		
	110 DE		25						For the maximum suppliable strokes, look at the technical data	
	111 SE			For the maximum suppliable strokes, look at the technical data						
	112 DEM				For the maximum suppliable strokes, look at the technical data					
■	113 DEMA					For the maximum suppliable strokes, look at the technical data				
* ▼	114 DEM through-rod						For the maximum suppliable strokes, look at the technical data			
* ▼ ■	115 DEMA through-rod							For the maximum suppliable strokes, look at the technical data		
◆	116 DEM for mechanical lock								For the maximum suppliable strokes, look at the technical data	
■	117 DEMA for mechanical lock			For the maximum suppliable strokes, look at the technical data						

DE: Double-acting (non-cushioned, not magnetic)
 DEM: Magnetic double-acting (non-cushioned)
 DEMA: Magnetic double-acting (cushioned)
 DEA: Cushioned double-acting (non-magnetic)
 SE: Single-acting (magnetic)

- Only available for non-magnetic versions (S) and with aluminium piston (A or Z)
- ▲ For speeds lower than 0.2m/s, to prevent surging. Use no-lubricated air only
- ▼ Stainless steel piston rod
- Available from Ø 16
- ◆ Available from Ø 12
- * For Ø16 to 25 aluminium piston, stainless steel piston rod

NOTES

ISO 6432 MINI-CYLINDERS SERIES TP

Minicylinders manufactured according to the ISO 6432 regulation having high resistance technopolymer heads and anodized aluminium liner. Available in various versions with a wide range of accessories:

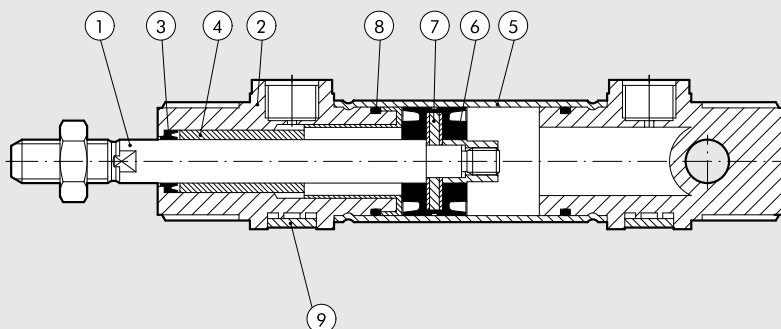
- with or without magnet
- single and double acting-single or through rod
- gaskets made of POLYURETHANE
- fixing accessories and guide units.



TECHNICAL DATA		POLYURETHANE
Max operating pressure	bar	10
	MPa	1
Temperature range	°C	-10 to +60
Fluid		Unlubricated air. Lubrication, if used, must be continuous
Bores	mm	16; 20; 25
Design		Aluminium liner chamfered on the heads
Standard strokes †	mm	Ø 16: from 1 to 200
	mm	Ø 20 to 25: from 1 to 500
Versions		† Maximum recommended strokes. Higher values can create operating problems.
Forces generated at 6 bar thrust/retraction		Double-acting, Double Through-rod (for both there are magnetic and non magnetic versions)
Weights		See page 1-7
Inrush pressure		See page 1-8
Notes		Max 0.6 bar
		The standard version is lacking of the head nut
		Use of fittings with a taper thread is NOT recommended.

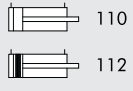
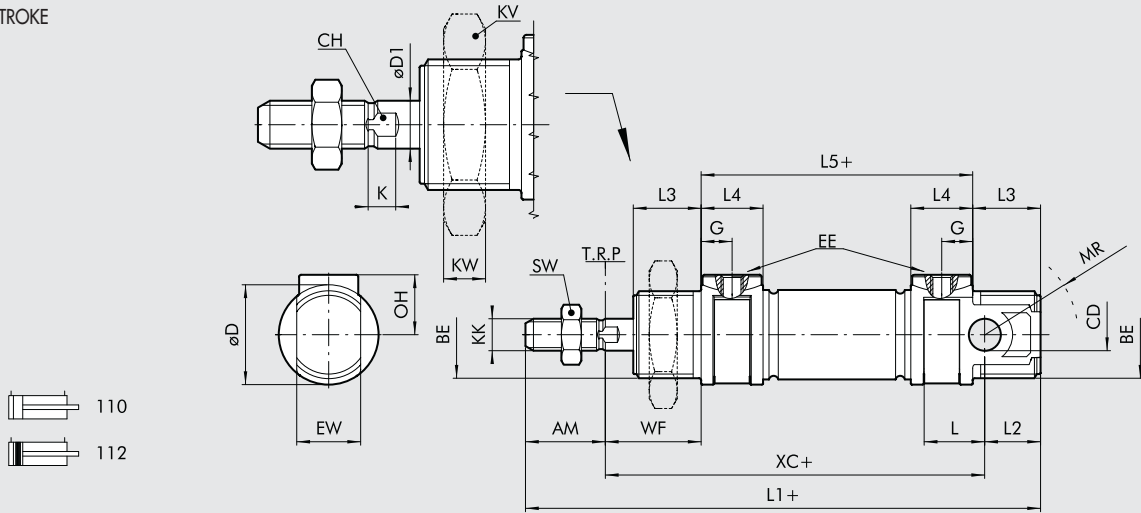
COMPONENTS

- ① PISTON ROD: C45 steel or stainless steel, thick chromed
- ② HEADS: high resistance technopolymer
- ③ PISTON ROD GASKET: polyurethane
- ④ GUIDE OPERATOR: technopolymer
- ⑤ BARREL: drawn anodized aluminium alloy
- ⑥ PISTON GASKET: polyurethane
- ⑦ MAGNET: neodymium
- ⑧ STATIC O-RINGS: NBR
- ⑨ COVER PLATE: technopolymer



DIMENSIONS OF STANDARD VERSIONS

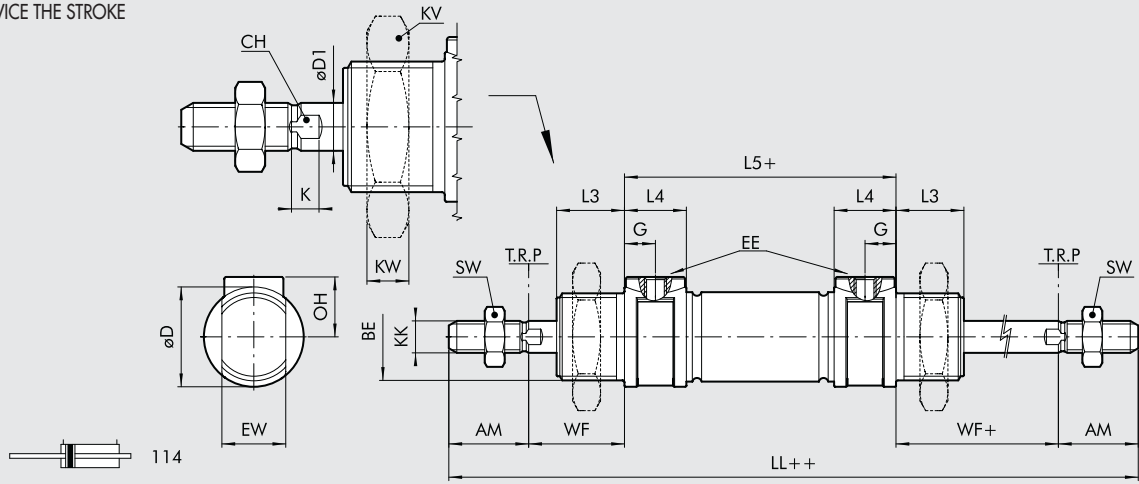
+ = ADD STROKE



																	MAX LOCKING TORQUE [Nm]										
Ø	AM	BE	CD (H9)	øD	øD1	G	EE	EW (d13)	OH	L	L1	L2	L3	L4	L5	KK	XC(±1)	WF	KW	KV	MR	SW	CH	K	Ø	BE (front/rear)	EE
16	16	M16x1.5	6	21	6	4.7	M5	12	12	11	111	13	17	9.5	56	M6	82	22	8	24	16	10	5	3.5	16	12/8	1.2
20	20	M22x1.5	8	25	8	7.7	1/8"	16	16	15	129	14	17	15.5	68	M8	95	24	7	32	18	13	7	4.6	20	22/15	3
25	22	M22x1.5	8	30	10	7.7	1/8"	16	17	15	143	17	20	15.5	73	M10x1.25	104	28	7	32	21	17	8	5.5	25	22/15	3

DIMENSIONS OF STANDARD VERSIONS WITH THROUGH-ROD

+ = ADD STROKE
++ = ADD TWICE THE STROKE



																	MAX LOCKING TORQUE [Nm]				
Ø	AM	BE	øD	øD1	G	EE	OH	LL	L3	L4	L5	KK	WF	KW	KV	SW	CH	K	Ø	BE	EE
16	16	M16x1.5	21	6	4.7	M5	12	132	17	9.5	56	M6	22	8	24	10	5	3.5	16	12	1.2
20	20	M22x1.5	25	8	7.7	1/8"	16	156	17	15.5	68	M8	24	7	32	13	7	4.6	20	22	3
25	22	M22x1.5	30	10	7.7	1/8"	17	173	20	15.5	73	M10x1.25	28	7	32	17	8	5.5	25	22	3

KEY TO CODES

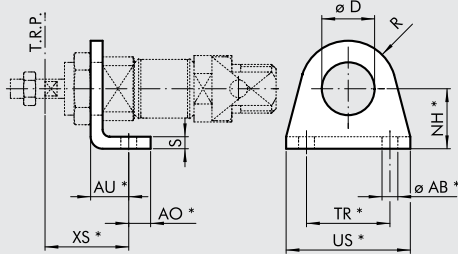
CYL	110 TYPE	3	16 BORE	0	020 STROKE	C MATERIAL	P GASKETS
110	DE non-magnetic minicylinder	● 3 TP heads (standard)	■ 16	0 Standard	For the maximum suppliable strokes, look at the technical data	C C45 chrome rod	P Polyurethane
112	DEM minicylinder	● 4 TP heads (standard) + head nut	■ 20	S Non-magnetic		X Stainless rod	
114	DEM through-rod minicylinder		■ 25				

DE: Double-acting (non-cushioned, not magnetic).
DEM: Double action magnetic (unless otherwise specified) not cushioned.

As standard the cylinders are already no stick-slip version.
● This version don't provide the nut on the head.
■ Ø 16 will be only in version with stainless rod (X).

ACCESSORIES FOR ISO 6432 MINI-CYLINDERS: FIXINGS

FOOT MODEL A

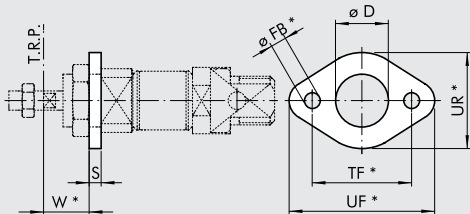


Code	Ø	Ø D	XS ±1.4	AU	AO	NH ±0.3	TR J ¹⁴	US	Ø AB H ¹³	R	S	Weight [g]
W0950080001	8	12	24	11	5	16	25	35	4.5	10	3	22
W0950080001	10	12	24	11	5	16	25	35	4.5	10	3	22
W0950120001	12	16	32	14	6	20	32	42	5.5	13	4	42
W0950120001	16	16	32	14	6	20	32	42	5.5	13	4	42
W0950200001	20	22	36	17	8	25	40	54	6.5	20	5	90
W0950200001	25	22	40	17	8	25	40	54	6.5	20	5	90

*ISO 6432 values

Note: Individually packed

FLANGE MODEL C

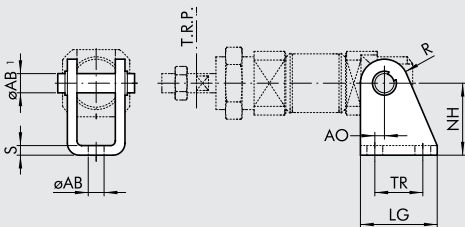


Code	Ø	Ø D	W ±1.4	Ø FB H ¹³	TF J ¹⁴	UF	UR	S	Weight [g]
W0950080002	8	12	13	4.5	30	40	22	3	10
W0950080002	10	12	13	4.5	30	40	22	3	10
W0950120002	12	16	18	5.5	40	52	30	4	26
W0950120002	16	16	18	5.5	40	52	30	4	26
W0950200002	20	22	19	6.5	50	66	40	5	52
W0950200002	25	22	23	6.5	50	66	40	5	52

*ISO 6432 values

Note: Individually packed

COUNTER-HINGE MODEL BC

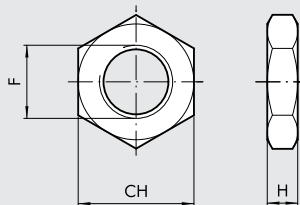


Code	Ø	AO	LG	TR J ¹³	NH ±0.2	MO	Ø AB1	Ø AB H ¹³	R	S	Weight [g]
W0950080005	8	2.5	22	12.5	24	18	4	4.5	6	2.5	24
W0950080005	10	2.5	22	12.5	24	18	4	4.5	6	2.5	24
W0950120005	12	2	25	15	27	25	6	5.5	7	3	40
W0950120005	16	2	25	15	27	25	6	5.5	7	3	40
W0950200005	20	4	32	20	30	30	8	6.5	10	4	78
W0950200005	25	4	32	20	30	30	8	6.5	10	4	78

*ISO 6432 values

Note: Supplied complete with 1 pin and 2 snap rings

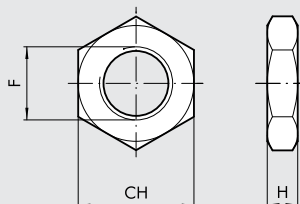
NUT FOR HEADS MODEL D



Code	Ø	F	CH	H	Weight [g]
0950080010	8	M12x1.25	19	7	12
0950080010	10	M12x1.25	19	7	12
0950120010	12	M16x1.5	24	8	20
0950120010	16	M16x1.5	24	8	20
0950200010	20	M22x1.5	32	7	44
0950200010	25	M22x1.5	32	7	44

Note: Individually packed

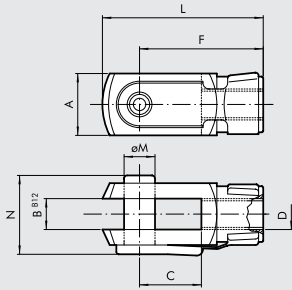
NUT FOR PISTON RODS MODEL DA



Code	Ø	F	CH	H	Weight [g]
0950080011	8	M4	7	3	0.6
0950080011	10	M4	7	3	0.6
0950120011	12	M6	10	4	1
0950120011	16	M6	10	4	1
0950200011	20	M8	13	5	3
0950322010	25	M10x1.25	17	6	7

Note: Individually packed

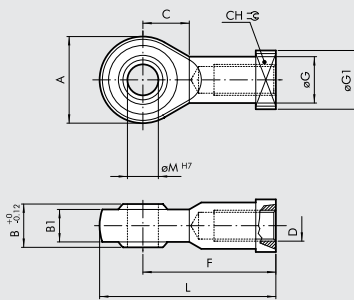
FORK MODEL GK-M



Code	Ø	øM	C	B	A	L	F	D	N	Weight [g]
W0950080020	8	4	8	4	8	21	16	M4	11	8
W0950080020	10	4	8	4	8	21	16	M4	11	8
W0950120020	12	6	12	6	12	31	24	M6	16	20
W0950120020	16	6	12	6	12	31	24	M6	16	20
W0950200020	20	8	16	8	16	42	32	M8	22	48
W0950322020	25	10	20	10	20	52	40	M10x1.25	26	92

Note: Individually packed

ROD EYE MODEL GA-M

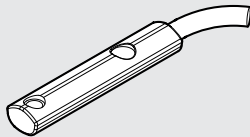


Code	Ø	øM	C	B	B1	A	L	F	D	øG	øG1	CH	Weight [g]
W0950080025	8	5	10	8	6	18	36	27	M4	9	11	9	22
W0950080025	10	5	10	8	6	18	36	27	M4	9	11	9	22
W0950120025	12	6	11	9	6.75	20	40	30	M6	10	13	11	28
W0950120025	16	6	11	9	6.75	20	40	30	M6	10	13	11	28
W0950200025	20	8	13	12	9	24	48	36	M8	12.5	16	14	50
W0950322025	25	10	15	14	10.5	28	57	43	M10x1.25	15	19	17	78

Note: Individually packed

ACCESSORIES FOR ISO 6432 MINI-CYLINDERS: MAGNETIC SENSORS

(E) RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



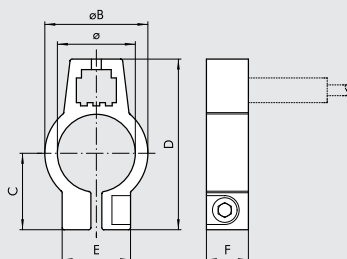
Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

* For use when standard sensors do not detect the magnet, e.g. near metal masses.

For technical data see page 1-246

Note: Individually packed

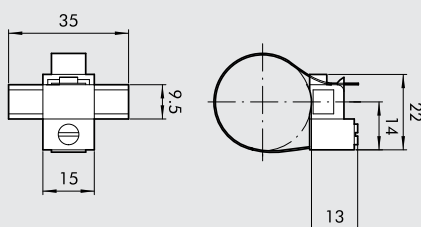
(F) SENSOR CIRCLIP MOD. DSW



Code	Bore	Model	Ø	øB	C	D	E	F
W0950000608	8	Circlip DSW - 08	9.3	12.3	11	24	12.3	9
W0950000610	10	Circlip DSW - 10	11.3	14.3	12	26	12.3	9
W0950000612	12	Circlip DSW - 12	13.3	16.3	13	28	12.3	9
W0950000616	16	Circlip DSW - 16	17.3	20.3	15.5	32	12.3	9
W0950000620	20	Circlip DSW - 20	21.3	24.3	17.5	36	14	9
W0950000625	25	Circlip DSW - 25	26.3	29.3	20	41.5	14	9

Note: Individually packed

(G) UNIVERSAL SENSOR CIRCLIP



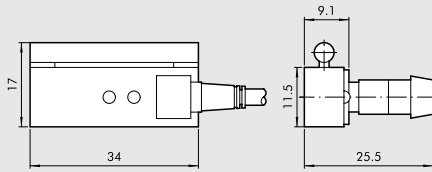
Code	Bore	Model
W0950001103	8 to 25	Sensor circlip

Note: Individually packed

MATERIAL

Circlip: stainless steel
Sensor holder: plastic

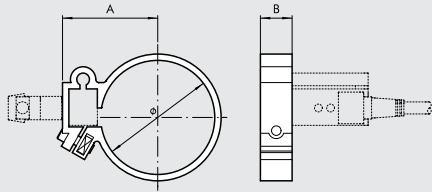
A SENSORS MOD. DSM



Code	Bore	Model
W0950000201	8 to 25	REED sensor DSM2 - C525 HS
W0950000222	8 to 25	HALL PNP sensor DSM3 - N225
W0950000232	8 to 25	HALL NPN sensor DSM3 - M225

For technical data see page 1-244
Note: Individually packed

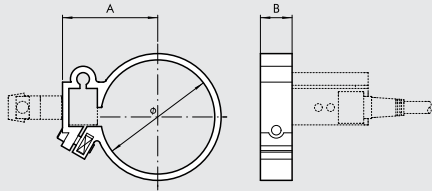
B SENSOR CIRCLIP MOD. DXF FOR STAINLESS STEEL BARREL



Code	Bore	Model	Ø	A	B
W0950000508	8	Circlip DXF - 09	9.3	15	10
W0950000510	10	Circlip DXF - 11	11.3	16.5	10
W0950000512	12	Circlip DXF - 13	13.3	17.5	10
W0950000516	16	Circlip DXF - 17	17.3	18.5	10
W0950000520	20	Circlip DXF - 21	21.3	21	10
W0950000525	25	Circlip DXF - 26	26.3	23.5	10

Note: Individually packed

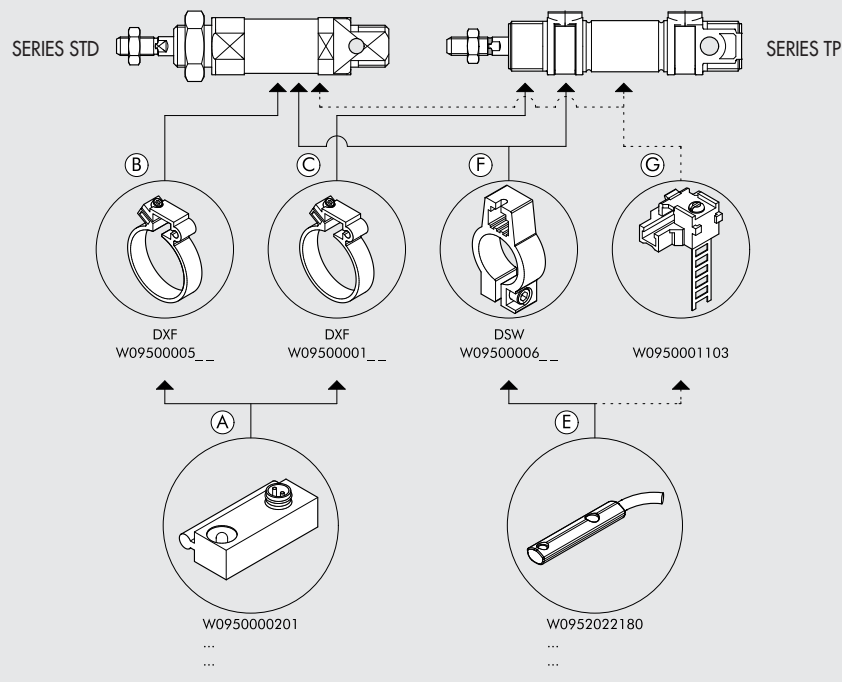
C SENSOR CIRCLIP MOD. DXF FOR ALUMINIUM BARREL



Code	Bore	Model	Ø	A	B
W0950000108	8	Circlip DXF 12- 8	12	17	10
W0950000110	10	Circlip DXF 14-10	14	18	10
W0950000112	12	Circlip DXF 16-12	16	19	10
W0950000116	16	Circlip DXF 20-16	20	21	10
W0950000120	20	Circlip DXF 24-20	24	23	10
W0950000125	25	Circlip DXF 29-25	29	28	10

Note: Individually packed

USE SENSORS



ACCESSORIES FOR ISO 6432 MINI-CYLINDERS: MECHANICAL PISTON ROD LOCK

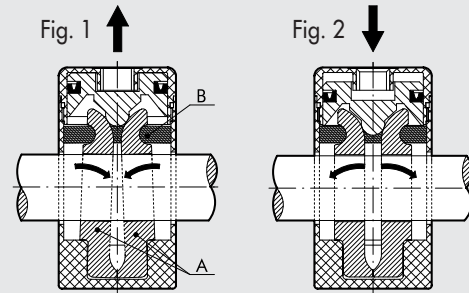
TECHNICAL DATA

Operating pressure	bar	3 to 6
	MPa	0.3 to 0.6
Max temperature range	°C	80
Max Fluid temperature	°C	70
Installation		In any position
Mechanics		Double shoe with mechanical locking Mechanical stick-slip
Operation		NC bidirectional
Fluid		Lubricated or unlubricated compressed air
Locking force		Ø 12-16: 180 N / Ø 20: 250 N Ø 25: 400 N
Pilot port		M5
MATERIALS		
body		Aluminium
shoe		Brass
spring		NBR
piston		Synthetic, with added teflon®
gasket		NBR



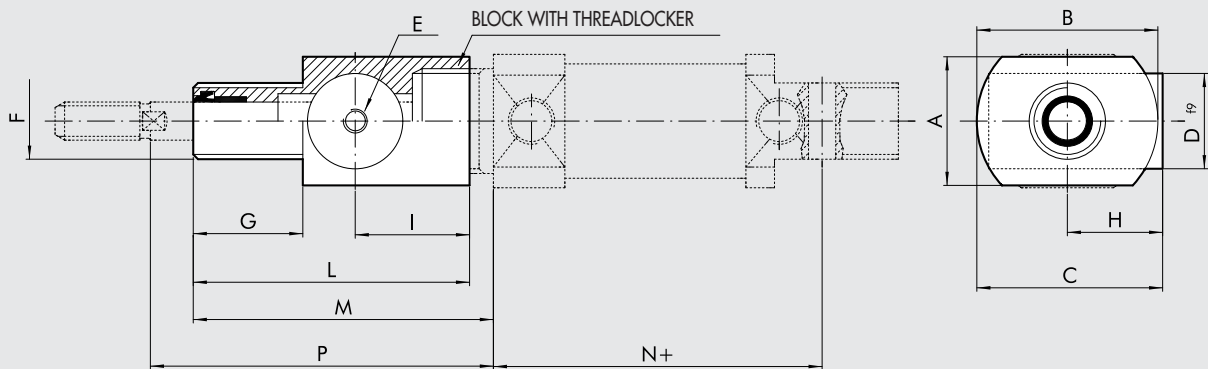
OPERATING PRINCIPLE

The mechanical piston rod lock is a normally-closed mechanism. In the absence of pneumatic piloting, the two shoes (A) lock the cylinder rod in both directions (Fig. 1). With pneumatic piloting, the piston rod guide forces the shoes to come right up to each other and overcome the counter spring (B) force and the piston rod can slide (Fig. 2). **It is important to remember that the mechanical piston rod lock is a static type, which means that it is necessary to stop the cylinder piston rod pneumatically before locking the part mechanically.**



DIMENSIONS

+ = ADD STROKE



Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	P(±1.2)	Weight [g]
W5010001099	12	25	25	31.5	20	M5	M16x1.5	12	19	23	47	52	53	57	100
W5010001099	16	25	25	31.5	20	M5	M16x1.5	12	19	23	47	52	60	57	100
W5010001100	20	27	38	40	20	M5	M22x1.5	23	21	24	58	65	71	72	100
W5010001101	25	27	38	40	20	M5	M22x1.5	23	21	24	58	68	76	76	100

ACCESSORIES FOR ISO 6432 MINI-CYLINDERS: GUIDE UNIT

Guide units series DS-DH-DM ensure optimal alignment and anti-rotation effect of the pneumatic cylinder connected to it. The guide units can be used separately or combined in order to get complete handling units: in which case the guide units can be coupled using the type A and C anchorage (foot and flange).

The guide unit can be coupled to ISO 6432 cylinders (Ø 12 - Ø 25).

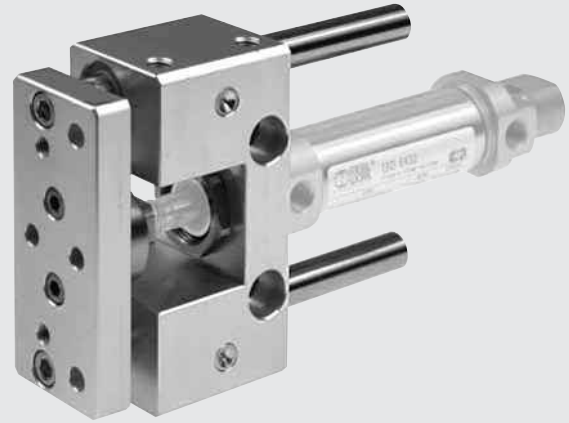
The following versions are available:

U PROFILE*: for limited loads and speeds (GDS)

H PROFILE*: for high loads (GDH)

H PROFILE**: for high speeds (GDM)

For weights, see technical data page 1-8



* With bronze guide bushing

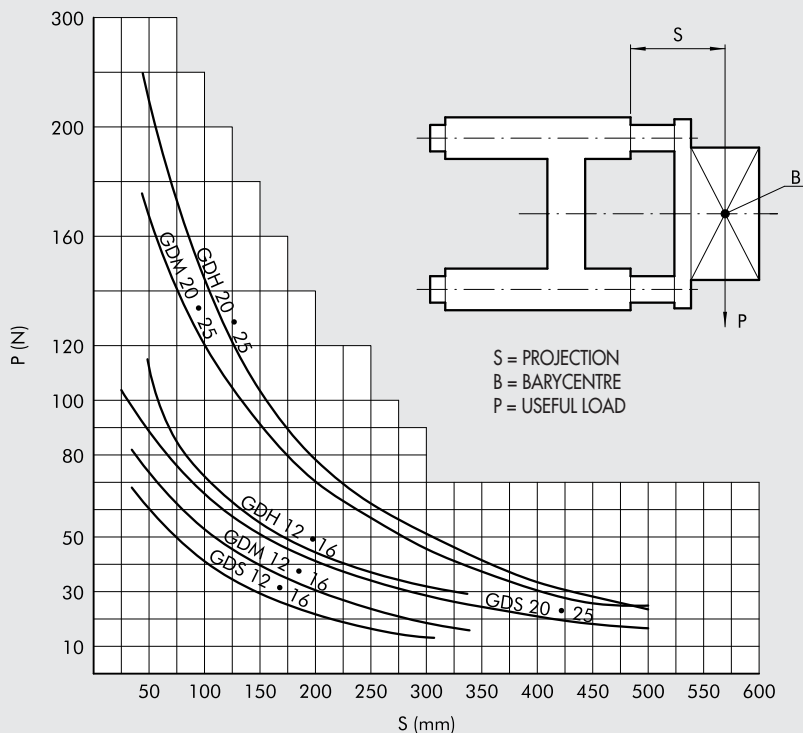
** With ball guide bushing

GUIDE ELEMENTS

SERIES GDS-GDH	Body:	aluminium alloy
	Guide bushing:	self-lubricating sintered bronze and wiper rings
	Piston rod:	chromed rolled steel

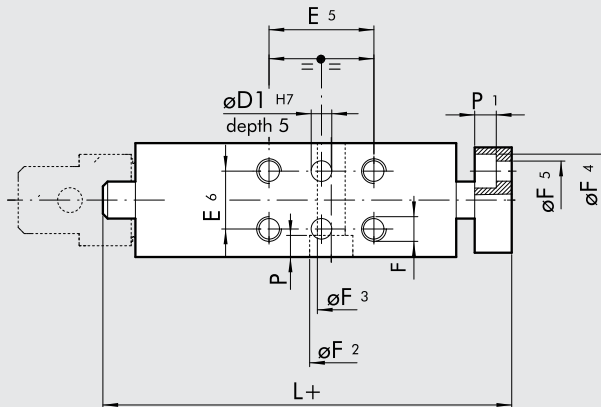
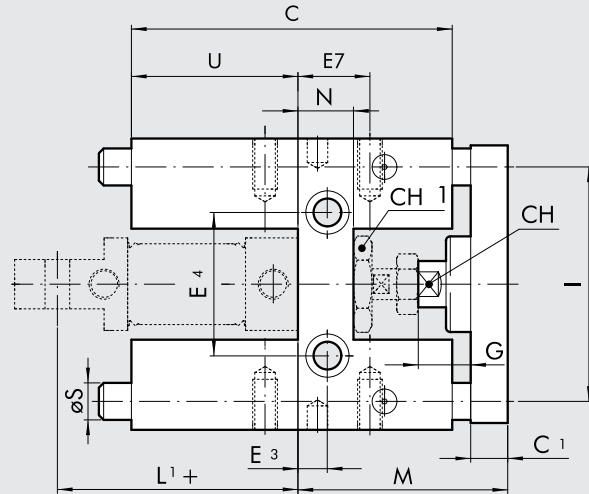
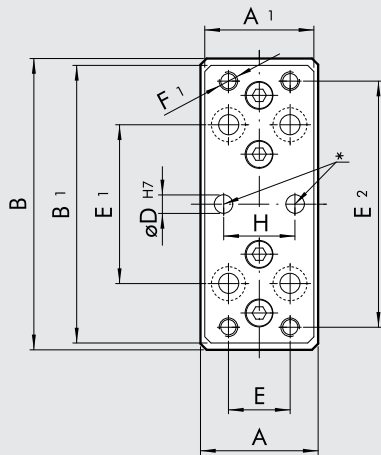
SERIES GDM	Body:	aluminium alloy
	Guide bushing:	linear guide ball bearings and wiper rings
	Piston rod:	tempered and chromed steel

GUIDE UNIT LOAD DIAGRAM



DIMENSIONS OF TYPE GDH-GDM

+ = ADD THE STROKE
 * = CENTERING PINHOLES



Ø	A	A ₁	B	B ₁	C	C ₁	Ch	Ch ₁	D	D ₁	E	E ₁	E ₂	E ₃	E ₄	E ₅	E ₆	E ₇	F	F ₁	F ₂	F ₃	F ₄	F ₅	G	H	I	L	L ₁	M	N	P	S	U
12	30	27	65	63	75	10	8	19	4	-	15	32	54	6.5	24	32.5	22	11	M4	M4	8.5	5.1	7.5	4.5	15	15	46	130	53	54	15	5.5	10	37
16	30	27	65	63	75	10	8	19	4	-	15	32	54	6.5	24	32.5	22	11	M4	M4	8.5	5.1	7.5	4.5	15	15	46	130	60	54	15	5.5	10	37
20	34	32	79	76	108	12	13	27	6	5	20	40	68	8.5	38	32.5	23	15	M6	M5	10.5	6.5	9	5.5	22	20	58	160	71	65	15	7	12	58
25	34	32	79	76	108	12	13	27	6	5	20	40	68	8.5	38	32.5	23	15	M6	M5	10.5	6.5	9	5.5	22	20	58	160	76	65	15	7	12	58

GDH (BRONZE GUIDE BUSHING)

Code	Bore	Type
W0700122...	12	UNIT MW DH 012
W0700162...	16	UNIT MW DH 016
W0700202...	20	UNIT MW DH 020
W0700252...	25	UNIT MW DH 025

...Enter the stroke in 3 digits (e.g. 50 = 050).

GDM (BALL GUIDE BUSHING)

Code	Bore	Type
W0700123...	12	UNIT MW DM 012
W0700163...	16	UNIT MW DM 016
W0700203...	20	UNIT MW DM 020
W0700253...	25	UNIT MW DM 025

...Enter the stroke in 3 digits (e.g. 50 = 050).

STROKE

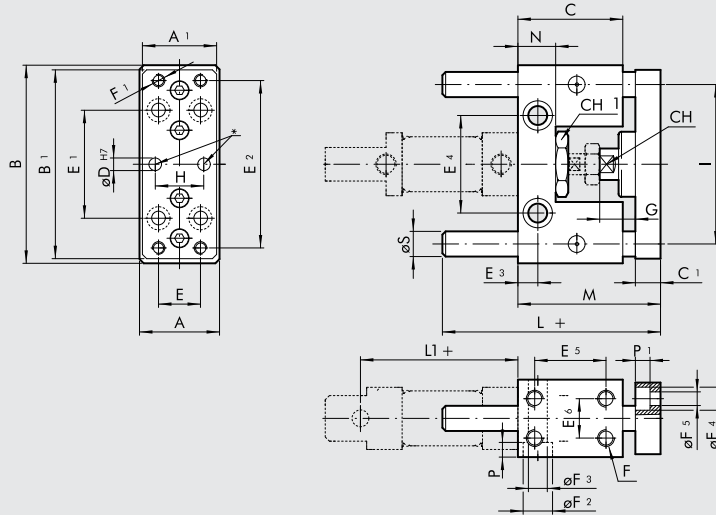
Cylinder stroke [mm]		Guide stroke [mm]
from	to	
0	75	50
75	125	100
125	175	150
175	225	200
225	275	250
275	345	320
345	425	400
425	525	500

Note:

Thanks to the dimensional features, it is possible to extend the use of GDH/GDM guides to cylinders with strokes up to 25 mm above the nominal guide stroke. The table here shows the stroke/cylinder range that can be used depending on the nominal stroke of the guide.

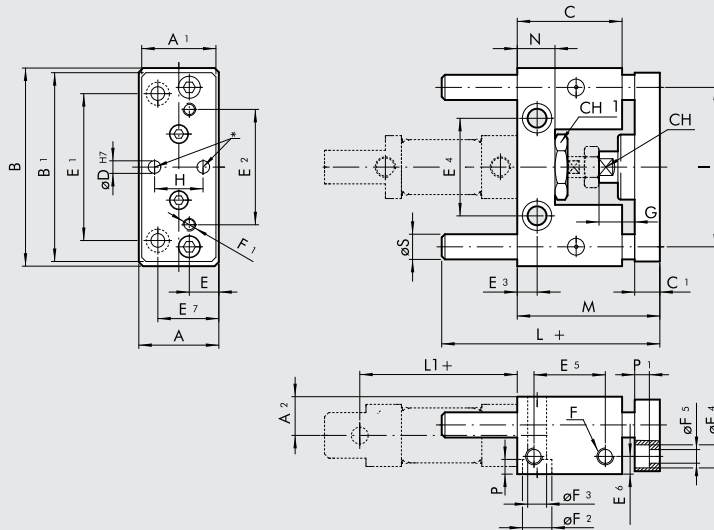
DIMENSIONS OF TYPE GDS

+ = ADD THE STROKE
* = CENTERING PINHOLES



Ø	A	A ₁	B	B ₁	C	C ₁	Ch	Ch ₁	D	E	E ₁	E ₂	E ₃	E ₄	E ₅	E ₆	F	F ₁	F ₂	F ₃	F ₄	F ₅	G	H	I	L	L ₁	M	N	P	P ₁	S
12	30	27	65	63	38	10	8	19	4	15	32	54	6.5	24	25	22	M4	M4	8.5	5.1	7.5	4.5	15	15	46	70	53	54	13	5.5	4.5	10
16	30	27	65	63	38	10	8	19	4	15	32	54	6.5	24	25	22	M4	M4	8.5	5.1	7.5	4.5	15	15	46	70	60	54	13	5.5	4.5	10

+ = ADD THE STROKE
* = CENTERING PINHOLES



Ø	A	A ₁	A ₂	B	B ₁	C	C ₁	Ch	Ch ₁	D	E	E ₁	E ₂	E ₃	E ₄	E ₅	E ₆	E ₇	F	F ₁	F ₂	F ₃	F ₄	F ₅	G	H	I	L	L ₁	M	N	P	P ₁	S
20	40	38	24	100	90	48	12	13	27	6	15	70	55	8.5	46.5	32	10	30	M8	M6	14	9	11	6.5	22	20	76	77	71	65	17	9	6.5	12
25	40	38	65	100	90	48	12	13	27	6	15	70	55	8.5	46.5	32	10	30	M8	M6	14	9	11	6.5	22	20	76	77	76	71	17	9	6.5	12

GDS (BRONZE GUIDE BUSHING)

Code	Bore	Type
W0700121...	12	UNIT MW DS 012
W0700161...	16	UNIT MW DS 016
W0700201...	20	UNIT MW DS 020
W0700251...	25	UNIT MW DS 025

...Enter the stroke in 3 digits (e.g. 50 = 050).

STROKE

Cylinder stroke [mm]		Guide stroke [mm]
from	to	
0	50	50
51	100	100
101	150	150
151	200	200
201	250	250

Note:

Thanks to the dimensional features, it is possible to use the range of strokes - cylinders, as shown in the table here, without the guide piston rods projecting beyond the cylinder fixing value (L1 +).

ISO 15552 CYLINDERS (EX ISO 6431)

Cylinders made to ISO 15552 available in various versions and with a wide range of accessories:

- Configuration with or without magnet
- Single-or double acting – single-or through-rod
- Wide choice of NBR, POLYURETHANE and FKM/FPM gaskets (for high temperatures, for low temperature)
- Special versions on request
- Fixing accessories, guide units and mechanical piston rod lock.

They are available in three series, which differ according to the shape of the barrel and, consequently, the type of sensors and accessories that can be mounted.

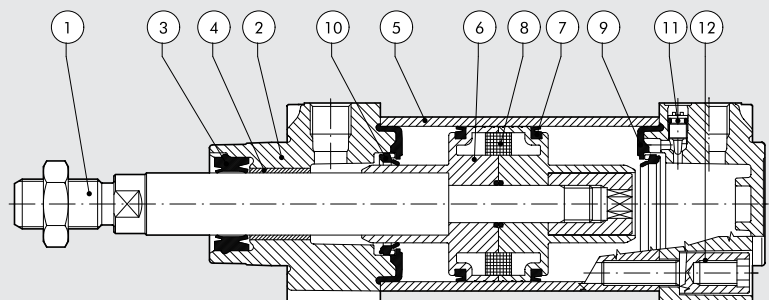
These cylinders are called series STD, type A, series 3.



TECHNICAL DATA		Polyurethane	NBR	FKM/FPM	Low Temperature
Max operating pressure	bar			10	
	MPa			1	
	psi			145	
Temperature range	°C	-20 to +80 (non-magnetic cyl.) -20 to +70 (magnetic cyl.)	-10 to +80 (non-magnetic cyl.) -10 to +70 (magnetic cyl.)	-10 to +150 (non-magnetic cyl.)	-35 to +80
Fluid		Unlubricated air. Lubrication, if used, must be continuous			
Bore	mm	32; 40; 50; 63; 80; 100; 125			
Design		Heads with Tap Tite screws			
Standard stroke †	mm	Single-acting: for bores 32 to 63 strokes from 1 to 250 Double-acting: for bores 32 to 80 strokes from 1 to 2800 for bores 100 to 125 strokes from 1 to 2600			
Versions		† Maximum recommended strokes. Higher values can create operating problems Double-acting cushioned, Single-acting retracted piston rod cushioned, Through-rod cushioned, Long cushioning, High-temperature, Piston rod lock, Oil seal, Through-rod oil seal, Low friction, Non-stick-slip*.			
Sensor magnet		All versions come complete with magnet. Supplied without magnet on request.			
Inrush pressure		Ø 32; 40: 0.4 bar Ø 50; 63 strokes < 1500 mm: 0.3 bar; strokes > 1500 mm: 0.4 bar Ø 80; 100; 125 strokes < 1500 mm: 0.2 bar; strokes > 1500 mm: 0.4 bar			
Notes		*Using for speeds lower than 0.2m/s, to prevent surging. Use no-lubricated air only			
Forces generated at 6 bar thrust/retraction		See page 1-7			
Weights		See page 1-8			

COMPONENTS

- ① PISTON ROD: C45 steel or stainless steel, thick chromed
- ② HEAD: die cast aluminium
- ③ PISTON ROD GASKET: polyurethane, NBR or FKM/FPM
- ④ GUIDE BUSHING: steel strip with bronze and PTFE insert
- ⑤ BARREL: drawn anodised calibrated aluminium
- ⑥ HALF-PISTON: self-lubricating technopolymer with built-in cushioning olives (aluminium with PTFE pad for diameters 80-100-125)
- ⑦ PISTON GASKET: polyurethane, NBR or FKM/FPM
- ⑧ MAGNET: plastoferrite
- ⑨ BUFFER + Static O-rings: NBR or FKM/FPM
- ⑩ CUSHIONING GASKET: polyurethane, NBR or FKM/FPM
- ⑪ CUSHIONING NEEDLE: OT 58 with needle out movement safety system even when fully open
- ⑫ SCREWS: Tap Tite for assembly



ISO 15552 CYLINDERS – SERIES STD (EX ISO 6431)



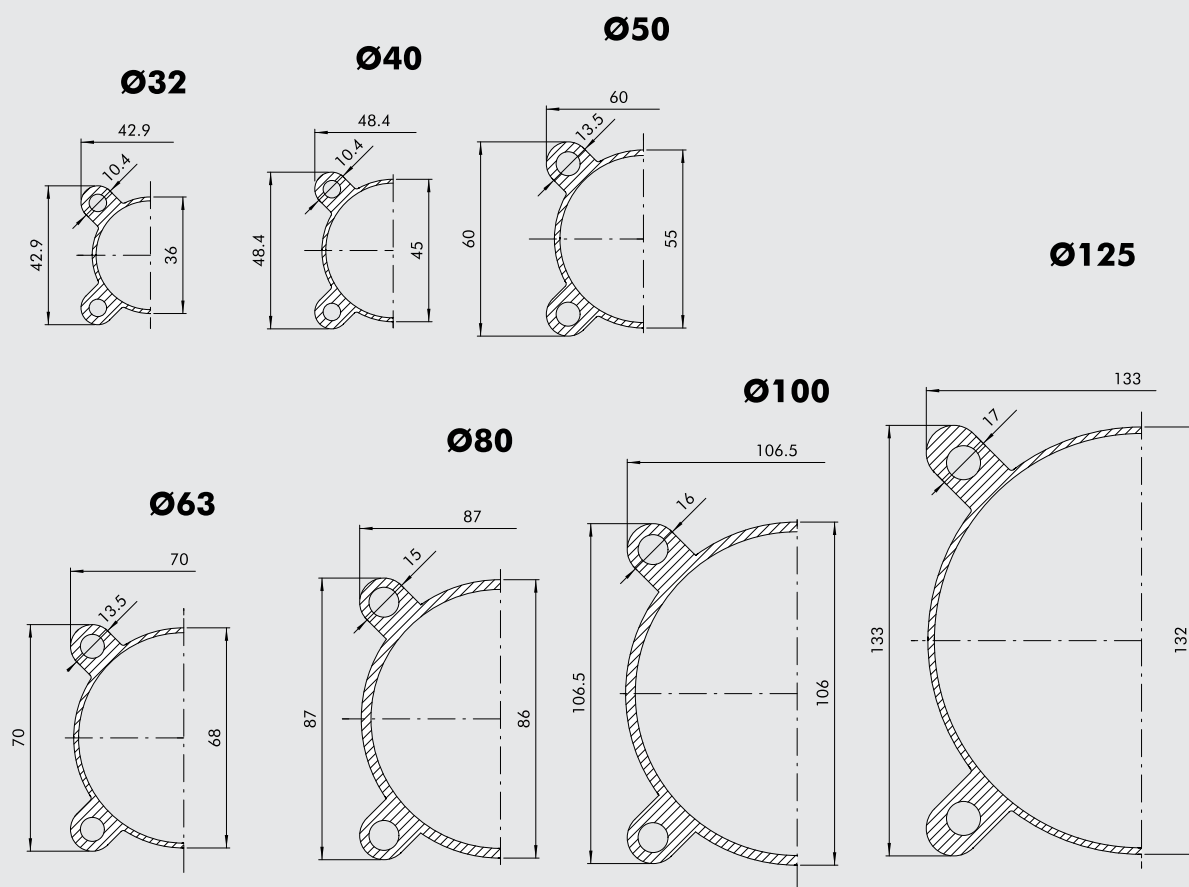
ISO 15552 cylinders, featuring a smooth barrel with no longitudinal slots. This means it is easier to clean the cylinder and there are fewer points where dirt can collect. Specific brackets are required for mounting magnetic sensors.



ACTUATORS

ISO 15552 CYLINDERS – SERIES STD

JACKET CROSS SECTION



KEY TO CODES CYLINDER ISO 15552 STD

CYL	1 2 1 TYPE	0	3 2 BORE	0 0 5 0 STROKE	C MATERIAL	P GASKETS
	120 Double-acting, cushioned, non-magnetic	0 Diameter S Non-magnetic ▲ G No stick slip	32 40 50	For the maximum suppliable strokes, look at the technical data	A C45 chromed rod, aluminium piston rod: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with Ø 80 mm and over C C45 chromed rod, technopolymer piston: standard for cylinders of Ø 32 to 63 mm with <1000 mm strokes Z Stainless steel piston rod and nut aluminium piston X Stainless steel piston rod and nut technopolymer piston	N NBR gaskets P Polyurethane gaskets V FKM/FPM gaskets ● B Low temperature
	121 Double-acting, cushioned		63			
	122 Through-rod		80			
	124 Double-acting, non-cushioned		■ 100 ■ 125			
	125 Opposed					
	+ 126 Single-acting					
	127 Tandem					
	134 Rod lock version					
	* 136 Version with piston rod lock					
	* ♦ 137 Piston rod lock + guide unit					

- In the code of cylinder with letter in fourth position Ø 100 becomes A1; Ø 125 becomes A2
- Only available for versions with aluminium piston (A or Z)
- + Available until Ø 63 and only the versions with piston in aluminum (A or Z)
- ▲ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only
- ♦ Available up to Ø 100
- * Not available for gaskets V or B

KEY TO CODES CYLINDER ISO 15552 STD LOW-FRICTION

CYL	1 2 3	A TYPE	3 2 BORE	0 0 5 0 STROKE	C MATERIAL	P GASKETS
		A Low friction, type A	32	Ø 32 to 80 stroke 1 to 2800 mm Ø 100 to 125 stroke 1 to 2600 mm	A C45 chromed rod, aluminium piston rod: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with Ø 80 mm and over C C45 chromed rod, technopolymer piston: standard for cylinders of Ø 32 to 63 mm with <1000 mm strokes Z Stainless steel piston rod and nut aluminium piston X Stainless steel piston rod and nut technopolymer piston	N NBR gaskets P Polyurethane gaskets V FKM/FPM gaskets
		B Low friction, type B	40			
		C Low friction, type C	50			
		D Low friction, type D	63			
		E Low friction, type E	80			
		F Low friction, type F	A1 = Ø 100 A2 = Ø 125			

KEY TO CODES CYLINDER ISO 15552 STD LONG-CUSHIONING

CYL	1 3 1	A TYPE	3 2 BORE	0 0 5 0 STROKE	C MATERIAL	P GASKETS
		A 200 mm front/rear cushioning cone – 200 mm ext.	32	1 to 2600 mm	A C45 chromed rod, aluminium piston rod for all sizes Z Stainless steel piston rod and nut aluminium piston	N NBR gaskets P Polyurethane gaskets V FKM/FPM gaskets
		B 150 mm front/rear cushioning cone – 150 mm ext.	40			
		C 100 mm front/rear cushioning cone – 100 mm ext.	50			
		D 150 mm front/rear cushioning cone – 200 mm ext.	63			
		E 100 mm front/rear cushioning cone – 200 mm ext.				
		F 50 mm front/rear cushioning cone – 100 mm ext.				
		G 100 mm front/rear cushioning cone – 150 mm ext.				
		H 200 mm front cushioning cone – 200 mm ext.				
		I 150 mm front cushioning cone – 150 mm ext.				
		L 100 mm front cushioning cone – 100 mm ext.				
		M 150 mm front cushioning cone – 200 mm ext.				
		N 100 mm front cushioning cone – 150 mm ext.				
		O 50 mm front cushioning cone – 100 mm ext.				
		Q 200 mm rear cushioning cone – 200 mm ext.				
		R 150 mm rear cushioning cone – 150 mm ext.				
		S 100 mm rear cushioning cone – 100 mm ext.				
		T 150 mm rear cushioning cone – 200 mm ext.				
		U 100 mm rear cushioning cone – 200 mm ext.				
		V 50 mm rear cushioning cone – 100 mm ext.				

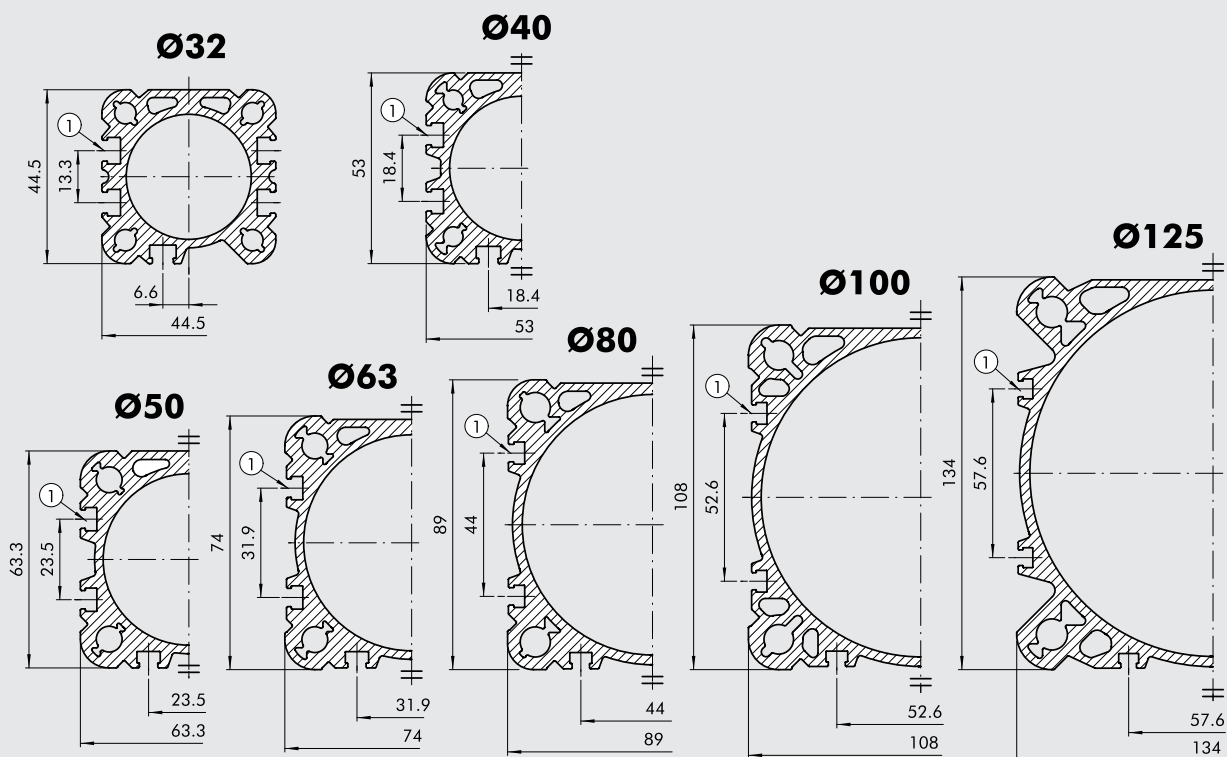
ISO 15552 CYLINDERS – TYPE A (EX ISO 6431)

ISO 15552 cylinders, featuring a barrel with longitudinal slots on three sides for inserting and securing retractable sensors. The same slots can also be used for valves and other mechanical parts.



JACKET CROSS SECTION

① SLOTS FOR RETRACTABLE SENSOR



KEY TO CODES CYLINDER ISO 15552 TYPE "A"

CYL	1 2 1 TYPE	A	3 2 BORE	0 0 5 0 STROKE	C MATERIAL	P GASKETS
	121 Double-acting, cushioned	A Standard	32	For the maximum suppliable strokes, look at the technical data	A C45 chromed rod, aluminium piston rod: standard for all cylinders with ≥1000 mm-stroke cylinders and for cylinder with Ø 80 mm and over	N NBR gaskets P Polyurethane gaskets V FKM/FPM gaskets ● B Low temperature
	122 Through-rod	▲ B No stick slip	40			
	124 Double-acting, non-cushioned	C Non-magnetic	50			
	125 Opposed		63			
	+ 126 Single-acting		80			
	127 Tandem		A1 = Ø 100			
	134 Rod lock version		A2 = Ø 125			
	* 136 Version with piston rod lock			C C45 chromed rod, technopolymer piston: standard for cylinders of Ø 32 to 63 mm with <1000 mm strokes		
	* ♦ 137 Piston rod lock + guide unit			Z Stainless steel piston rod and nut aluminium piston		
				X Stainless steel piston rod and nut technopolymer piston		

- Only available for versions with aluminium piston (A or Z)
- + Available until Ø 63 and only the versions with piston in aluminum (A or Z)
- ▲ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only
- ♦ Available up to Ø 100
- * Not available for gaskets V or B

KEY TO CODES CYLINDER ISO 15552 LOW-FRICTION TYPE "A"

CYL	1 2 9	A TYPE	3 2 BORE	0 0 5 0 STROKE	C MATERIAL	P GASKETS
		A Low friction, type A	32	Ø 32 to 80 stroke 1 to 2800 mm Ø 100 to 125 stroke 1 to 2600 mm	A C45 chromed rod, aluminium piston rod: standard for all cylinders with ≥1000 mm-stroke cylinders and for cylinder with Ø 80 mm and over	N NBR gaskets P Polyurethane gaskets V FKM/FPM gaskets
		B Low friction, type B	40			
		C Low friction, type C	50			
		D Low friction, type D	63			
		E Low friction, type E	80			
		F Low friction, type F	A1 = Ø 100 A2 = Ø 125			
				C C45 chromed rod, technopolymer piston: standard for cylinders of Ø 32 to 63 mm with <1000 mm strokes		
				Z Stainless steel piston rod and nut aluminium piston		
				X Stainless steel piston rod and nut technopolymer piston		

KEY TO CODES CYLINDER ISO 15552 LONG-CUSHIONING TYPE "A"

CYL	1 3 0	A TYPE	3 2 BORE	0 0 5 0 STROKE	A MATERIAL	P GASKETS
		A 200 mm front/rear cushioning cone – 200 mm ext.	32	1 to 2600 mm	A C45 chromed rod, aluminium piston rod for all sizes	N NBR gaskets P Polyurethane gaskets V FKM/FPM gaskets
		B 150 mm front/rear cushioning cone – 150 mm ext.	40			
		C 100 mm front/rear cushioning cone – 100 mm ext.	50			
		D 150 mm front/rear cushioning cone – 200 mm ext.	63			
		E 100 mm front/rear cushioning cone – 200 mm ext.				
		F 50 mm front/rear cushioning cone – 100 mm ext.				
		G 100 mm front/rear cushioning cone – 150 mm ext.				
		H 200 mm front cushioning cone – 200 mm ext.				
		I 150 mm front cushioning cone – 150 mm ext.				
		L 100 mm front cushioning cone – 100 mm ext.				
		M 150 mm front cushioning cone – 200 mm ext.				
		N 100 mm front cushioning cone – 150 mm ext.				
		O 50 mm front cushioning cone – 100 mm ext.				
		Q 200 mm rear cushioning cone – 200 mm ext.				
		R 150 mm rear cushioning cone – 150 mm ext.				
		S 100 mm rear cushioning cone – 100 mm ext.				
		T 150 mm rear cushioning cone – 200 mm ext.				
		U 100 mm rear cushioning cone – 200 mm ext.				
		V 50 mm rear cushioning cone – 100 mm ext.				

ISO 15552 CYLINDERS – SERIES 3 (EX ISO 6431)



ISO 15552 cylinders, featuring specially-shaped jackets designed to reduce weight to a minimum.
Two T-slots on the same side as the threaded fittings can take retractable sensors.
The other three sides of the barrel are smooth, with no slots, and hence easy to clean.

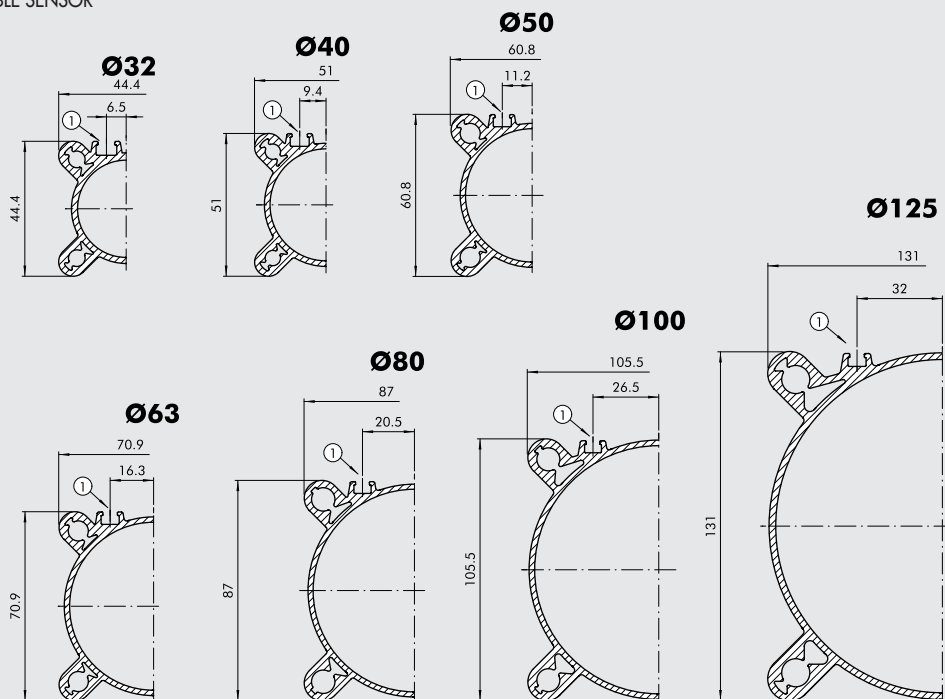


ACTUATORS

ISO 15552 CYLINDERS – SERIES 3

JACKET CROSS SECTION

① SLOTS FOR RETRACTABLE SENSOR



KEY TO CODES

CYL	1 2 1 TYPE	3	3 2 BORE	0 0 5 0 STROKE	C MATERIAL	N GASKETS
	121 Double-acting, cushioned	3 Series 3	32	For the maximum supplyable strokes, look at the technical data	A C45 chromed rod, aluminium piston rod: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with ≥ 80 mm and over	N NBR gaskets
	122 Through-rod	4 Series 3 No stick slip	40			P Polyurethane gaskets
	124 Double-acting, non-cushioned	5 Series 3 Non-magnetic	50			V FKM/FPM gaskets
	125 Opposed		63			● B Low temperature
+	126 Single-acting		80		C C45 chromed rod, technopolymer piston: standard for cylinders of ≥ 32 to 63 mm with < 1000 mm strokes	
	127 Tandem		A1 = 100 A2 = 125		Z Stainless steel piston rod and nut aluminium piston	
	134 Rod lock version				X Stainless steel piston rod and nut technopolymer piston	
*	136 Version with piston rod lock					
	137 Piston rod lock + guide unit					

● Only available for versions with aluminium piston (A or Z)
+ Available until $\varnothing 63$ and only the versions with piston in aluminum (A or Z)

◆ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only
* Available until $\varnothing 100$

ISO 15552 LOW-FRICTION CYLINDERS (EX ISO 6431) CODE 123 FOR SERIES STD CODE 129 FOR TYPE A

The low-friction cylinder is typically used as a dandy or tensioning cylinder since it is a single-acting cylinder without a return spring. The configurations are shown below:

- 1) The best type is A as it involves less friction.
- 2) Type B should be used when the cylinder is working under normal conditions outside the pneumatic cushioning area. Cushioning is only for emergency use. It acts as a shock absorber in the case of malfunction.
- 3) Type C differs from type A due to the presence of a piston rod gasket that prevents dirt getting in when operating in dirty environments.
- 4) Type D differs from type B due to the presence of a piston rod gasket that prevents dirt getting in when operating in dirty environments.
- 5) Type E should be used when the pressurized chamber is the front one.
- 6) For type F, see point 2.

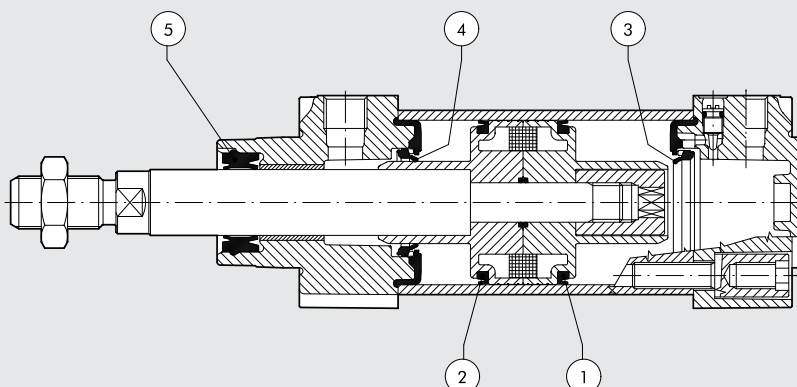


NB. THE CYLINDER IS ALWAYS SINGLE-ACTING WITHOUT A RETURN SPRING.

	TYPE	GASKETS
Rear chamber pressure	A	1
Rear chamber pressure and cushioning in case of impact	B	1+3
Rear chamber pressure and piston rod gasket	C	1+5
Rear chamber pressure, cushioning in case of impact and piston rod gasket	D	1+3+5
Front chamber pressure	E	2+5
Front chamber pressure and cushioning in case of impact	F	2+5+4

COMPONENTS

- ① Rear chamber piston gasket made of polyurethane (Ø 32 to 125)
- ② Front chamber piston gasket made of polyurethane (Ø 32 to 125)
- ③ Rear chamber cushioning gasket made of polyurethane
- ④ Front chamber cushioning gasket made of polyurethane
- ⑤ Piston rod gasket made of polyurethane



ISO 15552 ULTRA-LOW FRICTIONS CYLINDERS (EX ISO 6431)



A typical ultra-low friction cylinder is generally used as an oscillating or tensioning cylinder. It is single acting, in the sense that compressed air is normally fed into one of the two chambers only. An external force acts on the other side. Metal Work's ultra-low friction cylinder is designed as a double-acting one, which means the compressed air can be fed into the rear or either the front chamber. They are built to comply with ISO 15552 and are available with or without a magnet. Supplied with a series 3 barrel.

A through-rod version is not available.

These cylinders are always non-cushioned.

The gaskets are made of NBR.

A full range of accessories is available.



TECHNICAL DATA		NBR
Max operating pressure	bar	10
	MPa	1
	psi	145
Temperature range	°C	-10 to +80 (non-magnetic cylinder) -10 to +70 (magnetic cylinder)
		Unlubricated air
Fluid		
Bore	mm	32; 40; 50; 63
Standard stroke	mm	1 to 1200
Design		Heads with Tap Tite screws
Versions		Double-acting magnetic, Double-acting non-magnetic (always "no stick slip" cylinder)
Sensor magnet		All the versions with or without magnet
Inrush pressure	bar	Ø 32 = 0.08 Ø 40 = 0.06 Ø 50 = 0.05 Ø 63 = 0.04
Forces generated at 6 bar thrust/retraction		See page 1-7
Weights		See page 1-8
Notes		There may be leakage between the two chambers in the presence of low pressures (up to 1 bar)

COMPONENTS

- ① PISTON ROD: C45 steel or stainless steel, thick chromed
- ② HEAD: die cast aluminium
- ③ PISTON ROD GASKET: NBR
- ④ GUIDE BUSHING: steel strip with bronze insert
- ⑤ BARREL: drawn anodised calibrated aluminium
- ⑥ PISTON GASKET: NBR
- ⑦ HALF-PISTON: aluminium alloy
- ⑧ MAGNET: plastoferrite
- ⑨ GUIDE RING: special technopolymer
- ⑩ BUFFER + Static O-rings: NBR
- ⑪ CUSHIONING NEEDLE: OT 58 with needle out movement safety system even when fully open
- ⑫ SCREWS: Tap Tite for assembly

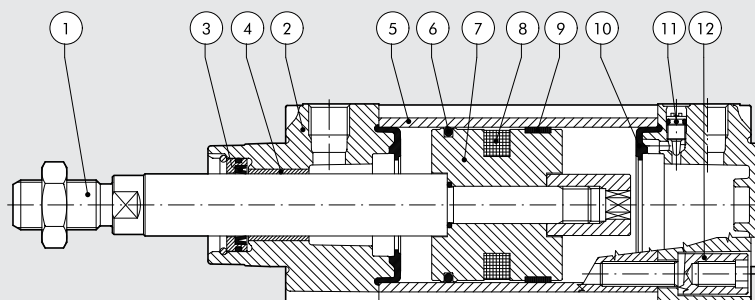
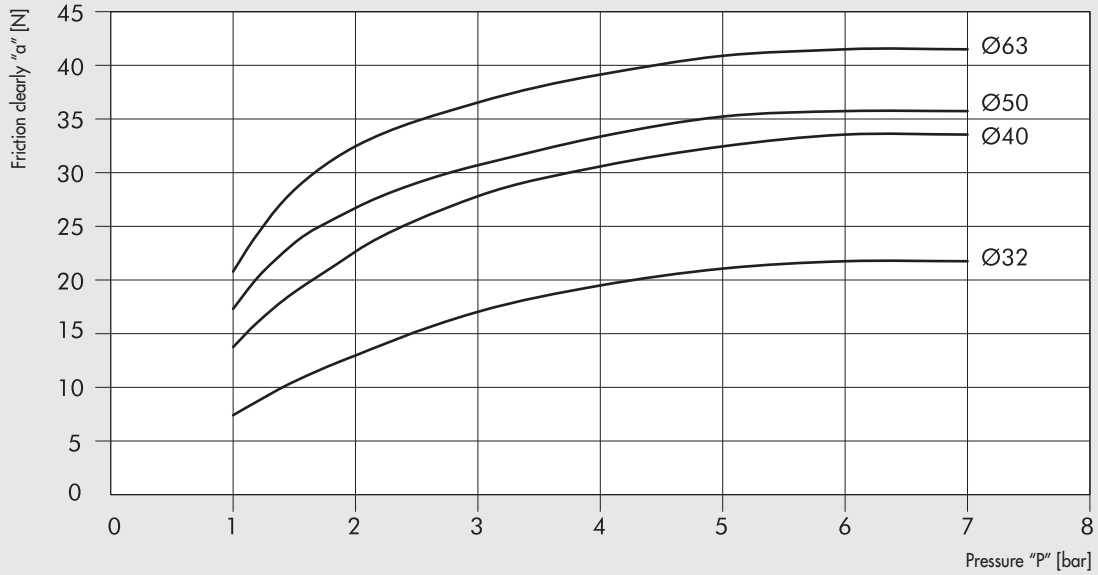


DIAGRAM OF THE CLEAN FRICTIONS



The clean friction values "a" in N have been obtained by inserting in the back chamber the pressure "P" in bars, and simultaneously by detecting the necessary force "F" in N to make the rod re-enter, applying the following formula:

$$a = F - [(P \times S) \times 9.81]$$

where "S" is the thrust section in cm²

KEY TO CODES

CYL	1 2 3 TYPE	3	3 2 BORE	0 1 0 0 STROKE	A MATERIAL	N GASKETS
123	Ultra-low friction	3 Double-acting magnetic 5 Double-acting not magnetic	32 40 50 63	From 1 to 1200 mm	A C45 chromed rod, aluminium piston rod Z Stainless steel piston rod and nut aluminium piston	N NBR gaskets

ALL the cylinders are no stick slip.
 ALL the cylinders are non-cushioned.
 Ultra-low friction cylinders are not available in the through-rod version.

ISO 15552 CYLINDERS WITH "COMBI" PISTON ROD GASKET (EX ISO 6431)

In some applications the piston rod is exposed to pollutants and dirt, which tend to adhere to the surface.

Ordinary gaskets are made of relatively soft elastomers as their main job is to provide a pneumatic seal. In critical applications they are unable to scrape dirt off the surface of the piston rod.

COMBI piston rod gaskets are designed to solve these problems.

They are made up of two separate parts:

- a **sealing element**, inside the cylinder, made of a special NBR elastomer with a Shore A hardness of 80 to provide a pneumatic seal.
- a **scraper ring**, outside the cylinder, made of highly wear-resistant plastic.



FEATURES AND ADVANTAGES

COMBI gaskets have three functions - sealing, scraping and securing. The outer projection of the scraper ring secures the cylinder head in its seat, so steel retaining rings are not required. This eliminates the risk of corrosion due to the presence of metal.

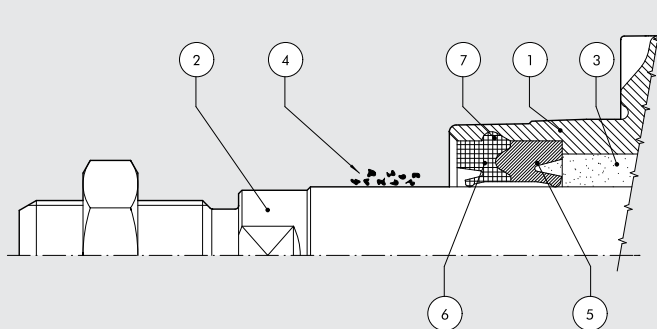
Friction is reduced. The materials used in the scraper ring and sealing element make the gasket extremely long lasting.

Cylinders with COMBI gaskets can be used with unlubricated dry air. The cylinder head seat is the same as for other Metal Work cylinder gaskets, so the cylinder head is standard.

OPERATING PRINCIPLE

The gasket is housed in the cylinder head ①. Inside the cylinder there is compressed air ③. Dirt ④ deposits on the piston rod ②.

The sealing element ⑤ provides the pneumatic seal. The scraper ring ⑥ cleans the piston rod. The projection ⑦ on the scraper ring secures the gasket in the cylinder head seat.



TECHNICAL DATA

Bores: 32; 40; 50; 63; 80; 100; 125.

The same as for ISO 15552 cylinders with NBR gaskets.

Maximum recommended speed: 1 m/s.

KEY TO CODES

The codes for ISO 15552 cylinders apply, the last letter C identifying the type of gasket.

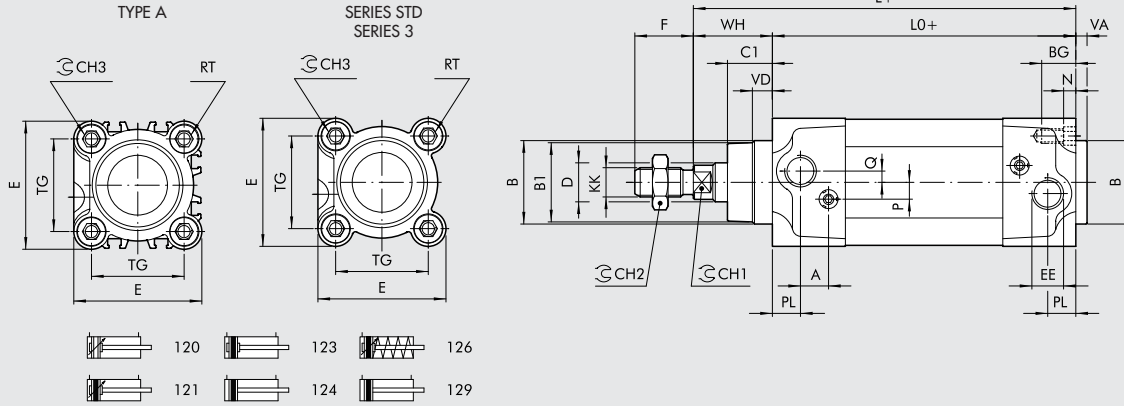
Example:

1210320100CC: ISO 15552 cylinder, dual-acting, cushioned, magnetic, diameter 32, stroke 100 mm, piston rod made of C45 chrome, COMBI piston rod gasket, other gaskets NBR.

ISO 15552 CYLINDERS DIMENSIONS

DIMENSIONS OF STANDARD VERSION

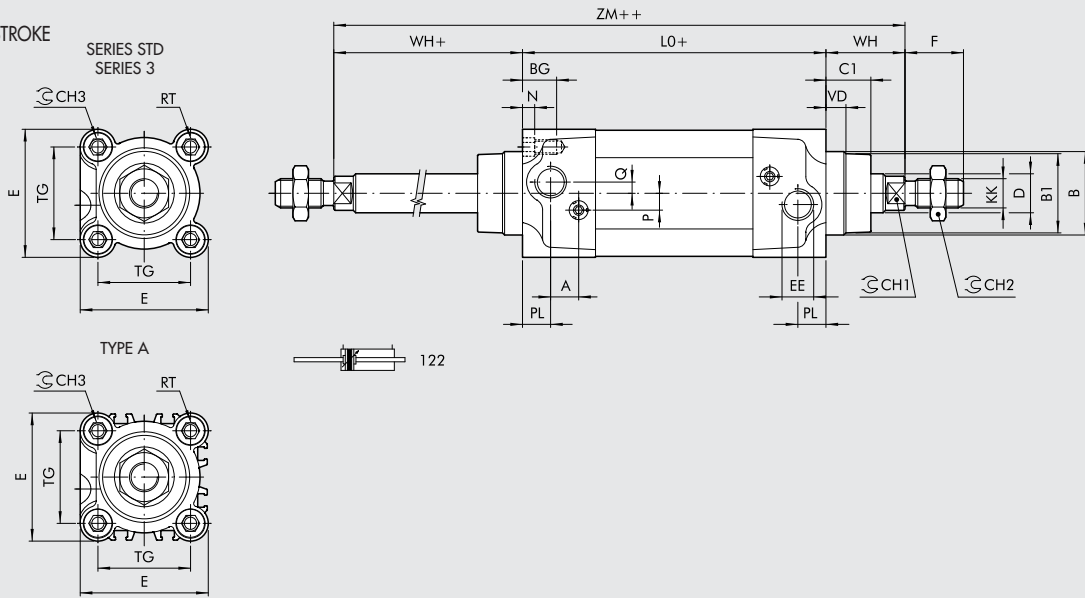
+ = ADD THE STROKE



DIMENSIONS OF THROUGH-ROD VERSION

+ = ADD THE STROKE

++ = ADD TWICE THE STROKE



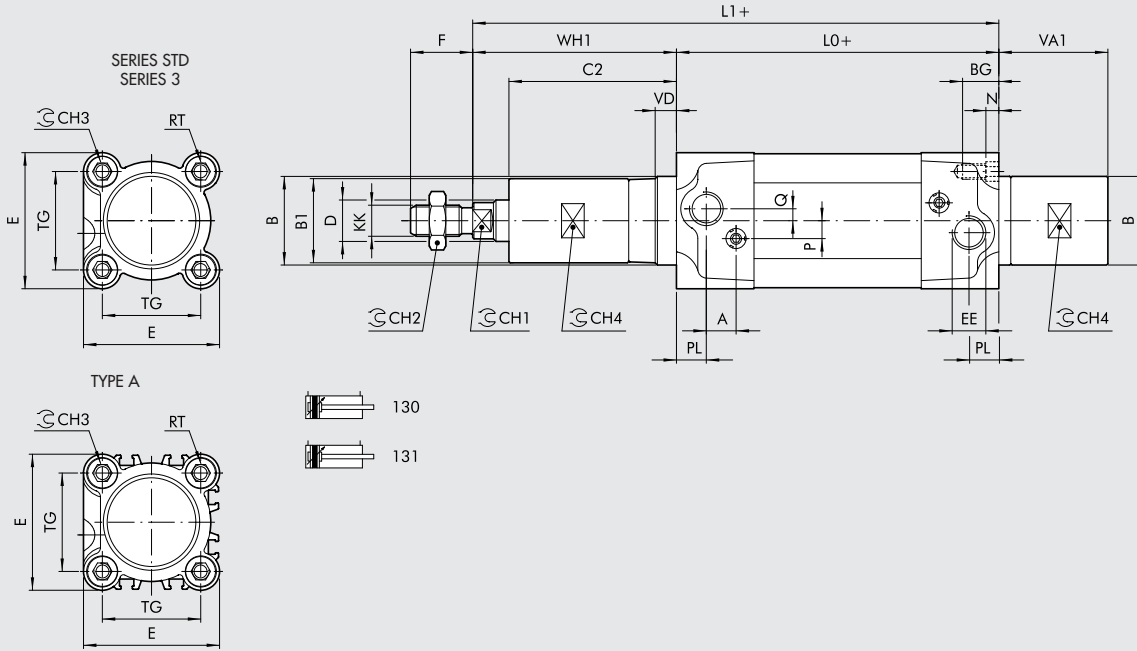
Ø	PL	VD	A	B	B ₁	WH	C ₁	CH ₁	CH ₂	CH ₃	KK	D	TG	VA	F	EE	RT	E	L	L ₀	ZM	BG	N	P	Q
32	10	6.5	10	30	28	26	16	10	17	6	M10x1.25	12	32.5	4	22	G1/8	M6	46	120	94	146	14.5	4.5	6	4
40	12	8	10	35	33	30	20	13	19	6	M12x1.25	16	38	4	24	G1/4	M6	54	135	105	165	14.5	4.5	6	4
50	14	13	10	40	38	37	25	17	24	8	M16x1.5	20	46.5	4	32	G1/4	M8	64.5	143	106	180	17.5	5.5	6	6
63	16	14	10	45	40	37	25	17	24	8	M16x1.5	20	56.5	4	32	G3/8	M8	75.5	158	121	195	17.5	5.5	6	6
80	18	12	12	45	43	46	33	22	30	10	M20x1.5	25	72	4	40	G3/8	M10	94	174	128	220	21.5	5.5	10	7
100	20	14	12	55	49	51	38	22	30	10	M20x1.5	25	89	4	40	G1/2	M10	111	189	138	240	21.5	5.5	10	7
125	25	20	10	60	54	65	45	27	41	12	M27x2	32	110	6	54	G1/2	M12	135	225	160	290	25.5	6.5	12	8

VERSION 126 (SINGLE-ACTING)

	Upper limit	Stroke	Lower limit	L0 - Ø 32	L0 - Ø 40	L0 - Ø 50	L0 - Ø 63	L - Ø 32	L - Ø 40	L - Ø 50	L - Ø 63
ISO	0	< C ≤	25	94	105	106	121	120	135	143	158
ISO	25	< C ≤	50	94	105	106	121	120	135	143	158
NON ISO	50	< C ≤	75	115	129.5	130.5	145.5	141	159.5	167.5	182.5
NON ISO	75	< C ≤	100	136	154	155	170	162	184	192	207
NON ISO	100	< C ≤	125	157	178.5	179.5	194.5	183	208.5	216.5	231.5
NON ISO	125	< C ≤	150	178	203	204	219	204	233	241	256
NON ISO	150	< C ≤	175	199	227.5	228.5	243.5	225	257.5	265.5	280.5
NON ISO	175	< C ≤	200	220	252	253	268	246	282	290	305
NON ISO	200	< C ≤	225	241	276.5	277.5	292.5	267	306.5	314.5	329.5
NON ISO	225	< C ≤	250	262	301	302	317	288	331	339	354

DIMENSIONS OF 100 mm CUSHIONING VERSION

+ = ADD THE STROKE



Ø	PL	VD	A	B	B ₁	WH ₁	C ₂	CH ₁	CH ₂	CH ₃	CH ₄	KK	D	TG	VA ₁	F	EE	RT	E	L ₁	L ₀	BG	N	P	Q
32	10	6.5	10	30	29	106	96	10	17	6	27	M10x1.25	12	32.5	79	22	G1/8	M6	46	200	94	14.5	4.5	6	4
40	12	8	10	35	34	107	97	13	19	6	30	M12x1.25	16	38	76.5	24	G1/4	M6	54	212	105	14.5	4.5	6	4
50	14	13	10	40	38	113.5	101.5	17	24	8	35	M16x1.5	20	46.5	76.5	32	G1/4	M8	64.5	219.5	106	17.5	5.5	6	6
63	16	14	10	45	38	113.5	101.5	17	24	8	35	M16x1.5	20	56.5	76.5	32	G3/8	M8	75.5	234.5	121	17.5	5.5	6	6

DIMENSIONS OF 150 mm CUSHIONING VERSION

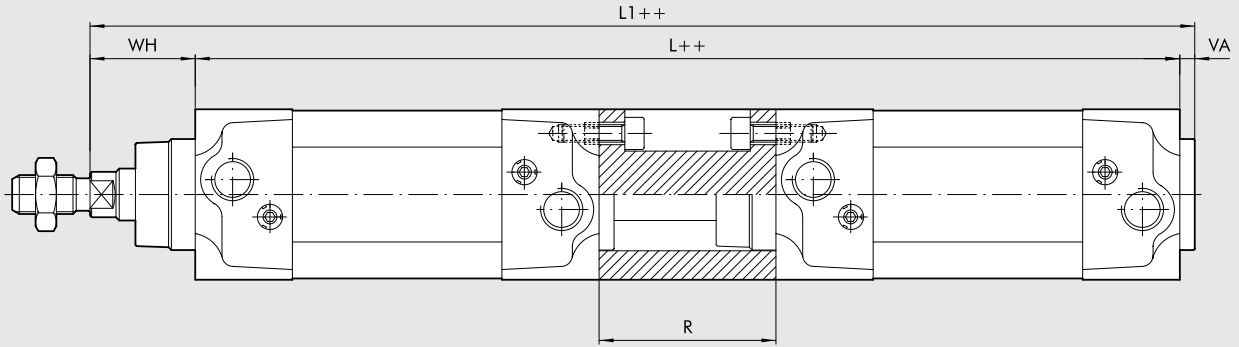
Ø	WH ₁	C ₂	VA ₁	L ₁
32	156	146	129	250
40	157	147	121.5	262
50	162.5	150.5	119.5	268.5
63	162.5	150.5	123.5	283.5

DIMENSIONS OF 200 mm CUSHIONING VERSION

Ø	WH ₁	C ₂	VA ₁	L ₁
32	206	196	179	300
40	207	197	176.5	312
50	213.5	201.5	176.5	319.5
63	213.5	201.5	176.5	334.5

DIMENSIONS OF TANDEM VERSION

++ = ADD TWICE THE STROKE



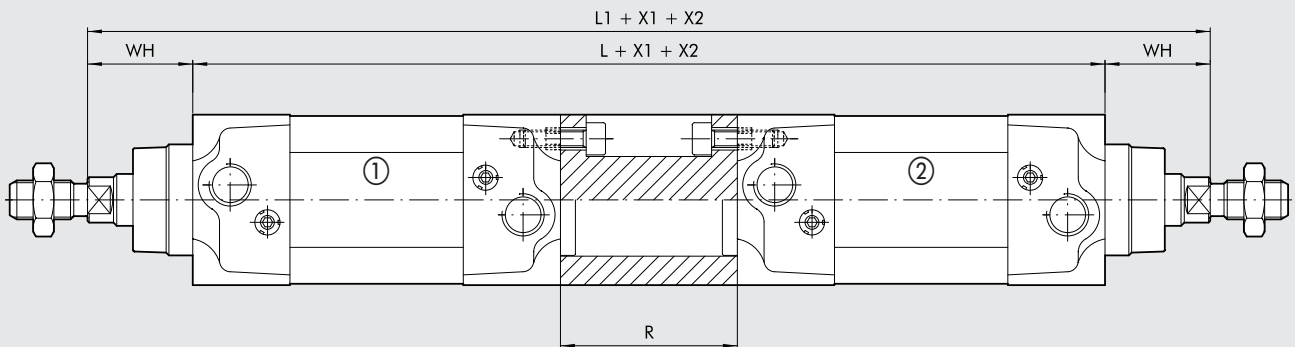
Ø	WH	VA	R	L	L ₁
32	26	4	55	243	273
40	30	4	55	265	299
50	37	4	68	280	321
63	37	4	68	310	351
80	46	4	92	348	398
100	51	4	92	368	423
125	65	6	120	440	511

Refer to standard cylinders for other values.

DIMENSIONS OF OPPOSED VERSION

X1 = STROKE CYLINDER 1

X2 = STROKE CYLINDER 2



Ø	WH	R	L	L ₁
32	26	55	243	295
40	30	55	265	325
50	37	68	280	354
63	37	68	310	384
80	46	92	348	440
100	51	92	368	470
125	65	120	440	570

Refer to standard cylinders for other values.

ISO 15552 TWO-FLAT CYLINDERS (EX ISO 6431)



This version of cylinder is used to keep the parts fixed to the piston rod at an angle and to apply torques within the specified limits. The piston rod of the Two Flat has two opposing longitudinal surfaces; it is made of stainless steel. The front cylinder head includes a sintered bronze bush that matches the profile of the piston rod and prevents it from rotating on its own axis. A special polyurethane gasket ensures pneumatic seal and prevents the accumulation of dirt. This technical solution is more reliable and gives a better pneumatic seal than with square or hexagonal piston rods. Supplied in series STD, with a smooth barrel, and type A, with a barrel with slots for retractable sensors. They are available in several versions and with a wide range of accessories:

- with or without magnet
- double acting, single piston rod
- double acting, through rod; one piston rod is Two Flat, the other cylindrical
- fixing accessories.



TECHNICAL DATA		POLYURETHANE			
Max operating pressure	bar	10			
	MPa	1			
	psi	145			
Temperature range	°C	-20 to +80 (non-magnetic cylinders)			
		-20 to +70 (magnetic cylinders)			
Fluid		Unlubricated air. Lubrication, if used, must be continuous			
Bore	mm	32; 40; 50; 63			
Design		Heads with Tap Tite screws			
Maximum stroke	mm	Ø 32 = 300	Ø 40 = 400	Ø 50 = 500	Ø 63 = 500
Versions		Double-acting cushioned, Through-rod cushioned, no-stick slip*			
Sensor magnet		All versions come complete with magnet. Supplied without magnet on request.			
Inrush pressure	bar	Ø 32 = 0.4	Ø 40 = 0.4	Ø 50 = 0.3	Ø 63 = 0.3
Max torque on piston rod	Nm	Ø 32 = 0.2	Ø 40 = 0.4	Ø 50 = 1	Ø 63 = 1
Maximum rotation on the rod	degrees	Ø 32 = 0.70°	Ø 40 = 0.75°	Ø 50 = 0.65°	Ø 63 = 0.65°
Forces generated at 6 bar thrust/retraction		See page 1-7			
Weights		See page 1-8			

* Using for speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only

KEY TO CODES FOR ISO 15552 TWO-FLAT STD CYLINDERS

CYL	1 2 1 TYPE	0	3 2 BORE	0 0 5 0 STROKE	F MATERIAL	P GASKETS
120	Double-acting, cushioned, non-magnetic	0 Diameter S Non-magnetic	32 40 50 63	+ Ø 32 stroke 1 to 300 mm + Ø 40 stroke 1 to 400 mm + Ø 50 to 63 stroke 1 to 500 mm	F "Two Flat" piston rod AISI 303 stainless steel nut	P Polyurethane gaskets
121	Double-acting, cushioned	▲ G No stick slip				
122	Through-rod					

- + Maximum recommended strokes. Higher values can create operating problems
- ▲ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only

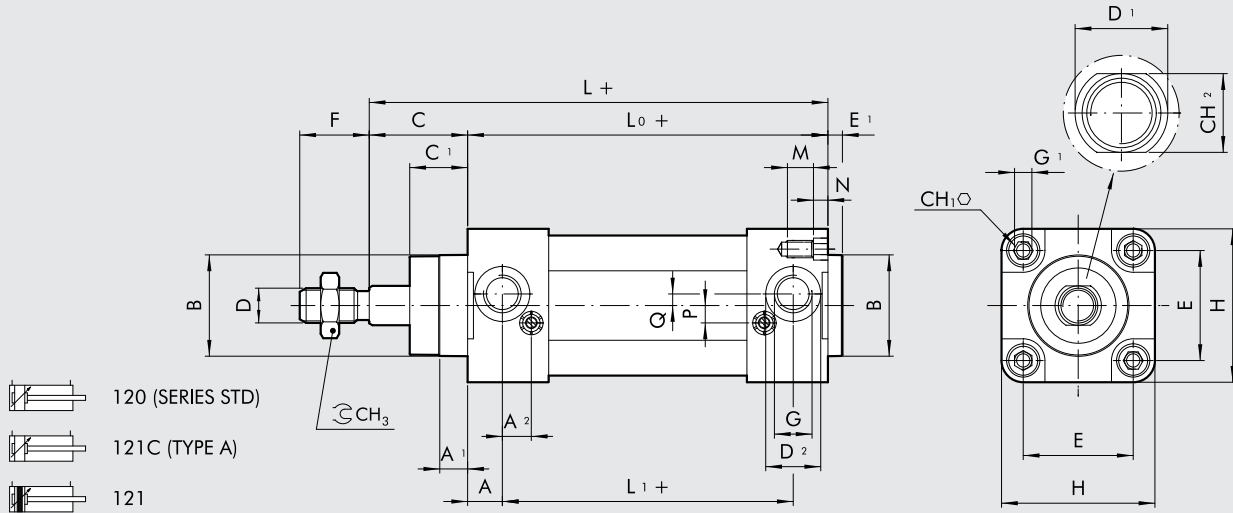
KEY TO CODES FOR ISO 15552 TWO-FLAT TYPE A CYLINDERS

CYL	1 2 1 TYPE	A	3 2 BORE	0 0 5 0 STROKE	F MATERIAL	P GASKETS
121	Double-acting, cushioned	A Standard ▲ B No stick slip	32 40 50 63	+ Ø 32 stroke 1 to 300 mm + Ø 40 stroke 1 to 400 mm + Ø 50 to 63 stroke 1 to 500 mm	F "Two Flat" piston rod AISI 303 stainless steel nut	P Polyurethane gaskets
122	Through-rod	C Non-magnetic				

- + Maximum recommended strokes. Higher values can create operating problems
- ▲ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only

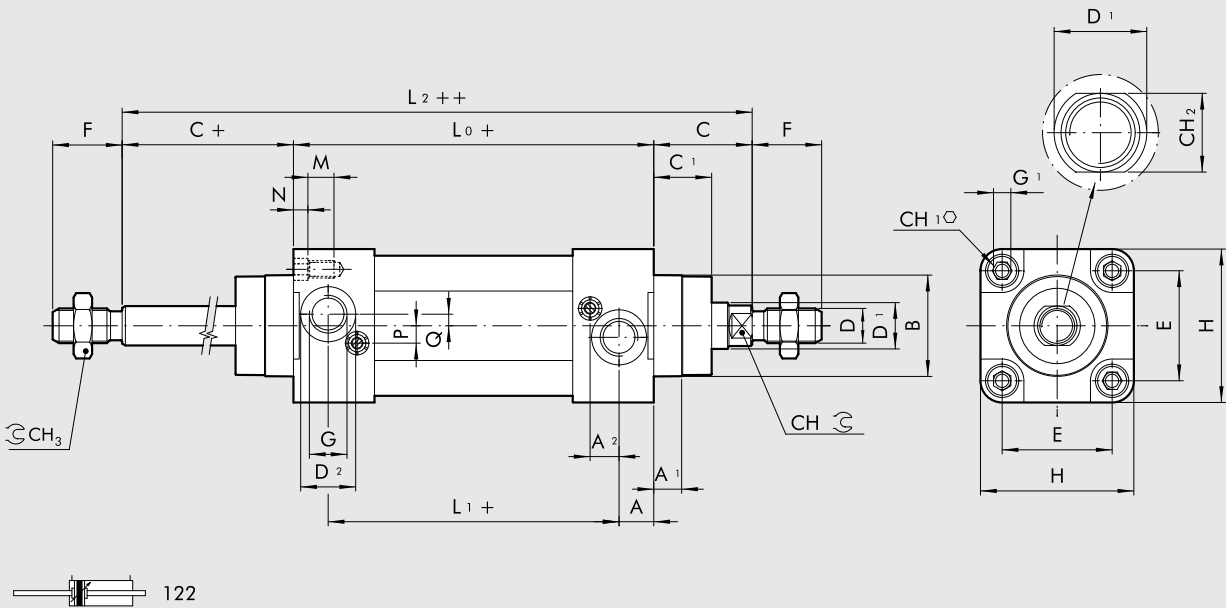
DIMENSIONS OF STANDARD VERSIONS

+ = ADD THE STROKE



DIMENSIONS OF THROUGH-ROD VERSION

+ = ADD THE STROKE
 ++ = ADD TWICE THE STROKE



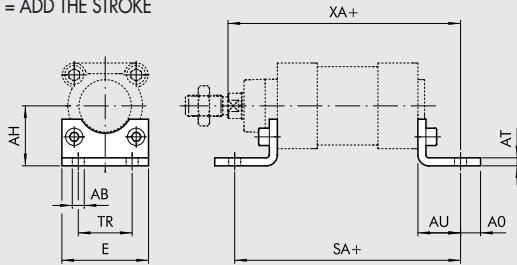
Ø	A	A ₁	A ₂	B	C	C ₁	CH	CH ₁	CH ₂	CH ₃	D	D ₁	D ₂	E	E ₁	F	G	G ₁	H	L	L ₀	L ₁	L ₂	M	N	P	Q
32	10	7	10	30	26	16	10	6	10	17	M10x1.25	12	15	32.5	5	22	G1/8	M6	47	120	94	74	146	9	4.5	6	4
40	12	9	10	35	30	20	13	6	13	19	M12x1.25	16	19	38	5	24	G1/4	M6	53	135	105	81	165	9	4.5	6	4
50	14	14	10	40	37	25	17	8	17	24	M16x1.5	20	19	46.5	5	32	G1/4	M8	65	143	106	78	180	12	5.5	6	6
63	16	14	10	45	37	25	17	8	17	24	M16x1.5	20	23	56.5	5	32	G3/8	M8	75	158	121	89	195	12	5.5	6	6

ACCESSORIES FOR ISO 15552 STD, TYPE A, SERIES 3, TWO FLAT: FIXINGS



FOOT - MODEL A

+ = ADD THE STROKE

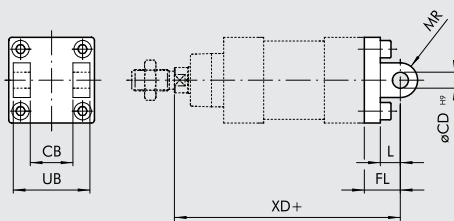


Code	Ø	Ø AB	AH	AO	AT	AU	TR	E	XA	SA	Weight [g]
W0950322001	32	7	32	11	4	24	32	45	144	142	76
W0950402001	40	9	36	15	4	28	36	52	163	161	100
W0950502001	50	9	45	15	4	32	45	65	175	170	162
W0950632001	63	9	50	15	6	32	50	75	190	185	266
W0950802001	80	12	63	20	6	41	63	95	215	210	456
W0951002001	100	14	71	25	6	41	75	115	230	220	572
W0951252001	125	16	90	15	7	45	90	140	270	250	1130

Note: individually packed with 2 screws

FEMALE HINGE - MODEL B

+ = ADD THE STROKE

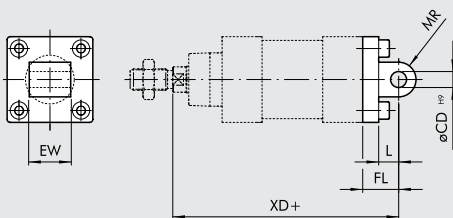


Code	Ø	UB	CB	FL	øCD	XD	MR	L	Weight [g]
W0950322003	32	45	26	22	10	142	10	12	116
W0950402003	40	52	28	25	12	160	12	15	160
W0950502003	50	60	32	27	12	170	12	15	252
W0950632003	63	70	40	32	16	190	16	20	394
W0950802003	80	90	50	36	16	210	16	20	670
W0951002003	100	110	60	41	20	230	20	25	1085
W0951252003	125	130	70	50	25	275	25	30	2000

Note: Supplied with 4 screws, 4 washers, 2 snap-rings, 1 pin

MALE HINGE - MODEL BA

+ = ADD THE STROKE

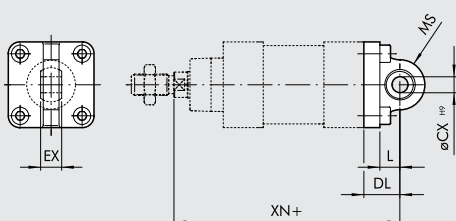


Code	Ø	EW	FL	MR	øCD	L	XD	Weight [g]
W0950322004	32	26	22	11	10	12	142	94
W0950402004	40	28	25	13	12	15	160	124
W0950502004	50	32	27	13	12	15	170	220
W0950632004	63	40	32	17	16	20	190	316
W0950802004	80	50	36	17	16	20	210	578
W0951002004	100	60	41	21	20	25	230	850
W0951252004	125	70	50	26	25	30	275	1590

Note: Supplied with 4 screws, 4 washers

ARTICULATED MALE HINGE - MODEL BAS

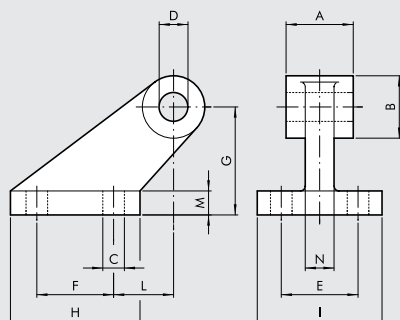
+ = ADD THE STROKE



Code	Ø	DL	MS	L	XN	øCX	EX	Weight [g]
W0950322006	32	22	16	12	142	10	14	106
W0950402006	40	25	19	15	160	12	16	142
W0950502006	50	27	19	15	170	12	16	236
W0950632006	63	32	24	20	190	16	21	336
W0950802006	80	36	24	20	210	16	21	572
W0951002006	100	41	30	25	230	20	25	840
W0951252006	125	50	36	30	275	25	31	1520

Note: Supplied with 4 screws, 4 washers

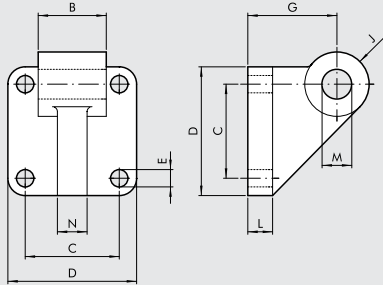
CETOP HINGE FOR MODEL B - MODEL GI



Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	Weight [g]
W0950322008	32	26	19	7	10	25	20	32	37	41	18	8	10	96
W0950402008	40	28	26	9	12	32	32	45	54	52	25	10	12	216
W0950502008	50	32	26	9	12	32	32	45	54	52	25	10	12	212
W0950632008	63	40	33	11	16	40	50	63	75	63	32	12	15	440
W0950802008	80	50	33	11	16	40	50	63	75	63	32	12	15	464
W0951002008	100	60	44	14	20	50	70	90	103	80	40	16	22	985
W0951252008	125	70	44	14	25	50	70	90	103	80	40	16	22	1000

Note: Supplied with 4 screws, 4 washers

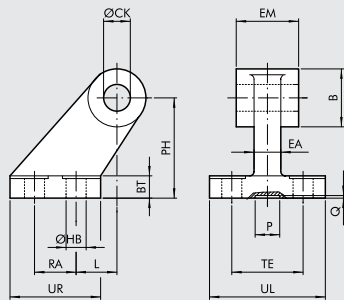
ISO HINGE FOR MODEL B - MODEL GS



Code	Ø	B	C	D	E	G	J	L	M	N	Weight [g]
W0950322108	32	25.5	32.5	45	7	32	11	10	10	10	106
W0950402108	40	27.5	38	52	7	36	13	10	12	12	138
W0950502108	50	31.5	46.5	65	9	45	13	12	12	12	252
W0950632108	63	39.5	56.5	75	9	50	17	12	16	15	350
W0950802108	80	49.5	72	95	11	63	17	16	16	15	655
W0951002108	100	59.5	89	115	11	73	21	16	20	22	980

Note: Supplied with 4 screws, 4 washers

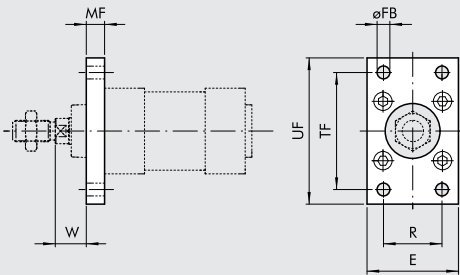
ISO 15552 HINGE FOR MODEL B - MODEL AB7



Code	Ø	EM	B	ØHB	ØCK	TE	RA	PH	UR	UL	L	BT	EA	P	Q	Weight [g]
W0950322017	32	26	20	6.6	10	38	18	32	31	51	3	8	10	21	3	60
W0950402017	40	28	22	6.6	12	41	22	36	35	54	2	10	15	21	3	85
W0950502017	50	32	26	9	12	50	30	45	45	65	3	12	16	21	3	162
W0950632017	63	40	30	9	16	52	35	50	50	67	2	14*	16	21	3	191
W0950802017	80	50	30	11	16	66	40	63	60	86	7	14	20	21	3	332
W0951002017	100	60	38	11	20	76	50	71	70	96	5	17*	20	11	3	522
W0951252017	125	70	45	14	25	94	60	90	90	124	10	20	30	21	3	960

* Values not to ISO 15552

FRONT FLANGE - MODEL C

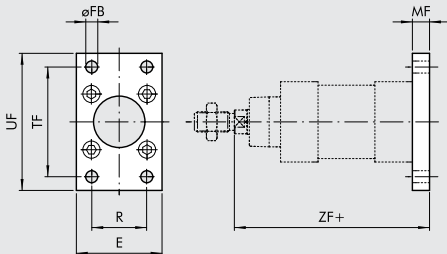


Code	Ø	TF	UF	E	MF	R	øFB	W	Weight [g]
W0950322002	32	64	80	50	10	32	7	16	246
W0950402002	40	72	90	55	10	36	9	20	290
W0950502002	50	90	110	65	12	45	9	25	522
W0950632002	63	100	120	75	12	50	9	25	670
W0950802002	80	126	153	95	16	63	12	30	1420
W0951002002	100	150	178	115	16	75	14	35	2040
W0951252002	125	180	220	140	20	90	16	45	4300

Note: Supplied with 4 screws

REAR FLANGE - MODEL C

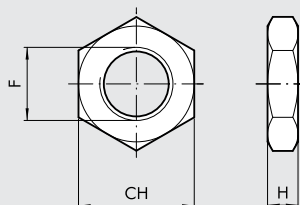
+ = ADD THE STROKE



Code	Ø	TF	UF	E	MF	R	øFB	ZF	Weight [g]
W0950322002	32	64	80	50	10	32	7	130	246
W0950402002	40	72	90	55	10	36	9	145	290
W0950502002	50	90	110	65	12	45	9	155	522
W0950632002	63	100	120	75	12	50	9	170	670
W0950802002	80	126	153	95	16	63	12	190	1420
W0951002002	100	150	178	115	16	75	14	205	2040
W0951252002	125	180	220	140	20	90	16	245	4300

Note: Supplied with 4 screws.

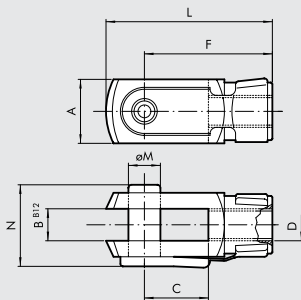
ROD NUT - MODEL S



Code	Ø	F	H	CH	Weight [g]
0950322010	32	M10x1.25	6	17	6
0950402010	40	M12x1.25	7	19	12
0950502010	50/63	M16x1.5	8	24	20
0950802010	80/100	M20x1.5	9	30	32
0951252010	125	M27x2	12	41	74

Note: Individually packed

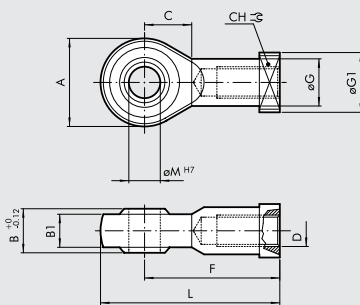
FORK MODEL GK-M



Code	∅	øM	C	B	A	L	F	D	N	Weight [g]
W0950322020	32	10	20	10	20	52	40	M10x1.25	26	92
W0950402020	40	12	24	12	24	62	48	M12x1.25	32	148
W0950502020	50	16	32	16	32	83	64	M16x1.5	40	340
W0950502020	63	16	32	16	32	83	64	M16x1.5	40	340
W0950802020	80	20	40	20	40	105	80	M20x1.5	48	690
W0950802020	100	20	40	20	40	105	80	M20x1.5	48	690
W0951252020	125	30	54	30	55	148	110	M27x2	65	1835

Note: Individually packed

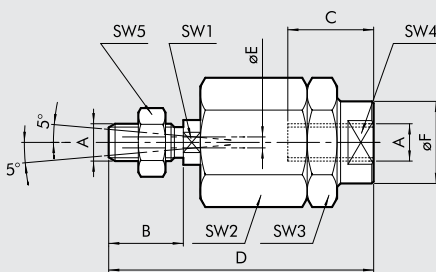
ROD EYE - MODEL GA-M



Code	∅	øM	C	BI	B	A	L	F	D	øG	CH	øG1	Weight [g]
W0950322025	32	10	15	10.5	14	28	57	43	M10x1.25	15	17	19	78
W0950402025	40	12	17	12	16	32	66	50	M12x1.25	17.5	19	19	116
W0950502025	50	16	22	15	21	42	85	64	M16x1.5	22	22	22	226
W0950502025	63	16	22	15	21	42	85	64	M16x1.5	22	22	22	226
W0950802025	80	20	26	18	25	50	102	77	M20x1.5	27.5	30	27	404
W0950802025	100	20	26	18	25	50	102	77	M20x1.5	27.5	30	27	404
W0951252025	125	30	36	25	37	70	145	110	M27x2	40	41	50	1190

Note: Individually packed

SELF ALIGNING ROD COUPLER - MODEL GA-K



Code	∅	A	B	C	D	øF	øE	SW ₁	SW ₂	SW ₃	SW ₄	SW ₅	Weight [g]
W0950322030	32	M10x1.25	20	20	71	22	4	12	30	30	19	17	216
W0950402030	40	M12x1.25	24	20	75	22	4	12	30	30	19	19	220
W0950502030	50	M16x1.5	32	32	103	32	4	20	41	41	30	24	620
W0950502030	63	M16x1.5	32	32	103	32	4	20	41	41	30	24	620
W0950802030	80	M20x1.5	40	40	119	32	4	20	41	41	30	30	680
W0950802030	100	M20x1.5	40	40	119	32	4	20	41	41	30	30	680

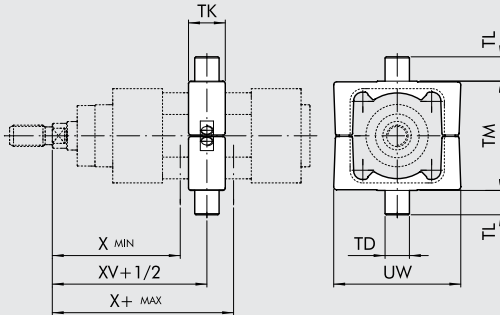
Note: Individually packed

NOTES

ACCESSORIES FOR ISO 15552 CYLINDERS: INTERMEDIATE HINGE

INTERMEDIATE HINGE - MODEL EN, FOR STD AND STD TWO-FLAT SERIES

+ = ADD THE STROKE
+ 1/2 = ADD HALF THE STROKE

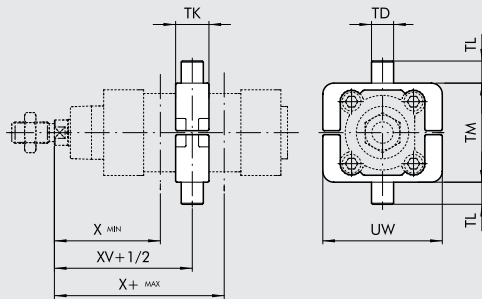


Code	Ø	X _(min)	XV	X _(max)	TM	TL	TD _{e.9}	TK	UW	Weight [g]
0950322007	32	63	73	83	50	12	12	22	65	282
0950402007	40	72	82.5	93	63	16	16	28	75	582
0950502007	50	83	90	97	75	16	16	32	95	880
0950632007	63	86.5	97.5	108.5	90	20	20	35	105	1230
0950802007	80	104	110	116	110	20	20	40	130	2030
0951002007	100	113.5	120	126.5	132	25	25	45	145	2600
0951252007	125	135	145	155	160	25	25	50	175	3900

Note: Supplied complete with 4 grub screws, 2 pins

INTERMEDIATE HINGE - MODEL EN, FOR TYPE A AND TYPE A TWO-FLAT SERIES

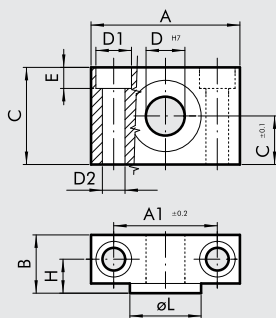
+ = ADD THE STROKE
+ 1/2 = ADD HALF THE STROKE



Code	Ø	X _(min)	XV	X _(max)	TM	TL	TD _{e.9}	TK	UW	Weight [g]
0950322107	32	63	73	83	50	12	12	22	65	170
0950402107	40	72	82.5	93	63	16	16	28	75	360
0950502107	50	83	90	97	75	16	16	28	95	580
0950632107	63	86.5	97.5	108.5	90	20	20	36	105	950
0950802107	80	104	110	116	110	20	20	36	130	1480
0951002107	100	113.5	120	126.5	132	25	25	45	145	2140
0951252107	125	135	145	155	160	25	25	50	175	2950

Note: Supplied with 4 securing screws

COUNTER-HINGE FOR MODEL EN - MODEL EL



Code	Ø	A	A ₁	B	C	C ₁	D ₁	D ₂	D	E	H	øL	Weight [g]
W0950322009	32	46	32	18	30	15	11	7	12	6.5	10.5	22	162
W0950402009	40	55	36	21	36	18	15	9	16	8.5	12	28	278
W0950402009	50	55	36	21	36	18	15	9	16	8.5	12	28	278
W0950632009	63	65	42	23	40	20	18	11	20	10.5	13	35	414
W0950632009	80	65	42	23	40	20	18	11	20	10.5	13	35	414
W0951002009	100	75	50	28.5	50	25	20	13	25	12.5	16	40	715
W0951002009	125	75	50	28.5	50	25	20	13	25	12.5	16	40	715

Note: Supplied with 4 securing screws

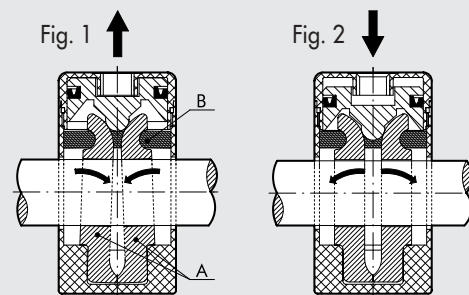
ACCESSORIES FOR ISO 15552 CYLINDERS: MECHANICAL ROD BLOCK

TECHNICAL DATA																	
Pilot pressure	bar 4 to 8 MPa 0.4 to 0.8																
Max ambient temperature	°C 80 °F 176																
Max fluid temperature	°C 70 °F 154																
Operation	NC - bidirectional																
Mechanics	Double shoe with mechanical lock Mechanical stick-slip																
Locking force	<table border="1"> <tr> <td>Ø</td> <td>32</td> <td>40</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> <td>125</td> </tr> <tr> <td>N</td> <td>650</td> <td>1100</td> <td>1600</td> <td>2500</td> <td>4000</td> <td>6300</td> <td>8700</td> </tr> </table>	Ø	32	40	50	63	80	100	125	N	650	1100	1600	2500	4000	6300	8700
Ø	32	40	50	63	80	100	125										
N	650	1100	1600	2500	4000	6300	8700										
MATERIAL																	
body	Aluminium																
shoe	Brass																
spring	NBR																
piston	Synthetic material with added Teflon®																
gasket	NBR																
Pilot port	M5 or 1/8"																



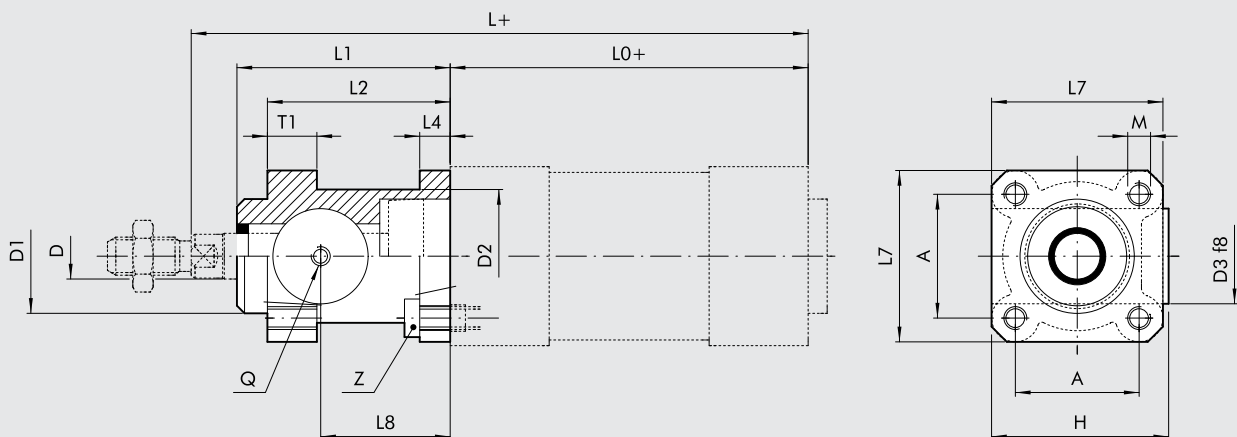
OPERATING PRINCIPLE

The mechanical piston rod lock is a normally-closed mechanism. In the absence of pneumatic piloting, the two shoes (A) lock the cylinder rod in both directions (Fig. 1). With pneumatic piloting, the piston rod guide forces the shoes to come right up to each other and overcome the counter spring (B) force and the piston rod can slide (Fig. 2). It is important to remember that the mechanical piston rod lock is a static type, which means that it is necessary to stop the cylinder piston rod pneumatically before locking the part mechanically.



DIMENSIONS

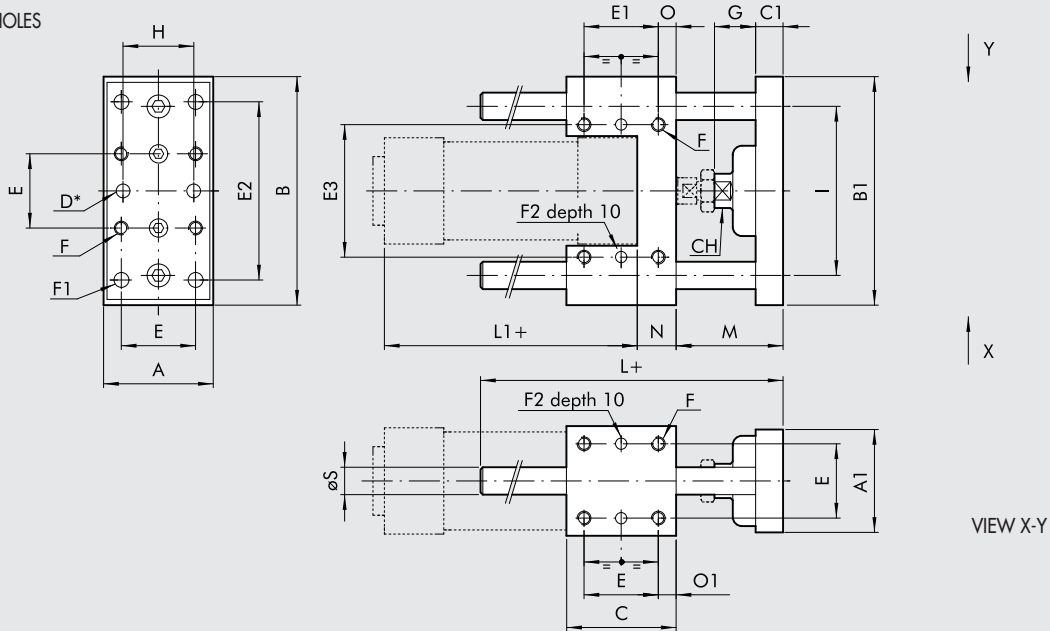
+ = ADD THE STROKE



Code	Ø	L ₁	L ₂	L ₄	L ₇	L ₈	D	D ₁	D ₂	D ₃	H	A	T ₁	M	Z	Q	L ₀	L	Weight [g]
W5010001102	32	58	48	8	45	34	12	30	35	25	46.5	32.5	13	M6	M6x20	M5	94	162	150
W5010001103	40	65	55	8	50	38	16	35	40	28	53	38	13	M6	M6x20	G1/8	105	180	200
W5010001104	50	82	70	15	60	48	20	40	50	35	64	46.5	16	M8	M8x30	G1/8	106	200	500
W5010001109	63	82	70	15	70	49.5	20	45	60	38	75	56.5	16	M8	M8x30	G1/8	121	215	700
W5010001106	80	110	90	18	90	61	25	45	80	48	95	72	20	M10	M10x35	G1/8	128	251	1700
W5010001107	100	115	100	18	105	68	25	55	100	58	110.5	89	20	M10	M10x35	G1/8	138	266	2700
W5010001108	125	167	122	22	140	86.5	32	60	130	65	150	110	30	M12	M12x40	G1/8	160	347	5600

DIMENSIONS TYPE GDS

+ = ADD THE STROKE
* = CENTERING PINHOLES

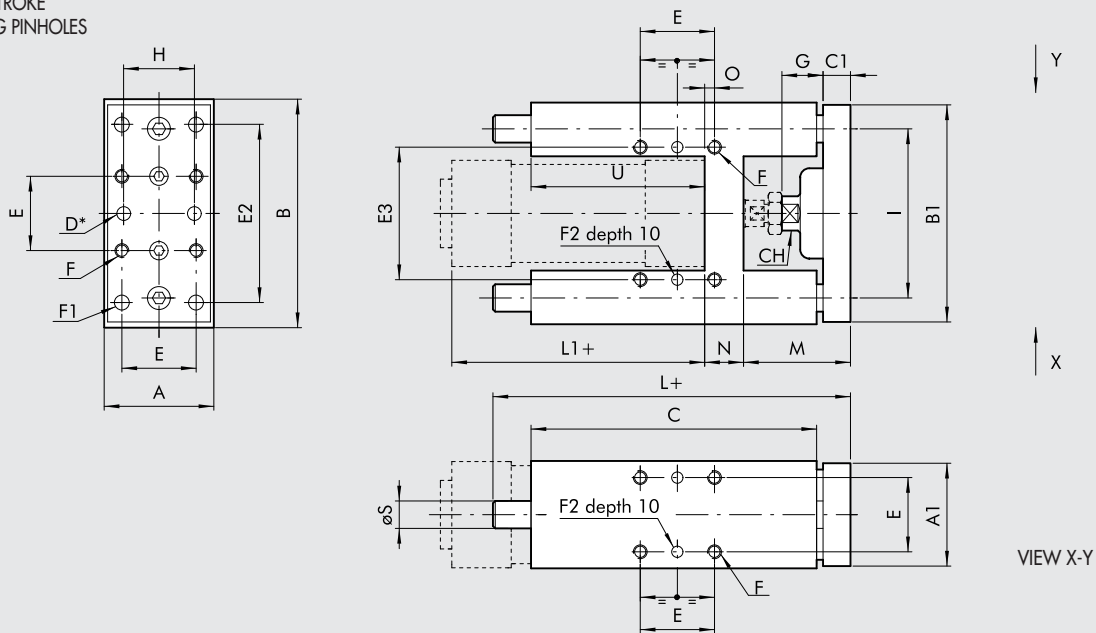


VIEW X-Y

Ø	A	A ₁	B	B ₁	C	C ₁	D ^{H7}	E	E ₁	E ₂	E ₃	F	F ₁	F ₂ ^{H7}	G	H	I	L	L ₁	M	N	O	O ₁	ØS	CH
32	48	45	100	95	48	12	6	32.5	32.5	78	58	M6	6.5	6	18	31	74	108	94	46	17	7.8	7.8	12	15
40	56	53	106	101	58	15	6	38	38	84	64	M6	6.5	6	21	36	80	120	105	52	21	10	10	12	15
50	66	63	125	120	59	15	6	46.5	46.5	100	80	M8	8.5	6	24	45	96	130	106	65	25	6.3	6.3	16	22
63	76	73	132	127	76	15	6	56.5	56.5	105	95	M8	8.5	6	24	45	104	145	121	65	25	9.8	9.8	16	22
80	98	95	165	160	90	16	6	72	50	130	130	M10	11	6	31	56	130	170	128	71	34	20	9	20	27
100	118	115	185	180	110	16	6	89	70	150	150	M10	11	6	31	56	152	190	138	71	39	20	10.5	20	27

DIMENSIONS TYPE GDH-GDM

+ = ADD THE STROKE
* = CENTERING PINHOLES



VIEW X-Y

Ø	A	A ₁	B	B ₁	C	C ₁	CH	D ^{H7}	E	E ₂	E ₃	F	F ₁	F ₂ ^{H7}	G	H	I	L	L ₁	M	N	O	ØS	U
32	49	45	97	90	125	12	13	6	32.5	78	61	M6	6.5	6	18	31	74	177	94	47	17	4.3	12	76
40	58	54	115	110	139	15	15	6	38	84	69	M6	6.5	6	21	36	87	192	105	53	21	11	16	81
50	69	63	137	130	148	15	22	6	46.5	100	85	M8	8.5	6	24	45	104	205	106	63	26	18.5	20	78
63	85	79	152	145	182	15	22	6	56.5	105	100	M8	8.5	6	24	45	119	237	121	62	26	15.3	20	111
80	105	99	189	180	215	20	27	6	72	130	130	M10	11	6	31	56	148	280	128	76	34	21	25	128
100	129	120	213	200	220	20	27	6	89	150	150	M10	11	6	31	56	172	280	138	76	39	24.5	25	128

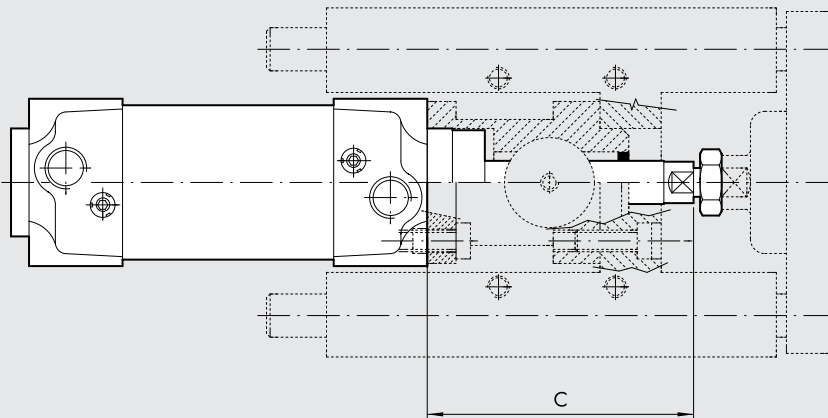
ORDER CODE GUIDE UNIT

Version	Code	Bore	Type
Sliding on bronze bushings (GDS)	W0700321...	32	UNIT MW DS 032...
	W0700401...	40	UNIT MW DS 040...
	W0700501...	50	UNIT MW DS 050...
	W0700631...	63	UNIT MW DS 063...
	W0700801...	80	UNIT MW DS 080...
	W0701001...	100	UNIT MW DS 100...
Sliding on bronze bushings (GDH)	W0700322...	32	UNIT MW DH 032...
	W0700402...	40	UNIT MW DH 040...
	W0700502...	50	UNIT MW DH 050...
	W0700632...	63	UNIT MW DH 063...
	W0700802...	80	UNIT MW DH 080...
	W0701002...	100	UNIT MW DH 100...
Sliding on ball bearing (GDM)	W0700323...	32	UNIT MW DM 032...
	W0700403...	40	UNIT MW DM 040...
	W0700503...	50	UNIT MW DM 050...
	W0700633...	63	UNIT MW DM 063...
	W0700803...	80	UNIT MW DM 080...
	W0701003...	100	UNIT MW DM 100...

Note: To complete the type and code, add the 3-digit stroke (e.g. 50=050)

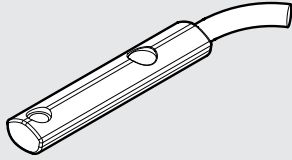
DIMENSIONS PISTON ROD LOCK + GUIDE UNIT COD. 137

Ø	C
32	74
40	85
50	107
63	107
80	136
100	143



ACCESSORIES FOR ISO 15552 CYLINDERS: MAGNETIC SENSORS

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

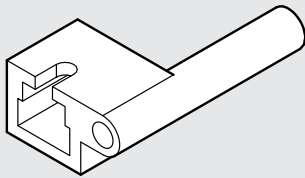
* For use when standard sensors do not detect the magnet, e.g. near metal masses.

Can be used on all ISO 15552 cylinders.

Use the adaptor to secure to STD cylinders.

For technical data see pag. 1-246

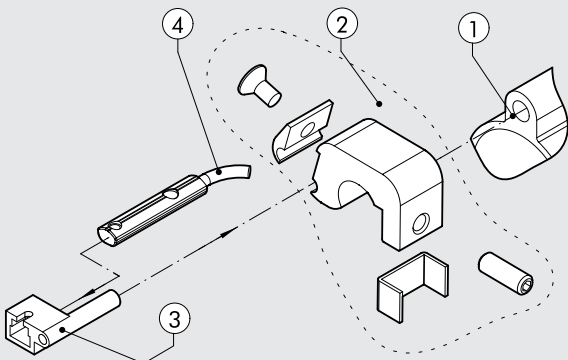
ADAPTOR FOR RETRACTABLE SENSOR



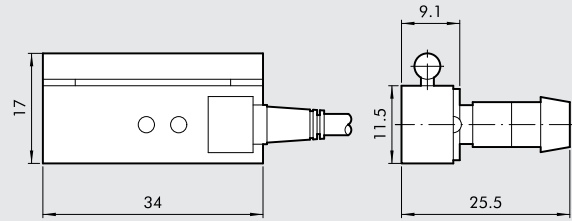
Code	Description
W0950001001	Adaptor DSS005 for DST/ST brackets

ASSEMBLY DIAGRAM

- ① ISO 15552 cylinder with traditional barrel
- ② Sensor bracket mod. DST (Ø 32 to 125)
- ③ Adaptor
- ④ Retractable sensor with insertion from above



SENSOR MOD. DSM

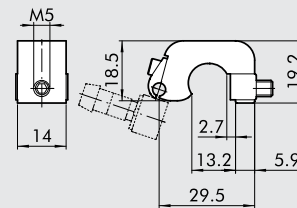


Code	Description
W0950000201	REED sensor DSM2-C525 HS
W0950000222	E.HALL PNP sensor DSM3-N225
W0950000232	E. HALL NPN sensor DSM3-M225

Can be used on ISO 15552 cylinders in the STD series and series 3.
For technical data see pag. 1-244

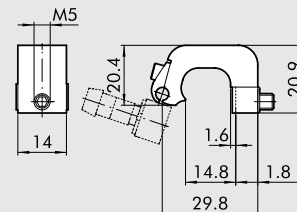
SENSOR SUPPORT BRACKETS FOR SENSORS DSM

Ø 32 to 40



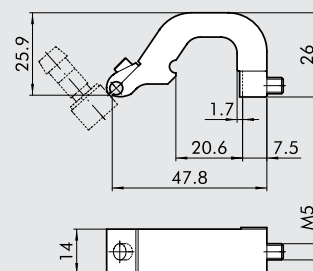
Code	Description
W0950000711	Bracket D.32 DST 80

Ø 50 to 63



Code	Description
W0950000712	Bracket D.50 DST 81

Ø 80 to 125



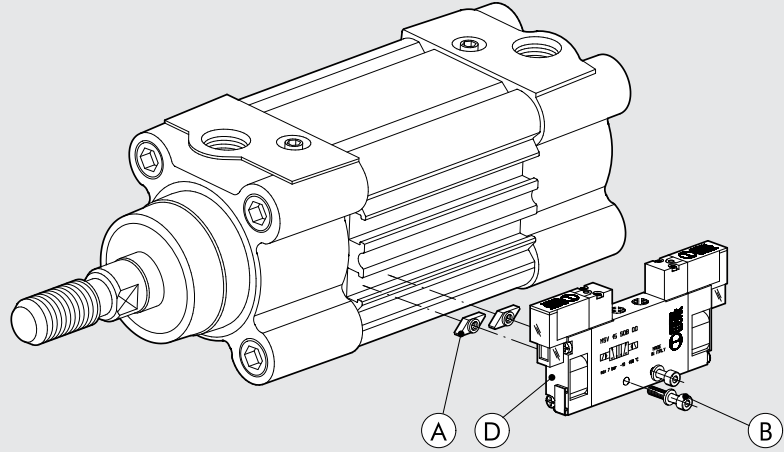
Code	Description
W0950000713	Bracket D.80-100-125 DST 82

VALVE ASSEMBLY ON CYLINDER FOR TYPE A AND SERIES 3 CYLINDERS

With this type of cylinder, the valves (D) can be mounted directly using the retracting sensor slot, without requiring the use of intermediate brackets.

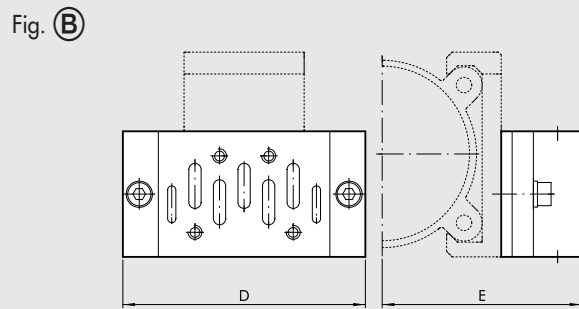
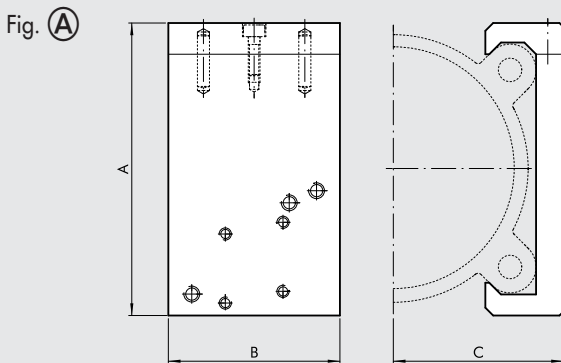
This can be done using the special plates (A), which come with both the M3 and M4 threads, and screws (B) of the size, type and quantity shown in the table below.

For ISO 1 and ISO 2 valves, the kit on which the valve is to be mounted (codes shown in the tables) will be fitted to the cylinder using the special plates (A) and the screws (B) listed in the table.



Type of valve to mount (D)	M3 fixing plate (A) code 0950003002	M4 fixing plate (A) code 0950003001	Screw (B) for connection to cylinder (one per plate)	Washer (B) (one per screw)	Valve assembly kit
MACH 11	n° 2	-	M3x16 UNI 5931 (DIN 912)	A3.2 UNI 1751 (DIN 127A)	-
SERIE 70 1/8	-	n° 2	M4x25 UNI 5931 (DIN 912)	-	-
SERIE 70 1/4	-	n° 2	M4x30 UNI 5931 (DIN 912)	A4.3 UNI 1751 (DIN 127A)	-
SERIE 70 1/2	-	n° 2	M4x45 UNI 5931 (DIN 912)	A4.3 UNI 1751 (DIN 127A)	-
ISO 1	-	n° 2	M4x8 UNI 7688 (DIN 965A)	-	0950002001
ISO 2	-	n° 2	M4x8 UNI 7688 (DIN 965A)	-	0950002002

FIXING BRACKET SERIES KCV FOR TYPE A AND SERIES 3 CYLINDERS



VALVE FIXING BRACKET - CYLINDER (Fig. A)

Code	Ø	A	B	C	D	ISO 1		ISO 2		Applicable valves	Weight [g]
						E	D	E			
0950322090	32	54	40	29.5	110	64.5	124	70.5	MACH 16 Series 70 1/8-1/4 ISO 1 - ISO 2	80	
0950402090	40	59.5	40	32.2	110	67.2	124	73.2	MACH 16 Series 70 1/8-1/4 ISO 1 - ISO 2	86	
0950502090	50	71.5	40	37	110	72	124	78	MACH 16 Series 70 1/8-1/4 ISO 1 - ISO 2	93	
0950632090	63	81.5	40	42	110	77	124	83	MACH 16 Series 70 1/8-1/4 ISO 1 - ISO 2	101	
0950802090	80	99	60	53.5	110	88.5	124	94.5	Series 70 1/8-1/4-1/2 ISO 1 - ISO 2	222	
0951002090	100	119.5	60	63.5	110	98.5	124	104.5	Series 70 1/8-1/4-1/2 ISO 1 - ISO 2	258	
0951252090	125	148	60	76.5	110	111.5	124	117.9	Series 70 1/8-1/4-1/2 ISO 1 - ISO 2	298	

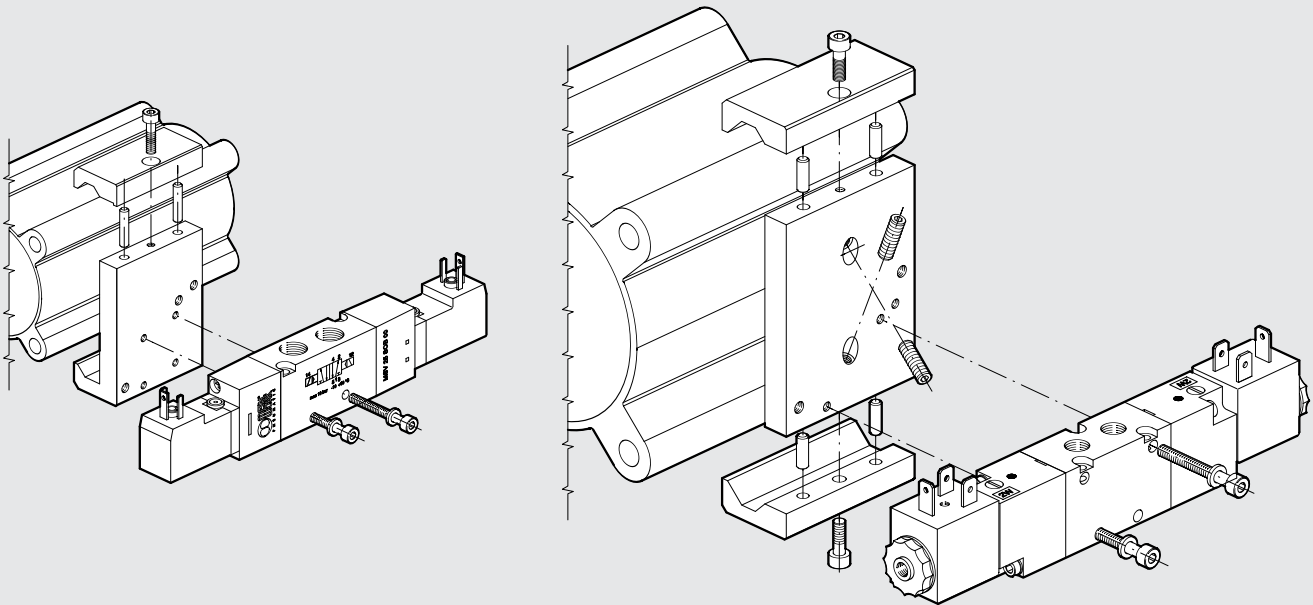
KIT FOR FIXING VALVES TO BRACKETS, FOR SERIES KCV BRACKETS

Code	Valve kit	Composition	Weight [g]
0950002003	MACH 16	2 hex. screws M3x25 with washer	4
0950002004	Series 70 1/8-1/4	2 hex. screws M4x50 with washer	8
0950002006	Series 70 1/2	2 hex. screws M5x50 with washer	20
0950002001	ISO 1	Adaptor + ISO 1 BASE SIDE + screws + washers (Fig.B)	230
0950002002	ISO 2	Adaptor + ISO 2 BASE SIDE + screws + washers (Fig.B)	350

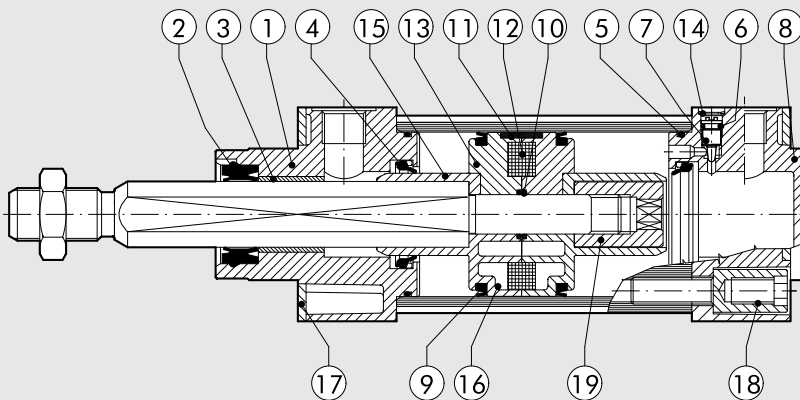
VALVE ASSEMBLY ON CYLINDER

FOR Ø 32-40-50-63

FOR Ø 80-100-125



CYLINDERS ISO 15552 STD AND TYPE "A" TWO-FLAT: SPARE PARTS

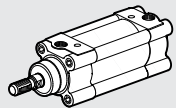


Code	Bore	Type	Parts
009 ... 0101F	Ø 32 to 63	Set of polyurethane gaskets	4-5-6-9-10
009 ... 0110F	Ø 32 to 63	Complete polyurethane front head kit	1-2-3-4-5-6-7-14-17-18
009 ... 0111	Ø 32 to 63	Complete polyurethane rear head kit	4-5-6-7-8-14-17-18
009 ... 0604	Ø 32 to 63	Complete polyurethane piston kit	9-10-16-17
009 ... 0704F	Ø 32 to 63	Complete polyurethane head A+P+piston kit	1-2-3-4-5-6-7-8-9-10-14-16-17-18
009 ... 0800	Ø 32 to 63	Magnet	12

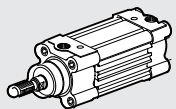
CYLINDERS ISO 15552 STD, TYPE "A" AND SERIES 3: SPARE PARTS

NEW RELEASE

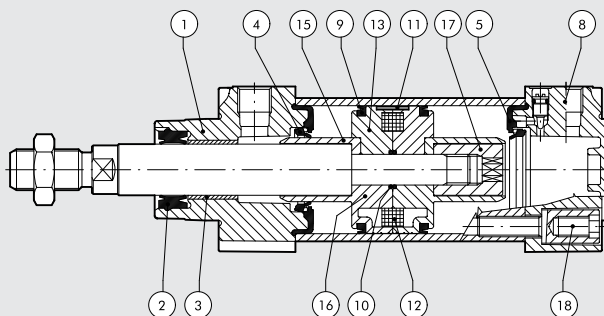
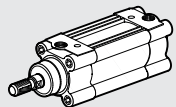
STD



TYPE A



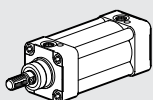
SERIES 3



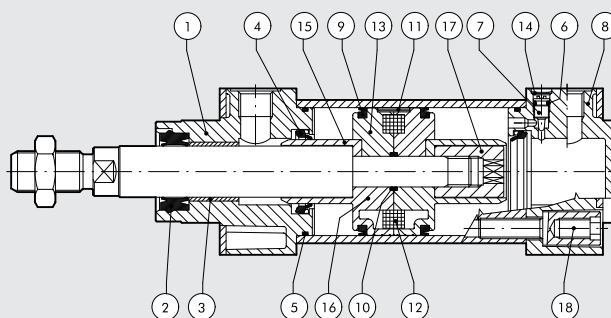
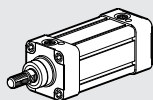
Code	Bore	Type	Parts
009 ... 0101	Ø 32 to 125	Complete set of polyurethane gaskets	2-4-5-9-10
009 ... 0502	Ø 32 to 125	Complete set of NBR gaskets	2-4-5-9-10
009 ... 0110N	Ø 32 to 125	Complete polyurethane front head kit	1-2-3-4-5-17-18
009 ... 0304N	Ø 32 to 125	Complete NBR front head kit	1-2-3-4-5-17-18
009 ... 0111N	Ø 32 to 125	Complete polyurethane rear head kit	4-5-8-17-18
009 ... 0305N	Ø 32 to 125	Complete NBR rear head kit	4-5-8-17-18
009 ... 0604	Ø 32 to 63	Complete polyurethane piston kit	9-10-16-17
009 ... 0604	Ø 80 to 125	Complete polyurethane piston kit	9-10-11-13-15-18
009 ... 0602	Ø 32 to 63	Complete NBR piston kit	9-10-16-17
009 ... 0602	Ø 80 to 125	Complete NBR piston kit	9-10-11-13-15-18
009 ... 0704N	Ø 32 to 63	Complete polyurethane head A+P+piston kit	1-2-3-4-5-8-9-10-16-17-18
009 ... 0704N	Ø 80 to 125	Complete polyurethane head A+P+piston kit	1-2-3-4-5-8-9-10-11-13-15-17-18
009 ... 0702N	Ø 32 to 63	Complete NBR head A+P+piston kit	1-2-3-4-5-8-9-10-16-17-18
009 ... 0702N	Ø 80 to 125	Complete NBR head A+P+piston kit	1-2-3-4-5-8-9-10-11-13-15-17-18
009 ... 0800	Ø 32 to 125	Magnet	12

OLD RELEASE

STD



TYPE A



Code	Bore	Type	Parts
009 ... 0101	Ø 32 to 125	Complete set of polyurethane gaskets	2-4-5-9-10
009 ... 0502	Ø 32 to 125	Complete set of NBR gaskets	2-4-5-9-10
009 ... 0110	Ø 32 to 125	Complete polyurethane front head kit	1-2-3-4-5-6-7-14-17-18
009 ... 0304	Ø 32 to 125	Complete NBR front head kit	1-2-3-4-5-6-7-14-17-18
009 ... 0111	Ø 32 to 125	Complete polyurethane rear head kit	4-5-6-7-8-14-17-18
009 ... 0305	Ø 32 to 125	Complete NBR rear head kit	4-5-6-7-8-14-17-18
009 ... 0604	Ø 32 to 63	Complete polyurethane piston kit	9-10-16-17
009 ... 0604	Ø 80 to 125	Complete polyurethane piston kit	9-10-11-13-15-18
009 ... 0602	Ø 32 to 63	Complete NBR piston kit	9-10-16-17
009 ... 0602	Ø 80 to 125	Complete NBR piston kit	9-10-11-13-15-18
009 ... 0704	Ø 32 to 63	Complete polyurethane head A+P+piston kit	1-2-3-4-5-6-7-8-9-10-14-16-17-18
009 ... 0704	Ø 80 to 125	Complete polyurethane head A+P+piston kit	1-2-3-4-5-6-7-8-9-10-11-13-14-15-17-18
009 ... 0702	Ø 32 to 63	Complete NBR head A+P+piston kit	1-2-3-4-5-6-7-8-9-10-14-16-17-18
009 ... 0702	Ø 80 to 125	Complete NBR head A+P+piston kit	1-2-3-4-5-6-7-8-9-10-11-13-14-15-17-18
009 ... 0800	Ø 32 to 125	Magnet	12

TWIN-ROD CYLINDER SERIES TWNC

Anti-rotation cylinders with axial dimensions to ISO 15552.

Serie STD barrel.

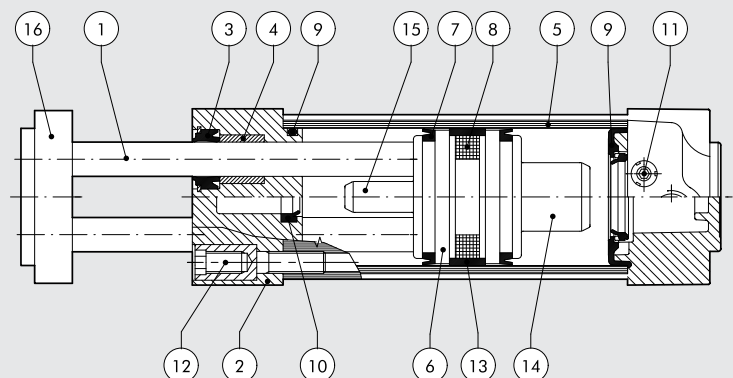
- standard configuration with magnet
- double-acting – passing twinner rods and single passing rod
- polyurethane gasket



TECHNICAL DATA		NBR - POLYURETHANE
Max operating pressure	bar	10
	MPa	1
	psi	145
Temperature range	°C	-10 to +80
Fluid		Filtered, unlubricated air. Lubrication, if used, must be continuous.
Bores	mm	32; 40; 50; 63; 80; 100
Strokes †	mm	from 25 to 500
Design		Extruded profile
Esecution		Magnetic standard cushioned
Forces generated at 6 bar thrust/retraction	N	Ø 32: 434/350 Ø 40: 678/597 Ø 50: 1060/940 Ø 63: 1683/1471 Ø 80: 2714/2295 Ø 100: 4241/3812 See page 1-9
Weight		† Maximum recommended strokes. Higher values can create operating problems

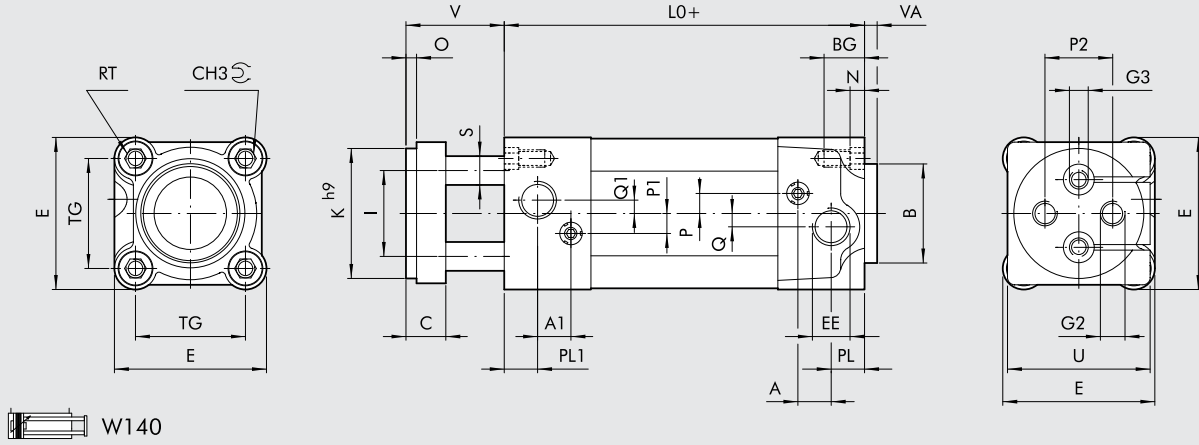
COMPONENTS

- PISTON ROD: thick chromed steel
- HEAD: aluminium alloy
- PISTON ROD GASKET: polyurethane
- GUIDE BUSHING: sintered bronze
- BARREL: drawn anodised aluminium alloy
- PISTON: aluminium alloy
- PISTON GASKET: polyurethane
- MAGNET: plastoferrite
- BUFFER+STATIC O-rings: NBR
- CUSHIONING GASKET: NBR or polyurethane
- NEEDLE: OT 58 brass
- SCREWS: Tap Tite for fixing and assembly
- GUIDE RING: special technopolymer
- REAR CUSHIONING CONE: OT58 brass
- FRONT CUSHIONING CONE: aluminium
- FLANGE: zinc-plated steel



TWIN RODS CYLINDER

+ = ADD THE STROKE

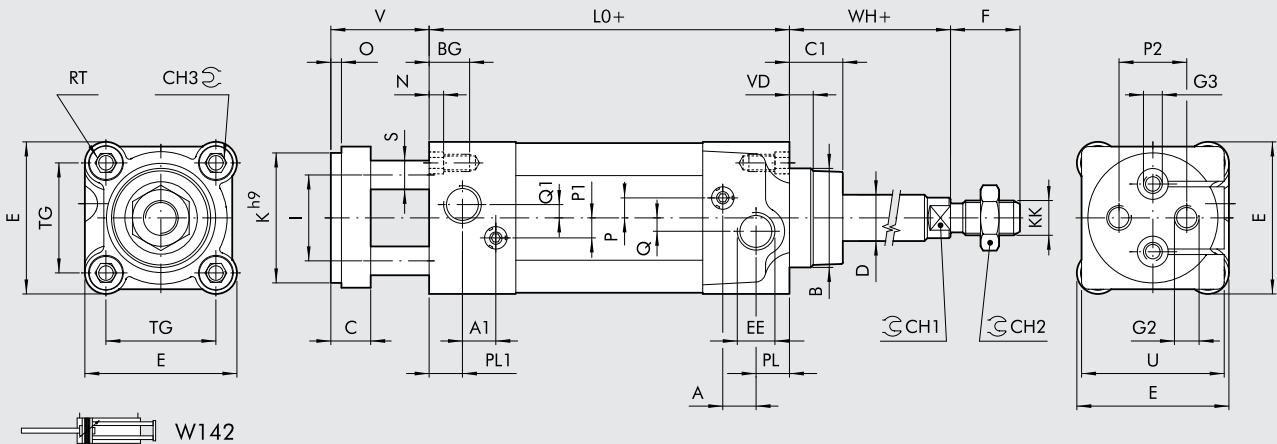


W140

Ø	PL	PL1	A	A1	B	CH3	TG	VA	EE	RT	E	L0	BG	N	P	P1	P2	Q	Q1	C	I	K ^{h9}	S	O	V	U	G2	G3
32	10	13	10	10.5	30	6	32.5	4	G1/8	M6	46	100	14.5	4.5	6	8	19	4	-	15	18	32	10	4	40	45	M6	-
40	12	12	10	10	35	6	38	4	G1/4	M6	54	100	14.5	4.5	6	6	22	4	4	15	22	40	10	4	40	49	M8	-
50	14	14	10	10	40	8	46.5	4	G1/4	M8	64.5	106	17.5	5.5	6	6	30	6	6	18	30	50	12	5	43	54	M8	M8
63	16	16	10	10	45	8	56.5	4	G3/8	M8	75.5	116	17.5	5.5	6	6	38	6	6	22	38	63	16	5	47	69	M10	M10
80	18	18	12	12	45	10	72	4	G3/8	M10	94	131	21.5	5.5	10	10	50	7	7	25	48	80	22	5	50	89	M12	M12
100	20	20	12	12	55	10	89	4	G1/2	M10	111	138	21.5	5.5	10	10	70	7	7	25	60	100	22	5	50	109	M12	M12

SINGLE THROUGH-ROD CYLINDER

+ = ADD THE STROKE



W142

Ø	PL	PL1	A	A1	B	CH1	CH2	CH3	TG	EE	RT	E	L0	BG	N	P	P1	P2	Q	Q1	C	C1	D	F	I	K ^{h9}	KK	S	O	V	VD	U	G2	G3	WH
32	10	13	10	10.5	30	10	17	6	32.5	G1/8	M6	46	100	14.5	4.5	6	8	19	4	-	15	16	12	22	18	32	M10x1.25	10	4	40	6.5	45	M6	-	26
40	12	12	10	10	35	13	19	6	38	G1/4	M6	54	100	14.5	4.5	6	6	22	4	4	15	20	16	24	22	40	M12x1.25	10	4	40	8	49	M8	-	30
50	14	14	10	10	40	17	24	8	46.5	G1/4	M8	64.5	106	17.5	5.5	6	6	30	6	6	18	25	20	32	30	50	M16x1.5	12	5	43	13	54	M8	M8	37
63	16	16	10	10	45	17	24	8	56.5	G3/8	M8	75.5	116	17.5	5.5	6	6	38	6	6	22	25	20	32	38	63	M16x1.5	16	5	47	14	69	M10	M10	37
80	18	18	12	12	45	22	30	10	72	G3/8	M10	94	131	21.5	5.5	10	10	50	7	7	25	33	25	40	48	80	M20x1.5	22	5	50	12	89	M12	M12	46
100	20	20	12	12	55	22	30	10	89	G1/2	M10	111	138	21.5	5.5	10	10	70	7	7	25	38	25	40	60	100	M20x1.5	22	5	50	14	109	M12	M12	51

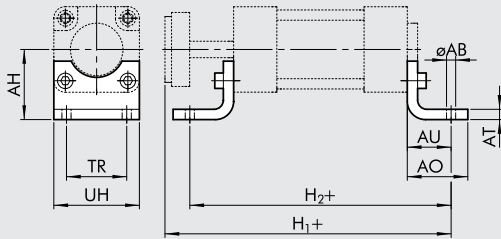
KEY TO CODES

CYL	W 1 4 0 TYPE	0 3 2 BORES	0 0 2 5 STROKE	+ Maximum recommended strokes. Higher values can create operating problems.
W140	Double-acting cylinder, magnetic, cushioned	032	+ 0025 to 0500 mm	
W142	Double-acting cylinder, magnetic, cushioned single through-rod	040 050 063 080 100		

ACCESSORIES FOR TWIN-ROD CYLINDER: FIXINGS

FOOT - MODEL A/S

+ = ADD THE STROKE



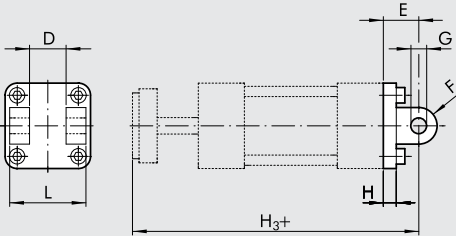
Code	Ø	AB	AH	AO	AT	AU	TR	UH	H ₁	H ₂	Weight [g]
W0950323001	32	7	32	35	4	24	32	45	164	148	76
W0950403001	40	9	36	43	4	28	36	52	168	156	98
W0950503001	50	9	45	47	4	32	45	65	181	170	156
W0950633001	63	9	50	47	6	32	50	75	195	180	246
W0950803001	80	12	63	61	6	41	63	95	222	213	406
W0951003001	100	14	71	66	6	41	75	115	229	220	540

Note: Individually packed with 2 screws

For fixing the leg to the supporting surface, it is advisable to use a DIN 7984 sunk-headed screw

FEMALE HINGE - MODEL B

+ = ADD THE STROKE

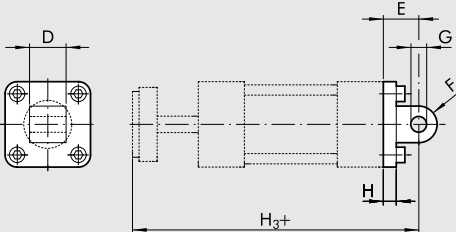


Code	Ø	D	E	F	G	H	H ₃	L	Weight [g]
W0950322003	32	26	22	11	10	10	162	45	116
W0950402003	40	28	25	13	12	10	165	52	160
W0950502003	50	32	27	13	12	12	176	60	252
W0950632003	63	40	32	17	16	12	195	70	394
W0950802003	80	50	36	17	16	16	217	90	670
W0951002003	100	60	41	21	23	16	229	110	1085

Note: Supplied with 4 screws, 4 washers, 2 snap-rings and 1 pin

MALE HINGE - MODEL BA

+ = ADD THE STROKE

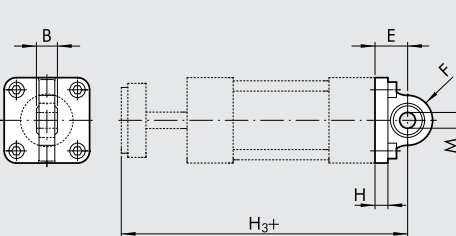


Code	Ø	D	E	F	G	H	H ₃	Weight [g]
W0950322004	32	26	22	11	10	10	162	94
W0950402004	40	28	25	13	12	10	165	124
W0950502004	50	32	27	13	12	12	176	220
W0950632004	63	40	32	17	16	12	195	316
W0950802004	80	50	36	17	16	16	217	578
W0951002004	100	60	41	21	20	16	229	850

Note: Supplied with 4 screws, 4 washers

ARTICULATED MALE HINGE - MODEL BAS

+ = ADD THE STROKE

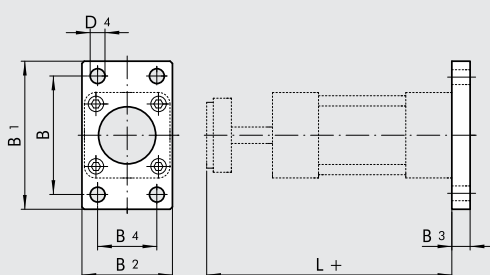


Code	Ø	E	F	H	H ₃	M	N	Weight [g]
W0950322006	32	22	16	10	162	10	14	106
W0950402006	40	25	19	10	165	12	16	142
W0950502006	50	27	19	12	176	12	16	236
W0950632006	63	32	24	12	195	16	21	336
W0950802006	80	36	24	16	217	16	21	572
W0951002006	100	41	30	16	229	20	25	840

Note: Supplied with 4 screws, 4 washers.

REAR FLANGE - MODEL C

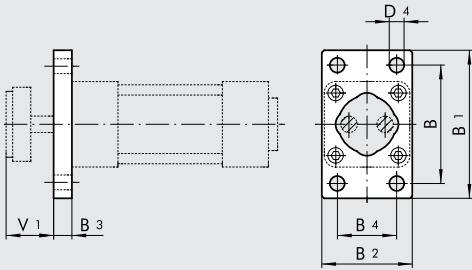
+ = ADD THE STROKE



Code	Ø	B	B ₁	B ₂	B ₃	B ₄	D ₄	L	Weight [g]
W0950322002	32	64	80	50	10	32	7	140	246
W0950402002	40	72	90	55	10	36	9	140	290
W0950502002	50	90	110	65	12	45	9	149	522
W0950632002	63	100	120	75	12	50	9	163	670
W0950802002	80	126	153	95	16	63	12	181	1420
W0951002002	100	150	178	115	16	75	14	188	2040

Note: Supplied with 4 screws.

FRONT FLANGE - MODEL C/S

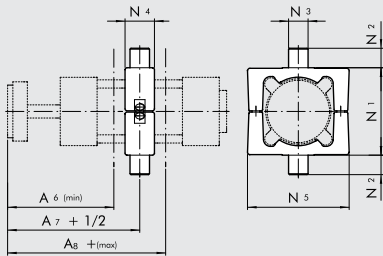


Code	Ø	B	B ₁	B ₂	B ₃	B ₄	D ₄	V ₁	Weight [g]
W0950323002	32	64	80	50	10	32	7	30	228
W0950403002	40	72	90	55	10	36	9	30	288
W0950503002	50	90	110	65	12	45	9	31	486
W0950633002	63	100	120	75	12	50	9	35	569
W0950803002	80	126	153	95	16	63	12	34	1145
W0951003002	100	150	178	115	16	75	14	34	1760

Note: Supplied with 4 screws

INTERMEDIATE HINGE - MODEL EN

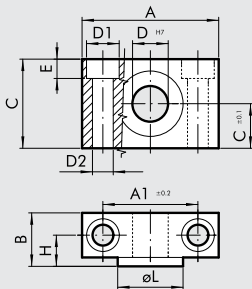
+ = ADD THE STROKE +1/2 = ADD HALF THE STROKE



Code	Ø	N ₁	N ₂	N ₃	N ₄	N ₅	A ₆	A ₇	A ₈	Weight [g]
0950322007	32	50	12	12	22	65	79	91	103	282
0950402007	40	63	16	16	28	75	82	90	98	582
0950502007	50	75	16	16	32	95	91.5	97.5	103.5	880
0950632007	63	90	20	20	35	105	95.5	104.5	113.5	1230
0950802007	80	110	20	20	40	130	108	115.5	123	2030
0951002007	100	132	25	25	45	145	110.5	119	127.5	2600

Note: Supplied with 4 screws, 2 pin

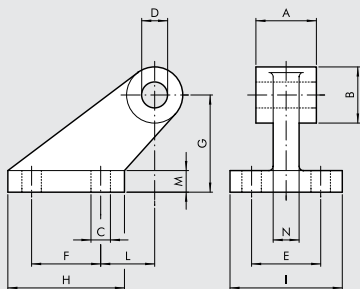
COUNTER-HINGE FOR MODEL EN - MODEL EL



Code	Ø	A	A ₁	B	C	C ₁	D ₁	D ₂	D	E	H	ØL	Weight [g]
W0950322009	32	46	32	18	30	15	11	7	12	6.5	10.5	22	162
W0950402009	40	55	36	21	36	18	15	9	16	8.5	12	28	278
W0950402009	50	55	36	21	36	18	15	9	16	8.5	12	28	278
W0950632009	63	65	42	23	40	20	18	11	20	10.5	13	35	414
W0950632009	80	65	42	23	40	20	18	11	20	10.5	13	35	414
W0951002009	100	75	50	28.5	50	25	20	13	25	12.5	16	40	715

Note: Supplied with 4 screws

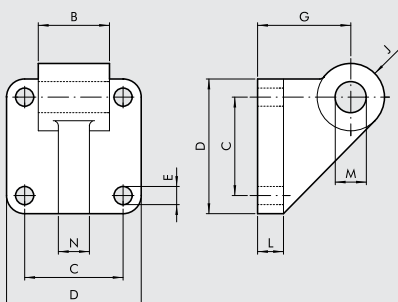
COUNTER-HINGE CETOP FOR MODEL B - MODEL GL



Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	Weight [g]
W0950322108	32	26	19	7	10	25	20	32	37	41	18	8	10	96
W0950402108	40	28	26	9	12	32	32	45	54	52	25	10	12	216
W0950502108	50	32	26	9	12	32	32	45	54	52	25	10	12	212
W0950632108	63	40	33	11	16	40	50	63	75	63	32	12	15	440
W0950802108	80	50	33	11	16	40	50	63	75	63	32	12	15	464
W0951002108	100	60	44	14	20	50	70	90	103	80	40	16	22	985

Note: Supplied with 4 screws, 4 washers

COUNTER-HINGE ISO FOR MODEL B - MODEL GS

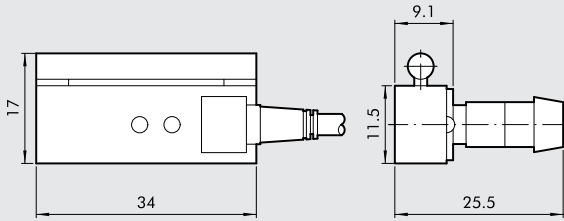


Code	Ø	B	C	D	E	G	J	L	M	N	Weight [g]
W0950322108	32	25.5	32.5	45	7	32	11	10	10	10	106
W0950402108	40	27.5	38	52	7	36	13	10	12	12	138
W0950502108	50	31.5	46.5	65	9	45	13	12	12	12	252
W0950632108	63	39.5	56.5	75	9	50	17	12	16	15	350
W0950802108	80	49.5	72	95	11	63	17	16	16	15	655
W0951002108	100	59.5	89	115	11	73	21	20	20	22	980

Note: Supplied with 4 screws, 4 washers

ACCESSORIES FOR TWIN-ROD CYLINDER: MAGNETIC SENSORS

SENSOR SERIES DSM

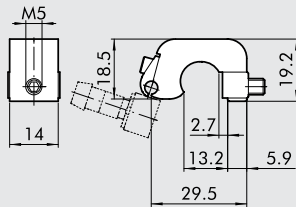


Code	Description
W0950000201	REED sensor DSM2-C525 HS
W0950000222	E.HALL PNP sensor DSM3-N225
W0950000232	E.HALL NPN sensor DSM3-M225

For technical data see page 1-244

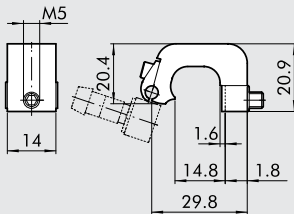
SENSOR BRACKET

Ø 32 to 40



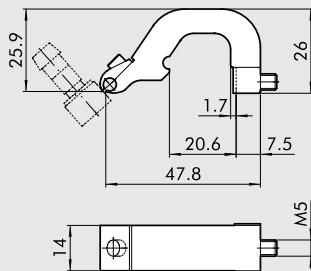
Code	Description
W0950000711	Bracket D.32-40 DST 80

Ø 50 to 63



Code	Description
W0950000712	Bracket D.50-63 DST 81

Ø 80 to 100



Code	Description
W0950000713	Bracket D.80-125 DST 82

NOTES

ISO 15552 CYLINDERS Ø 160-200 (ex ISO 6431)

Cylinders made to ISO 15552 available in various versions and with a wide range of accessories:

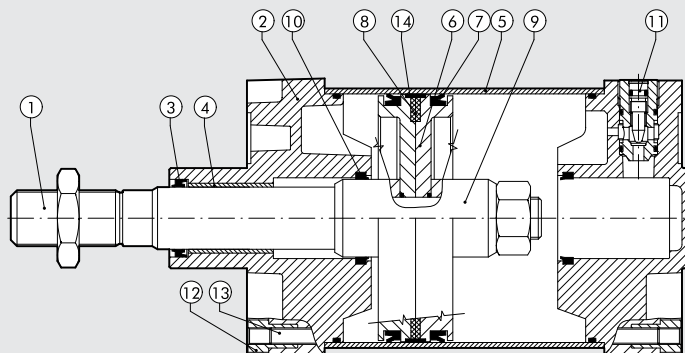
- configuration with or without magnet
- double-acting – single- or through-rod
- NBR gaskets or FKM/FPM (high temperature)
- available with mounted intermediate hinge
- special configurations on request



TECHNICAL DATA		
Max operating pressure	bar	10
	MPa	1
Temperature range	°C	-10 to 70
Fluid temperature	°C	-10 to 70
Design		Round barrel with tie rods
Standard strokes	mm	25-50-75-80-100-125-150-200-250-300-350-400-500-600-700-800-900-1000
Weight		See page 1-8
Forces generated at 6 bar (tensile stress)		See page 1-7

COMPONENTS

- PISTON ROD: C45 steel or stainless steel, thick chromed
- HEAD: die cast aluminium
- PISTON ROD GASKET: NBR or FKM/FPM
- GUIDE BUSHING: sintered bronze
- BARREL: drawn anodised aluminium alloy
- PISTON: aluminium
- PISTON GASKET: NBR or FKM/FPM
- MAGNET: plastoferrite
- CUSHIONING CAP: aluminium
- CUSHIONING GASKET+ Static O-rings: NBR or FKM/FPM
- CUSHIONING NEEDLE: OT 58 with needle out movement safety system even when fully open
- SCREWS: galvanised steel
- TIE RODS: galvanised steel
- GUIDE BELT: technopolimer



KEY TO CODES FOR ROUND BARREL

CYL	W 1 2 1 TYPE	1 6 0 DIAMETER-EXECUTION	0 0 5 0 STROKE	0 2 0 0 EXECUTION
W120	Double-acting, cushioned, non magnetic	160 160 200 200	+ 0025 to 2800 mm	Specify H1 value ONLY for version with intermediate hinge
W121	Double-acting, cushioned,	XA3 160 stainless steel piston rod		
W122	Double-acting, cushioned, through-rod	XA4 200 stainless steel piston rod		
W123	Double-acting, cushioned, through-rod, non magnetic	VA3 160 FKM/FPM gasket, stainless steel piston rod		
W124	Double-acting, non-cushioned	VA4 200 FKM/FPM gasket, stainless steel piston rod		
		KA3 160 FKM/FPM gasket, C45 piston rod		
		KA4 200 FKM/FPM gasket, C45 piston rod		
		AA3 160 + intermediate hinge		
		AA4 200 + intermediate hinge		

+ Maximum recommended strokes. Higher values can create operating problems

VERSION WITH SHAPED BARREL

An alternative to the round barrel version is a version with a shaped barrel.

The technical data, components and dimensions are the same as for the round barrel version.

Note: Type with intermediate hinge not available.



KEY TO CODES FOR SHAPED BARREL

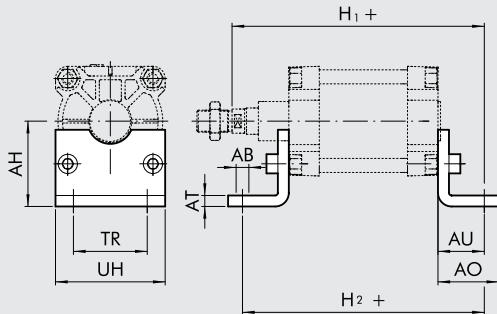
CYL	1 2 1 TYPE	1 6 0 DIAMETER-EXECUTION	0 0 5 0 STROKE	A MATERIAL	N GASKETS
120	Double-acting, cushioned, non-magnetic	160 160 200 200	+ 0025 to 2800 mm	A C45 chromed, piston rod	N NBR gaskets V FKM/FPM gaskets
121	Double-acting, cushioned,	SA3 160 non magnetic		Z Stainless steel chromed, piston rod	
122	Double-acting, cushioned, through-rod	SA4 200 non magnetic			
124	Double-acting, non-cushioned				

+ Maximum recommended strokes. Higher values can create operating problems

ACCESSORIES FOR ISO 15552 CYLINDERS Ø 160-200: FIXINGS

FOOT - MODEL A

+ = ADD THE STROKE

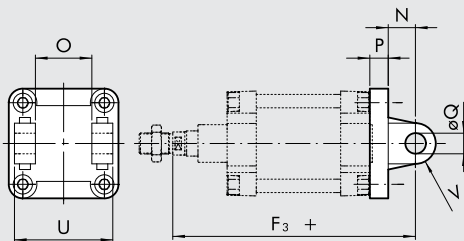


Code	Ø	AB	AH	AO	AT	AU	H ₁	H ₂	TR	UH	Weight [g]
W0951602001	160	18	115	80	10	60	319	300	115	180	2400
W0952002001	200	22	135	120	10	70	345	320	135	220	4000

Note: Individually packed with 2 screws

FEMALE HINGE - MODEL B

+ = ADD THE STROKE

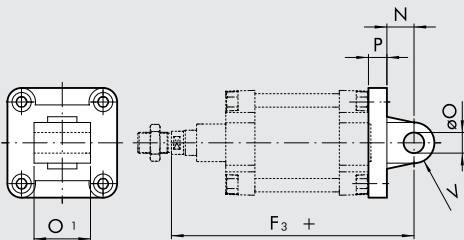


Code	Ø	U	O	øQ	P	N	F ₃	V	Weight [g]
W0951602003	160	170	90	30	20	35	314	25	3300
W0952002003	200	170	90	30	25	35	335	25	4300

Note: Supplied complete with 4 screws, 4 washers, 2 snap rings

MALE HINGE - MODEL BA

+ = ADD THE STROKE

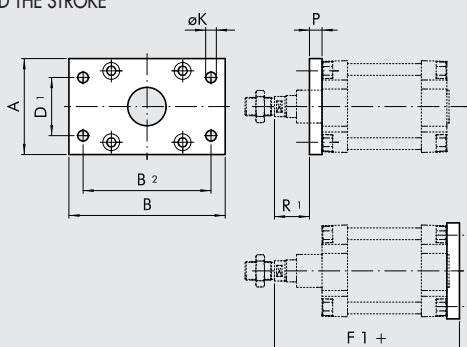


Code	Ø	O ₁	øO	P	N	F ₃	V	Weight [g]
W0951602004	160	90	30	20	35	314	25	2150
W0952002004	200	90	30	25	35	335	25	3550

Note: Supplied complete with 4 screws, 4 washers

FLANGE - MODEL C (FRONT AND REAR)

+ = ADD THE STROKE

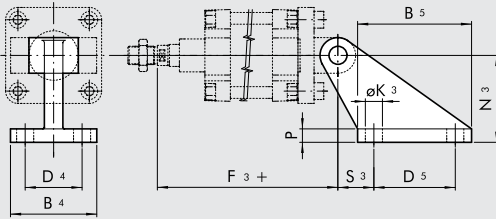


Code	Ø	A	B	B ₂	D ₁	øK	R ₁	P	F ₁	Weight [g]
W0951602002	160	180	270	230	115	18	59	20	279	6900
W0952002002	200	225	312	270	135	22	70	25	300	12800

Note: Individually packed with 4 screws

CETOP COUNTER-HINGE - MODEL GL

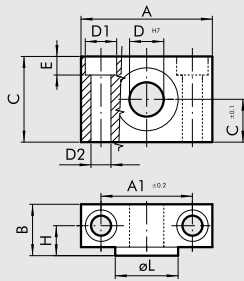
±= ADD THE STROKE



Code	Ø	B ₄	B ₅	D ₄	D ₅	N ₂	N ₃	S ₃	øK ₃	P	F ₃	Weight [g]
W0951602008	160	110	154	63	110	55	140	50	18	20	314	2300
W0951602008	200	110	154	63	110	60	140	50	18	20	335	2300

Note: Supplied complete with 4 screws, 4 washers

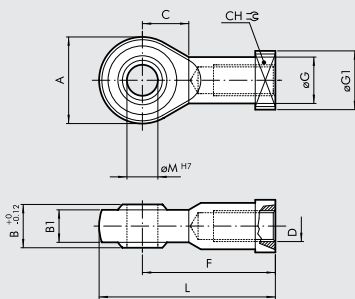
COUNTER-HINGE MODEL EL



Code	Ø	A	A ₁	B	C	C ₁	D ₁	D ₂	D	E	H	øL	Weight [g]
W0951602009	160	92	60	40	60	30	25	17	32	16.5	22.5	48	2740
W0951602009	200	92	60	40	60	30	25	17	32	16.5	22.5	48	2740

Note: Supplied with 4 securing screws

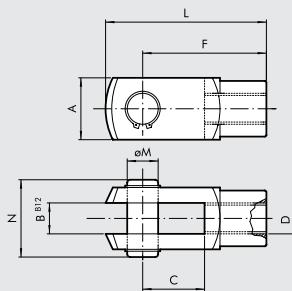
ROD EYE - MODEL GA-M



Code	Ø	øM	C	B ₁	B	A	L	F	D	øG	CH	øG ₁	Weight [g]
W0952002025	160	35	41	28	43	80	165	125	M36x2	46	50	58	1645
W0952002025	200	35	41	28	43	80	165	125	M36x2	46	50	58	1645

Note: Individually packed

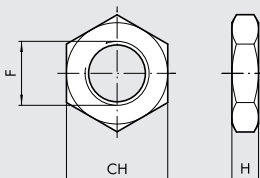
FORK - MODEL GK-M



Code	Ø	øM	C	B	A	L	F	D	N	Weight [g]
W0951602020	160	35	72	35	70	188	144	M36x2	84	3850
W0951602020	200	35	72	35	70	188	144	M36x2	84	3850

Note: Individually packed

ROD NUT - MODEL S

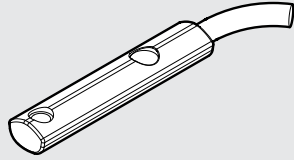


Code	Ø	F	H	CH	Weight [g]
W0951602010	160	M36x2	14	55	170
W0951602010	200	M36x2	14	55	170

Note: Individually packed

ACCESSORIES FOR ISO 15552 CYLINDERS Ø 160-200: MAGNETIC SENSORS

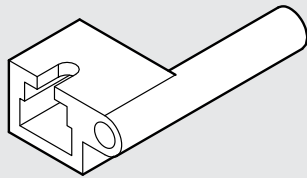
RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

* For use when standard sensors do not detect the magnet, e.g. near metal masses.
NB: For technical data see page 1-246

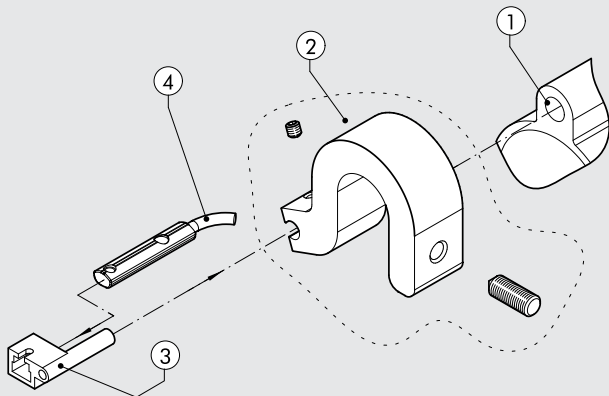
ADAPTOR FOR RETRACTABLE SENSOR



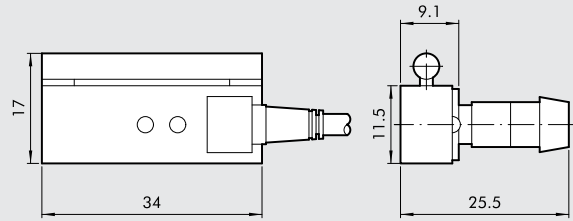
Code	Description
W0950001001	Adaptor DSS005 for DST/ST brackets

ASSEMBLY DIAGRAM

- ① ISO 15552 cylinder with traditional barrel
- ② Sensor bracket mod. ST (Ø 160 and 200)
- ③ Adaptor
- ④ Retractable sensor with insertion from above



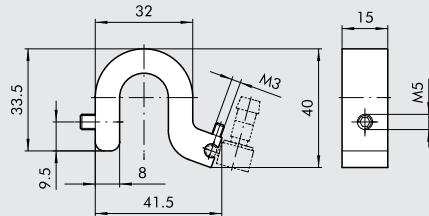
MAGNETIC SENSOR



Code	Description
W0950000201	REED sensor DSM2-C525
W0950000222	E.HALL PNP sensor DSM3-N225
W0950000232	E.HALL NPN sensor DSM3-M225

NB: For technical data see page 1-244

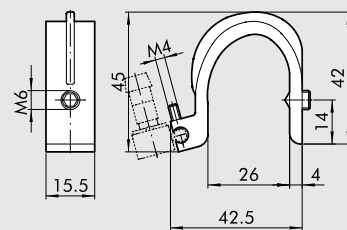
SENSOR SUPPORT BRACKET FOR STANDARD VERSION (WITH ROUND BARREL)



Code	Description
0951602093	Bracket 160-200

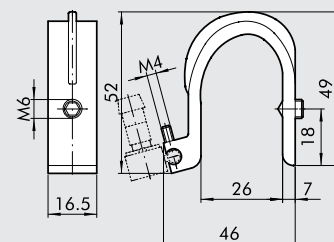
SENSOR SUPPORT BRACKET FOR OLD VERSION BARREL (SHAPED)

Ø 160



Code	Description
W0950000715	Bracket ST 160

Ø 200



Code	Description
W0950000716	Bracket ST 200

ISO 21287 CYLINDER SERIES LINER

Compact cylinder to ISO 21287, LINER series, available in different versions to meet all possible requirements:

- With or without magnet
- Double acting, single or through piston rod
- Double acting, perforated through piston rod
- Single acting, extended, retracted or through piston rod
- Single acting, perforated through rod
- Double acting anti-rotating version and double acting through piston rod
- Polyurethane or FKM/FPM gaskets (for high temperatures) also available
- Dimensions and centre distances to ISO 21287.

The heads have been eliminated for ease of installation, improved sturdiness and precision. The metal lining is designed to withstand heavy-duty work, tensile stress and impact. Technopolymer parts can withstand dynamic and pneumatic thrust. The lining virtually acts as a "bearing" to which most of user accessories are attached.

The wide range of anchors provide numerous fixing points.

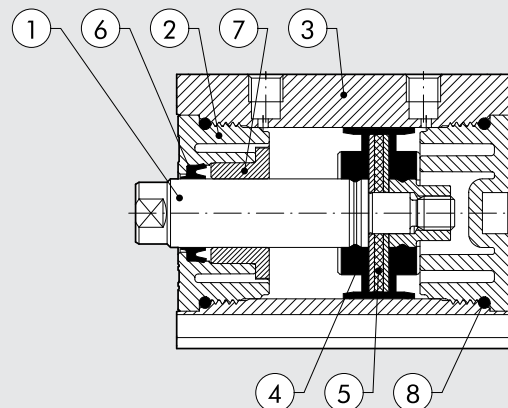
Retractable magnetic limit switches can be mounted to identify the position in the cylinder grooves.



TECHNICAL DATA		POLYURETHANE	FKM/FPM
Max operating pressure	bar		10
	MPa		1
	psi		145
Temperature range	°C	-10 to +60 (Ø 20 to 63)	-10 to +150 (non-magnetic cylinders)
		-10 to +80 (Ø 80 to 100)	
Fluid		Unlubricated air. Lubrication, if used, must be continuous.	
Bores	mm	20; 25; 32; 40; 50; 63; 80; 100 with ISO 21287 fixing centre distances	
Design		With profile	
Versions		Double-acting, Double-acting through-rod, Single-acting extended or retracted rod, Single-acting through-rod, Double-acting through-rod perforated, Double-acting non-rotating, Double-acting through-rod non-rotating, No stick slip	
Magnet for sensors		All versions are available with male or female piston rod. All versions come complete with magnet. Supplied without magnet on request.	
Inrush pressure	bar	* Using for speeds lower than 0.2 m/s, to prevent surging. For no-stick-slip versions use no-lubricated air only from Ø 20 to 32: 0.6 - from Ø 40 to 100: 0.4	
Forces generated at 6 bar thrust/retraction		see page 1-7	
Weights		see page 1-9	
Notes		For correct operation, it is advisable to use 50 µm filtered air	

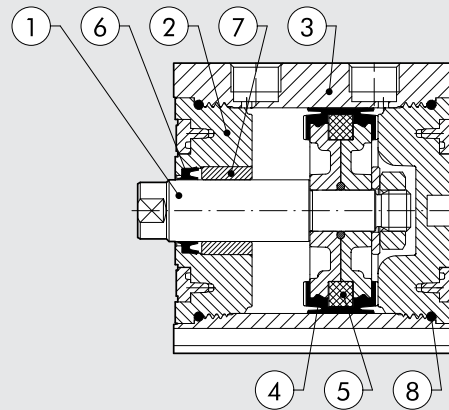
COMPONENTS Ø 20-25

- ① PISTON ROD: stainless steel, thick chromed
- ② END CAP: high-performance technopolymer
- ③ BARREL: drawn anodised and calibrated aluminium alloy
- ④ PISTON GASKET: polyurethane or FKM/FPM (for high temperature)
- ⑤ MAGNET: plastoneodimio
- ⑥ PISTON ROD GASKET: polyurethane or FKM/FPM (for high temperature)
- ⑦ GUIDE BUSHING: sintered bronze
- ⑧ STATIC O-RINGS: NBR or FKM/FPM (for high temperature)



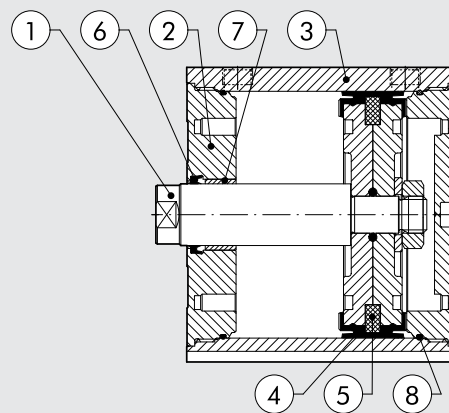
COMPONENTS Ø 32-63

- ① PISTON ROD: C45 steel or stainless steel, thick chromed
- ② END CAP: high-performance technopolymer
- ③ BARREL: drawn anodised and calibrated aluminium alloy
- ④ PISTON GASKET: polyurethane or FKM/FPM (for high temperature)
- ⑤ MAGNET: Ø 32 plastoneodimio - Ø 40 to 63 plastoferrite
- ⑥ PISTON ROD GASKET: polyurethane or FKM/FPM (for high temperature)
- ⑦ GUIDE BUSHING: sintered bronze
- ⑧ STATIC O-RINGS: NBR or FKM/FPM (for high temperature)

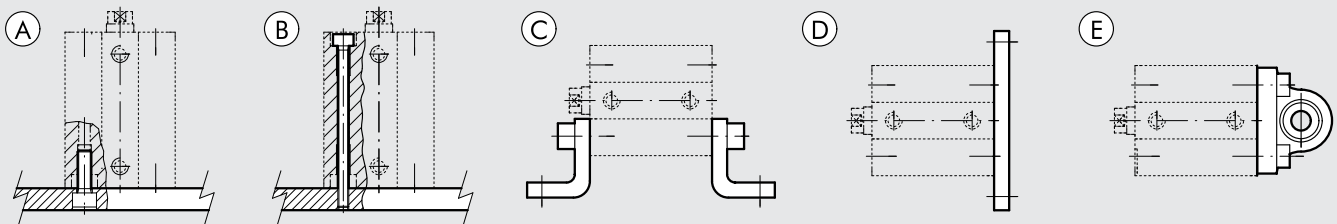


COMPONENTS Ø 80-100

- ① PISTON ROD: C45 steel or stainless steel, thick chromed
- ② END CAP: anodized aluminium alloy
- ③ BARREL: drawn anodised and calibrated aluminium alloy
- ④ PISTON GASKET: polyurethane or FKM/FPM (for high temperature)
- ⑤ MAGNET: plastoferrite
- ⑥ PISTON ROD GASKET: polyurethane or FKM/FPM (for high temperature)
- ⑦ GUIDE BUSHING: steel strip with bronze and PTFE insert
- ⑧ STATIC O-RINGS: NBR or FKM/FPM (for high temperature)



FIXING OPTIONS



- Ⓐ Fixing to structural work with a through screw, using the thread in the heads
- Ⓑ Direct fixing from above using long through screws or tie rods. Non-magnetic stainless steel must be used (e.g. AISI 304)
- Ⓒ Fixing with feet; the ordering code covers the supply of one foot and two screws for fixing to the cylinder
- Ⓓ Fixing with a flange mounted on the front or rear head; the ordering code covers the supply of a flange and four screws for fixing to the cylinder
- Ⓔ Fixing with articulated hinge to compensate for slight system misalignment and turn freely
The ordering code covers the supply of a hinge and four screws for fixing to the cylinder.

FORCE OF SPRINGS IN SINGLE-ACTING CYLINDERS (THEORETICAL)

Bore	Ø 20	Ø 25	Ø 32	Ø 40	Ø 50	Ø 63	Ø 80	Ø 100
Min. load (N)	8.40	13.90	19.00	24.80	36.30	50.20	77.60	131.80
Max. load (N)	20.90	33.20	35.90	53.70	62.20	82.30	118.90	183.30

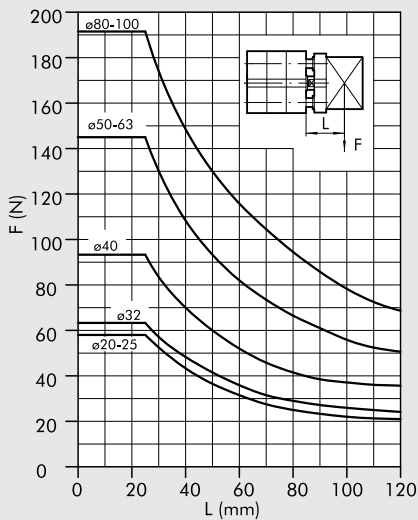
STROKES FOR COMPACT CYLINDERS ISO 21287

Standard stroke for single-acting cylinders	Standard stroke for other types	Max. recommended strokes for other types	Max. recommended strokes for non-rotating cylinders	Max recommended strokes for through-rod perforated
Ø 20 to 100 → 25 mm	Ø 20 to 25 → 5 to 60 mm Ø 32 to 100 → 5 to 80 mm	Ø 20 to 25 → 300 mm Ø 32 to 63 → 400 mm Ø 80 to 100 → 500 mm	Ø 20 to 63 → 120 mm Ø 80 to 100 → 150 mm	Ø 20 to 40 → 5 to 80 mm Ø 50 to 63 → 5 to 100 mm Ø 80 to 100 → 5 to 160 mm

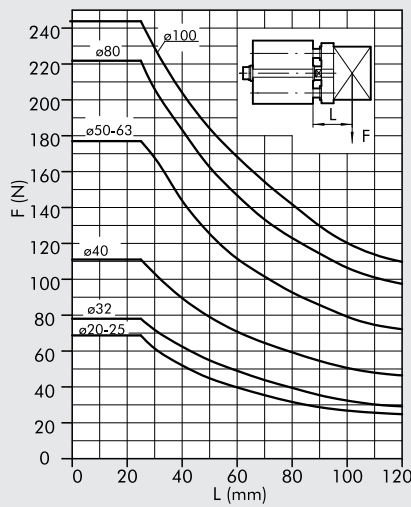
Maximum recommended strokes. Higher values can create operating problems

MAXIMUM LOADS FOR NON-ROTATING VERSION

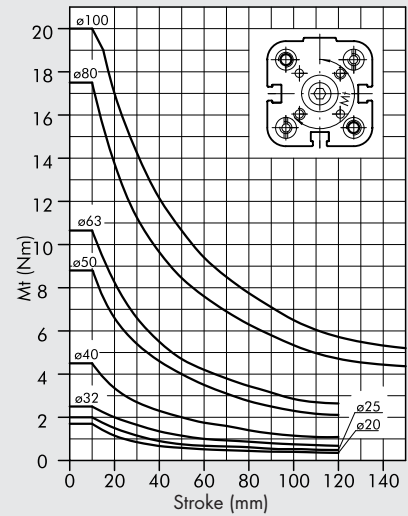
TRANSVERSAL FORCE FOR NON-ROTATING



TRANSVERSAL FORCE FOR NON-ROTATING THROUGH-ROD

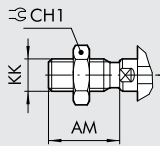


TORQUE DEPENDING ON STROKE



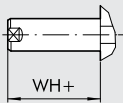
DIMENSIONS OF DOUBLE-ACTING Ø 20 to 50 AND SINGLE-ACTING Ø 20 to 50

SE-DE MALE PISTON ROD

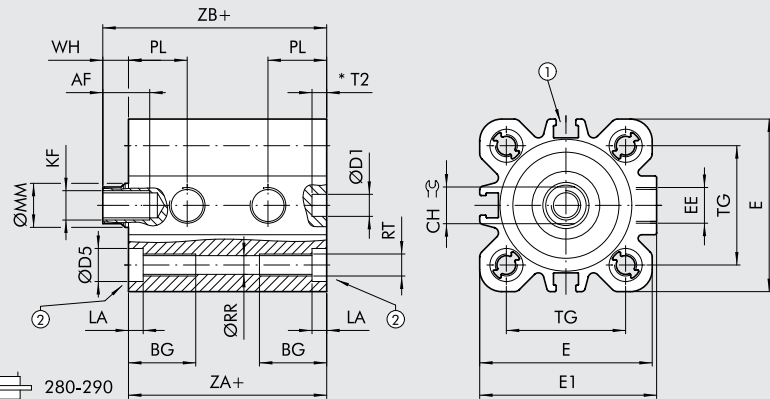
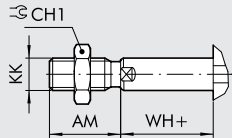


- + = ADD THE STROKE
- * = SECTION WITH TOLERANCE
- 1 = SENSOR SLOT
- 2 = SEAT FOR DIN 7984 SCREWS

SE EXTENDED PISTON ROD



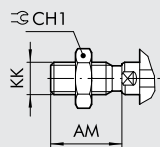
SE MALE EXTENDED PISTON ROD



Ø	AF	AM	BG	CH	CH1	ØD1 ^{H9}	ØD5	E	E1	EE	KF	KK	LA	ØMM	PL	ØRR	RT	T2	TG ^{+0.2}	WH	ZA ^{+0.3} ₀	ZB
20	14	16	17.5	8	13	6	7.5	35.5	36.5	M5	M6	M8	4.2	10	12	4.2	M5	3	22	6	37	43
25	14	16	17.5	8	13	6	7.5	39.5	40	M5	M6	M8	4.2	10	13	4.2	M5	3.5	26	6	39	45
32	16.5	19	21.5	10	17	6	9	47	48.2	G1/8	M8	M10x1.25	4	12	16	5.1	M6	4	32.5	7	44	51
40	16.5	19	21.5	10	17	6	9	55.5	56.5	G1/8	M8	M10x1.25	4	12	16	5.1	M6	4	38	7	45	52
50	17	22	21	13	19	6	10.5	66.5	67.8	G1/8	M10	M12x1.25	4.5	16	15.5	6.8	M8	3	46.5	8	45	53

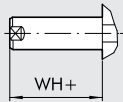
DIMENSIONS OF DOUBLE-ACTING Ø 63 to 100 AND SINGLE-ACTING Ø 63 to 100

SE-DE MALE PISTON ROD

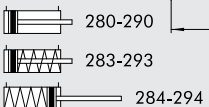
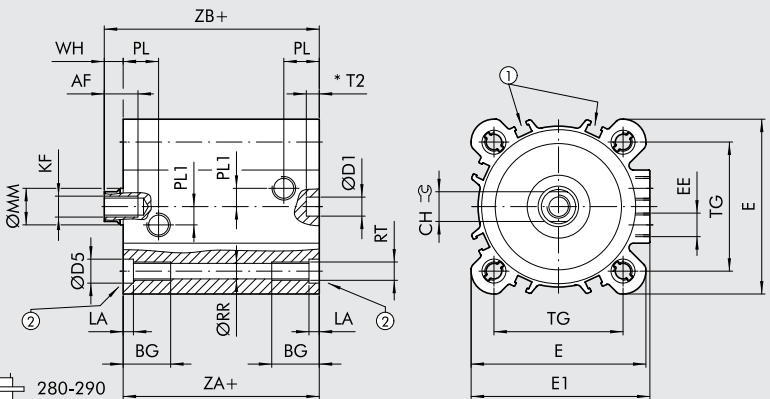
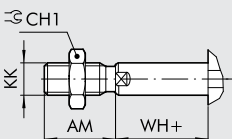


- + = ADD THE STROKE
- * = SECTION WITH TOLERANCE
- 1 = SENSOR SLOT
- 2 = SEAT FOR DIN 7984 SCREWS

SE EXTENDED PISTON ROD



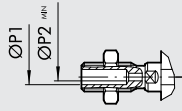
SE MALE EXTENDED PISTON ROD



Ø	AF	AM	BG	CH	CH1	ØD1 ^{H9}	ØD5	E	E1	EE	KF	KK	LA	ØMM	PL1	PL	ØRR	RT	T2	TG ^{+0.2}	WH	ZA ^{+0.4} ₀	ZB
63	17	22	21	13	19	8	10.5	76.5	78.3	G1/8	M10	M12x1.25	4.5	16	8	15.5	6.8	M8	3.5	56.5	8	49	57
80	22	28	22.5	17	24	8	14	95.5	95.5	G1/8	M12	M16x1.5	5	20	14	16.5	8.5	M10	4	72	10	54	64
100	24	28	25.5	22	30	8	14	114	114	G1/8	M12	M16x1.5	5	25	19	19.2	8.5	M10	4	89	10	67	77

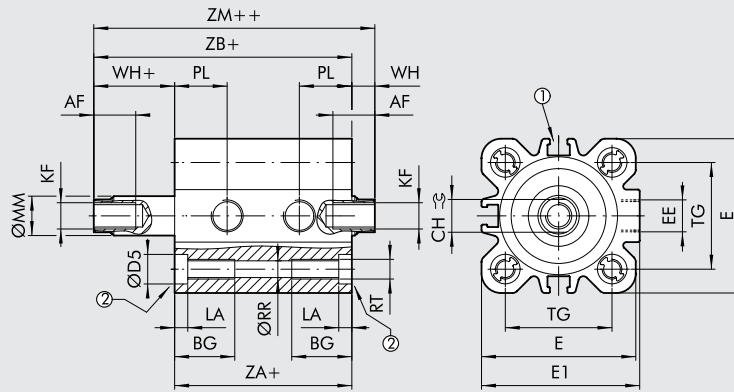
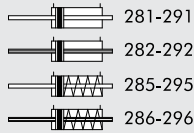
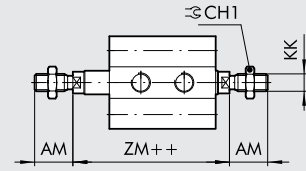
DIMENSIONS OF THROUGH-ROD Ø 20 to 50

SE-DE MALE PERFORATED THROUGH-ROD



- + = ADD THE STROKE
- ++ = ADD TWICE THE STROKE
- 1 = SENSOR SLOT
- 2 = SEAT FOR DIN 7984 SCREWS

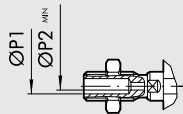
SE-DE MALE PISTON ROD



Ø	AF	AM	BG	CH	CH1	ØD5	E	E1	EE	KF	KK	LA	ØMM	ØP1	ØP2	PL	ØRR	RT	TG ^{+0.2}	WH	ZA ^{+0.3}	ZB	ZM
20	14	16	17.5	8	13	7.5	35.5	36.5	M5	M6	M8	4.2	10	3	1.5	12	4.2	M5	22	6	37	43	49
25	14	16	17.5	8	13	7.5	39.5	40	M5	M6	M8	4.2	10	3	1.5	13	4.2	M5	26	6	39	45	51
32	16.5	19	21.5	10	17	9	47	48.2	G1/8	M8	M10x1.25	4	12	4	2.5	16	5.1	M6	32.5	7	44	51	58
40	16.5	19	21.5	10	17	9	55.5	56.5	G1/8	M8	M10x1.25	4	12	4	2.5	16	5.1	M6	38	7	45	52	59
50	17	22	21	13	19	10.5	66.5	67.8	G1/8	M10	M12x1.25	4.5	16	6	4	15.5	6.8	M8	46.5	8	45	53	61

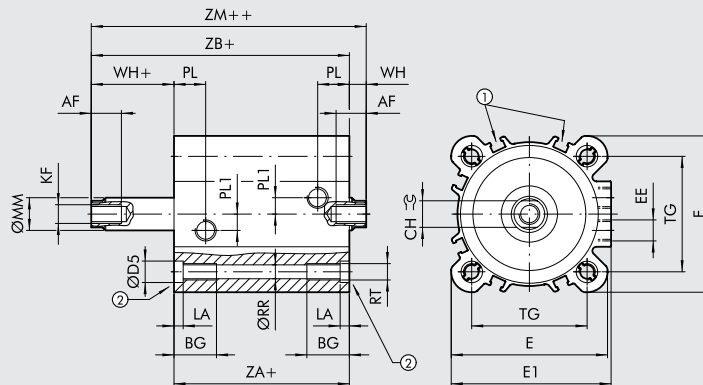
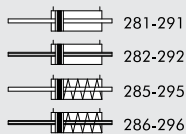
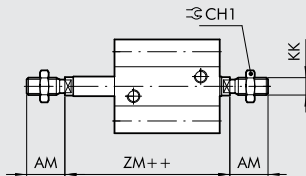
DIMENSIONS OF THROUGH-ROD Ø 63 to 100

SE-DE MALE PERFORATED THROUGH-ROD



- + = ADD THE STROKE
- ++ = ADD TWICE THE STROKE
- 1 = SENSOR SLOT
- 2 = SEAT FOR DIN 7984 SCREWS

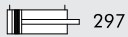
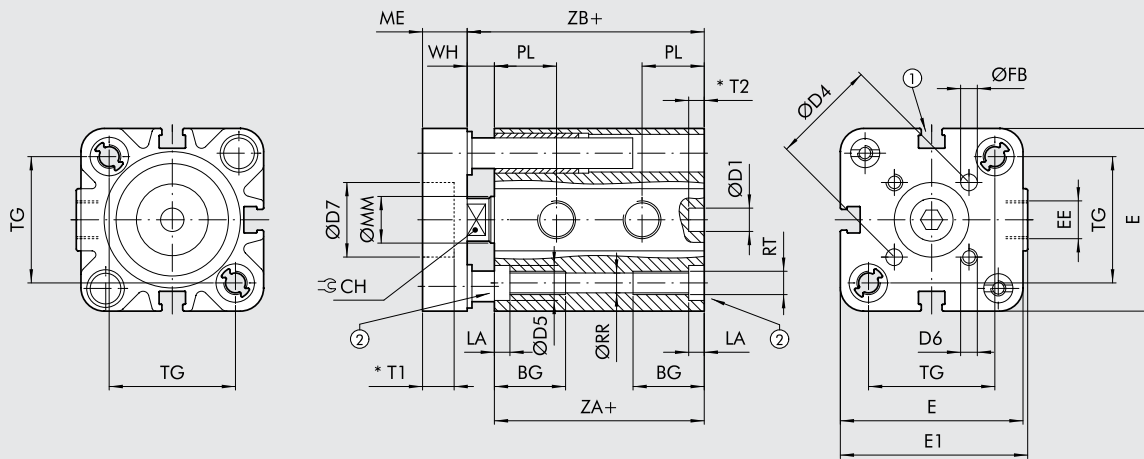
SE-DE MALE PISTON ROD



Ø	AF	AM	BG	CH	CH1	ØD5	E	E1	EE	KF	KK	LA	ØMM	ØP1	ØP2	PL1	PL	ØRR	RT	TG ^{+0.2}	WH	ZA ^{+0.4}	ZB	ZM
63	17	22	21	13	19	10.5	76.5	78.3	G1/8	M10	M12x1.25	4.5	16	6	4	8	15.5	6.8	M8	56.5	8	49	57	65
80	22	28	22.5	17	24	14	95.5	95.5	G1/8	M12	M16x1.5	5	20	G1/8	5	14	16.5	8.5	M10	72	10	54	64	74
100	24	28	25.5	22	30	14	114	114	G1/8	M12	M16x1.5	5	25	G1/8	6	19	19.2	8.5	M10	89	10	67	77	87

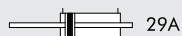
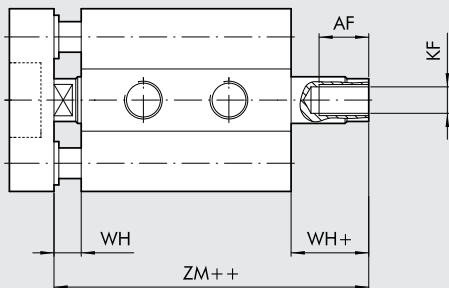
DIMENSIONS OF NON-ROTATING Ø 20 to 50

- + = ADD THE STROKE
- * = SECTION WITH TOLERANCE
- 1 = SENSOR SLOT
- 2 = SEAT FOR DIN 7984 SCREWS



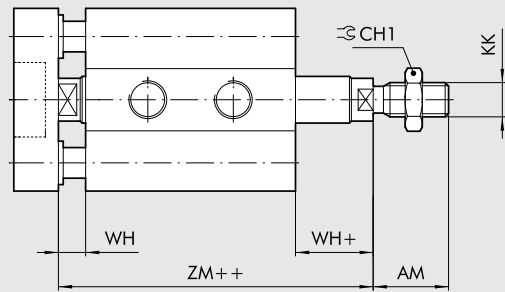
NON-ROTATING FEMALE THROUGH-ROD

- + = ADD THE STROKE
- ++ = ADD TWICE THE STROKE



NON-ROTATING MALE THROUGH-ROD

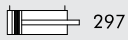
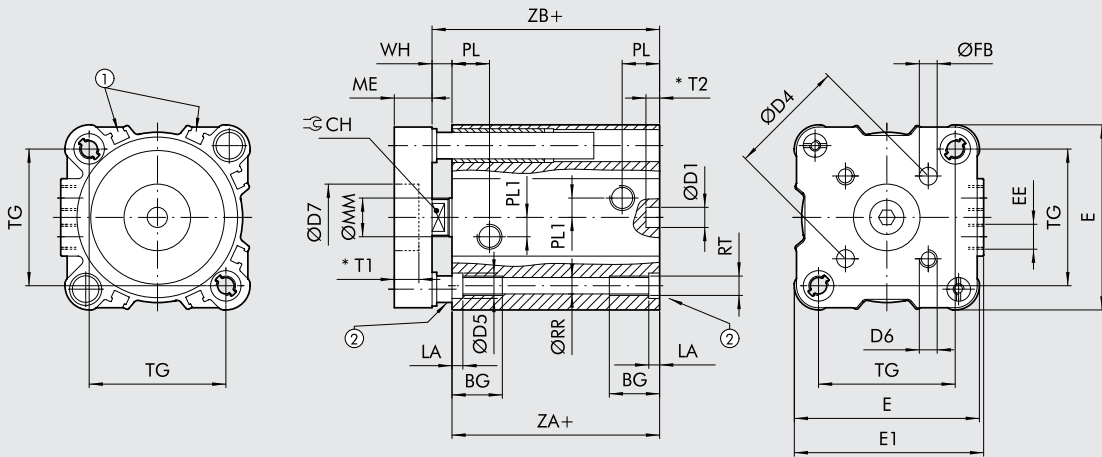
- + = ADD THE STROKE
- ++ = ADD TWICE THE STROKE



Ø	AF	AM	BG	CH	CH1	ØD1 ¹⁹	ØD4	ØD5	D6	ØD7 ¹⁹	E	E1	EE	ØFB	KF	KK	LA	ME	ØMM	PL	ØRR	RT	T1	T2	TG ^{20,2}	WH	ZA ^{20,3}	ZB	ZM
20	14	16	17.5	8	13	6	17	7.5	M4	-	35.5	36.5	M5	4	M6	M8	4.2	8	10	12	4.2	M5	-	3	22	6	37	43	49
25	14	16	17.5	8	13	6	22	7.5	M5	14	39.5	40	M5	5	M6	M8	4.2	8	10	13	4.2	M5	3.5	3.5	26	6	39	45	51
32	16.5	19	21.5	10	17	6	28	9	M5	17	47	48.2	G1/8	5	M8	M10x1.25	4	10	12	16	5.1	M6	3.5	4	32.5	7	44	51	58
40	16.5	19	21.5	10	17	6	33	9	M5	17	55.5	56.5	G1/8	5	M8	M10x1.25	4	10	12	16	5.1	M6	3.5	4	38	7	45	52	59
50	17	22	21	13	19	6	42	10.5	M6	22	66.5	67.8	G1/8	6	M10	M12x1.25	4.5	12	16	15.5	6.8	M8	5	3	46.5	8	45	53	61

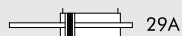
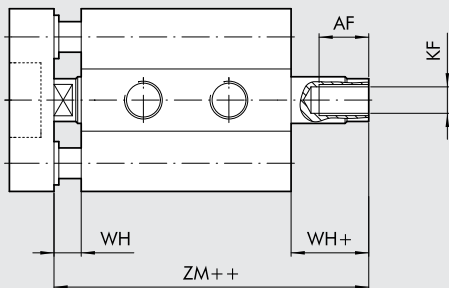
DIMENSIONS OF NON-ROTATING Ø 63 to 100

- + = ADD THE STROKE
- * = SECTION WITH TOLERANCE
- 1 = SENSOR SLOT
- 2 = SEAT FOR DIN 7984 SCREWS



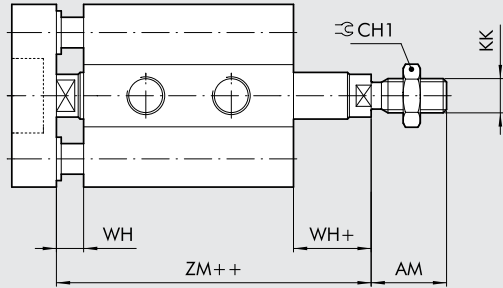
NON-ROTATING FEMALE THROUGH-ROD

- + = ADD THE STROKE
- ++ = ADD TWICE THE STROKE



NON-ROTATING MALE THROUGH-ROD

- + = ADD THE STROKE
- ++ = ADD TWICE THE STROKE



Ø	AF	AM	BG	CH	CH1	ØD1 ^{HP}	ØD4	ØD5	D6	ØD7 ^{HP}	E	E1	EE	ØFB	KF	KK	LA	ME	ØMM	PL1	PL	ØRR	RT	T1	T2	TG ^{+0.2}	WH	ZA ^{+0.4} ₀	ZB	ZM
63	17	22	21	13	19	8	50	10.5	M6	22	76.5	78.3	G1/8	6	M10	M12x1.25	4.5	12	16	8	15.5	6.8	M8	5	3.5	56.5	8	49	57	65
80	22	28	22.5	17	24	8	65	14	M8	24	95.5	95.5	G1/8	8	M12	M16x1.5	5	14	20	14	16.5	8.5	M10	7.5	4	72	10	54	64	74
100	24	28	25.5	22	30	8	80	14	M10	24	114	114	G1/8	10	M12	M16x1.5	5	14	25	19	19.2	8.5	M10	7.5	4	89	10	67	77	87

KEY TO CODE

CYL	2 8 TYPE	0	0	20 BORE	0	0 5 0 STROKE **	X MATERIAL	P GASKETS
	28 Compact cylinder ISO 21287 male piston rod	0 Double-acting through-rod	0 Magnetic	20	0 Standard		* C C45 piston rod chromium-plated	P Polyurethane gaskets
		1 Double-acting through-rod	□ S Non-magnetic	25			▷ X Stainless steel piston rod and nut	▶ V FKM/FPM gaskets
		2 Double-acting through-rod perforated	▲ G No stick slip	32			◁ A C45 chromed rod, aluminium piston	
	29 Compact cylinder ISO 21287 female piston rod	● 3 Single-acting retracting piston rod		40			○ Z Stainless steel piston rod and nut aluminium piston	
		● 4 Single-acting extended piston rod		50				
		● 5 Single-acting through-rod		63				
		● 6 Single-acting through piston rod perforated		80				
		▼ 7 Double-acting non-rotating		◆ 100				
		A Double-acting through-rod non-rotating						

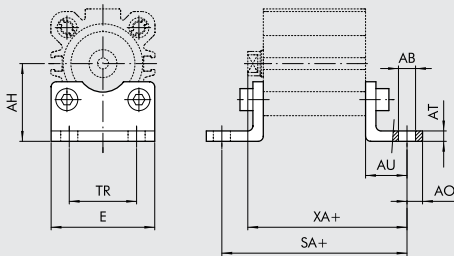
- ** For the maximum suppliabe stroke, see page 1-62
- Can also be used as double-acting with spring return
- ▼ For versions 29 only (female piston rod)
- ▲ For Ø 20 to 25 the standard version (0 or S)
For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only
- ◆ In the code of cylinder with letter in fourth position Ø 100 becomes A1
- ▶ Only for standard double acting and standard through rod double acting version
- Compulsory for Ø 20 and Ø 25 version Z
- * Only for Ø 32 to 63 P version (Polyurethane gaskets)
- ▷ Only for Ø 20 to 63 P version (Polyurethane gaskets)
- ◁ Only for Ø 32 to 100 V version (FKM/FPM gaskets) and for Ø 80 and 100 P version (Polyurethane gaskets)
- Only for Ø 20 to 100 V version (FKM/FPM gaskets) and for Ø 80 and 100 P version (Polyurethane gaskets)

NOTES

ACCESSORIES FOR ISO 21287 CYLINDERS: FIXING

FOOT - MODEL A

+ = ADD THE STROKE



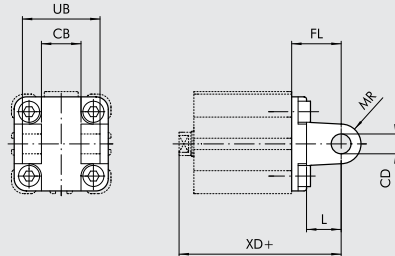
Code	Ø	ØAB	AH	AO	AT	AU	E	SA	TR	XA	Weight [g]
W0950206001	20	6.6	27	6	4	16	36	69	22	59	46
W0950256001	25	6.6	30*	6	4	16	40	71	26	61	52
W0950322001	32	7	32*	11*	4	24*	45	92*	32	75*	76
W0950402001	40	9	36*	15*	4	28*	52	101*	36	80*	100
W0950502001	50	9	45	15*	5	32*	65	109*	45	85*	162
W0950632001	63	9	50	15*	5	32*	75	113*	50	89*	266
W0950802001	80	12	63	20*	6	41*	95	136*	63	105*	456
W0951002001	100	14	71*	25*	6	41*	115	149*	75	118*	572

Note: Individually packed with 2 screws

* **IMPORTANT:** Values not to ISO 21287. Cylinder pins to ISO 15552 are used.

FEMALE HINGE-MODEL B

+ = ADD THE STROKE

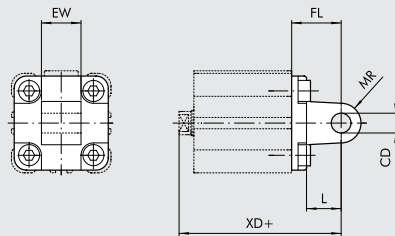


Code	Ø	CB ^{H14}	ØCD ^{H9}	FL	L	MR	UB ^{H14}	XD	Weight [g]
W0950322003	32	26	10	22	12	10	45	73	112
W0950402003	40	28	12	25	15	12	52	77	159
W0950502003	50	32	12	27	15	12	60	80	250
W0950632003	63	40	16	32	20	16	70	89	390
W0950802003	80	50	16	36	20	16	90	100	668
W0951002003	100	60	20	41	25	20	110	118	1047

Note: Supplied with 4 screws, 4 washers, 2 snap-rings and 1 pin

MALE HINGE-MODEL BA

+ = ADD THE STROKE

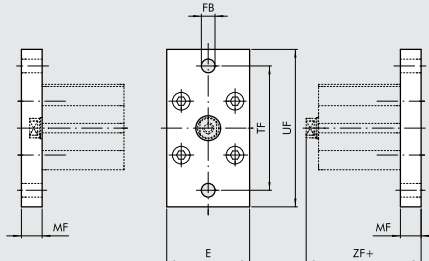


Code	Ø	ØCD ^{H9}	EW	FL	L	MR	XD	Weight [g]
W0950206004	20	8	16	20	14	8	63	44
W0950256004	25	8	16	20	14	8	65	48
W0950322004	32	10	26	22	12	11	73	94
W0950402004	40	12	28	25	15	13	77	124
W0950502004	50	12	32	27	15	13	80	220
W0950632004	63	16	40	32	20	17	89	316
W0950802004	80	16	50	36	20	17	100	578
W0951002004	100	20	60	41	25	21	118	850

Note: Supplied with 4 screws, 4 washers

FLANGE Ø 20 to 25 - MODEL C (FRONT AND REAR)

+ = ADD THE STROKE



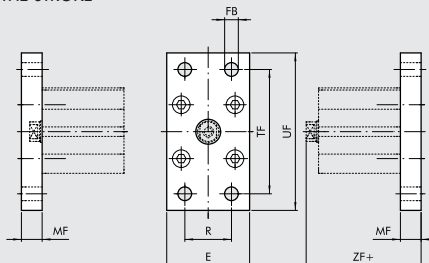
Code	Ø	E	ØFB	MF	TF	UF	ZF	Weight [g]
W0950206002	20	36	6.6	10*	55	70	53*	184
W0950256002	25	40	6.6	10*	60	76	55*	226

Note: Supplied with 4 screws

* **IMPORTANT:** Non ISO 21287 norm fixing distance

FLANGE Ø 32 to 100 - MODEL C (FRONT AND REAR)

+ = ADD THE STROKE

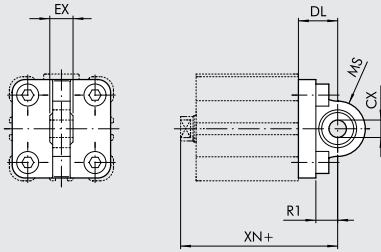


Code	Ø	E	ØFB	MF	R	TF	UF	ZF	Weight [g]
W0950322002	32	50	7	10	32	64	80	61	246
W0950402002	40	55	9	10	36	72	90	62	290
W0950502002	50	65	9	12	45	90	110	65	522
W0950632002	63	75	9	12	50	100	120	69	670
W0950802002	80	95	12	16	63	126	153	80	1420
W0951002002	100	115	14	16	75	150	178	93	2040

Note: Supplied with 4 screws

ARTICULATED MALE HINGE - MODEL BAS

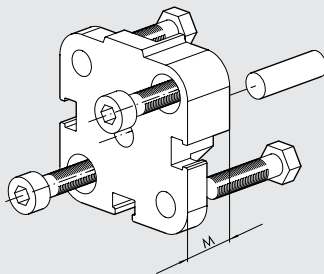
+ = ADD THE STROKE



Code	Ø	ØCX	DL	EX	MS	R1	XN	Weight [g]
W0950322006	32	10	22	14	16	12	73	106
W0950402006	40	12	25	16	18	15	77	142
W0950502006	50	12	27	16	21	19	80	236
W0950632006	63	16	32	21	23	20	89	336
W0950802006	80	16	36	21	28	24	100	572
W0951002006	100	20	41	25	30	25	118	840

Note: Supplied with 4 screws, 4 washers

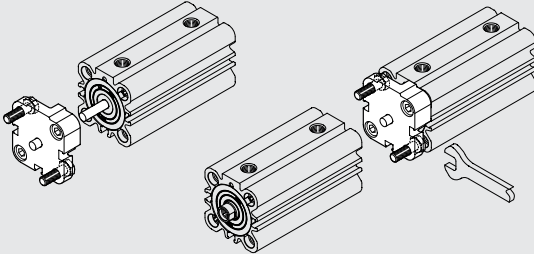
FLANGE FOR OPPOSITE CYLINDERS



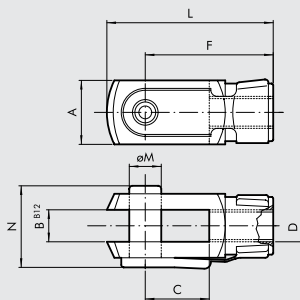
Code	Ø	M	Weight [g]
0950203060	20	12.5	45
0950253060	25	13	57
0950323060	32	14.5	88
0950403061	40	14.5	106
0950503061	50	14.5	158
0950633061	63	14.5	258
0950803061	80	16.5	452
0951003061	100	19.5	801

Note: Supplied complete with 1 pin, 4 screws

ASSEMBLING OPPOSING CYLINDERS



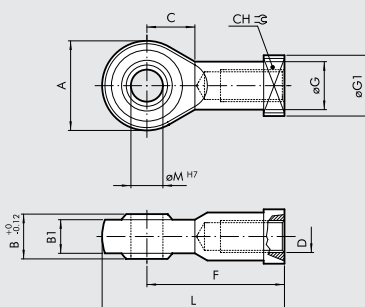
FORK - MODEL GK-M



Code	Ø	A	B	C	D	F	L	øM	N	Weight [g]
W0950200020	20	16	8	16	M8	32	42	8	22	48
W0950200025	25	16	8	16	M8	32	42	8	22	48
W0950322020	32	20	10	20	M10x1.25	40	52	10	26	92
W0950322025	40	20	10	20	M10x1.25	40	52	10	26	92
W0950402020	50	24	12	24	M12x1.25	48	62	12	32	148
W0950402025	63	24	12	24	M12x1.25	48	62	12	32	148
W0950502020	80	32	16	32	M16x1.5	64	83	16	40	340
W0950502025	100	32	16	32	M16x1.5	64	83	16	40	340

Note: Individually packed

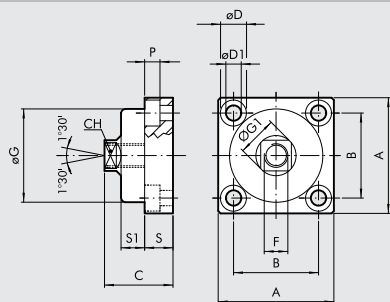
ROD EYE - MODEL GA-M



Code	Ø	A	B	B1	C	CH	D	F	øG	øG1	L	øM	Weight [g]
W0950200025	20	24	12	9	13	14	M8	36	12.5	16	48	8	50
W0950200025	25	24	12	9	13	14	M8	36	12.5	16	48	8	50
W0950322025	32	28	14	10.5	15	17	M10x1.25	43	15	19	57	10	78
W0950322025	40	28	14	10.5	15	17	M10x1.25	43	15	19	57	10	78
W0950402025	50	32	16	12	17	19	M12x1.25	50	17.5	22	66	12	116
W0950402025	63	32	16	12	17	19	M12x1.25	50	17.5	22	66	12	116
W0950502025	80	42	21	15	23	22	M16x1.5	64	22	27	85	16	226
W0950502025	100	42	21	15	23	22	M16x1.5	64	22	27	85	16	226

Note: Individually packed

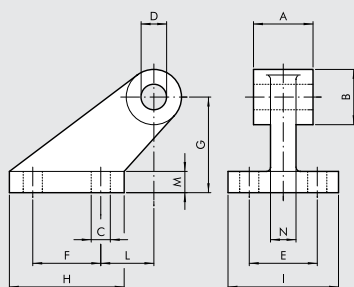
COMPENSATION JOINT - MODEL GA



Code	Ø	A	B	C	CH	øD	øD1	F	øG	ØG1	P	S	S1	Weight [g]
W0950326021	32	49	36	30	13	11	6.5	M10x1.25	39.5	17	6.5	12	10	172
W0950326021	40	49	36	30	13	11	6.5	M10x1.25	39.5	17	6.5	12	10	172
W0950406021	50	59	42	36	15	14	8.5	M12x1.25	44	19	8.5	15	13.5	286
W0950406021	63	59	42	36	15	14	8.5	M12x1.25	44	19	8.5	15	13.5	286
W0950506021	80	79	58	44	22	17	10.5	M16x1.5	59	26	10.5	20	15	628
W0950506021	100	79	58	44	22	17	10.5	M16x1.5	59	26	10.5	20	15	628

Note: Individually packed

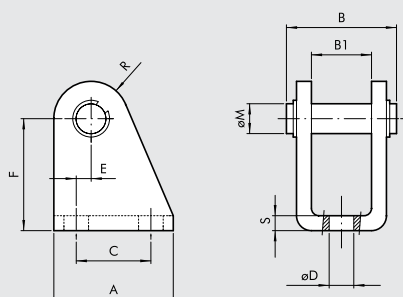
COUNTER-HINGE CETOP Ø 32 to 100



Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	Weight [g]
W0950322008	32	26	19	7	10	25	20	32	37	41	18	8	10	96
W0950402008	40	28	26	9	12	32	32	45	54	52	25	10	12	216
W0950502008	50	32	26	9	12	32	32	45	54	52	25	10	12	212
W0950632008	63	40	33	11	16	40	50	63	75	63	32	12	15	440
W0950802008	80	50	33	11	16	40	50	63	75	63	32	12	15	464
W0951002008	100	60	44	14	20	50	70	90	103	80	40	16	22	985

Note: Supplied complete with 4 screws, 4 washers

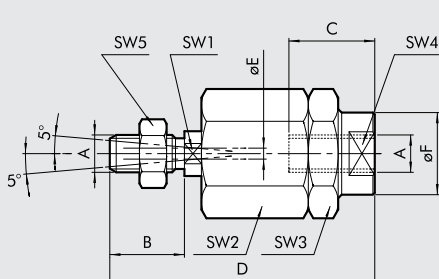
COUNTER-HINGE Ø 16 to 25 - MODEL BC



Code	Ø	A	B	B1	C	øD	E	F	øM	R	S	Weight [g]
W0950200005	20	32	30	16	20	6.5	4	30	8	10	4	78
W0950200005	25	32	30	16	20	6.5	4	30	8	10	4	78

Note: Supplied complete with 1 pin and and 2 snap rings

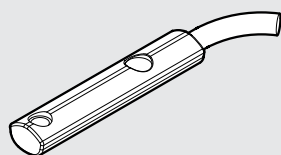
SELF ALIGNING ROD COUPLER - MODEL GA-K



Code	Ø	A	B	C	D	øE	øF	SW1	SW2	SW3	SW4	SW5	Weight [g]
W0950200030	20	M8	20	20	57	4	12.5	7	17	17	11	13	56
W0950200030	25	M8	20	20	57	4	12.5	7	17	17	11	13	56
W0950322030	32	M10x1.25	20	20	71	4	22	12	30	30	19	17	216
W0950322030	40	M10x1.25	20	20	71	4	22	12	30	30	19	17	216
W0950402030	50	M12x1.25	24	20	75	4	22	12	30	30	19	19	220
W0950402030	63	M12x1.25	24	20	75	4	22	12	30	30	19	19	220
W0950502030	80	M16x1.5	32	32	103	4	32	20	41	41	30	24	620
W0950502030	100	M16x1.5	32	32	103	4	32	20	41	41	30	24	620

Note: Individually packed

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE

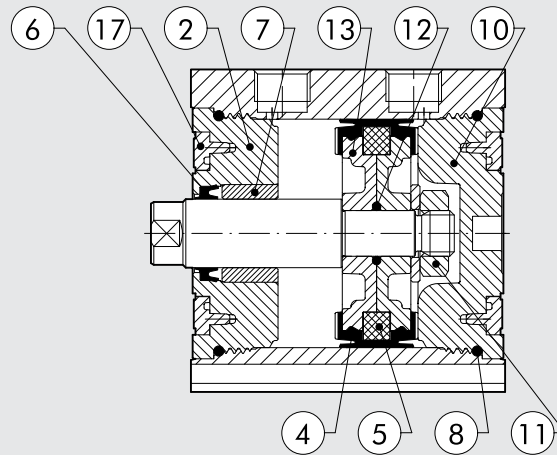


Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

* For use when standard sensors do not detect the magnet, e.g. near metal masses.
NB: For technical data see page 1-246

SPARE PARTS FOR ISO 21287 CYLINDER

COMPACT CYLINDERS ISO 21287 (POLYURETHANE)



Code	Bores	Type	Parts
009 ..L001	Ø 20, 25	Complete set of gaskets polyurethane	4 6 8
009 ..L001	Ø 32 to 63	Complete set of gaskets polyurethane	4 6 8 12 17
009 ..L001	Ø 80, 100	Complete set of gaskets polyurethane	4 6 8 12
009 ..L101	Ø 20, 25, 80, 100	Front head kit	2 6 7 8
009 ..L101	Ø 32 to 63	Front head kit	2 6 7 8 17
009 ..L201	Ø 20, 25, 80, 100	Rear head kit	8 10
009 ..L201	Ø 32 to 63	Rear head kit	8 10 17
009 ..7401	Ø 20, 25	Piston kit polyurethane	4 5 11
009 ..L401	Ø 32 to 63	Piston kit polyurethane	4 5 11 12 13 17
009 ..7401	Ø 80 to 100	Piston kit polyurethane	4 5 11 12 13
009 ..7501	Ø 20, 25, 80, 100	Magnet	5
009 ..L501	Ø 32 to 63	Magnet	5 17
009 ..L901	Ø 20, 25	Front + rear cylinder head + piston kit polyurethane	2 4 5 6 7 8 10 11
009 ..L901	Ø 32 to 63	Front + rear cylinder head + piston kit polyurethane	2 4 5 6 7 8 10 11 12 13 17
009 ..L901	Ø 80, 100	Front + rear cylinder head + piston kit polyurethane	2 4 5 6 7 8 10 11 12 13

NOTES

COMPACT CYLINDERS SERIES CMPC

Compact cylinder series CMPC available in numerous versions to meet a full range of requirements:

- With or without magnet
- Single-acting extended rod, retracted or through-rod
- Dual-acting non-rotating and dual-acting through-rod versions
- Tandem with two, three or four stages
- Multi-position with two and three stages
- Fixing centre distances to ISO 15552 from Ø 32 to Ø 100 and from Ø 20 to Ø 100 complying with French standard NFE 49-004-1 and 2 (UNITOP). Ø 12 and Ø 16 have centre distances compatible with trade cylinders.

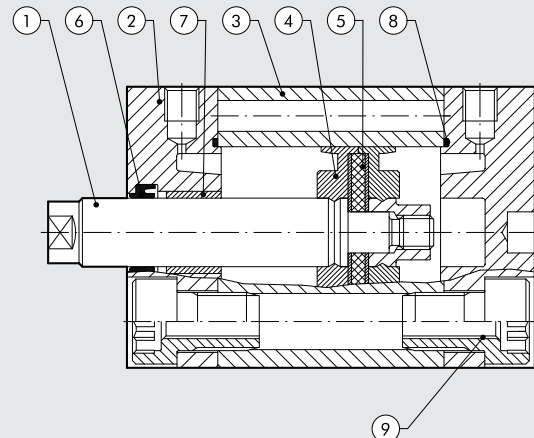
The special profile and outer heads locked onto the jacket by screws ensure optimal guiding of the cylinder and multiple fixing options with a wide range of mountings. To determine the position in the relevant cylinder slots, it is possible to mount retracting magnetic limit switches. Available also in a version having FKM/FPM gaskets (for high temperature) from Ø 20 to Ø 100.



TECHNICAL DATA		POLYURETHANE	FKM/FPM
Max operating pressure	bar		10
	MPa		1
	psi		145
Temperature range	°C	-10 to +60 (Ø 32 to 63)	-10 to +150 (non-magnetic cylinders)
		-10 to +60 (Ø 12 to 25; Ø 80; Ø 100)	
Fluid		Unlubricated air. Lubrication, if used, must be continuous	
Bores	mm	Ø 12; 16; interchangeable with similar products	
	mm	Ø 32; 40; 50; 63; 80; 100 with ISO 15552 fixing centre distances	
	mm	Ø 20; 25; 32; 40; 50; 63; 80; 100 with NFE 49-004-1 and 2 fixing centre distances	
Design		With profile, heads with screws	
Versions		Double-acting, Single-acting extended or retracted rod, Through-rod, Through-rod perforated, Single-acting through-rod, Through-rod non-rotating, no-stick slip*	
Magnet for sensors		All versions come complete with magnet. Supplied without magnet on request.	
Inrush pressure		Ø 12 to 32: 0.6 bar - Ø 40 to 100: 0.4 bar	
Forces generated at 6 bar thrust/retraction		See page 1-7	
Weights		See page 1-8	
Notes		For correct operation, it is advisable to use 50 µm filtered air	
		* Using for speeds lower than 0.2m/s, to prevent surging. For no-stick-slip versions use no-lubricated air only	

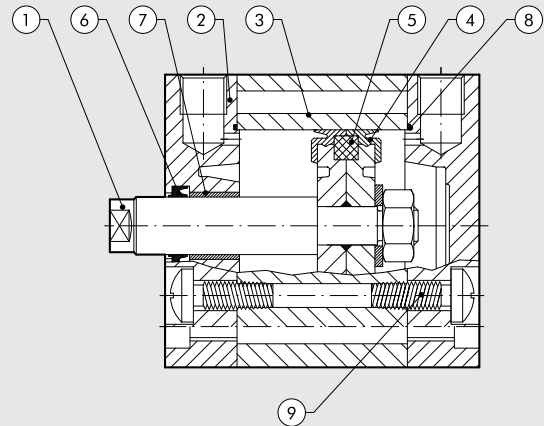
COMPONENTS Ø 12 to 25

- ① PISTON ROD: stainless steel, thick chromed
- ② HEAD: extruded anodised aluminium alloy
- ③ BARREL: drawn anodised and calibrated aluminium alloy
- ④ PISTON GASKET: polyurethane or FKM/FPM
- ⑤ MAGNET: neodymium-plastic
- ⑥ PISTON ROD GASKET: polyurethane or FKM/FPM
- ⑦ GUIDE BUSHING: steel strip with bronze and PTFE insert
- ⑧ STATIC O-RINGS: NBR or FKM/FPM
- ⑨ SECURING SCREWS: zinc-plated steel



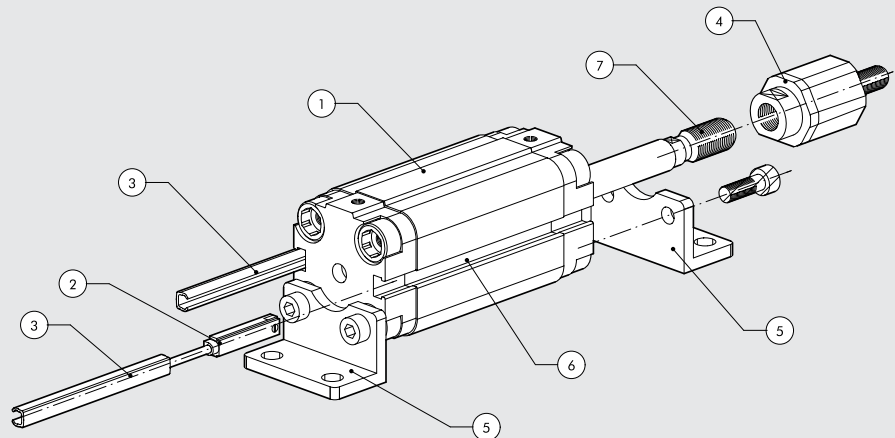
COMPONENTS Ø 32 to 100

- ① PISTON ROD: C45 steel or stainless steel, thick chromed
- ② HEAD: extruded anodised aluminium alloy
- ③ JACKET: drawn anodised and calibrated aluminium alloy
- ④ PISTON GASKET: polyurethane or FKM/FPM
- ⑤ MAGNET: Ø 12 to 32 neodymium-plastic
Ø 40 to 100 plastoferrite
- ⑥ PISTON ROD GASKET: polyurethane or FKM/FPM
- ⑦ GUIDE BUSHING: steel strip with bronze and PTFE insert
- ⑧ STATIC O-rings: NBR or FKM/FPM
- ⑨ SECURING SCREWS: zinc-plated steel

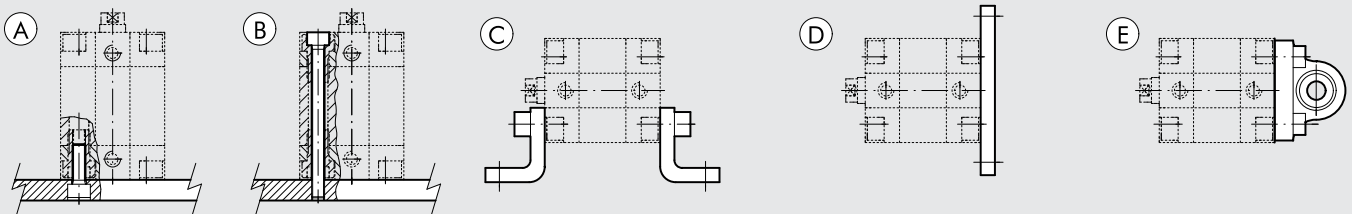


TECHNICAL DATA

- ① Compact cylinder available with two separate fixing centre distances
 - Ø 32 to 100 to ISO 15552
 - Ø 20 to 100 to NFE 49-004-1 and 2
- ② Pre-wired retracting sensor with or without connector
- ③ Plastic strip to keep out dirt and/or protect the sensor wire cod. W0950000160
- ④ Ball-and-socket joint code W095... 2030
- ⑤ Example of cylinder mounting with feet code W095... 6001. All mountings come complete with cylinder assembly screws
- ⑥ Sensor slot
- ⑦ Piston rod with male or female thread as required



COMPACT CYLINDER FIXING OPTIONS



- Ⓐ Fixing to structural work with a through screw, using the thread in the heads
- Ⓑ Direct fixing from above using long through screws or tie rods. Non-magnetic stainless steel must be used (e.g. AISI 304)
- Ⓒ Fixing with feet; the ordering code covers the supply of one foot and two screws for fixing to the cylinder
- Ⓓ Fixing with a flange mounted on the front or rear head; the ordering code covers the supply of a flange and four screws for fixing to the cylinder
- Ⓔ Fixing with articulated hinge to compensate for slight system misalignment and turn freely
The ordering code covers the supply of a hinge and four screws for fixing to the cylinder

FORCE OF SPRINGS IN SINGLE-ACTING CYLINDERS (THEORETICAL)

Bore	Ø 12	Ø 16	Ø 20	Ø 25	Ø 32	Ø 40	Ø 50	Ø 63	Ø 80	Ø 100
Min. load (N)	4.40	4.90	8.40	13.90	19.00	24.80	36.30	50.20	77.60	131.80
Max. load (N)	9.80	14.20	20.90	33.20	35.90	53.70	62.20	82.30	118.90	183.30

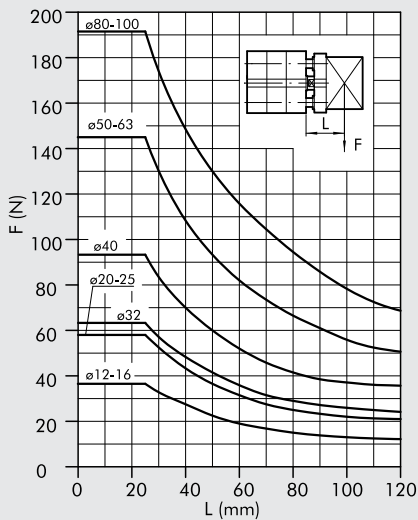
STROKES FOR COMPACT CYLINDERS

Standard stroke for single-acting cylinders	Standard stroke for other types	Max. recommended strokes for other types	Max. recommended strokes for non-rotating cylinders	Max recommended strokes for through-rod perforated
Ø 12 → 10 mm	Ø 12 to 16 → from 5 to 40 mm	Ø 12 to 25 → 200 mm	Ø 12 to 63 → 120 mm	Ø 20 to 40 → from 5 to 80 mm
Ø 16 to 100 → 25 mm	Ø 20 to 25 → from 5 to 50 mm	Ø 32 to 40 → 300 mm	Ø 80 to 100 → 150 mm	Ø 50 to 63 → from 5 to 100 mm
	Ø 32 to 100 → from 5 to 80 mm	Ø 50 to 63 → 400 mm		Ø 80 to 100 → from 5 to 160 mm
		Ø 80 to 100 → 500 mm		

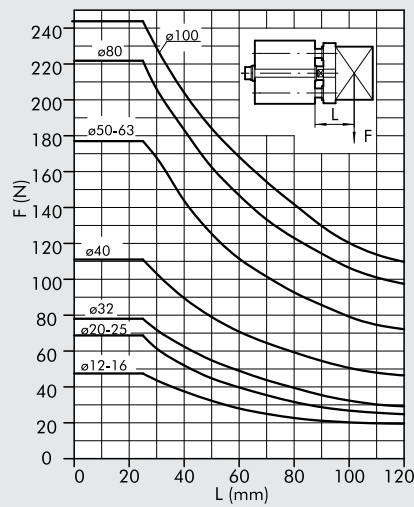
Maximum recommended strokes. Higher values can create operating problems

MAXIMUM LOADS FOR NON-ROTATING VERSION

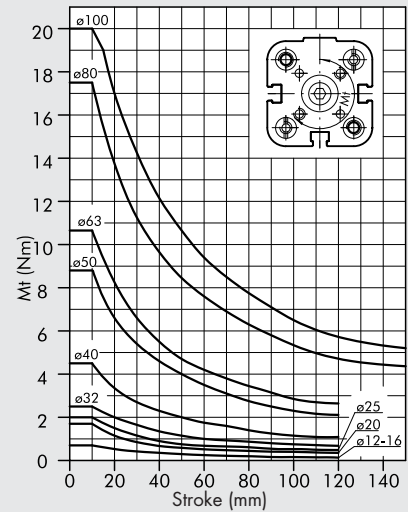
TRANSVERSAL FORCE FOR NON-ROTATING



TRANSVERSAL FORCE FOR NON-ROTATING THROUGH-ROD

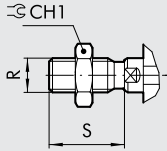


TORQUE DEPENDING ON STROKE



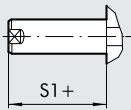
DIMENSIONS OF DOUBLE-ACTING Ø 12 to 25 AND SINGLE-ACTING Ø 12 to 25

SE-DE MALE PISTON ROD

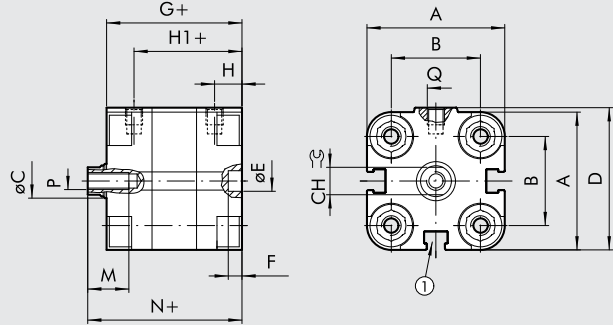
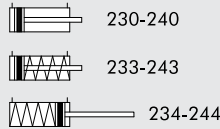
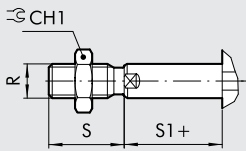


+ = ADD THE STROKE
1 = SENSOR SLOT

SE EXTENDED PISTON ROD



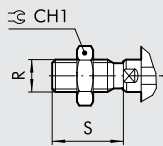
SE MALE EXTENDED PISTON ROD



Ø	A	B	ØC	CH	CH1	D	ØE ^{HP}	F	G	H	H1	L	M	N	O	ØO1	P	Q	R	S	S1	NORM
12	29	18	6	5	10	30	6	4	38	8	30	18.5	8	42.5	M4	3.2	M3	M5	M6	16	4.5	-
16	29	18	8	7	13	30	6	4	38	8	30	18.5	10	42.5	M4	3.2	M4	M5	M8	20	4.5	-
20	36.5	22	10	8	17	37.5	6	4	38	8	30	18.5	12	42.5	M5	4.2	M5	M5	M10x1.25	22	4.5	UNITOP
25	40.5	26	10	8	17	41.5	6	4	39.5	8	31.5	19	12	45	M5	4.2	M5	M5	M10x1.25	22	5.5	UNITOP

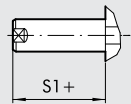
DIMENSIONS OF DOUBLE-ACTING Ø 32 to 100 AND SINGLE-ACTING Ø 32 to 100

SE-DE MALE PISTON ROD

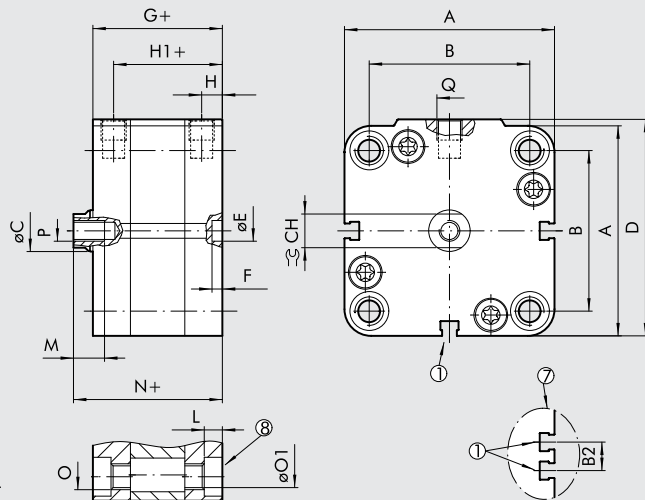
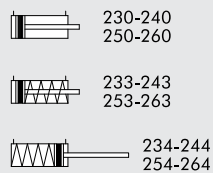
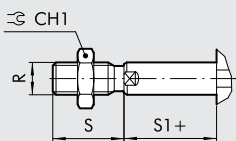


+ = ADD THE STROKE
1 = SENSOR SLOT
7 = ONLY FOR Ø 63 to Ø 100
8 = SEAT FOR DIN 7984 SCREWS

SE EXTENDED PISTON ROD



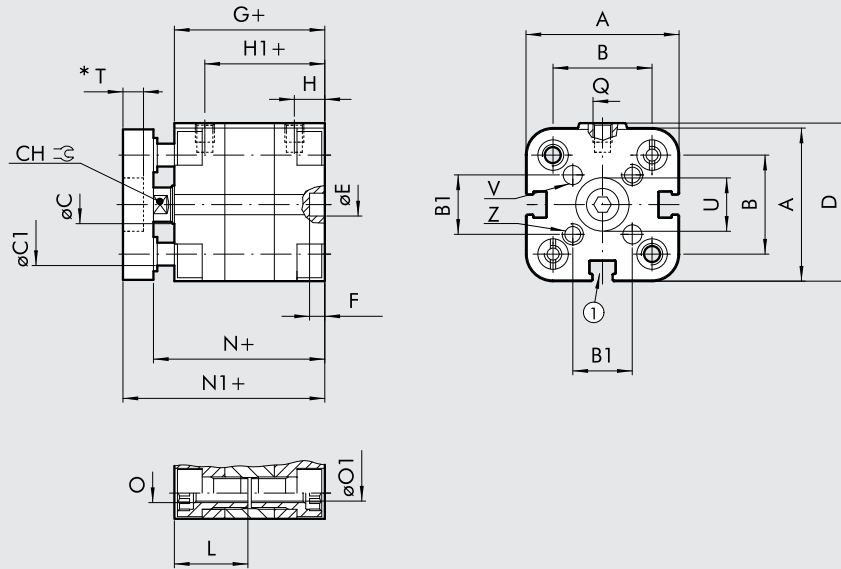
SE MALE EXTENDED PISTON ROD



Ø	A	B		ØC	CH	CH1	D	ØE ^{HP}	F	G	H	H1	L	M	N	O		ØO1		P	Q	R	S	S1	
		ISO	UNITOP													ISO	UNITOP								
32	47	32.5 ^{+0.1} _{-0.4}	32 ^{+0.4} _{-0.1}	-	12	10	17	48.5	6	4	44.5	7.5	37	4	14	50.5	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22	6
40	56	38	42	-	12	10	17	57.5	6	4	45.5	7.5	38	4.5	14	52	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22	6.5
50	67	46.5	50	-	16	13	19	69	6	4	45.5	7.5	38	4.5	16	53	M8	M8	6.2	6.2	M8	G1/8	M12x1.25	24	7.5
63	80	56.5	62	13	16	13	19	82	8	4	50	7.5	42.5	5.5	16	57.5	M8	M10	6.2	8.5	M8	G1/8	M12x1.25	24	7.5
80	102	72	82	17	20	17	24	105	8	4	56	8.5	47.5	5.5	20	64	M10	M10	8.5	8.5	M10	G1/8	M16x1.5	32	8
100	123	89	103	21	25	22	30	126	8	4	66.5	10.5	56	5.5	24	76.5	M10	M10	8.5	8.5	M12	G1/4	M20x1.5	40	10

DIMENSIONS OF NON-ROTATING Ø 12 to 25

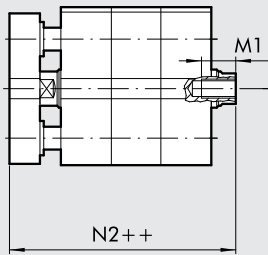
- + = ADD THE STROKE
- ++ = ADD TWICE THE STROKE
- * = SECTION WITH TOLERANCE
- 1 = SENSOR SLOT



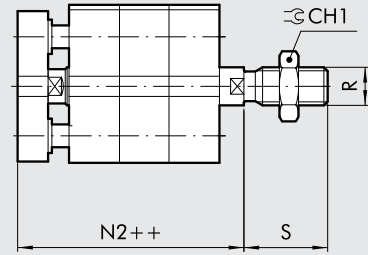
247

NON-ROTATING FEMALE THROUGH-ROD

NON-ROTATING MALE THROUGH-ROD



24A

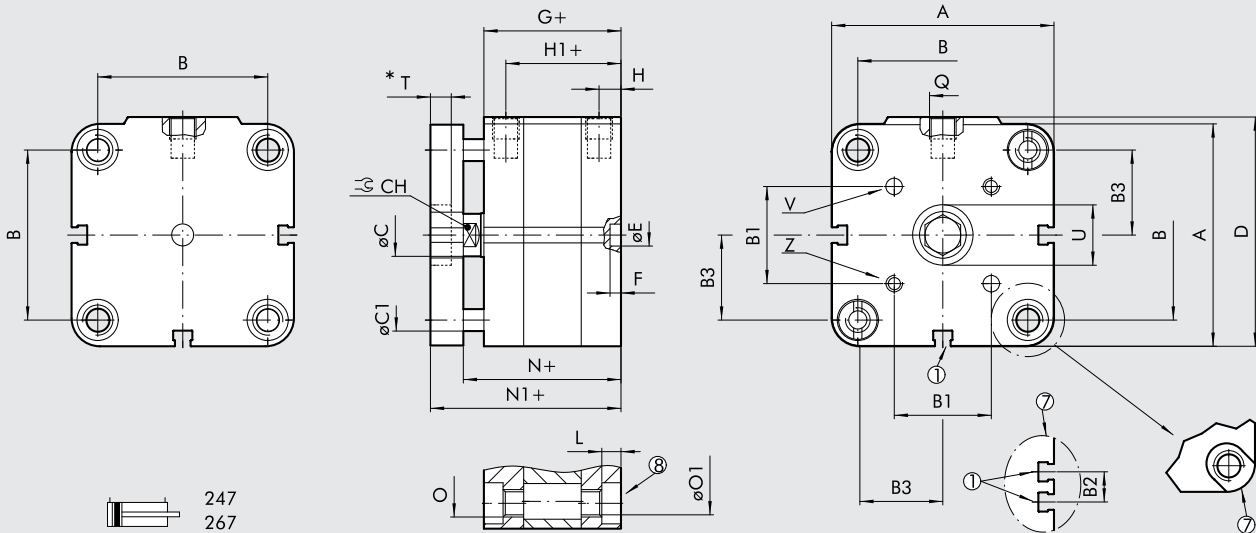


23A

Ø	A	B	B1	ØC	ØC1	CH	CH1	D	ØE ^{H9}	F	G	H	H1	L	M1 x strokes		N	N1	N2	O	ØO1	P	Q	R	S	T	ØU ^{H9}	ØV ^{H8}	Z	NORM
															< 5	≥ 5														
12	29	18	9.9	6	5	5	10	30	6	4	38	8	30	18.5	5	8	42.5	48.5	53	M4	3.2	M3	M5	M6	16	2	6	3	M3	-
16	29	18	9.9	8	5	7	13	30	6	4	38	8	30	18.5	5	10	42.5	48.5	53	M4	3.2	M4	M5	M8	20	2	8	3	M3	-
20	36.5	22	12	10	6	8	17	37.5	6	4	38	8	30	18.5	7	12	42.5	50.5	55	M5	4.2	M5	M5	M10x1.25	22	3.5	10	4	M4	UNITOP
25	40.5	26	15.6	10	6	8	17	41.5	6	4	39.5	8	31.5	19	7	12	45	53	58.5	M5	4.2	M5	M5	M10x1.25	22	4	14	5	M5	UNITOP

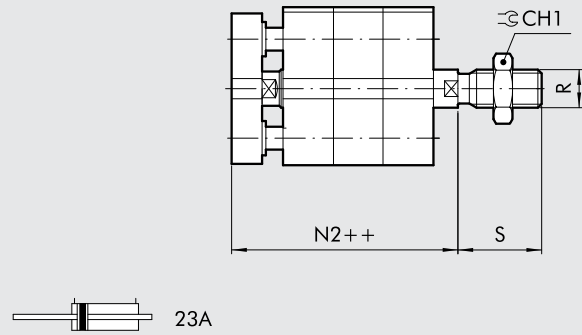
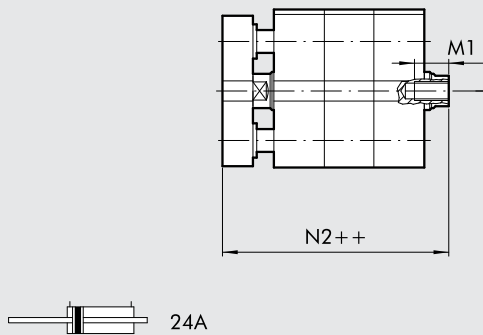
DIMENSIONS OF NON-ROTATING Ø 32 to 100

- + = ADD THE STROKE
- ++ = ADD TWICE THE STROKE
- * = SECTION WITH TOLERANCE
- 1 = SENSOR SLOT
- 7 = ONLY FOR Ø 63 TO Ø 100
- 8 = SLOT FOR DIN 7984 SCREWS



NON-ROTATING FEMALE THROUGH-ROD

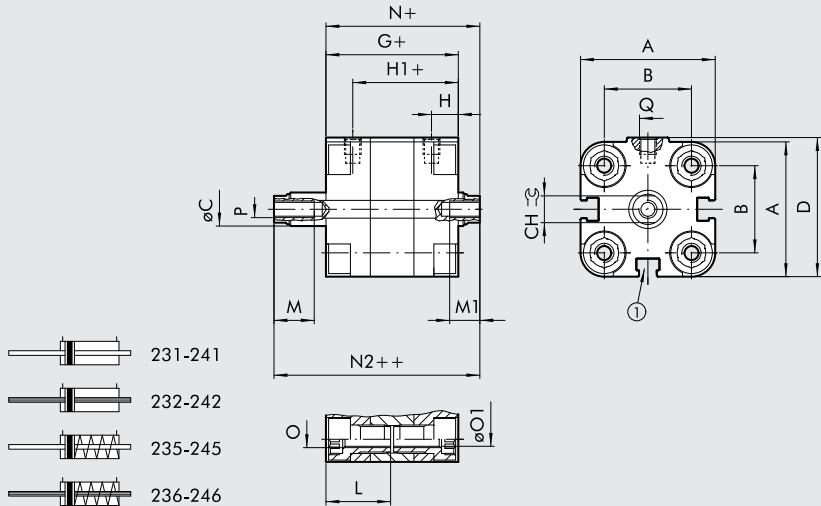
NON-ROTATING MALE THROUGH-ROD



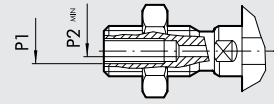
Ø	B																
	A	ISO	UNITOP	B1	B2	B3	ØC	ØC1	CH	CH1	D	ØE ^{H9}	F	G	H	H1	L
32	47	32.5 ^{+0.1} _{-0.4}	32 ^{+0.4} _{-0.1}	19.8	-	16.1	12	8	10	17	48.5	6	4	44.5	7.5	37	4
40	56	38	42	23.3	-	20	12	8	10	17	57.5	6	4	45.5	7.5	38	4.5
50	67	46.5	50	29.7	-	24	16	10	13	19	69	6	4	45.5	7.5	38	4.5
63	80	56.5	62	35.4	13	30	16	10	13	19	82	8	4	50	7.5	42.5	5.5
80	102	72	82	46	17	38.5	20	12	17	24	105	8	4	56	8.5	47.5	5.5
100	123	89	103	56.6	21	48	25	12	22	30	126	8	4	66.5	10.5	56	5.5
Ø	M1 x strokes		O				ØO1				Q	R	S	T	ØU ^{H9}	ØV ^{H8}	Z
	< 5	≥ 5	N	N1	N2	ISO	UNITOP	ISO	UNITOP	P							
32	14	9	50.5	60.5	66.5	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22	4.5	17	5	M5
40	14	9	52	62	68.5	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22	4.5	17	5	M5
50	16	11	53	65	72.5	M8	M8	6.2	6.2	M8	G1/8	M12x1.25	24	6	22	6	M6
63	16	11	57.5	69.5	77	M8	M10	6.2	8.5	M8	G1/8	M12x1.25	24	6	22	6	M6
80	20	15	64	78	86	M10	M10	8.5	8.5	M10	G1/8	M16x1.5	32	8	28	8	M8
100	24	19	76.5	90.5	100.5	M10	M10	8.5	8.5	M12	G1/4	M20x1.5	40	9	30	10	M10

DIMENSIONS OF THROUGH-ROD Ø 12 to 25

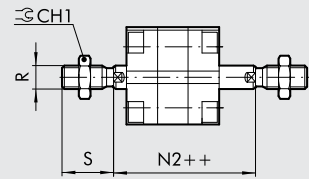
+ = ADD THE STROKE
 ++ = ADD TWICE THE STROKE
 1 = SENSOR SLOT



SE-DE MALE PERFORATED THROUGH-ROD



SE-DE MALE THROUGH-ROD

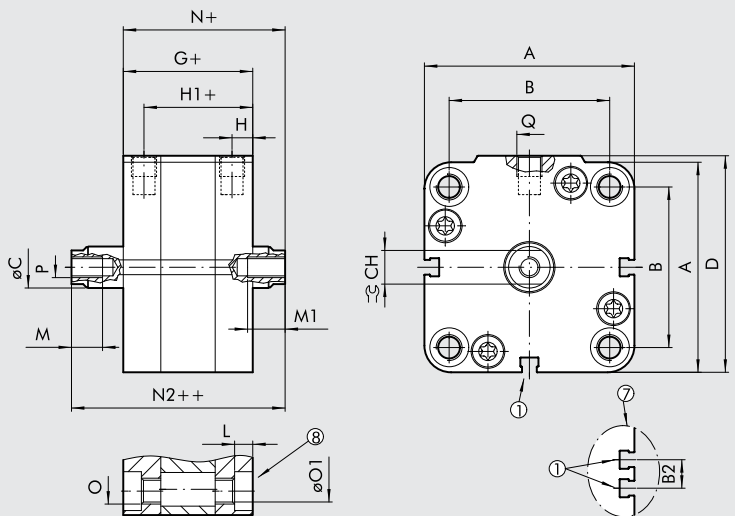


Ø	A	B	ØC	CH	CH1	D	G	H	H1	L	M	M1 x strokes			N2	O	ØO1	P	P2	Q	R	S	NORM
												< 5	≥ 5	N									
12	29	18	6	5	10	30	38	8	30	18.5	8	5	8	42.5	47	M4	3.2	M3	-	M5	M6	16	-
16	29	18	8	7	13	30	38	8	30	18.5	10	5	10	42.5	47	M4	3.2	M4	-	M5	M8	20	-
20	36.5	22	10	8	17	37.5	38	8	30	18.5	12	7	12	42.5	47	M5	4.2	M5	1.5	M5	M10x1.25	22	UNITOP
25	40.5	26	10	8	17	41.5	39.5	8	31.5	19	12	7	12	45	50.5	M5	4.2	M5	1.5	M5	M10x1.25	22	UNITOP

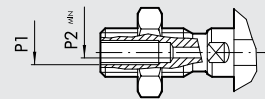
DIMENSIONS OF THROUGH-ROD Ø 32 to 100

+ = ADD THE STROKE
 ++ = ADD TWICE THE STROKE

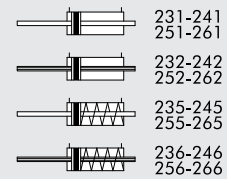
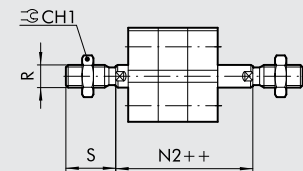
1 = SENSOR SLOT
 7 = ONLY FOR Ø 63 TO Ø 100
 8 = SLOT FOR DIN 7984 SCREWS



SE-DE MALE PERFORATED THROUGH-ROD



SE-DE MALE THROUGH-ROD



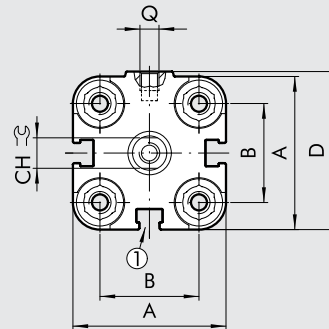
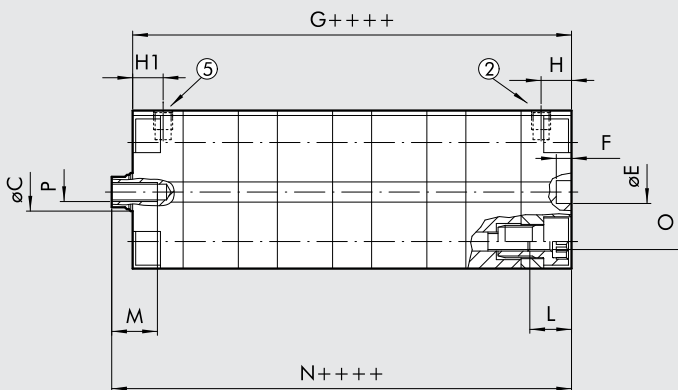
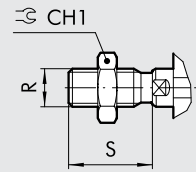
Ø	A	B		B2	ØC	CH	CH1	D	G	H	H1	L	M	M1 x strokes			N2	O	ØO1		P	P1	P2	Q	R	S	
		ISO	UNITOP											< 5	≥ 5	N			ISO	UNITOP							
32	47	32.5 ^{+0.1} _{-0.4}	32 ^{+0.4} _{-0.1}	-	12	10	17	48.5	44.5	7.5	37	4	14	14	9	50.5	56.5	M6	M6	5.2	5.2	M6	-	2.5	G1/8	M10x1.25	22
40	56	38	42	-	12	10	17	57.5	45.5	7.5	38	4.5	14	14	9	52	58.5	M6	M6	5.2	5.2	M6	-	2.5	G1/8	M10x1.25	22
50	67	46.5	50	-	16	13	19	69	45.5	7.5	38	4.5	16	16	11	53	60.5	M8	M8	6.2	6.2	M8	-	4	G1/8	M12x1.25	24
63	80	56.5	62	-	13	16	13	82	50	7.5	42	5.5	16	16	11	57.5	65	M8	M10	6.2	8.5	M8	-	4	G1/8	M12x1.25	24
80	102	72	82	-	17	20	17	105	56	8.5	47.5	5.5	20	20	15	64	72	M10	M10	8.5	8.5	M10	1/8	5	G1/8	M16x1.5	32
100	123	89	103	-	21	25	22	126	66.5	10.5	56	5.5	24	24	19	76.5	86.5	M10	M10	8.5	8.5	M12	1/4	6	G1/4	M20x1.5	40

DIMENSIONS OF TANDEM Ø 20 to 25 - 4-STAGES

++ = ADD TWICE THE STROKE
 +++ = ADD THREE TIMES THE STROKE
 ++++ = ADD FOUR TIMES THE STROKE

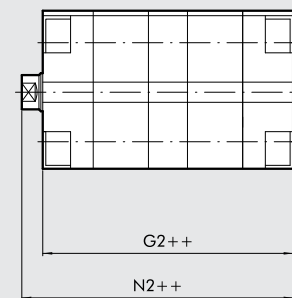
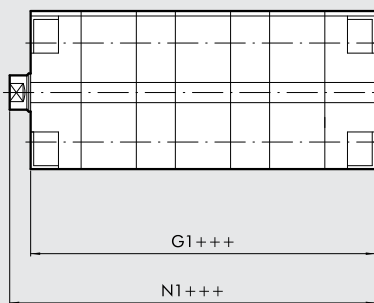
1 = SENSOR SLOT
 2 = CYLINDERS OUT
 5 = CYLINDERS IN

MALE PISTON ROD



TANDEM 3 STAGES

TANDEM 2 STAGES



Ø	A	B	ØC	CH	CH1	D	ØE ^{H9}	F	G	G1	G2	H	H1	L	M	N	N1	N2	O	P	Q	R	S	NORM
20	36.5	22	10	8	17	37.5	6	4	114.5	89	63.5	8	8	10	12	119	93.5	68	M5	M5	M5	M10x1.25	22	UNITOP
25	40.5	26	10	8	17	41.5	6	4	118	92	66	8	8	10	12	123.5	97.5	71.5	M5	M5	M5	M10x1.25	22	UNITOP

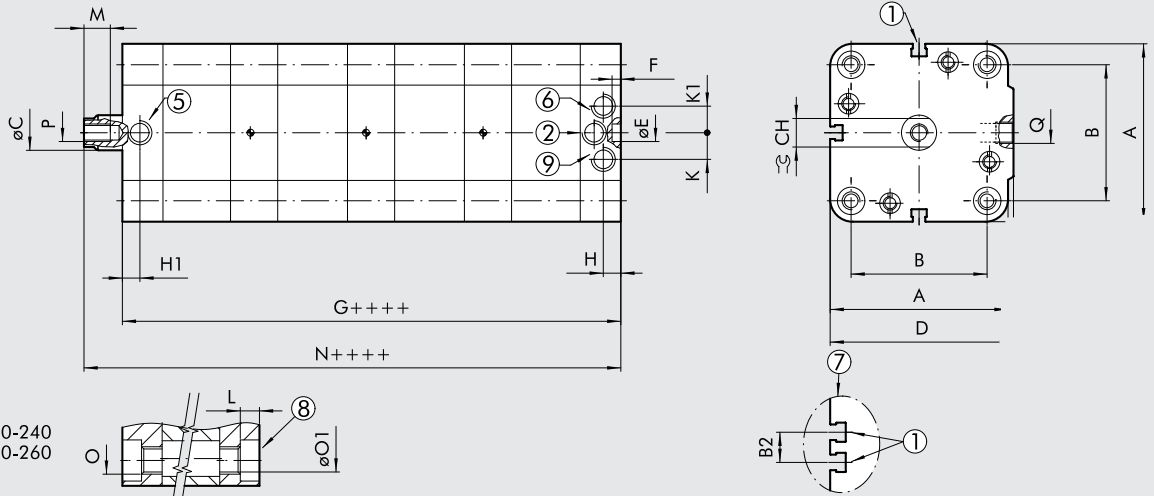
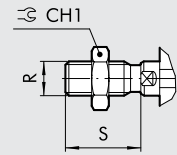
DIMENSIONS OF TANDEM Ø 32 to 100 - 4-STAGES

++ = ADD TWICE THE STROKE
 +++ = ADD THREE TIMES THE STROKE
 ++++ = ADD FOUR TIMES THE STROKE

2 = CYLINDERS OUT FOR Ø 32 to 63
 5 = CYLINDERS IN FOR Ø 32 to 63
 6 = CYLINDERS IN FOR Ø 80; 100
 9 = CYLINDERS OUT FOR Ø 80; 100

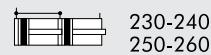
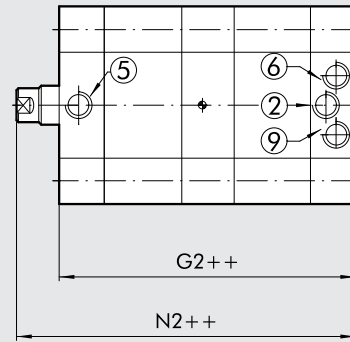
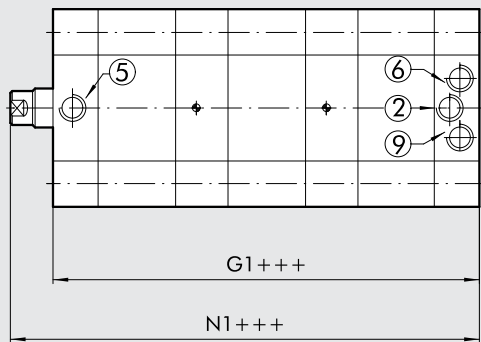
1 = SENSOR SLOT
 7 = ONLY FOR Ø 63 to 100
 8 = SLOT FOR DIN 7984 SCREWS

MALE PISTON ROD



TANDEM 3-STAGES

TANDEM 2-STAGES



Ø	A	B			ØC	CH	CH1	D	ØE ^{HP}	F	G	G1	G2	H	H1	K	K1
		ISO	UNITOP	B2													
32	47	32.5 ^{+0.1} _{-0.4}	32 ^{+0.4} _{-0.1}	-	12	10	17	48.5	6	4	154	117.5	81	7.5	7.5	-	-
40	56	38	42	-	12	10	17	57.5	6	4	162.5	123.5	84.5	7.5	7.5	-	-
50	67	46.5	50	-	16	13	19	69	6	4	163.5	124	85	7.5	7.5	-	-
63	80	56.5	62	13	16	13	19	82	8	4	182	138	94	7.5	7.5	-	-
80	102	72	82	17	20	17	24	105	8	4	204.5	155	105.5	8.5	-	10.5	10.5
100	123	89	103	21	25	22	30	126	8	4	243	184	125.5	10.5	-	14.5	14.5

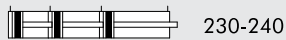
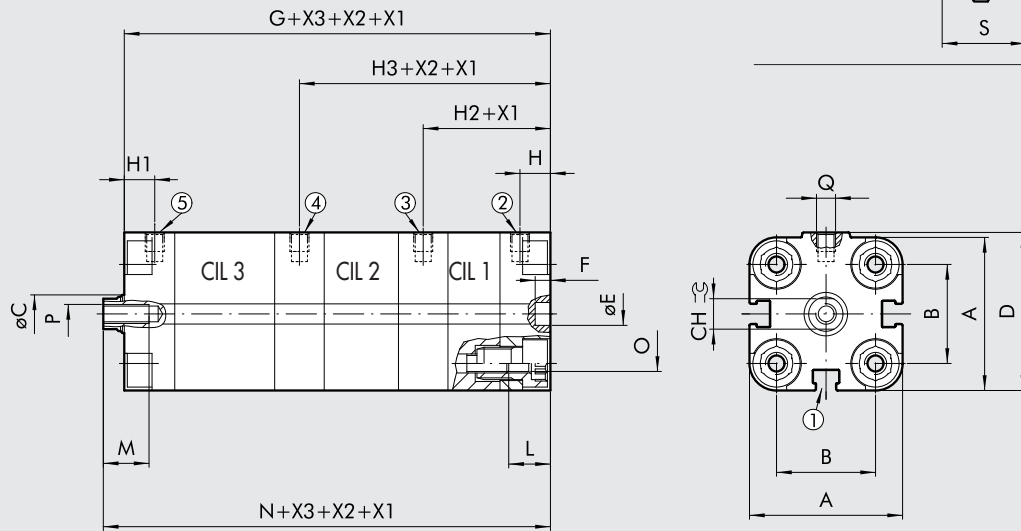
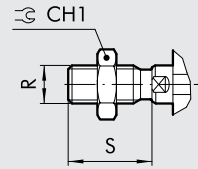
Ø	L	M	N	N1	N2	O		ØO1		P	Q	R	S
						ISO	UNITOP	ISO	UNITOP				
32	4	14	160	123.5	87	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22
40	4.5	14	169	130	91	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22
50	4.5	16	171	131.5	92.5	M8	M8	6.2	6.2	M8	G1/8	M12x1.25	24
63	5.5	16	189.5	145.5	101.5	M8	M10	6.2	8.5	M8	G1/8	M12x1.25	24
80	5.5	20	212.5	163	113.5	M10	M10	8.5	8.5	M10	G1/8	M16x1.5	32
100	5.5	24	253	194	135.5	M10	M10	8.5	8.5	M12	G1/4	M20x1.5	40

DIMENSIONS OF MULTI-POSITION Ø 12 to 25 - 3-STAGES

- 1 = SENSOR SLOT
- 2 = CYLINDER 1 OUT
- 3 = CYLINDER 2 OUT
- 4 = CYLINDER 3 OUT
- 5 = CYLINDERS 1-2-3 IN

- X1 = CYLINDER 1 STROKE
- X2 = CYLINDER 2 STROKE
- X3 = CYLINDER 3 STROKE

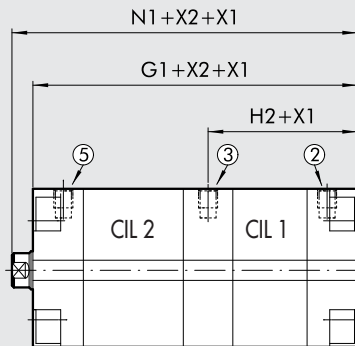
MALE PISTON ROD



MULTI-POSITION 2-STAGES

- 2 = CYLINDER 1 OUT
- 3 = CYLINDER 2 OUT
- 5 = CYLINDERS 1-2 IN

- X1 = CYLINDER 1 STROKE
- X2 = CYLINDER 2 STROKE



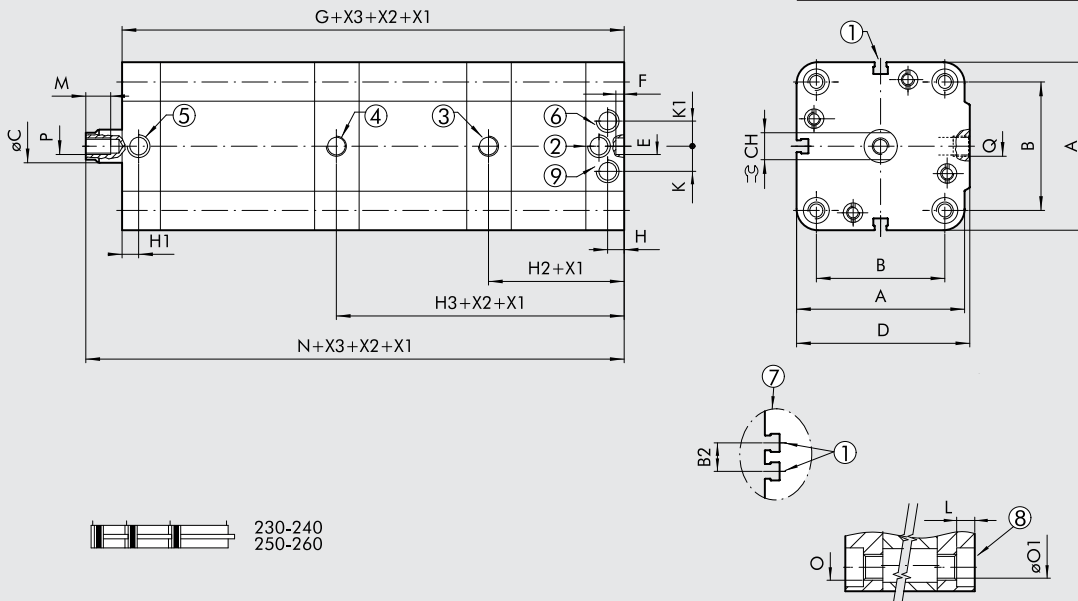
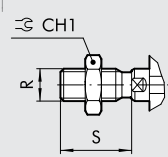
Ø	A	B	ØC	CH	CH1	D	ØE ^{HP}	F	G	G1	H	H1	H2	H3	L	M	N	N1	O	P	Q	R	S	NORM	
12	29	18	6	5	10	30	6	4	89	63.5	8	8	33.5	59	10	8	93.5	68	M4	M3	M5	M6	16	-	
16	29	18	8	7	13	30	6	4	89	63.5	8	8	33.5	59	10	10	93.5	68	M4	M4	M5	M8	20	-	
20	36.5	22	10	8	17	37.5	6	4	89	63.5	8	8	33.5	59	10	12	93.5	68	M5	M5	M5	M5	M10x1.25	22	UNITOP
25	40.5	26	10	8	17	41.5	6	4	92	66	8	8	34	60	10	12	97.5	71.5	M5	M5	M5	M5	M10x1.25	22	UNITOP

DIMENSIONS OF MULTI-POSITION Ø 32 to 100 - 3-STAGES

- 1 = SENSOR SLOT
- 2 = CYLINDER 1 OUT FOR Ø 32 to 63
- 3 = CYLINDER 2 OUT FOR Ø 32 to 100
- 4 = CYLINDER 3 OUT FOR Ø 32 to 100
- 5 = CYLINDER 1-2-3 IN FOR Ø 32 to 63
- 6 = CYLINDER 1-2-3 IN FOR Ø 80 to 100
- 7 = ONLY FOR Ø 63 to 100
- 8 = SLOT FOR DIN 7984 SCREWS
- 9 = CYLINDER 1 OUT FOR Ø 80 to 100

- X1 = CYLINDER 1 STROKE
- X2 = CYLINDER 2 STROKE
- X3 = CYLINDER 3 STROKE

MALE PISTON ROD

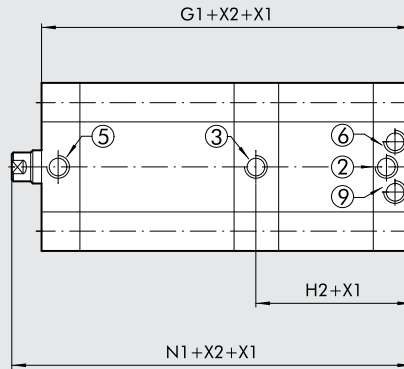


230-240
250-260

MULTI-POSITION 2-STAGES

- 2 = CYLINDER 1 OUT FOR Ø 32 to 63
- 3 = CYLINDER 2 OUT FOR Ø 32 to 100
- 5 = CYLINDER 1-2 IN FOR Ø 32 to 63
- 6 = CYLINDER 1-2 IN FOR Ø 80 to 100
- 9 = CYLINDER 1 OUT FOR Ø 80 to 100

- X1 = CYLINDER 1 STROKE
- X2 = CYLINDER 2 STROKE



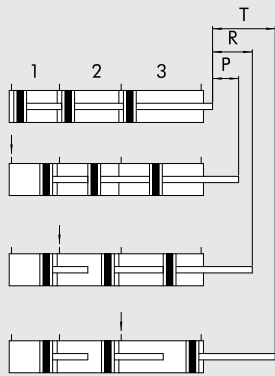
230-240
250-260

Ø	A	B			ØC	CH	CH1	D	ØE ^{H9}	F	G	G1	H	H1	H2	H3
		ISO	UNITOP	B2												
32	47	32.5 ^{+0.1} _{-0.4}	32 ^{+0.4} _{-0.1}	-	12	10	17	48.5	6	4	117.5	81	7.5	7.5	44	80.5
40	56	38	42	-	12	10	17	57.5	6	4	123.5	84.5	7.5	7.5	46.5	85.5
50	67	46.5	50	-	16	13	19	69	6	4	124	85	7.5	7.5	47	86
63	80	56.5	62	13	16	13	19	82	8	4	138	94	7.5	7.5	51.5	95.5
80	102	72	82	17	20	17	24	105	8	4	155	105.5	8.5	-	58	107.5
100	123	89	103	21	25	22	30	126	8	4	184	125.5	10.5	-	69.3	128

Ø	K	K1	L	M	N	N1	O		ØO1		P	Q	R	S
							ISO	UNITOP	ISO	UNITOP				
32	-	-	4	14	123.5	87	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22
40	-	-	4.5	14	130	91	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22
50	-	-	4.5	16	131.5	92.5	M8	M8	6.2	6.2	M8	G1/8	M12x1.25	24
63	-	-	5.5	16	145.5	101.5	M8	M10	6.2	8.5	M8	G1/8	M12x1.25	24
80	10.5	10.5	5.5	20	163	113.5	M10	M10	8.5	8.5	M10	G1/8	M16x1.5	32
100	14.5	14.5	5.5	24	194	135.5	M10	M10	8.5	8.5	M12	G1/4	M20x1.5	40

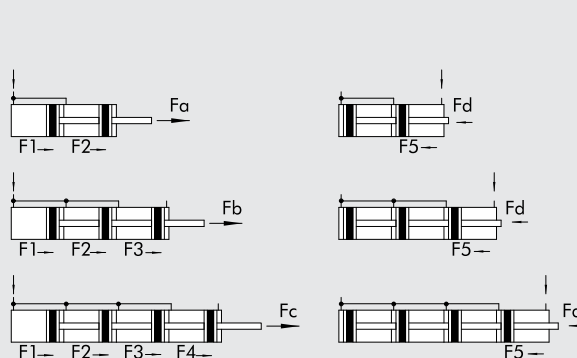
FUNCTIONAL DIAGRAMS

MULTI-POSITION



1 = STAGE 1
2 = STAGE 2
3 = STAGE 3

TANDEM



LEGENDA

P = Stage 1 stroke
R = Stage 2 stroke
T = Stage 3 stroke

$F_a = F_1 + F_2$ [N]
 $F_b = F_1 + F_2 + F_3$ [N]
 $F_c = F_1 + F_2 + F_3 + F_4$ [N]
 $F_d = F_5$ [N]

KEY TO CODE

CYL	2 3	1	0	2 5	0	0 5 0	X	P
	TYPE			BORE		STROKE **	MATERIAL	GASKETS
	23 Compact cylinder centre distances to UNITOP male piston rod	0 Double-acting 1 Double-acting through-rod + 2 Double-acting through-rod perforated ● 3 Single-acting retracting piston rod ● 4 Single-acting extended piston rod ● 5 Single-acting through-rod	0 Magnetic <input type="checkbox"/> S Non-magnetic ▲ G No stick slip	12 16 20 25 32 40 50 63 80 ◆ 100	0 Standard + A 2-stage tandem + B 3-stage tandem + C 4-stage tandem		* C C45 piston rod chromium-plated ▷ X Stainless steel piston rod and nut ◁ A C45 chromed rod, aluminium piston ○ Z Stainless steel piston rod and nut aluminium piston	P Polyurethane gaskets ▶ + V FKM/FPM gaskets
	24 Compact cylinder centre distances to UNITOP female piston rod	● 4 Single-acting extended piston rod ● 5 Single-acting through-rod						
	■ 25 Compact cylinder centre distances to ISO male piston rod	● + 6 Single-acting through-rod piston rod perforated ▼ 7 Double-acting non-rotating						
	■ 26 Compact cylinder centre distances to ISO female piston rod	A Double-acting through-rod non-rotating						

** For the maximum suppliabe stroke, see page 1-74

- ◆ In the code of cylinder with letter in fourth position Ø 100 becomes A1
- Codes only for cylinders Ø 32 to 100
- Can also be used as double-acting with spring return
- + Available from Ø 20
- ▼ For versions 24 and 26 only (female piston rod)
- ▲ For Ø 12 to 25 the standard version (0 or S) it's already no stick slip
For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only
- ▶ Only for standard double acting and standard through rod double acting version
- Compulsory for Ø 20 and Ø 25 version Z
- * Only for Ø 32 to 63 P version (Polyurethane gaskets)
- ▷ Only for Ø 12 to 63 P version (Polyurethane gaskets)
- ◁ Only for Ø 32 to 100 V version (FKM/FPM gaskets) and for Ø 80 and 100 P version (Polyurethane gaskets)
- Only for Ø 20 to 100 V version (FKM/FPM gaskets) and for Ø 80 and 100 P version (Polyurethane gaskets)

- The ordering codes for a Multi-position cylinder is a combination of several codes, each describing a stage.

Coding example for a UNITOP multiposition cylinder
2 stages Ø 20 strokes 40 + 10 (total stroke 50 mm) male rod:
1° STADIO (P) : 230020P040XP +
2° STADIO (R) : 230020R050XP

Coding example for a UNITOP multiposition cylinder
3 stages Ø 20 strokes 15 + 30 + 40 (total stroke 85 mm) male rod:
1° STADIO (P) : 230025P015XP +
2° STADIO (R) : 230025R045XP +
3° STADIO (T) : 230025T085XP

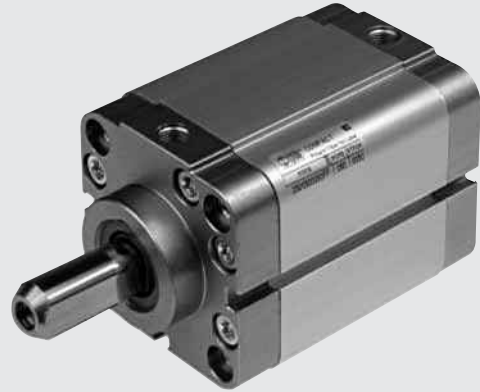
COMPACT CYLINDERS SERIES CMPC TWO-FLAT

This version is used to keep at an angle the objects fixed onto the piston rod and to apply torques within the specified limits. The piston rod in two-flat cylinders has two opposing longitudinal surfaces and is made entirely of stainless steel. The front head of the cylinder includes a sintered bronze bush that engages the piston rod and prevents it from rotating. A special polyurethane gasket guarantees air-tightness and dirt removal. This technical solution is more airtight and reliable than square or hexagonal piston rods.

These compact cylinders come in the following versions:

- with or without a magnet
- dual-acting, single piston rod
- dual-acting, through piston rod – one piston rod is two-flat, and the other is cylindrical
- fixing centre distances compatible with ,ISO 15552 (former ISO 6431), or with French standard NFE 49-004-1 and 2 (UNITOP).

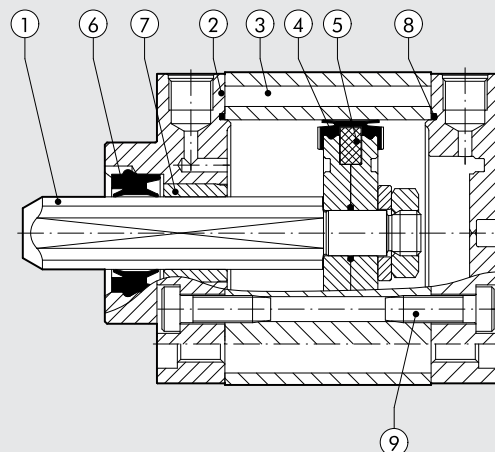
The special profile and the fact that the external heads are screwed onto the liner give an excellent guide. Numerous fixing options are available thanks to wide range of anchor points. Retractable magnetic limit switches can be mounted in slots in the cylinder to measure the position.



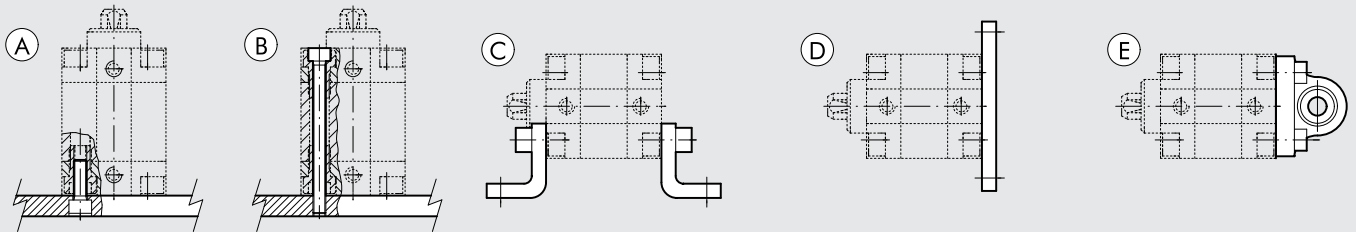
TECHNICAL DATA		POLYURETHANE
Max operating pressure	bar	10
	MPa	1
	psi	145
Temperature range	°C	-10 to +80 (non-magnetic cylinder) -10 to +70 (magnetic cylinder)
Fluid		Unlubricated air. Lubrication, if used, must be continuous
Bores	mm	32; 40; 50; 63; 80 with ISO 15552 fixing centre distances
	mm	32; 40; 50; 63; 80 with NFE 49-004-1 and 2 fixing centre distances
Design		With profile, heads with screws
Maximum strokes †	mm	Ø 32-40 = 300; Ø 50-63 = 400; Ø 80 = 500
Versions		Double-acting, Double-acting Through-rod
Magnet for sensors		All versions come complete with magnet. Supplied without magnet on request
Inrush pressure	bar	Ø 32 = 0.8; from Ø 40 to 80 = 0.6
Max torque on piston rod	Nm	Ø 32 and 40 = 0.2; Ø 50 and 63 = 0.4; Ø 80 = 1
Maximum rotation on the rod	degrees	Ø 32 and 40 = 0.70°; Ø 50 and 63 = 0.75°; Ø 80 = 0.65°
Weights		See page 1-9
† Maximum recommended strokes. Higher values can create operating problems For no-stick slip versions, are no-lubricated air only		

COMPONENTS Ø 12 to 25

- 1 PISTON ROD: C45 steel or stainless steel, two-flat
- 2 HEAD: extruded anodised aluminium alloy
- 3 JACKET: drawn anodised and calibrated aluminium alloy
- 4 PISTON GASKET: polyurethane
- 5 MAGNET: Ø 32 neodymium - Ø 40 to 100 plastoferrite
- 6 PISTON ROD GASKET TWO-FLAT: polyurethane
- 7 GUIDE BUSHING: steel strip with bronze
- 8 STATIC O-rings: NBR
- 9 SECURING SCREWS: zinc-plated steel



FIXING OPTIONS



- Ⓐ Fixing to structural work with a through screw, using the thread in the heads
- Ⓑ Direct fixing from above using long through screws or tie rods. Non-magnetic stainless steel must be used (e.g. AISI 304)
- Ⓒ Fixing with feet; the ordering code covers the supply of one foot and two screws for fixing to the cylinder.
- Ⓓ Fixing with a flange mounted on the front or rear head; the ordering code covers the supply of a flange and four screws for fixing to the cylinder
- Ⓔ Fixing with articulated hinge to compensate for slight system misalignment and turn freely
The ordering code covers the supply of a hinge and four screws for fixing to the cylinder

KEY TO CODE

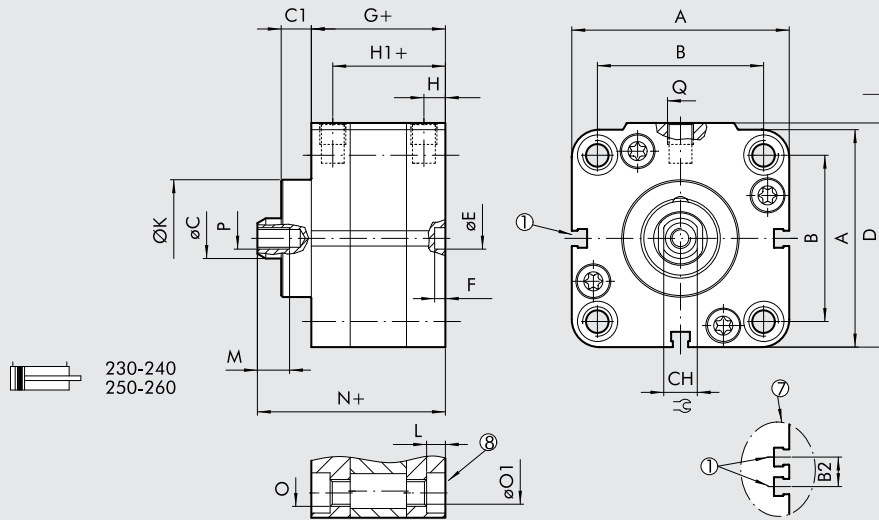
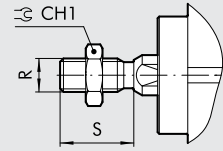
CYL	2 3 TYPE	1	0	3 2 BORE	0	0 5 0 STROKE *	F MATERIAL	P GASKETS
	23 Compact cylinder centre distances to UNITOP male piston rod	0 Double-acting 1 Double-acting through-rod	0 Magnetic S Non-magnetic G No stick slip	32 40 50 63 80	0 Standard		F "TWO-FLAT" piston rod AISI 303 stainless steel	P Polyurethane gaskets
	24 Compact cylinder centre distances to UNITOP female piston rod							
	25 Compact cylinder centre distances to ISO male piston rod							
	26 Compact cylinder centre distances to ISO female piston rod							

* For the maximum suppliable strokes, look at the technical data

DIMENSIONS OF DOUBLE-ACTING

+ = ADD THE STROKE
 1 = SENSOR SLOT
 7 = ONLY FOR Ø 63 to 100
 8 = SEAT FOR DIN 7984 SCREWS

DE MALE PISTON ROD



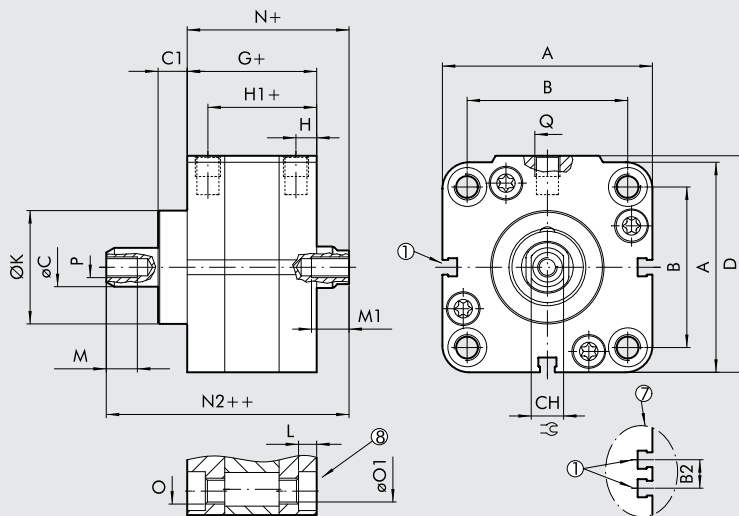
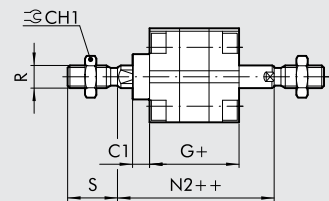
Ø	A	B											O		ØO1		P	Q	R	S						
		ISO	UNITOP	B2	ØC	C1	CH	CH1	D	ØE ^{M7}	F	G	H	H1	ØK	L					M	N	ISO	UNITOP	ISO	UNITOP
32	47	32.5 ^{+0.1} _{-0.4}	32 ^{+0.4} _{-0.1}	-	12	9	10	17	48.5	6	4	44.5	7.5	37	30	4	14	59.5	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22
40	56	38	42	-	12	9	10	17	57.5	6	4	45.5	7.5	38	35	4.5	14	61	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22
50	67	46.5	50	-	16	11.5	13	19	69	6	4	45.5	7.5	38	40	4.5	16	64.5	M8	M8	6.2	6.2	M8	G1/8	M12x1.25	24
63	80	56.5	62	13	16	11.5	13	19	82	8	4	50	7.5	42.5	45	5.5	16	69	M8	M10	6.2	8.5	M8	G1/8	M12x1.25	24
80	102	72	82	17	20	13	17	24	105	8	4	56	8.5	47.5	45	5.5	20	77	M10	M10	8.5	8.5	M10	G1/8	M16x1.5	32

DIMENSIONS OF THROUGH-ROD

+ = ADD THE STROKE
 ++ = ADD TWICE THE STROKE

1 = SENSOR SLOT
 7 = ONLY FOR Ø 63 TO Ø 80
 8 = SLOT FOR DIN 7984 SCREWS

DE MALE PISTON ROD



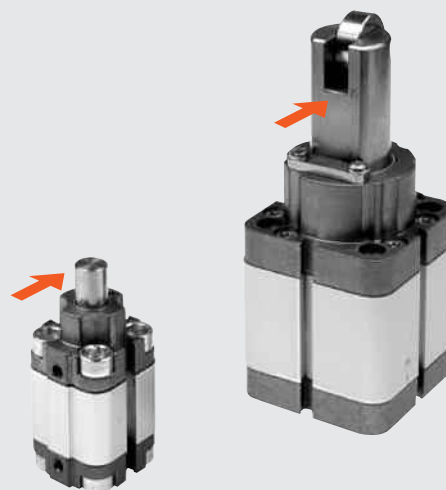
Ø	A	B											M1 x strokes		O		ØO1		P	Q	R	S					
		ISO	UNITOP	B2	ØC	C1	CH	CH1	D	G	H	H1	ØK	L	M	N	N2	ISO					UNITOP	ISO	UNITOP		
32	47	32.5 ^{+0.1} _{-0.4}	32 ^{+0.4} _{-0.1}	-	12	9	10	17	48.5	44.5	7.5	37	30	4	14	14	9	50.5	65.5	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22
40	56	38	42	-	12	9	10	17	57.5	45.5	7.5	38	35	4.5	14	14	9	52	67.5	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22
50	67	46.5	50	-	16	11.5	13	19	69	45.5	7.5	38	40	4.5	16	16	11	53	72	M8	M8	6.2	6.2	M8	G1/8	M12x1.25	24
63	80	56.5	62	13	16	11.5	13	19	82	50	7.5	42	45	5.5	16	16	11	57.5	76.5	M8	M10	6.2	8.5	M8	G1/8	M12x1.25	24
80	102	72	82	17	20	13	17	24	105	56	8.5	47.5	45	5.5	20	20	15	64	85	M10	M10	8.5	8.5	M10	G1/8	M16x1.5	32


COMPACT STOPPER CYLINDER

Compact stopper cylinders designed for stopping moving parts or chucks.

- With or without magnet execution
- Single-acting, oversize extended piston rod
- Can be also used as double-acting with spring return
- Fixing centre distances to ISO 15552 for $\varnothing 32$, $\varnothing 50$, $\varnothing 80$ and French standard NFE 49-004-1 and 2 (UNITOP).

In the relevant cylinder slots, it is possible to mount retracting magnetic sensor.

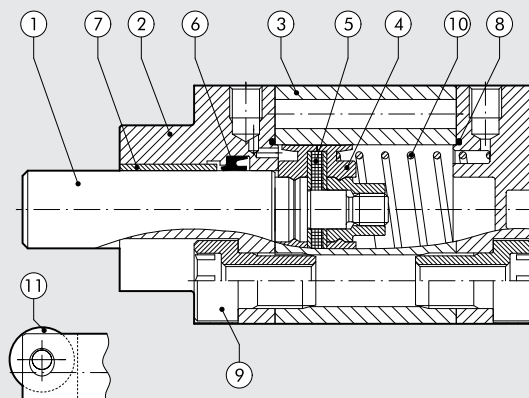


 Chuck impact direction

TECHNICAL DATA	
Max operating pressure	bar 10 MPa 1 psi 145
Temperature range	$^{\circ}\text{C}$ -10 to +80
Fluid	Unlubricated air. Lubrication, if used, must be continuous
Stroke bore	mm $\varnothing 20 \times 15$; $\varnothing 32 \times 20$; $\varnothing 50 \times 30$; $\varnothing 80 \times 30$; $\varnothing 80 \times 40$ a with NFE 49-004-1 and 2 fixing centre distances (UNITOP) mm $\varnothing 32 \times 20$; $\varnothing 50 \times 30$; $\varnothing 80 \times 30$; $\varnothing 80 \times 40$ with ISO 15552 fixing centre distances
Design	With profile, heads with screws
Versions	Single-acting extended rod, Can be also used as double-acting with spring return
Magnet for sensors	All versions come complete with magnet. Supplied without magnet on request
Inrush pressure	bar $\varnothing 20$: 1.2; $\varnothing 32$ -50: 1; $\varnothing 80$: 0.5
Weights	See page 1-9
Notes	For correct operation, it is advisable to use 50 μm filtered air

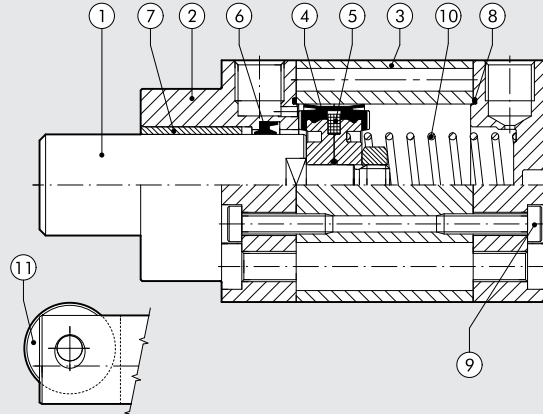
COMPONENTS $\varnothing 20$

- ① PISTON ROD: Stainless steel, thick chromed
- ② HEAD: extruded anodised aluminium alloy
- ③ BARREL: drawn anodised and calibrated aluminium alloy
- ④ PISTON GASKET: polyurethane
- ⑤ MAGNET: neodymium-plastic
- ⑥ PISTON ROD GASKET: polyurethane
- ⑦ GUIDE BUSHING: steel strip with bronze and PTFE insert
- ⑧ STATIC O-RINGS: NBR
- ⑨ SECURING SCREWS: zinc-plated steel
- ⑩ RETURN SPRING: spring stainless steel
- ⑪ WHEEL: zinc-plated steel



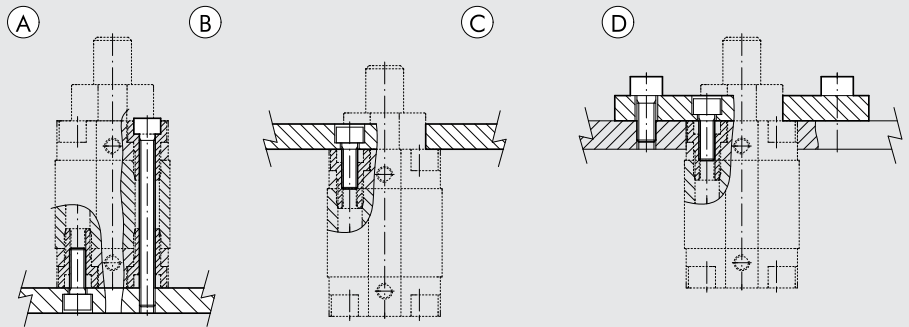
COMPONENTS Ø 32, Ø 50, Ø 80

- ① PISTON ROD: Stainless steel, thick chromed
- ② HEAD: extruded anodised aluminium alloy
- ③ JACKET: drawn anodised and calibrated aluminium alloy
- ④ PISTON GASKET: polyurethane
- ⑤ MAGNET: Ø 32 neodymium-plastic - Ø 50 to 80 plastoferrite
- ⑥ PISTON ROD GASKET: polyurethane
- ⑦ GUIDE BUSHING: steel strip with bronze and PTFE insert.
- ⑧ STATIC O-rings: NBR
- ⑨ SECURING SCREWS: zinc-plated steel
- ⑩ RETURN SPRING: spring stainless steel
- ⑪ WHEEL: zinc-plated steel



COMPACT STOPPER CYLINDER FIXING OPTIONS

- Ⓐ Fixing with screws, using the thread in the rear heads
- Ⓑ Direct fixing from above using long through screws or tie rods. Non-magnetic stainless steel must be used (e.g. AISI 304)
- Ⓒ Fixing with screws, using the thread in the front heads.
- Ⓓ Fixing using flange fixed onto the cylinder.

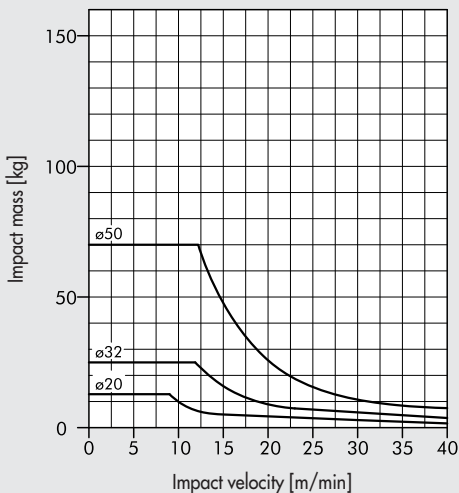


FORCE OF SPRINGS IN COMPACT STOPPER CYLINDERS (THEORETICAL)

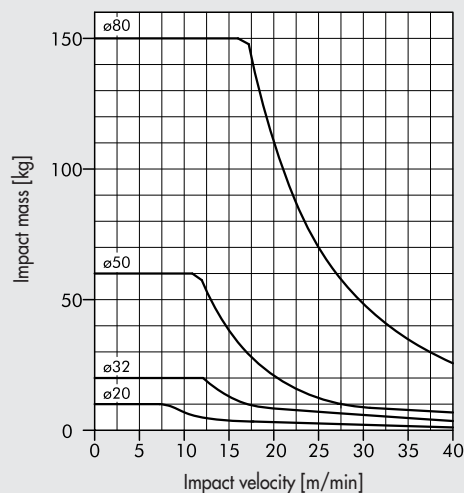
Stroke bore	Ø 20 x 15	Ø 32 x 20	Ø 50 x 30	Ø 80 x 30	Ø 80 x 40
Min. load (N)	13.7	22.4	50.2	97.9	71.0
Max. load (N)	21.2	36.0	115.9	178.5	178.5

LOAD GRAPH

TRUNNION VERSION



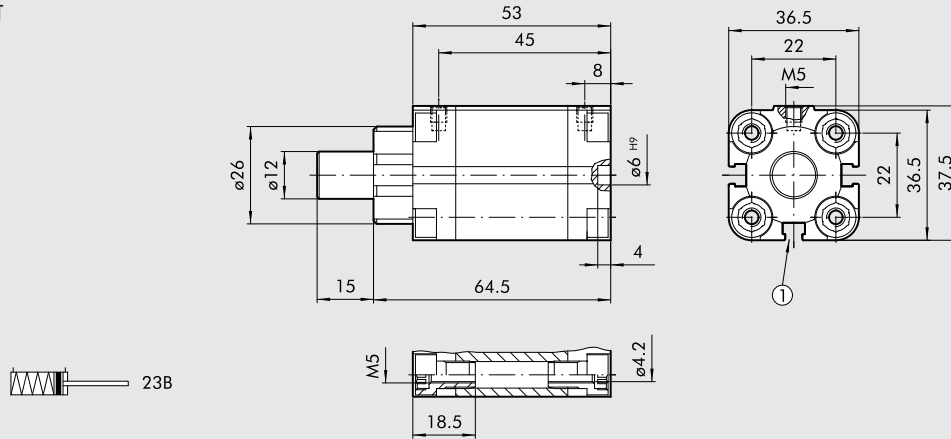
ROLLER VERSION



With stopper cylinders it is important to keep to the values shown in the graph to prevent early breakage of the mechanical parts. The values shown are only valid with about 1 mm plastic deformation (stopper on chuck).

Ø 20 STROKE 15 mm TRUNNION VERSION

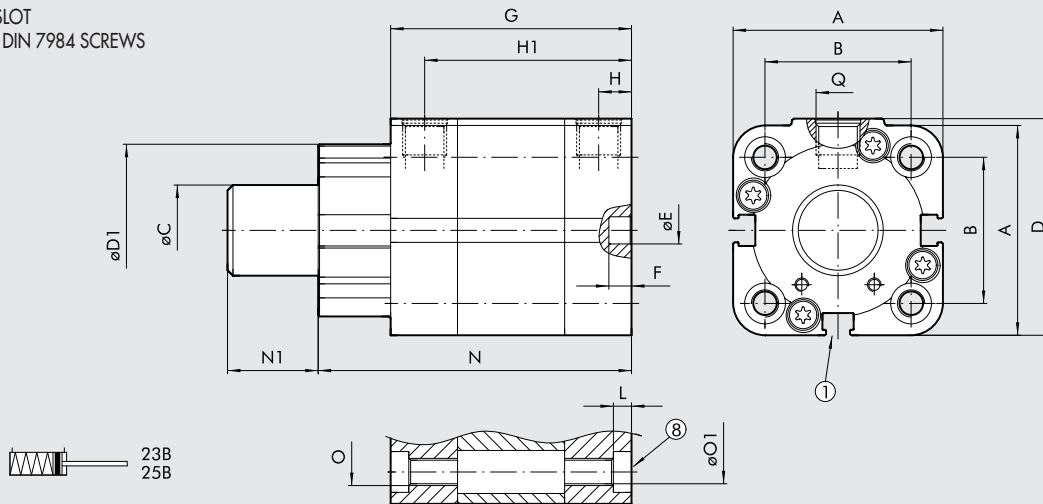
1 = SENSOR SLOT



Code	Description
23B0200015XP	Compact stopper cylinder, trunnion Ø 20, stroke 15
23B5200015XP	Compact stopper cylinder, trunnion Ø 20, stroke 15 (non-magnetic version)

Ø 32 STROKE 20 mm; Ø 50 STROKE 30 mm TRUNNION VERSION

1 = SENSOR SLOT
8 = SEAT FOR DIN 7984 SCREWS

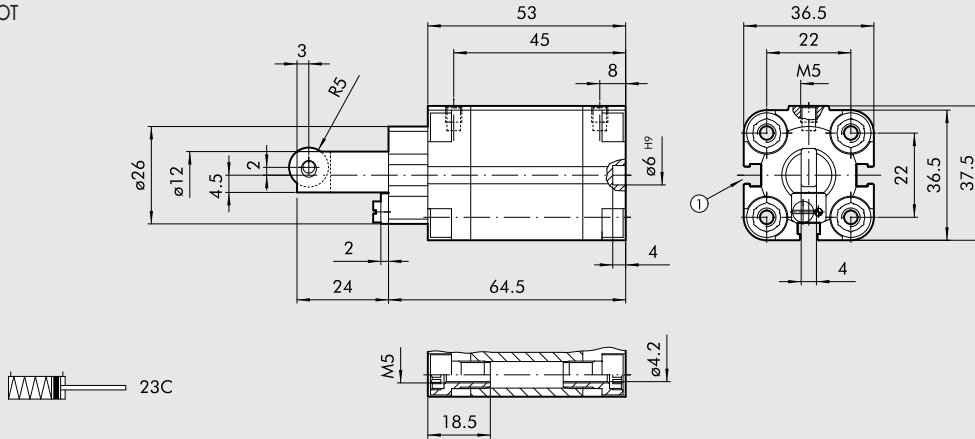


Ø	A	B		ØC	D	D1	ØE ^{H9}	F	G	H	H1	L	N	N1	O		Ø01		Q
		ISO	UNITOP												ISO	UNITOP			
32x20	47	32.5 ^{+0.1} _{-0.4}	32 ^{+0.4} _{-0.1}	20	48.5	38	6	4	64.5	7.5	57	4	80.5	20	M6	M6	5.2	5.2	G1/8
50x30	67	46.5	50	32	69	53	6	4	75.5	7.5	68	4.5	99.5	30	M8	M8	6.2	6.2	G1/8

Code	Description
23B0320020XP	Compact stopper cylinder, trunnion Ø 32, stroke 20 UNITOP
25B0320020XP	Compact stopper cylinder, trunnion Ø 32, stroke 20 ISO 15552
23B5320020XP	Compact stopper cylinder, trunnion Ø 32, stroke 20 UNITOP (non-magnetic version)
25B5320020XP	Compact stopper cylinder, trunnion Ø 32, stroke 20 ISO 15552 (non-magnetic version)
23B0500030XP	Compact stopper cylinder, trunnion Ø 50, stroke 30 UNITOP
25B0500030XP	Compact stopper cylinder, trunnion Ø 50, stroke 30 ISO 15552
23B5500030XP	Compact stopper cylinder, trunnion Ø 50, stroke 30 UNITOP (non-magnetic version)
25B5500030XP	Compact stopper cylinder, trunnion Ø 50, stroke 30 ISO 15552 (non-magnetic version)

Ø 20 STROKE 15 mm ROLLER VERSION

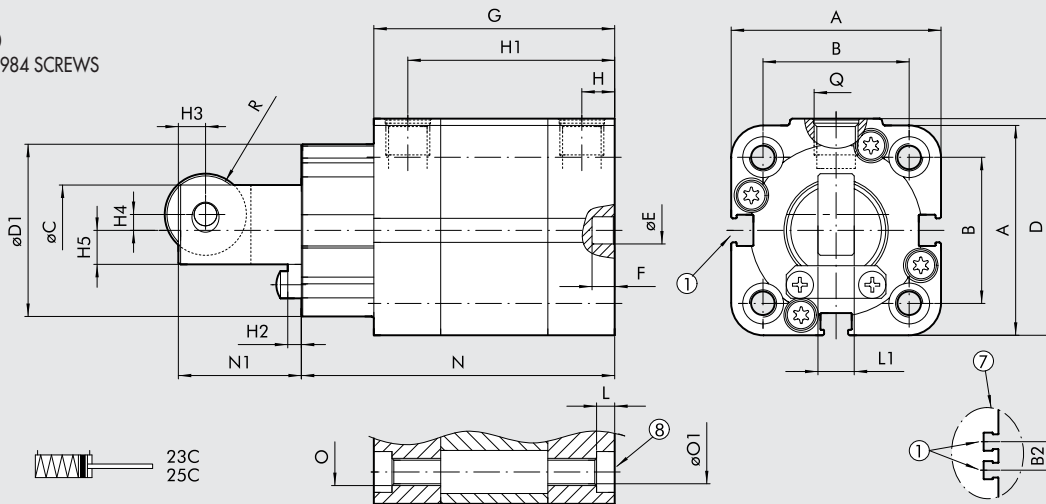
1 = SENSOR SLOT



Code	Description
23C0200015XP	Compact stopper cylinder, roller Ø 20, stroke 15
23CS200015XP	Compact stopper cylinder, roller Ø 20, stroke 15 (non-magnetic version)

Ø 32 STROKE 20 mm; Ø 50 STROKE 30 mm; Ø 80 STROKE 30 AND 40 mm ROLLER VERSION

1 = SENSOR SLOT
 7 = ONLY FOR Ø 80
 8 = SEAT FOR DIN 7984 SCREWS



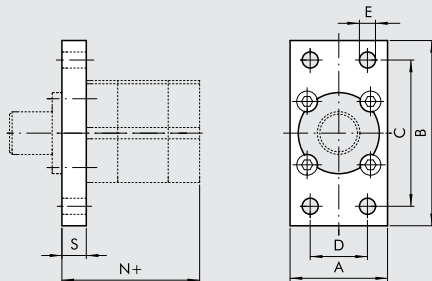
Ø	A	ISO	B		ØC	D	D1	ØE ^{H9}	G	F	H	H1	H2	H3	H4	H5	O		ØO1		L	L1	N	N1	Q	R
			UNITOP	B2													ISO	UNITOP	ISO	UNITOP						
32x20	47	32.5 ^{+0.1} _{-0.4}	32 ^{+0.1} _{-0.1}	-	20	48.5	38	6	64.5	4	7.5	57	3	6	3.5	7.5	M6	M6	5.2	5.2	4	8	80.5	38	G1/8	9
50x30	67	46.5	50	-	32	69	53	6	75.5	4	7.5	68	4	6	7	12	M8	M8	6.2	6.2	4.5	10	99.5	50.5	G1/8	12.5
80x30	102	72	82	17	50	105	76	8	126	4	8.5	117.5	8	10	11	18	M10	M10	8.5	8.5	5.5	18	141	63	G1/8	18
80x40	102	72	82	17	50	105	76	8	136	4	8.5	127.5	8	10	11	18	M10	M10	8.5	8.5	5.5	18	151	73	G1/8	18

Code	Description
23C0320020XP	Compact stopper cylinder, roller Ø 32, stroke 20 UNITOP
25C0320020XP	Compact stopper cylinder, roller Ø 32, stroke 20 ISO 15552
23CS320020XP	Compact stopper cylinder, roller Ø 32, stroke 20 UNITOP (non-magnetic version)
25CS320020XP	Compact stopper cylinder, roller Ø 32, stroke 20 ISO 15552 (non-magnetic version)
23C0500030XP	Compact stopper cylinder, roller Ø 50, stroke 30 UNITOP
25C0500030XP	Compact stopper cylinder, roller Ø 50, stroke 30 ISO 15552
23CS500030XP	Compact stopper cylinder, roller Ø 50, stroke 30 UNITOP (non-magnetic version)
25CS500030XP	Compact stopper cylinder, roller Ø 50, stroke 30 ISO 15552 (non-magnetic version)
23C0800030XP	Compact stopper cylinder, roller Ø 80, stroke 30 UNITOP
25C0800030XP	Compact stopper cylinder, roller Ø 80, stroke 30 ISO 15552
23CS800030XP	Compact stopper cylinder, roller Ø 80, stroke 30 UNITOP (non-magnetic version)
25CS800030XP	Compact stopper cylinder, roller Ø 80, stroke 30 ISO 15552 (non-magnetic version)
23C0800040XP	Compact stopper cylinder, roller Ø 80, stroke 40 UNITOP
25C0800040XP	Compact stopper cylinder, roller Ø 80, stroke 40 ISO 15552
23CS800040XP	Compact stopper cylinder, roller Ø 80, stroke 40 UNITOP (non-magnetic version)
25CS800040XP	Compact stopper cylinder, roller Ø 80, stroke 40 ISO 15552 (non-magnetic version)

ACCESSORIES FOR STOPPER CYLINDER

FLANGE Ø 32, Ø 50, Ø 80

+ = ADD THE STROKE



UNITOP

Code	Ø	A	B	C	D	E	N	S	Weight [g]
W0950326302	32	50	80	64	32	7	54.5	10	210
W0950506302	50	68	110	90	45	9	57.5	12	502
W0950806302	80	107	160	135	63	12	111	15	1575

ISO

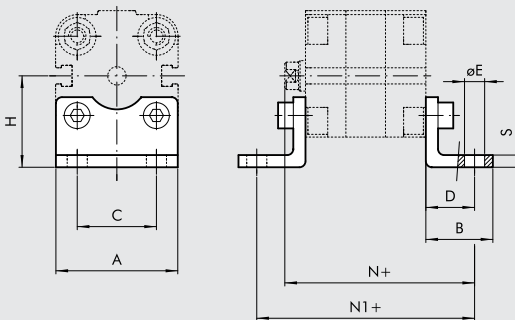
Code	Ø	A	B	C	D	E	N	S	Weight [g]
W0950326302	32	50	80	64	32	7	54.5	10	210
W0950506312	50	65	110	90	45	9	57.5	12	447
W0950806312	80	95	153	126	63	12	112	16	1190

Note: Supplied with 4 screws.

ACCESSORIES FOR COMPACT AND COMPACT TWO-FLAT CYLINDERS

FOOT - MODEL A

+ = ADD THE STROKE



CMPC UNITOP, TWO-FLAT UNITOP

Code	Ø	A	B	C	D	ØE	H	N	N1	S	Weight [g]
W0950126001 ▲	12	30	17.5	18	13	5.5	22	55.5	64	3	26
W0950126001 ▲	16	30	17.5	18	13	5.5	22	55.5	64	3	26
W0950206001	20	36	22	22	16	6.6	27	58.5	70	4	46
W0950256001	25	40	22	26	16	6.6	30	58.5	71.5	4	52
W0950322001	32	45	35	32	24	7	31.9	74.5	92.5	4	76
W0950406001	40	60	28	42	20	9	42.5	72	85.5	5	88
W0950406001F *	40	60	28	42	20	9	42.5	72	85.5	5	88
W0950506001	50	68	32	50	24	9	47	77	93.5	6	176
W0950506001F *	50	68	32	50	24	9	47	77	93.5	6	176
W0950636001	63	84	39	62	27	11	59.5	84.5	104	6	276
W0950636001F *	63	84	39	62	27	11	59.5	84.5	104	6	276
W0950806001	80	102	42	82	30	11	65.5	94	116	8	392
W0951006001	100	123	45	103	33	13.5	78	109.5	132.5	8	558

* Only for Two-Flat version

CMPC ISO, TWO-FLAT ISO

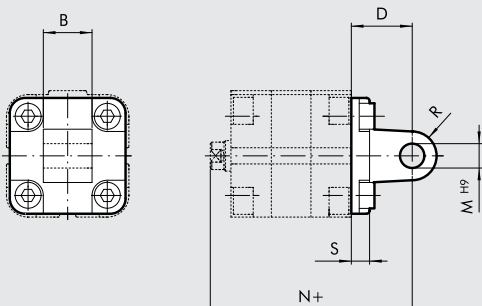
Code	Ø	A	B	C	D	ØE	H	N	N1	S	Weight [g]
W0950322001	32	45	35	32	24	7	31.9	74.5	92.5	4	76
W0950402001	40	52	43	36	28	9	36	80	101.5	4	100
W0950502001	50	65	47	45	32	9	45	85	109.5	4	162
W0950632001	63	75	47	50	32	9	50	89.5	114	6	266
W0950802001	80	95	61	63	41	12	63	105	138	6	456
W0951002001	100	115	65	75	41	14	71	117.5	148.5	6	572

Note: Individually packed with 2 screws.

▲ Non UNITOP norm fixing distance

MALE HINGE-MODEL BA

+ = ADD THE STROKE



CMPC UNITOP, TWO-FLAT UNITOP

Code	Ø	B	D	M	N	R	S	Weight [g]
W0950126004 ▲	12	12	16	6	58.5	6	6	24
W0950126004 ▲	16	12	16	6	58.5	6	6	24
W0950206004	20	16	20	8	62.5	8	6	44
W0950256004	25	16	20	8	62.5	8	6	48

CMPC ISO, TWO-FLAT ISO

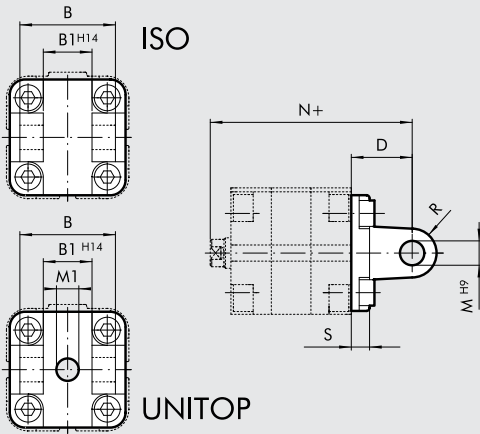
Code	Ø	B	D	M	N	R	S	Weight [g]
W0950322004	32	26	22	10	72.5	11	10	94
W0950402004	40	28	25	12	77	13	10	124
W0950502004	50	32	27	12	80	13	12	220
W0950632004	63	40	32	16	89.5	17	12	316
W0950802004	80	50	36	16	100	17	16	578
W0951002004	100	60	41	20	117.5	21	16	850

Note: Supplied with 4 screws, 4 washers

▲ Non UNITOP norm fixing distance

FEMALE HINGE-MODEL B

+ = ADD THE STROKE



CMPC UNITOP, TWO-FLAT UNITOP

Code	Ø	B	B1	D	M	M1	N	R	S	Weight [g]
W0950322003	32	45	26	22	10	14	72.5	11	10	116
W0950406003	40	52	28	25	12	14	77	12.5	9	184
W0950506003	50	60	32	27	12	18	80	12.5	11	266
W0950636003	63	70	40	32	16	-	89.5	15	11	470
W0950806003	80	90	50	36	16	23	100	15	13	670
W0951006003	100	110	60	41	20	28	117.5	20	15	1110

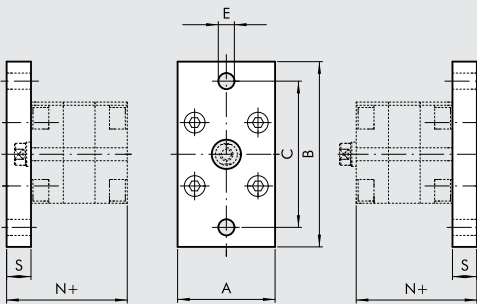
CMPC ISO, TWO-FLAT ISO

Code	Ø	B	B1	D	M	N	R	S	Weight [g]
W0950322003	32	45	26	22	10	72.5	11	10	116
W0950402003	40	52	28	25	12	77	13	10	160
W0950502003	50	60	32	27	12	80	13	12	252
W0950632003	63	70	40	32	16	89.5	17	12	394
W0950802003	80	90	50	36	16	100	17	16	670
W0951002003	100	110	60	41	23	117.5	21	16	1085

Note: Supplied with 4 screws, 4 washers, 2 snap-rings and 1 pin.

FLANGE Ø 12 to 25 - MODEL C (FRONT AND REAR)

+ = ADD THE STROKE



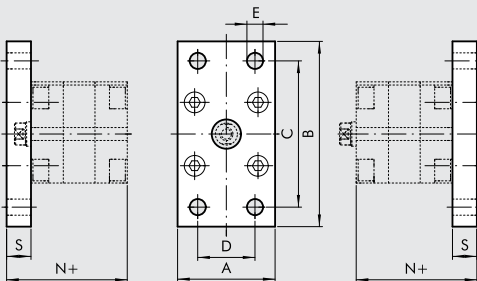
CMPC

Code	Ø	A	B	C	E	N	S	Weight [g]
W0950126002 ▲	12	29	55	43	5.5	48	10	112
W0950126002 ▲	16	29	55	43	5.5	48	10	112
W0950206002	20	36	70	55	6.6	48	10	184
W0950256002	25	40	76	60	6.6	49.5	10	226

Note: Supplied with 4 screws
▲ Non UNITOP norm fixing distance

FLANGE Ø 32 to 100 - MODEL C (FRONT AND REAR)

+ = ADD THE STROKE



CMPC UNITOP

Code	Ø	A	B	C	D	E	N	S	Weight [g]
W0950322002	32	50	80	64	32	7	54.5	10	246
W0950406002	40	60	102	82	36	9	55.5	10	454
W0950506002	50	68	110	90	45	9	57.5	12	655
W0950636002	63	87	130	110	50	9	65	15	1255
W0950806002	80	107	160	135	63	12	71	15	1900
W0951006002	100	128	190	163	75	14	81.5	15	2700

TWO FLAT UNITOP

Code	Ø	A	B	C	D	E	N	S	Weight [g]
W0950322002	32	50	80	64	32	7	54.5	10	246
W0950406002F	40	60	102	82	36	9	55.5	10	454
W0950506002F	50	68	110	90	45	9	57.5	12	655
W0950636002F	63	87	130	110	50	9	65	15	1255
W0950806002F	80	107	160	135	63	12	71	15	1900

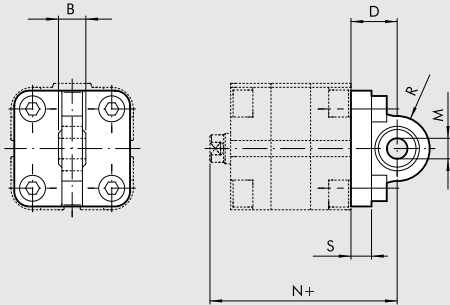
CMPC ISO, TWO FLAT ISO

Code	Ø	A	B	C	D	E	N	S	Weight [g]
W0950322002	32	50	80	64	32	7	54.5	10	246
W0950402002	40	55	90	72	36	9	55.5	10	290
W0950502002	50	65	110	90	45	9	57.5	12	522
W0950632002	63	75	120	100	50	9	62	12	670
W0950802002	80	95	153	126	63	12	72	16	1420
W0951002002	100	115	178	150	75	14	82.5	16	2040

Note: Supplied with 4 screws

ARTICULATED MALE HINGE - MODEL BAS

+ = ADD THE STROKE

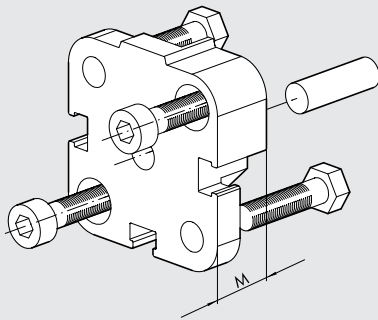


CMPC ISO, TWO FLAT ISO

Code	Ø	B	D	M	N	R	S	Weight [g]
W0950322006	32	14	22	10	72.5	16	10	106
W0950402006	40	16	25	12	77	19	10	142
W0950502006	50	16	27	12	80	19	12	236
W0950632006	63	21	32	16	89.5	24	12	336
W0950802006	80	21	36	16	100	24	16	572
W0951002006	100	25	41	20	117.5	30	16	840

Note: Supplied with 4 screws, 4 washers

FLANGE FOR OPPOSITE CYLINDERS

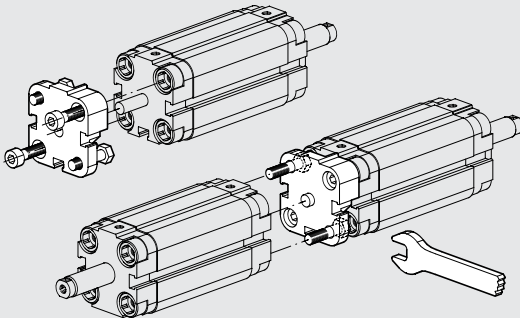


CMPC UNITOP Code	CMPC ISO Codice	Ø	M	Weight [g]	
				UNITOP	ISO
0950123060 ▲	-	12	12.5	29	-
0950123060 ▲	-	16	12.5	29	-
0950203060	-	20	12.5	45	-
0950253060	-	25	13	57	-
0950323060	0950323060	32	14.5	88	88
0950403060	0950403061	40	14.5	106	106
0950503060	0950503061	50	14.5	172	158
0950633060	0950633061	63	14.5	274	258
0950803060	0950803061	80	16.5	470	452
0951003060	0951003061	100	19.5	826	801

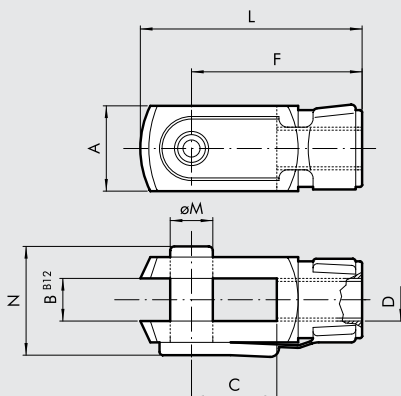
Note: Supplied complete with 1 pin, 4 screws

▲ Non UNITOP norm fixing distance

ASSEMBLING OPPOSING CYLINDERS



FORK - MODEL GK-M

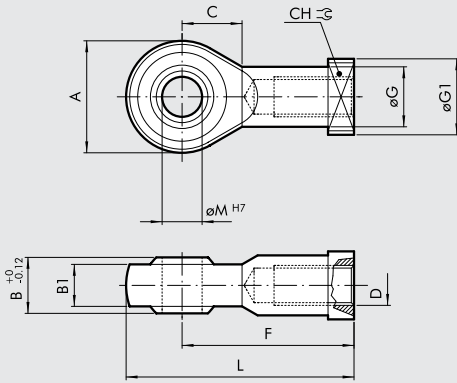


CMPC UNITOP AND ISO, TWO FLAT UNITOP AND ISO

Code	Ø	A	B	C	D	F	L	ØM	N	Weight [g]
W0950120020	12	12	6	12	M6	24	31	6	16	20
W0950200020	16	16	8	16	M8	32	42	8	22	48
W0950322020	20	20	10	20	M10x1.25	40	52	10	26	92
W0950322020	25	20	10	20	M10x1.25	40	52	10	26	92
W0950322020	32	20	10	20	M10x1.25	40	52	10	26	92
W0950322020	40	20	10	20	M10x1.25	40	52	10	26	92
W0950402020	50	24	12	24	M12x1.25	48	62	12	32	148
W0950402020	63	24	12	24	M12x1.25	48	62	12	32	148
W0950502020	80	32	16	32	M16x1.5	64	83	16	40	340
W0950802020	100	40	20	40	M20x1.5	80	105	20	48	690

Note: Individually packed

ROD EYE - MODEL GA-M

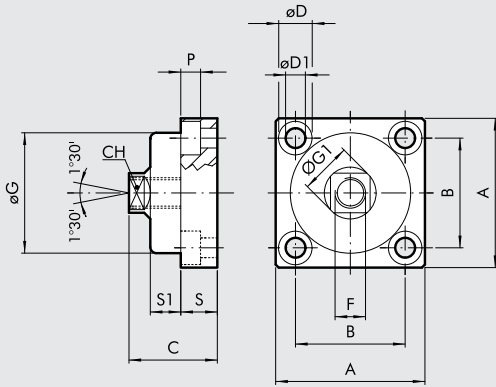


CMPC UNITOP AND ISO, TWO FLAT UNITOP AND ISO

Code	Ø	A	B	B1	C	CH	D	F	ØG	ØG1	L	ØM	Weight [g]
W0950120025	12	20	9	6.75	11	11	M6	30	10	13	40	6	28
W0950200025	16	24	12	9	13	14	M8	36	12.5	16	48	8	50
W0950322025	20	28	14	10.5	15	17	M10x1.25	43	15	19	57	10	78
W0950322025	25	28	14	10.5	15	17	M10x1.25	43	15	19	57	10	78
W0950322025	32	28	14	10.5	15	17	M10x1.25	43	15	19	57	10	78
W0950322025	40	28	14	10.5	15	17	M10x1.25	43	15	19	57	10	78
W0950402025	50	32	16	12	17	19	M12x1.25	50	17.5	22	66	12	116
W0950402025	63	32	16	12	17	19	M12x1.25	50	17.5	22	66	12	116
W0950502025	80	42	21	15	23	22	M16x1.5	64	22	27	85	16	226
W0950802025	100	50	25	18	27	30	M20x1.5	77	27.5	34	102	20	404

Note: Individually packed.

COMPENSATION JOINT - MODEL GA

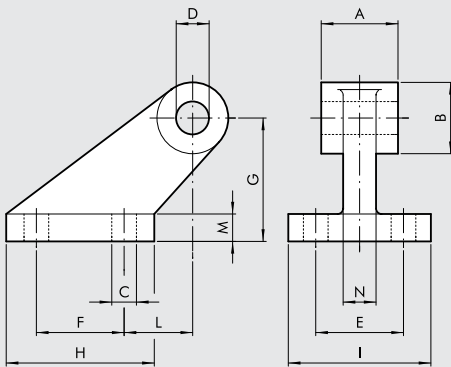


CMPC UNITOP, ISO, TWO FLAT

Code	Ø	A	B	C	CH	ØD	ØD1	F	ØG	ØG1	P	S	S1	Weight [g]
W0950326021	20	49	36	30	13	11	6.5	M10x1.25	39.5	17	6.5	12	10	172
W0950326021	25	49	36	30	13	11	6.5	M10x1.25	39.5	17	6.5	12	10	172
W0950326021	32	49	36	30	13	11	6.5	M10x1.25	39.5	17	6.5	12	10	172
W0950326021	40	49	36	30	13	11	6.5	M10x1.25	39.5	17	6.5	12	10	172
W0950406021	50	59	42	36	15	14	8.5	M12x1.25	44	19	8.5	15	13.5	286
W0950406021	63	59	42	36	15	14	8.5	M12x1.25	44	19	8.5	15	13.5	286
W0950506021	80	79	58	44	22	17	10.5	M16x1.5	59	26	10.5	20	15	628
W0950806021	100	89	65	51	27	19	12.5	M20x1.5	69	31	12.5	20	20	1200

Note: Individually packed.

COUNTER-HINGE CETOP Ø 32 to 100

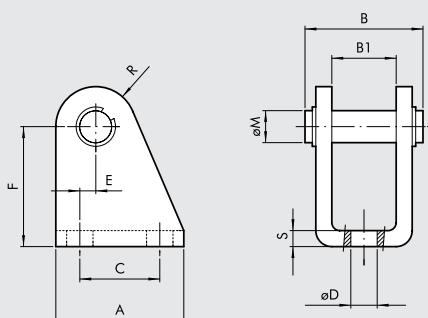


CMPC UNITOP AND ISO, TWO FLAT UNITOP AND ISO

Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	Weight [g]
W0950322008	32	26	19	7	10	25	20	32	37	41	18	8	10	96
W0950402008	40	28	26	9	12	32	32	45	54	52	25	10	12	216
W0950502008	50	32	26	9	12	32	32	45	54	52	25	10	12	212
W0950632008	63	40	33	11	16	40	50	63	75	63	32	12	15	440
W0950802008	80	50	33	11	16	40	50	63	75	63	32	12	15	464
W0951002008	100	60	44	14	20	50	70	90	103	80	40	16	22	985

Note: Supplied complete with 4 screws, 4 washers

COUNTER-HINGE Ø 16 to 25 - MODEL BC

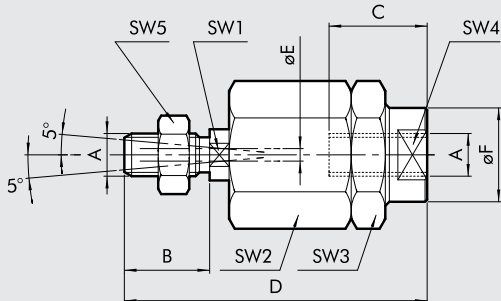


CMPC UNITOP

Code	Ø	A	B	B1	C	ØD	E	F	ØM	R	S	Weight [g]
W0950120005	12	25	25	12	15	5.5	2	27	6	7	3	40
W0950120005	16	25	25	12	15	5.5	2	27	6	7	3	40
W0950200005	20	32	30	16	20	6.5	4	30	8	10	4	78
W0950200005	25	32	30	16	20	6.5	4	30	8	10	4	78

Note: Supplied complete with 1 pin and 2 snap rings

SELF ALIGNING ROD COUPLER - MODEL GA-K

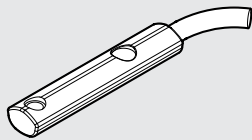


CMPC UNITOP, ISO, TWO FLAT UNITOP E ISO

Code	Ø	A	B	C	D	ØE	ØF	SW1	SW2	SW3	SW4	SW5	Weight [g]
W0950120030	12	M6	10	10	35	2	8.5	5	13	13	7	10	24
W0950200030	16	M8	20	20	57	4	12.5	7	17	17	11	13	56
W0950322030	20	M10x1.25	20	20	71	4	22	12	30	30	19	17	216
W0950322030	25	M10x1.25	20	20	71	4	22	12	30	30	19	17	216
W0950322030	32	M10x1.25	20	20	71	4	22	12	30	30	19	17	216
W0950322030	40	M10x1.25	20	20	71	4	22	12	30	30	19	17	216
W0950402030	50	M12x1.25	24	20	75	4	22	12	30	30	19	19	220
W0950402030	63	M12x1.25	24	20	75	4	22	12	30	30	19	19	220
W0950502030	80	M16x1.5	32	32	103	4	32	20	41	41	30	24	620
W0950802030	100	M20x1.5	40	40	119	4	32	20	41	41	30	30	680

Note: Individually packed.

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

* For use when standard sensors do not detect the magnet, e.g. near metal masses.

NB: For technical data see page 2-46

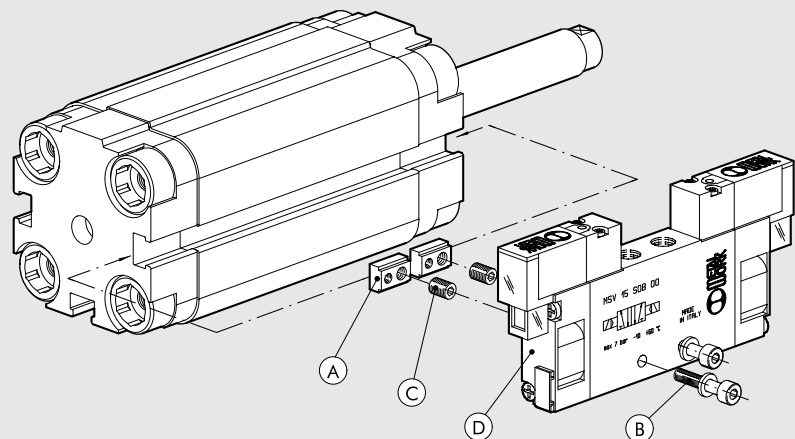
VALVE ASSEMBLY ON CYLINDER

With this type of cylinder, the valves (D) can be mounted directly using the retracting sensor slot, without requiring the use of intermediate brackets. This can be done using the special plates (A) which come with both M3 and M4 threads, and screws (B) of the size, type and quantity shown in the table below.

The plates are supplied complete with 2 stud pins, one M3 and one M4 (C).

After the valve centre distance and the position of the valve have been determined, the plates can be secured to the cylinder.

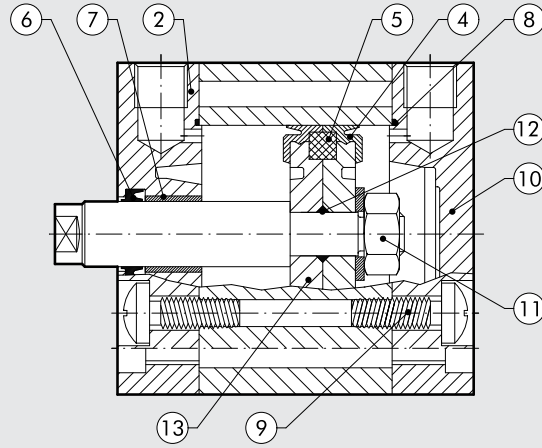
A "position memory" will be created to facilitate subsequent maintenance on the valve.



Type of valve to mount (D)	Fixing plate (A) CODE 0950003000	Position memory: grub screw (C) to be used	Screw (B) for connection to the cylinder (one per plate)	Washer (B) (one per screw)
MACH 11	n° 2	M4	M3x16 UNI 5931 (DIN 912)	A3.2 UNI 1751 (DIN 127A)
SERIE 70 1/8	n° 2	M3	M4x25 UNI 5931 (DIN 912)	—
SERIE 70 1/4	n° 2	M3	M4x30 UNI 5931 (DIN 912)	A4.3 UNI 1751 (DIN 127A)

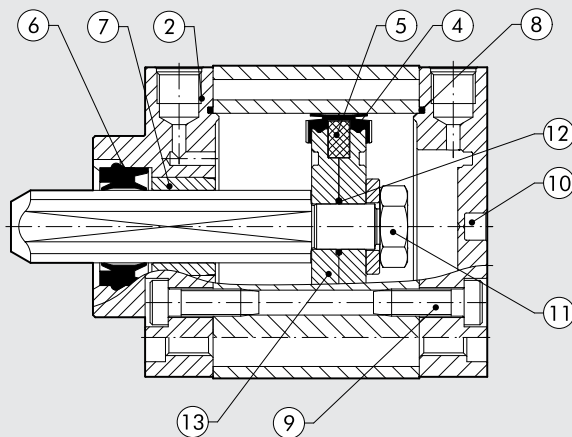
SPARE PARTS

COMPACT CYLINDERS, SERIES CMPC



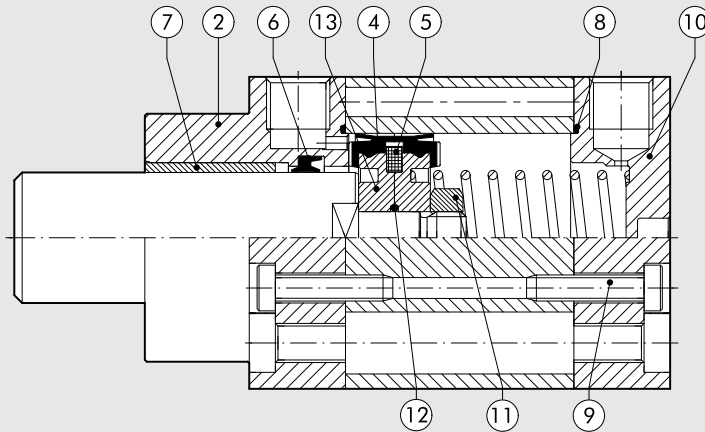
Code	Bores	Type	Parts
009 ... 7001	Ø 12 to 100	Complete set of gaskets polyurethane	4 6 8
009 ... 7101	Ø 12 to 100	Front cylinder head kit for UNITOP polyurethane	2 7 6 8 9
0090327101	Ø 32	Front cylinder head kit for ISO Ø 32 polyurethane	2 7 6 8 9
009 ... 8101	Ø 40 to 100	Front cylinder head kit for ISO polyurethane	2 7 6 8 9
009 ... 7201	Ø 12 to 100	Rear cylinder head kit for UNITOP polyurethane	8 9 10
0090327201	Ø 32	Rear cylinder head kit for ISO Ø 32 polyurethane	8 9 10
009 ... 8201	Ø 40 to 100	Rear cylinder head kit for ISO polyurethane	8 9 10
009 ... 7401	Ø 12 to 100	Piston kit polyurethane	4 5 11 12 13
009 ... 7501	Ø 12 to 100	Magnet	5
009 ... 7901	Ø 12 to 100	Front + rear cylinder head + piston kit for UNITOP polyurethane	2 4 5 6 7 8 9 10 11 12 13
0090327901	Ø 32	Front + rear cylinder head + piston kit for ISO Ø 32 polyurethane	2 4 5 6 7 8 9 10 11 12 13
009 ... 8901	Ø 40 to 100	Front + rear cylinder head + piston kit for ISO polyurethane	2 4 5 6 7 8 9 10 11 12 13

COMPACT CYLINDERS, SERIES CMPC TWO-FLAT



Code	Bores	Type	Parts
009 ... 7001F	Ø 32 to 80	Set of gaskets	4 8 12
009 ... 7101F	Ø 40 to 80	Front cylinder head kit for UNITOP	2 7 6 8 9
0090327101F	Ø 32	Front cylinder head kit for ISO Ø 32	2 7 6 8 9
009 ... 8101F	Ø 40 to 80	Front cylinder head kit for ISO	2 7 6 8 9
009 ... 7201	Ø 40 to 80	Rear cylinder head kit for UNITOP	8 9 10
0090327201	Ø 32	Rear cylinder head kit for ISO Ø 32	8 9 10
009 ... 8201	Ø 40 to 80	Rear cylinder head kit for ISO	8 9 10
009 ... 7401	Ø 32 to 80	Piston kit	4 5 11 12 9 13
009 ... 7501	Ø 32 to 80	Magnet	5
009 ... 7901F	Ø 40 to 80	Front + rear cylinder head + piston kit for UNITOP	2 4 5 6 7 8 9 10 11 12 13
0090327901F	Ø 32	Front + rear cylinder head + piston kit for ISO Ø 32	2 4 5 6 7 8 9 10 11 12 13
009 ... 8901F	Ø 40 to 80	Front + rear cylinder head + piston kit for ISO	2 4 5 6 7 8 9 10 11 12 13

COMPACT CYLINDERS, STOPPER



Code	Bores	Type	Parts
009 ... 7060	Ø 20; 32; 50; 80	Complete set of gaskets	4 6 8
009 ... 7160	Ø 20; 32; 50; 80	Front cylinder head kit for UNITOP	2 7 6 8 9
0090327160	Ø 32	Front cylinder head kit for ISO Ø 32	2 7 6 8 9
009 ... 8160	Ø 50; 80	Front cylinder head kit for ISO	2 7 6 8 9
009 ... 7201	Ø 20; 32	Rear cylinder head kit for UNITOP Ø 20 - Ø 32	8 9 10
009 ... 7260	Ø 50; 80	Rear cylinder head kit for UNITOP	8 9 10
0090327201	Ø 32	Rear cylinder head kit for ISO Ø 32	8 9 10
009 ... 8260	Ø 50; 80	Rear cylinder head kit for ISO	8 9 10
0090207401	Ø 20	Piston kit Ø 20	4 5 11
009 ... 7460	Ø 32; 50; 80	Piston kit	4 5 11 12 13
009 ... 7501	Ø 20; 32; 50; 80	Magnet	5
009 ... 7960	Ø 20; 32; 50; 80	Front + rear cylinder head + piston kit for UNITOP	2 4 5 6 7 8 9 10 11 12 13
0090327960	Ø 32	Front + rear cylinder head + piston kit for ISO Ø 32	2 4 5 6 7 8 9 10 11 12 13
009 ... 8960	Ø 50; 80	Front + rear cylinder head + piston kit for ISO	2 4 5 6 7 8 9 10 11 12 13

NOTES

ROUND CYLINDER SERIES RNDC

Clean profile cylinders available in different versions:

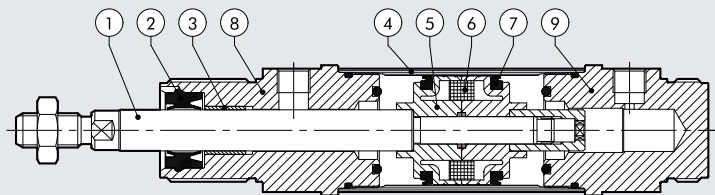
- configuration with or without magnet
- single- and double-acting - single or through-rod
- pneumatic cushioning on request
- range of gaskets available in NBR, POLYURETHANE and FKM/FPM (for high temperatures)



TECHNICAL DATA		POLYURETHANE	NBR	FKM/FPM	LOW TEMPERATURE
Max operating pressure	bar	10	10	10	10
	MPa	1	1	1	1
	psi	145	145	145	145
Temperature range	°C	-20 to +80 (non-magnetic cylinders)	-10 to +80 (non-magnetic cylinders)	-10 to +150 (non-magnetic cylinders)	-35 to +80
		-20 to +70 (magnetic cylinders)	-10 to +70 (magnetic cylinders)		
Fluid		Unlubricated air. Lubrication, if used, must be continuous			
Bores	mm	32; 40; 50			
Design		Screwed heads			
Versions		Double-acting, Double-acting through-rod, Double-acting cushioned, Double-acting through-rod cushioned, Single-acting, Single-acting through-rod, no-stick slip*			
Magnet for sensors		All versions come complete with magnet. Supplied without magnet on request			
Standard strokes †	mm	Single-acting: for bores Ø 32 to 50 strokes from 1 to 250			
		Double-acting: for bores Ø 32 to 50 strokes from 1 to 500			
		† Maximum recommended strokes. Higher values can create operating problems			
Inrush pressure	bar	Ø 32 and 40: 0.4 - Ø 50: 0.3			
Forces generated at 6 bar thrust/retraction		See page 1-7			
Weights		See page 1-9			
Notes		*Using for speeds lower than 0.2 m/s, to prevent surging. For no-stick-slip versions use no-lubricated air only			

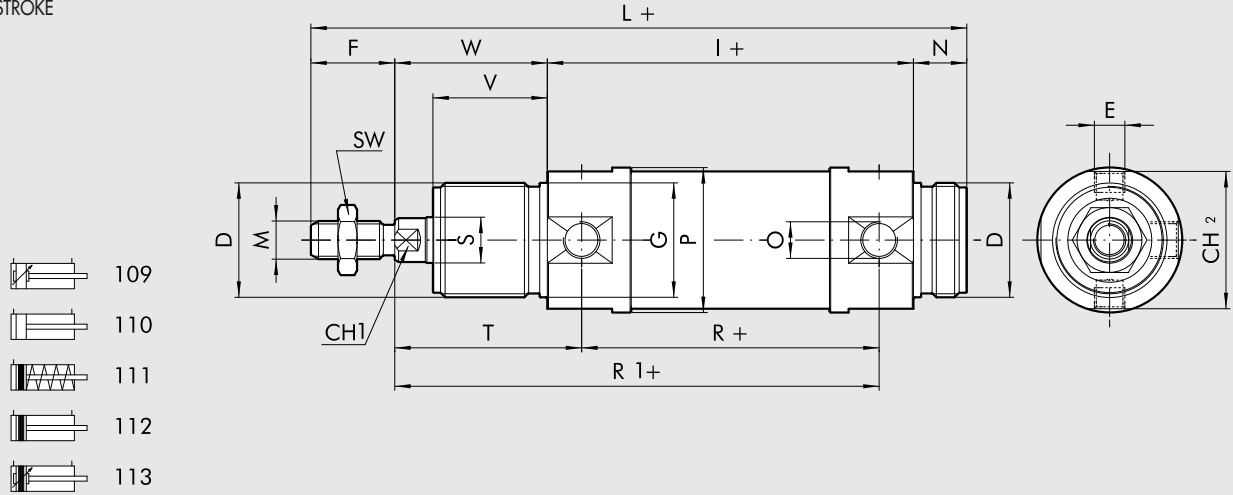
COMPONENTS






- ① PISTON ROD: C45 steel or stainless steel, thick chromed
- ② PISTON ROD GASKET: polyurethane, NBR or FKM/FPM
- ③ GUIDE BUSHING: steel strip with bronze and PTFE insert
- ④ BARREL: drawn anodised aluminium alloy
- ⑤ HALF-PISTON: self-lubricating technopolymer with integrated cushioning olives
- ⑥ MAGNET: plastoferrite
- ⑦ PISTON GASKET: polyurethane, NBR or FKM/FPM
- ⑧ HEAD: anodised aluminium alloy
- ⑨ HEAD: anodised aluminium alloy



DIMENSIONS OF STANDARD VERSIONS

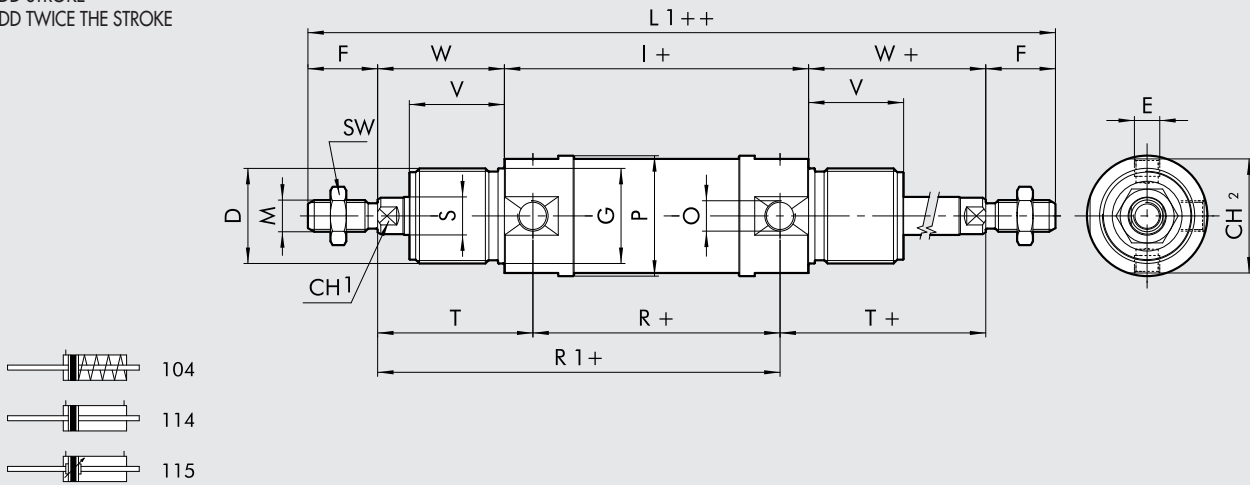
+ = ADD STROKE



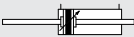


-  109
-  110
-  111
-  112
-  113

DIMENSIONS OF THROUGH-ROD VERSIONS

+ = ADD STROKE
++ = ADD TWICE THE STROKE



-  104
-  114
-  115

DIMENSIONS OF STANDARD DOUBLE-ACTING AND THROUGH-ROD

Ø D	E	F	Ø G	CH1	I	L	M	N	O	Ø P	R	Ø S	SW	T	CH2	V	W	L1	
32	M30x1.5	M8x1	22	30	10	96	172	M10x1.25	14	G1/8	38	78	12	17	49	36	30	40	220
40	M38x1.5	M10x1	24	38	13	113	198	M12x1.25	16	G1/4	46	89	16	19	57	43	35	45	251
50	M45x1.5	M12x1.5	32	45	17	120	220	M16x1.5	18	G1/4	57	96	20	24	62	54	38	50	284

DIMENSIONS OF STANDARD SINGLE-ACTING AND THROUGH-ROD

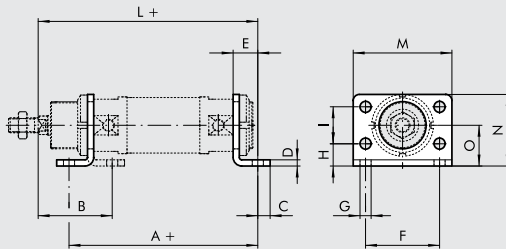
Lower limit	Stroke	Upper limit	I			L			R1			L1		
			Ø 32	Ø 40	Ø 50	Ø 32	Ø 40	Ø 50	Ø 32	Ø 40	Ø 50	Ø 32	Ø 40	Ø 50
0	< C ≤	50	96	113	120	172	198	220	127	146	158	220	251	284
50	< C ≤	100	125	145.5	155.5	201	230.5	255.5	156	178.5	193.5	249	283.5	319.5
100	< C ≤	150	154	178	191	230	263	291	185	211	229	278	316	355
150	< C ≤	200	183	210.5	226.5	259	295.5	326.5	214	243.5	264.5	307	348.5	390.5
200	< C ≤	250	212	243	262	288	328	362	243	276	300	336	381	426

For all the other values, see previous table, except for T and R which are both replaced by R1

ACCESSORIES FOR ROUND CYLINDER: FIXINGS

FOOT MODEL AC

+ = ADD STROKE

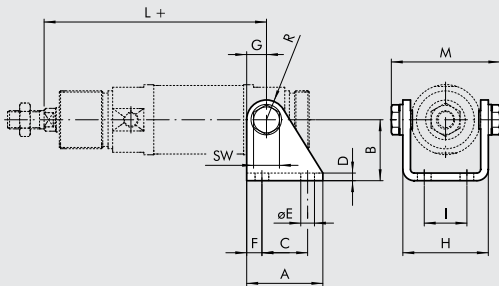


Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	O	Weight [g]
W0950320002	32	124	50	7	4	14	52	7	14	28	150	66	49	28	104
W0950400002	40	153	60	10	5	20	60	9	18	30	178	80	58	33	190
W0950500002	50	160	64	10	6	20	70	9	20	40	190	90	70	40	296

Note: Individually packed

COUNTER-HINGE MODEL BC

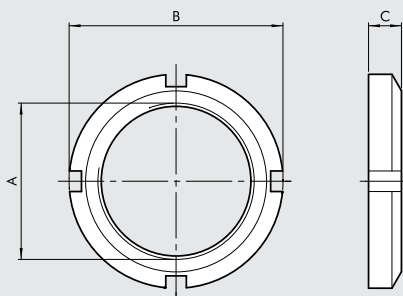
+ = ADD STROKE



Code	Ø	A	B	C	D	E	F	G	H	I	L	M	R	SW	Weight [g]
W0950320005	32	40	35	24	4	7	8	12	46.1	20	127	60	12	13	152
W0950400005	40	50	40	30	5	9	10	13	56.1	28	146	72.5	13	17	262
W0950500005	50	54	45	34	6	9	10	14	69.1	36	158	89	14	19	401

Note: Supplied with 2 screws

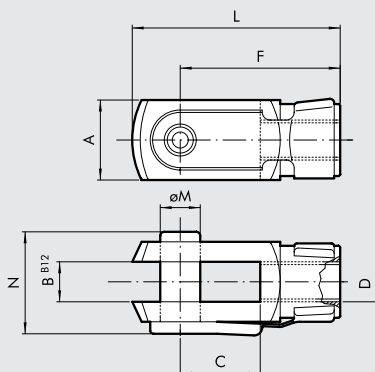
HEAD LOCK RING MODEL G



Code	Ø	A	B	C	Weight [g]
W0950320010	32	M30x1.5	45	7	46
W0950400010	40	M38x1.5	50	8	56
W0950500010	50	M45x1.5	58	9	124

Note: Individually packed

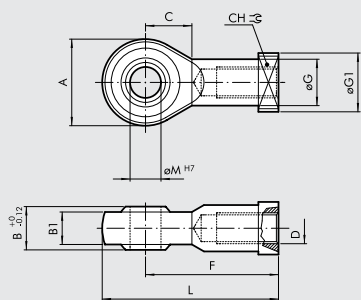
FORK MODEL GK-M



Code	Ø	Ø M	C	B	A	L	F	D	N	Weight [g]
W0950322020	32	10	20	10	20	52	40	M10x1.25	26	92
W0950402020	40	12	24	12	24	62	48	M12x1.25	32	148
W0950502020	50	16	32	16	32	83	64	M16x1.5	40	340

Note: Individually packed

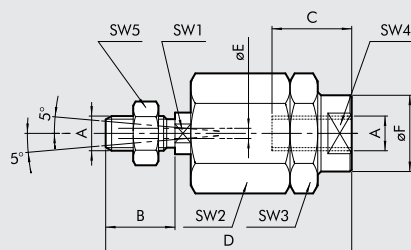
SPHERICAL JOINT MODEL GA-M



Code	Ø	øM	C	B1	B	A	L	F	D	øG	CH	Weight [g]
W0950322025	32	10	15	10,5	14	28	57	43	M10x1.25	15	17	78
W0950402025	40	12	17	12	16	32	66	50	M12x1.25	17.5	19	116
W0950502025	50	16	22	15	21	42	85	64	M16x1.5	22	22	226

Note: Individually packed

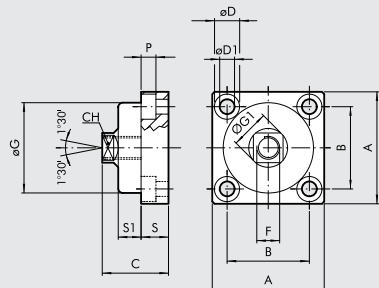
ARTICULATED JOINT MODEL GA-K



Code	Ø	A	B	C	D	øE	øF	SW1	SW2	SW3	SW4	SW5	Weight [g]
W0950322030	32	M10x1.25	20	20	71	4	22	12	30	30	19	17	216
W0950402030	40	M12x1.25	24	20	75	4	22	12	30	30	19	19	220
W0950502030	50	M16x1.5	32	32	103	4	32	20	41	41	30	24	620

Note: Individually packed

FLEXIBLE COLLAR - MODEL GA

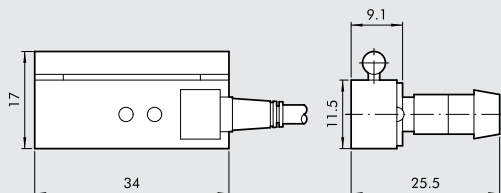


Code	Ø	A	B	C	CH	øD	øD1	F	øG	øG1	P	S	S1	Weight [g]
W0950326021	32	49	36	30	13	11	6.5	M10x1.25	39.5	17	6.5	12	10	172
W0950406021	40	59	42	36	15	14	8.5	M12x1.25	44	19	8.5	15	13.5	286
W0950506021	50	79	58	44	22	17	10.5	M16x1.5	59	26	10.5	20	15	628

Note: Individually packed

ACCESSORIES FOR ROUND CYLINDER: MAGNETIC SENSORS

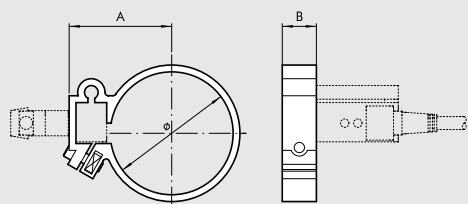
SENSOR



Code	Description
W0950000201	REED sensor DSM2 - C525 HS
W0950000222	E. HALL PNP sensor DSM3-N225
W0950000232	E. HALL NPN sensor DSM3-M225

N.B.: For technical data see page 1-244

SENSOR CIRCLIP



Code	Bore	Model	Ø	A	B
W0950000132	32	Circlip DXF 36 - 32	36	29.5	10
W0950000140	40	Circlip DXF 45 - 40	45	34.5	10
W0950000150	50	Circlip DXF 52 - 50	55	38.5	10

SHORT-STROKE CYLINDERS SERIES SSCY



Compact cylinders suitable for installation in limited spaces:

- configuration with or without magnet
- single or double-acting - single or through-rod
- anti-rotation version and with built-in fixings
- possible choice of NBR, POLYURETHANE or FKM/FPM gaskets
- special design on request.



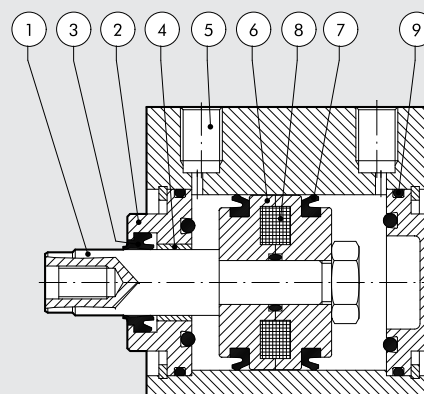
ACTUATORS

SHORT-STROKE CYLINDERS – SERIES SSCY

TECHNICAL DATA		Polyurethane	NBR	FKM/FPM	Low Temperature	
Max operating pressure	bar	10	10	10	10	
	MPa	1	1	1	1	
Temperature range	°C	-10 to +80	-10 to +80	-10 to +150 (non-magnetic cylinders)	-35 to +80	
Fluid		Unlubricated air. Lubrication, if used, must be continuous				
Bores	mm	12 ; 16 ; 20 ; 25 ; 32 ; 40 ; 50 ; 63 ; 80 ; 100				
Design		With profile				
Standard strokes †	mm	Double acting:	Ø 12 to Ø 25, stroke 5 to 50 mm			
			Ø 32 to Ø 40, stroke 5 to 70 mm			
			Ø 50 to Ø 63, stroke 5 to 110 mm			
			Ø 80 to Ø 100, stroke 5 to 150 mm			
			Single-acting:	Ø 12 to Ø 25, stroke 5 to 25 mm		
				Ø 32 to Ø 63, stroke 5 to 50 mm		
Anti-rotation:	Ø 12 to Ø 63, stroke 5 to 120 mm					
	Ø 80 to Ø 100, stroke 5 to 150 mm					
Perforated through-rod:	Ø 20 to Ø 40, stroke 5 to 100 mm					
	Ø 50 to Ø 63, stroke 5 to 130 mm					
	Ø 80 to Ø 100, stroke 5 to 165 mm					
Versions		† Maximum recommended strokes. Higher values can create operating problems Double-acting, Double-acting through-rod, Single-acting retracted piston rod, Single acting extended piston rod, Single-acting through-rod, Perforated through-rod, Anti-rotation, Oscillating male, Oscillating female, no-stick slip* All versions come complete with magnet. Supplied without magnet on request				
Magnet for sensors						
Inrush pressure	bar	Ø 12 to 32: 0.6 - 40 to 100: 0.4				
Forces generated at 6 bar thrust/retraction		See page 1-7				
Weight		See page 1-8				
Notes		* Using for speeds lower than 0.2 m/s, to prevent surging. For no-stick-slip versions use no-lubricated air only				

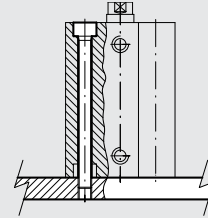
COMPONENTS

- 1 PISTON ROD: C45 steel or stainless steel, thick chromed
- 2 HEAD:
Ø 12 to 25 nichel-plated brass
Ø 32 to 100 anodised aluminium
- 3 PISTON ROD GASKET: polyurethane, NBR or FKM/FPM
- 4 GUIDE BUSHING: steel strip with bronze and PTFE insert
- 5 BARREL: drawn anodised aluminium alloy
- 6 HALF-PISTON:
Ø 12 to 63 acetal resin
Ø 80 to 100 in aluminium with PTFE guide pad
- 7 PISTON GASKET: polyurethane, NBR or FKM/FPM
- 8 MAGNET: Ø 12 to 25 neodymium - Ø 32 to 100 plastoferrite
- 9 Static O-rings: NBR or FKM/FPM



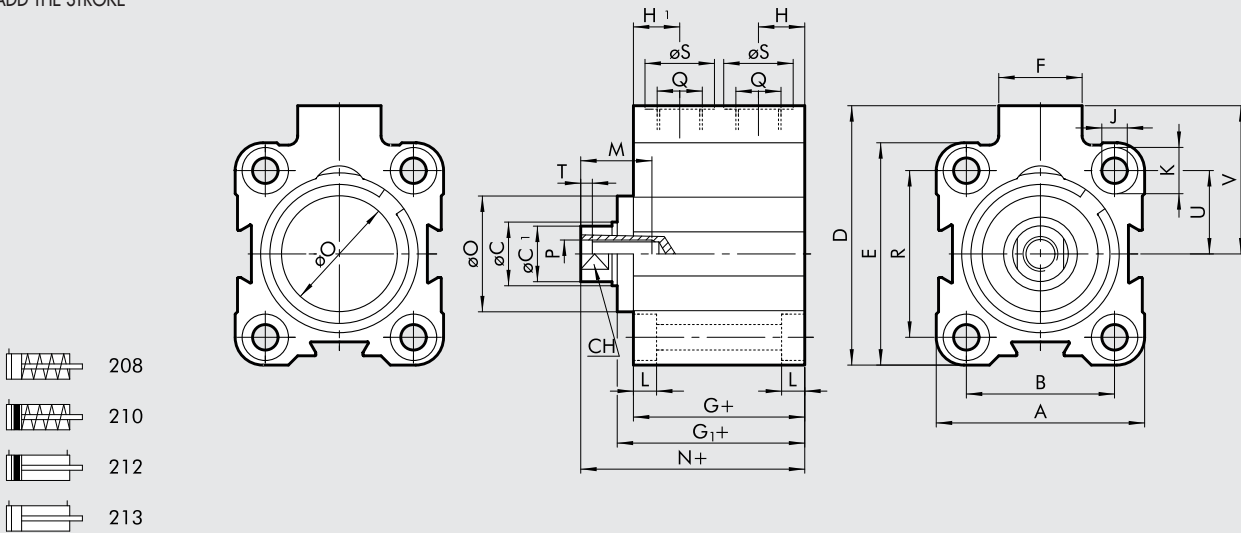
FIXING METHOD

Fix directly from above using long through-screws or tie rods.
Non-magnetic stainless steel must be used (e.g. AISI 304).



DIMENSIONS STANDARD VERSIONS

+ = ADD THE STROKE



- 208
- 210
- 212
- 213

DIMENSIONS OF DOUBLE ACTING

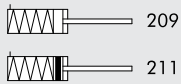
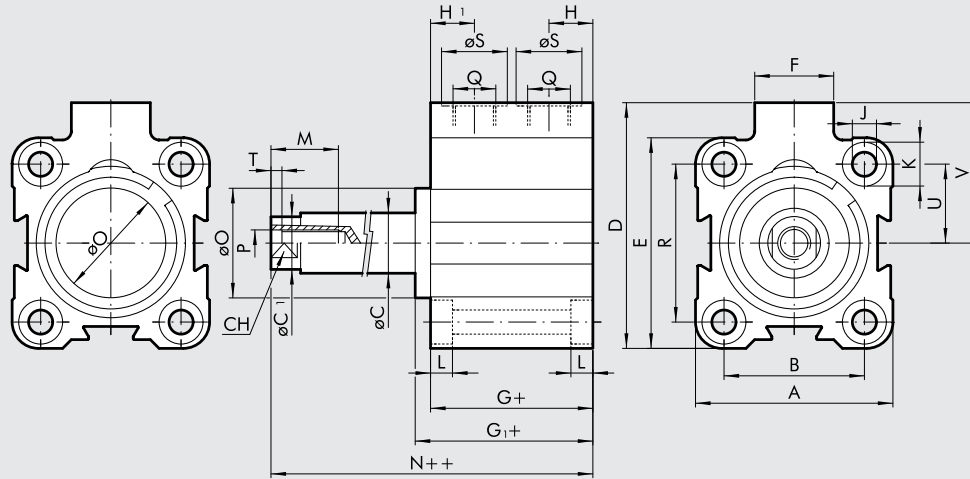
Ø	A	B	øC	øC ₁	D	E	F	G	G ₁	H	H ₁	J	K	L	M	N	øO	P	Q	R	øS	CH	T	U	V
12	23.5	13	6	5.5	28	26	11	32.5	-	6.5	10.5	3.7	6	3.7	7	38	-	M3	M5	-	8	5	2	9.5	16.5
16	28	20	8	7.5	33	28	11	33	-	6.7	10.5	3.7	6	3.7	10	37.5	-	M5	M5	20	8	7	2	10	19
20	32	22	10	9	37	32	11	32	-	6.5	10.5	4.6	7.5	4.6	10	36.5	-	M5	M5	22	8	8	2	11	21
25	37	26	10	9	47.5	39	18	33	36.5	8.5	8.5	4.6	7.5	4.6	10	42.5	20	M5	G1/8	28	15	8	2	14	28
32	45	32	12	11	56	48	18	37	40.8	10	10	5.5	10	5.7	15	48.3	25	M6	G1/8	36	15	10	2.5	18	32
40	54.5	40	12	11	62.7	54.5	18	39.5	44.7	10	10	5.5	10	5.7	15	53.2	30	M6	G1/8	40	15	10	2.5	20	35.5
50	66	50	16	15	73	66	18	39.5	46.2	11	11	6.6	11	6.8	18	53.2	35	M8	G1/8	50	15	13	3.5	25	40
63	80	62	16	15	88	80	23	42	48.7	12	12	9	15	9	18	57.7	35	M8	G1/8	62	15	13	3.5	31	48
80	100	82	20	19	110	100	26	57	67.2	14	14	9	15	9	18	75.2	44	M10	G1/4	82	19	17	4	41	60
100	124	103	25	24	134	124	26	64	74.7	15	15	11	18	11	20	84.3	56	M12	G1/4	103	19	22	5	51.5	72

DIMENSIONS OF SINGLE-ACTING, RETRACTED PISTON ROD

Ø	stroke	A	B	øC	øC ₁	D	E	F	G	G ₁	H	H ₁	J	K	L	M	N	øO	P	Q	R	øS	CH	T	U	V
12	5 to 25	23.5	13	6	5.5	28	26	11	32.5	-	6.5	10.5	3.7	6	3.7	7	38	-	M3	M5	-	8	5	2	9.5	16.5
16	5 to 25	28	20	8	7.5	33	28	11	33	-	6.7	10.5	3.7	6	3.7	10	37.5	-	M5	M5	20	8	7	2	10	19
20	5 to 25	32	22	10	9	37	32	11	32	-	6.5	10.5	4.6	7.5	4.6	10	36.5	-	M5	M5	22	8	8	2	11	21
25	5 to 25	37	26	10	9	47.5	39	18	33	36.5	8.5	8.5	4.6	7.5	4.6	10	42.5	20	M5	G1/8	28	15	8	2	14	28
32	5 to 25	45	32	12	11	56	48	18	37	40.8	10	10	5.5	10	5.7	15	48.3	25	M6	G1/8	36	15	10	2.5	18	32
	> 25 to 50								45	48.8							56.3									
40	5 to 25	54.5	40	12	11	62.7	54.5	18	39.5	44.7	10	10	5.5	10	5.7	15	53.2	30	M6	G1/8	40	15	10	2.5	20	35.5
	> 25 to 50								47.5	52.7							61.2									
50	5 to 25	66	50	16	15	73	66	18	39.5	46.2	11	11	6.6	11	6.8	18	53.2	35	M8	G1/8	50	15	13	3.5	25	40
	> 25 to 50								47.5	54.2							61.2									
63	5 to 25	80	62	16	15	88	80	23	42	48.7	12	12	9	15	9	18	57.7	35	M8	G1/8	62	15	13	3.5	31	48
	> 25 to 50								50	56.7							65.7									

DIMENSIONS OF SINGLE-ACTING EXTENDED PISTON ROD

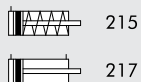
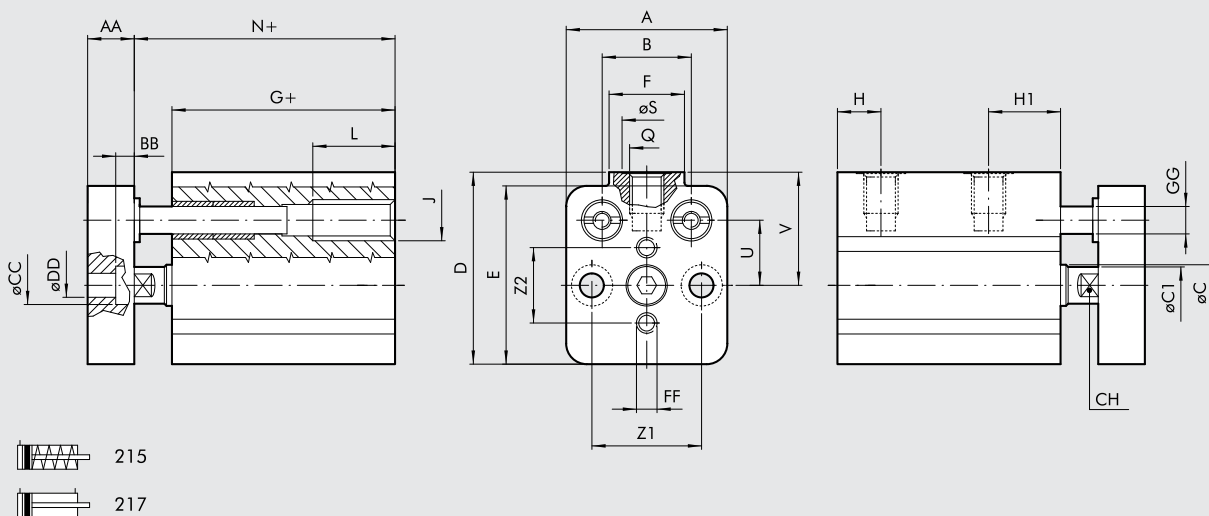
+ = ADD THE STROKE
 ++ = ADD TWICE THE STROKE



Ø	stroke	A	B	øC	øC ₁	D	E	F	G	G ₁	H	H ₁	J	K	L	M	N	øO	P	Q	R	øS	CH	T	U	V
12	5 to 25	23.5	13	6	5.5	28	26	11	32.5	-	6.5	10.5	3.7	6	3.7	7	38	-	M3	M5	-	8	5	2	9.5	16.5
16	5 to 25	28	20	8	7.5	33	28	11	33	-	6.7	10.5	3.7	6	3.7	10	37.5	-	M5	M5	20	8	7	2	10	19
20	5 to 25	32	22	10	9	37	32	11	32	-	6.5	10.5	4.6	7.5	4.6	10	36.5	-	M5	M5	22	8	8	2	11	21
25	5 to 25	37	26	10	9	47.5	39	18	33	36.5	8.5	8.5	4.6	7.5	4.6	10	42.5	20	M5	G1/8	28	15	8	2	14	28
32	5 to 25	45	32	12	11	56	48	18	37	40.8	10	10	5.5	10	5.7	15	48.3	25	M6	G1/8	36	15	10	2.5	18	32
	> 25 to 50								45	48.8							56.3									
40	5 to 25	54.5	40	12	11	62.7	54.5	18	39.5	44.7	10	10	5.5	10	5.7	15	53.2	30	M6	G1/8	40	15	10	2.5	20	35.5
	> 25 to 50								47.5	52.7							61.2									
50	5 to 25	66	50	16	15	73	66	18	39.5	46.2	11	11	6.6	11	6.8	18	53.2	35	M8	G1/8	50	15	13	3.5	25	40
	> 25 to 50								47.5	54.2							61.2									
63	5 to 25	80	62	16	15	88	80	23	42	48.7	12	12	9	15	9	18	57.7	35	M8	G1/8	62	15	13	3.5	31	48
	> 25 to 50								50	56.7							65.7									

DIMENSIONS OF Ø 12 ANTI-ROTATION

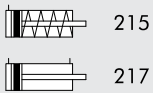
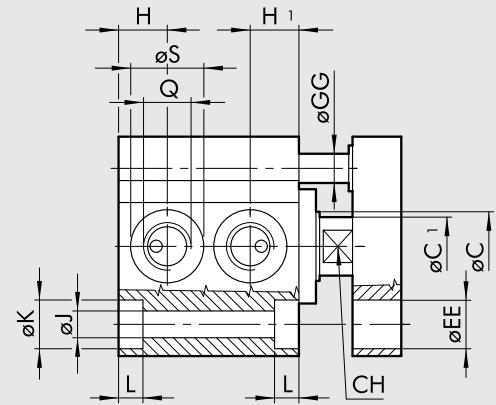
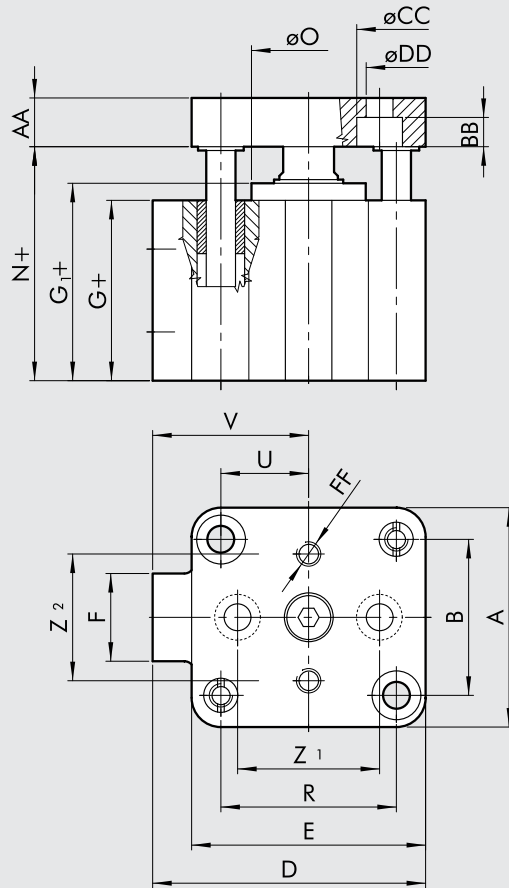
+ = ADD THE STROKE



Ø	A	B	øC	øC ₁	D	E	F	G	H	H ₁	J	L	N	Z ₁	Z ₂	Q	øS	U	V	AA	BB	øCC	øDD	FF	øGG
12	23.5	13	6	5.5	28	26	11	32.5	6.5	10.5	M6	12	38	16	11	M5	8	9.5	16.5	8	3.5	6	3.5	M3	4

DIMENSIONS OF Ø 16 TO Ø 100 ANTI-ROTATION

+ = ADD THE STROKE

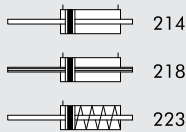
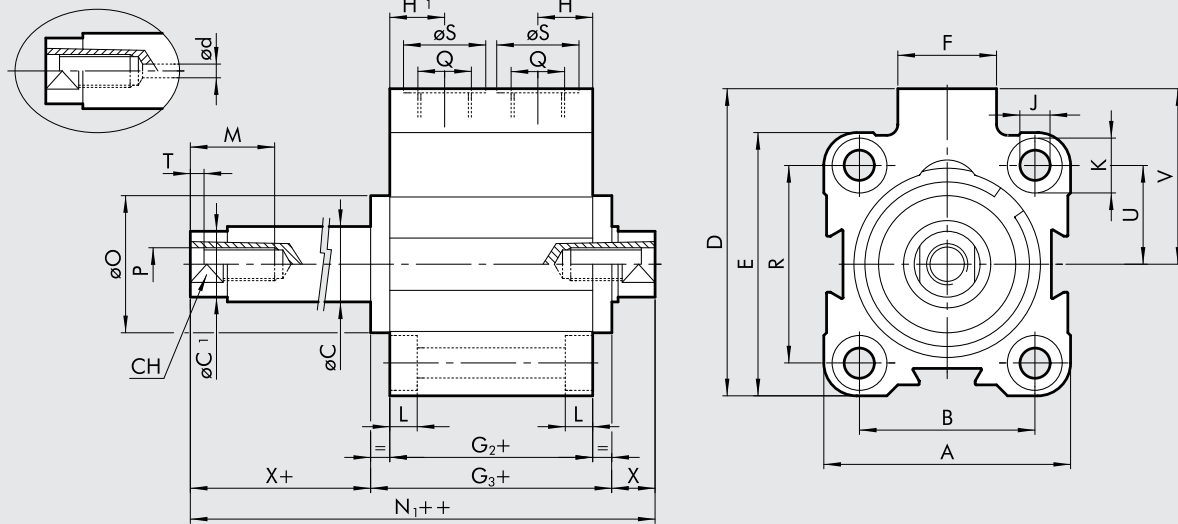


Ø	A	B	øC	øC1	D	E	F	G	G1	H	H1	J	K	L	N	Z1	Z2	Q	R	øS	CH	U	V	AA	BB	øCC	øDD	øEE	FF	øGG	øO
16	28	20	8	7.5	33	28	11	33	-	6.7	10.5	3.7	6	3.7	37.5	20	15	M5	20	8	7	10	19	8	3.5	6	3.5	6	M3	4	-
20	32	22	10	9	37	32	11	32	-	6.5	10.5	4.6	7.5	4.6	36.5	22	18	M5	22	8	8	11	21	8	5	7.5	4.5	7.5	M4	6	-
25	37	26	10	9	47.5	39	18	33	36.5	8.5	8.5	4.6	7.5	4.6	42.5	22	22	G1/8	28	15	8	14	28	8	5	7.5	4.5	8	M4	6	20
32	45	32	12	11	56	48	18	37	40.8	10	10	5.5	10	5.7	48.3	26	26	G1/8	36	15	10	18	32	10	6	10	5.5	10	M5	8	25
40	54.5	40	12	11	62.7	54.5	18	39.5	44.7	10	10	5.5	10	5.7	53.2	34	34	G1/8	40	15	10	20	35.5	10	6	10	5.5	10	M5	8	30
50	66	50	16	15	73	66	18	39.5	46.2	11	11	6.6	11	6.8	53.2	43	43	G1/8	50	15	13	25	40	12	7	11	6.5	11	M6	10	35
63	80	62	16	15	88	80	23	42	48.7	12	12	9	15	9	57.7	55	55	G1/8	62	15	13	31	48	12	9	14	9	15	M6	10	35
80	100	82	20	19	110	100	26	57	67.2	14	14	9	15	9	75.2	70	70	G1/4	82	19	17	41	60	14	9	14	9	15	M8	12	44
100	124	103	25	24	134	124	26	64	74.7	15	15	11	18	11	84.3	94	94	G1/4	103	19	22	51.5	72	17	9	14	9	18	M8	12	56

DIMENSIONS OF THROUGH-ROD

+ = ADD THE STROKE
 ++ = ADD TWICE THE STROKE

PERFORATED THROUGH-ROD



DIMENSION OF DOUBLE ACTING THROUGH-ROD AND PERFORATED THROUGH-ROD

Ø	A	B	øC	øC ₁	D	ød**	E	F	G ₂	G ₃	H	H ₁	J	K	L	M	N ₁	øO	P	Q	R	øS	CH	T	U	V	X*
12	23.5	13	6	5.5	28	-	26	11	36.7	-	10.5	10.5	3.7	6	3.7	7	47.7	-	M3	M5	-	8	5	2	9.5	16.5	5.5
16	28	20	8	7.5	33	-	28	11	36.8	-	10.5	10.5	3.7	6	3.7	10	45.8	-	M5	M5	20	8	7	2	10	19	4.5
20	32	22	10	9	37	1.5	32	11	36	-	10.5	10.5	4.6	7.5	4.6	10	45.0	-	M5	M5	22	8	8	2	11	21	4.5
25	37	26	10	9	47.5	1.5	39	18	35.7	42.7	8.5	8.5	4.6	7.5	4.6	10	54.7	20	M5	G1/8	28	15	8	2	14	28	6
32	45	32	12	11	56	2.5	48	18	37	44.5	10	10	5.5	10	5.7	15	59.5	25	M6	G1/8	36	15	10	2.5	18	32	7.5
40	54.5	40	12	11	62.7	2.5	54.5	18	39.5	49.9	10	10	5.5	10	5.7	15	66.9	30	M6	G1/8	40	15	10	2.5	20	35.5	8.5
50	66	50	16	15	73	2.5	66	18	39.5	52.9	11	11	6.6	11	6.8	18	66.9	35	M8	G1/8	50	15	13	3.5	25	40	7
63	80	62	16	15	88	4	80	23	42	55.4	12	12	9	15	9	18	73.4	35	M8	G1/8	62	15	13	3.5	31	48	9
80	100	82	20	19	110	5	100	26	57	77.4	14	14	9	15	9	18	93.4	44	M10	G1/4	82	19	17	4	41	60	8
100	124	103	25	24	134	6	124	26	64	85.4	15	15	11	18	11	20	104.6	56	M12	G1/4	103	19	22	5	51.5	72	9.6

* for Ø 12, 16, 20: (N₁++) = (G₂+) + (X) + (X+)

** column for perforated through-rod only

DIMENSION OF SINGLE-ACTING THROUGH-ROD

Ø	stroke	A	B	øC	øC ₁	D	E	F	G ₂	G ₃	H	H ₁	J	K	L	M	N ₁	øO	P	Q	R	øS	CH	T	U	V	X*
12	5 to 25	23.5	13	6	5.5	28	26	11	36.7	-	10.5	10.5	3.7	6	3.7	7	47.7	-	M3	M5	-	8	5	2	9.5	16.5	5.5
16	5 to 25	28	20	8	7.5	33	28	11	36.8	-	10.5	10.5	3.7	6	3.7	10	45.8	-	M5	M5	20	8	7	2	10	19	4.5
20	5 to 25	32	22	10	9	37	32	11	36	-	10.5	10.5	4.6	7.5	4.6	10	45.0	-	M5	M5	22	8	8	2	11	21	4.5
25	5 to 25	37	26	10	9	47.5	39	18	35.7	42.7	8.5	8.5	4.6	7.5	4.6	10	54.7	20	M5	G1/8	28	15	8	2	14	28	6
32	5 to 25	45	32	12	11	56	48	18	37	44.5	10	10	5.5	10	5.7	15	59.5	25	M6	G1/8	36	15	10	2.5	18	32	7.5
	> 25 to 50								45	52.5							67.5										7.5
40	5 to 25	54.5	40	12	11	62.7	54.5	18	39.5	49.9	10	10	5.5	10	5.7	15	66.9	30	M6	G1/8	40	15	10	2.5	20	35.5	8.5
	> 25 to 50								47.5	57.9							74.9										8.5
50	5 to 25	66	50	16	15	73	66	18	39.5	52.9	11	11	6.6	11	6.8	18	66.9	35	M8	G1/8	50	15	13	3.5	25	40	7
	> 25 to 50								47.5	60.9							74.9										7
63	5 to 25	80	62	16	15	88	80	23	42	55.4	12	12	9	15	9	18	73.4	35	M8	G1/8	62	15	13	3.5	31	48	9
	> 25 to 50								50	63.4							81.4										9

* for Ø 12, 16, 20: (N₁++) = (G₂+) + (X) + (X+)

KEY TO CODES

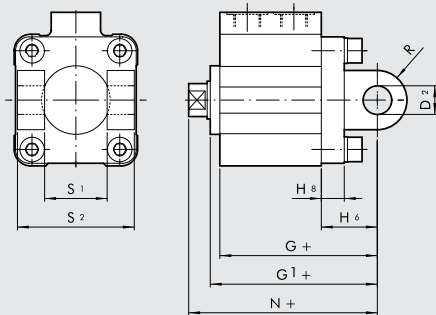
CYL	2 1 2 TIPOLOGIA	0	4 0 BORE	0 0 1 0 STROKE	C MATERIAL	P GASKETS
■ 208	Single-acting retracted rod, non-magnetic	0 Standard	12	For the maximum suppliable strokes, look at the technical data	A C45 chrome rod, aluminium piston rod Ø 12 to 63 mm C C45 chrome rod, technopolymer piston rod (standard Ø 80 to 100 mm) Z Stainless steel piston rod and nut aluminium piston Ø 12 to 63 mm X Stainless steel piston rod and nut technopolymer piston (standard Ø 80 to 100 mm)	P Polyurethane gaskets N NBR gaskets ● V FKM/FPM gaskets ● B Low temperature
■ 209	Single-acting extended rod, non-magnetic	S Non-magnetic	16			
■ 210	Single-acting, retracted rod	▲ G No stick slip	20			
■ 211	Single acting, extended rod		25			
■ 212	Double acting, magnetic		32			
■ 213	Double acting, non-magnetic		40			
■ 214	Double acting, through-rod		50			
■ 215	Single-acting, retracted, anti-rotation		63			
■ 217	Double acting, anti-rotation		80			
▼ 218	Double acting, perforated through-rod		◆ 100			
■ 221	Oscillating male hinge (up to Ø 63 only)					
■ 222	Oscillating female hinge (up to Ø 63 only)					
■ 223	Single-acting, through-rod					

- ◆ In the code of cylinder with letter in fourth position Ø 100 becomes A1
- Available up to Ø 63
- ▼ Available from Ø 20

- Only available for non-magnetic versions (S) and with aluminium piston (A or Z)
- ▲ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only

DIMENSIONS: SAME AS 222 VERSION (FEMALE HINGE MOD. B)

+ = ADD THE STROKE

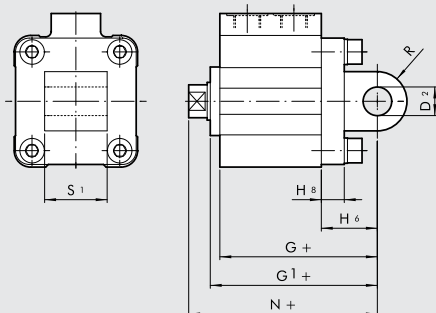


Ø	stroke	D ₂	G	G ₁	H ₆	H ₈	N	R	S ₁	S ₂
32	5 to 70	10	59	62.8	22	10	70.3	11	26	45
40	5 to 70	12	64.5	69.7	25	10	78.2	13	28	52
50	5 to 110	12	66.5	73.2	27	12	80.2	13	32	60
63	5 to 110	16	74	80.7	32	12	89.7	17	40	70

Note: For other dimensions, refer to the standard version

DIMENSIONS: SAME AS 221 VERSION (MALE HINGE MOD. BA)

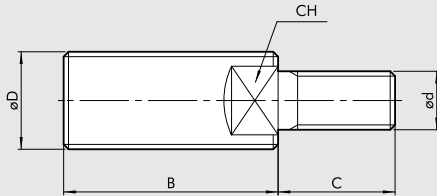
+ = ADD THE STROKE



Ø	stroke	D ₂	G	G ₁	H ₆	H ₈	N	R	S ₁
32	5 to 70	10	59	62.8	22	10	70.3	11	26
40	5 to 70	12	64.5	69.7	25	10	78.2	13	28
50	5 to 110	12	66.5	73.2	27	12	80.2	13	32
63	5 to 110	16	74	80.7	32	12	89.7	17	40

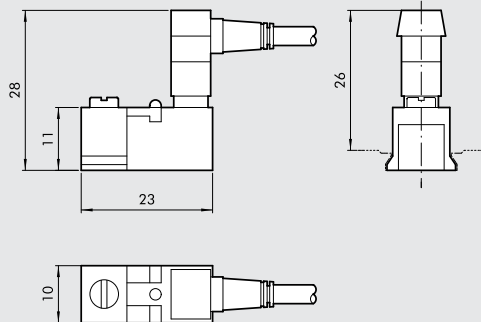
Note: For other dimensions, refer to the standard version.

DIMENSIONS OF MALE NIPPLE FOR PISTON ROD



Code	Ø	Ø D	Ø d	B	C	CH	Weight [g]
219001200	12	M6	M3	16	6	4	3
219001600	16	M8	M5	20	9	6	8
219001600	20	M8	M5	20	9	6	8
219002500	25	M10x1.25	M5	22	9	7	12
219003200	32	M10x1.25	M6	22	12	7	14
219004000	40	M12x1.25	M6	24	12	10	14
219005000	50	M16x1.5	M8	32	15	13	20
219005000	63	M16x1.5	M8	32	15	13	20
219008000	80	M20x1.5	M10	40	15	17	96
219010000	100	M20x1.5	M12	40	18	17	102

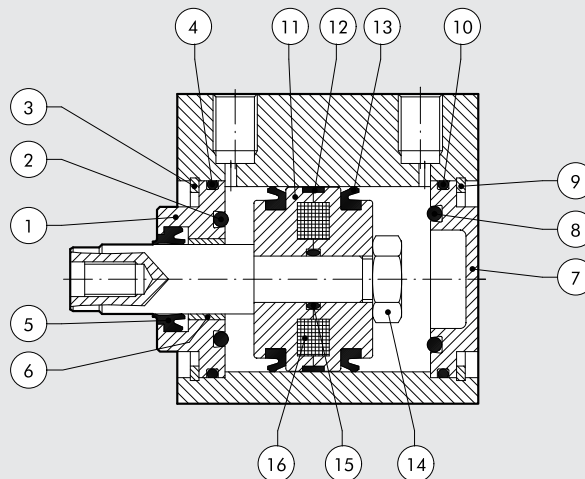
ACCESSORIES FOR SHORT-STROKE CYLINDERS: MAGNETIC SENSORS



Code	Bore	Model	Version
W0950000252	12 to 100	Reed sensor DCB 2C-425	Reed connector + bracket - CB
W0950000253	12 to 100	Sensor HALL PNP DCB3-N225	Hall PNP connector + bracket - CB
W0950014360	12 to 100	Sensor HALL NPN DCB3-M225	Hall NPN connector + bracket - CB

N.B.: For technical data see page 1-245

SPARES PARTS FOR SHORT-STROKE CYLINDERS



Code	Bores	Type	Parts
009 ... 0010	Ø 12 to 100	Complete polyurethane front head kit	1 2 3 4 5 6
009 ... 0011	Ø 12 to 100	Complete NBR front head kit	1 2 3 4 5 6
009 ... 0015	Ø 12 to 100	Complete NBR rear head kit	7 8 9 10
009 ... 0021	Ø 12 to 100	Complete polyurethane piston kit	11 12 13 14 15
009 ... 0023	Ø 12 to 100	Complete NBR piston kit	11 12 13 14 15
009 ... 0005	Ø 12 to 100	Complete set of polyurethane gaskets	2 4 5 8 10 13 15
009 ... 0006	Ø 12 to 100	Complete set of NBR gaskets	2 4 5 8 10 13 15
009 ... 0031	Ø 12 to 100	Complete polyurethane front+rear head kit + piston	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
009 ... 0033	Ø 12 to 100	Complete NBR front+rear head kit + piston	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
009 ... 0001	Ø 12 to 100	Magnet	16

CARTRIDGE MICRO-CYLINDER SERIES CRTC

Single-acting micro-cylinders with threaded body for fixing in small space or directly inside the machine body, owing to the external O-ring which ensures perfect seal.

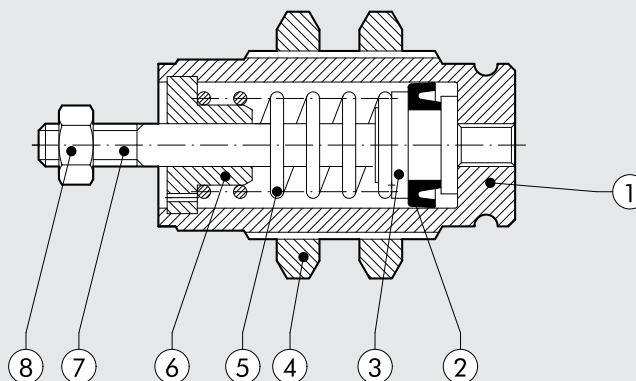
ATTENTION: in case of cycles with high frequencies it's advisable that the piston doesn't reach the end of the stroke during the rod coming out stage.



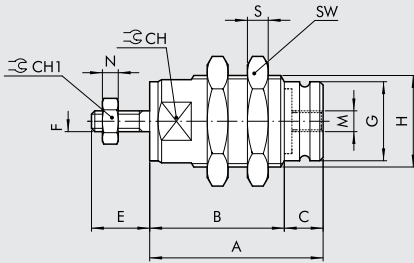
TECHNICAL DATA					
Operating pressure	bar	2 to 6			
	MPa	0.2 to 0.6			
Temperature range	°C	-10 to +80			
	Fluid	Lubricated or unlubricated air. Lubrication, if used, must be continuous			
Bores	mm	6 ; 10 ; 16			
Strokes	mm	5 ; 10 ; 15			
Port		M5			
Versions		Single-acting			
Design		Mechanically edged			
Seal OR on the body (not included in the supply)		Ø	OR		
		6	7x1		
		10	9.5x1.5		
		16	16x1.5		
Weight	g	Ø	STROKE		
			5	10	15
		6	14	16	19
		10	30	35	40
		16	76	84	90

COMPONENTS

- ① Nickel-plated brass body
- ② NBR rubber piston rod gasket
- ③ AISI 303 steel piston/piston rod (for Ø 6 - Ø 10)
Brass piston (for Ø 16)
- ④ Steel spring
- ⑤ Zinc-plated steel nut
- ⑥ Brass bushing
- ⑦ AISI 303 steel piston rod (for Ø 16)
- ⑧ Zinc-plated steel nut

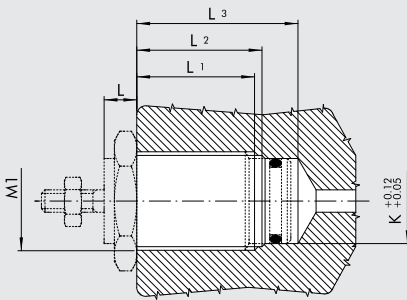


CARTRIDGE CYLINDER DIMENSIONS, Ø 6, 10, 16



Ø	A			B			C	CH	CH1	E	F	G	H	M	N	S	SW
	Stroke			Stroke													
6	19.5	26.5	33.5	14.5	21.5	28.5	5	9	5.5	8	M3	8.5	M10x1	M5	2.4	3	14
10	23	29.5	36.5	16	22.5	29.5	7	14	7	10.5	M4	12	M15x1.5	M5	2	4	19
16	27	32	37	21	26	31	6	20	8	13	M5	19	M22x1.5	M5	4	5	27

ASSEMBLY SEAT DIMENSIONS



Ø	L			L1			L2			L3			K	M1
	Stroke			Stroke			Stroke			Stroke				
6	5	10	15	5	10	15	5	10	15	5	10	15	8.5	M10x1
10	6	6	6	11	17	24	13	19	26	20	26	34	12	M15x1.5
16	7	7	7	15	20	25	17	21	27	26	31	36	19	M22x1.5

KEY TO CODES

Code	Description
W1000060005	CYL. CRTC-006-0005-S000-00
W1000060010	CYL. CRTC-006-0010-S000-00
W1000060015	CYL. CRTC-006-0015-S000-00
W1000100005	CYL. CRTC-010-0005-S000-00
W1000100010	CYL. CRTC-010-0010-S000-00
W1000100015	CYL. CRTC-010-0015-S000-00
W1000160005	CYL. CRTC-016-0005-S000-00
W1000160010	CYL. CRTC-016-0010-S000-00
W1000160015	CYL. CRTC-016-0015-S000-00

KEY TO CODES

CYL	C R T C	0 1 0	0 0 1 0	S 0 0 0	0 0	0 0
	TYPE	DIAMETER	STROKE	TYPE	FURTHER DESCRIPTION	SPECIAL DESIGN
	Cartridge microcylinder	006 010 016	0005 0010 0015	Single-acting retracted piston rod		

COMPACT GUIDED CYLINDERS SERIES CMPG

The guided compact cylinder series CMPG is a robust and practical solution with a built-in guide unit. The rod guiding bushes are mounted directly in the anodized aluminium alloy lining.

Two guiding solutions are available: sintered bronze bushes coupled with ground carbon chromed steel rods, or ball recirculation bushes coupled with tempered, chromed and ground steel rods.

There are grooves on one side of the body to house the retractable sensors.

In the non-cushioned version, the stop is silenced by NBR front gaskets, and the cushioned version has adjustable pins to graduate braking.

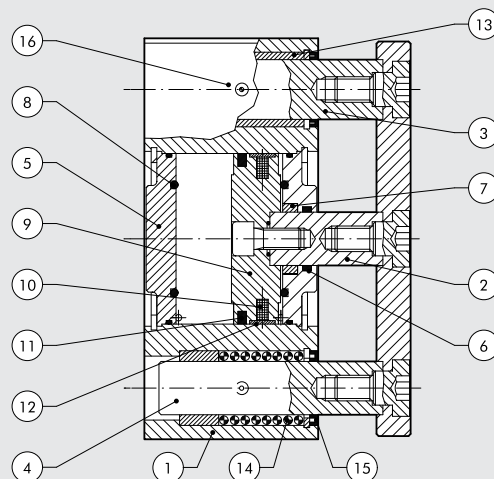
Threaded holes and calibrated holes are provided for fixing the dowel pins.



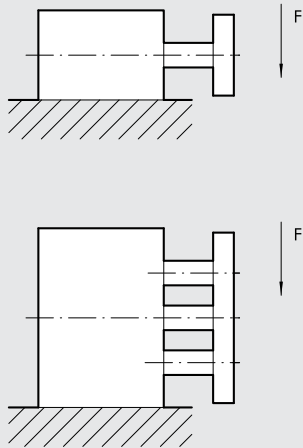
TECHNICAL DATA		CUSHIONED	NO-CUSHIONED
Operating pressure	bar		1 to 10
	MPa		0.1 to 1
	psi		14.5 to 145
Temperature range	°C		0 to 80
	°F		32 to 176
With dry air	°C		-20
	°F		-4
Bores	mm	16; 20; 25; 32; 40; 50; 63	16; 20; 25; 32; 40; 50; 63; 80; 100
Strokes	mm	Ø 16: 20 - 30-40-50	Ø 16: 10-20-25*-30-40-50-75-100-150-200
		Ø 20; Ø 25: 20-30-40-50-75-100-150	Ø 20; Ø 25: 20-25*-30-40-50-75-100-150-200
		Ø 32 to Ø 63: 25-50-75-100-150-175	Ø 32 to Ø 100: 25-50-75-100-150-200
			Other strokes on request but with the same cylinder dimensions as the standard stroke immediately above
Version			With bronze bushings With ball bearings See page 1-9
Weights			
			* only bronze bushings version

COMPONENTS

- ① JACKET: anodized aluminium alloy
- ② PISTON ROD: grinded chrome steel
- ③ GUIDE ROD: grinded chrome steel
- ④ GUIDE ROD: hardened and tempered chrome steel
- ⑤ REAR BASE: anodized aluminium alloy
- ⑥ FRONT BASE: anodized aluminium alloy
- ⑦ GUIDE BUSHING: self-lubricating bronze
- ⑧ BUFFER GASKET: NBR
- ⑨ PISTON: aluminium alloy
- ⑩ MAGNET: plastoferrite
- ⑪ PISTON GASKET: (PARKER PRADIFA) NBR
- ⑫ GUIDE RING: PTFE
- ⑬ SLIDE BUSHING: sintered bronze
- ⑭ BALL BEARINGS
- ⑮ DUST SCRAPER RING: NBR or FKM/FPM
- ⑯ GREASE NIPPLES: zinc-plated or stainless steel



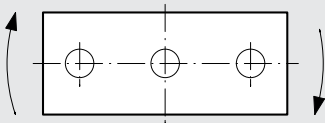
MAXIMUM SIDE LOAD



Ø mm	Guide unit	Stroke (mm)										
		10	20	25	30	40	50	75	100	150	175	200
16	Bushes	35	29	27	26	23	20	16	14	10	-	8
	Balls	29	31	-	27	38	34	29	24	12	-	8
20	Bushes	-	52	50	45	39	35	58	49	38	-	31
	Balls	-	56	-	48	79	70	54	50	27	-	32
25	Bushes	-	71	67	61	54	48	78	66	50	-	41
	Balls	-	72	-	62	78	73	60	52	37	-	30
32	Bushes	-	-	197	-	-	168	138	109	78	70	65
	Balls	-	-	89	-	-	60	276	217	138	122	110
40	Bushes	-	-	197	-	-	168	138	109	78	70	65
	Balls	-	-	89	-	-	60	276	217	138	122	110
50	Bushes	-	-	295	-	-	256	216	177	125	112	103
	Balls	-	-	138	-	-	89	393	314	184	163	148
63	Bushes	-	-	295	-	-	256	216	177	125	112	103
	Balls	-	-	138	-	-	89	393	314	184	163	148
80	Bushes	-	-	354	-	-	305	256	207	153	-	128
	Balls	-	-	236	-	-	158	864	687	413	-	335
100	Bushes	-	-	540	-	-	471	413	344	254	-	213
	Balls	-	-	471	-	-	314	1374	1074	629	-	511

NB: Forces are expressed in N

MAXIMUM TORQUE ON PLATE

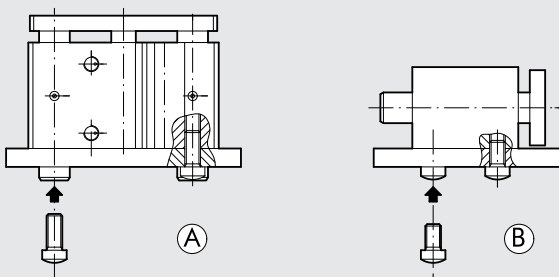


Ø mm	Guide unit	Stroke (mm)										
		10	20	25	30	40	50	75	100	150	175	200
16	Bushes	0.51	0.45	0.40	0.36	0.32	0.28	0.24	0.20	0.46	-	0.12
	Balls	0.74	0.60	-	0.50	0.72	0.65	0.54	0.45	0.35	-	0.25
20	Bushes	-	0.92	0.85	0.79	0.72	0.64	1.05	0.90	0.69	-	0.56
	Balls	-	1.28	-	1.08	1.78	1.59	1.24	1	0.61	-	0.49
25	Bushes	-	1.55	1.42	1.32	1.18	1.04	1.70	1.44	1.10	-	0.90
	Balls	-	1.98	-	1.70	2.16	2.20	1.66	1.4	1.02	-	0.82
32	Bushes	-	-	3.94	-	-	2.95	2.46	1.97	1.55	1.38	1.24
	Balls	-	-	1.97	-	-	1	2.96	2.44	2.40	2.43	2.18
40	Bushes	-	-	4.40	-	-	3.45	2.96	2.46	1.70	1.55	1.40
	Balls	-	-	2.46	-	-	1.45	6.38	5.4	3	2.73	2.40
50	Bushes	-	-	7.36	-	-	5.9	4.90	4.4	3	2.78	2.50
	Balls	-	-	3.45	-	-	2.44	10.8	8.35	4.5	4.06	3.60
63	Bushes	-	-	7.85	-	-	6.38	5.40	4.9	3.4	3.05	2.80
	Balls	-	-	3.94	-	-	2.46	11.77	9.3	5	4.46	4
80	Bushes	-	-	11.78	-	-	9.80	7.84	6.88	5.30	-	4.40
	Balls	-	-	9.34	-	-	5.88	31.38	24.5	10.40	-	11.7
100	Bushes	-	-	22.55	-	-	19.62	16.68	14.7	10.65	-	8.90
	Balls	-	-	21.56	-	-	13.73	63.72	49.1	26.6	-	21.6

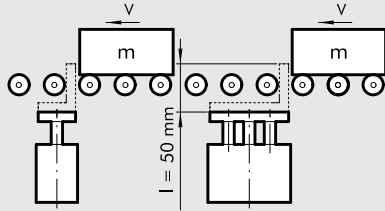
NB: Forces are expressed in Nm

ASSEMBLY OPTIONS

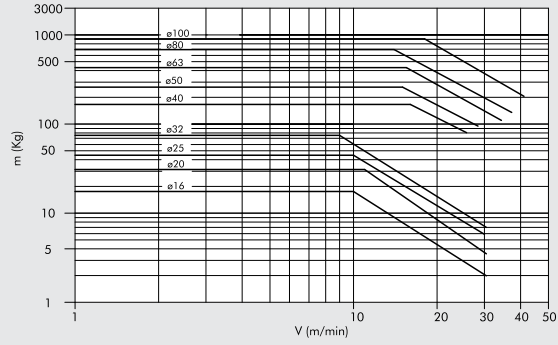
If the compact guided cylinder is mounted as shown in figure A, there need to be two through holes in the frame for the guide columns.



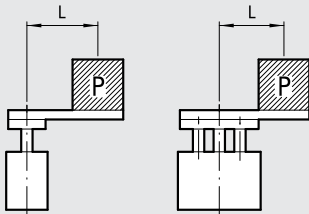
STOPPER FUNCTIONS



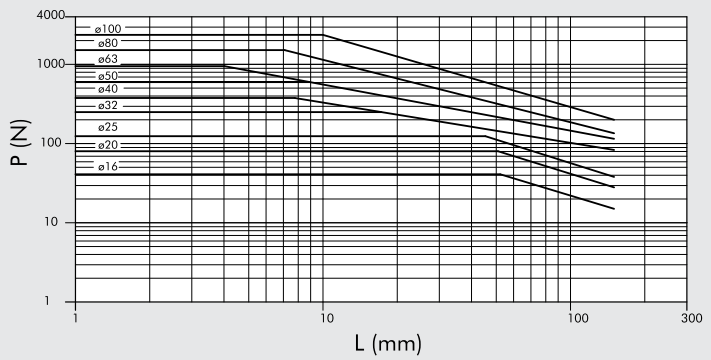
The graph refers to a 50mm-stroke cylinder.



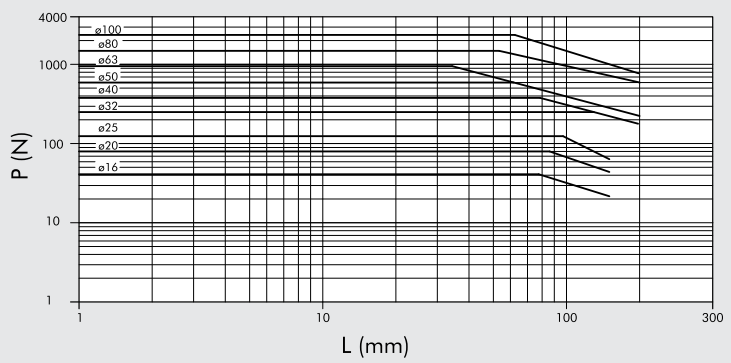
LIFTING FUNCTIONS



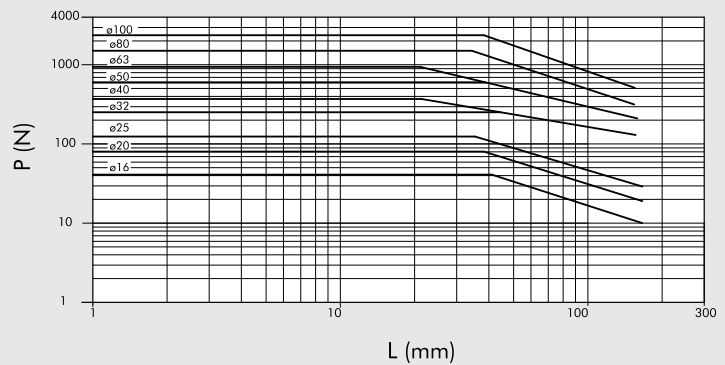
The graph refers from 25 to 50 mm-stroke cylinders with ball re-circulation guide unit



The graph refers from 75 to 100 mm-stroke cylinders with ball re-circulation guide unit

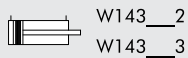
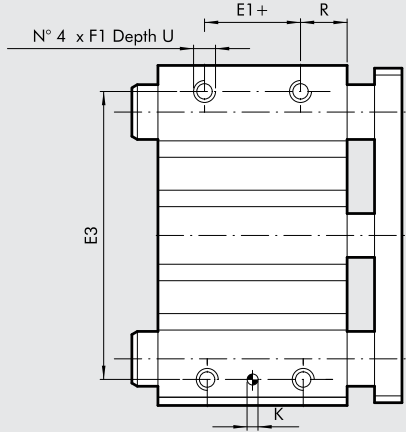
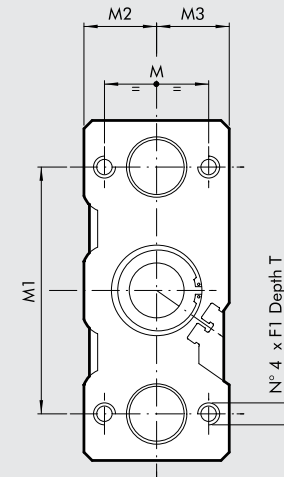
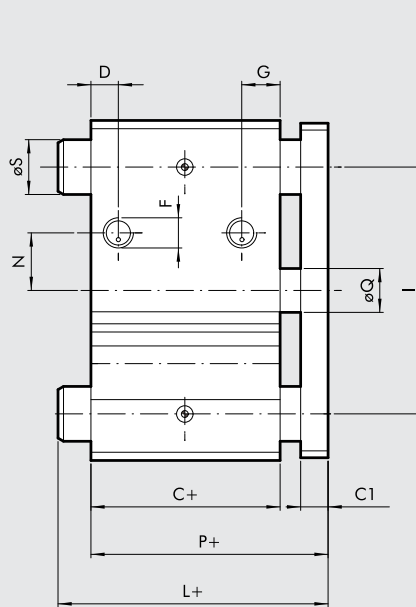
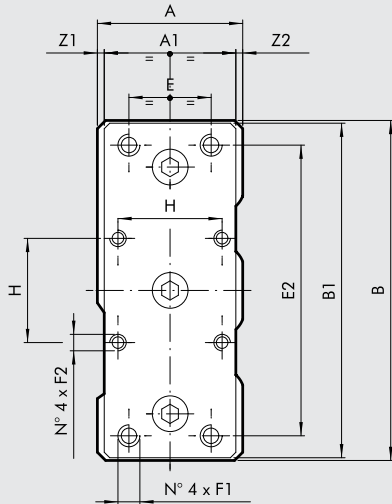


The graph refers to 50 mm-stroke cylinders with bushing guide unit



DIMENSIONS OF NO-CUSHIONED COMPACT GUIDED CYLINDERS

+ = ADD THE STROKE



BORE	Ø S	
	Version BA (Bronze Bushings)	Version BB (Ball Bearings)
16	10	10
20	12	10
25	16	16
32	20	20
40	20	20
50	25	**
63	25	**
80	28	25
100	35	30

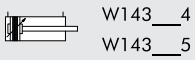
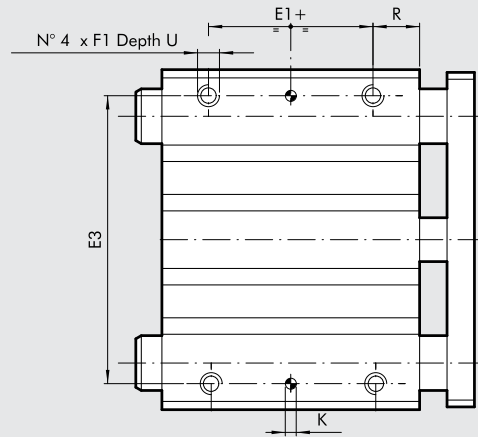
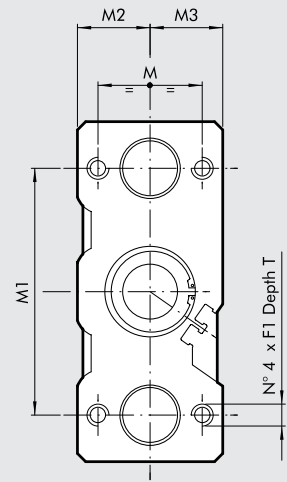
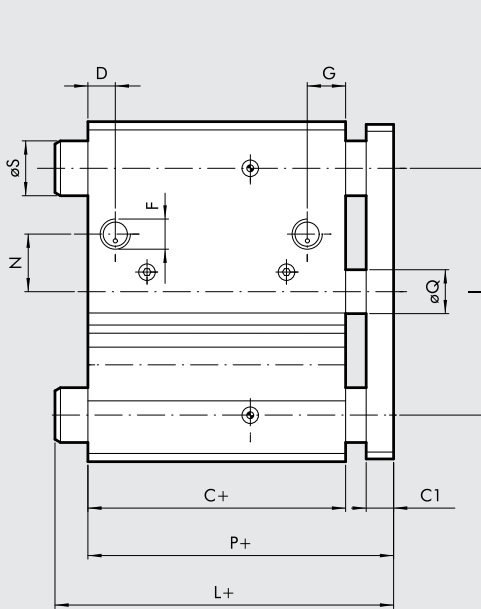
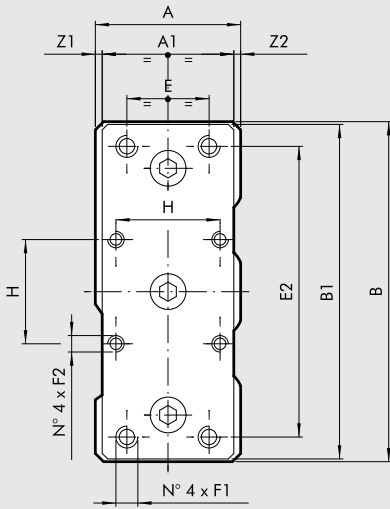
** for strokes 25 and 50 = 20
for strokes ≥75 = 25

BORE	L stroke	
	0 to 50	75 to 200
16	45	-
20	49	76
25	49.5	79.5

Ø	A	A1	B	B1	C	C1	D	E	E1	E2	E3	F	F1	F2	G	H	K ^{Ø7}	I	L	M	M1	M2	M3	N	P	ØQ	R	T	U	Z1	Z2
16	33	25	64	62	33	10	9	16	7	52	54	M5	M5	-	10.5	-	4	40	*	22	42	15	18	8	45	8	13	20	8	5.5	2.5
20	36	29	74	72	37	10	9	18	10	60	64	1/8 M5	-	-	11	-	5	46	*	26	52	17	19	9	49	10	13	20	8	4.5	2.5
25	42	38	88	86	37.5	10	9	26	10	70	76	1/8 M6	-	-	11.5	-	5	56	*	32	62	21	21	8	49.5	12	14	25	9	2	2
32	51	49	114	112	37.5	10	9	30	5	96	100	1/8 M8	M6	12.5	32.5	6	80	73.5	38	80	25.5	25.5	15	49.5	16	16	20	11	1.5	1.5	
40	51	49	124	122	44	10	11	30	10	106	110	1/8 M8	M6	14	38	6	90	73.5	38	90	25.5	25.5	21	56	16	17	20	11	1.5	1.5	
50	59	56	140	138	44	12	11	40	10	120	124	1/4 M10	M8	14	46.5	6	100	83	44	100	29.5	29.5	27	58	20	17	25	12.5	1.5	1.5	
63	72	69	150	148	49	12	11	50	10	130	132	1/4 M10	M8	14	56.5	6	110	83	44	110	36	36	31.5	63	20	20	25	15	1.5	1.5	
80	92	88	188	185	56.5	16	15.5	60	15	160	166	3/8 M12	M10	19	72	6	140	93	56	140	46	46	37	74.5	25	21	30	18	2	2	
100	112	108	224	221	66	16	19	80	15	190	200	3/8 M14	M10	23	89	8	170	105	62	170	56	56	40	84	30	25	35	21	2	2	

DIMENSIONS OF CUSHIONED COMPACT GUIDED CYLINDERS

+ = ADD THE STROKE



Ø S		
BORE	Version BA (Bronze Bushings)	Version BB (Ball Bearings)
16	10	10
20	12	10
25	16	16
32	20	20
40	20	20
50	25	**
63	25	**

** for strokes 25 and 50 = 20
for strokes ≥75 = 25

* =	L stroke	
	0 to 50	75 to 200
16	70	-
20	74	105.5
25	74.5	108.5

Ø	A	A1	B	B1	C	C1	D	E	E1	E2	E3	F	F1	F2	G	H	K ¹⁷	I	L	M	M1	M2	M3	N	P	ØQ	R	T	U	Z1	Z2
16	33	25	64	62	58	10	9	16	32	52	54	M5	M5	-	10.5	-	4	40	*	22	42	15	18	8	◆	8	13	20	8	5.5	2.5
20	36	29	74	72	62	10	9	18	35	60	64	1/8 M5	-	-	11	-	5	46	*	26	52	16.5	19.5	9	78	10	13	20	8	4.5	2.5
25	42	38	88	86	62.5	10	9	26	35	70	76	1/8 M6	-	-	11.5	-	5	56	*	32	62	21	21	8	78.5	12	14	25	9	2	2
32	51	49	114	112	62.5	10	9	30	30	96	100	1/8 M8	M6	12.5	32.5	6	80	106.5	38	80	25.5	25.5	15	82.5	16	16.5	20	11	1.5	1.5	
40	51	49	124	122	69	10	11	30	35	106	110	1/8 M8	M6	14	38	6	90	106.5	38	90	25.5	25.5	21	89	16	17	20	11	1.5	1.5	
50	59	56	140	138	69	12	11	40	35	120	124	1/4 M10	M8	14	46.5	6	100	118	44	100	29.5	29.5	27	93	20	17	25	12.5	1.5	1.5	
63	72	69	150	148	74	12	11	50	35	130	132	1/4 M10	M8	14	56.5	6	110	118	44	110	36	36	31.5	98	20	20	25	15	1.5	1.5	

◆ for bronze bushings = 78; for ball bearing = 75

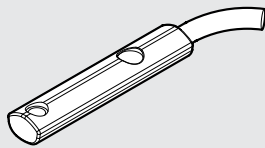
KEY TO CODES

W 1 4 3 TYPE	0 3 2 DIAMETER	2 VERSION	0 2 5 STROKE
	16 20 25 32 40 50 63 * 80 * A1=100	2 bronze bushings 3 ball bearings 4 cushioned with brass bushings 5 cushioned with ball bearings	CUSHIONED VERSION Ø 16: 20, 30, 40, 50 Ø 20 to 25: 20, 30, 40, 50, 75, 100, 150 Ø 32 to 63: 25, 50, 75, 100, 150, 175 NOT CUSHIONED VERSION ♦ Ø 16: 10, 20, ● 25, 30, 40, 50, 75, 100, 150, 200 Ø 20 to 25: 20, ● 25, 30, 40, 50, 75, 100, 150, 200 Ø 32 to 100: 25, 50, 75, 100, 150, 200 ♦ Other strokes on request but with the same cylinder dimensions as the standard stroke immediately above.

- * Not cushioned version only
- Bronze bushings version only

ACCESSORIES FOR COMPACT GUIDED CYLINDER: MAGNETIC SENSORS

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

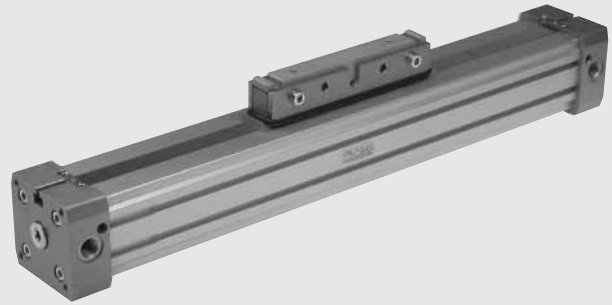
* For use when standard sensors do not detect the magnet, e.g. near metal masses.
NB: For technical data see page 1-246

NOTES

RODLESS CYLINDER SERIES STD

Rodless cylinders come in five different bores - Ø 16, 25, 32, 40 and 63 mm – and the design incorporates numerous innovations.

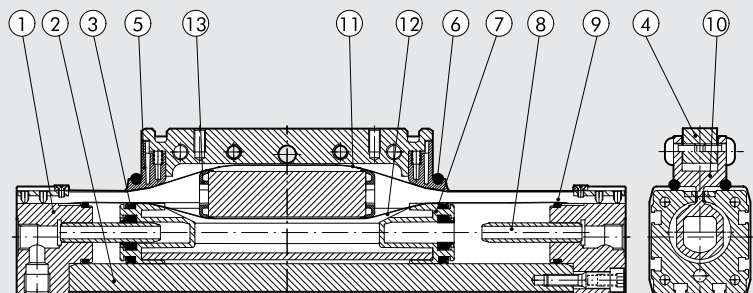
- Calibrated extruded anodized aluminium alloy jacket
- Sensor slots and accessory slots in the jacket itself
- Longitudinal seal by means of specially-shaped indeformable stainless steel strips
- Strokes 100 to 5700 mm with 1mm intervals
- Adjustable integrated pneumatic cushioning
- Adjustable limit switches and decelerations can be applied at any time
- For this type of cylinder (size 32 and upwards), the valves can be fitted directly using the retracting sensors without requiring any intermediate brackets. Refer to the table on page 1-46



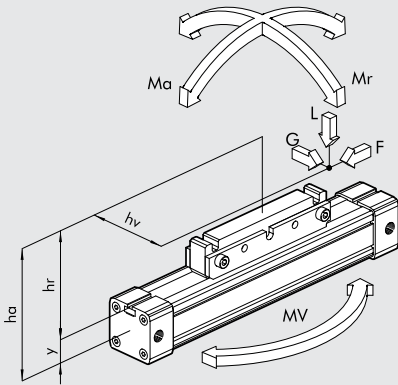
TECHNICAL DATA		NBR	FKM/FPM
Operating pressure	bar		1 to 8
	MPa		0.1 to 0.8
	psi		14.5 to 116
	°C		-15 to 80
Temperature range	°C		-15 to 80
	°F		- 5 to 176
Fluid		50 µm unlubricated filtered air Lubrication, if used, must be continuous.	
Bores	mm	Ø 16, 25, 32, 40, 63	
Type of construction		Double-acting rodless cylinder with direct transmission system	
Strokes	mm	Ø 16: from 100 to 5000 with 1mm interval	
		Ø 25, 32 e 40: from 100 to 5700 with 1mm interval	
		Ø 63: from 100 to 5500 with 1mm interval	
Recommended speeds		V < 1 m/s (NBR)	V ≥ 1 m/s (FKM/FPM)
Max. speed with decelerators		< 1 m/s (NBR)	2 m/s (FKM/FPM)
Weight		See page 1-9	
Notes		For versions no-stick slip, use no-lubricated air only	

COMPONENTS

- 1 CYLINDER HEAD: aluminium alloy
- 2 BARREL: profiled anodized aluminium alloy
- 3 PISTON GASKET: NBR or FKM/FPM
- 4 CENTRAL ELEMENT: aluminium alloy
- 5 SCRAPER: Hostaform®
- 6 O-RING: FKM/FPM
- 7 PISTON: Hostaform®
- 8 CUSHIONING CONE: aluminium alloy
- 9 STATIC O-RINGS: NBR or FKM/FPM
- 10 SLIDE: aluminium alloy
- 11 OUTER STRIP: stainless steel
- 12 INNER STRIP: stainless steel
- 13 BAND SUPPORT: Hostaform®



DIMENSIONING - FORCE AND TORQUE



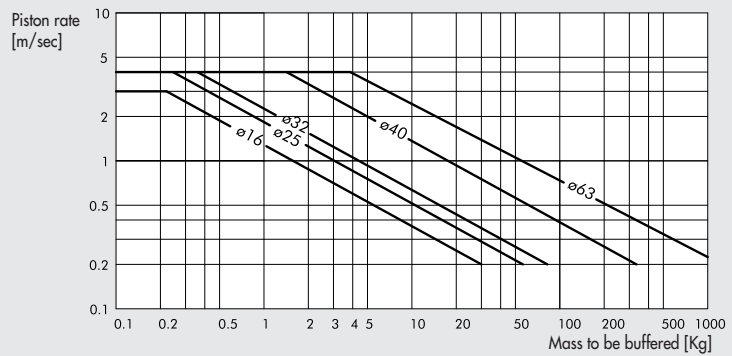
Bore	Centre Distance Y	Actual Force F at 6 bar [N]	Cushioning stroke [mm]	Max. load L [N]	Ma max [Nm]	Mr max [Nm]	Mv max [Nm]
16	9	110	15	120	4	0.3	0.5
25	14	250	21	300	15	1	3
32	18	420	26	450	30	2	4
40	22	640	32	750	60	4	8
63	44	1550	40	1650	200	8	24

N.B.: When the cylinder is subjected simultaneously to torque and force, it is advisable to keep to the following equations.
 $Ma = F \times ha$ $Mr = L \times hv + G \times hr$ $Mv = F \times hv$

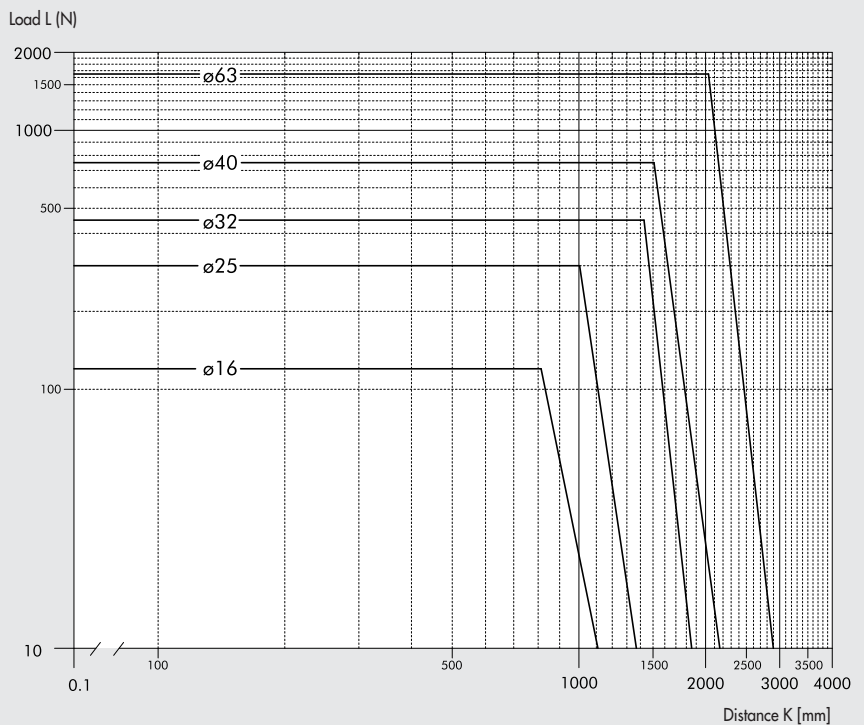
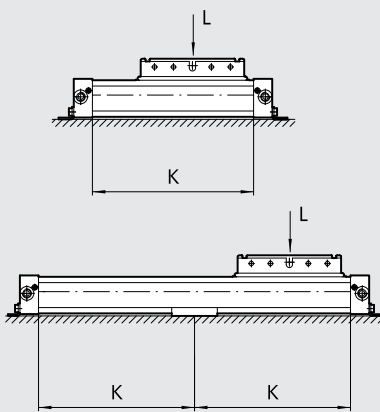
$$\frac{Mv}{Mv_{max}} \leq 1; \quad \frac{L}{L_{max}} \leq 1; \quad \frac{Ma}{Ma_{max}} + \frac{Mr}{Mr_{max}} + 0.22 \times \frac{Mv}{Mv_{max}} + 0.4 \frac{L}{L_{max}} \leq 1$$

DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

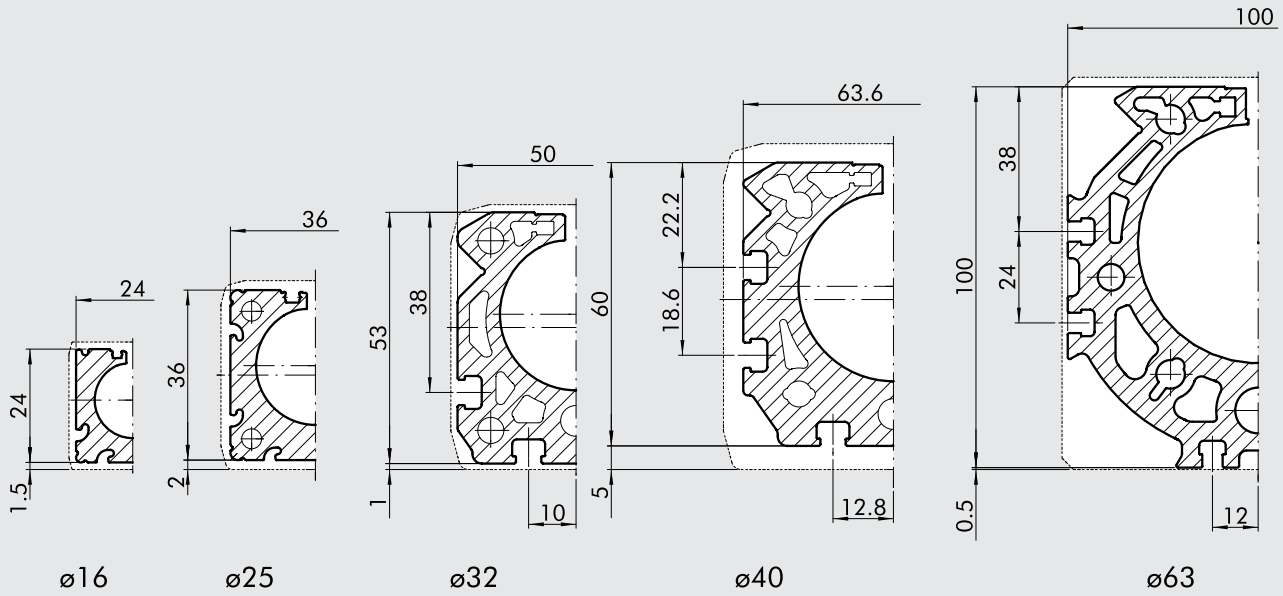
For the cylinder to reach the end-of-stroke position without intense or repeated impact which would damage it, it is necessary to annul the kinetic energy of the moving mass and the work generated. The maximum cushionable load depends on the traversing speed and the absorption of the air buffer supplied standard with the various cylinders. The diagram shows the speeds and cushionable mass for the various diameters at a pressure of 6 bar.



MAXIMUM LOAD ACCORDING TO THE DISTANCE BETWEEN SUPPORTS

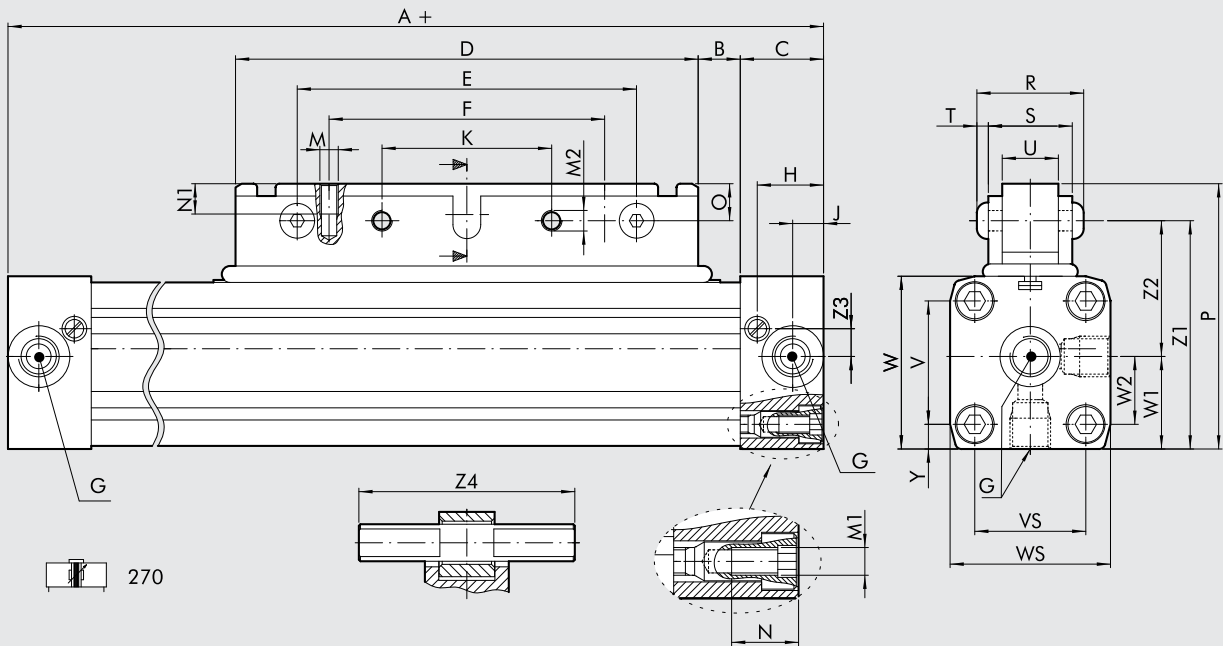


BARREL CROSS SECTION



DIMENSIONS Ø 16 to 40

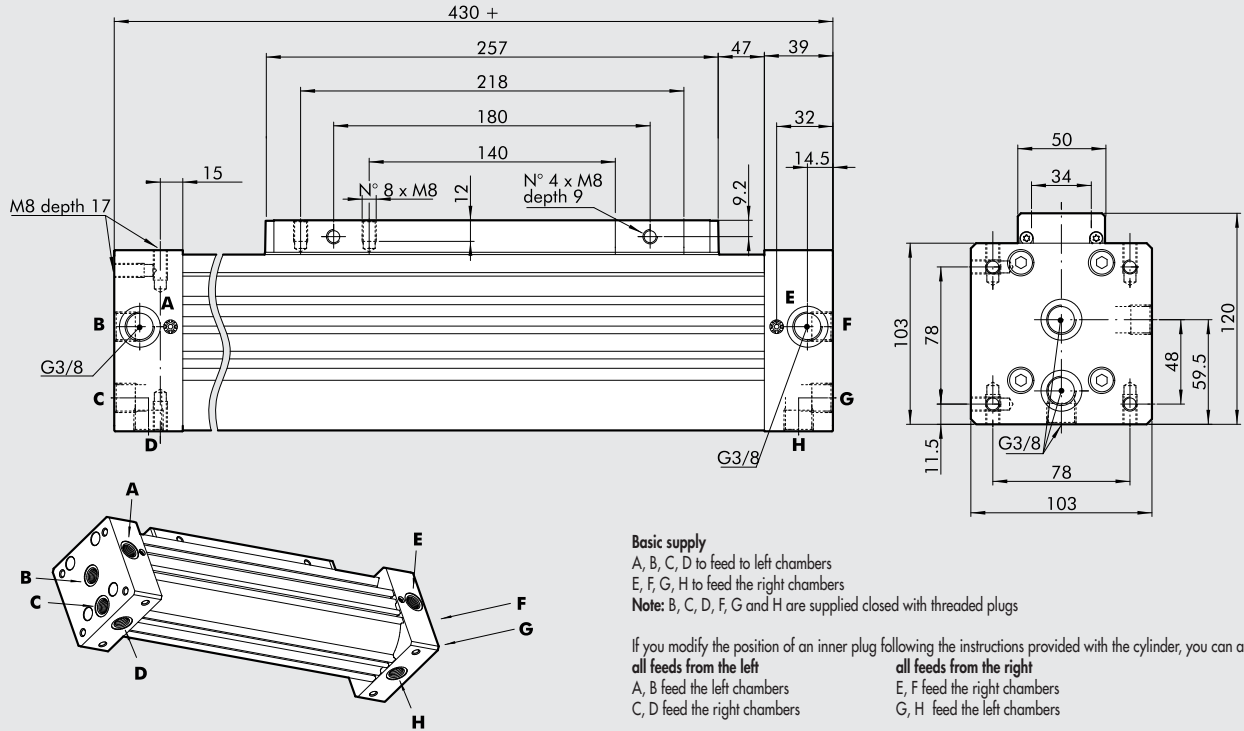
+ = ADDED STROKE



Ø	A	B	C	D	E	F	G	H	J	K	M	M1	M2	N	N1	O	P	R	S	T	U	V	VS	W	WS	W1	W2	Y	Z1	Z2	Z3	Z4
16	130	12	15	76	64	48	M5	12	6.4	32	M4	M3	M5	7	8	6	43.5	23.5	18	2.75	10	18	18	27	27	13.5	9	4.5	37.5	24	4.5	28
25	200	17	23	120	100	80	1/8	18.5	8.5	50	M5	M5	M6	12	11	13	66	29.6	23	3.3	15	27	27	40	40	20	13.5	6.5	53	33	6.5	42
32	250	23	27	150	110	90	1/4	22	10.5	55	M6	M6	M8	14	12	12	86	36	27	4.4	18	40	36	56	52	30	22	8	74	44	8	70
40	300	45	30	150	110	90	1/4	24	15	55	M6	M6	M8	17.5	12	12	97	36.8	28	4.4	18	54	54	69	72	36	27	9	85	49	11.8	70

DIMENSIONS Ø 63

+ = ADDED STROKE



Basic supply

A, B, C, D to feed to left chambers

E, F, G, H to feed the right chambers

Note: B, C, D, F, G and H are supplied closed with threaded plugs

If you modify the position of an inner plug following the instructions provided with the cylinder, you can arrange:

all feeds from the left

A, B feed the left chambers

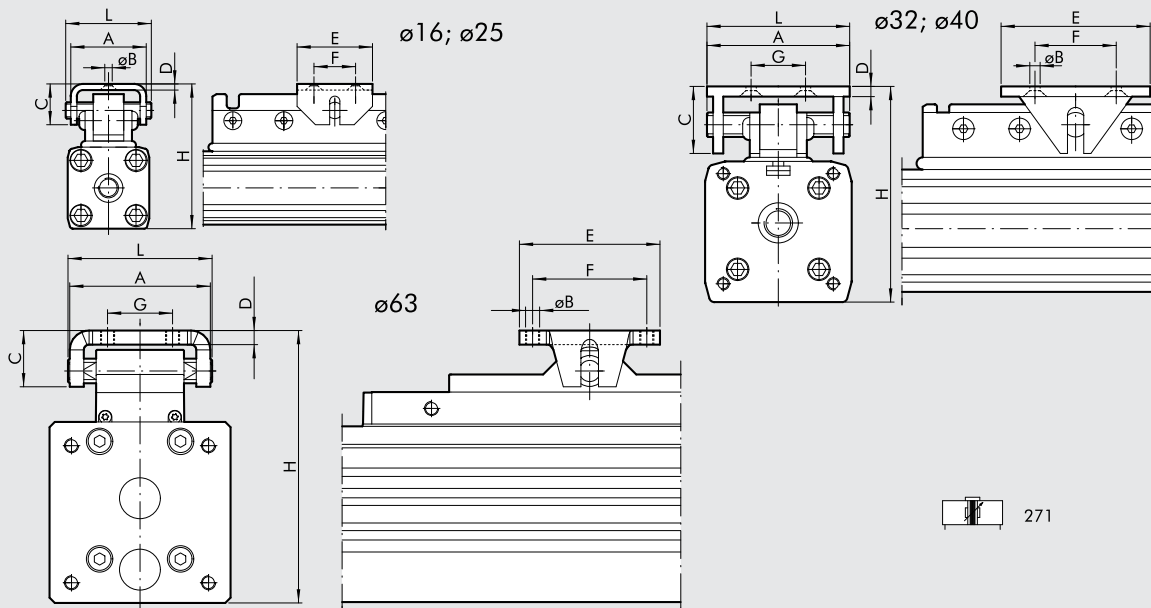
C, D feed the right chambers

all feeds from the right

E, F feed the right chambers

G, H feed the left chambers

VERSION WITH SWING CARRIAGE

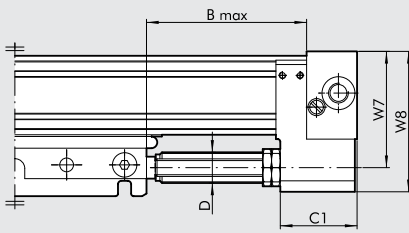
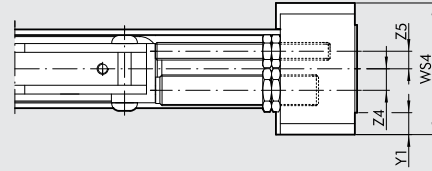


NOTE: For other dimensions see code 270

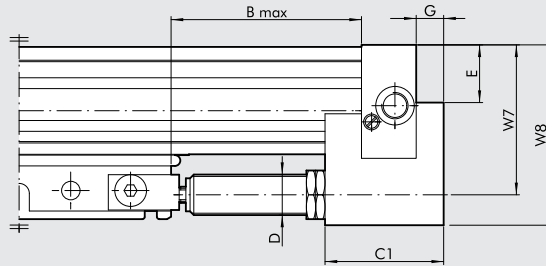
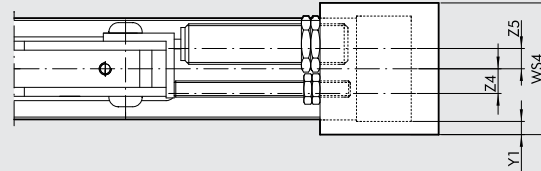
Ø	A	ØB	C	D	E	F	G	H	L
16	25	4.5	13	2	20	10	-	47-50	28
25	37	5.5	20	3	30	16	-	72-75	42
32	70	6.5	38	5	90	75	55	91-100	70
40	70	6.5	38	5	90	75	55	111-120	70
63	80	M8	32	8	80	65	37	155-162	82

DIMENSIONS VERSION WITH ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS

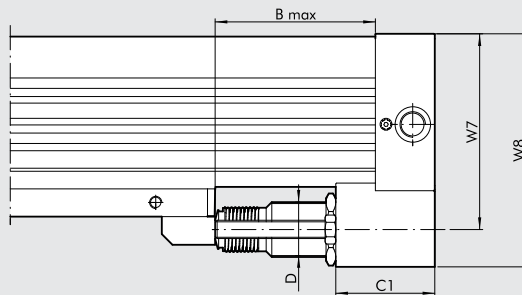
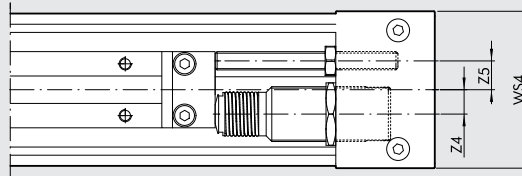
ø16



ø25 ÷ ø40



ø63



Ø	B Max	C1	D	E	F	G	W7	W8	WS4	Y1	Z4	Z5	Stroke	Max. cushioned force		Max. impact force [N]	Max. thrust force [N]
														For stroke [J]	For hour [J]		
16	42	22	M12x1	-	50	-	38	46	42	7.5	7	7.5	10	4.5	14125	1000	220
25	72	44	M14x1.5	17	80	9	53	67	50	5	8	9.8	16	18	34000	2800	530
32	90	56	M20x1.5	29	100	11	74	89	60	4	10	12.2	22	40	53700	3750	890
40	105	74	M25x1.5	32.8	100	14	89	108	75	1.5	12.5	12.7	25	65	70000	5500	1550
63	105	65	M36x1.5	-	120	-	128.5	153	103	-	16	19	25	125	91000	11120	2220

For graphs to help choose shock absorbers see page 1-137

KEY TO CODES

CYL	27	0	0	2 5	0 0 5 0	C	N
	TYPE			BORE	STROKE		GASKETS
	27 Rodless cylinder	0 Standard 1 With swing drive + 2 Twin cushioned series "Double" 3 Double-acting cushioned Magnetic + adjustable limit switches and shock absorbers	0 Magnetic S Non-magnetic ■ G No stick slip	16 25 32 40 63	Ø 16: from 100 to 5000 mm Ø 25 to 40: from 100 to 5700 mm Ø 63 from 100 to 5500 mm		N NBR gasket ● V FKM/FPM gasket

■ For speed ≤ 0.2 m/s ● For speed ≥ 1/m/s + Available up to Ø 32

RODLESS CYLINDER WITH GUIDE "V"

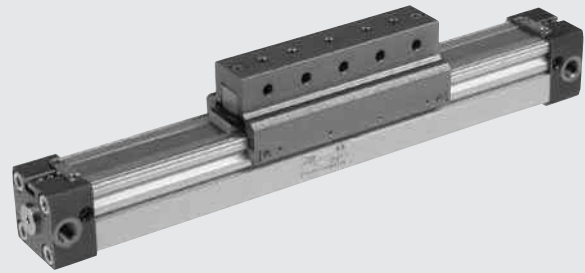
Two opposed V-shaped guide units are obtained directly in the anodized aluminium cylinder liner, on which a cover with two acetalic resin wear-resistant pads slides.

The cover has a tip-up-type carriage-piston rod coupling. In this way the carriage only transfers loads axially and does not support loads and moments in other directions.

The play of the pads can be adjusted by means of side threaded grub screws. Therefore, it is possible to recover the wear of pads, which can be replaced without the need for dismantling the cylinder.

This family of rodless cylinders has the same features as the basic versions: such as an integrated adjustable pneumatic cushioning, sensor slots and accessory holding slots.

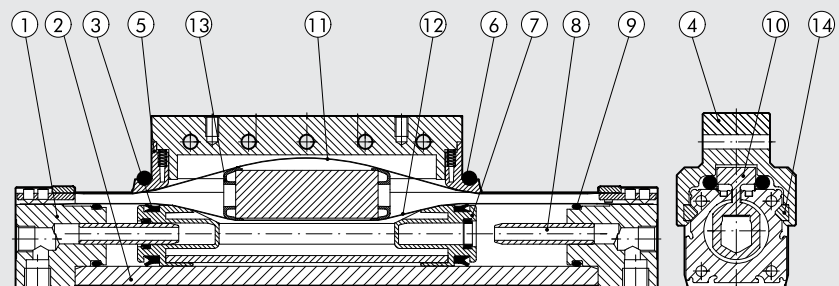
A version is available with adjustable limit switches and hydraulic decelerators. They can be purchased separately and applied at any time to the basic cylinders as well.



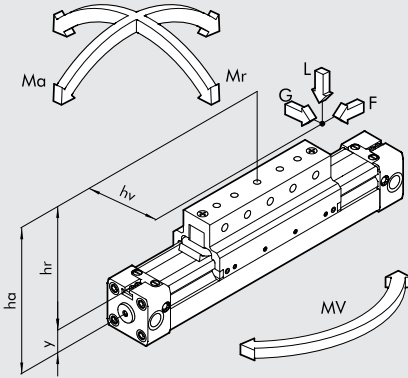
TECHNICAL DATA		NBR	FKM/FPM
Operating pressure	bar	1.5 to 8	
	MPa	0.15 to 0.8	
	psi	21.8 to 116	
Temperature range	°C	-15 to 80	
	°F	- 5 to 176	
Fluid		50 µm unlubricated filtered air Lubrication, if used, must be continuous	
Bores	mm	25, 32, 40, 63	
Type of construction		Double-acting rodless cylinder with direct transmission system	
Strokes	mm	Ø 25, 32 and 40: from 100 to 5700 with 1mm interval	
		Ø 63: from 100 to 5500 with 1mm interval	
Recommended speeds		V < 1 m/s (NBR)	V ≥ 1 m/s (FKM/FPM)
Max. speed with decelerators		< 1 m/s (NBR)	2 m/s (FKM/FPM)
Weight		See page 1-9	
Notes		For no-stick slip versions, use no-lubricated air only	

COMPONENTS

- ① CYLINDER HEAD: aluminium alloy
- ② BARREL: profiled anodized aluminium alloy
- ③ PISTON GASKET: NBR or FKM/FPM
- ④ CENTRAL ELEMENT: aluminium alloy
- ⑤ SCRAPER: Hostaform®
- ⑥ O-RING: FKM/FPM
- ⑦ PISTON: Hostaform®
- ⑧ CUSHIONING CONE: aluminium alloy
- ⑨ STATIC O-RINGS: NBR or FKM/FPM
- ⑩ SLIDE: aluminium alloy
- ⑪ OUTER STRIP: stainless steel
- ⑫ INNER STRIP: stainless steel
- ⑬ BAND SUPPORT: Hostaform®
- ⑭ "V" GUIDE PLATE: Hostaform®



DIMENSIONING - FORCE AND TORQUE



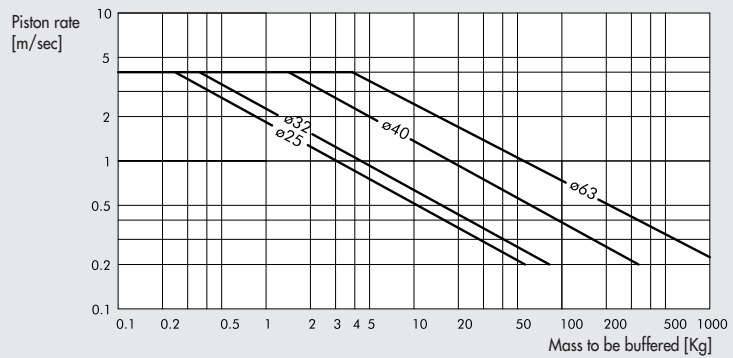
Bore	Centre Distance Y	Actual Force F at 6 bar [N]	Cushioning stroke [mm]	Max. load L [N]	Ma max [Nm]	Mr max [Nm]	Mv max [Nm]
25	14	200	21	350	22	5	22
32	18	300	26	400	40	10	40
40	22	490	32	700	70	26	70
63	44	1300	40	1800	250	80	250

N.B.: The loads can be applied for speeds below 0.2 m/s. For higher speeds, it is advisable not to exceed 1 m/s
N.B.: When the cylinder is subjected simultaneously to torque and force, it is advisable to keep to the following equations
 $Ma = F \times ha$ $Mr = L \times hv + G \times hr$ $Mv = F \times hv$

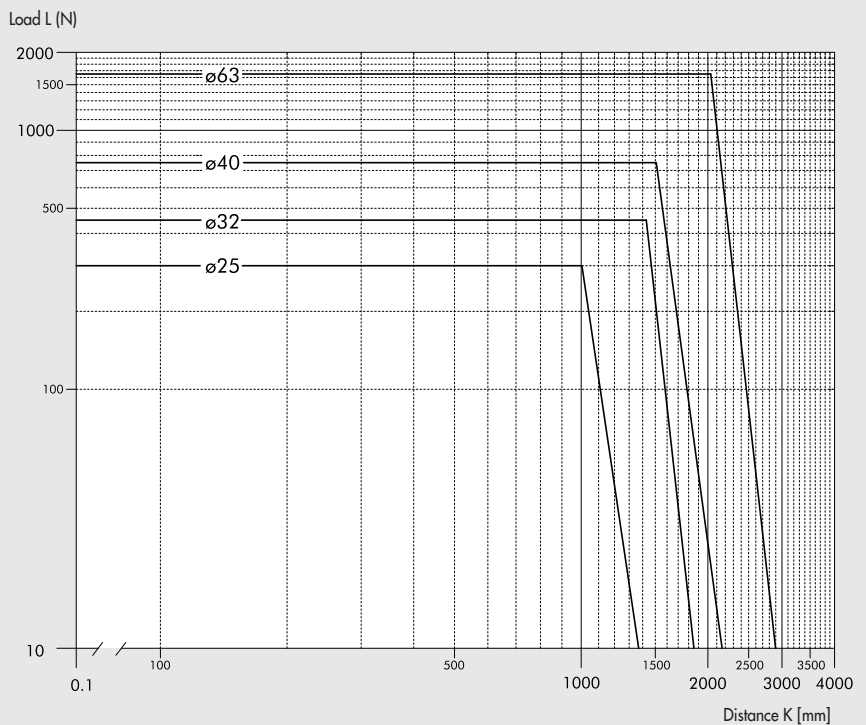
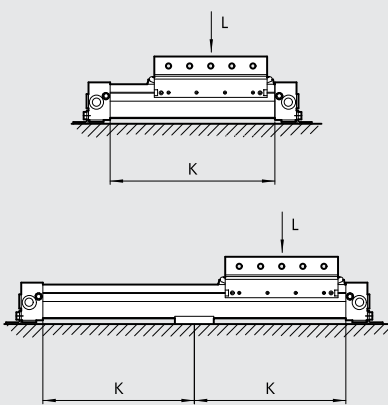
$$\frac{Mv}{Mv_{max}} \leq 1; \quad \frac{L}{L_{max}} \leq 1; \quad \frac{Ma}{Ma_{max}} + \frac{Mr}{Mr_{max}} + 0.22 \times \frac{Mv}{Mv_{max}} + 0.4 \frac{L}{L_{max}} \leq 1$$

DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

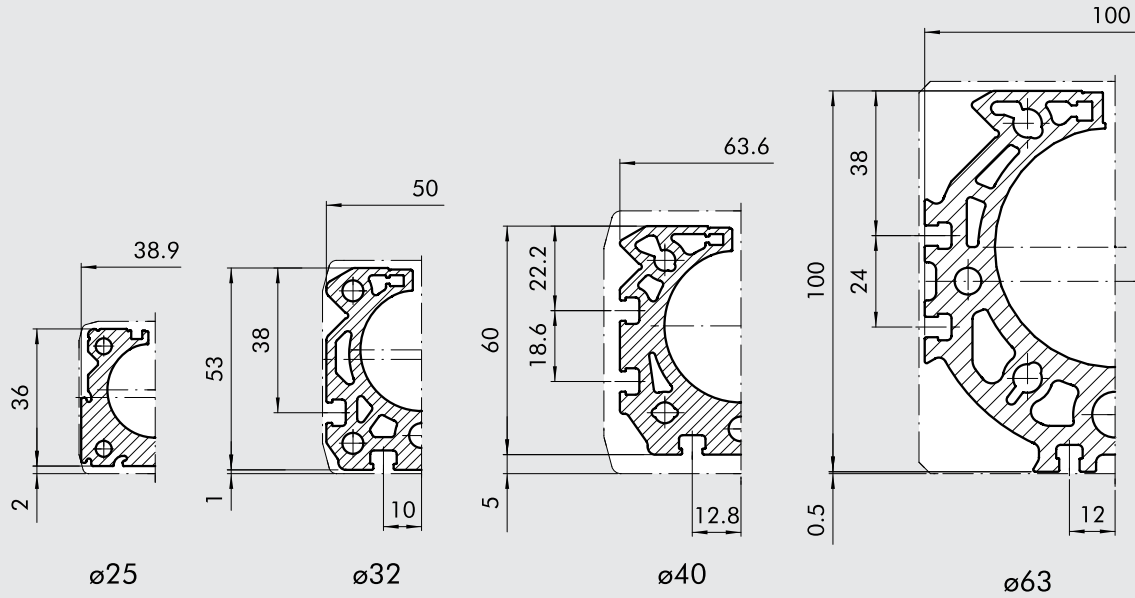
For the cylinder to reach the end-of-stroke position without intense or repeated impact which would damage it, it is necessary to annul the kinetic energy of the moving mass and the work generated. The maximum cushionable load depends on the traversing speed and the absorption of the air buffer supplied standard with the various cylinders. The diagram shows the speeds and cushionable mass for the various diameters at a pressure of 6 bar.



MAXIMUM LOAD ACCORDING TO THE DISTANCE BETWEEN SUPPORTS

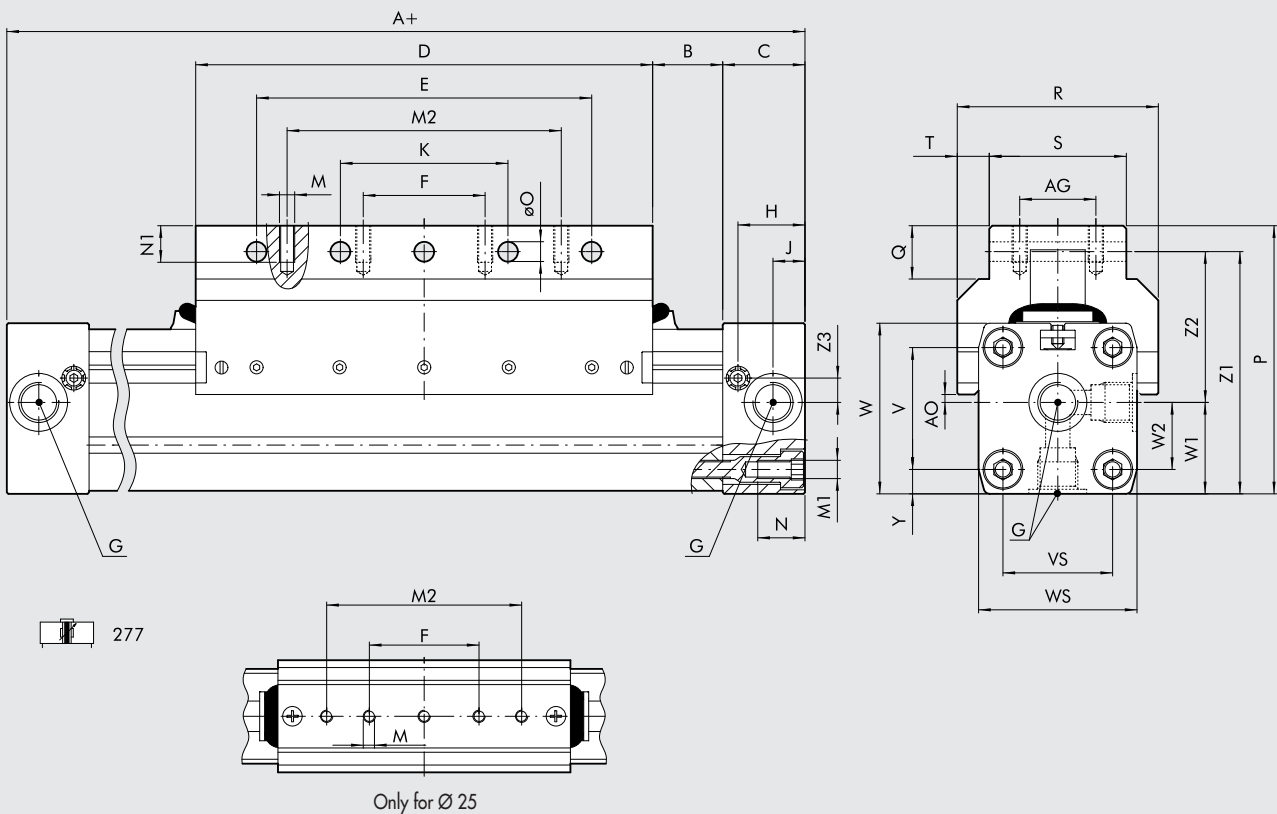


BARREL CROSS SECTION



DIMENSIONS Ø 25 to 40

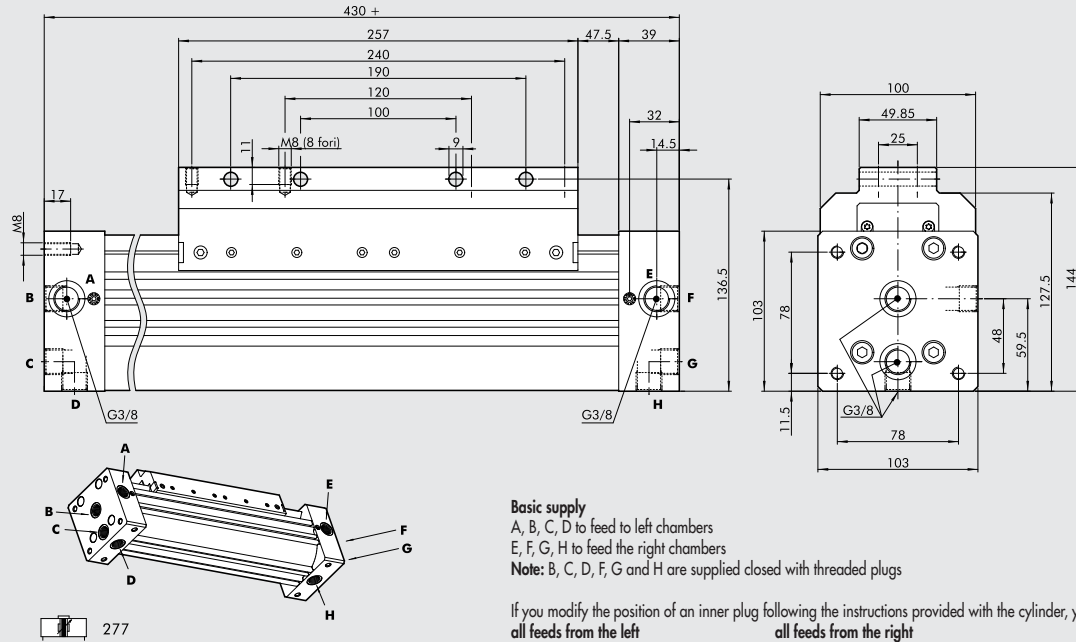
+ = ADDED STROKE



Ø	A	AG	AO	B	C	D	E	F	G	H	J	K	M	M1	M2	N	NI	øO	P	Q	R	S	T	V	VS	W	WS	W1	W2	Y	Z1	Z2	Z3
25	200	-	2	17	23	120	90	45	1/8	18.5	8.5	45	M5	M5	80	12	8	5.5	67.5	21	46	26	10	27	27	40	40	20	13.5	6.5	57.5	37.5	6.5
32	250	25	2.6	23	27	150	110	40	1/4	22	10.5	55	M5	M6	90	15	12	6.4	88	17.5	66	45	10.5	40	36	56	52	30	22	8	79.5	49.5	8
40	300	25	9.4	45	30	150	110	40	1/4	24	15	55	M6	M6	90	17.5	12	6.4	98.5	17.5	80	45	17.5	54	54	69	72	36	27	9	89.9	53.9	11.8

DIMENSIONS Ø 63

+ = ADDED STROKE



Basic supply

A, B, C, D to feed to left chambers
E, F, G, H to feed the right chambers

Note: B, C, D, F, G and H are supplied closed with threaded plugs

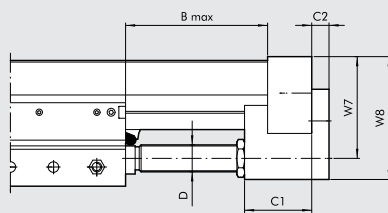
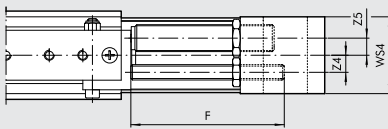
If you modify the position of an inner plug following the instructions provided with the cylinder, you can arrange:

all feeds from the left
A, B feed the left chambers
C, D feed the right chambers

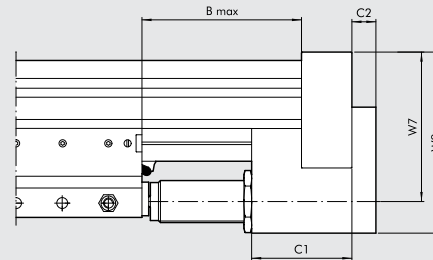
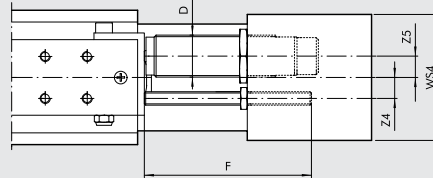
all feeds from the right
E, F feed the right chambers
G, H feed the left chambers

DIMENSIONS VERSION WITH ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS

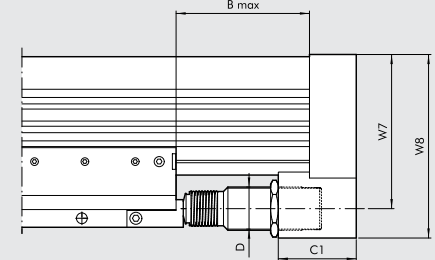
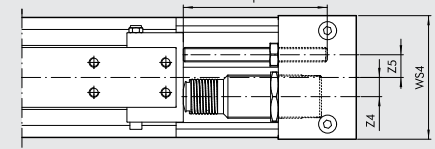
Ø 25



Ø 32; Ø 40



Ø 63



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Ø	B Max	C1	C2	D	F	W7	W8	WS4	Z4	Z5	Stroke	Max. cushioned force		Max. impact force [N]	Max. thrust force [N]
												For stroke [J]	For hour [J]		
25	84	35	9	M14x1.5	80	53	67	50	8	9.8	16	26	34000	2800	530
32	110	45	11	M20x1.5	100	74	89	60	10	12.2	22	54	53700	3750	890
40	120	60	14	M25x1.5	100	89	108	75	12.5	12.7	25	90	70000	5500	1550
63	122	65	-	M36x1.5	120	128.5	153	103	16	19	25	160	91000	11120	2220

For graphs to help choose shock absorbers see page 1-137

KEY TO CODES

CYL	27 TYPE	7	0	2 5 BORE	0 0 5 0 STROKE	C	N GASKETS
	27 Rodless cylinder	7 Double-acting cushioned Magnetic with guide "V" 8 Double-acting cushioned Magnetic with guide "V" + adjustable limit switches and decelerator	0 Magnetic S Non-magnetic * G No stick slip	25 32 40 63	Ø 25 to 40: from 100 to 5700 mm Ø 63 from 100 to 5500 mm		N NBR gasket ● V FKM/FPM gasket

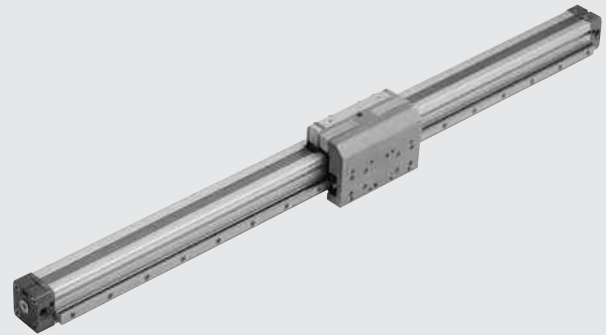
* For speed ≤ 0.2 m/s ● For speed ≥ 1/m/s

RODLESS CYLINDER WITH BALL RECIRCULATING GUIDE

The range of rodless cylinders with ball circulation guides is available with five different bores Ø 16, 25, 32, 40 and 63. The bore 63 can be supplied in two versions: the "standard" one for intermediate loads and the "heavy" one for considerably weighty loads. Besides the general features specified for standard rodless cylinders, the other main features are:

- Very high load capacity, acting in all directions without discharging onto the cylinder slide.
- Hardened steel guide connected firmly to the cylinder jacket.
- Ball circulation shoes constructed using special technology that make them very silent when the guide slides, with very long maintenance intervals. For example, they only need lubricating every 2000 km or once a year, using type 2 grease, preferably containing lithium soap.
- Extra sturdy slide support with various holes for fixing the loads. Holes for centring pins are also provided.
- 100 to 2650 stroke at intervals of 1 mm.
- Integrated pneumatic adjustable cushioning.
- Adjustable limit switches and decelerations can be applied at any time.

For this type of cylinder (size 32 and upwards), the valves can be fitted directly using the retracting sensors without requiring any intermediate brackets. Refer to the table on page 1-46



TECHNICAL DATA		NBR	FKM/FPM
Operating pressure	bar	0.5 to 8	
	MPa	0.05 to 0.8	
	Psi	7 to 116	
Temperature range	°C	-15 to 80	
	°F	-5 to 176	
Fluid		50 µm unlubricated filtered air lubrication, if used, must be continuous	
Bores	mm	Ø 16, 25, 32, 40, 63	
Type of construction		Double-acting rodless cylinder with direct transmission system	
Strokes	mm	Ø 16: from 100 to 1350 with 1 interval	
		Ø 25: from 100 to 2300 with 1 interval	
		Ø 32: from 100 to 2300 with 1 interval	
		Ø 40: from 100 to 2250 with 1 interval	
		Ø 63 standard: from 100 to 2100 with 1 interval	
		Ø 63 heavy: from 100 to 2650 with 1 interval	
Threaded ports		M5, G1/8", G1/4", G3/8"	
Assembly		As required	
Recommended speed		< 1 m/s (NBR)	≥ 1 m/s (FKM/FPM)
Max. speed with decelerators		< 1 m/s (NBR)	2 m/s (FKM/FPM)
Weight		See page 1-7	
Notes		For no-stick slip versions, use no-lubricated air only	

COMPONENTS

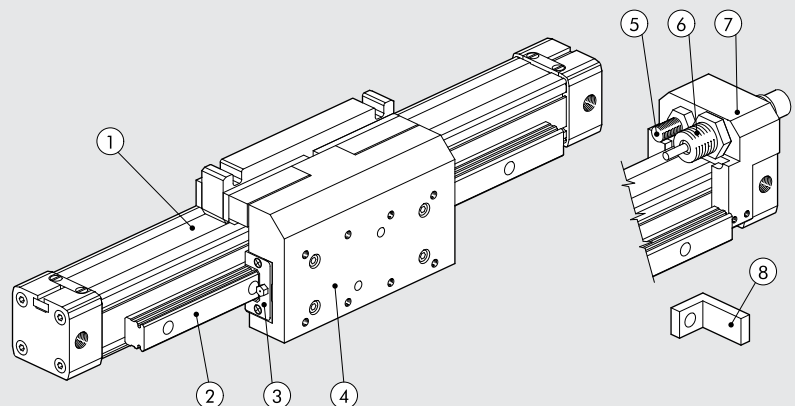
For version 275

- ① CYLINDER: see construction details on page 1-118
- ② GUIDE: hardened steel
- ③ SHOE: steel with hardened ball circulation
- ④ SLIDE SUPPORT: anodised aluminium

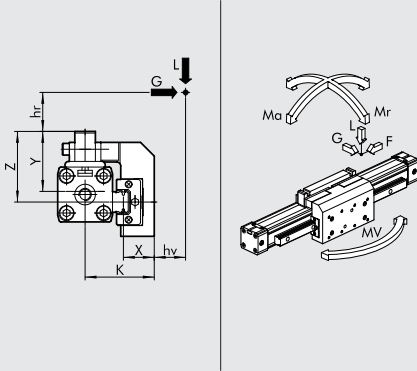
For version 276

Besides the details specified above:

- ⑤ END-OF-STROKE STUD PIN: zinc-plated steel, complete with 2 zinc-plated nuts for fixing
- ⑥ DECELERATOR: burnished steel, complete with 2 zinc-plated or burnished nuts for fixing
- ⑦ DECELERATOR SUPPORT: anodised aluminium
- ⑧ BRACKET: hardened-and-tempered and zinc-plated steel



DIMENSIONING - FORCES AND MOMENTS



Ø	Version	Actual force F at 6 bar [N]	Cushioning stroke [mm]	K [mm]	X [mm]	Y [mm]	Z [mm]	Max load L [N]	Max load G [N]	Ma max [Nm]	Mr max [Nm]	Mv max [Nm]
16	-	110	15	35	16	29	33	500	500	16	15	16
25	-	250	21	50.5	21	44	51.5	1500	1500	100	50	100
32	-	420	26	59	22.5	53.5	70	3000	3000	200	100	200
40	-	640	32	68	24.7	58	73	4000	4000	200	140	200
63	standard	1550	40	84	23.1	79	100	6000	6000	400	140	400
63	heavy	1550	40	91	29.2	79	88	10000	10000	600	400	600

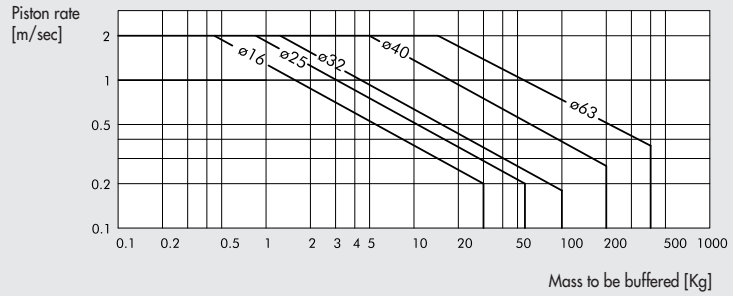
N.B.: when the cylinder is subjected simultaneously to torque and force, it is advisable to keep to the following equations

$$Ma = F \times (hr + Y) \quad Mr = G \times (hr + z) + Lx (hv + X) \quad Mv = F \times (K + hv)$$

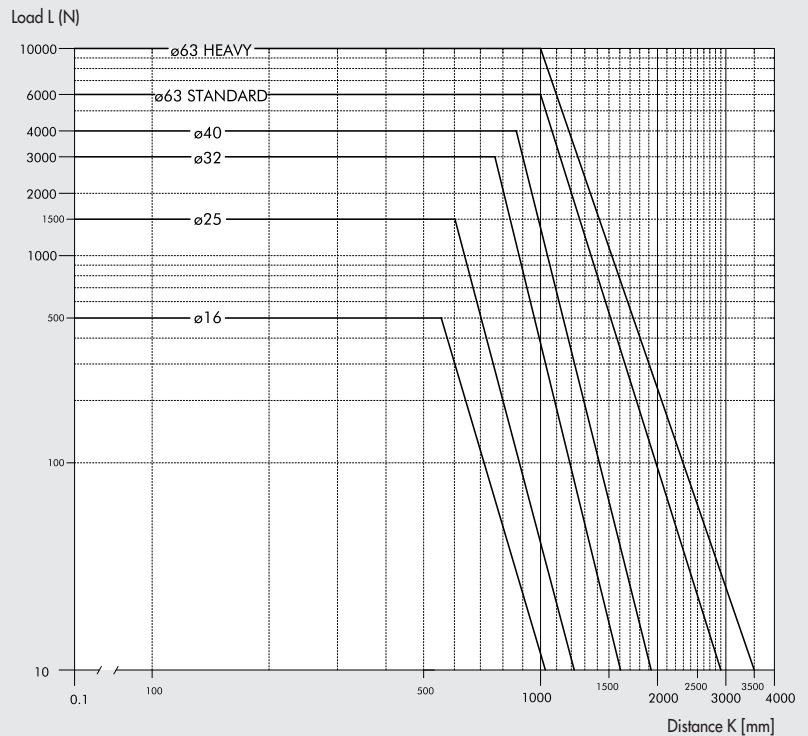
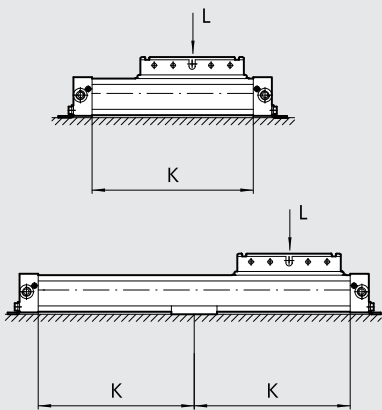
$$\frac{Ma}{Ma_{max}} + \frac{Mr}{Mr_{max}} + \frac{Mv}{Mv_{max}} + \frac{L}{L_{max}} + \frac{G}{G_{max}} \leq 1$$

DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

For the cylinder to reach the end-of-stroke position without intense or repeated impact which would damage it, it is necessary to annul the kinetic energy of the moving mass and the work generated. The maximum cushionable load depends on the traversing speed and the absorption of the air buffer supplied standard with the various cylinders. The diagram shows the speeds and cushionable mass for the various diameters at a pressure of 6 bar.

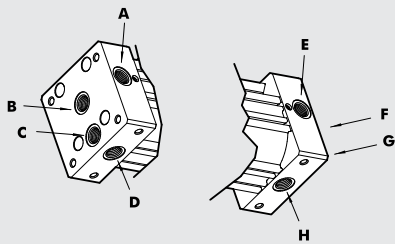
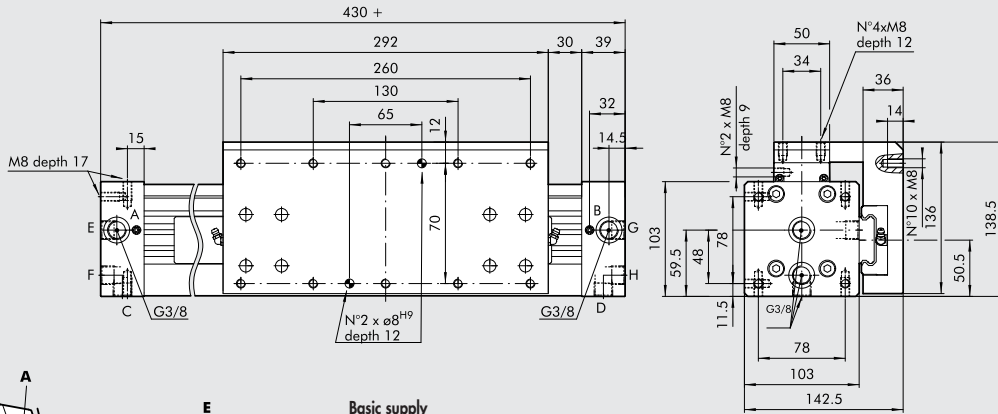


MAXIMUM LOAD ACCORDING TO THE DISTANCE BETWEEN SUPPORTS



DIMENSIONS Ø 63

HEAVY



Basic supply

A, B, C, D to feed to left chambers
E, F, G, H to feed the right chambers

Note: B, C, D, F, G and H are supplied closed with threaded plugs.

If you modify the position of an inner plug following the instructions provided with the cylinder, you can arrange:

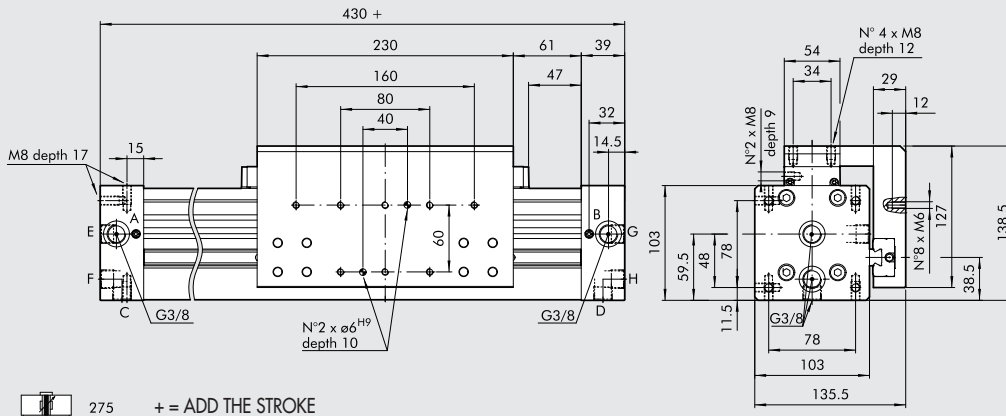
all feeds from the left

A, B feed the left chambers
C, D feed the right chambers

all feeds from the right

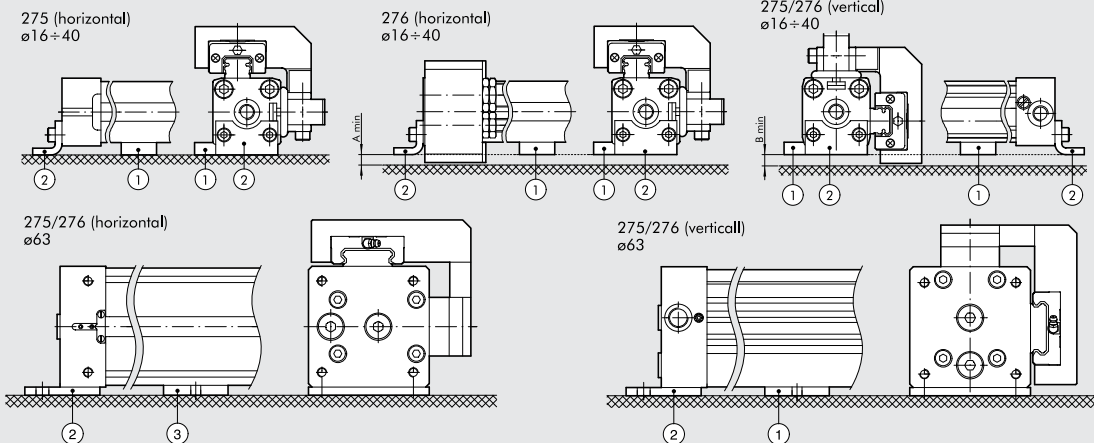
E, F feed the right chambers
G, H feed the left chambers

STANDARD



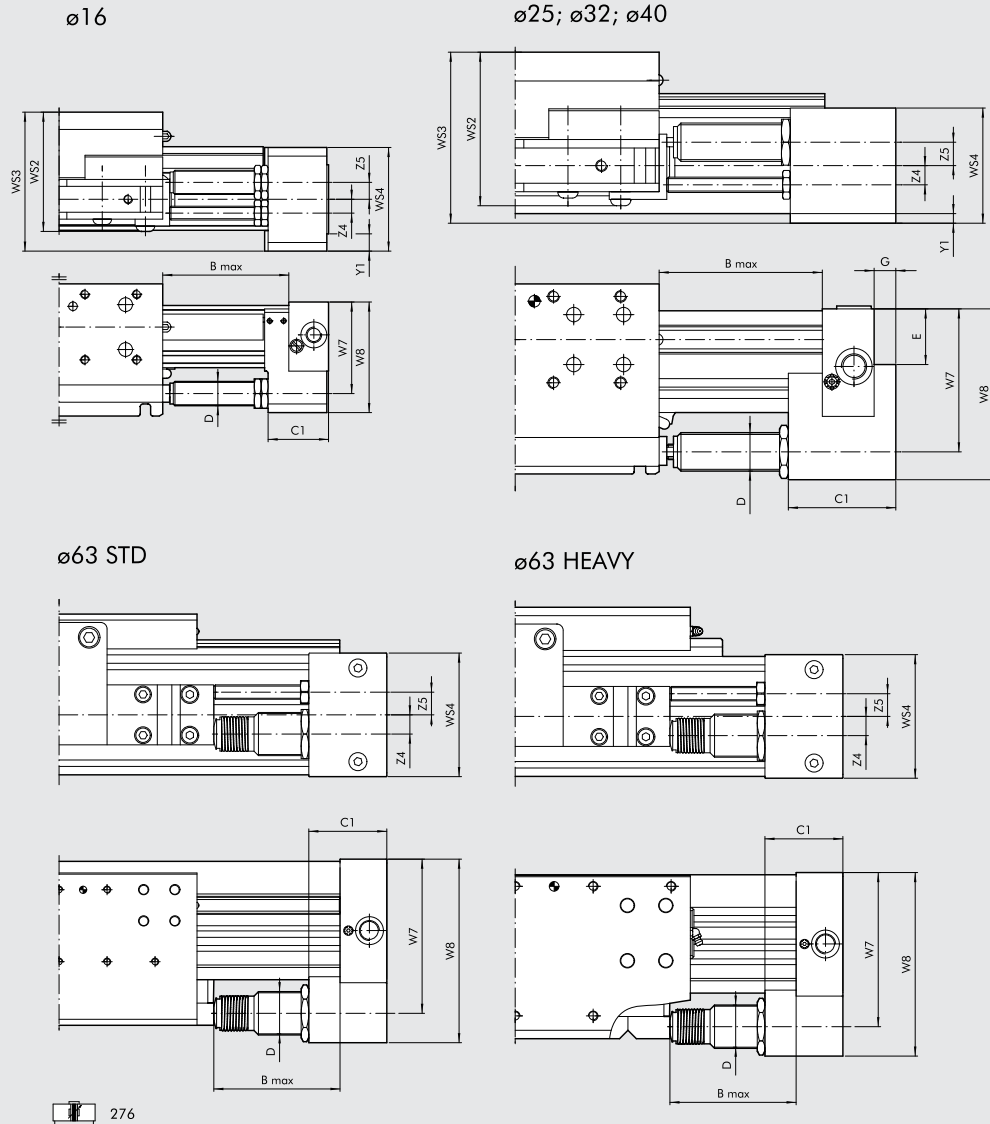
275 + = ADD THE STROKE

ASSEMBLY DIAGRAMS



Ø	Horizontal layout		Vertical layout	
	A min	Intern. support code (1)	B min	Intern. support code (1)
16	8	W0950164004	12	W0950164004
25	10	W0950254004	10	W0950254004
32	4	W0950324004	11	W0950324004
40	3	W0950404004	5	W0950404004
63	-	W0950637032	-	W0950637036

DIMENSION VERSION WITH ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS Ø 16 to 63



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Ø	Version	B max	C1	D	E	G	W7	W8	WS2	WS3	WS4	Y1	Z4	Z5	Stroke	Max. cushioned force		Max. impact force [N]	Max. thrust force [N]
																Per stroke [J]	Per hour [J]		
16	-	50	22	M12x1	-	-	38	46	52	56	42	7.5	7	7.5	10	4.5	14125	1000	220
25	-	72	44	M14x1	17	9	53	67	71	80.5	50	5	8	9.8	16	18	34000	2800	530
32	-	90	56	M20x1.5	29	11	74	89	82.5	91	60	4	10	12.2	22	40	53700	3750	890
40	-	105	74	M25x1.5	32.8	14	89	108	92	108	75	1.5	12.5	12.7	25	65	70000	5500	1550
63	standard	105	65	M36x1.5	-	-	128.5	153	-	-	103	-	16	19	25	125	91000	11120	2220
63	heavy	105	65	M36x1.5	-	-	128.5	153	-	-	103	-	16	19	25	125	91000	11120	2220

For graphs to help choose shock absorbers see page 1-137

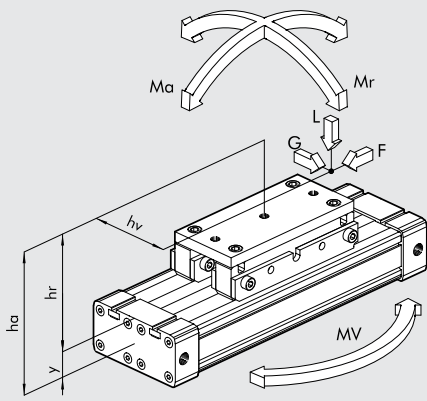
KEY TO CODES

CYL	27 TYPE	5	0	2 5 BORE	0 0 5 0 STROKE	C	N GASKETS
	27 Rodless cylinder	5 Double-acting cushioned magnetic with ball circulation guides 6 Double-acting cushioned magnetic with ball circulation guides + adjustable limit switch and shock absorbers	0 STD Magnetic S STD Non-magnetic ■ G STD No stick slip A HEAVY Magnetic ■ B HEAVY No stick slip C HEAVY Non-magnetic	16 25 32 40 63	Ø 16: 100 to 1350 mm Ø 25 - 32: 100 to 2300 mm Ø 40: 100 to 2250 mm Ø 63 std: 100 to 2100 mm Ø 63 heavy: 100 to 2650 mm		N NBR gasket ● V FKM/FPM gasket

■ For speed ≤ 0.2 m/s ● For speed ≥ 1/m/s

RODLESS CYLINDER SERIES DOUBLE

DIMENSIONING - FORCES AND MOMENTS



Bore Ø	Actual force F at 6 bar [N]	Cushioning stroke [mm]	Max load L [N]	Ma max [Nm]	Mr max [Nm]	Mv max [Nm]
2x16	200	15	240	8	2.4	1
2x25	480	21	600	30	8	6
2x32	820	26	900	60	16.5	10

N.B.: When the cylinder is subjected simultaneously to torque and force, it is advisable to keep to the following equations.

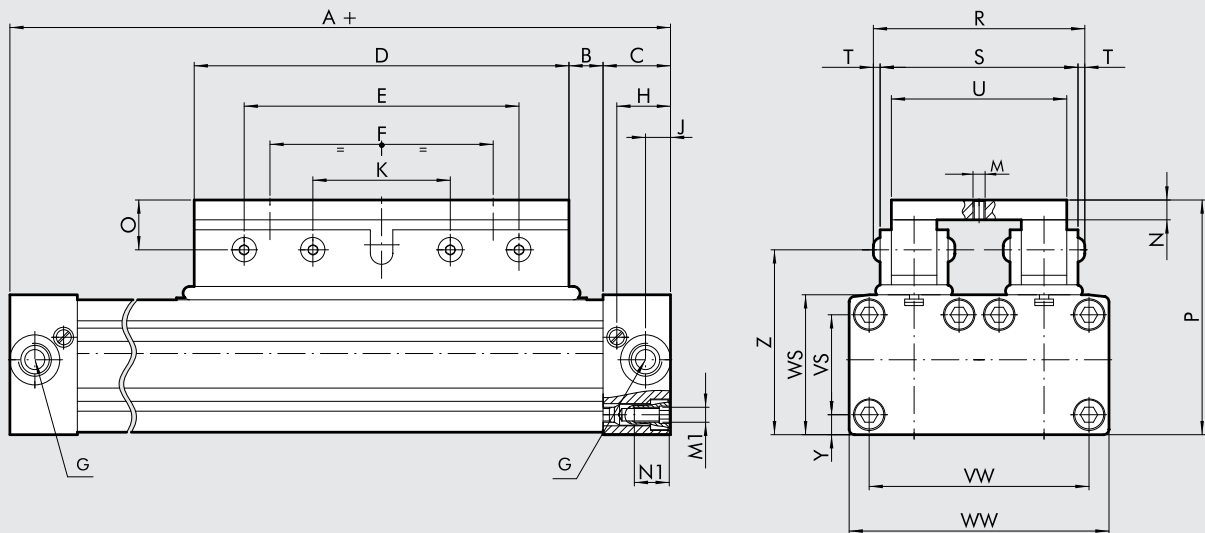
$$Ma = F \times ha \quad Mr = L \times hv + G \times hr \quad Mv = F \times hv$$

$$\frac{Mv}{Mv_{max}} \leq 1; \quad \frac{L}{L_{max}} \leq 1; \quad \frac{Ma}{Ma_{max}} + \frac{Mr}{Mr_{max}} + 0.22 \times \frac{Mv}{Mv_{max}} + 0.4 \times \frac{L}{L_{max}} \leq 1$$

For technical data see page 1-118
For the weights see page 1-9

DIMENSIONS OF RODLESS CYLINDER, DOUBLE SERIES

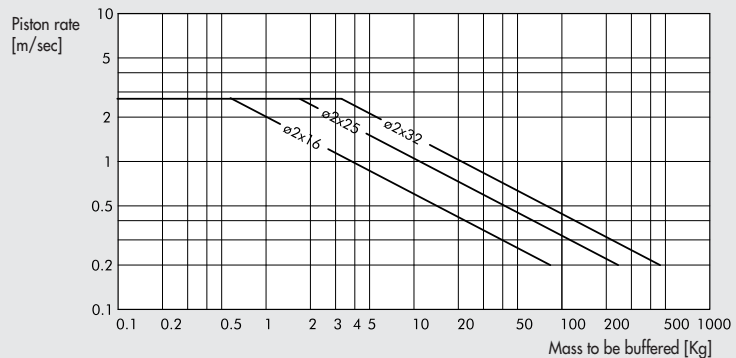
+ = ADD THE STROKE



Ø	A	B	C	D	E	F	G	H	J	K	M	N	M1	N1	O	P	R	S	T	U	VW	VS	WW	WS	Y	Z
2x16	130	12	15	76	64	48	M5	12	6.4	32	M5	10	M3	7	16	53.5	48	42	3	34	42	18	51	27	4.5	37.5
2x25	200	17	23	120	100	80	1/8	18.5	8.5	50	M6	15	M5	12	20	74	66	59	3.5	50	63	27	72	41	7	53.5
2x32	250	23	27	150	110	90	1/4	22.5	10.5	55	M6	12	M6	14	20	95	86.5	77.5	4.5	70	86	40	100	56	8	74

DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

For the cylinder to reach the end-of-stroke position without intense or repeated impact which would damage it, it is necessary to annul the kinetic energy of the moving mass and the work generated. The maximum cushionable load depends on the traversing speed and the absorption of the air buffer supplied standard with the various cylinders. The diagram shows the speeds and cushionable mass for the various diameters at a pressure of 6 bar.

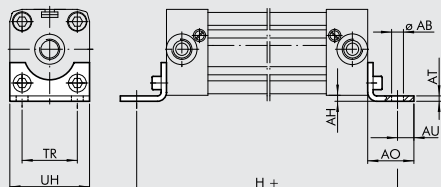


ACCESSORIES FOR RODLESS STD, GUIDE "V", WITH BALL RECIRCULATING GUIDE CYLINDERS



FOOT Ø 16; 25

+ = ADDED STROKE

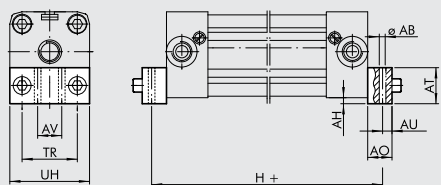


Code	Ø	ØAB	AH	AO	AT	AU	TR	UH	H	Weight [g]
W0950167001	16	3.6	1.5	14	1.6	4	18	26	150	10
W0950257001	25	5.5	2	22	2.5	6	27	40	232	32

Note: Individually packed with 2 screws

FOOT Ø 32; 40

+ = ADDED STROKE

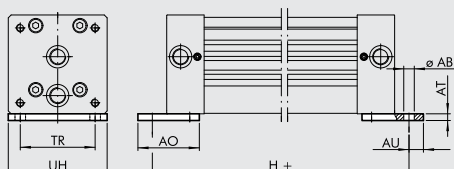


Code	Ø	ØAB	AH	AO	AT	AU	AV	TR	UH	H	Weight [g]
W0950327001	32	6.6	4	25	20	8	20	36	51	284	88
W0950407001	40	9	2	25	20	11.5	30	54	71	327	112

Note: Individually packed with 2 screws

FOOT Ø 63

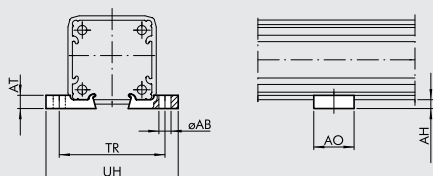
+ = ADDED STROKE



Code	Ø	ØAB	AT	AO	AU	TR	UH	H	Weight [g]
W0950637001	63	11	7	64	15	78	103	460	360

Note: Individually packed with 2 screws

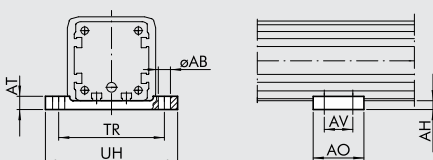
INTERMEDIATE FOOT Ø 16; 25 FOR STD AND GUIDE A "V"



Code	Ø	ØAB	AH	AO	AT	TR	UH	Weight [g]
W0950167031	16	5.5	3	20	5	41	53	4
W0950257031	25	5.5	4	20	6	48	60	6
0950254024*	25	5.5	4	20	6	48	60	6

Note: Individually packed.
* For the guide "V" version only

INTERMEDIATE FOOT Ø 32; 40 FOR STD AND GUIDE A "V"



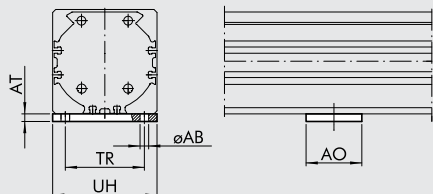
Code	Ø	ØAB	AH	AO	AT	AV	TR	UH	Weight [g]
W0950327032	32	6.5	5	55	8	40	61.5	73	72
W0950407032	40	6.5	7	60	8	45	70-75	85	104

Note: plate supplied complete with 4 screws, 4 fixing plates

INTERMEDIATE SUPPORT Ø 63 FOR VERSION STD, GUIDE "V" AND VERTICAL POSITION BALL RECIRCULATING

Code	Ø	ØAB	AH	AO	AT	TR	UH	Weight [g]
W0950637032	63	8.5	7.5	55	7.5	78	103	330

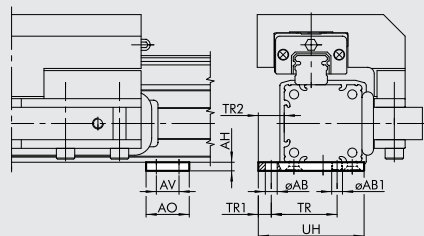
Note: plate supplied complete with 4 screws, 4 fixing plates



INTERMEDIATE SUPPORT Ø 16 to 25 FOR BALL RECIRCULATING

Code	Ø	ØAB	ØAB1	AH	AO	AV	TR	TR1	TR2	UH
W0950164004	16	3.5	M3	3	12	6	20	4	8	32.5
W0950254004	25	5.5	M5	4	20	10.5	30.5	6	12	49

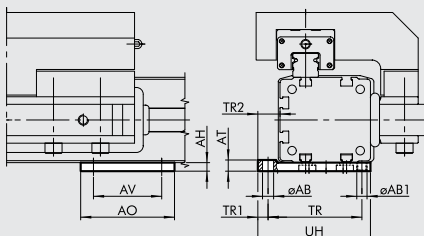
Note: Supplied complete with 4 screws



INTERMEDIATE SUPPORT Ø 32 to 40 FOR BALL RECIRCULATING

Code	Ø	ØAB	ØAB1	AH	AO	AT	AV	TR	TR1	TR2	UH
W0950324004	32	6.5	M6	5	55	5	40	55	6	13	66
W0950404004	40	6.5	M6	6.6	60	8	45	63	7.5	15	77

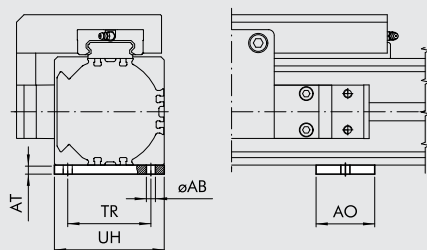
Note: Supplied complete with 4 screws, 4 plates.



INTERMEDIATE SUPPORT KIT Ø 63 FOR HORIZONTAL POSITION BALL RECIRCULATING

Code	Ø	ØAB	AH	AO	AT	TR	UH
W0950637036	63	8.5	7.5	55	8.5	78	103

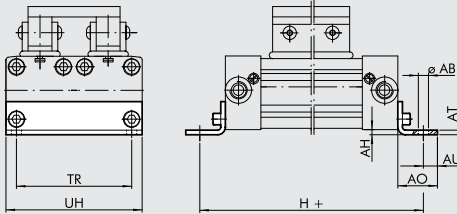
Note: Supplied complete with 4 screws, 4 plates.



NOTES

ACCESSORIES FOR RODLESS CYLINDER SERIE DOUBLE

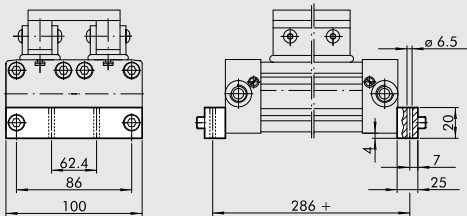
FOOT Ø 16; 25



Code	Ø	ØAB	AH	AO	AT	AU	TR	UH	H	Weight [g]
W0950168001	2x16	3.6	1.5	14	1.6	4	42	51	150	18
W0950258001	2x25	5.5	2	22	2.5	6	63	72	232	54

Note: Individually packed complete with 2 screws

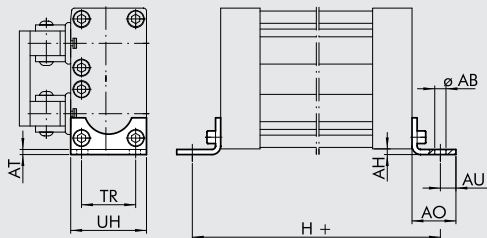
FOOT Ø 32



Code	Descrizione	Weight [g]
W0950328036	Foot DOUBLE Ø 32	156

Note: Individually packed complete with 2 screws

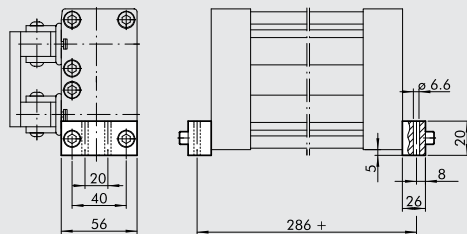
VERTICAL FOOT Ø 16; 25



Code	Ø	ØAB	AH	AO	AT	AU	TR	UH	H	Weight [g]
W0950167001	2x16	3.6	1.5	14	1.6	4	18	26	150	10
W0950257001	2x25	5.5	4	22	2.5	6	27	40	232	32

Note: Individually packed complete with 2 screws

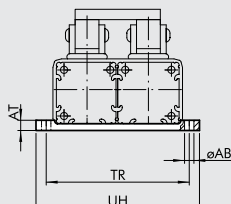
VERTICAL FOOT Ø 32



Code	Description	Weight [g]
W0950328035	Vertical foot Ø 32	92

Note: Individually packed complete with 2 screws

INTERMEDIATE FOOT Ø 16 to 32



Code	Ø	ØAB	AH	AO	AT	AV	TR	UH	Weight [g]
W0950168037	2x16	3.5	3	12	6	6	60.5	64	16
W0950258037	2x25	5.5	4	20	6	10.5	84.5	96	34
W0950328037	2x32	6.5	5	55	8	40	111.5	123	96

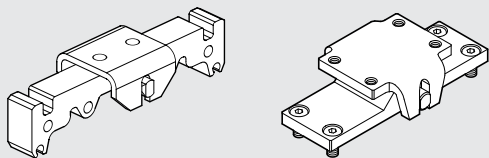
Note: Supplied complete with 8 screws, 8 fixing plates (plates for Ø 32 only)

ACCESSORIES FOR CONVERTING STD RODLESS CYLINDERS INTO SWING CYLINDERS

KIT TO TRANSFORM INTO SWING VERSION

Ø16 to 40

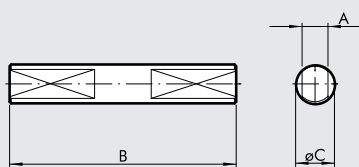
Ø63



Code	Ø	Weight [g]
W0950167035	16	34
W0950257035	25	118
W0950327035	32	450
W0950327035	40	450
W0950637035	63	810

Note: Ø 16 to 40: Supplied complete with 1 adaptor, 1 support, 1 pin, 1 bushing
 Ø 63: Supplied complete with 1 plate, 1 support, 1 pin, 2 bushings, 4 screws

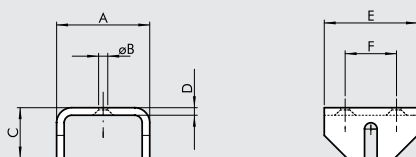
DRIVE PIN



Code	Ø	A	B	ØC	Weight [g]
W0950167034	16	2.9	28	5	6
W0950257034	25	5	42	8	16
W0950327034	32	8	70	12	52
W0950327034	40	8	70	12	52
W0950637034	63	10	82	14	100

Note: Individually packed

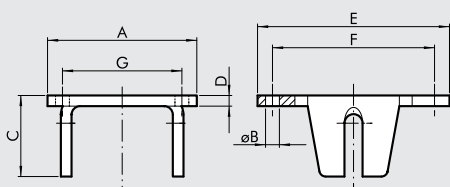
SWING SUPPORT Ø 16; 25



Code	Ø	A	ØB	C	D	E	F	Weight [g]
W0950167033	16	25	4.5	13	2	20	10	14
W0950257033	25	37	5.5	20	3	30	16	40

Note: Individually packed

SWING SUPPORT Ø 32; 40; 63

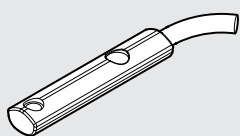


Code	Ø	A	ØB	C	D	E	F	G	Weight [g]
W0950327033	32	70	6.5	38	5	90	75	55	274
W0950327033	40	70	6.5	38	5	90	75	55	274
W0950637033	63	80	M8	32	8	80	65	37	400

Note: Individually packed

ACCESSORIES: SENSOR MAGNETIC

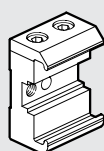
SLIM SENSOR



Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

For use on the rodless cylinder guide "V" Ø25 or when standard sensors do not detect the magnet, e.g. near metal masses. For technical data see page 1-246.

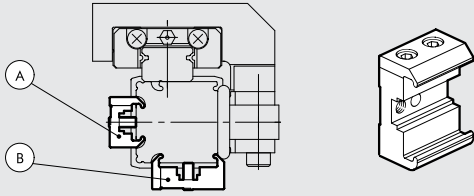
SENSOR SUPPORT Ø 16; 25



Code	Description
0950164001	Sensor support STD

Note: Supplied with 1 stud pin, 2 screws

SENSOR SUPPORT Ø 16 FOR RODLESS CYLINDER WITH RECIRCULATING BALL

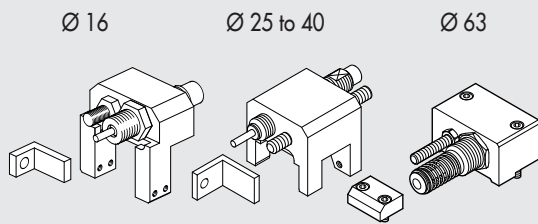


Code sensor support	Description sensor support	Type sensor support	Mounting on the carriage opposite side	Mounting on the guide opposite side
0950164003	Sensor support short	A	•	
0950164001	Sensor support std	B		•

Note: Supplied complete with 2 screws, 1 pin

ACCESSORIES: SHOCK ABSORBERS

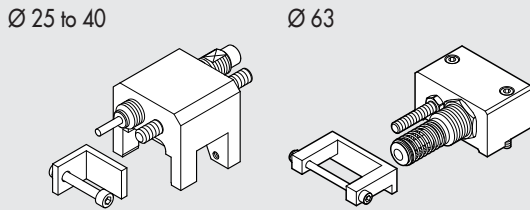
ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS KIT



Code	Description	Weight [g]
0950164002	Rodless cylinder limit switch and shock absorbers Ø 16	125
0950254002	Rodless cylinder limit switch and shock absorbers Ø 25	260
0950324002	Rodless cylinder limit switch and shock absorbers Ø 32	460
0950404002	Rodless cylinder limit switch and shock absorbers Ø 40	730
0950634002	Rodless cylinder limit switch and shock absorbers Ø 63	1620

Note: Supplied complete with 1 shock absorber support, 1 standard shock absorber, 1 shock absorber nut, 1 limit switch grub screw, 1 grub screw nut (2 for Ø 63), 1 bracket, 1 bracket screw, 4 locking grub screws (for Ø 16 and Ø 25), 4 locking plates and 4 screws (for Ø 32 and Ø 40)

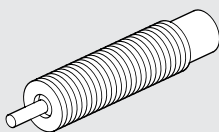
ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS KIT FOR RODLESS CYLINDER WITH GUIDE "V"



Code	Description	Weight [g]
0950254004	Rodless cylinder limit switch and shock absorbers Ø 25	260
0950324004	Rodless cylinder limit switch and shock absorbers Ø 32	460
0950404004	Rodless cylinder limit switch and shock absorbers Ø 40	730
0950634004	Rodless cylinder limit switch and shock absorbers Ø 63	1620

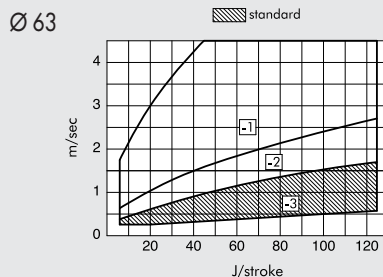
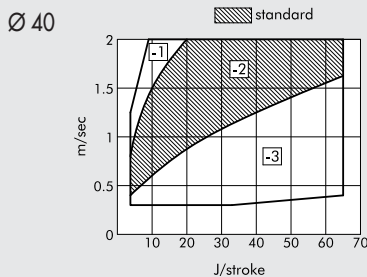
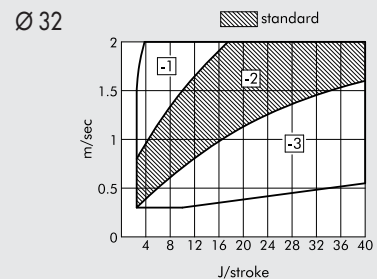
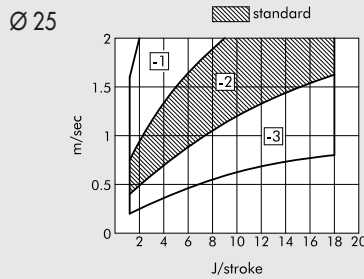
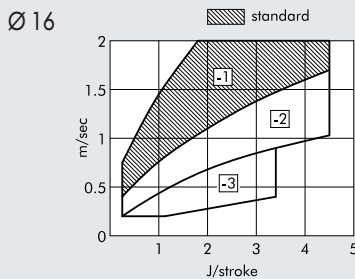
Note: Supplied complete with 1 shock absorber support, 1 standard shock absorber, 1 shock absorber nut, 1 limit switch grub screw, 1 grub screw nut (2 for Ø 63), 1 bracket, 1 bracket screw, 4 locking grub screws (for Ø 25), 4 locking plates and 4 screws (for Ø 32 and Ø 40)

SHOCK ABSORBERS



Code	Description	Ø
0950004003	Shock absorbers PRO15 MF1 + nut M12x1.5	16
0950004004	Shock absorbers PRO25 MC2 + nut M14x1.5	25
0950004005	Shock absorbers PRO50 MC2 + nut M20x1.5	32
0950004006	Shock absorbers PRO100 MF2 + nut M25x1.5	40
0950004007	Shock absorbers PRO125 MF3 + nut M36x1.5	63

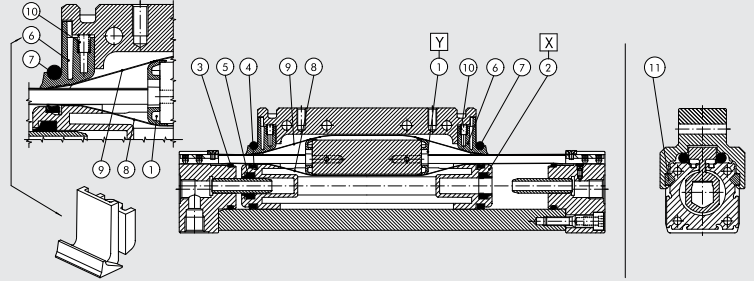
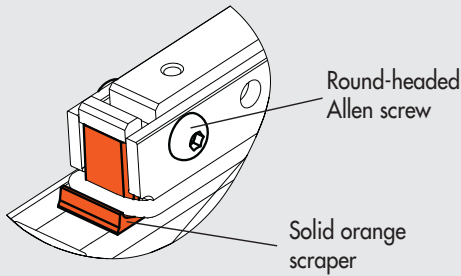
GRAPHS TO HELP CHOOSE THE RIGHT SHOCK ABSORBERS



The dotted areas indicate that the SHOCK ABSORBERS is supplied standard. Other options can be selected depending on the speed [m/sec] and the maximum work force [J/stroke] to dissipate at each stroke. Refer to the diagrams above to select the correct option.

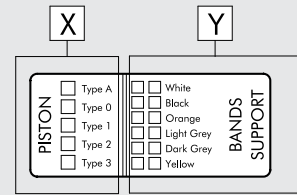
SPARE PARTS FOR STD RODLESS CYLINDERS, GUIDE "V", BALL RECIRCULATING GUIDE, DOUBLE

"LAST RELEASE" CYLINDER



- ① Bands support Kit
- ② Piston kit
- ③ ④ ⑤ ⑥ ⑦ ⑩ NBR gaskets Kit (FKM/FPM for ⑦)
- ③ ④ ⑤ ⑥ ⑦ ⑩ FKM/FPM gaskets Kit
- ⑧ ⑨ Bands Kit (inner/outer)
- ⑪ "V" guide plate kit

Spare parts label
on one cylinder side



BANDS SUPPORT KIT POS 1 (Y)

Ø	Code White	Code Black	Code Orange	Code Light grey	Code Dark grey	Code Yellow
16	0090165080	0090165081	0090165082	0090165083	0090165084	0090165085
25	0090255080	0090255081	0090255082	0090255083	0090255084	0090255085
32	0090325080	0090325081	0090325082	0090325083	0090325084	0090325085
40	0090405080	0090405081	0090405082	0090405083	0090405084	0090405085
63	*0090635080	*0090635081	*0090635082	*0090635083	*0090635084	*0090635085

* For Ø 63, the kit includes a strip support and a shim in the colour ordered
Therefore, two kits must be ordered for each cylinder

BANDS KIT (INNER AND OUTER) POS 8-9

Ø	Code
16	0090166...
25	0090256...
32	0090326...
40	0090406...
63	0090636...

Complete the code with the 4 figure cylinder stroke

"V" GUIDE PLATE KIT POS 11

Ø	Code
25	0090255060
32	0090325060
40	0090325060
63	0090635060

PISTON KIT POS 2 (X)

Ø	Code Type 0 (0 rings)	Code Type 1 (1 rings)	Code Type 2 (2 rings)	Code Type 3 (3 rings)	Code Type A (4 rings)
16	0090165015	0090165016	0090165017	0090165018	-
25	0090255015	0090255016	0090255017	0090255018	0090255019
32	0090325015	0090325016	0090325017	0090325018	0090325019
40	0090405015	0090405016	0090405017	0090405018	-
63	0090635015	0090635016	0090635017	0090635018	-

NBR GASKET KIT POS 3-4-5-6-7-10

Ø	Code
16	0090165022
25	0090255022
32	0090325022
40	0090405022
63	0090635022

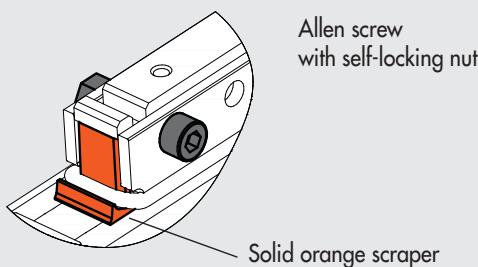
FKM/FPM GASKET KIT POS 3-4-5-6-7-10

Ø	Code
16	0090165023
25	0090255023
32	0090325023
40	0090405023
63	0090635023

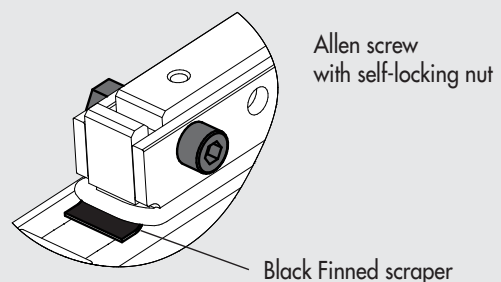
NOTES

If the ends of the carriage appear as below indicated, please contact our commercial department for the spare parts

"INTERMEDIATE RELEASE"



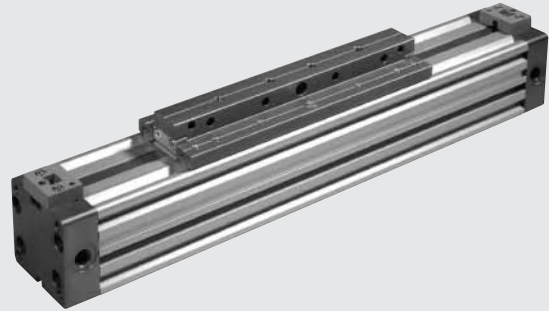
"OLD RELEASE"



RODLESS CYLINDER SERIES PU

Series PU rodless cylinders have an internal strip for longitudinal tightness made of polyurethane (PU) with a harmonic steel wire core. This solution gives excellent air tightness values. It is particularly suitable for high-speed and highly cyclical applications, even with long strokes.

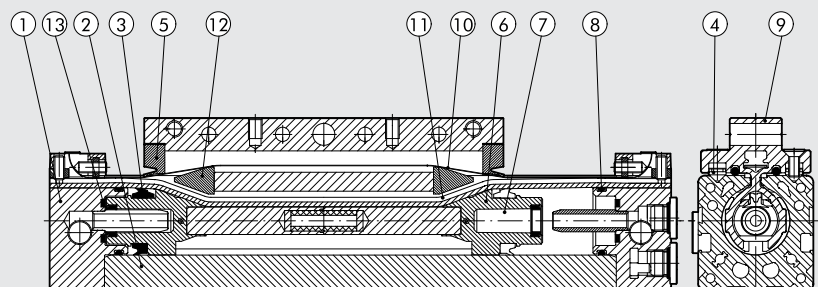
The external strip, which merely provides protection against foreign bodies entry, is made of harmonic steel. The anodised aluminium cylinder liner has a T-slot on either side for housing the retracting sensors. Cylinder control solenoid valves can also be housed in these slots and secured by means of plates and screws (see General Catalogue page 1-46). There are plastic anti-wear guide shoes on either side of the carriage to increase the load capacity. They engage V-slots in the cylinder liner. All the cylinders incorporate adjustable pneumatic cushioning. One version has hydraulic decelerators + adjustable limit switches. These can also be added at a later stage by purchasing the relevant kit. The balanced drive version avoids having to transmit transverse torques and forces to the carriage whenever the load is supported by guides outside the cylinder.



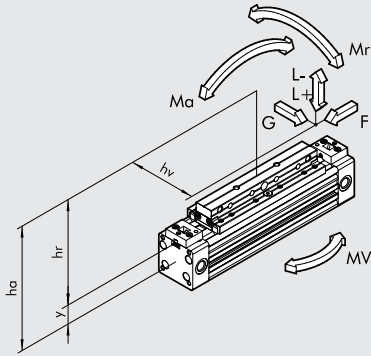
TECHNICAL DATA		NBR
Operating pressure	bar	1 to 8
	MPa	0.1 to 0.8
	psi	14.5 to 116
	°C	-15 to +80
Temperature range	°C	-15 to +80
	°F	-5 to +176
Fluid		50 µm unlubricated filtered air Lubrication, if used, must be continuous
Bores	mm	25, 32
Type of construction		Double-acting rodless cylinder with direct transmission system
Strokes		from 100 to 5700 mm with 1mm interval
Recommended speeds	m/s	< 2
Max. speed with decelerators	m/s	< 2
Weight		See page 1-9
Notes		For versions no-stick slip, use no-lubricated air only

COMPONENTS

- ① CYLINDER HEAD: anodized aluminium alloy
- ② BARREL: profiled anodized aluminium alloy
- ③ PISTON GASKET: polyurethane
- ④ V-SHAPED GUIDE SHOE: Hostaform®
- ⑤ DUST SCRAPER: Hostaform®
- ⑥ PISTON: Hostaform®
- ⑦ CUSHIONING CONE: anodized aluminium alloy
- ⑧ STATIC O-RINGS: NBR
- ⑨ SLIDE: anodized aluminium alloy
- ⑩ OUTER STRIP: stainless steel
- ⑪ INTERNAL STRAP: polyurethane + steel strands
- ⑫ DIRECTION CHANGE: Hostaform®
- ⑬ BUFFER: NBR



DIMENSIONING - FORCE AND TORQUE



Bore	Centre Distance	Cushioning stroke	Actual Force		Max. load	Max. load	Ma max	Mr max	Mv max
Y	[mm]	[mm]	F at 6 bar [N]	G [N]	L+ [N]	L- [N]	[Nm]	[Nm]	[Nm]
25	16.5	20	250	350	480	350	22	5	10
32	20.1	20	420	450	650	450	40	10	20

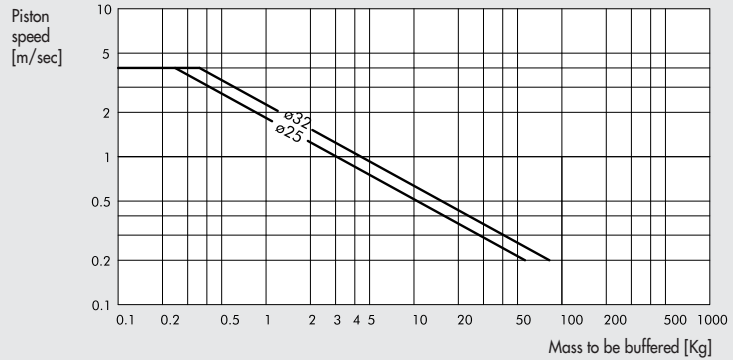
N.B.: When the cylinder is subjected simultaneously to torque and force, it is advisable to keep to the following equations.

$$Ma = F \times ha \quad Mr = L \times hv + G \times hr \quad Mv = F \times hv$$

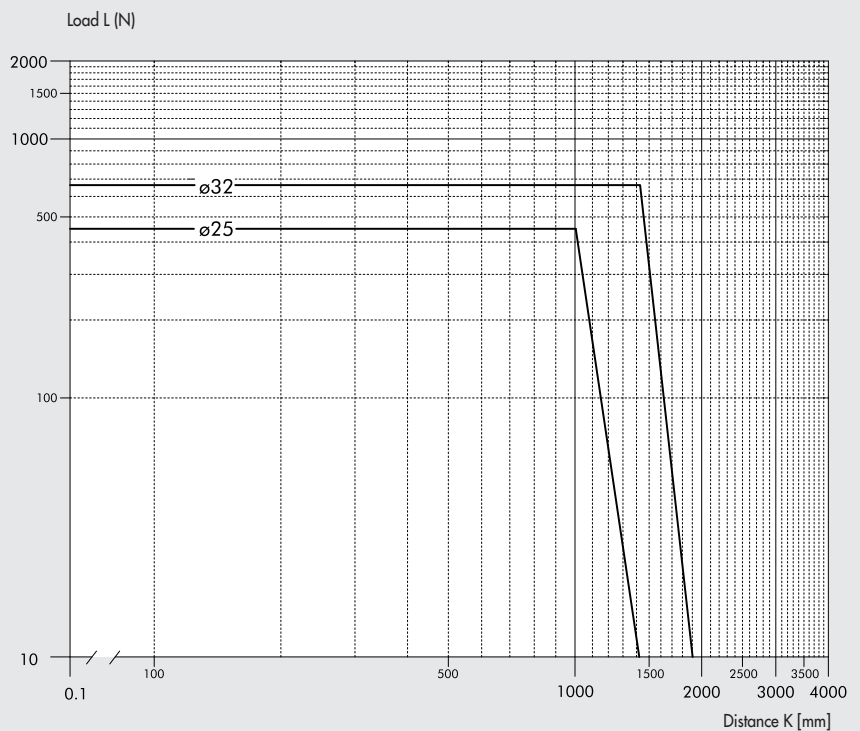
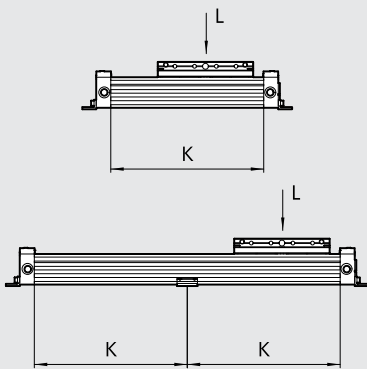
$$\frac{Mv}{Mv_{max}} \leq 1; \quad \frac{L}{L_{max}} \leq 1; \quad \frac{Ma}{Ma_{max}} + \frac{Mr}{Mr_{max}} + 0.22 \times \frac{Mv}{Mv_{max}} + 0.4 \frac{L}{L_{max}} \leq 1$$

DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

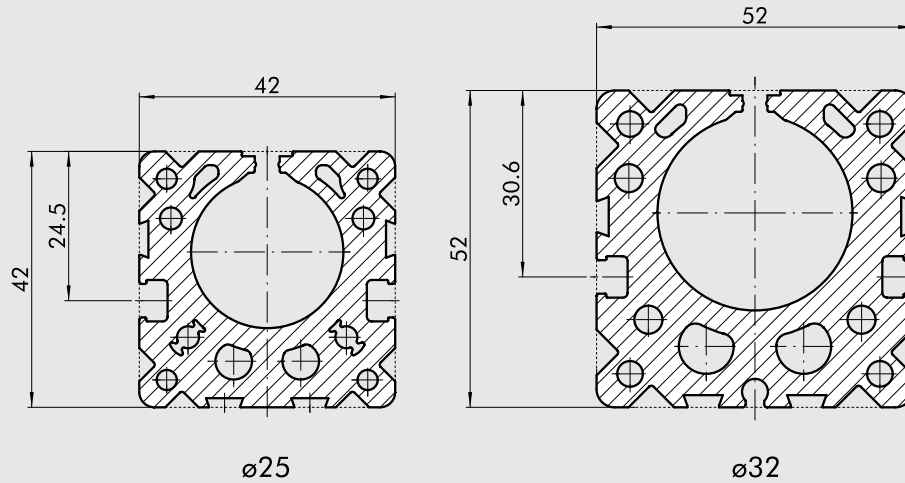
For the cylinder to reach the end-of-stroke position without intense or repeated impact which would damage it, it is necessary to annul the kinetic energy of the moving mass and the work generated. The maximum cushionable load depends on the traversing speed and the absorption of the air buffer supplied standard with the various cylinders. The diagram shows the speeds and cushionable mass for the various diameters at a pressure of 6 bar.



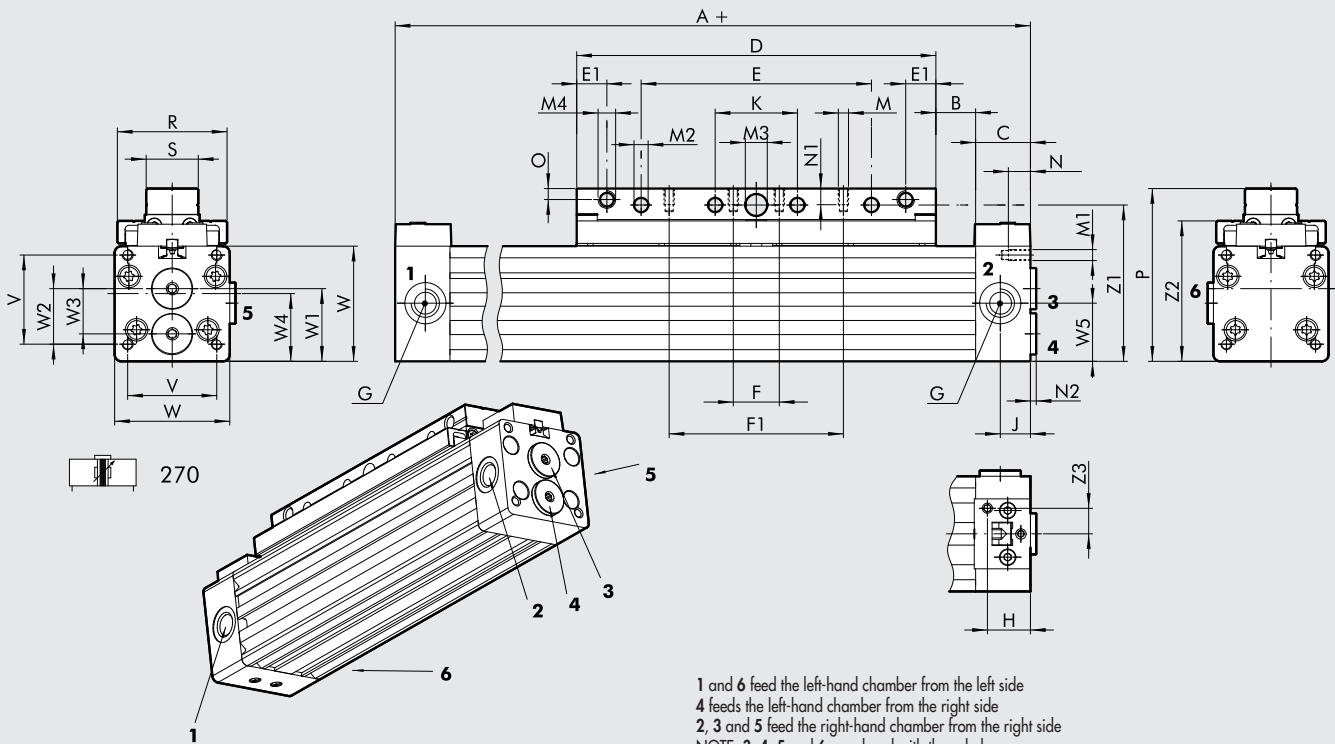
MAXIMUM LOAD ACCORDING TO THE DISTANCE BETWEEN SUPPORTS



BARREL CROSS SECTION



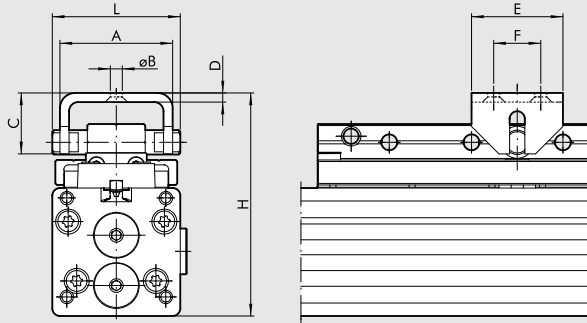
DIMENSIONS



Ø	A	B	C	D	E	E1	F	F1	G	H	J	K	M	M1	M2	M3 ^{H10}	M4	N	N1	N2	O	P	R	S	V	W	W1	W2	W3	W4	W5	Z1	Z2	Z3
25	200	14.5	20	131	84	11	50	-	1/8	15.7	11	30	M5	M4	5.2	8	M6	13	7.5	2.1	4	63	40	19	32.5	42	26.5	20.3	16.5	25.5	21.2	57	51.2	9.3
32	250	19.5	20	171	124	11	30	100	1/8	15.7	11	50	M5	M5	5.2	8	M6	13.5	7.5	2.1	4	73	48	19	40	52	31.2	24.3	19	31.9	27	67	61	9.3

RODLESS CYLINDER WITH SWING CARRIAGE

NOTE: For other dimensions see code 270

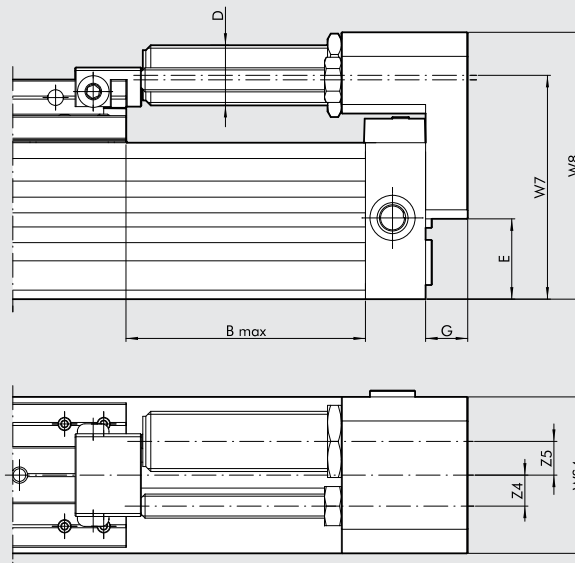


271

Ø	A	ØB	C	D	E	F	H	L
25	37	5.5	20	3	30	16	73-75	42
32	37	5.5	20	3	30	16	83-85	42

DIMENSIONS VERSION WITH ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS

NOTE: For other dimensions see code 270



273

Ø	B Max	D	E	G	W7	W8	WS4	Z4	Z5	Stroke	Max. cushioned force		Max. impact force [N]	Max. thrust force [N]
											For stroke [J]	For hour [J]		
25	50	M14x1.5	21.5	12	61.5	72	42	9.2	6	16	18	34000	2800	530
32	75	M20x1.5	26.7	14	74.4	88.7	52	10.3	11.2	22	40	53700	3750	890

For graphs to help choose shock absorbers see page 1-137

KEY TO CODES

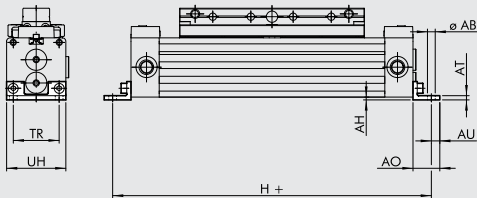
CYL	27 TYPE	0	0	2 5 BORE	0 100 STROKE	C	P GASKETS
	27 Rodless cylinder	0 Double acting cushioned magnetic 1 Double acting with swing carriage 3 Double acting + adjustable limit switch and shock absorbers	3 Magnetic 4 No stick slip 5 Non-magnetic	25 32	from 100 to 5700 mm	C	P Polyurethane gaskets

■ For speed ≤ 0.2 m/s

ACCESSORIES FOR RODLESS CYLINDER SERIES PU

FOOT Ø 25; 32

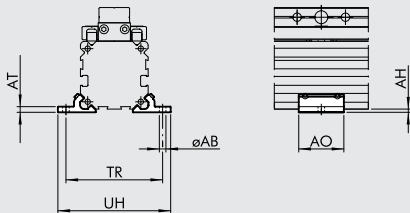
+ = ADDED STROKE



Code	Ø	ØAB	AH	AO	AT	AU	TR	UH	H	Weight [g]
0950254041	25	5.5	2	19	3	6	32.5	42	226	30
0950324041	32	6.6	3	24	4	7	38	52	284	60

Note: Individually packed with 2 screws

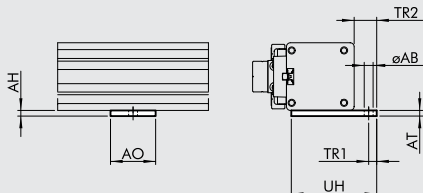
INTERMEDIATE FOOT Ø 25; 32



Code	Ø	ØAB	AH	AO	AT	TR	UH	Weight [g]
W0950257038	25	5.5	2	28	3.5	60	70	16
W0950327038	32	6.6	3	33	4	73	85	30

Nota: 2 brackets and 4 grub screws per pack

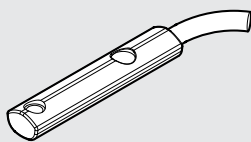
SIDE INTERMEDIATE FOOT Ø 25; 32



Code	Ø	ØAB	AH	AO	AT	TR1	TR2	UH	Weight [g]
0950254051	25	5.5	3.5	28	3.5	5	14	57.5	20
0950324051	32	5.5	4	40	4	5	12	61	32

Nota: 1 bracket, 2 screws and 2 plates per pack

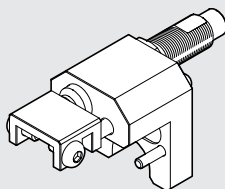
SLIM SENSOR



Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

* For use when standard sensors do not detect the magnet, e.g. near metal masses.
For technical data see page 1-246

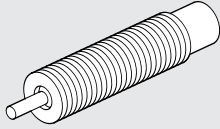
ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS KIT



Code	Ø	Description	Weight [g]
0950254013	25	Rodless cylinder limit switch and shock absorbers Ø 25 series PU	220
0950324013	32	Rodless cylinder limit switch and shock absorbers Ø 32 series PU	420

Note: supplied complete with 1 decelerator bracket, 1 standard decelerator, 1 decelerator nut, 1 limit switch grub screw, 1 limit switch grub screw nut, 1 limit switch block, 2 block screws and 2 decelerator bracket screws

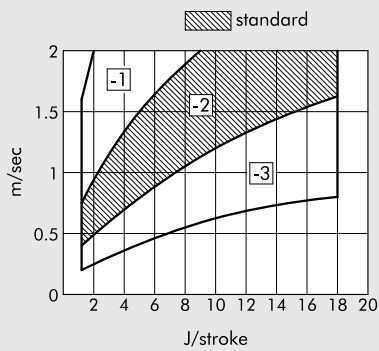
SHOCK ABSORBERS



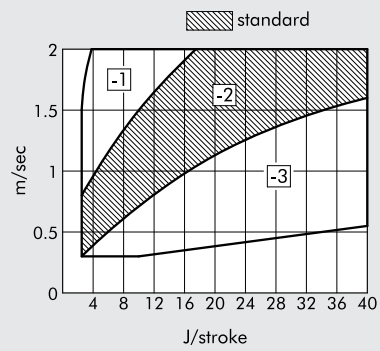
Code	Ø	Description
0950004004	25	Shock absorbers PRO25 MC2 + nut M14x1.5
0950004005	32	Shock absorbers PRO50 MC2 + nut M20x1.5

GRAPHS TO HELP CHOOSE THE RIGHT SHOCK ABSORBERS

Ø 25

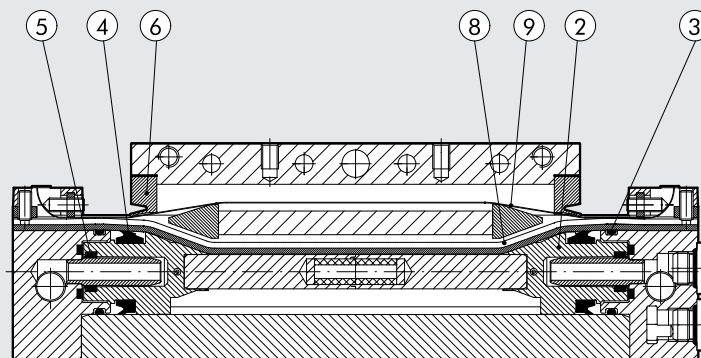


Ø 32



The dotted areas indicate that the SHOCK ABSORBERS is supplied standard.
Other options can be selected depending on the speed [m/sec] and the maximum work force [J/stroke] to dissipate at each stroke.
Refer to the diagrams above to select the correct option.

SPARE PARTS FOR RODLESS CYLINDER SERIES PU



**DUST SCRAPER KIT
POS 6**

Code	Ø
0090255025P	25
0090255025P	32

Note: 2 dust scrapers

**GASKET KIT
POS 3-4-5**

Code	Ø
0090255024P	25
0090325024P	32

**BANDS KIT
(inner and outer) POS 8-9**

Code	Ø
0090256___P	25
0090326___P	32

Complete the code with the 4-figure cylinder stroke

**PISTON KIT
POS 2**

Code	Ø
0090255009P	25
0090325009P	32

Note: 2 pistons

NOTES

NOTES

ACTUATORS

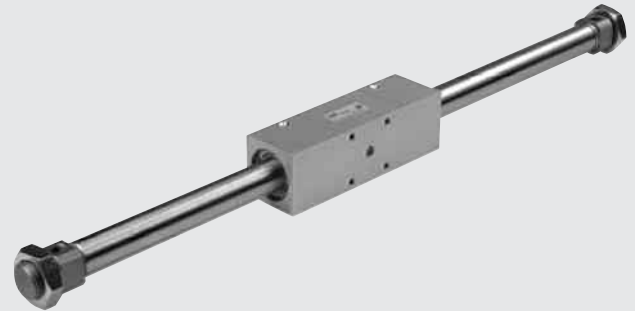
NOTES

NOTES

ACTUATORS

RODLESS CYLINDER WITH MAGNETIC SLIDING SERIES MAGNETIC SLIDE

The magnetic-slide rodless cylinder operates pneumatically and is equipped with a piston and a slide with magnets. The slide runs freely along the liner, following the piston movements, thanks to the magnetic coupling force between the two. If an axial force exceeding the magnetic coupling force is applied to the slide, it disengages. It is therefore important to operate within the pressure, force and speed ranges shown in the catalogue. The load is fixed onto the slide using four threaded holes. The cylinder is secured at the ends by means of nuts, flanges and brackets. This solution is recommended when there is limited space for assembly, there must be no air leaks or impurities must be prevented from entering. Available with three bores Ø 16-20-25, in the basic or swinging versions, with adjustable pneumatic cushioning or non-adjustable cushioning. Designed for use with magnetic sensors.

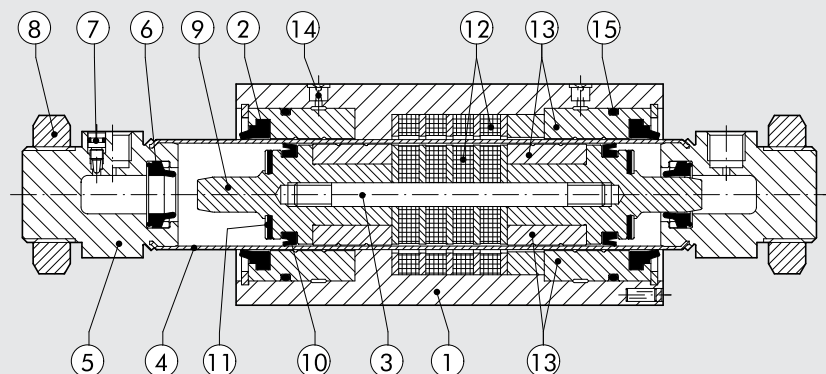


N.B.: We always suggest to use flow microregulators. During the setup of the actuator, start with CLOSE flow microregulators, and open gradually till the achievement of the required speed.

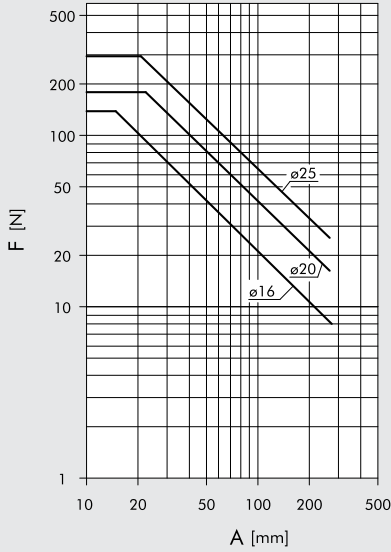
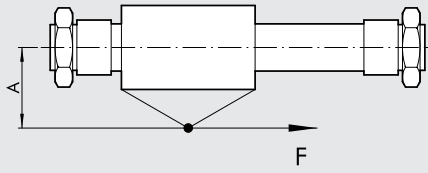
TECHNICAL DATA		Ø 16	Ø 20	Ø 25
Operating pressure	bar		2 to 71	
	MPa		0.2 to 0.7	
	psi		29 to 101	
Temperature range	°C		-10 to 60	
	°F		14 to 140	
Fluid		Unlubricated 50 µm filtered air. Lubrication, if used, must be continuous		
Bores	mm	16; 20; 25		
Strokes	mm	from 10 to 1000 with 1 intervals		
Versions		Magnetic uncushioned/cushioned		
		Swinging magnet uncushioned/cushioned		
Design		Double-acting rodless cylinder, with magnetic coupling transmission system		
Position sensing		Magnet for limit switch sensor		
Fixing		Hex nuts (supplied standard) - Legs - Flanges		
Theoretic force at 6 bar	N	118	185	288
Magnetic coupling force (static condition)	N	200	300	500
Max speed	m/s	0.4	0.4	0.4
Weight		See page 1-9		
Notes		Lubricate the slide every 2000 km or once a year, through the lubricators		

COMPONENTS Ø 20

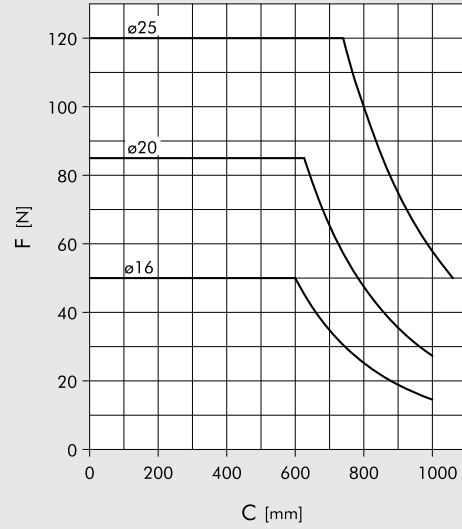
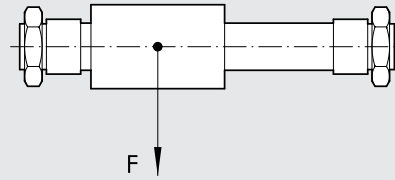
- ① SLIDE: anodized aluminium alloy
- ② WIPER RING: polyurethane
- ③ TIE ROD: stainless steel, thick-chromed
- ④ BARREL: AISI 304 stainless steel
- ⑤ HEAD: anodized aluminium alloy
- ⑥ CUSHIONING GASKET: NBR
- ⑦ NEEDLE: OT 58 with needle-out movement safety system, even when fully open
- ⑧ HEAD NUT: OT 58 nickel-plated
- ⑨ HALF-PISTON: aluminium alloy
- ⑩ PISTON GASKET: polyurethane
- ⑪ BUFFER: NBR
- ⑫ INT/EXT MAGNETS: neodymium
- ⑬ INT/EXT GUIDES: thermoplastic resin with lubricating additive
- ⑭ GREASE NIPPLE: steel
- ⑮ Static O-rings: NBR



ADMISSIBLE AXIAL FORCE "F" AS A FUNCTION OF THE LEVER ARM "A"

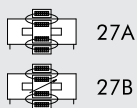
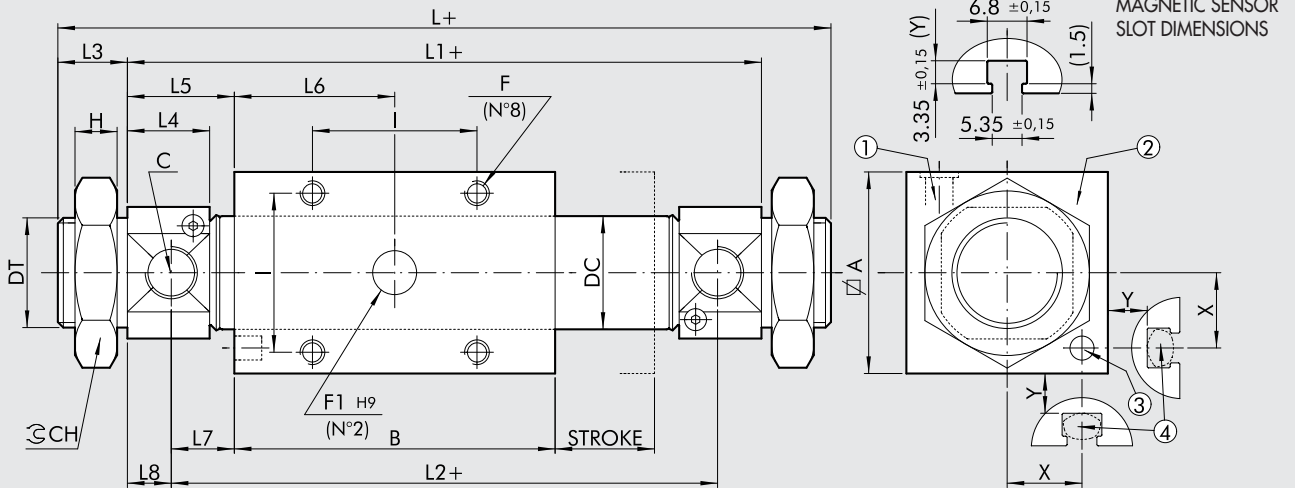


ADMISSIBLE AXIAL FORCE "F" AS A FUNCTION OF THE STROKE "C"



DIMENSIONS

+ = ADD STROKE



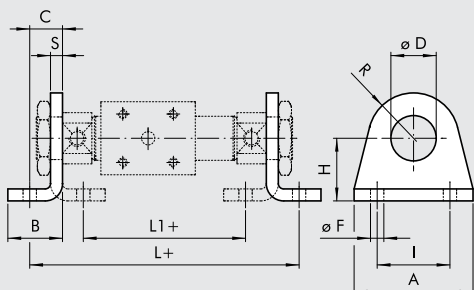
- ① Grease nipple
- ② External cursor, 360° adjustment
- ③ Sensor magnet
- ④ Position for magnetic sensors
(N.B. customer must provide supports)

Ø	A	B	C	DC	DT	F	F1	I	L	L1	L2	L3	L4	L5	L6	L7	L8	CH	H	X	Y
16	35	125	M5	17.3	M16x1.5	M5x7	8x3	26	205	181	169	12	10	28	62.5	22	6	24	8	14	9
20	42	135	G1/8	21.3	M22x1.5	M5x10	8x3	32	217	185	169	16	15.5	25	67.5	17	8	32	7	17.5	9
25	50	150	G1/8	26.5	M22x1.5	M6x11	10x4	36	238	206	188	16	17.1	28	75	19	9	32	7	21.5	9

ACCESSORIES FOR RODLESS CYLINDER WITH MAGNETIC SLIDING: FIXING

FOOT

+ = ADD STROKE

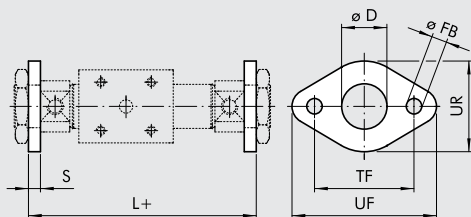


Code	Ø	D	A	B	C	H ±0.3	R	F ±0.2	I ^{Js}	L	L1	S	Weight [g]
0950164040	16	16	42	20	14	27	13	5.5	32	209	161	4	50
0950204040	20	22	54	25	17	30	20	6.5	40	219	161	5	105
0950204040	25	22	54	25	17	30	20	6.5	40	240	182	5	105

Note: individually pocket

FLANGIA MOD. C

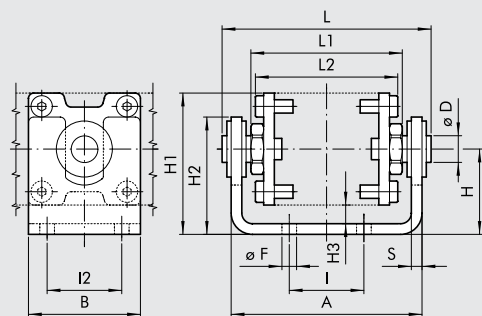
+ = ADD STROKE



Code	Ø	D	FB ^{H13}	TF ^{H14}	UF	UR	L	S	Weight [g]
W0950120002	16	16	5.5	40	52	30	189	4	26
W0950200002	20	22	6.5	50	66	40	195	5	52
W0950200002	25	22	6.5	50	66	40	216	5	52

Note: individually pocket

KIT FOR SWING VERSION



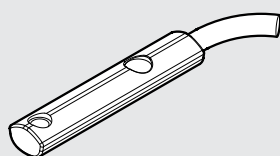
Code	Ø	A	B	D	F ±0.1	H	H1	H2	H3	I	I2	L	L1	L2	S	Weight [g]
0950164050	16	67	40	10	5.5	28.5	46	40	7	26	26	73.5	53	52	4	288
0950204050	20	74	42	10	5.5	32	53	43	7	32	32	80.5	60	59	4	345
0950254050	25	87	50	12	6.5	38	63	50	8	36	36	96.5	68	68	5	576

Note: individually pocket. Supplied with 8 screws

The swinging version kit can be used to avoid bending moments and lateral loads on the slide. It can also be used to compensate for misalignments with respect to the load guide. Max alignment error ±1mm.

ACCESSORIES: MAGNETIC SENSOR

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

* For use when standard sensors do not detect the magnet, e.g. near metal masses. For technical data see page 1-246. Note: Individually packed.

STAINLESS STEEL ISO 6432 MINI-CYLINDER



ISO 6432 stainless steel micro-cylinders are available in various versions with a wide range of accessories

- with or without magnet execution
- double-acting - single or through-rod
- gaskets: Polyurethane or FKM/FPM (for high temperatures)
- fixing accessories



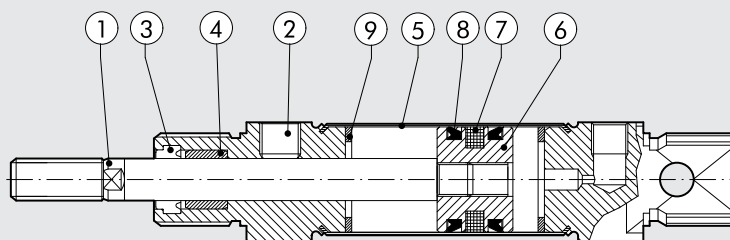
ACTUATORS

STAINLESS STEEL ISO 6432 MINI-CYLINDER

TECHNICAL DATA		POLYURETHANE	FKM/FPM
Max operating pressure	bar	10	
	MPa	1	
Temperature range	°C	-10 to +80	-10 to +150 (non-magnetic cylinders)
Fluid		Unlubricated air. Lubrication, if used, must be continuous	
Bores	mm	16; 20; 25	
Design		Chamfered heads	
Standard strokes ⁺	mm	max 500	
Versions		Double-acting, Double-acting through-rod	
Magnet for sensors		All versions come complete with magnet. Supplied without magnet on request.	
		⁺ Maximum recommended strokes. Higher values can create operating problems	

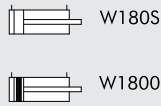
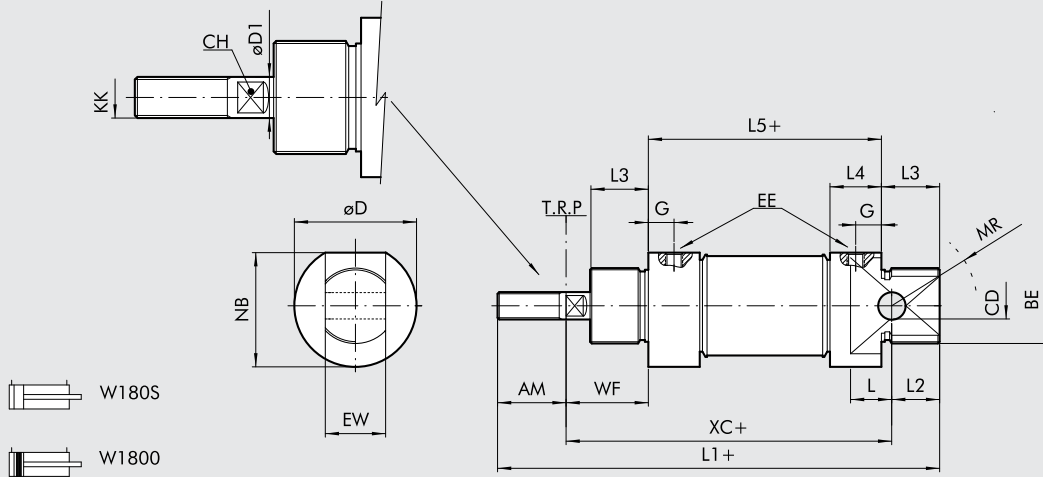
COMPONENTS

- PISTON ROD: AISI 316 steel
- HEAD: AISI 304 steel
- PISTON ROD GASKET: polyurethane or FKM/FPM
- GUIDE BUSHING: sintered bronze
- JACKET: AISI 304 steel
- PISTON: brass
- PISTON GASKET: polyurethane or FKM/FPM
- MAGNET: plastoferrite
- Static O-rings: NBR or FKM/FPM



DIMENSIONS OF DOUBLE-ACTING

+ = ADD STROKE

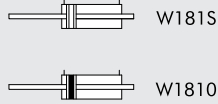
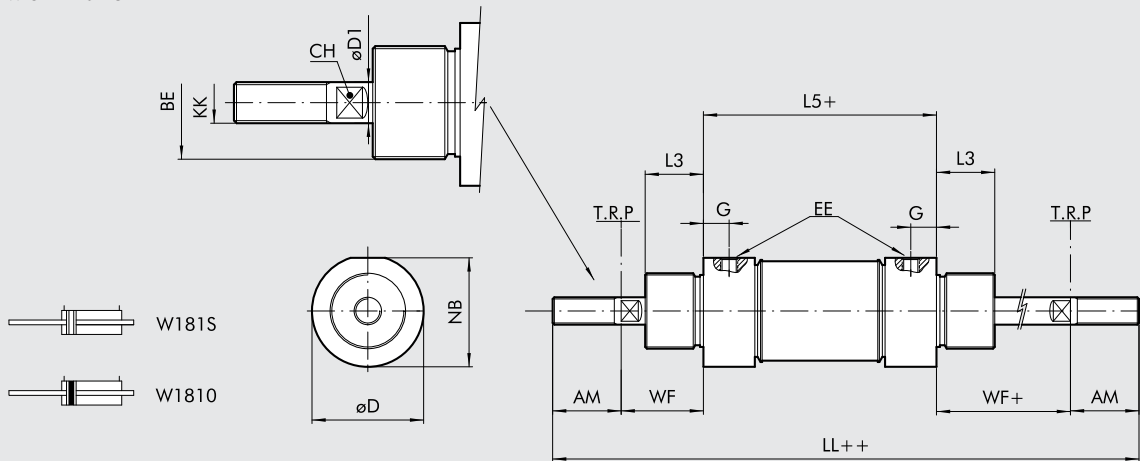


Ø	AM	BE	øCD ^{H9}	CH	øD	øD1	EE	EW ^{d13}	G	KK	L	L1	L2	L3	L5	MR	NB	WF	XC
16	16	M16x1.5	6	5	19	6	M5	12	5	M6	9	109	11	18	55	16	18	22	82
20	20	M22x1.5	8	7	27	8	G 1/8	16	8	M8	12	131	16	20	67	18	25.5	24	95
25	22	M22x1.5	8	9	30	10	G 1/8	16	8	M10x1.25	12	140	14	22	68	21	28.5	28	104

DIMENSIONS DOUBLE-ACTING THROUGH-ROD

+ = ADD STROKE

++ = ADD TWICE THE STROKE



Ø	AM	BE	CH	øD	øD1	EE	G	KK	LL	L3	L5	NB	WF ^{±1,2}
16	16	M16x1.5	5	19	6	M5	5	M6	129,5	18	55	18	22
20	20	M22x1.5	7	27	8	G 1/8	8	M8	156	20	67	25.5	24
25	22	M22x1.5	9	30	10	G 1/8	8	M10x1.25	169	22	68	28.5	28

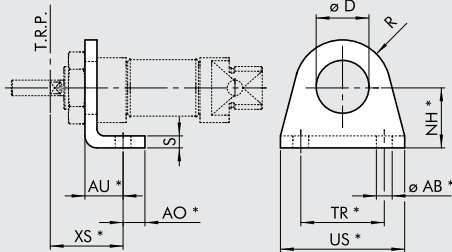
KEY TO CODES

W 1 8	0	0	1 6	0 0 2 0
	TYPE	VERSION	DIAMETER	STROKE
Stainless steel cylinder	0 DEM 1 DEM through-rod	0 Standard (magnetic) S Non-magnetic V FKM/FPM gasket	16 20 25	+ 0 to 500 mm

DEM: Magnetic double-acting (non-cushioned)
 + Maximum recommended strokes. Higher values can create operating problems

ACCESSORIES FOR STAINLESS STEEL ISO 6432 MINI-CYLINDER: FIXINGS

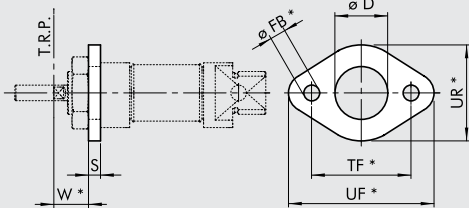
STAINLESS STEEL LEG MODEL A



Code	Ø	ØAB	AU	AO	D	NH	XS ^{±1.4}	R	S	TR	US	Weight [g]
W095X120001	16	5.5	14	6	16.1	20	22	13	4	32	42	42
W095X200001	20	6.6	17	8	22.1	25	36	20	5	40	54	90
W095X200001	25	6.6	17	8	22.1	25	40	20	5	40	54	90

*ISO 6432 values
Note: Individually packed

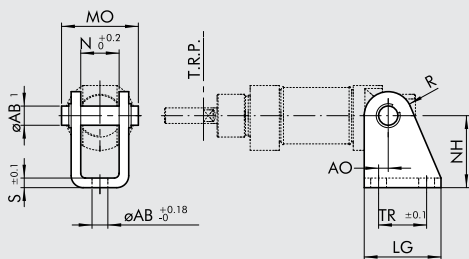
STAINLESS STEEL FLANGE MODEL C



Code	Ø	D	FB	W ^{±1.4}	S	TF	UF	UR	Weight [g]
W095X120002	16	16	5.5	18	4	40	52	30	26
W095X200002	20	22	6.6	19	5	50	66	40	52
W095X200002	25	22	6.6	23	5	50	66	40	52

*ISO 6432 values
Note: Individually packed

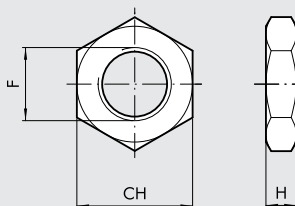
STAINLESS STEEL COUNTER-HINGE MODEL BC



Code	Ø	AB1	AB	AO	LG	MO	N	NH	R	S	TR	Weight [g]
W095X120005	16	6	5.5	2	25	24	12.1	27	7	3	15	40
W095X200005	20	8	6.6	4	32	31	16.1	30	10	4	20	78
W095X200005	25	8	6.6	4	32	31	16.1	30	10	4	20	78

Note: Supplied complete with 1 pin and 2 snap rings

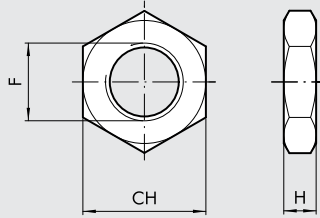
STAINLESS STEEL NUT FOR HEADS



Code	Ø	CH	F	H
W095X120010	16	22	M16x1.5	5
W095X200010	20	27	M22x1.5	8
W095X200010	25	27	M22x1.5	8

Note: Individually packed

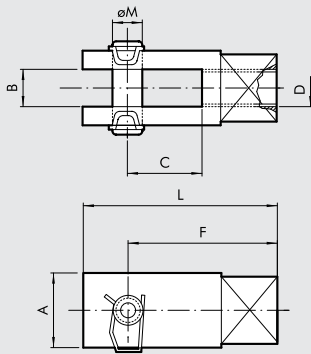
STAINLESS STEEL NUT FOR PISTON RODS



Code	Ø	CH	F	H	Weight [g]
W095X120011	16	10	M6	4	1
W095X200011	20	13	M8	5	3
W095X322011	25	17	M10x1.25	6	7

Note: Individually packed

STAINLESS STEEL FORK-MODEL GK-M

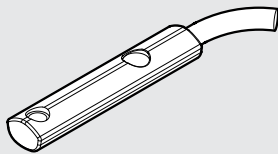


Code	Ø	A	B	C	D	F	L	Ø M
W095X120020	16	12	6	12	M6	24	31	6
W095X200020	20	16	8	16	M8	32	42	8
W095X322020	25	20	10	20	M10x1.25	40	52	10

Note: Individually packed

ACCESSORIES: MAGNETIC SENSORS

SLIM SENSOR



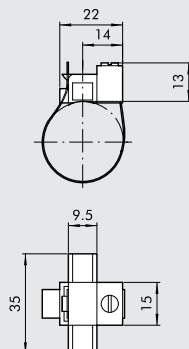
Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

* For use when standard sensors do not detect the magnet, e.g. near metal masses.

For technical data see page 1-246

Note: Individually packed

SENSOR CIRCLIP



Code	Bore	Description
W0950001103	8 to 63	Sensor circlip

Note: Individually packed

MATERIAL

Circlip: stainless steel
Sensor holder: plastic

STAINLESS STEEL ROUND CYLINDERS RNDC



Stainless steel clean profile cylinders available in different versions:

- with or without magnet execution
- double-acting - single or through-rod
- pneumatic cushioning on request
- gaskets: Polyurethane or FKM/FPM (for high temperatures)



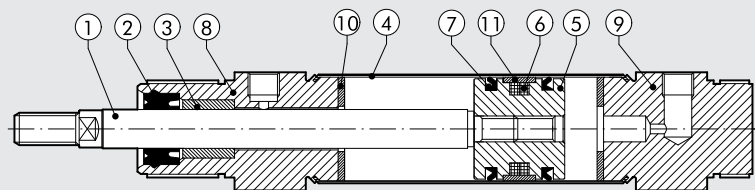
ACTUATORS

STAINLESS STEEL ROUND CYLINDERS RNDC

TECHNICAL DATA		POLYURETHANE	FKM/FPM
Max operating pressure	bar		10
	MPa		1
	psi		145
Temperature range	°C	-20 to +80	-10 to +150 (non-magnetic cylinders)
Fluid		Unlubricated air. Lubrication, if used, must be continuous	
Bores	mm	32; 40; 50; 63	
Design		Chamfered heads	
Versions		Double-acting, Double-acting through-rod	
Magnet for sensors		All versions come complete with magnet. Supplied without magnet on request.	
Standard strokes \pm	mm	max 500	
		\pm Maximum recommended strokes. Higher values can create operating problems	

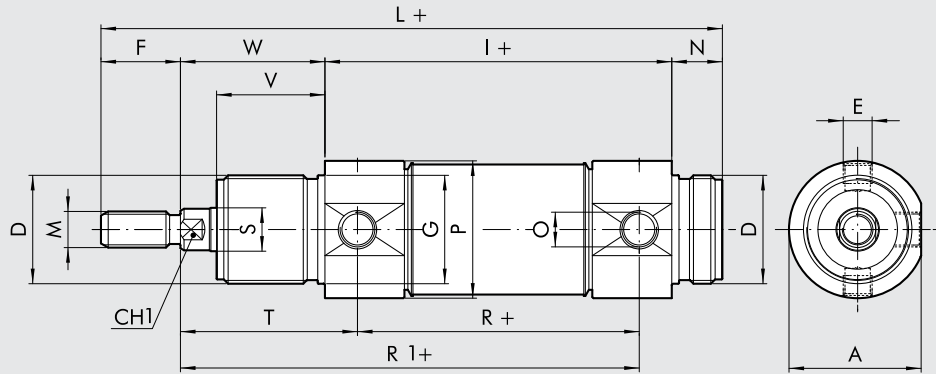
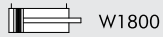
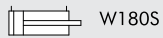
COMPONENTS

- ① PISTON ROD: AISI 316 steel
- ② PISTON ROD GASKET: polyurethane or FKM/FPM
- ③ GUIDE BUSHING: sintered bronze
- ④ JACKET: AISI 304 steel
- ⑤ PISTON: aluminium
- ⑥ MAGNET: plastoferrite
- ⑦ PISTON GASKET: polyurethane or FKM/FPM
- ⑧ ⑨ HEAD: AISI 304 steel
- ⑩ BUFFER: polyurethane
- ⑪ GUIDE RING: PTFE



DIMENSIONS OF DOUBLE-ACTING

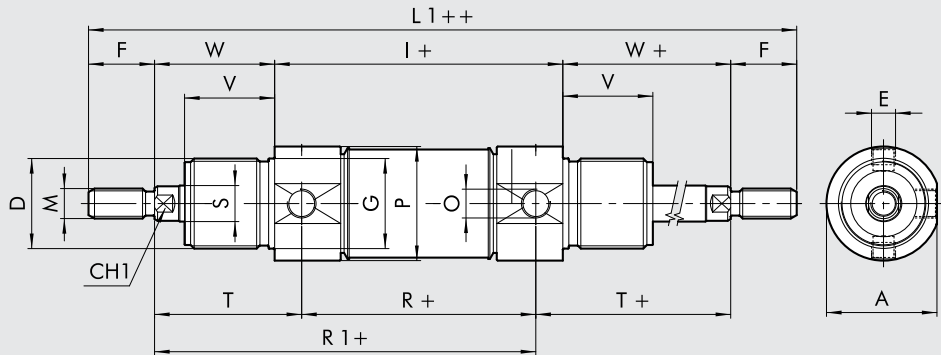
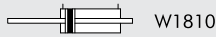
+ = ADD STROKE



DIMENSIONS DOUBLE-ACTING THROUGH-ROD

+ = ADD STROKE

++ = ADD TWICE THE STROKE



Ø	A	CH1	D	E	F	ØG	I	L	L1	M	N	O	ØP	R	ØS	T	V	W
32	36.5	10	M30x1.5	M8x1	20	30	96	168	212	M10x1.5	14	G1/8	38	78	12	47	30	38
40	44	13	M38x1.5	M10x1	24	38	113	198	251	M12x1.75	16	G1/4	46	89	16	57	35	45
50	55	17	M45x1.5	M12x1.5	32	45	120	220	284	M16x2	18	G1/4	57	96	20	62	38	50
63	67.5	17	M45x1.5	M14x1.5	32	45	124	224	288	M16x2	18	G3/8	70	98	20	63	38	50

CHIAVE DI CODIFICA

W 1 8	0	0	3 2	0 0 3 2
	TYPE	VERSION	DIAMETER	STROKE
Stainless steel cylinder	0 DEM 1 DEM through-rod	0 Standard (magnetic) S Non-magnetic V FKM/FPM gasket	32 40 50 63	+ Ø 32 to 63 stroke 0 to 500 mm

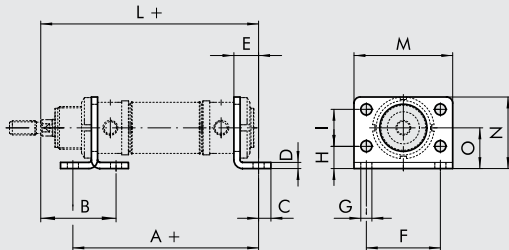
DEM: Magnetic double-acting (non-cushioned)

+ Maximum recommended strokes. Higher values can create operating problems

ACCESSORIES FOR STAINLESS STEEL ROUND CYLINDER: FIXINGS

STAINLESS STEEL LEG MODEL AC

+ = ADD STROKE

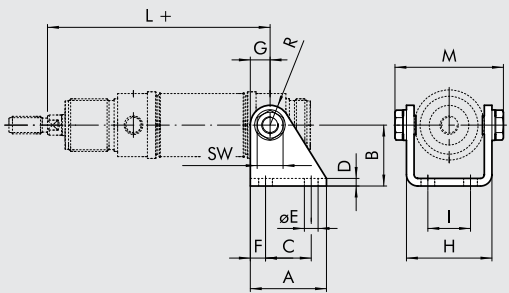


Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	O
W095X320002	32	124	48	7	4	14	52	7	14	28	148	66	49	28
W095X400002	40	153	60	10	5	20	60	9	18	30	178	80	58	33
W095X500002	50	160	64	10	6	20	70	9	20	40	190	90	70	40
W095X630002	63	164	64	10	6	20	76	9	20	50	194	96	80	45

Note: Individually packed

STAINLESS STEEL COUNTER-HINGE MODEL BC

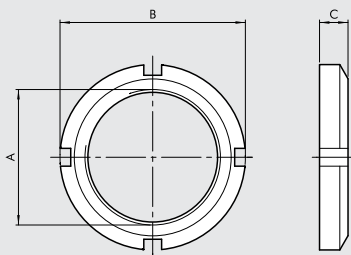
+ = ADD STROKE



Code	Ø	A	B	C	D	E	F	G	H	I	L	M	R
W095X320005	32	40	35	24	4	7	8	12	46.1	20	125	58.1	12
W095X400005	40	50	40	30	5	9	10	13	56.1	28	146	70.1	13
W095X500005	50	54	45	34	6	9	10	14	69.1	36	158	86.1	14
W095X630005	63	65	50	35	6	9	15	16	82.1	42	161	99.1	16

Note: Supplied complete with 2 screws

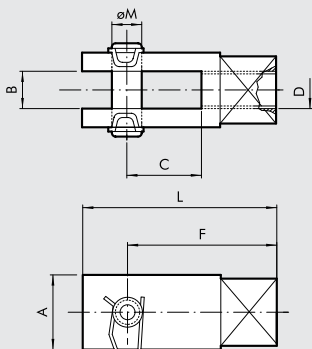
STAINLESS STEEL HEAD RING NUT MODEL G



Code	Ø	A	B	C
W095X320010	32	M30x1.5	45	7
W095X400010	40	M38x1.5	52	8
W095X500010	50	M45x1.5	58	9
W095X500010	63	M45x1.5	58	9

Note: Individually packed

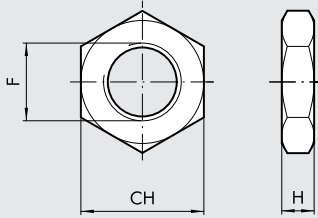
STAINLESS STEEL FORK-MODEL GK-M



Code	Ø	A	B	C	D	F	L	ØM
W095X320020	32	20	10	20	M10x1.5	40	52	10
W095X400020	40	24	12	24	M12x1.75	48	62	12
W095X500020	50	32	16	32	M16x2	64	83	16
W095X500020	63	32	16	32	M16x2	64	83	16

Note: Individually packed

STAINLESS STEEL NUT FOR PISTON RODS

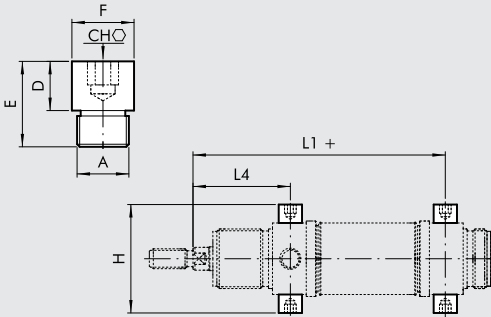


Code	Ø	F	CH	H	Weight [g]
W095X320011	32	M10x1.5	17	6	6
W095X400011	40	M12x1.75	19	7	12
W095X500011	50	M16x2	24	8	20
W095X500011	63	M16x2	24	8	20

Note: Individually packed

STAINLESS STEEL OSCILLATING PIN

+ = ADD STROKE

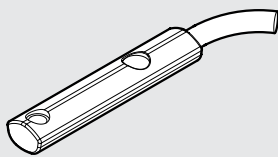


Code	Ø	A	CH	D	E	øF	H	L1	L4
W095X320007	32	M8X1	5	8	14	10	51	125	47
W095X400007	40	M10X1	6	9.5	16.5	12	61	146	57
W095X500007	50	M12X1.5	6	11	20	14	75	158	62
W095X630007	63	M14X1.5	8	13	26	16	92	161	63

Note: 2- piece pack

ACCESSORIES: MAGNETIC SENSORS

SLIM SENSOR



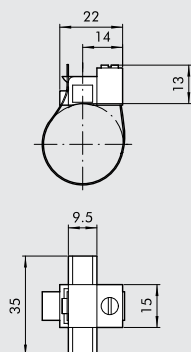
Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

* For use when standard sensors do not detect the magnet, e.g. near metal masses.

For technical data see page 1-246

Note: Individually packed

SENSOR CIRCLIP



Code	Bore	Description
W0950001103	8 to 63	Sensor circlip

Note: Individually packed

MATERIAL

Circlip: stainless steel
Sensor holder: plastic

STAINLESS STEEL ISO 15552 CYLINDERS (EX ISO 6431)

Stainless steel cylinders made to ISO 15552 available in various versions and with a wide range of accessories:

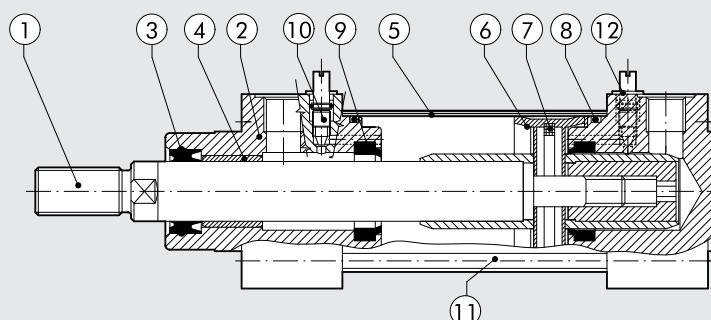
- with or without magnet execution
- double-acting – single- or through-rod
- gaskets: Polyurethane or FKM/FPM (for high temperatures)
- fixing accessories, guide units and mechanical piston rod lock



TECHNICAL DATA		POLYURETHANE	FKM/FPM
Max operating pressure	bar		10
	MPa		1
	psi		145
Temperature range	°C	-20 to +80	-10 to +150
Fluid		Unlubricated air. Lubrication, if used, must be continuous	
Bores	mm	32; 40; 50; 63; 80; 100	
Design		Heads with tie rods	
Standard strokes †	mm	max 1000	
Versions		Double-acting cushioned, Double-acting through-rod cushioned	
Magnet for sensors		All versions come complete with magnet. Supplied without magnet on request	
		† Maximum recommended strokes. Higher values can create operating problems	

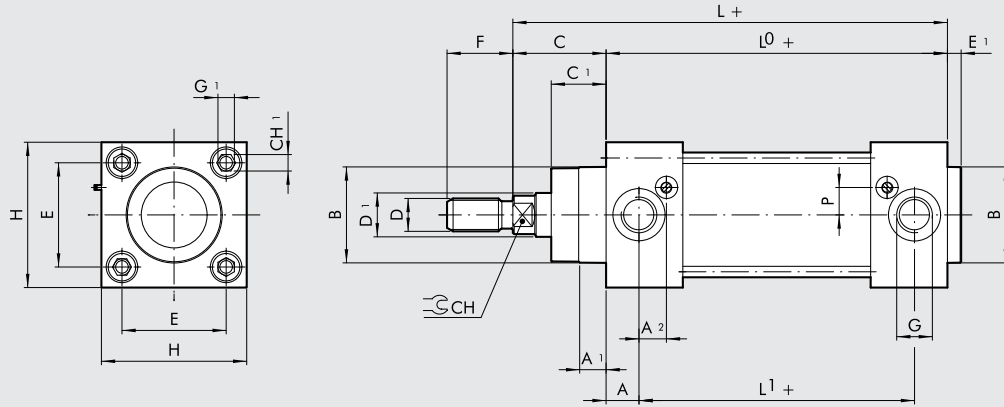
COMPONENTS

- ① PISTON ROD: AISI 316 steel
- ② HEAD: AISI 304 steel
- ③ PISTON ROD GASKET: polyurethane or FKM/FPM
- ④ GUIDE BUSHING: sintered bronze
- ⑤ JACKET: AISI 304 steel
- ⑥ ENBLOC GASKET: NBR or FKM/FPM
- ⑦ MAGNET: plastoferrite
- ⑧ Static O-rings: NBR or FKM/FPM
- ⑨ CUSHIONING GASKET: polyurethane or FKM/FPM
- ⑩ CUSHIONING NEEDLE: AISI 304 steel
- ⑪ TIE ROD: AISI 316 steel
- ⑫ NEEDLE-RETAINING RING: technopolymer



DIMENSIONS OF DOUBLE-ACTING

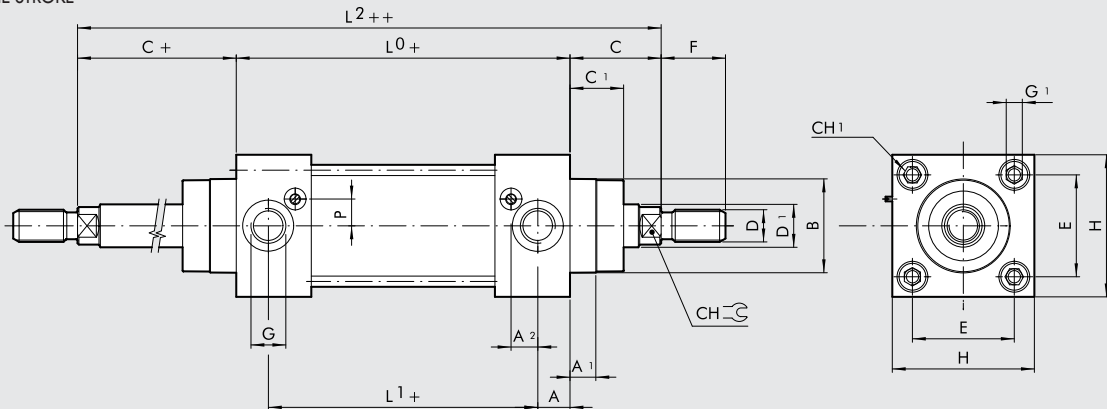
+ = ADD STROKE



W184

DIMENSIONS DOUBLE-ACTING THROUGH-ROD

+ = ADD STROKE
++ = ADD TWICE THE STROKE



W185

Ø	A	A ₁	A ₂	B	C	C ₁	CH	CH ₁	D	D ₁	E	E ₁	F	G	G ₁	H	L	L ₀	L ₁	L ₂	P
32	14	9	11.3	30	26	18	10	6	M10x1.25	12	32.5	4	22	G1/8	M6	50	121	95	67	147	6
40	14	9	13	35	30	22	13	6	M12x1.25	16	38	4	24	G1/4	M6	55	135	105	77	165	8
50	14	9	12.7	40	37	25.5	16	8	M16x1.5	20	46.5	4	32	G1/4	M8	65	143	106	78	180	11.8
63	16	9	15.8	45	37	25	16	8	M16x1.5	20	56.5	4	32	G3/8	M8	75	158	121	89	195	11.7
80	16	9	16.3	45	46	35	21	10	M20x1.5	25	72	4	40	G3/8	M10	95	174	128	96	220	15.5
100	18	9	15.5	55	51	38	21	10	M20x1.5	25	89	4	40	G1/2	M10	110	189	138	102	240	15.5

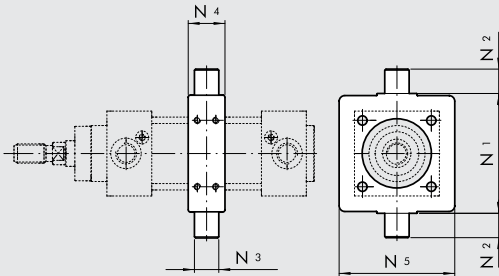
KEY TO CODES

W 1 8	4	0	3 2	0 0 3 2
	TYPE	VERSION	DIAMETER	STROKE
Stainless steel cylinder	4 DEMA 5 DEMA through-rod	0 Standard (magnetic) S Non-magnetic ● V FKM/FPM gasket	32 40 50 63 80 A1=100	+ 0 to 1000 mm

DEMA: Magnetic double-acting (cushioned)
 + Maximum recommended strokes. Higher values can create operating problems
 ● For this version the cylinder will be not magnetic

ACCESSORIES FOR STAINLESS ISO 15552 CYLINDER: FIXINGS

STAINLESS STEEL INTERMEDIATE HINGE - MODEL EN

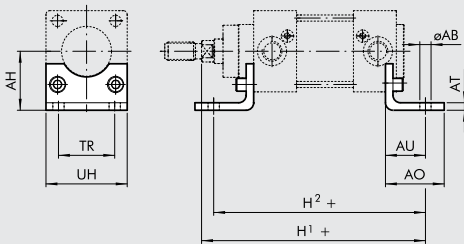


Code	Ø	N ₁	N ₂	N ₃	N ₄	N ₅
W095X322007	32	50	12	12	22	65
W095X402007	40	63	16	16	28	75
W095X502007	50	75	16	16	32	95
W095X632007	63	90	20	20	35	105
W095X802007	80	110	20	20	40	130
W095XA12007	100	132	25	25	45	145

Note: Supplied complete with 8 grub screws

STAINLESS STEEL SHORT FOOT MOUNTING

+ = ADD THE STROKE

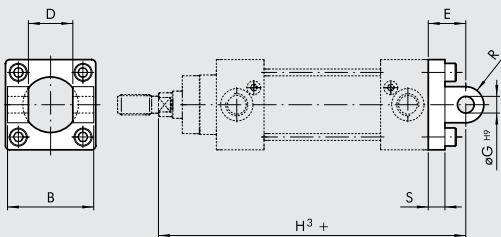


Code	Ø	Ø AB	AH	AO	AT	AU	TR	UH	H ₁	H ₂
W095X322001	32	7	32	35	4	24	32	45	145	143
W095X402001	40	9	36	36	4	28	36	52	163	161
W095X502001	50	9	45	47	5	32	45	65	175	170
W095X632001	63	9	50	45	5	32	50	75	190	185
W095X802001	80	12	63	55	6	41	63	95	215	210
W095XA12001	100	14	71	57	6	41	75	115	230	220

Note: Individually packed with 2 screws

STAINLESS STEEL FEMALE HINGE - MODEL B

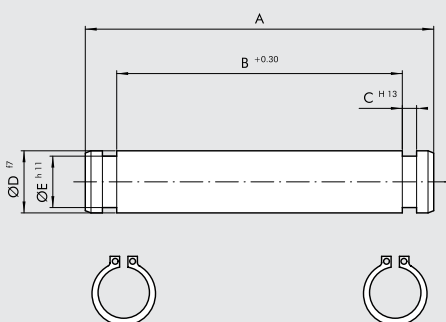
+ = ADD THE STROKE



Code	Ø	B	D	E	Ø G	H ₃	R	S
W095X322003	32	45	26	22	10	142	10	9
W095X402003	40	52	28	25	12	160	12	9
W095X502003	50	65	32	27	12	170	12	11
W095X632003	63	75	40	32	16	190	16	11
W095X802003	80	95	50	36	16	210	16	14
W095XA12003	100	115	60	41	20	230	20	14

Note: Supplied with 4 screws, 4 washers. **WITHOUT PIN.**

FEMALE HINGE INOX PIN

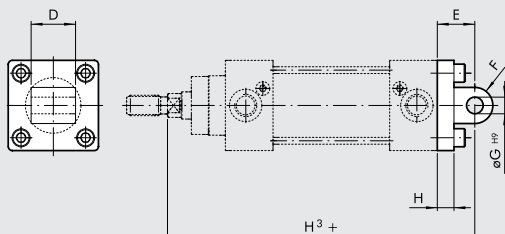


Code	Ø	A	B	C	D	E
W095X322050	32	53	46	1.1	10	9.6
W095X402050	40	60	53	1.1	12	11.5
W095X502050	50	68	61	1.1	12	11.5
W095X632050	63	78	71	1.1	16	15.2
W095X802050	80	98	91	1.1	16	15.2
W095XA12050	100	118	111	1.3	20	19

Note: Supplied with 2 snap-rings

STAINLESS STEEL MALE HINGE - MODEL BA

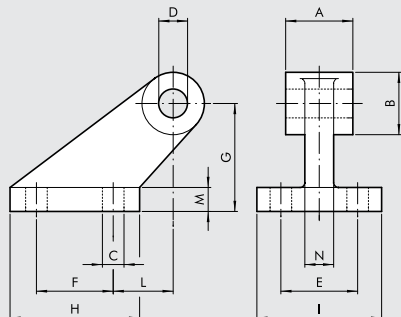
+ = ADD THE STROKE



Code	Ø	D	E	F	Ø G	H	H ₃
W095X322004	32	26	22	10	10	9	143
W095X402004	40	28	25	12	12	9	160
W095X502004	50	32	27	12	12	11	170
W095X632004	63	40	32	16	16	11	190
W095X802004	80	50	36	16	16	14	210
W095XA12004	100	60	41	20	20	14	230

Note: Supplied with 4 screws, 4 washers

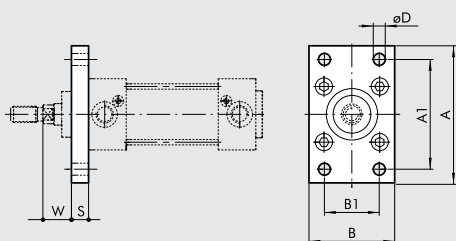
STAINLESS STEEL ISO COUNTER-HINGE FOR MODEL B - MODEL GS



Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N
W095X322008	32	26	20	6.6	10	38	18	32	31	51	3	8	10
W095X402008	40	28	22	6.6	12	41	22	36	35	54	2	10	15
W095X502008	50	32	26	9	12	50	30	45	45	65	3	12	16
W095X632008	63	40	30	9	16	52	35	50	50	67	2	14	16
W095X802008	80	50	30	11	16	66	40	63	60	86	7	14	20
W095XA12008	100	60	38	11	20	76	50	71	70	96	5	17	20

Note: Individually packed

STAINLESS STEE FRONT FLANGE - MODEL C

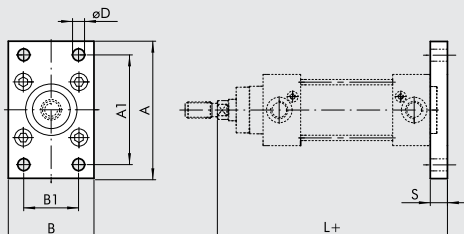


Code	Ø	A	A ₁	B	B ₁	S	ØD	W
W095X322002	32	80	64	45	32	10	7	16
W095X402002	40	90	72	52	36	10	9	20
W095X502002	50	110	90	65	45	12	9	25
W095X632002	63	120	100	75	50	12	9	25
W095X802002	80	150	126	95	63	16	12	30
W095XA12002	100	170	150	115	75	16	14	35

Note: Supplied with 4 screws

STAINLESS STEE REAR FLANGE - MODEL C

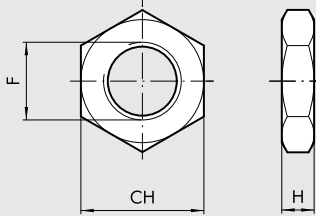
+ = ADD THE STROKE



Code	Ø	A	A ₁	B	B ₁	S	ØD	L
W095X322002	32	80	64	45	32	10	7	105
W095X402002	40	90	72	52	36	10	9	115
W095X502002	50	110	90	65	45	12	9	118
W095X632002	63	120	100	75	50	12	9	133
W095X802002	80	150	126	95	63	16	12	144
W095XA12002	100	170	150	115	75	16	14	154

Note: Supplied with 4 screws

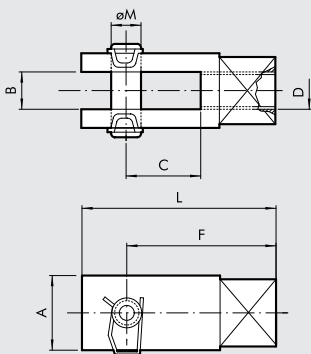
STAINLESS STEEL NUT FOR PISTON RODS



Code	Ø	F	H	CH	Weight [g]
W095X322011	32	M10x1.25	6	17	6
W095X402011	40	M12x1.25	7	19	12
W095X502011	50	M16x1.5	8	24	20
W095X502011	63	M16x1.5	8	24	20
W095X802011	80	M20x1.5	9	30	32
W095X802011	100	M20x1.5	9	30	32

Note: Individually packed

STAINLESS STEEL FORK-MODEL GK-M

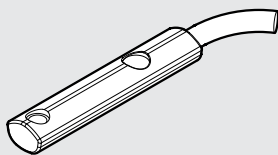


Code	Ø	A	B	C	D	F	L	Ø M
W095X322020	32	20	10	20	M10x1.25	40	52	10
W095X402020	40	24	12	24	M12x1.25	48	62	12
W095X502020	50	32	16	32	M16x1.5	64	83	16
W095X502020	63	32	16	32	M16x1.5	64	83	16
W095X802020	80	40	20	40	M20x1.5	80	105	20
W095X802020	100	40	20	40	M20x1.5	80	105	20

Note: Individually packed

ACCESSORIES: MAGNETIC SENSORS

SLIM SENSOR



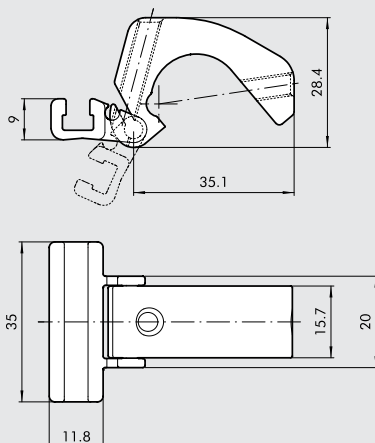
Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

* For use when standard sensors do not detect the magnet, e.g. near metal masses.

For technical data see page 1-246

Note: Individually packed

SENSOR BRACKET



Code	Bore	Description
W0950001100	32 to 100	Sensor bracket

Note: Individually packed

MATERIAL

Bracket: zinc-plated aluminium
 Sensor holder: zinc-plated aluminium
 Fixing screw: zinc-plated aluminium

NOTES

ACTUATORS

● GENERAL TECHNICAL DATA GRIPPERS

PAGE 1-168



● GRIPPERS WITH TWO PARALLEL JAWS, SERIES P1

PAGE 1-172



● GRIPPERS WITH TWO PARALLEL JAWS, SERIES P2

PAGE 1-174



● GRIPPERS WITH TWO PARALLEL JAWS, LONG STROKE, SERIES P4

PAGE 1-176



● GRIPPERS WITH TWO HINGED JAWS, SERIES P7

PAGE 1-179



● TECHNOPOLYMER HINGED GRIPPERS, SERIES P8

PAGE 1-181



● GRIPPERS 180° WITH 2 HINGED JAWS SERIES P9

PAGE 1-183



● GRIPPERS WITH THREE PARALLEL JAWS, SERIES P11

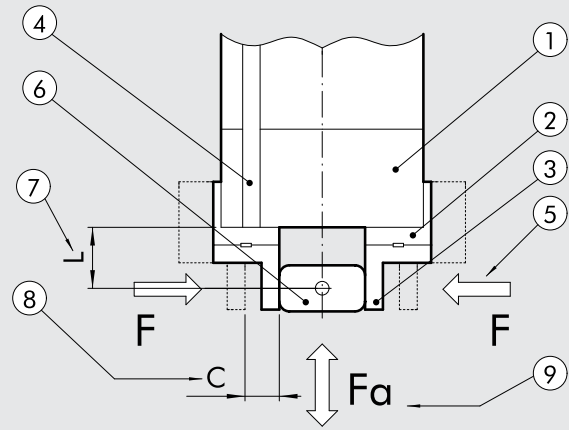
PAGE 1-185

GENERAL TECHNICAL DATA GRIPPERS

NOMENCLATURE

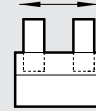
- ① Pneumatic gripper
- ② Jaws
- ③ Clamping finger
- ④ Sensor slot
- ⑤ F = clamping force of one jaw only
If a gripper has three jaws, with $F = 25\text{ N}$, so the total clamping force is $25 \times 3 = 75\text{ N}$
- ⑥ Load
- ⑦ L = distance between the barycentre of the load and the reference surface
- ⑧ C = stroke of a single jaw
- ⑨ F_a = maximum axial force applied to the grippers

FIG. 1.1



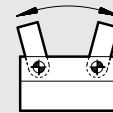
TYPES

Parallel gripper: the jaws move in a straight line. There may be two, three or even four jaws.

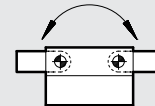


Hinged gripper: the jaws are hinged and move along the arc of a circle. It is generally cheaper than a parallel gripper but there are some limitations (see fig. 1.5):

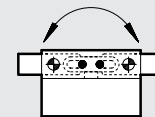
- If the part has varying dimensions, the contact area changes (see fig. 1.6)
- If the part is cylindrical with varying dimensions, the position of the axis of the clamped part varies (see fig. 1.7)



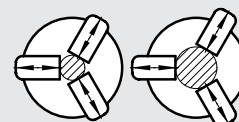
Gripper with retracting jaws: the jaws have an opening angle of about 90° . The clamping fingers can retract fully from the work top, and so, in certain cases, it is possible to avoid one linear retraction motion (see fig. 1.5).



Toggle gripper: a hinged gripper with a toggle-action mechanism to achieve high clamping forces. Clamping is irreversible even when there is no pressure, so the part cannot be released accidentally. The opening angle is 90° so it acts as retracting gripper. The clamping force is high within a limited angle only.



Number of jaws: two-jaw grippers are used for prism-shaped parts or cylindrical ones with a single diameter. Three-jaw grippers can be used for cylindrical parts with different diameters.



CLAMPING FINGERS

The clamping fingers must be as light and short as possible to keep inertia to a minimum. The longer the clamping fingers, the less force is available (see fig. 1.2). Wider fingers are only heavier, they do not increase friction (see fig. 1.3).

FIG. 1.2

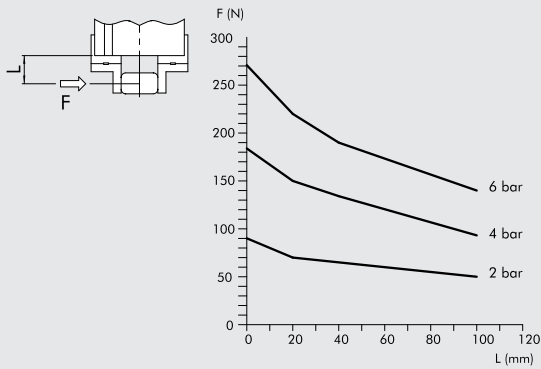
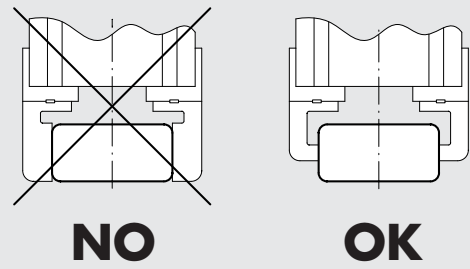
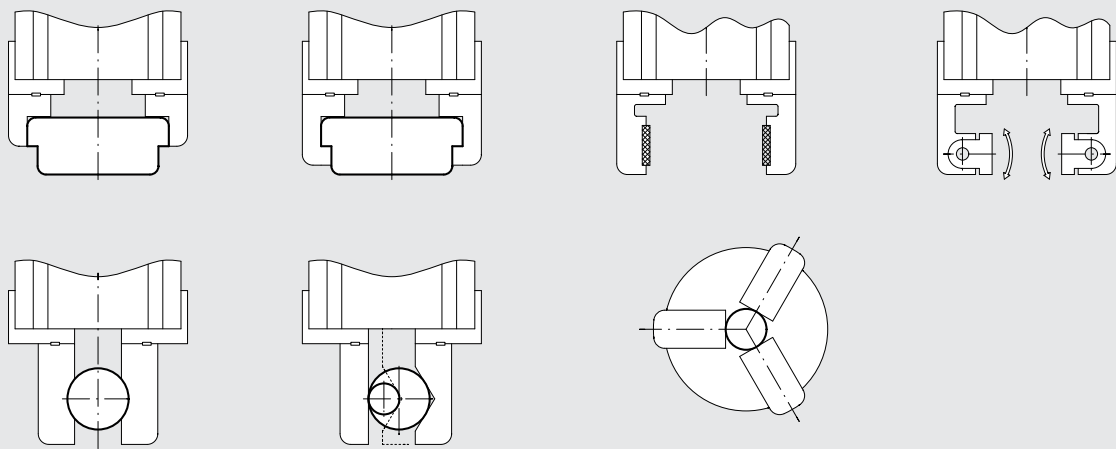


FIG. 1.3



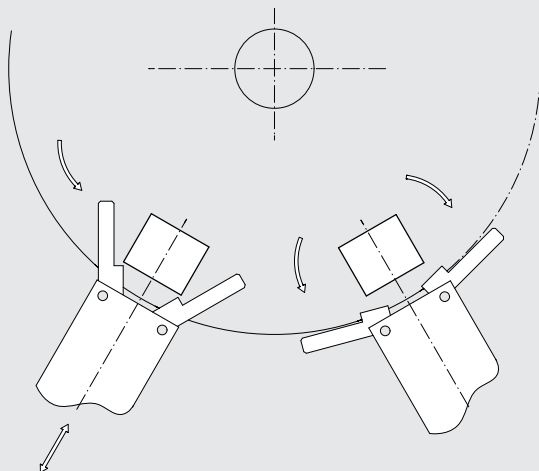
EXAMPLE OF CLAMPING FINGERS

FIG. 1.4



EXAMPLE OF RETRACTING HINGED GRIPPERS

FIG. 1.5



EXAMPLE OF USE LIMITATIONS OF HINGED GRIPPERS

FIG. 1.6

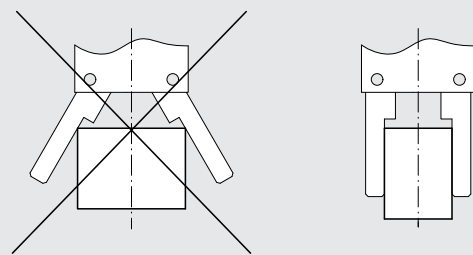
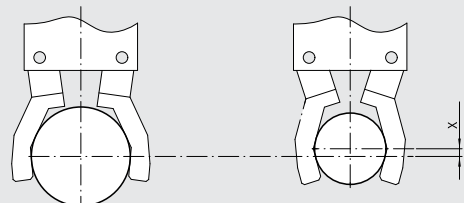


FIG. 1.7

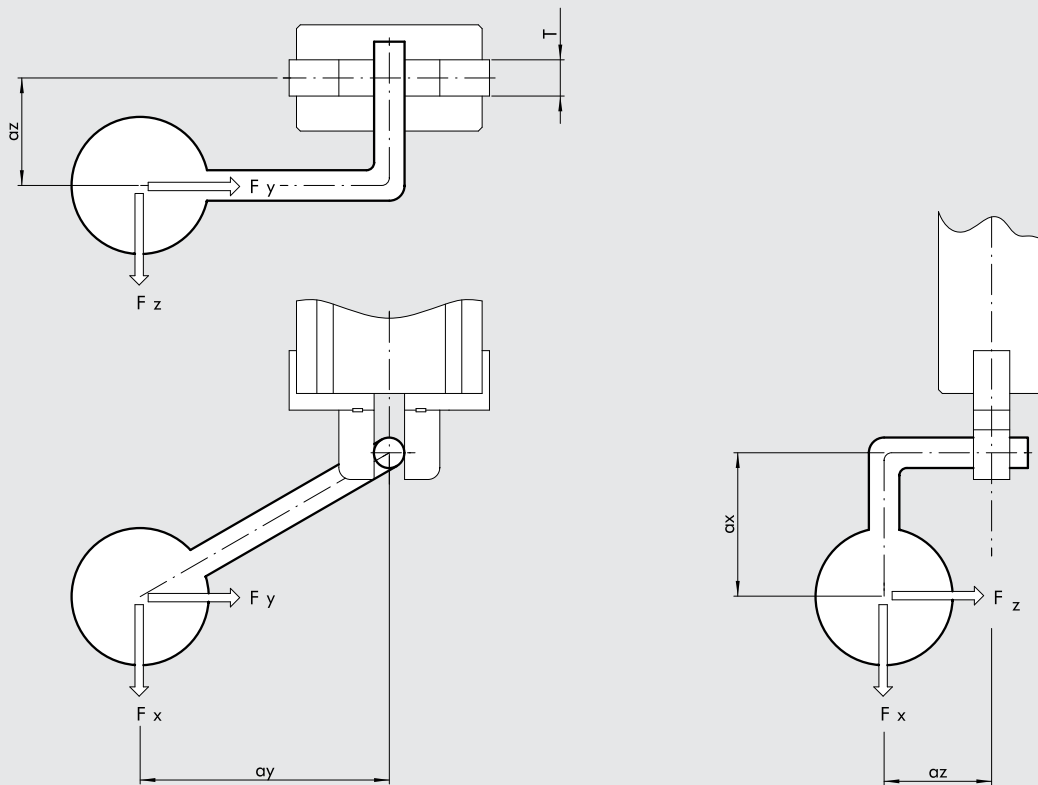


CALCULATIONS

First of all, determine the necessary clamping force.
 Then decide which type of gripper can ensure this force with required pressure and clamping distance.
 To help designers calculate the clamping force, we propose two levels of calculation.

DRAWING TO CALCULATE GRIPPER CLAMPING FORCE

FIG. 1.8



APPROXIMATION METHOD

Clamping force of each jaw [N] $\geq 200 \times$ weight of part [kg] / number of jaws.

Data	Unit of measurement	Formula	Example
M	Mass of part	kg	1.2
n	Number of jaws	-	3
F	Clamping force of each jaw	$\geq 200 \times M/n$	$\geq 200 \times 1.2/3 = 80$

PRECISION COMPUTING METHOD

	Data	Unit of measur.	Formula	Example
M	Mass of part	Kg		1.2
a	Acceleration	m/s ²		5 in direction X
Ω	Angle speed	rad/s		0
T	Width of clamping finger	mm		8
d	Clamping diameter of part	mm		16
ax	Distance along X of the barycentre from clamping centre	mm		0
ay	Distance along Y of the barycentre from clamping centre	mm		0
az	Distance along Z of the barycentre from clamping centre	mm		25
μ	Finger/part friction coefficient			0.2
	Some examples:			
	Smooth steel on smooth metal		μ = 0.1	
	Rough steel on smooth metal		μ = 0.2 - 0.3	
	Soft material, e.g. Vulkolan		μ = 0.4	
	Coupled shape (vedi fig. 1.4)		μ = 1	
	Forces applied to barycentre of part. When determining the forces, assess for each direction:			
	Force x weight	N	M x 9.81	
	Force of inertia x linear acceleration	N	M x a	
	Force of inertia x angular velocity	N	M x Ω ² x r	
Fx	Force along gripper axis	N		Fx = weight 1.2 x 9.81 = 11.8 N
Fy	Force perpendicular to jaw	N		Fy = F. of inertia = 1.2 x 5 = 6 N
Fz	Force tangent to jaw	N		Fz = 0
	Force equivalent to clamping centre:			
Ft eq	Equivalent tangential force	N	$\sqrt{\left[F_x \cdot \left(\frac{az + \frac{T}{2}}{T} + \frac{ay + \frac{d}{2}}{d} \right) + F_z \cdot \frac{ax}{T} + F_y \cdot \frac{ax}{d} \right]^2 + F_z^2}$	$\sqrt{\left[11.8 \cdot \frac{25 + \frac{8}{2}}{8} + 0 \right]^2} = 42.8 \text{ N}$
Fy eq	Equivalent perpendicular force	N	$F_y \cdot \frac{az + \frac{T}{2}}{T} + F_z \cdot \frac{ay}{T}$	$= 6 \cdot \frac{25 + \frac{8}{2}}{8} = 75 \text{ N}$
Fs teo	Theoretical clamping force	N	Greater of (Fteq/2μ) and (Fy eq)	Greater of (42.8/2.02) and 75 = 107
F	Clamping force	N	FsTeo · 1.5 (safety coefficient)	= 107 · 1.5 = 160 N

NOTES

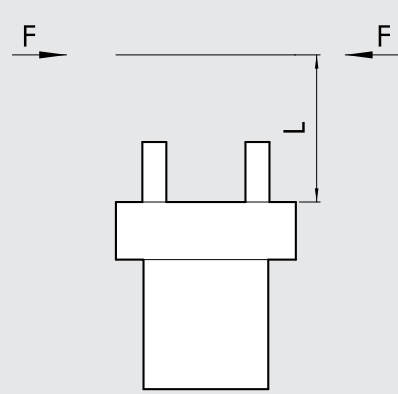
GRIPPER WITH 2 PARALLEL JAWS SERIES P1

- Dual-acting parallel gripper for internal and external clamping.
- Anodized aluminium alloy body and tempered steel jaws.
- Bottom or side fixing.
- All sizes come with magnets and sensor slots.

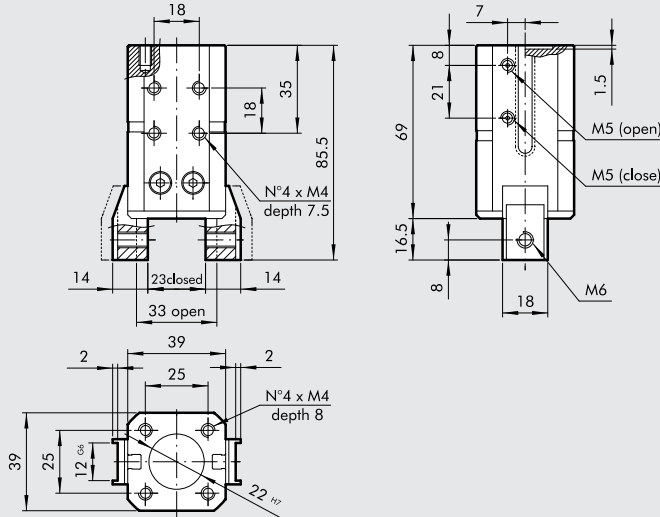


TECHNICAL DATA		P1-20	P1-32
Operating pressure	bar	2 to 8	
	MPa	0.2 to 0.8	
	psi	29 to 116	
Temperature range	°C	5 to 70	
Fluid		20 µm filtered, lubricated or unlubricated air; lubrication if used, it must be continuous	
Bores	mm	20	32
Clamping force at 6.3 bar 20 mm from the top surface during opening and closing	N	70	170
Single jaw stroke	mm	5	5
Weight	Kg	0.50	0.70

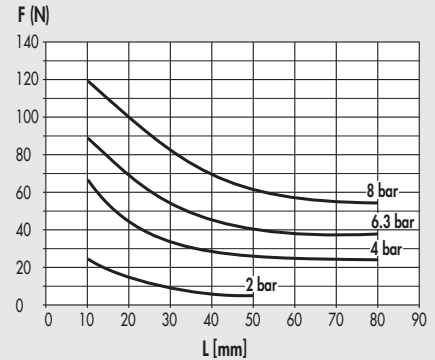
TABLE OF CLAMPING FORCES FOR VARIOUS POINTS OF APPLICATION



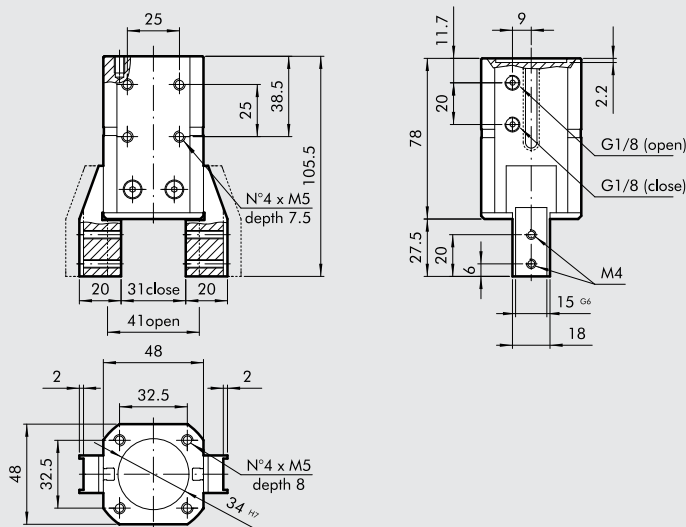
DIMENSIONS OF GRIPPERS P1-20



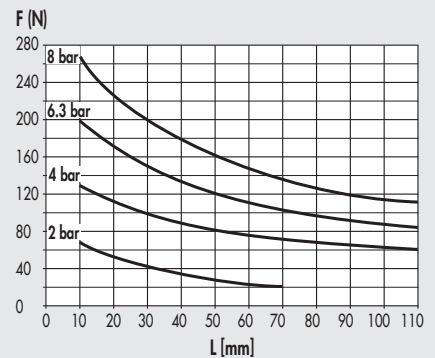
Code	Description
W155020001	Gripper with 2 parallel jaws P1-20



DIMENSIONS OF GRIPPERS P1-32

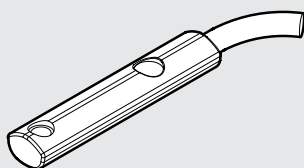


Code	Description
W1550320001	Gripper with 2 parallel jaws P1-32



ACCESSORIES

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE

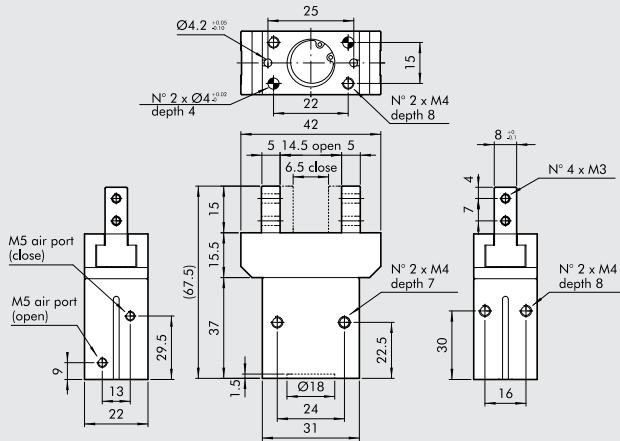


Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

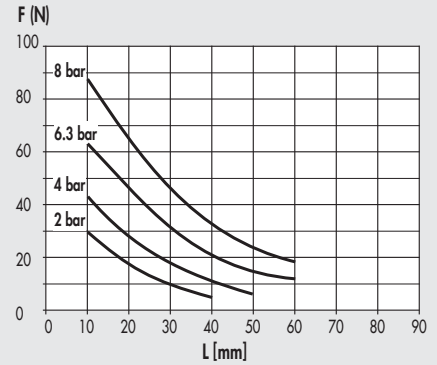
* For use when standard sensors do not detect the magnet, e.g. near metal masses.

For technical data see page 1-246

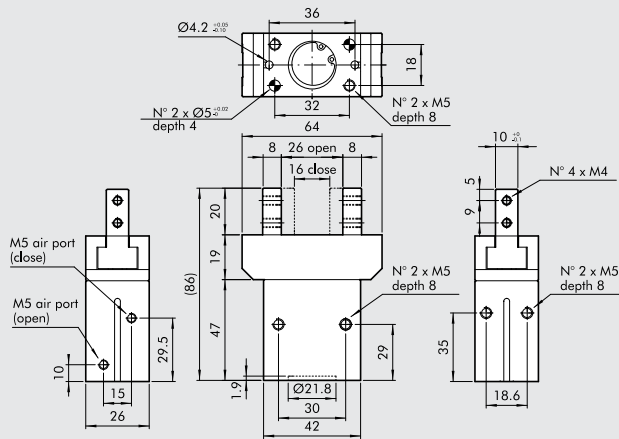
DIMENSIONS OF GRIPPER P2-16



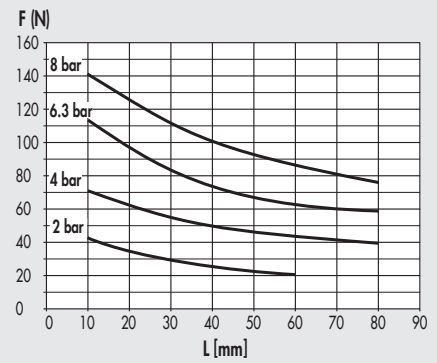
Code W1570160200 **Description** Gripper with 2 parallel jaws P2-16



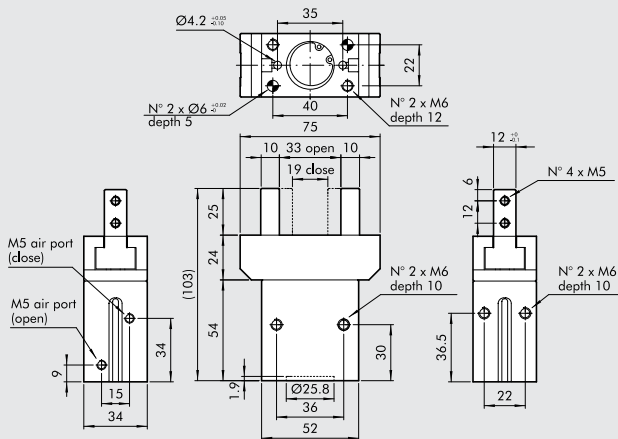
DIMENSIONS OF GRIPPER P2-20



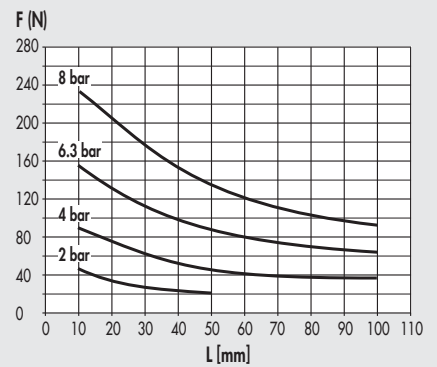
Code W1570200200 **Description** Gripper with 2 parallel jaws P2-20



DIMENSIONS OF GRIPPER P2-25

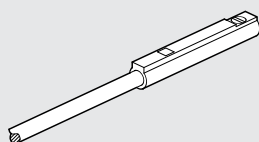


Code W1570250200 **Description** Gripper with 2 parallel jaws P2-25



ACCESSORIES

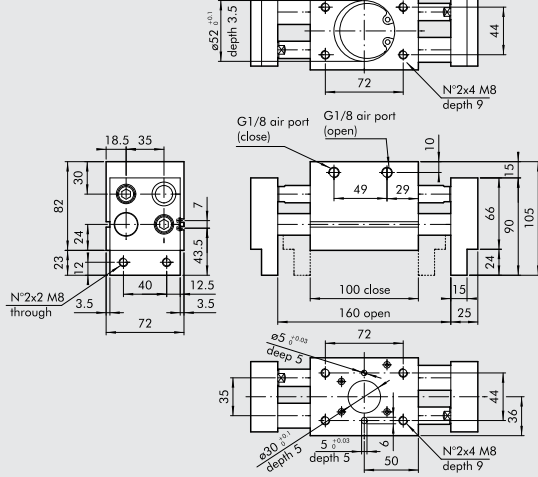
SENSOR



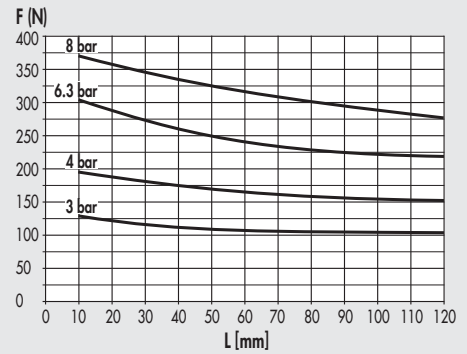
Code W0950044180 **Description** Sensor REED 2 wires 24 VDC 1 m
Code W0950045390* **Description** Sensor HALL 3 wires 24 VDC 2 m

* For technical data see page 1-247

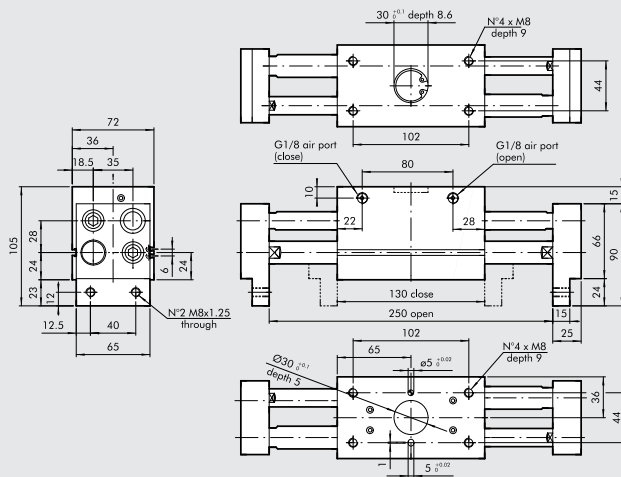
DIMENSIONS OF GRIPPER P4-25



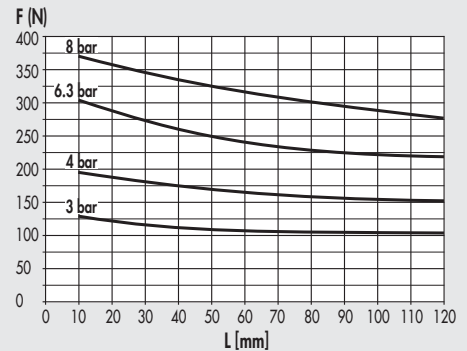
Code	Description
W1580250200	Gripper with 2 long-stroke jaws P4-25



DIMENSIONS OF GRIPPER P4-30

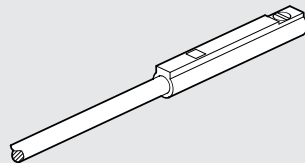


Code	Description
W1580300200	Gripper with 2 long-stroke jaws P4-30



ACCESSORIES

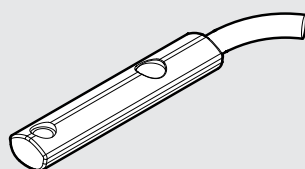
SENSOR FOR P4 10



Code	Description
W0950044180	Sensor REED 2 wires 24 VDC 1 m
W0950045390*	Sensor HALL 3 wires 24 VDC 2 m

* For technical data see page 1-247

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE FOR P4-12-30



Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

* For use when standard sensors do not detect the magnet, e.g. near metal masses.

* For technical data see page 1-246

GRIPPERS WITH 2 HINGED JAWS – SERIES P7



Hinged grippers with 30° opening angle. Bores 16, 20, 32 and 50 mm.
All grippers are magnetic with slots in the body with retracting sensors.

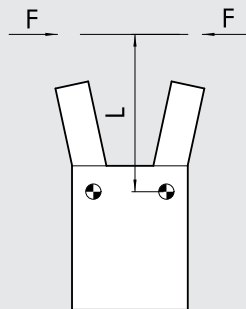


ACTUATORS

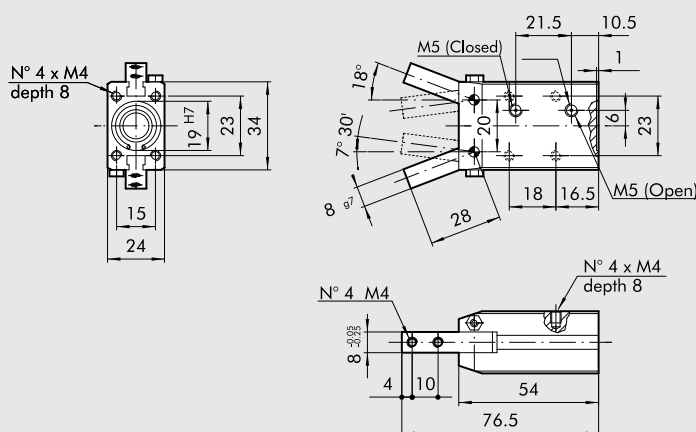
GRIPPERS WITH 2 HINGED JAWS – SERIES P7

TECHNICAL DATA		P7-16	P7-20	P7-32	P7-50
Operating pressure	bar	2 to 10	2 to 10	2 to 10	2 to 10
	MPa	0.2 to 1	0.2 to 1	0.2 to 1	0.2 to 1
	psi	29 to 145	29 to 145	29 to 145	29 to 145
Fluid	20 µm filtered, lubricated or unlubricated air; lubrication if used, it must be continuous.				
Temperature range	°C	5 to 70			
Clamping force at 6.3 bar 20 mm from the centre of rotation of the jaws, during opening and closing	N	27	50	120	180
Weight	kg	0.12	0.19	0.5	1.6

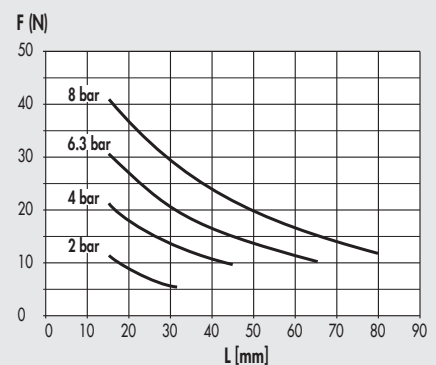
TABLE OF CLAMPING FORCES FOR VARIOUS POINTS OF APPLICATION



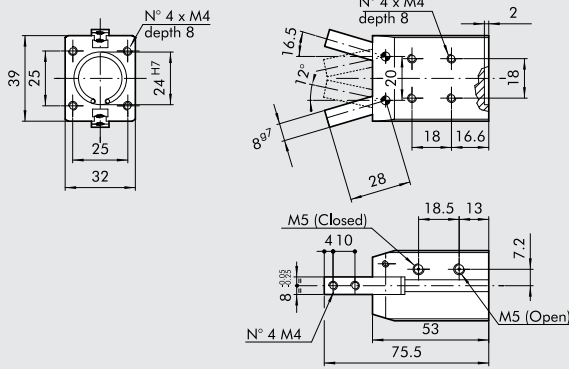
DIMENSIONS OF GRIPPERS P7-16



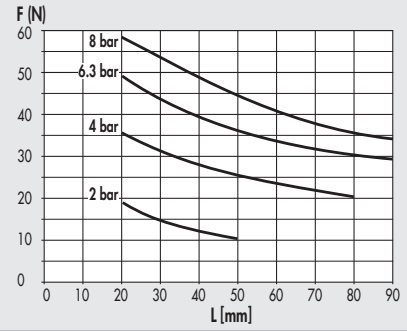
Code W1590160200 Description Gripper with 2 hinged jaws P7-16



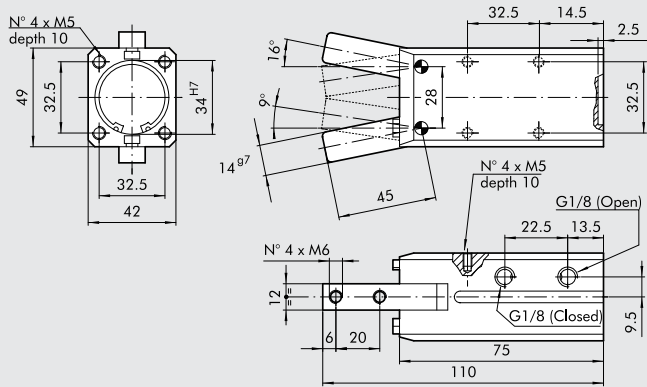
DIMENSIONS OF GRIPPERS P7-20



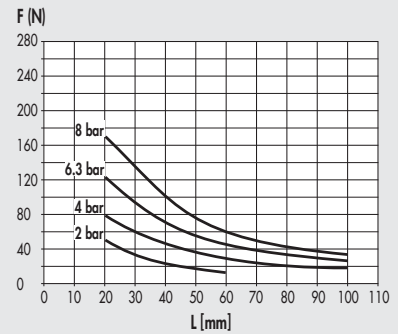
Code	Description
W1590200200	Gripper with 2 hinged jaws P7-20



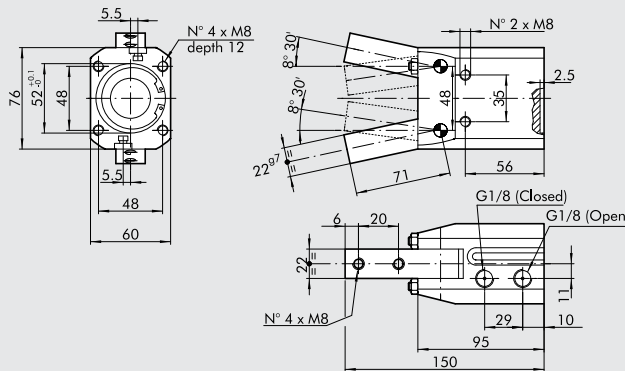
DIMENSIONS OF GRIPPERS P7-32



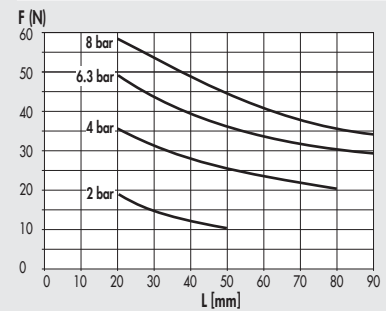
Code	Description
W1590320200	Gripper with 2 hinged jaws P7-32



DIMENSIONS OF GRIPPERS P7-50

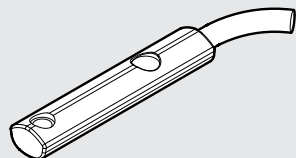


Code	Description
W1590500200	Gripper with 2 hinged jaws P7-50



ACCESSORIES

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

* For use when standard sensors do not detect the magnet, e.g. near metal masses.

* For technical data see page 1-246

TECHNOPOLYMER HINGED GRIPPERS SERIES P8



Single-acting hinged grippers, normally open, made entirely of technopolymer. Three sizes with clamping force 25-80 N at 6 bar. This solution makes the entire system lighter. This gripper is corrosion-resistant and antimagnetic. It comes complete with spring-loaded bracket for pre-loading the piece (force 1.5-6 N) and sensor holders.



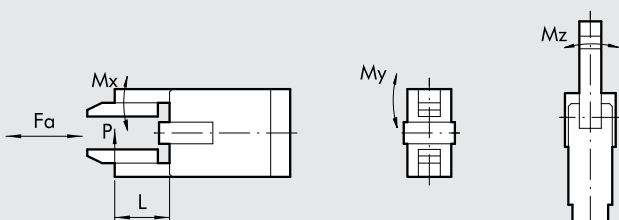
ACTUATORS

TECHNOPOLYMER HINGED GRIPPERS SERIES P8

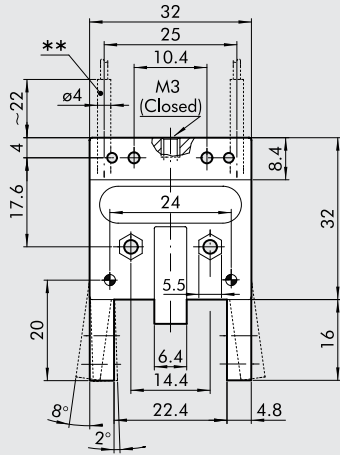
TECHNICAL DATA		P8-32	P8-40	P8-50
Operating pressure	bar		4 to 7	
	MPa		0.4 to 0.7	
Operating temperature	bar		58 to 101	
	°C		5 to 60	
Fluid		20 µm filtered, lubricated or unlubricated air; lubrication if used, it must be continuous		
Life		Over 2 million cycles		
Jaw opening angle		8°		
Clamping force per jaw at 6 bar	N	22.5	48	80
Applicable weight (recommended)	kg	0.2	0.4	0.8
Air consumption per cycle	cm ³	0.5	1	1.8
Opening time	sec	0.04	0.05	0.05
Closing time	sec	0.06	0.08	0.08
Weight of grippers	g	36	45	60
Moment of inertia	kg cm ²	0.04	0.12	0.15
Repeatability	mm	0.1	0.1	0.1

TABLE OF MOMENTS

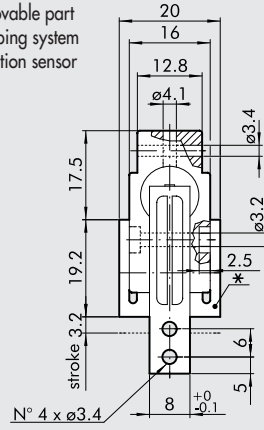
Gripper	FA (N)	Mx (Ncm)	My (Ncm)	Mz (Ncm)	P (N)
P8 - 32	3	9	10	10	22.5
P8 - 40	5	23	20	20	47.5
P8 - 50	8	49	30	40	80



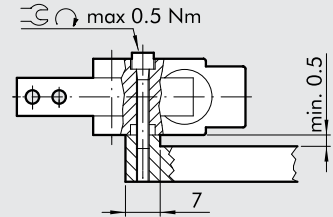
DIMENSIONS OF GRIPPERS P8-32



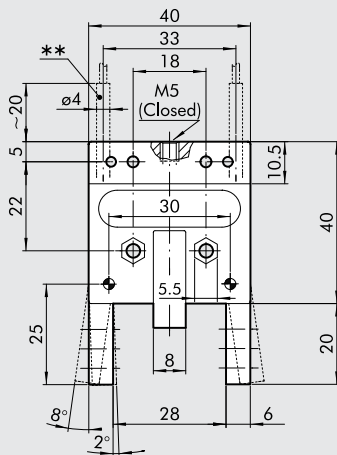
- * Removable part clamping system
- ** Induction sensor



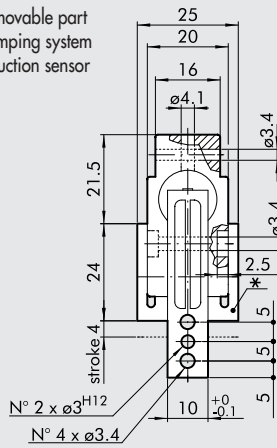
Code	Description
W0710010002	Tecnopolimer hinged grippers P8-32



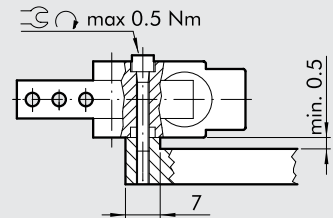
DIMENSIONS OF GRIPPERS P8-40



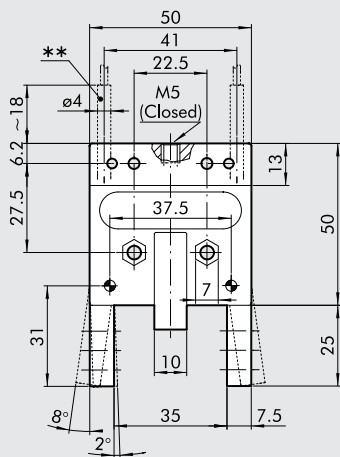
- * Removable part clamping system
- ** Induction sensor



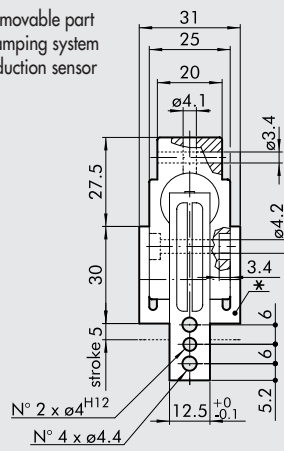
Code	Description
W0710010003	Tecnopolimer hinged grippers P8-40



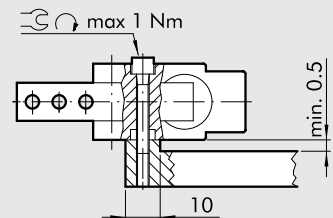
DIMENSIONS OF GRIPPERS P8-50



- * Removable part clamping system
- ** Induction sensor

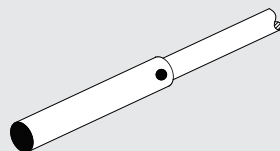


Code	Description
W0710010004	Tecnopolimer hinged grippers P8-50



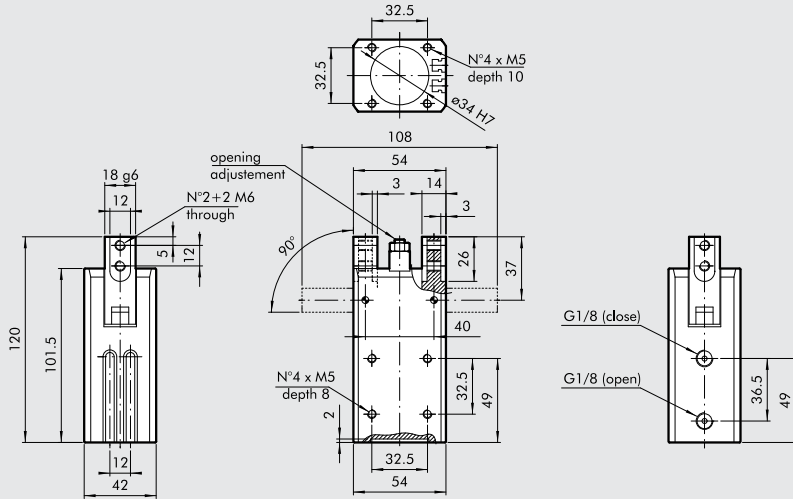
ACCESSORIES

INDUCTION SENSOR

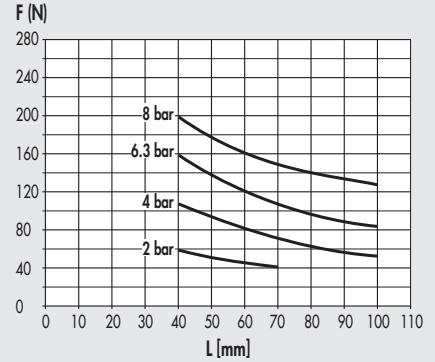


Code	Description
W0950037391	Induction sensor Ø 4 mm PNP-NO-2 m

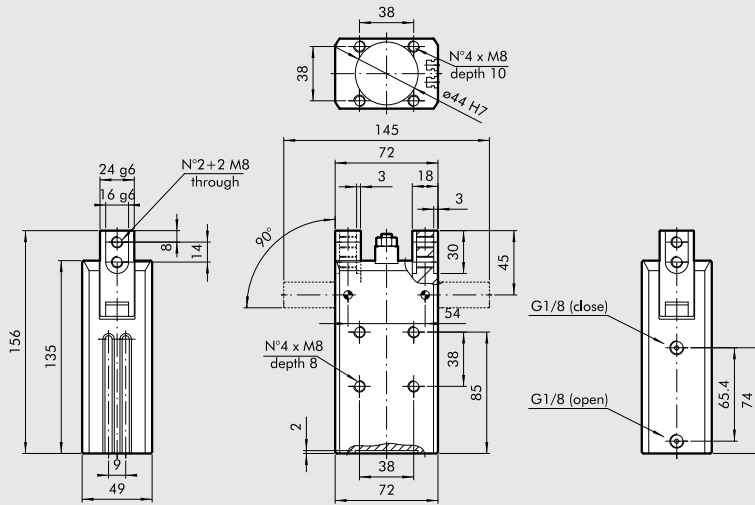
DIMENSIONS OF GRIPPERS P9-32



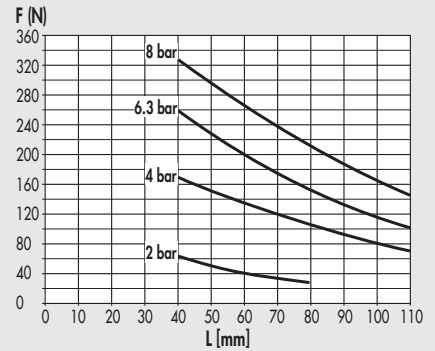
Code	Description
W1530320180	Hinged gripper P9-32



DIMENSIONS OF GRIPPERS P9-40

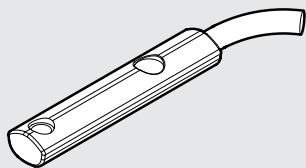


Code	Description
W1530400180	Hinged gripper P9-40



ACCESSORIES

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

* For use when standard sensors do not detect the magnet, e.g. near metal masses.
 * For technical data see page 1-246

GRIPPERS WITH 3 PARALLEL JAWS SERIES P11



Double-acting grippers with three self-centring jaws, internal and external clamping. The body contains slots for mounting retracting magnetic sensors.

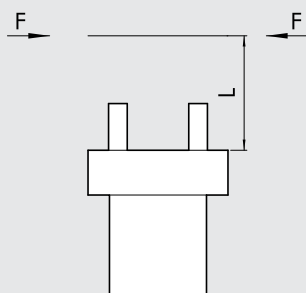


ACTUATORS

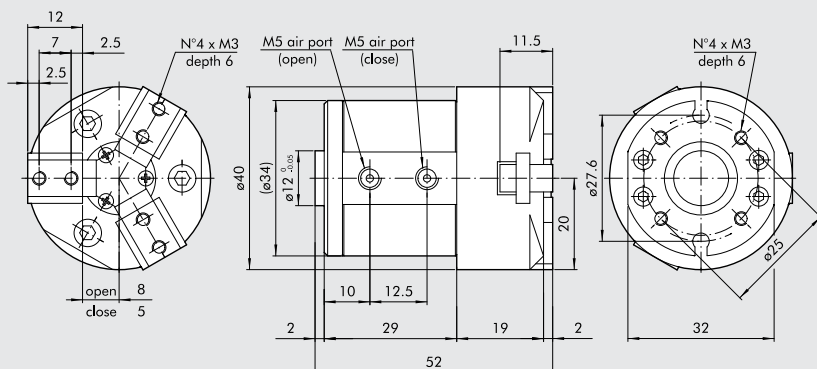
GRIPPERS WITH 3 PARALLEL JAWS - SERIES P11

TECHNICAL DATA		P11-16	P11-20	P11-25	P11-60
Min./max. operating pressure	bar		2 to 7		
	MPa		0.2 to 0.7		
	psi		29 to 101		
Temperature range	°C		5 to 70		
Fluid		20 µm filtered, lubricated or unlubricated air; lubrication if used, it must be continuous.			
Bore	mm	16	20	25	60
Single jaw stroke	mm	3	4	5	12.5
Clamping force at 6.3 bar 22 mm from the top surface, during opening and closing	N	38	62	110	900
Weight	kg	0.12	0.21	0.3	2.7
Maximum operating frequency	cycles/s	1.5	1.5	1.5	1.2

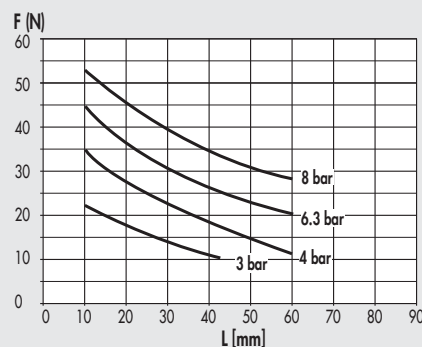
TABLE OF CLAMPING FORCES FOR VARIOUS POINTS OF APPLICATION



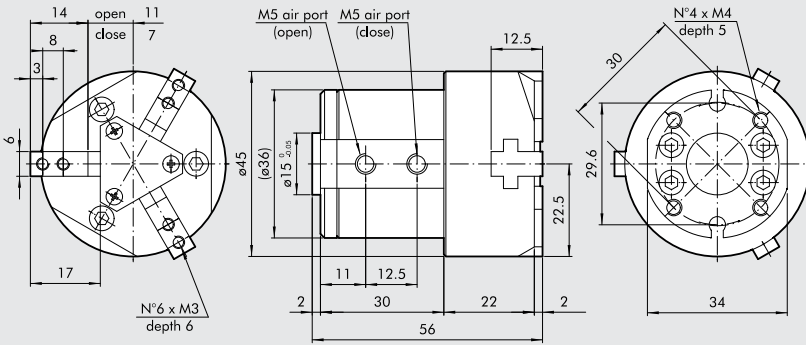
DIMENSIONS OF GRIPPER P11-16



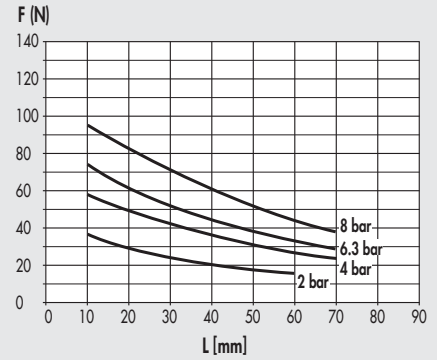
Code **W1570160300** Description **Grippers with 3 parallel jaws P11-16**



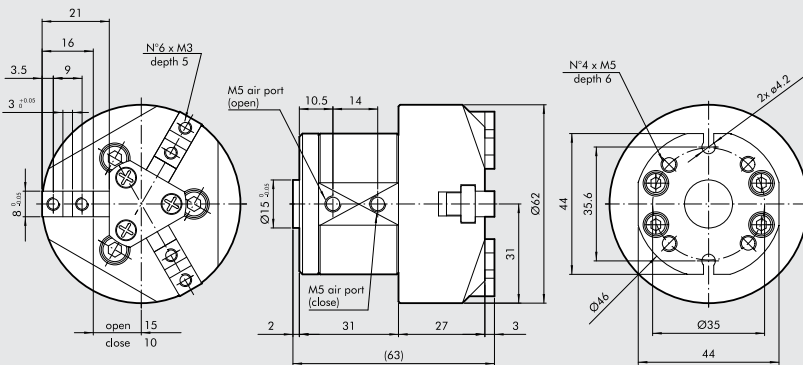
DIMENSIONS OF GRIPPER P11-20



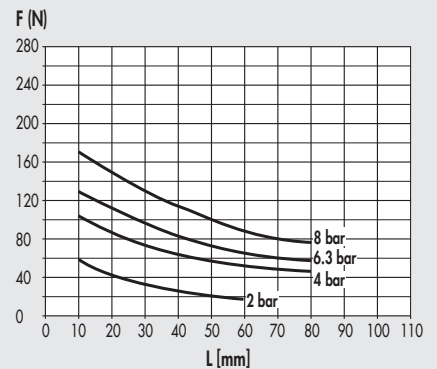
Code W1570200300 **Description** Grippers with 3 parallel jaws P11-20



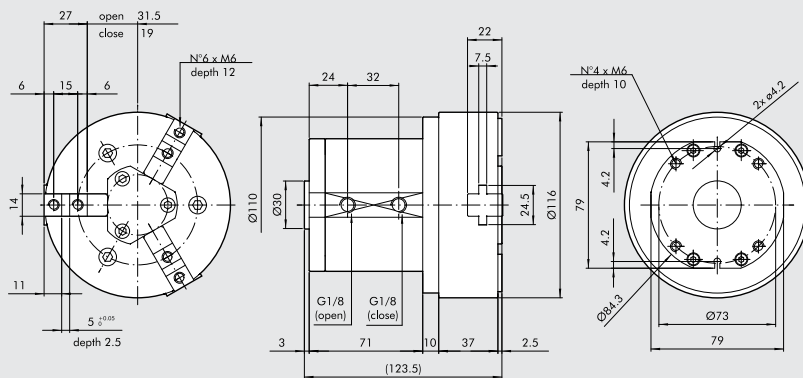
DIMENSIONS OF GRIPPER P11-25



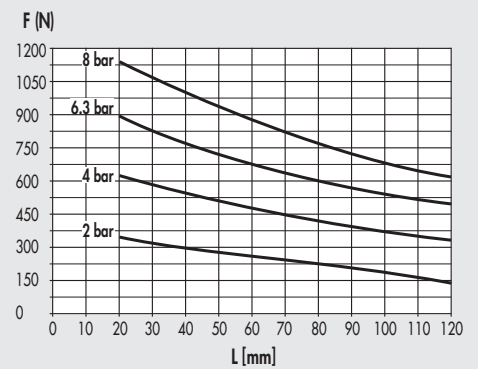
Code W1570250300 **Description** Grippers with 3 parallel jaws P11-25



DIMENSIONS OF GRIPPER P11-60

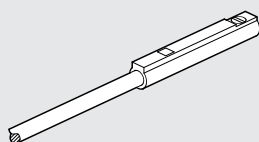


Code W1570600300 **Description** Grippers with 3 parallel jaws P11-60



ACCESSORIES

SENSOR FOR P11 16-60



Code W0950044180 **Description** Sensor REED 2 wires 24 VDC 1 m
Code W0950045390* **Description** Sensor HALL 3 wires 24 VDC 2 m

* For technical data see page 1-247

● GENERAL TECHNICAL DATA ROTARY ACTUATORS

PAGE 1-188



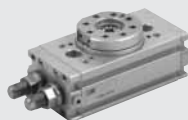
● ROTARY ACTUATORS SERIES R1

PAGE 1-189



● ROTARY ACTUATORS SERIES R2

PAGE 1-192



● ROTARY ACTUATORS SERIES R3

PAGE 1-195



● ROTARY ACTUATORS SERIES R3 WITH EXTERNAL SHOCK ABSORBERS

PAGE 1-200

GENERAL TECHNICAL DATA

ROTARY ACTUATORS

DEVICES

The use of hydraulic decelerators means it is possible to increase absorbed power. Some models in the catalogue have built-in decelerators. For those without, the user can mount decelerators outside the actuator. With horizontal axis rotation, if the masses are distributed asymmetrically it may be difficult to keep a constant rotation speed using flow regulators only. In this case it is advisable to use a decelerator.

CALCULATIONS

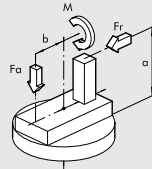
The following needs to be calculated:

- Absorbed kinetic energy
- Axial forces on the shaft or rotating flange
- Radial force on the shaft or rotating flange
- Overturning moment

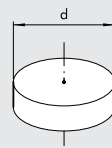
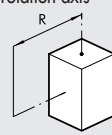
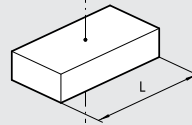
Then compare each of the 4 sizes with the admissible ones shown in the catalogue for each rotary actuator. Remember that the application of optional hydraulic decelerator, where envisaged, doubles the kinetic energy that can be absorbed by the actuator.

SIZING

HOW TO CALCULATE KINETIC ENERGY

Denomination	Unit of measurement	Formula	Example	
				
α	Angle of rotation	rad	$= \text{degrees} \cdot \frac{\pi}{180}$	$= 90^\circ = \frac{\pi}{2} \text{ rad.}$
t	Rotation time	s		2
J_a	Moment of inertia of rotating masses N.B.: added those of the individual masses	Kg m^2	$= \sum J_i$	$= 0.078 + 0.02 + 0.133 = 0.232$
E	Kinetic energy	Nm	$= 1/2 J \omega^2 = 2J \cdot \left(\frac{\alpha}{t}\right)^2$	$= 2 \cdot 0.232 \cdot \left(\frac{\pi}{2}\right)^2 = 0.57$
F_r	Radial force (Remember to take into account centrifugal forces)	N	$(F_c = M \cdot \omega^2 \cdot R)$	50
F_a	Axial force	N		10
M	Overturning moment	Nm	$= M + F_r \cdot a + F_a \cdot b$	$= 50 \times 0.1 + 10 \times 0 = 5$

MOMENTS OF INERTIA FOR THE MOST COMMON SHAPES

Denomination	Unit of measurement	Formula	Example	
		Disco		
M	Disk mass	Kg		7
d	Disk diameter	m		0.3
J	Moment of inertia of the disk	Kg m^2	$= \frac{Md^2}{8}$	$= \frac{7 \cdot 0.3^2}{8} = 0.0787$
		Mass distant from rotation axis		
M	Mass	Kg		0.5
R	Distance between barycenter and rotation axis	m		0.2
J	Moment of inertia of the mass	Kg m^2	$= MR^2$	$= 0.5 \times 0.2^2 = 0.02$
		Parallelepiped with barycenter on rotation axis		
M	Mass	Kg		10
L	Side of the parallelepiped	m		0.4
J	Moment of inertia of the mass	Kg m^2	$= M \frac{L^2}{12}$	$= \frac{10 \cdot 0.4^2}{12} = 0.13$

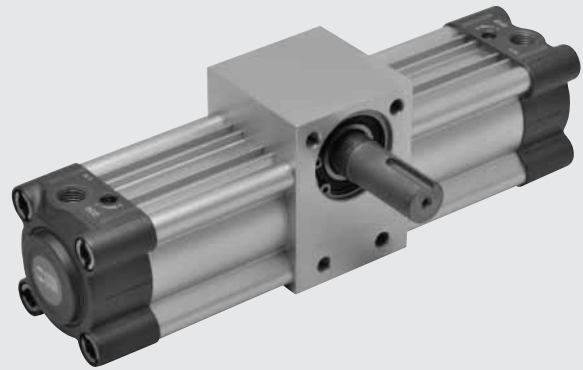
ROTARY ACTUATORS SERIES R1 Ø 32 to 100

Rack-type rotary cylinders in various configurations:

- Configuration with standard magnet
- Version with male pinion or female hole
- Mechanical stroke adjustment
- Special configurations on request

The central body has ISO bore holes for wall fixing using ISO pin and/or flange fittings.

N.B.: We always suggest to use flow microregulators.
During the setup of the actuator, start with CLOSE flow microregulators, and open gradually till the achievement of the required speed.



TECHNICAL DATA		32	40	50	63	80	100
Gaskets		NBR					
Operating pressure	bar	10					
	MPa						
	psi	145					
Temperature range	°C	- 10 to + 80					
Fluid		Filtered lubricated or unlubricated air.					
		Lubrication, if used, must be continuous.					
Bores	mm	Ø 32 ; Ø 40 ; Ø 50 ; Ø 63 ; Ø 80 ; Ø 100					
Rotation angle		90°; 180°; 270°; 360°					
Type of construction		Extruded profile					
Configuration		Magnetic standard cushioned					
Axial load	N	2500	2800	4500	5600	8500	12200
Max. moment (6 bar - 0.6 Mpa)	Nm	4.5	12.5	16	32	70	120

N.B. The product is supplied with negative end-of-stroke piston (in the proximity of head A).

The first cycle involves movement of the piston (towards head B) with consequent anti-clockwise rotation of the pinion.

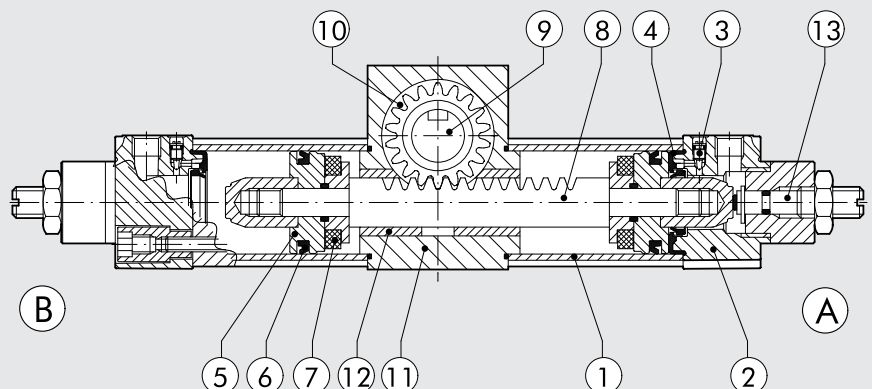
ACTUAL ROTATION ANGLE

Cylinders without regulation of the rotation angle: the manufacturing tolerance is $+ 4^{\circ}/0^{\circ}$ compared to the nominal value

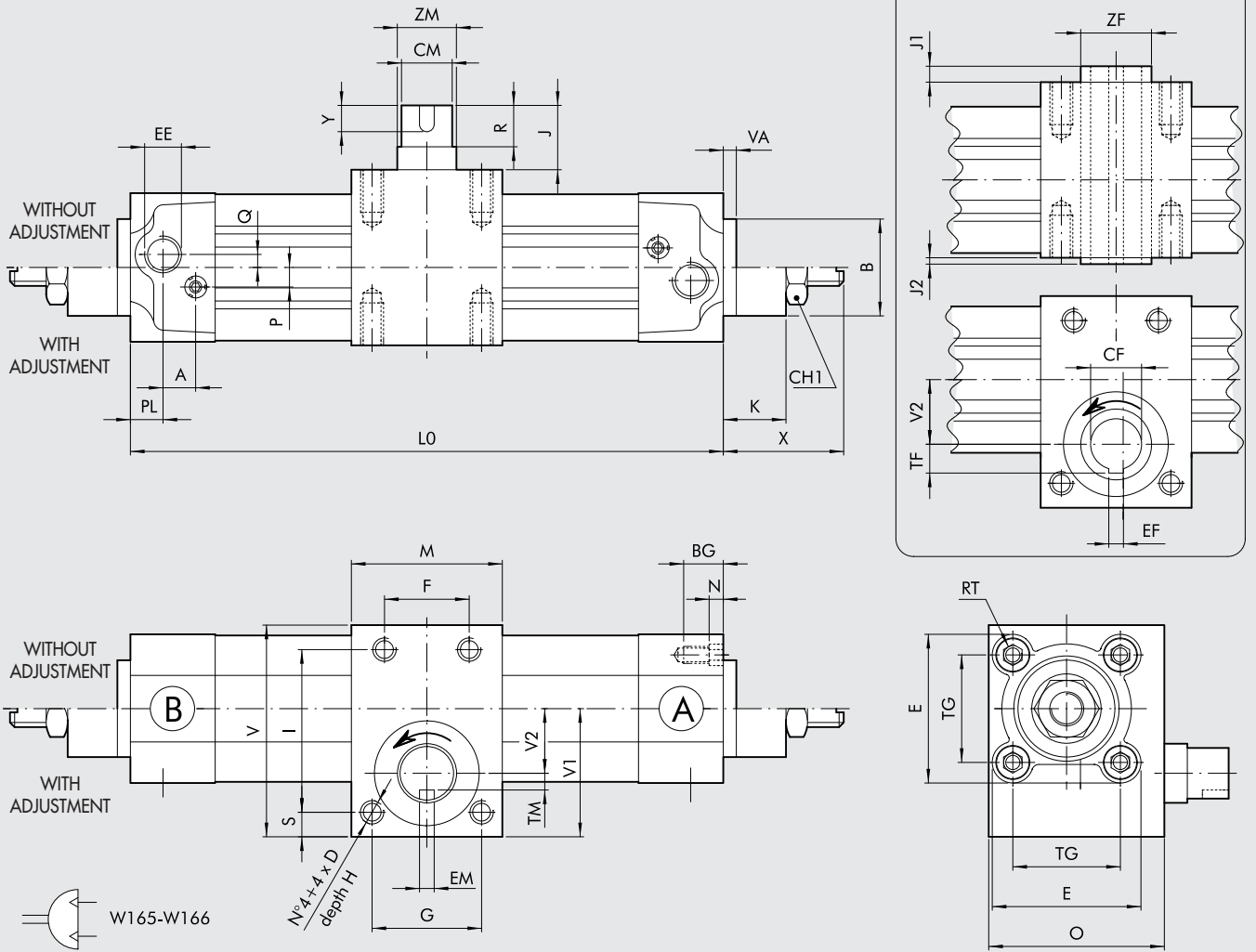
Cylinders with regulation of the rotation angle: the possible regulation ranges from $+ 2^{\circ}/- 20^{\circ}$.

COMPONENTS

- ① BARREL: profiled anodised aluminium alloy
- ② HEAD: die cast aluminium
- ③ CUSHIONING NEEDLE: OT 58 with needle out movement safety system even when fully open
- ④ BUFFER + Static O-rings: NBR or FKM/FPM
- ⑤ PISTON: aluminium
- ⑥ PISTON GASKET: NBR
- ⑦ MAGNET: plastoferrite
- ⑧ RACK: AISI 304
- ⑨ PIGNON MALE/FEMALE: nitrided alloy steel
- ⑩ BALL BEARING
- ⑪ CENTRAL BODY: anodised aluminium
- ⑫ RACK GUIDE BUSH: self-lubricating sintered bronze
- ⑬ REGULATION SCREW: AISI 303



DIMENSIONS OF ROTARY CYLINDER Ø 32 to 100



Note: with the key slot in the position specified, the piston is in contact with head (A)

Ø	L0 ±1 for ROTATION ANGLE				Δ	A	B	BG	CM ^{g7}	CF ^{g7}	CH1	D	E	EE	EF ^{D10}	EM ^{H9}	F	G	H	I	J
	90°	180°	270°	360°																	
32	218.7	261.1	303,5	345.9	0.236	10	30	15.5	14	10	22	M6	46	G1/8	3	5	30	30	14	50	34.5
40	241.4	288.6	335,6	382.8	0.262	10	35	15.5	16	12	22	M6	54	G1/4	4	5	30	30	14	60	39.5
50	265.9	322.4	379,0	435.5	0.314	10	40	18.5	19	14	27	M8	64.5	G1/4	5	6	32	45	16	65	46.5
63	295.1	358.0	420,8	483.6	0.349	10	45	18.5	24	16	27	M10	75.5	G3/8	5	8	38	52	17	73	47.5
80	358.3	443.1	528,0	612.8	0.471	12	45	21.5	28	25	36	M12	94	G3/8	8	8	48	70	20	100	58.5
100	399.8	500.4	600,9	701.4	0.559	12	55	21.5	38	30	36	M14	111	G1/2	8	10	60	80	25	120	67

Ø	J1	J2	K	M	N	O	P	PL	Q	R	RT	S	TG	TF	TM	V	V1	V2	VA	X	Y	ZM	ZF
32	4.5	-	16	47	4.5	47	6	10	4	30	M6	9	32.5	6.4	4	68	44.5	19	4	32 - 35.5	20	15	15
40	5	2	20	52.5	4.5	54.5	6	12	4	35	M6	7	38	7.8	5	74	45	22	4	45.5 - 50	25	17	17
50	7	-	25	63	5.5	64	6	14	6	40	M8	10	46.5	9.3	6	85	51	25	4	48.5 - 53	25	20	20
63	2,5	-	25	75	5.5	75	6	16	6	45	M8	11	56.5	10.3	8	95	56	27.5	4	46.5 - 51	30	25	25
80	8.5	-	33	95	5.5	95	10	18	7	50	M10	12.5	72	15.8	10	125	76	39	4	61 - 67	35	35	35
100	7	-	38	111	5.5	110	10	20	7	60	M10	15	89	18.3	14	150	90.5	45.5	4	66.5 - 74.5	45	45	45

Δ = Linear displacement (mm) for each degree of rotation

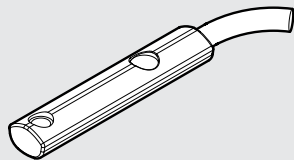
KEY TO CODES

W165 TYPE		050 BORES	1 VERSION	090 ANGLE OF ROTATION •
W165	cylinder with male pinion	032	1	090
W166	cylinder with female pinion	040		180
		050	2	270
		063		360
		080		
		100		

• expressed in sexagesimal degrees.

ACCESSORIES: MAGNETIC SENSORS

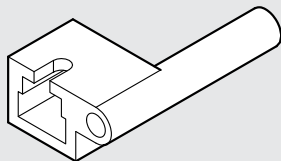
RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

* For use when standard sensors do not detect the magnet, e.g. near metal masses.
For technical data see pag. 1-246

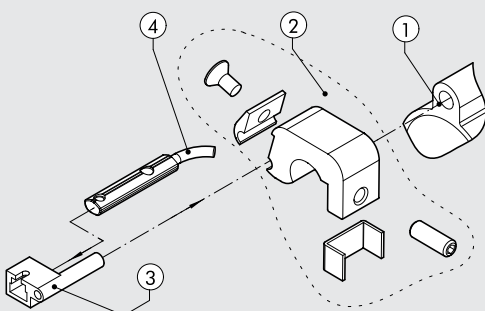
ADAPTOR FOR RETRACTABLE SENSOR



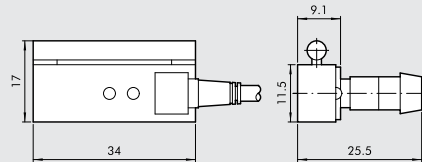
Code	Description
W0950001001	Adaptor DSS005 for DST/ST brackets

ASSEMBLY DIAGRAM

- ① ISO 15552 cylinder with traditional barrel
- ② Sensor bracket mod. DST (Ø 32 to 100)
- ③ Adaptor
- ④ Retractable sensor with insertion from above



SENSOR MOD. DSM

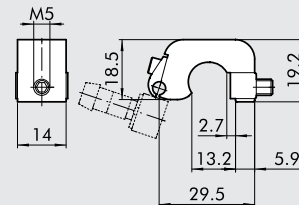


Code	Description
W0950000201	REED sensor DSM2-C525 HS
W0950000222	E.HALL PNP sensor DSM3-N225
W0950000232	E. HALL NPN sensor DSM3-M225

For technical data see pag. 1-244

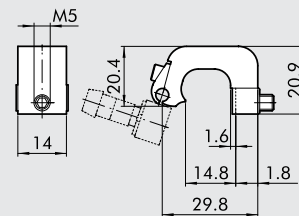
SENSOR SUPPORT BRACKETS FOR SENSORS DSM

Ø 32 to 40



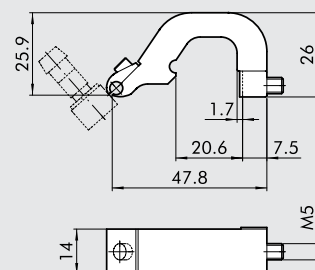
Code	Description
W0950000711	Bracket D.32 DST 80

Ø 50 to 63



Code	Description
W0950000712	Bracket D.50 DST 81

Ø 80 to 100

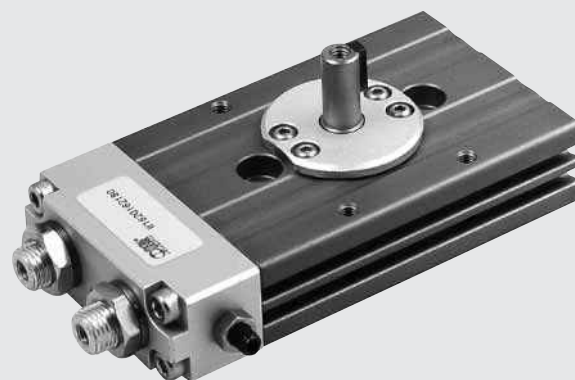


Code	Description
W0950000713	Bracket D.80-100-125 DST 82

ROTARY ACTUATORS SERIES R2

Actuator with double rack and play take-up.
Four sizes – 12, 16, 20 and 25. Two angles of rotation – 90° and 180°.
Stroke adjustment system for all sizes. Pneumatic cushioning for all sizes except the smallest. There are slots in the body to house a magnetic proximity sensor. Air supply, stroke adjustment and cushioning adjustment are all on the same side.

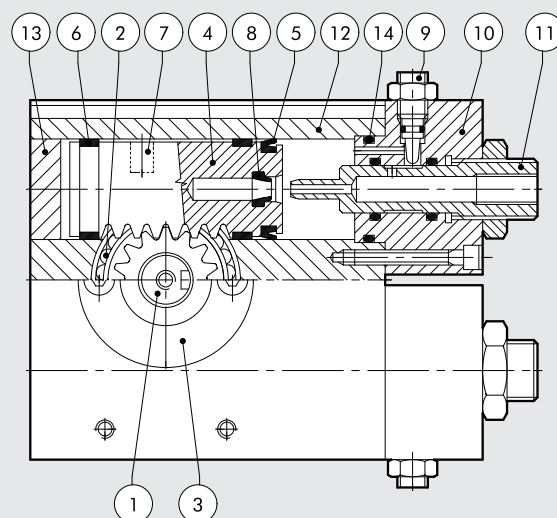
N.B.: We always suggest to use flow microregulators.
During the setup of the actuator, start with CLOSE flow microregulators, and open gradually till the achievement of the required speed.



TECHNICAL DATA		R2-12	R2-16	R2-20	R2-25
Operating pressure	bar	1.5 to 7			
	MPa	0.15 to 0.7			
	psi	22 to 101			
Temperature range	°C	5 to 60			
Angle adjustment	degrees	35° (about +10° -25°)			
Fluid		20 µm filtered, lubricated or unlubricated air; lubrication if used, it must be continuous			
Versions		90°/180° rotation			
Ports		Both at the front			
Sizes	mm	12	16	20	25
Theoretical torque (ΔP= pressure in bar)	Nm	0.065 x P	0.14 x P	0.25 x P	0.48 x P
Max. axial load	N	8	14	40	80
Max. radial load	N	8	14	40	80
Weight with 90° rotation	Kg	0.18	0.26	0.63	0.8
Weight with 180° rotation	Kg	0.21	0.31	0.72	1
Rotation time without load:					
• 90° angle	s	0.2	0.2	0.2	0.2
• 180° angle	s	0.3	0.3	0.3	0.3

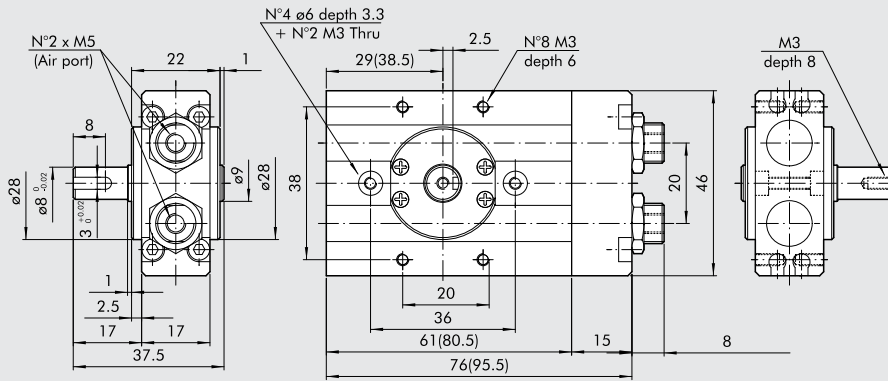
COMPONENTS

- ① ROTARY SHAFT / PINION: hardened and tempered steel
- ② BALL BEARING
- ③ FLANGE: anodised aluminium
- ④ PISTON / RACK: hardened and tempered steel
- ⑤ PISTON GASKET: NBR
- ⑥ GUIDE SHOE: PTFE
- ⑦ MAGNET: neodymium
- ⑧ CUSHIONING GASKET: NBR
- ⑨ CUSHIONING PIN: zinc-plated steel
- ⑩ HEAD: anodised aluminium
- ⑪ PNEUMATIC CONNECTION / STROKE ADJUSTMENT: steel
- ⑫ JACKET: anodised aluminium
- ⑬ BASE: anodised aluminium
- ⑭ SEAL: NBR



ROTARY ACTUATOR R2-12 90°/180°

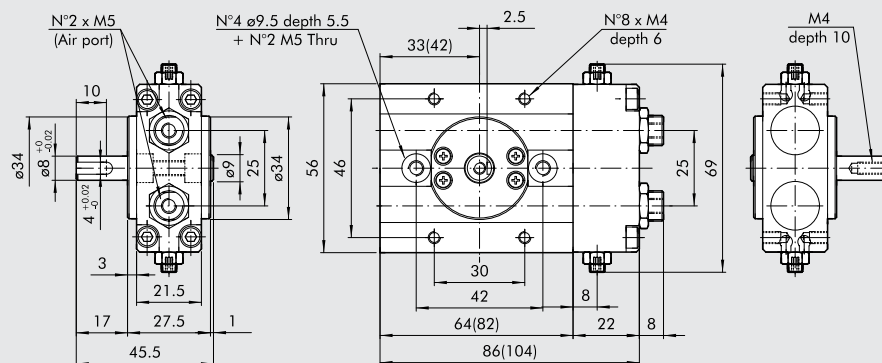
Code	Description
W1620122090	Rotary actuator R2-12-90°
W1620122180	Rotary actuator R2-12-180°



Dimensions for 180° rotation are given in brackets

ROTARY ACTUATOR R2-16 90°/180°

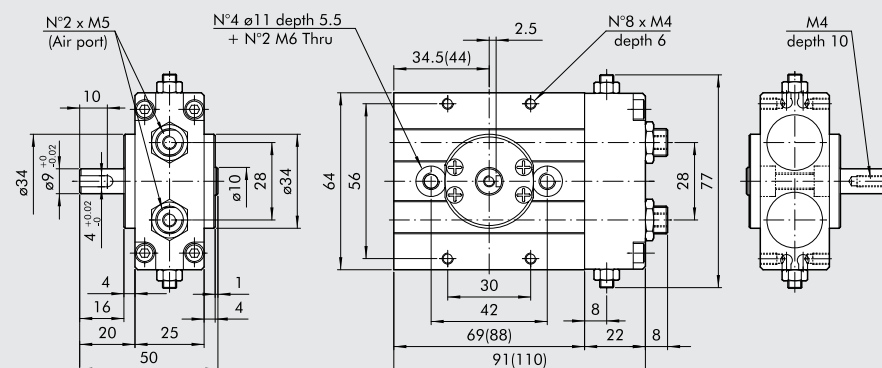
Code	Description
W1620162090	Rotary actuator R2-16-90°
W1620162180	Rotary actuator R2-16-180°



Dimensions for 180° rotation are given in brackets

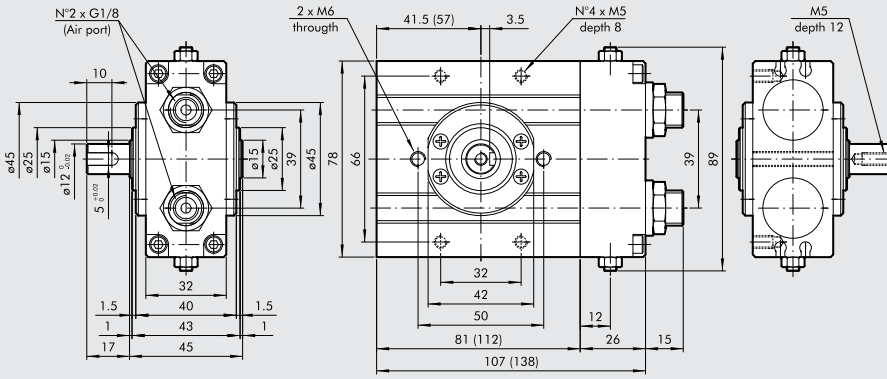
ROTARY ACTUATOR R2-20 90°/180°

Code	Description
W1620202090	Rotary actuator R2-20-90°
W1620202180	Rotary actuator R2-20-180°



Dimensions for 180° rotation are given in brackets

ROTARY ACTUATOR R2-25 90°/180°

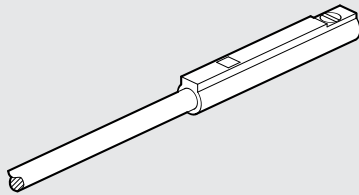


Dimensions for 180° rotation are given in brackets

Code	Description
W1620252090	Rotary actuator R2-25-90°
W1620252180	Rotary actuator R2-25-180°

ACCESSORIES

MAGNETIC SENSOR Ø 4



Code	Description
W0950044180	Sensor REED 2 wires 24 VDC 1 m
W0950045390*	Sensor HALL 3 wires 24 VDC 2 m

* For technical data see page 1-247

NOTES

ROTARY ACTUATORS SERIES R3

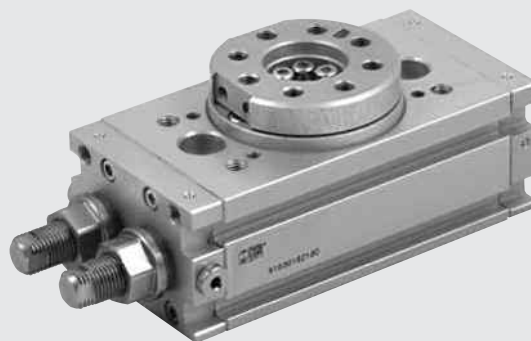
Actuator with double rack and play take-up. Angle of rotation adjustable from 0 to 180°. The R3 rotary actuator can come with a mechanical stop or hydraulic end-of-stroke cushioning.

There is a version with flange and one with shaft (for $\varnothing 16-20-25-30$).

There are slots in the body for retracting magnetic proximity sensors, two on each side. There is hole in the flange for air pipes or wires.

N.B.: We always suggest to use flow microregulators.

During the setup of the actuator, start with CLOSE flow microregulators, and open gradually till the achievement of the required speed.



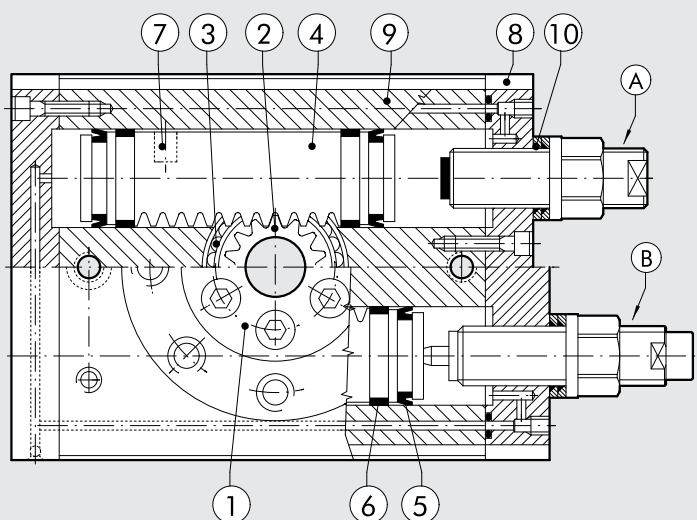
TECHNICAL DATA		R3-16	R3-20	R3-22	R3-25	R3-30	R3-40
Operating pressure	bar						3 to 7
	MPa						0.3 to 0.7
	psi						43.5 to 101
	degrees						0° to 180°
Temperature range	°C						5 to 60
Angle adjustment	degrees						0° to 180°
Fluid		20 μ m filtered, lubricated or unlubricated air; lubrication if used, it must be continuous					
Versions		With mechanical stop / hydraulic decelerator					
Sizes		16	20	22	25	30	40
Bores	mm	2 x 16	2 x 20	2 x 22	2 x 25	2 x 30	2 x 40
Theoretical torque at 6 bar	Nm	0.9	1.8	2.7	4.6	9.3	22
Max. axial load	N	74	135	195	300	340	360
Max. radial load	N	78	137	360	450	490	560
Weight	Kg	0.53	0.99	1.29	2.08	3.9	6.7
Rotation time without load	s	0.2	0.2	0.2	0.2	0.3	0.3
Admissible kinetic energy	Joule						
WITH MECHANICAL STOP		0.007	0.025	0.049	0.082	0.090	0.150
(with flange W1630__2180 and with shaft W1630__5180)							
WITH HYDRAULIC DECELERATOR		-	-	-	0.29	1.10	1.60
(with flange W1630__2180 and with shaft W1630__5180)							

COMPONENTS

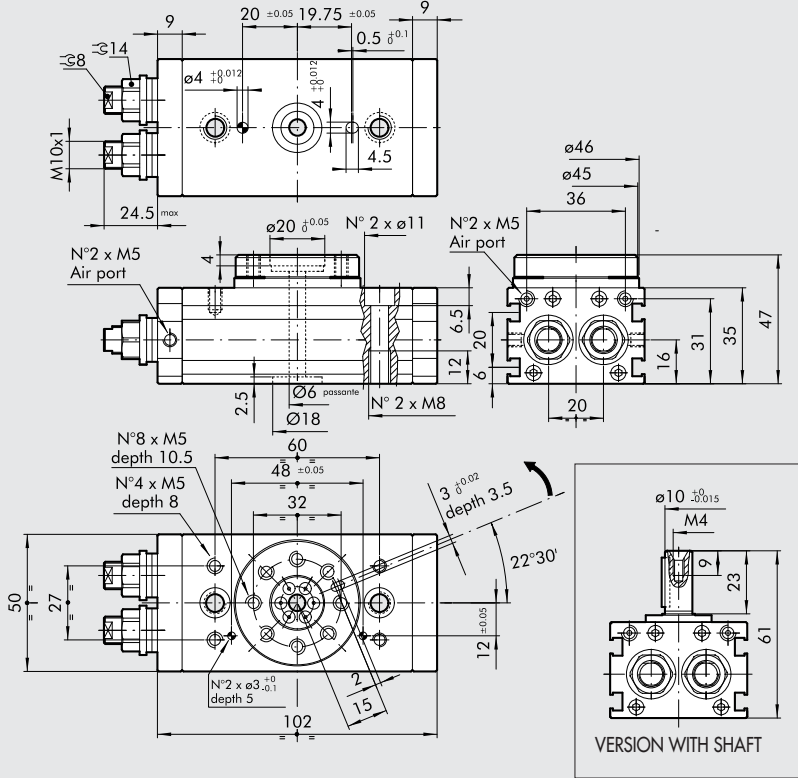
- ① ROTARY FLANGE: anodised aluminium
- ② PINION: hardened and tempered steel
- ③ BALL BEARING
- ④ PISTON / RACK: hardened and tempered steel
- ⑤ CUSHIONING GASKET: NBR
- ⑥ GUIDE SHOE: PTFE
- ⑦ MAGNET: neodymium
- ⑧ HEAD: anodised aluminium
- ⑨ JACKET: anodised aluminium
- ⑩ SEAL: NBR

VERSIONS:

- A Stroke adjustment
- B Stroke adjustment with inside hydraulic shock absorbers (available from $\varnothing 25$)

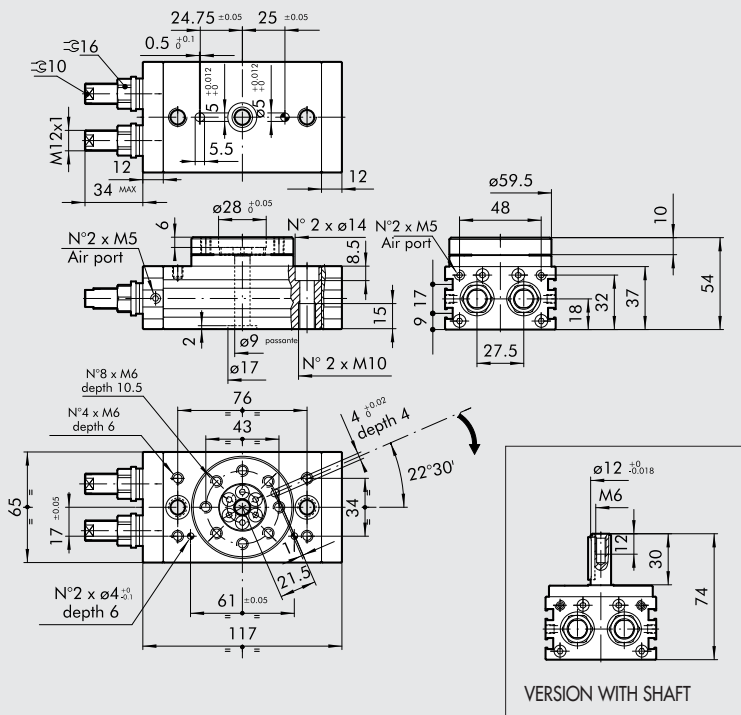


ROTARY ACTUATOR R3-16



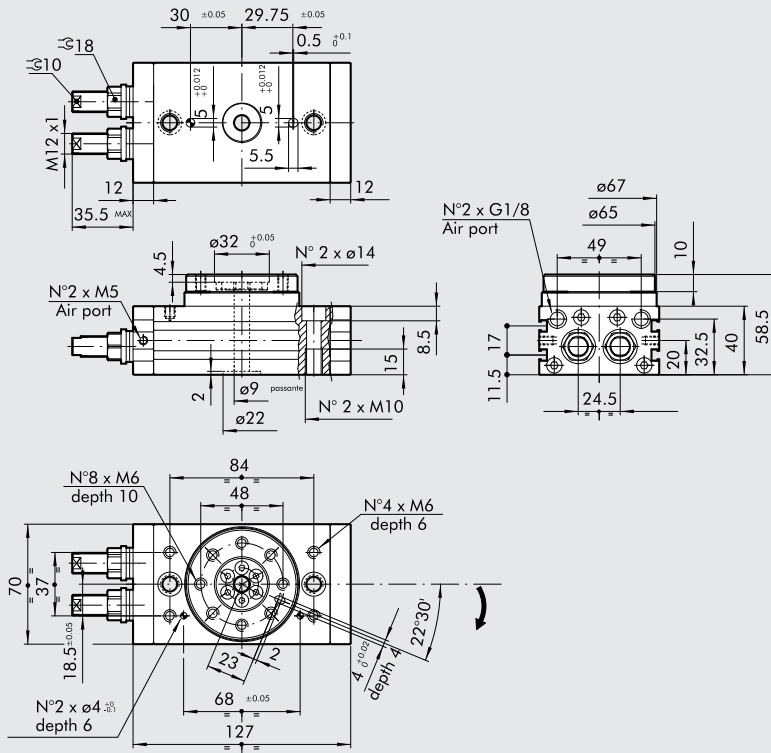
Code	Description
W1630162180	Rotary actuator with flange R3-16
W1630165180	Rotary actuator with shaft R3-16

ROTARY ACTUATOR R3-20



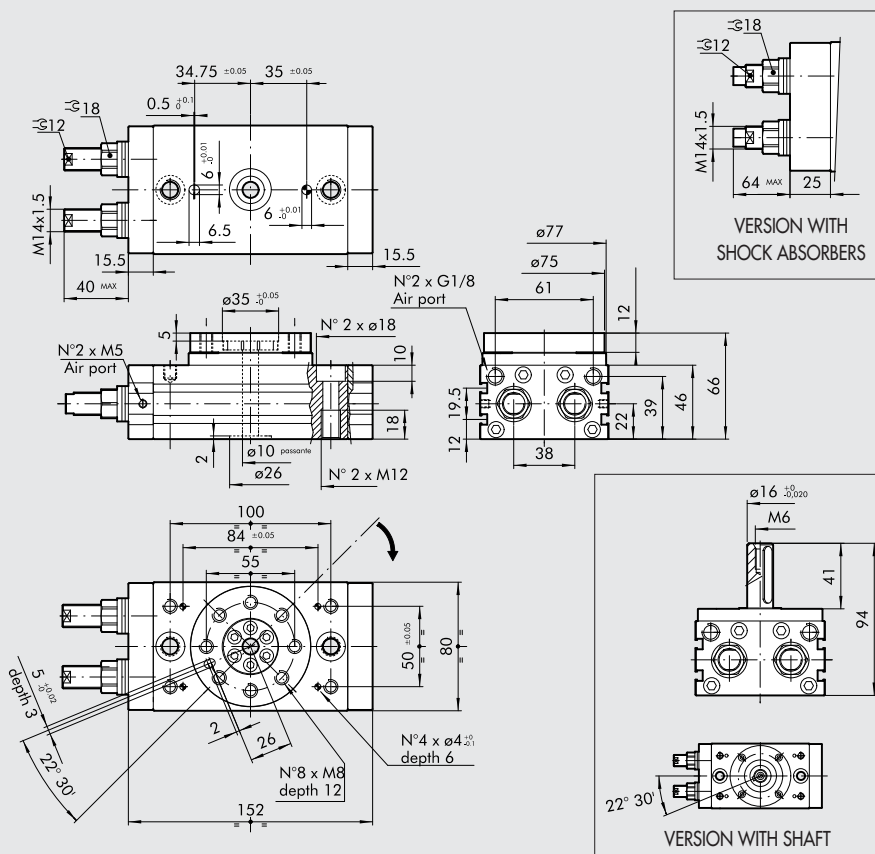
Code	Description
W1630202180	Rotary actuator with flange R3-20
W1630205180	Rotary actuator with shaft R3-20

ROTARY ACTUATOR R3-22



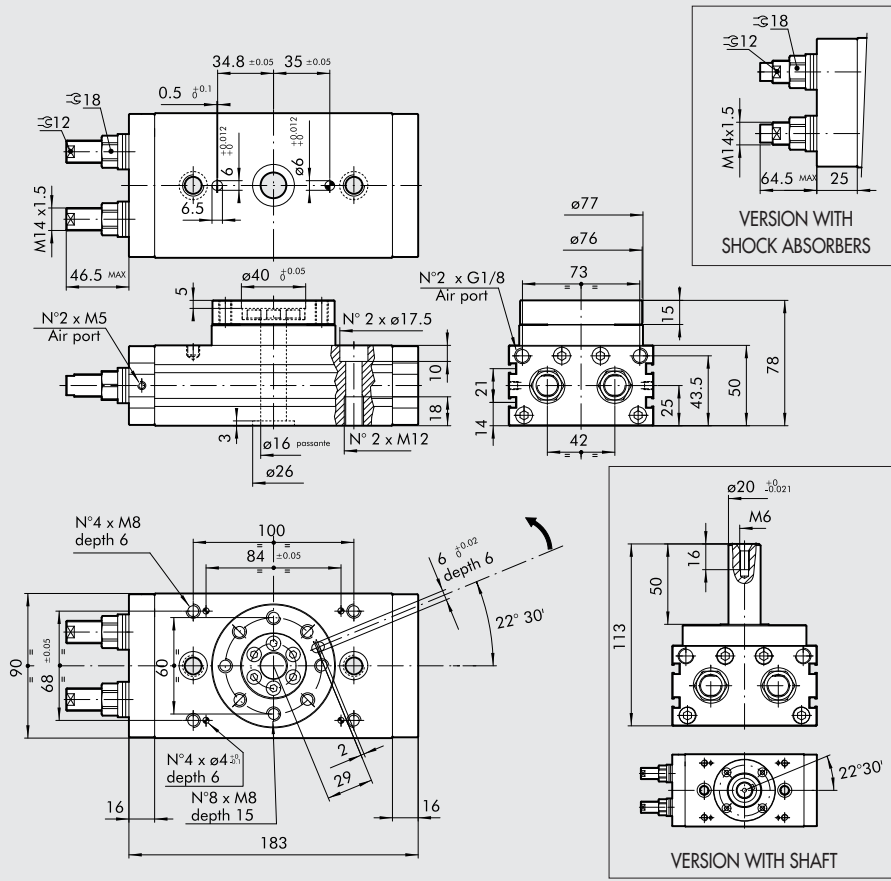
Code	Description
W1630222180	Rotary actuator with flange R3-22

ROTARY ACTUATOR R3-25



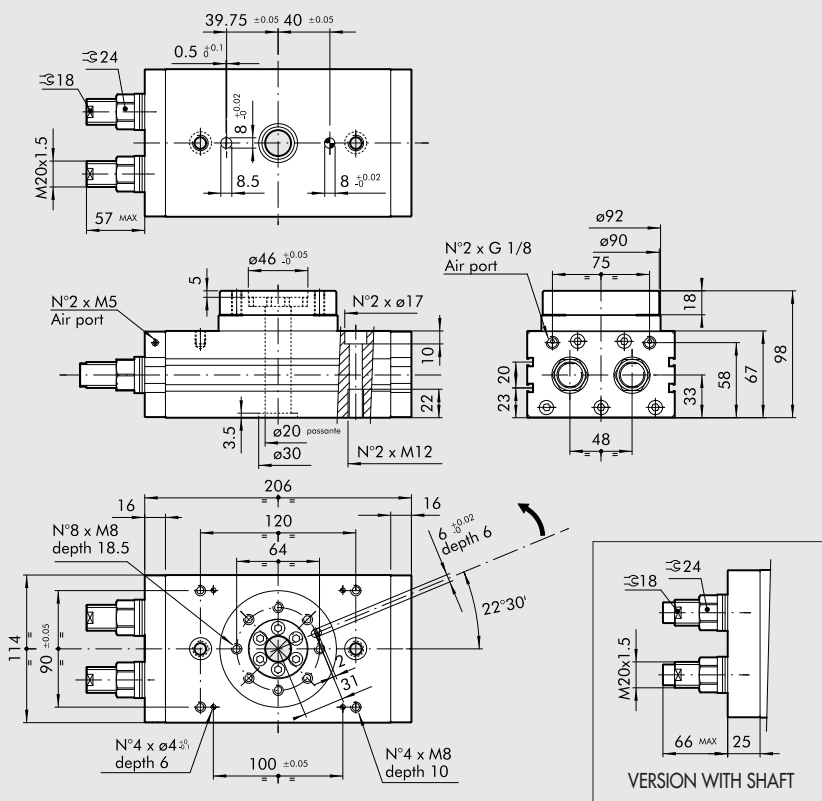
Code	Description
W1630252180	Rotary actuator with flange R3-25
W1630253180	Rotary actuator with flange + shock absorbers R3-25
W1630255180	Rotary actuator with shaft R3-25
W1630256180	Rotary actuator with shaft + shock absorbers R3-25

ROTARY ACTUATOR SERIES R3-30



Code	Description
W1630302180	Rotary actuator with flange R3-30
W1630303180	Rotary actuator with flange + shock absorbers R3-30
W1630305180	Rotary actuator with shaft R3-30
W1630306180	Rotary actuator with shaft + shock absorbers R3-30

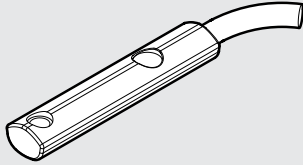
ROTARY ACTUATOR SERIES R3-40



Code	Description
W1630402180	Rotary actuator with flange R3-40
W1630403180	Rotary actuator with flange + shock absorbers R3-40

ACCESSORIES

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



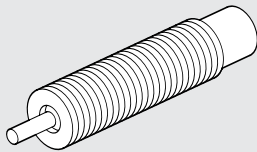
Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

* For use when standard sensors do not detect the magnet, e.g. near metal masses.

For technical data see page 1-246

SPARE PARTS

SHOCK ABSORBERS



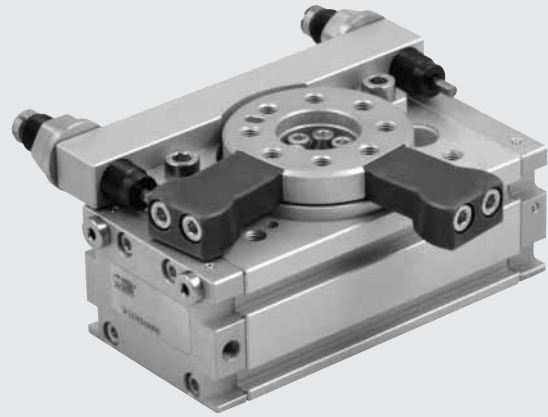
Code	Ø	Description
0950004011	Ø 25	Shock absorbers SPM25 MC3 short M14x1.5
0950004008	Ø 30	Shock absorbers PM25 MC3 M14x1.5
0950004005	Ø 40	Shock absorbers PR050 MC2 + nut M20x1.5

NOTES

ROTARY ACTUATORS SERIES R3 WITH EXTERNAL SHOCK ABSORBERS

Dual-rack actuator with automatic adjustment for wear. Hydraulic shock absorbers are arranged externally and operate at a distance from the axis of rotation which is considerably higher than for internal ones. This means that the absorbable kinetic energy is 4 to 8 times higher. It is reduced in length as there are no adjusting screws. A 90° and a 180° versions are available. Grooves are provided in the body to fix retractable magnetic proximity sensors, two on each side. A hole has been drilled in the flange for the passage of air pipes or power cables.

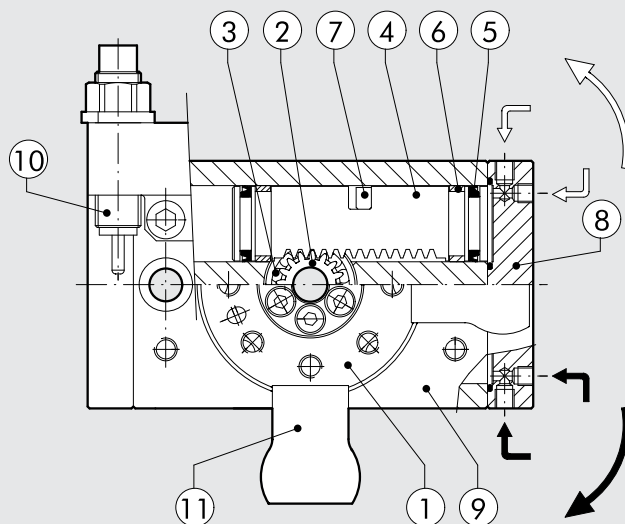
N.B.: We always suggest to use flow microregulators. During the setup of the actuator, start with CLOSE flow microregulators, and open gradually till the achievement of the required speed.



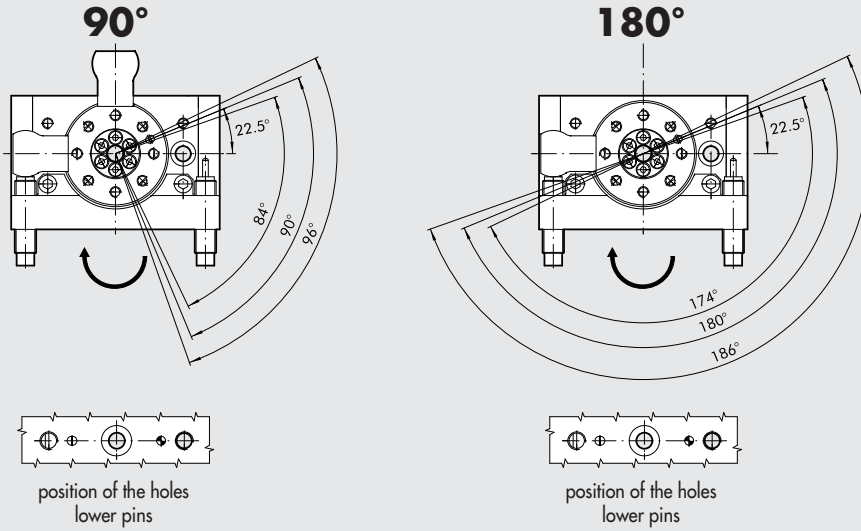
TECHNICAL DATA		R3-16	R3-20	R3-22	R3-25	R3-30	R3-40
Operating pressure	bar	3 to 7					
	MPa	0.3 to 0.7					
	psi	43.5 to 101					
Temperature range	°C	5 to 60					
Angle adjustment	degrees	90° o 180° ± 3°					
Fluid		20 µm filtered, lubricated or unlubricated air; lubrication if used, it must be continuous					
Sizes	mm	16	20	22	25	30	40
Bore	mm	2 x 16	2 x 20	2 x 22	2 x 25	2 x 30	2 x 40
Theoretical torque at 6 bar	Nm	0.9	1.8	2.7	4.6	9.3	22
Max. axial load	N	74	135	195	300	340	360
Max. radial load	N	78	137	360	450	490	560
Max overturning moment	Nm	2.4	4	5.3	9.7	12	18
Admissible kinetic energy	J	0.16	0.55	0.85	1.40	1.85	3.35
Rotation time without load	s	0.2	0.2	0.2	0.2	0.3	0.3

COMPONENTS

- ① ROTARY FLANGE: anodised aluminium
- ② PINION: hardened and tempered steel
- ③ BALL BEARING
- ④ PISTON / RACK: hardened and tempered steel
- ⑤ CUSHIONING GASKET: NBR
- ⑥ GUIDE SHOE: PTFE
- ⑦ MAGNET: neodymium
- ⑧ HEAD: anodised aluminium
- ⑨ JACKET: anodised aluminium
- ⑩ STROKE REGULATOR WITH HYDRAULIC SHOCK ABSORBERS
- ⑪ Block for 90° version



ROTATION ANGLE

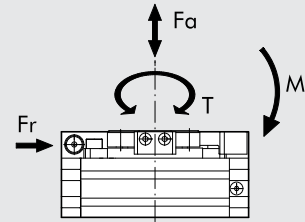


ADMISSIBLE KINETIC ENERGY Joule [J]

Bore Ø	With flange, 90° rotation°: W1630_4090	With flange, 180° rotation°: W1630_4180
16	0.16	
20	0.55	
22	0.85	
25	1.40	
30	1.85	
40	3.35	

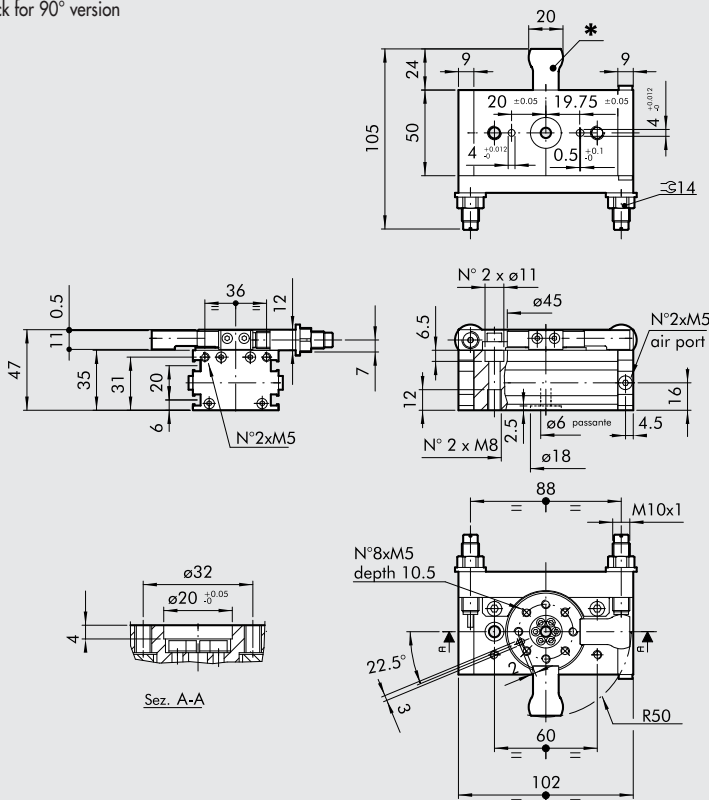
DIMENSIONES - FORCES AND MOMENTS

Bore Ø	T Theoretical torque at 6 bar [Nm]	FA Max. axial load [N]	FR Max. radial load [N]	M Averturing momnet [Nm]
16	0.9	74	78	2.4
20	1.8	135	137	4
22	2.7	195	360	5.3
25	4.6	300	450	9.7
30	9.3	340	490	12
40	22	360	560	18



ROTARY ACTUATOR SERIES R3-16 WITH EXTERNAL SHOCK ABSORBERS, 90/180°

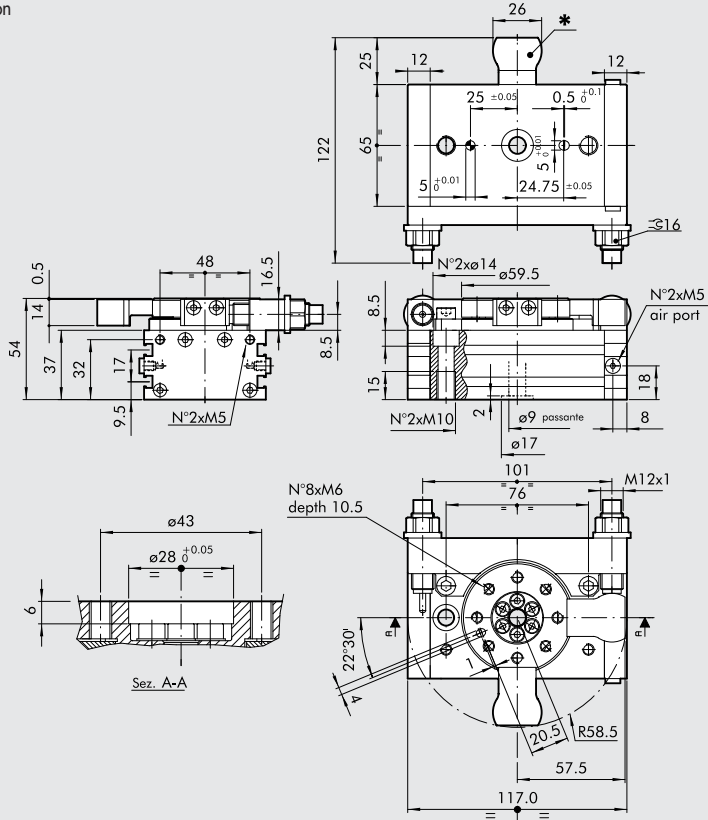
* Block for 90° version



Code	Description
W1630164090	Rotary actuator with flange + shock absorbers R3-16-90
W1630164180	Rotary actuator with flange + shock absorbers R3-16-180

ROTARY ACTUATOR SERIES R3-20 WITH EXTERNAL SHOCK ABSORBERS, 90/180°

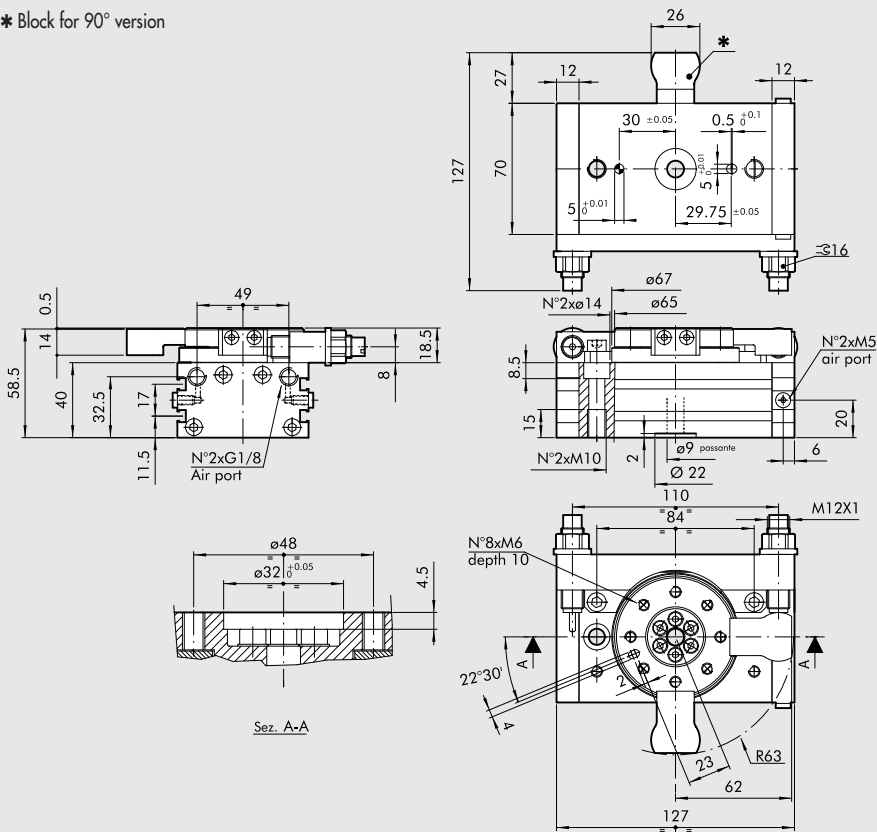
* Block for 90° version



Code	Description
W1630204090	Rotary actuator with flange + shock absorbers R3-20-90
W1630204180	Rotary actuator with flange + shock absorbers R3-20-180

ROTARY ACTUATOR SERIES R3-22 WITH EXTERNAL SHOCK ABSORBERS, 90/180°

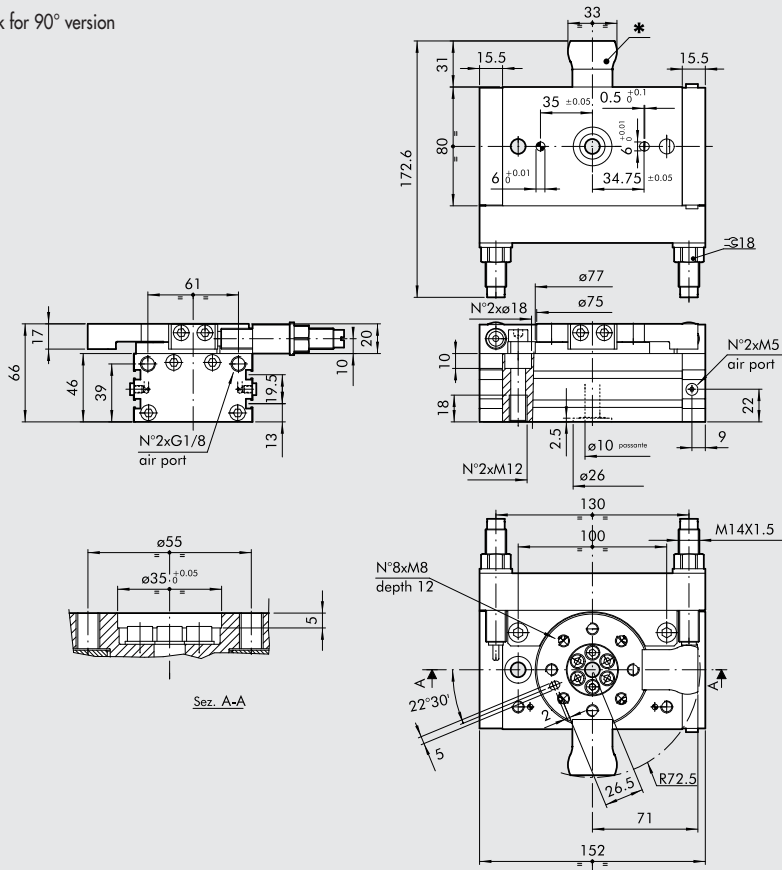
* Block for 90° version



Code	Description
W1630224090	Rotary actuator with flange + shock absorbers R3-22-90
W1630224180	Rotary actuator with flange + shock absorbers R3-22-180

ROTARY ACTUATOR SERIES R3-25 WITH EXTERNAL SHOCK ABSORBERS, 90/180°

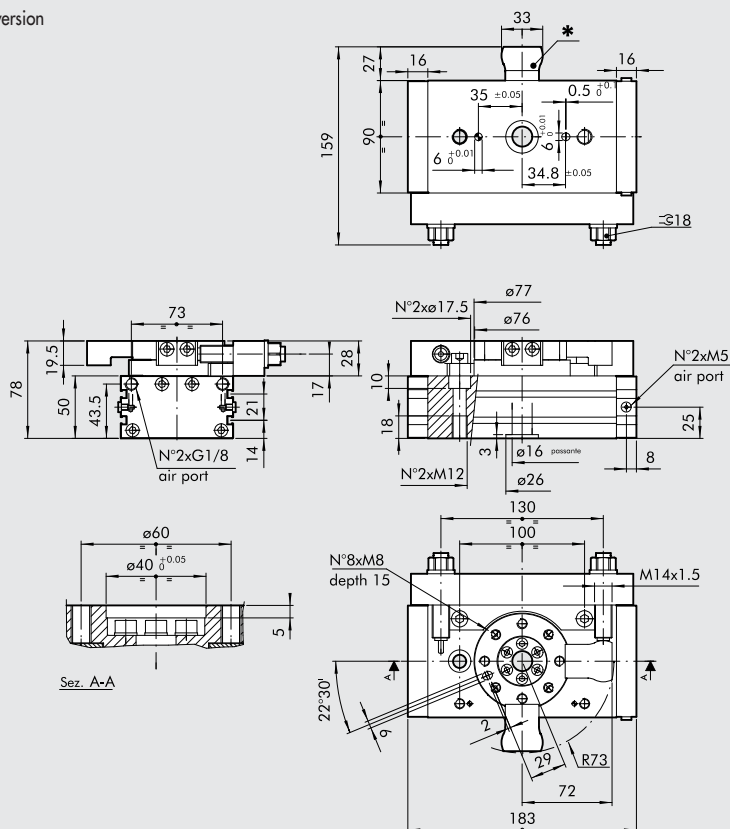
* Block for 90° version



Code	Description
W1630254090	Rotary actuator with flange + shock absorbers R3-25-90
W1630254180	Rotary actuator with flange + shock absorbers R3-25-180

ROTARY ACTUATOR SERIES R3-30 WITH EXTERNAL SHOCK ABSORBERS, 90/180°

* Block for 90° version



Code	Description
W1630304090	Rotary actuator with flange + shock absorbers R3-30-90
W1630304180	Rotary actuator with flange + shock absorbers R3-30-180

● **GENERAL TECHNICAL DATA SLIDES**

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● **TWIN CYLINDERS SERIES S10**

PAGE 1-207



● **TWIN CYLNDERS SLIDE WITH FIXED BODY SERIES S11**

PAGE 1-211



● **TWIN CYLNDERS SLIDE WITH FIXED PLATES SERIES S12**

PAGE 1-217



● **PRECISION SLIDES SERIES S13**

PAGE 1-223

OTHER GUIDE UNITS AND SLIDE



● **GDS, GDH AND GDM GUIDE UNITS FOR ISO 6432**

PAGE 1-19



● **GDS, GDH AND GDM GUIDE UNITS FOR ISO 15552**

PAGE 1-42



● **SHORT-STROKE ANTI-ROTATION CYLINDERS**

PAGE 1-105



● **COMPACT ANTI-ROTATION CYLINDERS SERIES CMPC**

PAGE 1-76



● **ISO 21287 ANTI-ROTATION CYLINDERS SERIES LINER**

PAGE 1-65



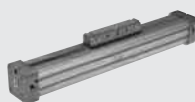
● **TWIN-ROD CYLINDERS SERIES TWNC**

PAGE 1-49



● **COMPACT GUIDES CYLINDERS SERIES CMPG**

PAGE 1-112



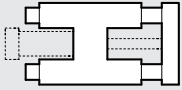
● **RODLESS CYLINDERS SERIE STD**

PAGE 1-118

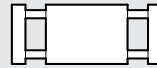
GENERAL TECHNICAL DATA SLIDES

TYPES

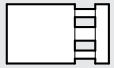
The range of guide units and slides is very extensive. Guides are grouped into families.



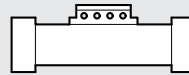
Guide units to couple with standard cylinders.
These are separate units to which an ISO 6432 or ISO 15552 cylinder is attached.



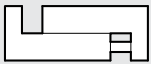
Twin pneumatic cylinder.
The jacket has two calibrated holes for housing two pistons and rods side by side. There are versions with a single piston rod, through piston rod and different power supplies depending on whether you wish to fix the jacket or the flanges to the ends of the piston rod.



Pneumatic single piston cylinders with supports at the end of the piston rod.
The common factor in all the various configurations is that, as well as the calibrated hole for the piston in the cylinder body or front head, there are other slots housing bushes or guide bearings for additional piston rods.



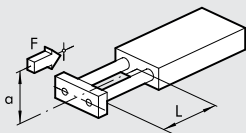
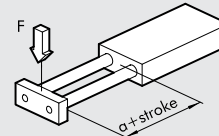
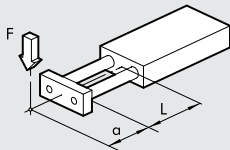
Rodless cylinders.
In these cylinders the piston rod is integral with a carriage on the outside of the jacket, so there is no piston rod. We offer versions in which the jacket is open, with a C-shaped section, and piston and carriage linked mechanically.



Guides with pneumatic actuator.
The main part of this actuators is the guiding section which determines the shape, applications, loads, maximum strokes and cost. The pneumatic part is housed in one of the bodies of the unit or it comes as a complete cylinder housed inside the guide.

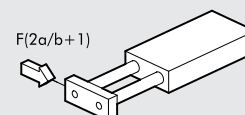
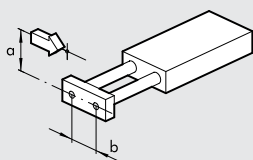
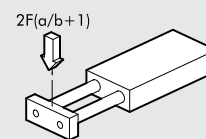
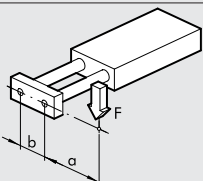
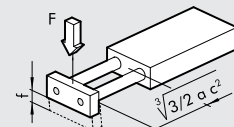
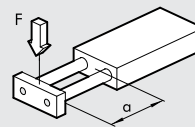
LOAD CONDITIONS

Admitted loads for each guide unit are shown in the catalogue. If the load is not aligned with the moving plate, it is possible to determine the equivalent load or stroke with a good approximation.



To check the admissible load

To check the arrow



TWIN CYLINDER SERIES S10

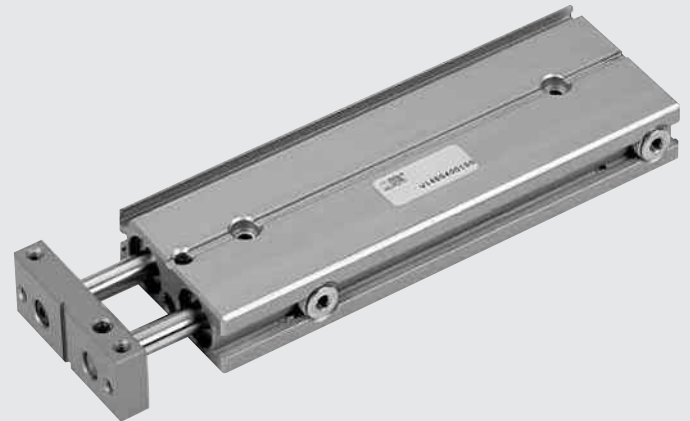
There are two sliding systems available:

- on bushes
- on ball recirculating bearings

The frame is made up of two paired cylinders with a common anodized aluminium body containing slots for retracting sensors.

There are 5 bores available:

2 x Ø 12, 2 x Ø 16, 2 x Ø 20, 2 x Ø 25 and 2 x Ø 30.



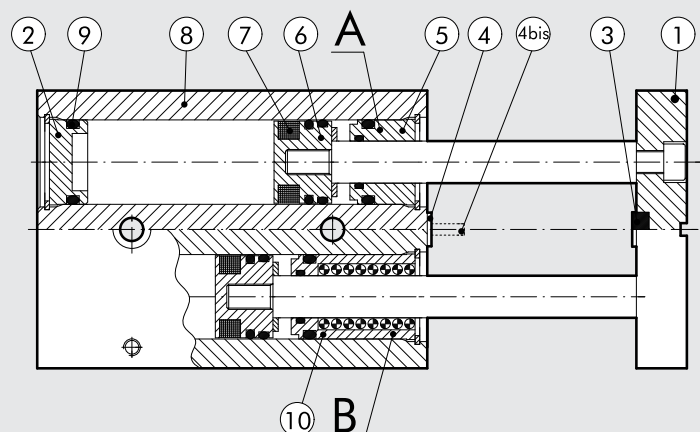
TECHNICAL DATA		S10-12	S10-16	S10-20	S10-25	S10-30
Pressure range	bar			3 to 7		
	MPa			0.3 to 0.7		
	psi			43.5 to 101		
Temperature range	°C			5 to 60		
Fluid		10 µm dried or lubricated filtered air. Lubrication, if used, must be continuous.				
Piston speed	mm/s	30 to 100				
Versions		System with sliding bushes/System with ball bushes available with stop screw or hydraulic decelerator				
Sizes		12	16	20	25	30
Bores	mm	2 x 12	2 x 16	2 x 20	2 x 25	2 x 30
Piston rod diameter	mm	6	8	10	12	16
Strokes	mm	15	15	25	25	25
	mm	25	25	50	50	50
	mm	50	50	75	75	75
	mm	-	75	100	100	100
Weight (C = stroke mm)					125	125
	• Sliding version	Kg	0.12 + (0.002 x C)	0.24 + (0.0025 x C)	0.51 + (0.005 x C)	0.76 + (0.006 x C)	1.3 + (0.009 x C)
• Ball bearing version	Kg	0.21 + (0.002 x C)	0.48 + (0.0025 x C)	0.77 + (0.005 x C)	0.18 + (0.006 x C)	1.92 + (0.009 x C)
Theoretical thrust		(Multiply the value shown by the pressure in bar)				
• Thrust force	da N	2.26 x ΔP	4 x ΔP	6.28 x ΔP	9.8 x ΔP	14.1 x ΔP
• Pull force	da N	1.69 x ΔP	3 x ΔP	4.11 x ΔP	7.5 x ΔP	10.1 x ΔP
Max. loads		(The values shown refer to the min. and max. strokes)				
• Sliding version	N	3 to 1.5	6 to 3	10 to 3.5	12 to 5.6	20 to 7
• Ball bearing version	N	6 to 4	11 to 6	20 to 7	26 to 8	36 to 11

COMPONENTS

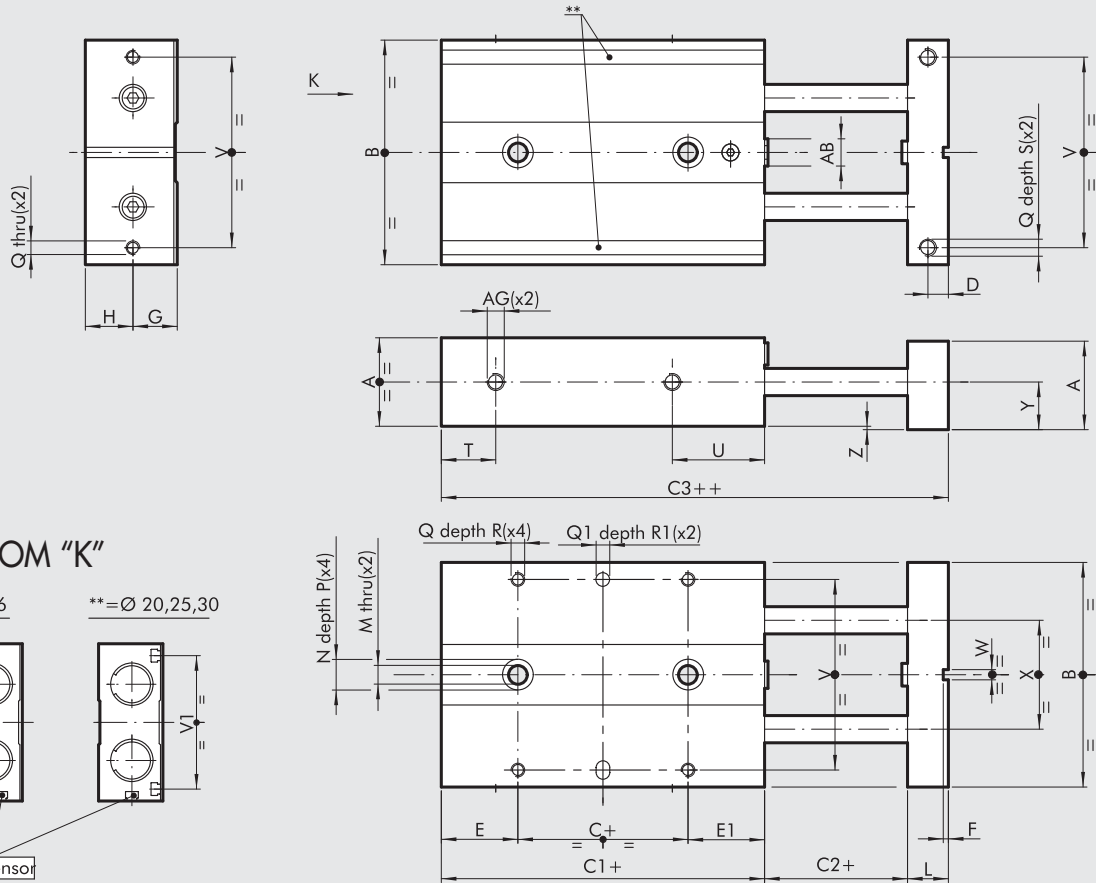
- ① FLANGE: anodized aluminium
- ② REAR BASE: anodized aluminium
- ③ BUFFER: rubber
- ④ ADJUSTABLE STRIKER PLATE. Zinc-plated steel
- ④ bis. HYDRAULIC DECELERATOR
- ⑤ FRONT BASE: brass
- ⑥ PISTON: brass
- ⑦ MAGNET: Plastroferrite
- ⑧ CYLINDER BODY: anodized aluminium
- ⑨ STATIC O-RING: NBR
- ⑩ BALL RE-CIRCULATION BUSH

VERSIONS:

- Ⓐ With sliding bushes
- Ⓑ With ball bushes



DIMENSIONS OF TWIN CYLINDER SERIES S10, ON BUSHES Ø 12 to 30 mm



+ = ADD THE STROKE
 ++ = ADD TWICE THE STROKE

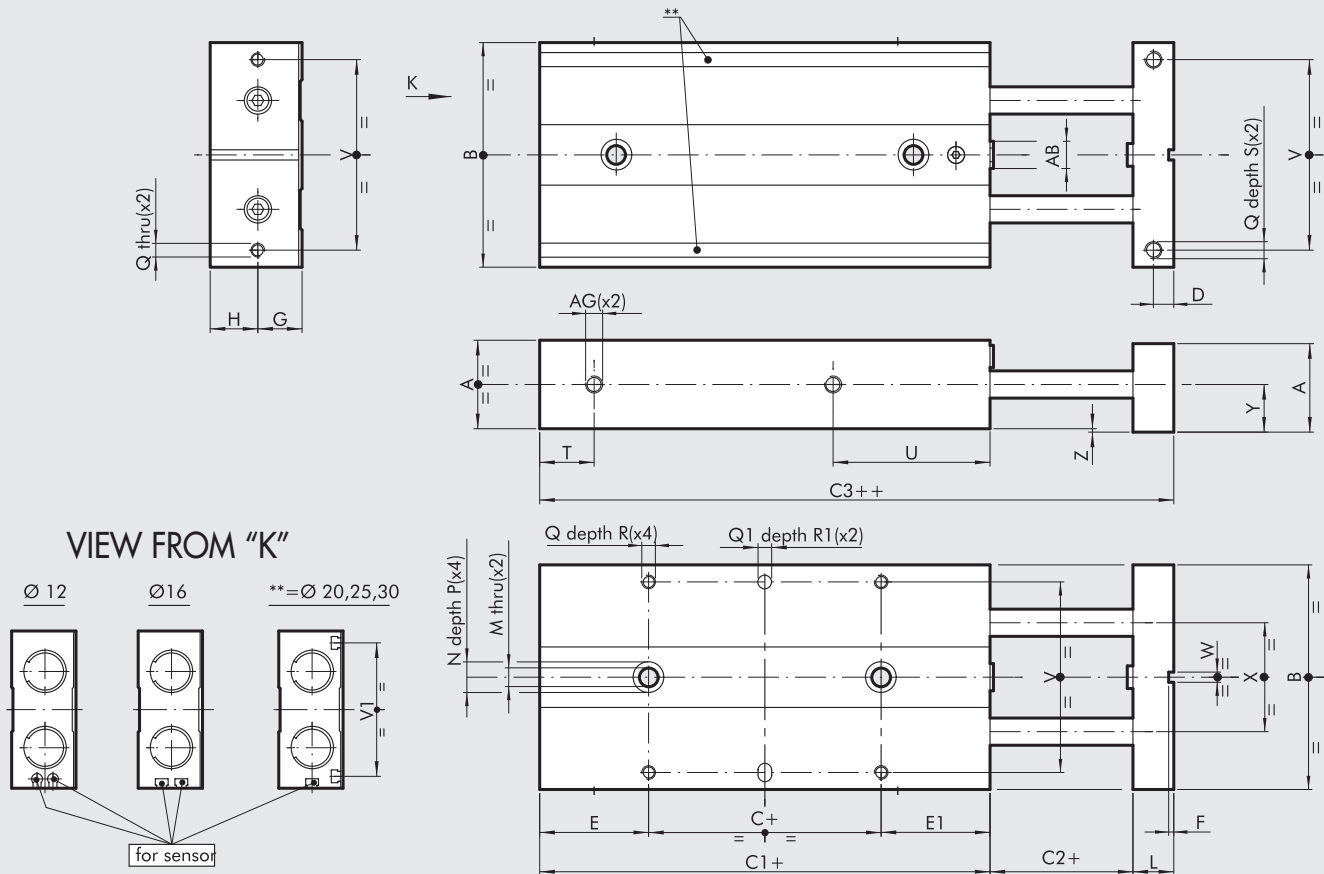
Code	Ø	A	B	C	C1	C2	C3	D	E	E1	F	G	H	L	M	N	P	Q	Q1 ^{H7}	R	R1	S	T
W1440122...	12	18	46	10	50	2	60	4	20	20	1.5	9	10	8	4.3	8	4	M3	4	5	3	8	9
W1440162...	16	22	56	16	62	2	74	5	26	20	1.5	11	12	10	4.3	8	4	M4	4	6	3	8	10
W1440202...	20	26	66	10	68	2	82	6	29	29	1.5	13	14	12	5.5	9	5	M4	4	7	3	10	11
W1440252...	25	32	78	10	74	2	90	7	32.5	31.5	2.5	16	17	14	6.5	10.5	6	M5	4	7	3	12	11
W1440302...	30	36	98	10	87	2	105	8	37.5	39.5	2.5	18	19	16	8.5	14	8	M6	6	8	5	12	13

Ø	U	V	V1	W	X	Y	Z	AB	AG
12	28	38	-	3	20	10	1	M5	M5
16	33	46	-	3	26	12	1	M6	M5
20	40	56	54	3	30	14	1	M8	M5
25	42	66	64	5	39	17	1	M10	M5
30	51	86	82	5	52	19	1	M12	G 1/8"

...Enter the stroke in mm (e.g. Ø 12 stroke 50 = W1440122050)

- Strokes for bore 12 mm 15; 25; 50;
- Strokes for bore 16 mm 15; 25; 50; 75;
- Strokes for bore 20 mm 25; 50; 75; 100;
- Strokes for bore 25 mm 25; 50; 75; 100; 125;
- Strokes for bore 30 mm 25; 50; 75; 100; 125;

DIMENSIONS OF TWIN CYLINDER SERIES S10, ON BALL BEARINGS Ø 12 to 30 mm



+ = ADD THE STROKE
 ++ = ADD TWICE THE STROKE

Code	Ø	A	B	C	C1	C2	C3	D	E	E1	F	G	H	L	M	N	P	Q	Q1 ^{H7}	R	R1	S	T
W1440123...	12	18	46	10	69	2	79	4	29.5	29.5	1.5	9	10	8	4.3	8	4	M3	4	5	3	8	9
W1440163...	16	22	56	10	90	2	98	5	42	38	1.5	11	12	10	4.3	8	4	M4	4	6	3	8	10
W1440203...	20	26	66	10	100	2	111	6	46.5	43.5	1.5	13	14	12	5.5	9	5	M4	4	7	3	10	11
W1440253...	25	32	78	10	108	2	120	7	51.5	46.5	2.5	16	17	14	6.5	10.5	6	M5	4	7	3	12	11
W1440303...	30	36	98	10	124	2	142	8	56	58	2.5	18	19	16	8.5	14	8	M6	6	8	5	12	13

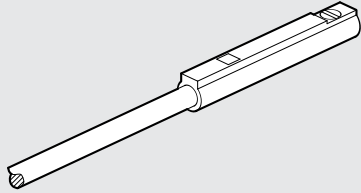
Ø	U	V	V1	W	X	Y	Z	AB	AG
12	47	38	-	3	20	10	1	M5	M5
16	57	46	-	3	26	12	1	M6	M5
20	69	56	54	3	30	14	1	M8	M5
25	72	66	64	5	39	17	1	M10	M5
30	88	86	82	5	52	19	1	M12	G 1/8"

...Enter the stroke in mm (e.g. Ø 12 stroke 50 = W1440123050)

- Strokes for bore 12 mm 15; 25; 50;
- Strokes for bore 16 mm 15; 25; 50; 75;
- Strokes for bore 20 mm 25; 50; 75; 100;
- Strokes for bore 25 mm 25; 50; 75; 100; 125;
- Strokes for bore 30 mm 25; 50; 75; 100; 125;

ACCESSORIES

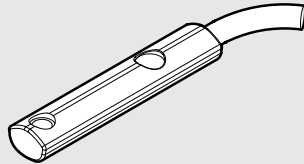
MAGNETIC SENSOR Ø 4, FOR SLIDE S10 Ø 12



Code	Description
W0950044180	Sensor REED 2 wires 24 VDC 1 m
W0950045390*	Sensor HALL 3 wires 24 VDC 2 m

* For technical data see page 1-247

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE, FOR SLIDE S10 Ø16 to 30



Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

* For use when standard sensors do not detect the magnet, e.g. near metal masses.

For technical data see page 1-246

NOTES

TWIN CYLINDER SLIDE WITH FIXED BODY SERIES S11

There are two sliding systems available:

- on bushes
- on ball bearings

The frame is made up of two paired through-rod cylinders with a common anodized aluminium body containing slots for retracting sensors.

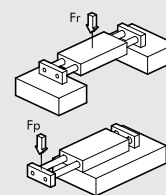
There are 5 bores available:

2 x Ø 12; 2 x Ø 16; 2 x Ø 20; 2 x Ø 25 and 2 x Ø 30.

The piston rods are united by means of a plate on which mechanical stops or hydraulic shock absorbers can be mounted.



TECHNICAL DATA						
Fluid		20 µm filtered air				
Pressure range	bar	1.5 to 7				
	MPa	0.15 to 0.7				
	psi	43.5 to 101				
Temperature range	°C	5 to 60				
Piston speed	mm/s	30 to 200				
Versions		With sliding bushes / With ball bearing bushes / With stop screw / With hydraulic shock absorbers				
Bores	mm	12	16	20	25	30
Piston rod diameter	mm	6	8	10	12	16
Strokes	mm	25	25	25	25	25
		50	60	50	50	50
		75	75	75	75	75
		-	100	100	100	100
		-	-	125	125	125
		-	-	-	150	150
Weight = X + (Y · C) where C = stroke	kg					
• Sliding version		X = 0.14	X = 0.25	X = 0.5	X = 0.7	X = 1.24
		Y = 0.002	Y = 0.0035	Y = 0.045	Y = 0.007	Y = 0.01
• Ball bearing version		X = 0.25	X = 0.37	X = 0.78	X = 1.04	X = 1.98
		Y = 0.002	Y = 0.0035	Y = 0.045	Y = 0.007	Y = 0.01
Theoretical thrust (P = relative pressure in bar)	N	16.9 x P	30 x P	47 x P	75 x P	101 x P
Max. loads		(The values shown refer to the min. and max. strokes)				
• Loads with sliding version	N	Fr: 7 to 3	Fr: 20 to 4	Fr: 35 to 4.5	Fr: 50 to 5.4	Fr: 80 to 12
		Fp: 4 to 1.5	Fp: 4 to 1.5	Fp: 12 to 3	Fp: 15 to 3.5	Fp: 20 to 4.5
• Loads with ball bearing version	N	Fr: 13 to 5	Fr: 35 to 6.5	Fr: 58 to 7	Fr: 80 to 8	Fr: 130 to 18
		Fp: 6 to 3	Fp: 11 to 3	Fp: 18 to 5	Fp: 23 to 6	Fp: 50 to 8

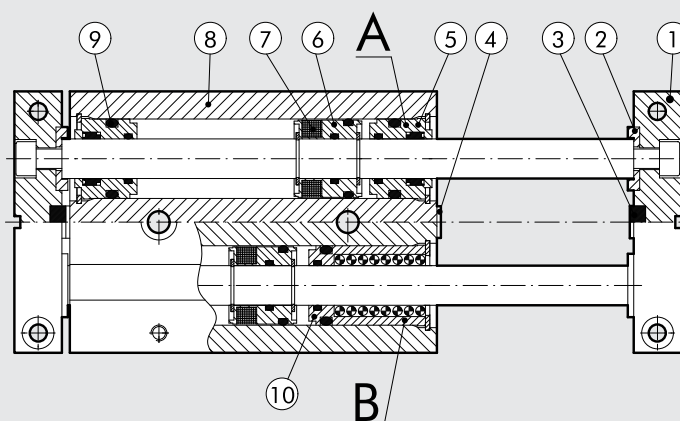


COMPONENTS

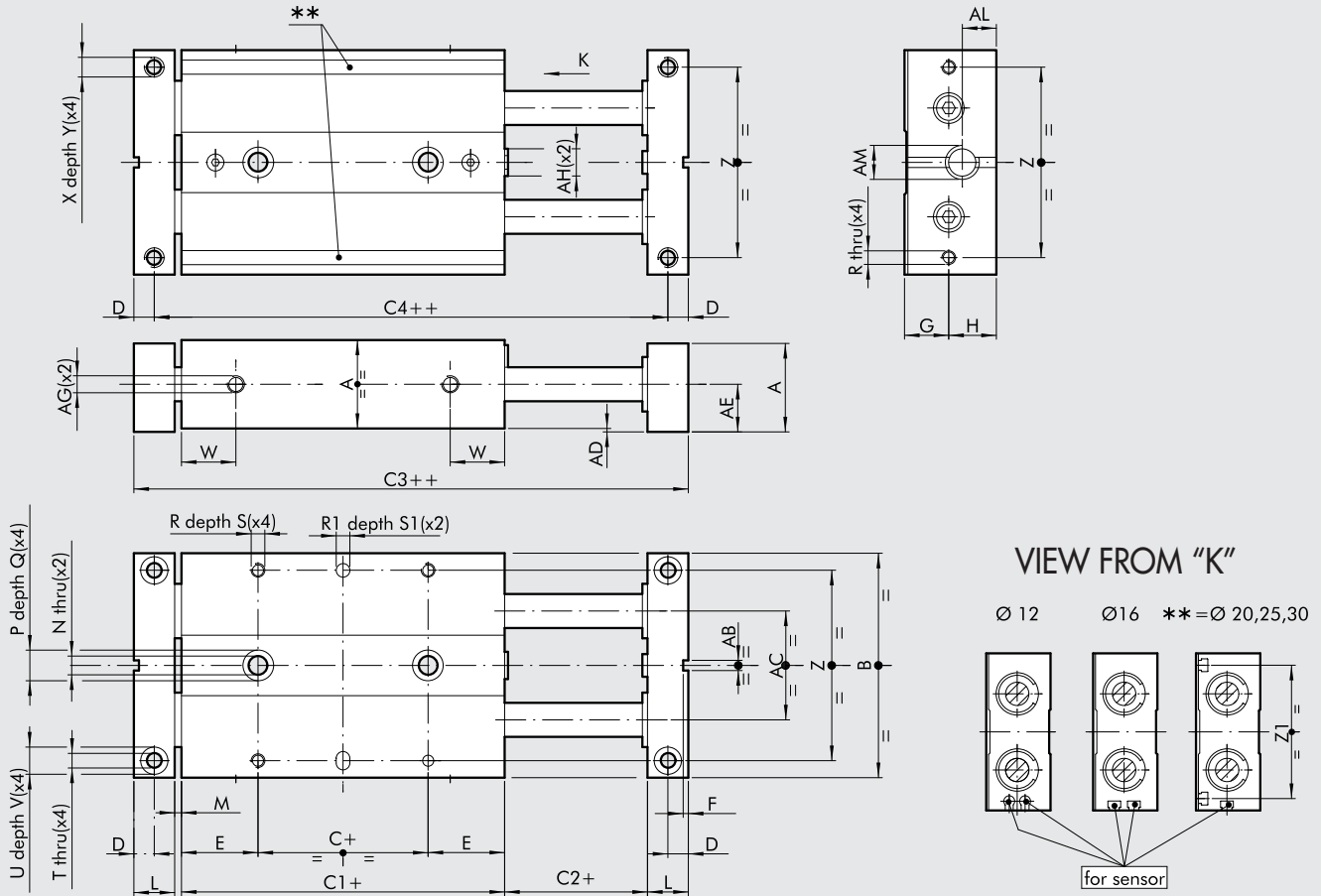
- ① FLANGE: anodized aluminium
- ② WASHER: steel
- ③ BUFFER: rubber
- ④ ADJUSTABLE STRIKER PLATE: Zinc-plated steel
- ⑤ BASE: brass
- ⑥ PISTON: brass
- ⑦ MAGNET: plastoferrite
- ⑧ CYLINDER BODY: anodized aluminium
- ⑨ STATIC O-RINGS: NBR
- ⑩ BUSH: ball bearing

VERSIONS:

- Ⓐ With sliding bushes
- Ⓑ With ball bearing bushes



DIMENSIONS OF TWIN-CYLINDER GUIDE UNITS SERIES S11, ON BUSHES Ø 12 to 30



+ = ADD THE STROKE
 ++ = ADD TWICE THE STROKE

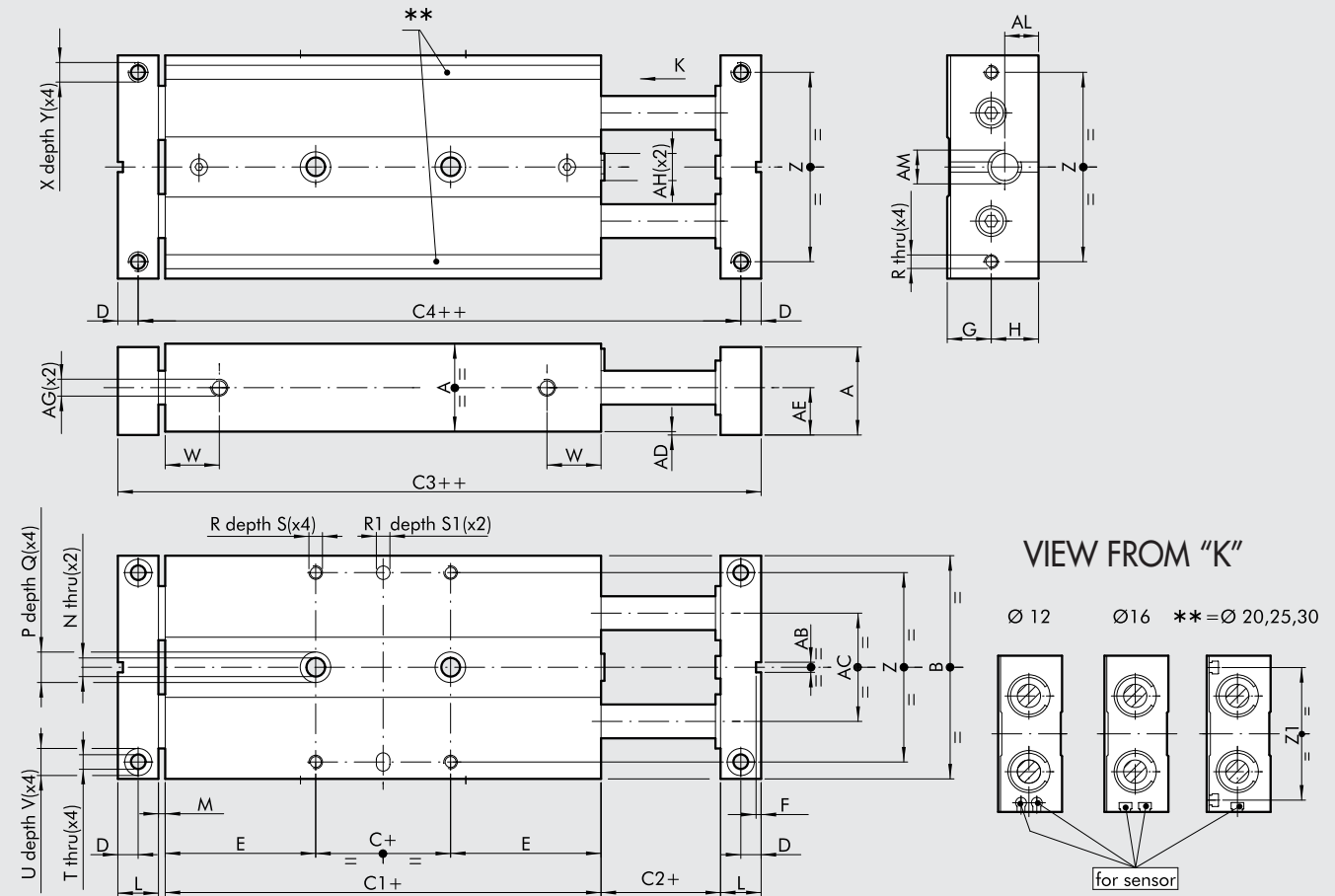
Code	Ø	A	B	C	C1	C2	C3	C4	D	E	F	G	H	L	M	N	P	Q	R	R1 ^{H7}	S	S1	T
W1450122...	12	18	46	5	45	2	65	57	4	20	1.5	9	10	8	2	4.3	8	4	M3	4	5	3	3.3
W1450162...	16	22	56	10	50	2	74	64	5	20	1.5	11	12	10	2	4.3	8	4	M4	4	6	3	4.3
W1450202...	20	26	66	10	55	2	83	71	6	22.5	1.5	13	14	12	2	5.5	9	5	M4	4	7	3	4.3
W1450252...	25	32	78	10	60	2	92	78	7	25	2.5	16	17	14	2	6.5	10.5	6	M5	4	7	3	5.2
W1450302...	30	36	98	10	70	2	106	90	8	30	2.5	18	19	16	2	8.5	14	8	M6	6	8	5	5.2

Ø	U	V	W	X	Y	Z	Z1	AB	AC	AD	AE	AF	AG	AM	AL
12	6	3	14	M4	6	38	-	3	20	1	10	4	M5	M8x1	7
16	8	4	15	M5	8	46	-	3	26	1	12	5	M5	M10x1	8.5
20	8	4	16	M5	10	56	54	3	30	1	14	5	M5	M10x1	9
25	9	5	19	M6	12	66	64	5	39	1	17	6	M5	M12x1	10
30	9	5	21	M6	12	86	82	5	52	1	19	6	G 1/8	M14x1.5	12

...Enter the stroke in mm (e.g. Ø 12 stroke 50 = W1450122050)

- Strokes for bore 12 mm: 25; 50; 75
- Strokes for bore 16 mm: 25; 50; 75; 100
- Strokes for bore 20 mm: 25; 50; 75; 100; 125
- Strokes for bore 25 mm: 25; 50; 75; 100; 125; 150
- Strokes for bore 30 mm: 25; 50; 75; 100; 125; 150

DIMENSIONS OF TWIN-CYLINDER GUIDE UNITS SERIES S11, ON BALL BEARINGS Ø 12 to 30



+ = ADD THE STROKE
 ++ = ADD TWICE THE STROKE

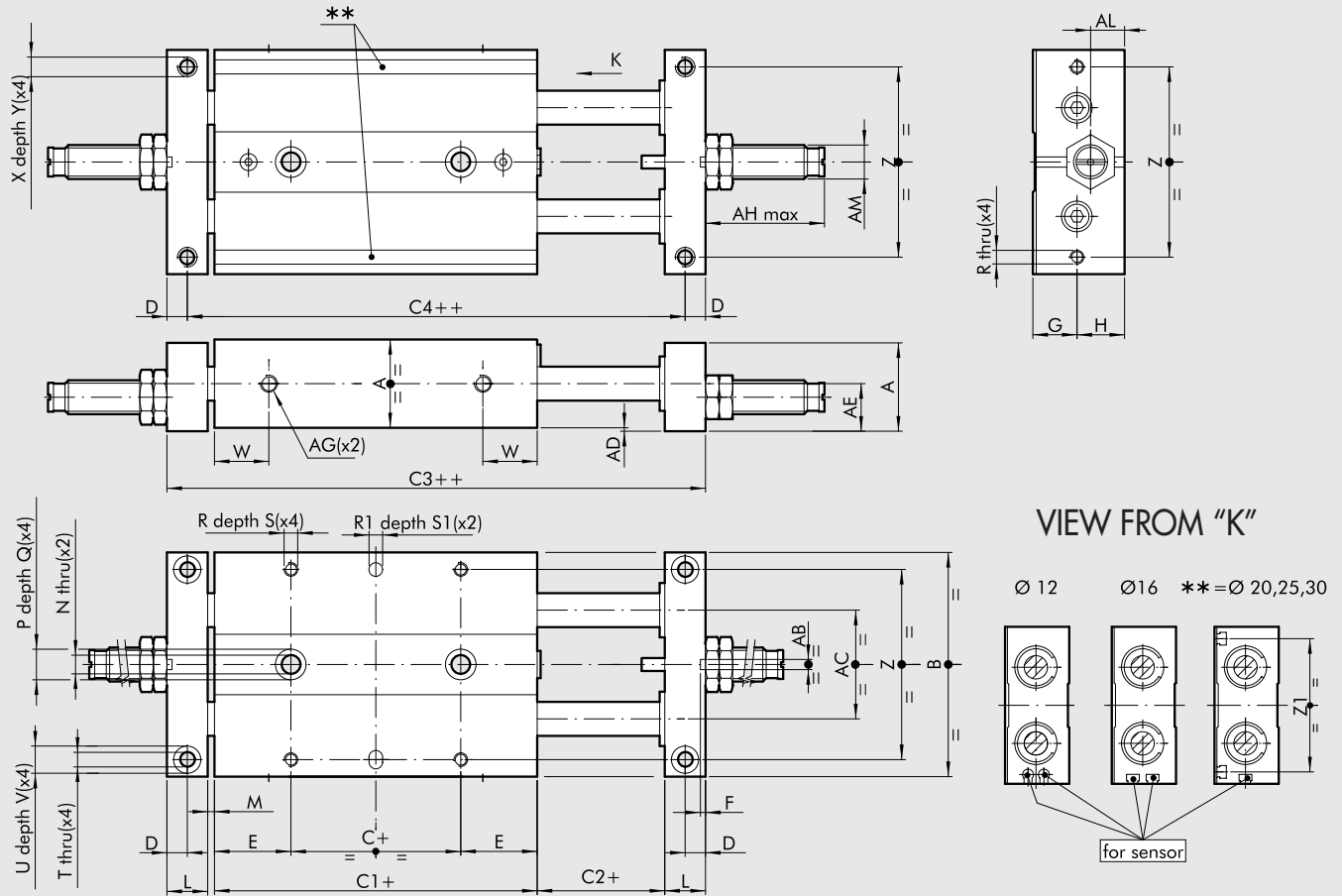
Code	Ø	A	B	C	C1	C2	C3	C4	D	E	F	G	H	L	M	N	P	Q	R	R1 ^{H7}	S	S1	T
W1450123...	12	18	46	5	71	2	91	83	4	33	1.5	9	10	8	2	4.3	8	4	M3	4	5	3	3.3
W1450163...	16	22	56	10	85	2	109	99	5	37.5	1.5	11	12	10	2	4.3	8	4	M4	4	6	3	4.3
W1450203...	20	26	66	10	99	2	127	115	6	44.5	1.5	13	14	12	2	5.5	9	5	M4	4	7	3	4.3
W1450253...	25	32	78	10	105	2	137	123	7	47.5	2.5	16	17	14	2	6.5	10.5	6	M5	4	7	3	5.2
W1450303...	30	36	98	10	128	2	164	148	8	59	2.5	18	19	16	2	8.5	14	8	M6	6	8	5	5.2

Ø	U	V	W	X	Y	Z	Z1	AB	AC	AD	AE	AF	AG	AH	AM	AL
12	6	3	28	M4	6	38	-	3	20	1	10	4	M5	M5	M8x1	7
16	8	4	33	M5	8	46	-	3	26	1	12	5	M5	M6	M10x1	8.5
20	8	4	40	M5	10	56	54	3	30	1	14	5	M5	M8	M10x1	9
25	9	5	42	M6	6	66	64	5	39	1	17	6	M5	M10	M12x1	10
30	9	5	50	M6	12	86	82	5	52	1	19	6	G 1/8	M12	M14x1.5	12

...Enter the stroke in mm (e.g. Ø 12 stroke 50 = W1450123050)

- Strokes for bore 12 mm 25; 50; 75
- Strokes for bore 16 mm 25; 50; 75; 100
- Strokes for bore 20 mm 25; 50; 75; 100; 125
- Strokes for bore 25 mm 25; 50; 75; 100; 125; 150
- Strokes for bore 30 mm 25; 50; 75; 100; 125; 150

DIMENSIONS OF TWIN-CYLINDER GUIDE UNITS WITH SHOCK ABSORBERS SERIES S11, ON BUSHES Ø 12 to 30



+ = ADD THE STROKE
 ++ = ADD TWICE THE STROKE

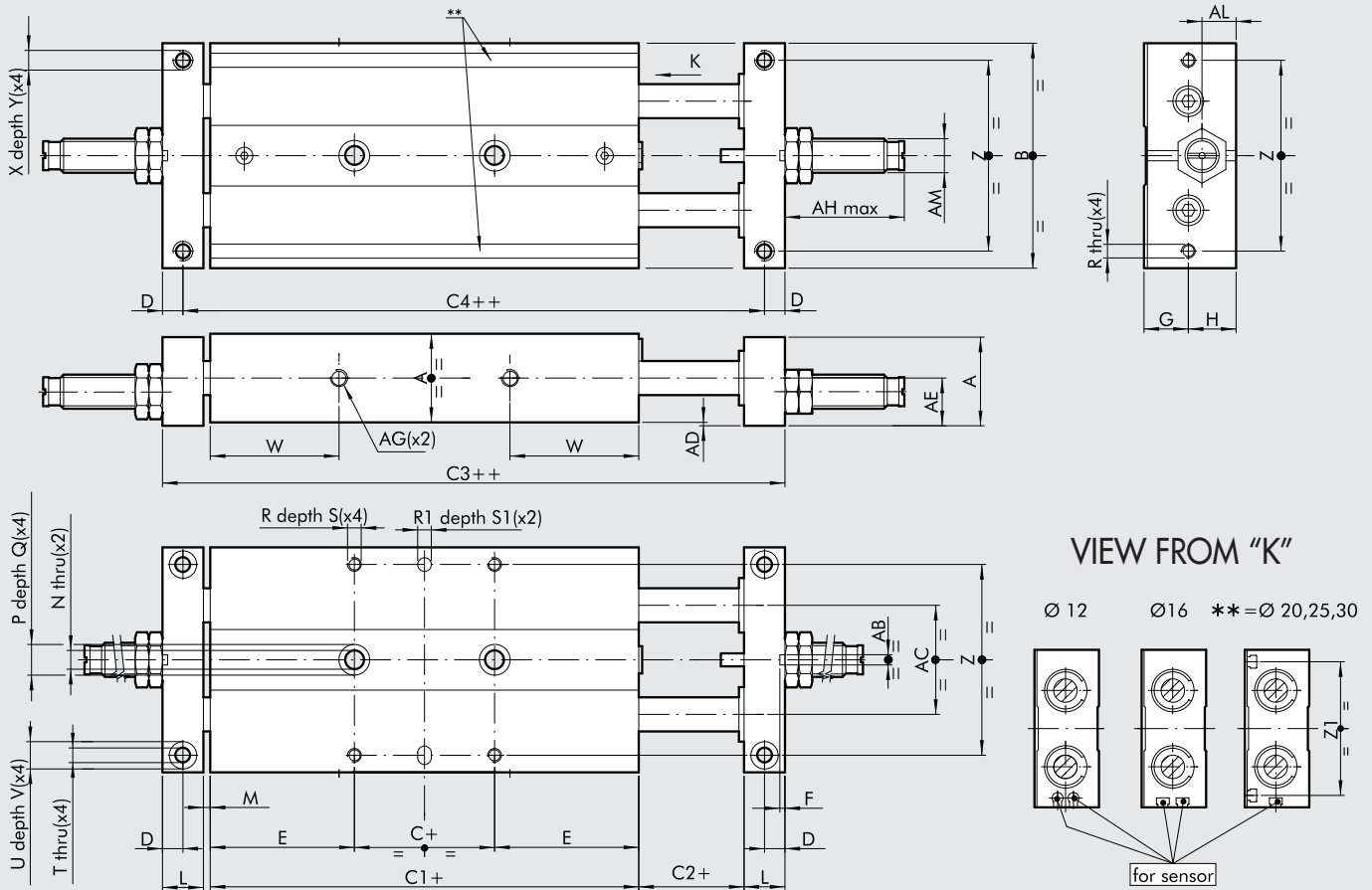
Code	Ø	A	B	C	C1	C2	C3	C4	D	E	F	G	H	L	M	N	P	Q	R	R1 ^{H7}	S	S1	T
W1450124...	12	18	46	5	45	2	65	57	4	20	1.5	9	10	8	2	4.3	8	4	M3	4	5	3	3.3
W1450164...	16	22	56	10	50	2	74	64	5	20	1.5	11	12	10	2	4.3	8	4	M4	4	6	3	4.3
W1450204...	20	26	66	10	55	2	83	71	6	22.5	1.5	13	14	12	2	5.5	9	5	M4	4	7	3	4.3
W1450254...	25	32	78	10	60	2	92	78	7	25	2.5	16	17	14	2	6.5	10.5	6	M5	4	7	3	5.2
W1450304...	30	36	98	10	70	2	106	90	8	30	2.5	18	19	16	2	8.5	14	8	M6	6	8	5	5.2

Ø	U	V	W	X	Y	Z	Z1	AB	AC	AD	AE	AF	AG	AH	AM	AL
12	6	3	14	M4	6	38	-	3	20	1	10	4	M5	30	M8x1	7
16	8	4	15	M5	8	46	-	3	26	1	12	5	M5	35	M10x1	8.5
20	8	4	16	M5	10	56	54	3	30	1	14	5	M5	35	M10x1	9
25	9	5	19	M6	12	66	69	5	39	1	17	6	M5	36	M12x1	10
30	9	5	21	M6	12	86	82	5	52	1	19	6	G 1/8	60	M14x1.5	12

...Enter the stroke in mm (e.g. Ø 12 stroke 50 = W1450124050)

- Strokes for bore 12 mm 25; 50; 75
- Strokes for bore 16 mm 25; 50; 75; 100
- Strokes for bore 20 mm 25; 50; 75; 100; 125
- Strokes for bore 25 mm 25; 50; 75; 100; 125; 150
- Strokes for bore 30 mm 25; 50; 75; 100; 125; 150

DIMENSIONS OF TWIN-CYLINDER GUIDE UNITS, BALL BEARING VERSION WITH SHOCK ABSORBERS SERIES S11 Ø 12 to 30



+ = ADD THE STROKE
 ++ = ADD TWICE THE STROKE

Code	Ø	A	B	C	C1	C2	C3	C4	D	E	F	G	H	L	M	N	P	Q	R	R1 ^{H7}	S	S1	T
W1450125...	12	18	46	5	71	2	91	83	4	33	1.5	9	10	8	2	4.3	8	4	M3	4	5	3	3.3
W1450165...	16	22	56	10	85	2	109	99	5	37.5	1.5	11	12	10	2	4.3	8	4	M4	4	6	3	4.3
W1450205...	20	26	66	10	99	2	127	115	6	44.5	1.5	13	14	12	2	5.5	9	5	M4	4	7	3	4.3
W1450255...	25	32	78	10	105	2	137	123	7	47.5	2.5	16	17	14	2	6.5	10.5	6	M5	4	7	3	5.2
W1450305...	30	36	98	10	128	2	164	148	8	59	2.5	18	19	16	2	8.5	14	8	M6	6	8	5	5.2

Ø	U	V	W	X	Y	Z	Z1	AB	AC	AD	AE	AF	AG	AH	AM	AL
12	6	3	28	M4	6	38	-	3	20	1	10	4	M5	30	M8x1	7
16	8	4	33	M5	8	46	-	3	26	1	12	5	M5	35	M10x1	8.5
20	8	4	40	M5	10	56	54	3	30	1	14	5	M5	35	M10x1	9
25	9	5	42	M6	6	66	64	5	39	1	17	6	M5	36	M12x1	10
30	9	5	50	M6	12	86	82	5	52	1	19	6	G 1/8	60	M14x1.5	12

...Enter the stroke in mm (e.g. Ø 12 stroke 50 = W1450125050)

Strokes for bore 12 mm 25; 50; 75

Strokes for bore 16 mm 25; 50; 75; 100

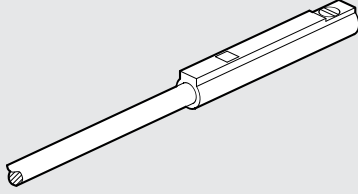
Strokes for bore 20 mm 25; 50; 75; 100; 125

Strokes for bore 25 mm 25; 50; 75; 100; 125; 150

Strokes for bore 30 mm 25; 50; 75; 100; 125; 150

ACCESSORIES

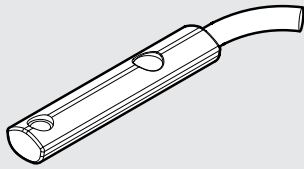
MAGNETIC SENSOR Ø 4, FOR SLIDE S11 Ø 12



Code	Description
W0950044180	Sensor REED 2 wires 24 VDC 1 m
W0950045390*	Sensor HALL 3 wires 24 VDC 2 m

* For technical data see page 1-247

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE, FOR SLIDE S11 Ø 16 to 30



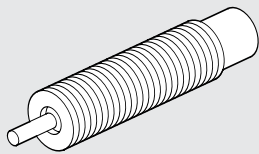
Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

* For use when standard sensors do not detect the magnet, e.g. near metal masses.

For technical data see page 1-246

SPARE PARTS

SHOCK ABSORBERS



Code	Ø	Description
0950004001	12	Shock absorbers PMX 10 MF3 + nut M10x1
0950004002	16 - 20	Shock absorbers PM 15 MF3 + nut M12x1
0950004003	25	Shock absorbers SPM 25 MC-C + nut M14x1.5
0950004004	30	Shock absorbers PR50 MC2 + nut M20x1.5

NOTES

TWIN CYLINDER SLIDE WITH FIXED PLATES SERIES S12

Two sliding systems are available:

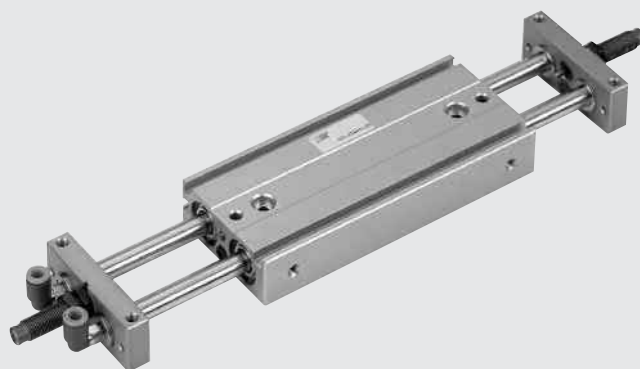
- on bushes
- on ball bearings

The structure is made up of two paired through-rod cylinders with a common anodized aluminium body with grooves for mounting the retractable sensor.

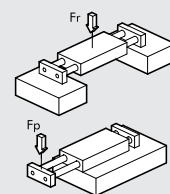
Five bores available: 2 x Ø 16; 2 x Ø 20; 2 x Ø 25; 2 x Ø 30.

The rods are joined together by means of a plate on which the mechanical limit switches or hydraulic shock absorbers can be mounted.

The compressed air ports are at the end of the piston rods.



TECHNICAL DATA		20 µm filtered air			
Fluid		20 µm filtered air			
Pressure range	bar	1.5 to 7			
	MPa	0.15 to 0.7			
	psi	21.5 to 101			
Temperature range	°C	5 to 60			
Piston speed	mm/s	30 to 200			
Versions		With sliding bushes / With ball bearing bushes / With stop screw / With hydraulic shock absorbers			
Bores	mm	16	20	25	30
Piston rod diameter	mm	8	10	12	16
		25	25	25	25
		60	50	50	50
		75	75	75	75
Strokes	mm	100	100	100	100
		-	125	125	125
		-	-	150	150
Weight = X + (Y · C) where C = stroke	kg				
• Sliding version		X = 0.25	X = 0.5	X = 0.7	X = 1.24
		Y = 0.0035	Y = 0.045	Y = 0.007	Y = 0.01
• Ball bearing version		X = 0.37	X = 0.78	X = 1.04	X = 1.98
		Y = 0.0035	Y = 0.045	Y = 0.007	Y = 0.01
Theoretical thrust (P = relative pressure in bar)	N	30 x P	47 x P	75 x P	101 x P
Max. loads		(The values shown refer to the min. and max. strokes)			
• Loads with sliding version	N	Fr: 20 to 4	Fr: 35 to 4.5	Fr: 50 to 5.4	Fr: 80 to 12
		Fp: 4 to 1.5	Fp: 12 to 3	Fp: 15 to 3.5	Fp: 20 to 4.5
• Loads with ball bearing version	N	Fr: 35 to 6.5	Fr: 58 to 7	Fr: 80 to 8	Fr: 130 to 18
		Fp: 11 to 3	Fp: 18 to 5	Fp: 23 to 6	Fp: 50 to 8

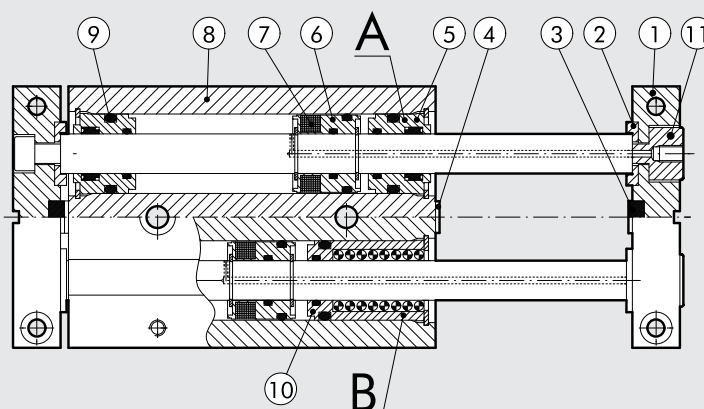


COMPONENTS

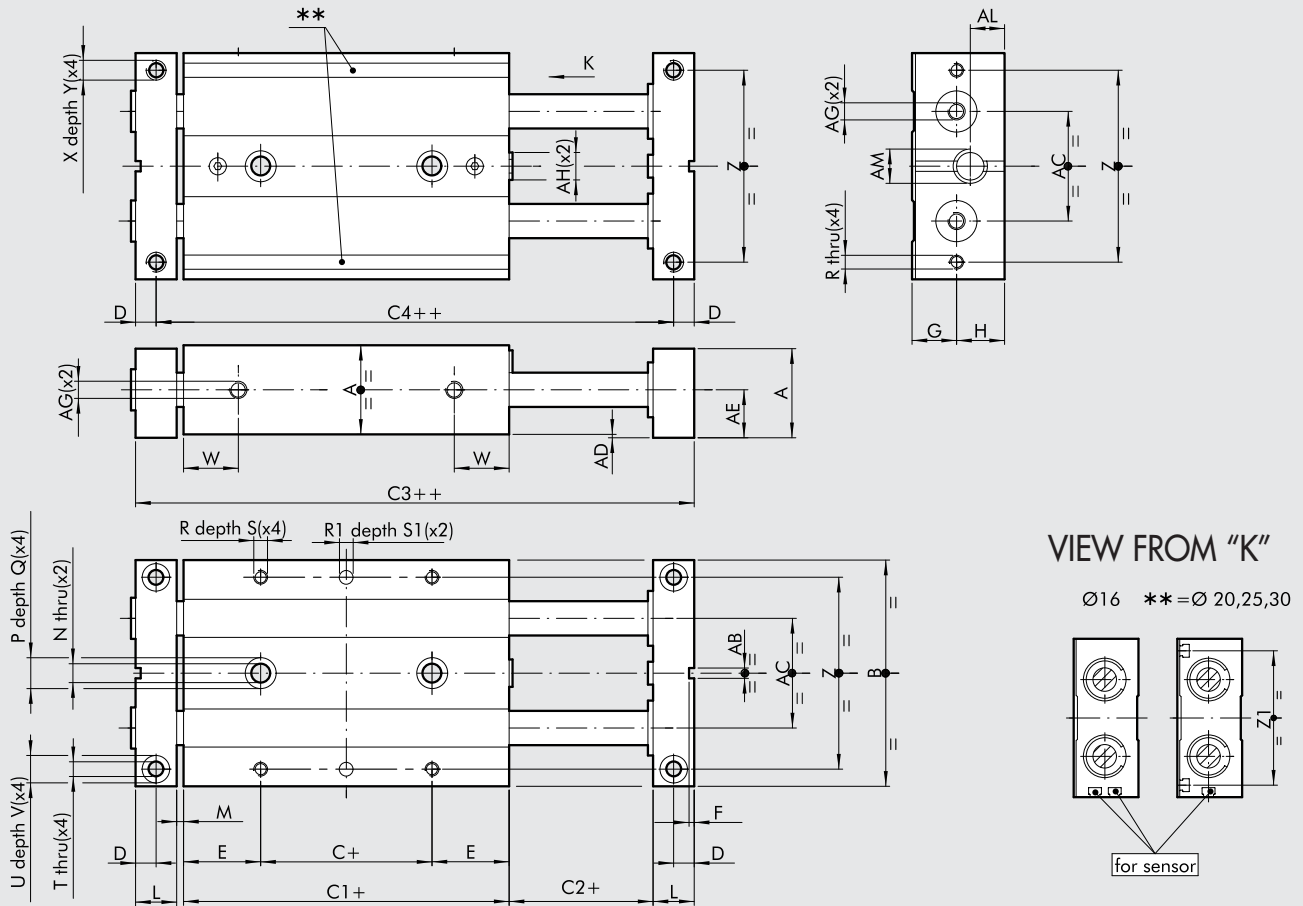
- ① FLANGE: anodized aluminium
- ② WASHER: steel
- ③ BUFFER: rubber
- ④ ADJUSTABLE STRIKER PLATE: Zinc-plated steel
- ⑤ BASE: brass
- ⑥ PISTON: brass
- ⑦ MAGNET: Plastroferrite
- ⑧ CYLINDER BODY: anodized aluminium
- ⑨ STATIC O-RINGS: NBR
- ⑩ BUSH: ball bearing
- ⑪ SCREW: pneumatically powered

VERSIONS:

- Ⓐ With sliding bush
- Ⓑ With ball bearing bush



DIMENSIONS OF TWIN-CYLINDER SLIDE SERIES S12 Ø 16 to 30



+ = ADD THE STROKE
 ++ = ADD TWICE THE STROKE

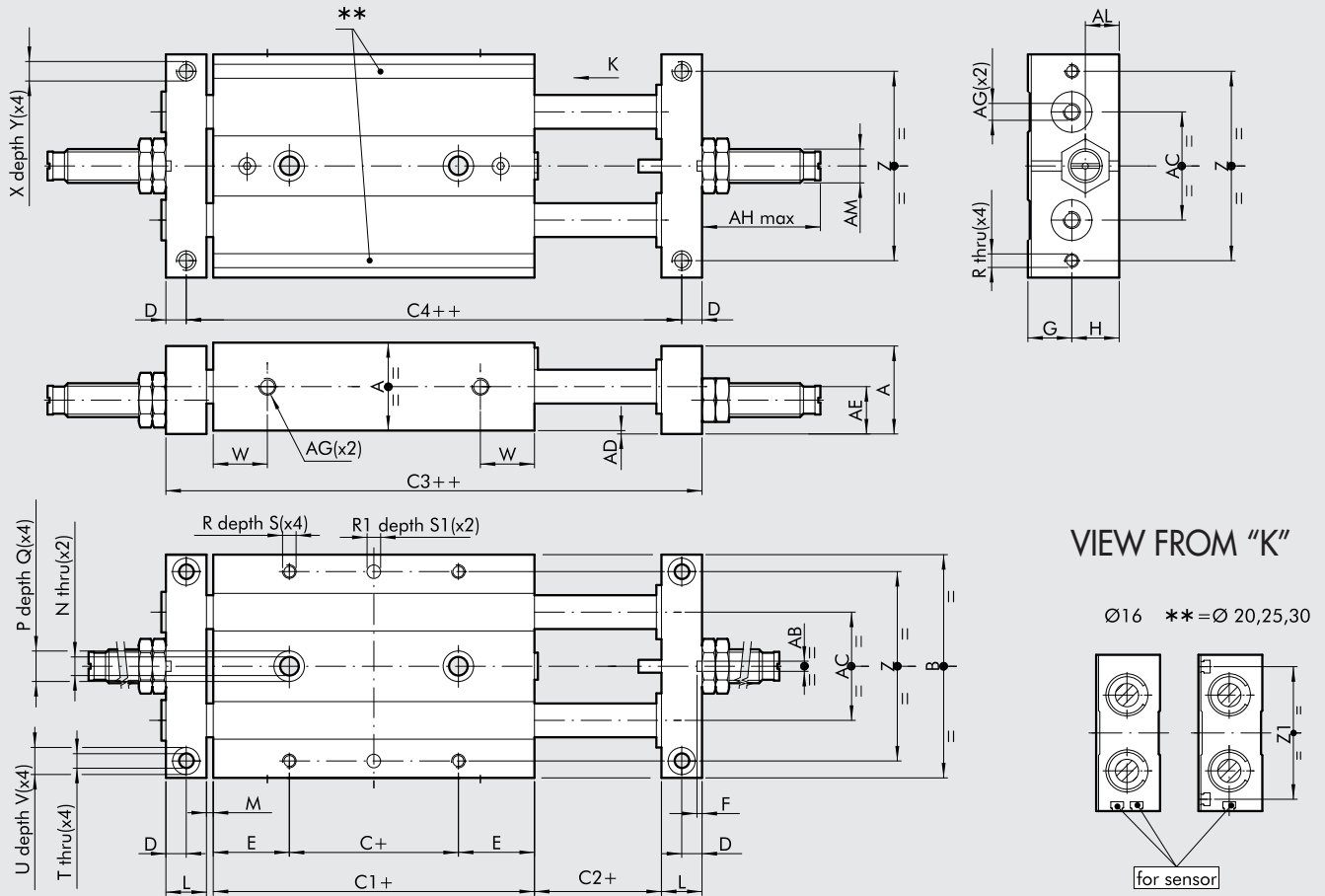
Code	Ø	A	B	C	C1	C2	C3	C4	D	E	F	G	H	L	M	N	P	Q	R	R1 ^{H7}	S	S1	T
W1460162...	16	22	56	10	50	2	74	64	5	20	1.5	11	12	10	2	4.3	8	4	M4	4	6	3	4.3
W1460202...	20	26	66	10	55	2	83	71	6	22.5	1.5	13	14	12	2	5.5	9	5	M4	4	7	3	4.3
W1460252...	25	32	78	10	60	2	92	78	7	25	2.5	16	17	14	2	6.5	10.5	6	M5	4	7	3	5.2
W1460302...	30	36	98	10	70	2	106	90	8	30	2.5	18	19	16	2	8.5	14	8	M6	6	8	5	5.2

Ø	U	V	W	X	Y	Z	Z1	AB	AC	AD	AE	AF	AG	AH	AM	AL
16	8	4	15	M5	8	46	-	3	26	1	12	5	M5	M6	M10x1	8.5
20	8	4	16	M5	10	56	54	3	30	1	14	5	M5	M8	M10x1	9
25	9	5	19	M6	12	66	64	5	39	1	17	6	M5	M10	M12x1	10
30	9	5	21	M6	12	86	82	5	52	1	19	6	G 1/8	M12	M14x1.5	12

...Enter the stroke in mm (e.g. Ø 16 stroke 50 = W1450162050)

- Strokes for bore 16 mm 25; 50; 75; 100
- Strokes for bore 20 mm 25; 50; 75; 100; 125
- Strokes for bore 25 mm 25; 50; 75; 100; 125; 150
- Strokes for bore 30 mm 25; 50; 75; 100; 125; 150

DIMENSIONS OF TWIN-CYLINDER SLIDE WITH SHOCK ABSORBERS SERIES S12 Ø 16 to 30



+ = ADD THE STROKE
 ++ = ADD TWICE THE STROKE

Code	Ø	A	B	C	C1	C2	C3	C4	D	E	F	G	H	L	M	N	P	Q	R	R1 ^{H7}	S	S1	T
W1460164...	16	22	56	10	50	2	74	64	5	20	1.5	11	12	10	2	4.3	8	4	M4	4	6	3	4.3
W1460204...	20	26	66	10	55	2	83	71	6	22.5	1.5	13	14	12	2	5.5	9	5	M4	4	7	3	4.3
W1460254...	25	32	78	10	60	2	92	78	7	25	2.5	16	17	14	2	6.5	10.5	6	M5	4	7	3	5.2
W1460304...	30	36	98	10	70	2	106	90	8	30	2.5	18	19	16	2	8.5	14	8	M6	6	8	5	5.2

Ø	U	V	W	X	Y	Z	Z1	AB	AC	AD	AE	AF	AG	AH	AM	AL
16	8	4	15	M5	8	46	-	3	26	1	12	5	M5	35	M10x1	8.5
20	8	4	16	M5	10	56	54	3	30	1	14	5	M5	35	M10x1	9
25	9	5	19	M6	12	66	64	5	39	1	17	6	M5	36	M12x1	10
30	9	5	21	M6	12	86	82	5	52	1	19	6	G 1/8	60	M14x1.5	12

...Enter the stroke in mm (e.g. Ø 16 stroke 50 = W1450164050)

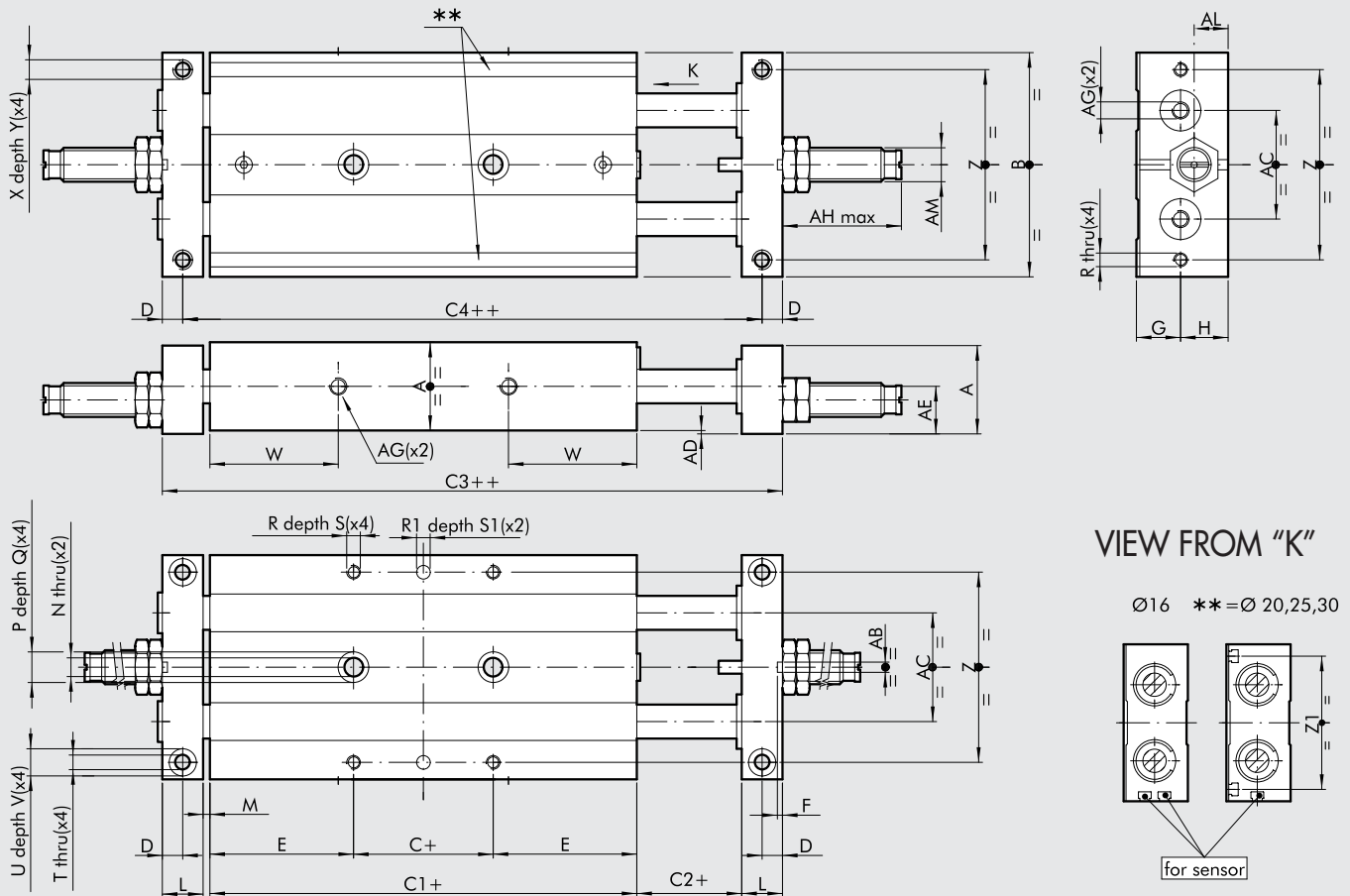
Strokes for bore 16 mm 25; 50; 75; 100

Strokes for bore 20 mm 25; 50; 75; 100; 125

Strokes for bore 25 mm 25; 50; 75; 100; 125; 150

Strokes for bore 30 mm 25; 50; 75; 100; 125; 150

DIMENSIONS OF TWIN-CYLINDER SLIDE WITH SHOCK ABSORBERS SERIES S12 Ø 16 to 30



+ = ADD THE STROKE
 ++ = ADD TWICE THE STROKE

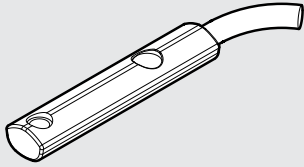
Code	Ø	A	B	C	C1	C2	C3	C4	D	E	F	G	H	L	M	N	P	Q	R	R1 ^{H7}	S	S1	T
W1460165...	16	22	56	10	85	2	109	99	5	37.5	1.5	11	12	10	2	4.3	8	4	M4	4	6	3	4.3
W1460205...	20	26	66	10	99	2	127	115	6	44.5	1.5	13	14	12	2	5.5	9	5	M4	4	7	3	4.3
W1460255...	25	32	78	10	105	2	137	123	7	47.5	2.5	16	17	14	2	6.5	10.5	6	M5	4	7	3	5.2
W1460305...	30	36	98	10	128	2	164	148	8	59	2.5	18	19	16	2	8.5	14	8	M6	6	8	5	5.2

Ø	U	V	W	X	Y	Z	Z1	AB	AC	AD	AE	AF	AG	AH	AM	AL
16	8	4	33	M5	8	46	-	3	26	1	12	5	M5	35	M10x1	8.5
20	8	4	40	M5	10	56	54	3	30	1	14	5	M5	35	M10x1	9
25	9	5	42	M6	6	66	64	5	39	1	17	6	M5	36	M12x1	10
30	9	5	50	M6	12	86	82	5	52	1	19	6	G 1/8	60	M14x1	12

...Enter the stroke in mm (e.g. Ø 16 stroke 50 = W1450165050)
 Strokes for bore 16 mm 25; 50; 75; 100
 Strokes for bore 20 mm 25; 50; 75; 100; 125
 Strokes for bore 25 mm 25; 50; 75; 100; 125; 150
 Strokes for bore 30 mm 25; 50; 75; 100; 125; 150

ACCESSORIES

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE, FOR SLIDE S11 Ø 16 to 30



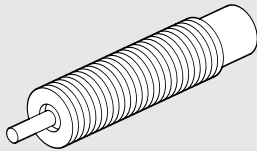
Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8

* For use when standard sensors do not detect the magnet, e.g. near metal masses.

For technical data see page 1-246

SPARES

SHOCK ABSORBERS



Code	Ø	Description
0950004002	ø 16 - 20	Shock absorbers PM10 MF2 + nut M10x1
0950004003	ø 25	Shock absorbers PR015 MF1 + nut M12x1
0950004004	ø 30	Shock absorbers PR025 MC2 + nut M14x1.5

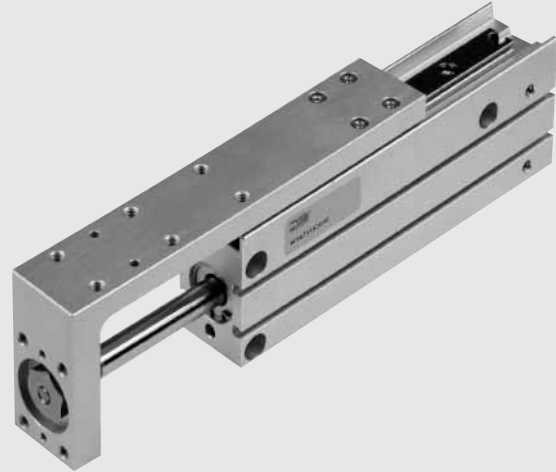
NOTES

PRECISION SLIDES SERIES S13

Series S13 precision slides feature a dual-acting pneumatic cylinder that has the sole purpose of pushing and pulling the load, a ground steel guide that is integral with the body, and a ball recirculation pad that is fixed onto the moving table and is designed to withstand all the loads and movements applied. This ensures accurate movement with virtually no play, and the piston rods do not suffer wear as there are no lateral loads.

All the slides are equipped with sensor magnets.

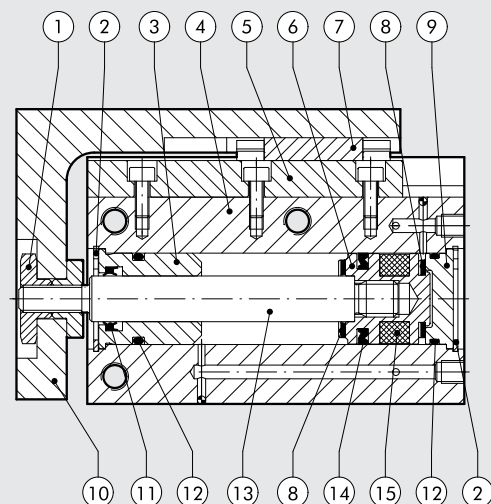
The body can be secured on many sides. The load side can be fixed onto the table from the top or the front. The compressed air supply can be connected on three sides. The retractable sensors can be fitted on the right or on the left. All these possibilities make the application extremely flexible. The width is extremely reduced to allow installation in small spaces and the combination of several reduced-pitch slides.



TECHNICAL DATA		Ø 6	Ø 10	Ø 16	Ø 20
Operating pressure	bar	2 to 8			
	MPa	0.2 to 0.8			
	psi	29 to 116			
Operating temperature	°C	- 10 to + 70			
Fluid		Lubricated and unlubricated compressed air at 20 µm, must be uninterrupted when lubricated			
Minimum and maximum speed	mm/s	30 to 500			
Pneumatic fittings		M5			
Type of guide		Ball recirculation			
Versions		Magnetic dual-acting with rubber buffer			
Strokes	mm	10	10	10	10
		25	25	25	25
		---	---	50	50
Theoretical thrust force, at 6 bar	N	17	47	120	188
Theoretical pull force, at 6 bar	N	13	40	104	158
Admitted loads		See diagrams page 1-224			
Admitted kinetic energy	Joule	0.012	0.025	0.050	0.100
Stroke tolerance	mm	0 / +1.0			
Assembly position		Any (horizontal and vertical)			
Weight	Kg	See table page 1-224			

COMPONENTS

- ① NUT: stainless steel
- ② SNAP RING: galvanised steel
- ③ FRONT BASE: bronze
- ④ BODY: anodized aluminium
- ⑤ GUIDE: tempered stainless steel
- ⑥ PISTON: aluminium
- ⑦ BALL RECIRCULATION PAD: stainless steel
- ⑧ BUFFER: NBR
- ⑨ REAR BASE: anodized aluminium
- ⑩ PLATE: anodized aluminium
- ⑪ PISTON ROD GASKET: type EM, NBR
- ⑫ O-RING: NBR
- ⑬ PISTON ROD: stainless steel
- ⑭ PISTON GASKET: type PZ, NBR
- ⑮ MAGNET: neodymium (Ø 6 and Ø 10)
plastoferrite (Ø 16 and Ø 20)



WEIGHTS

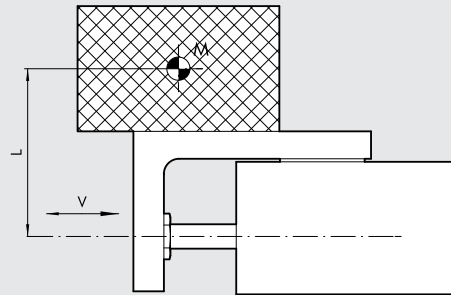
WEIGHT [gr]				
Stroke	Bore			
	6	8	16	20
10	68	125	230	455
25	90	160	280	550
50	---	---	350	660

WEIGHT OF MOVING PART [gr]

Stroke	Bore			
	6	8	16	20
10	30	50	100	180
25	40	68	125	220
50	---	---	167	290

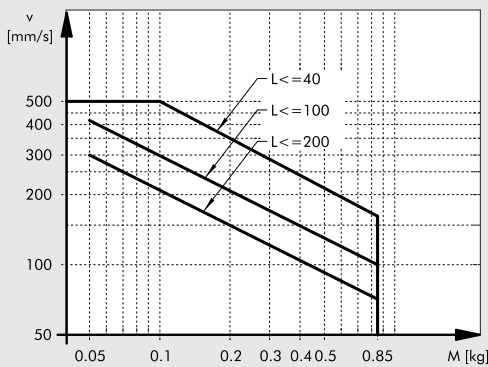
MASS/VELOCITY DIAGRAM

M (kg) = Mass applied
 L (mm) = Distance between the axis of the piston rod and the barycentre of the mass
 v (mm/s) = Velocity of the slide
 vert = Limit with vertical movement

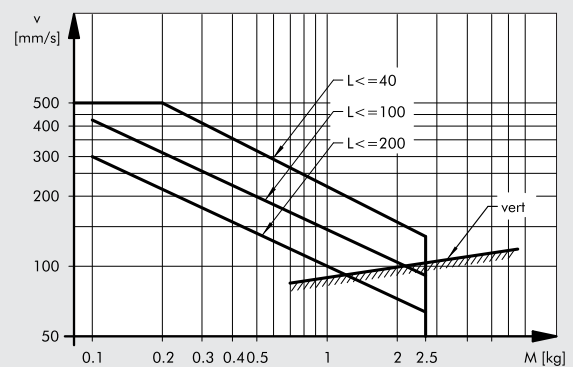


ADMITTED LOADS DIAGRAM

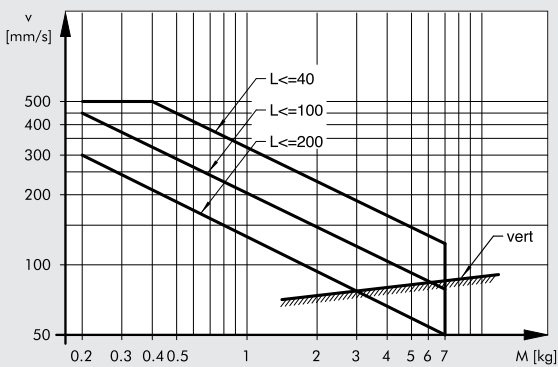
S13-6



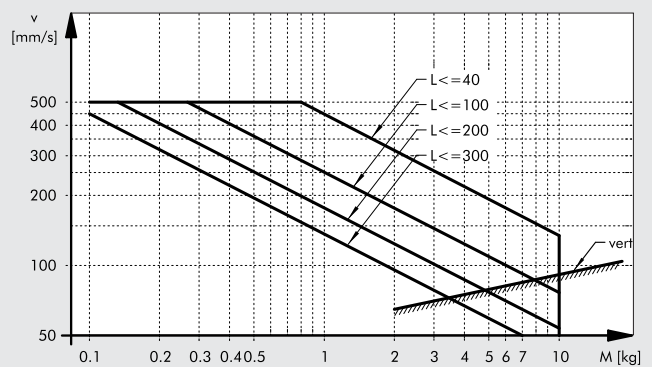
S13-10



S13-16



S13-20



FIXING OPTIONS

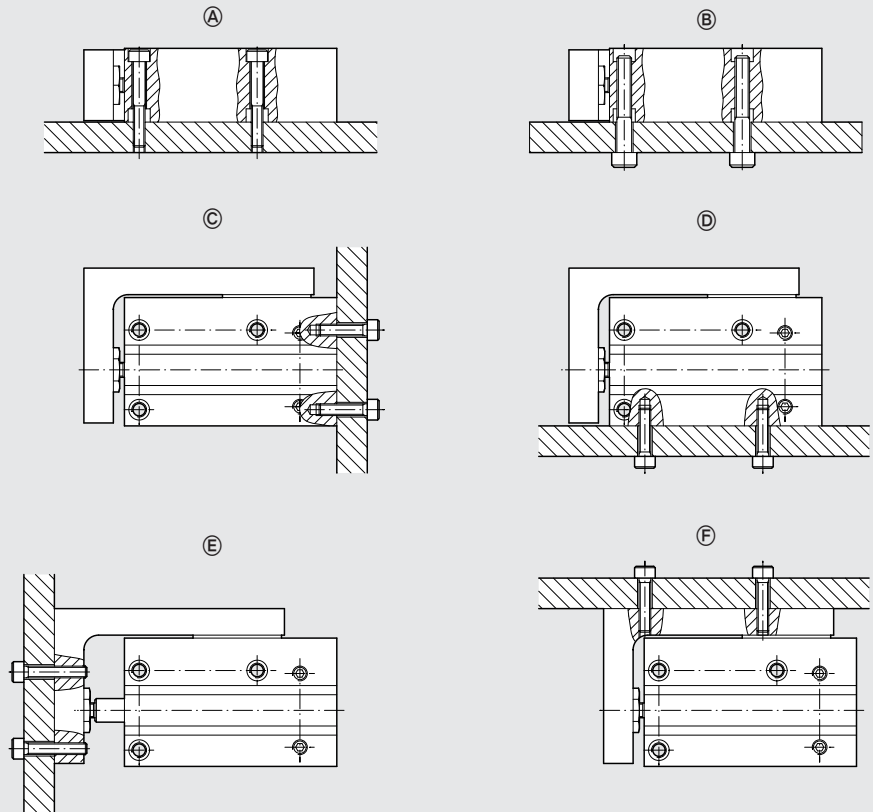
FIXING THE BODY

- Ⓐ Lateral, via the through holes
- Ⓑ Lateral, on the hole threads
- Ⓒ Rear, on the threaded holes
- Ⓓ Vertical, on the threaded holes

FIXING THE MOVING TABLE

- Ⓔ Front, on the threaded holes
- Ⓕ Top, on the threaded holes

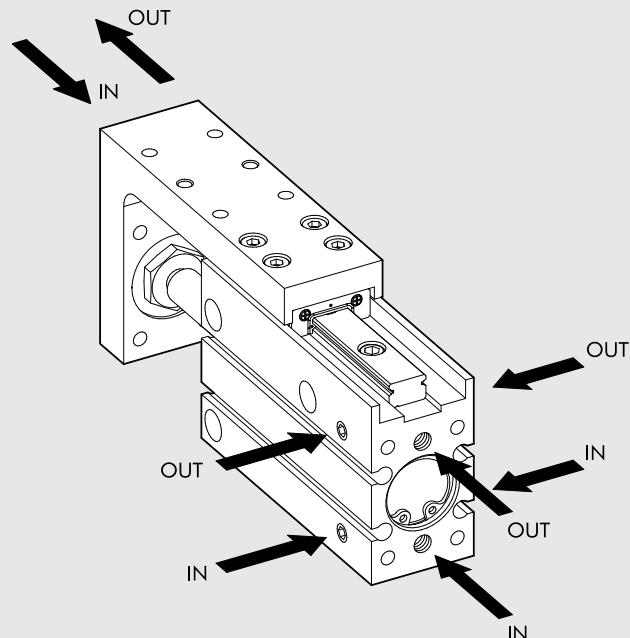
N.B. Since the table is supported by a ball guide/pad, avoid applying excessive torques or forces. When securing the screws, hold the table, not the body, so that the torque discharges through the ball pad.



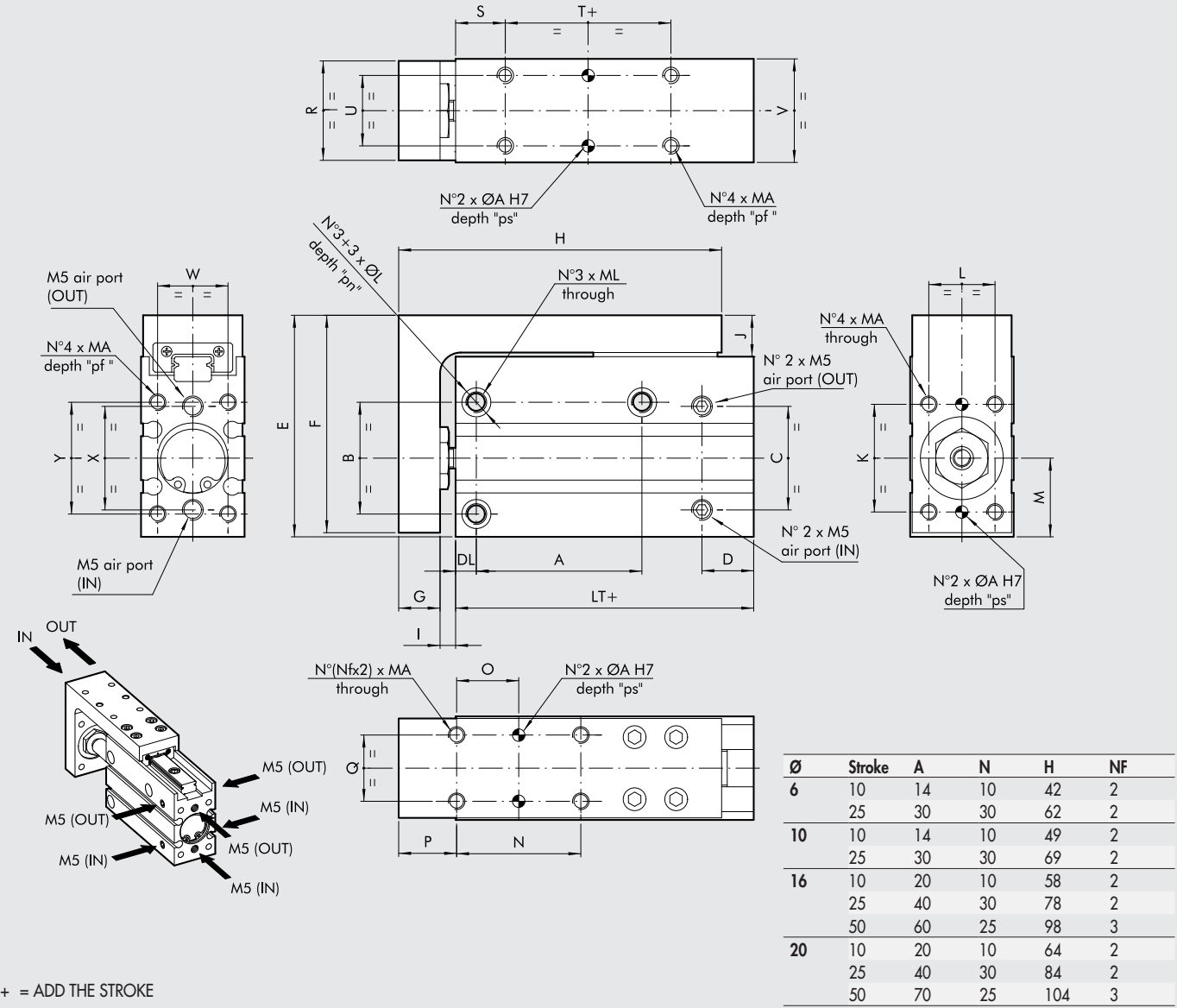
COMPRESSED-AIR SUPPLY

The compressed air supply can be from the back, from the left or from the right.

The slide comes with holes on the left and right that are plugged with screws and O-ring seals. If you wish to use the holes, remove the screws and O-rings and fix them in the holes in the back, applying a drop of adhesive to the screw thread.



DIMENSIONS



Ø	Stroke	A	N	H	NF
6	10	14	10	42	2
	25	30	30	62	2
10	10	14	10	49	2
	25	30	30	69	2
16	10	20	10	58	2
	25	40	30	78	2
	50	60	25	98	3
20	10	20	10	64	2
	25	40	30	84	2
	50	70	25	104	3

+ = ADD THE STROKE

Code	Ø	LT	B	C	D	E	F	G	I	J	K	MA	pf	ØA	ps	L	M	O	P	Q	R	S
W1471063...*	6	31	19	18	10	39	38	5.5	2.9	7.5	15	M3	5	2	4.5	9	14.5	N/2	8	9	15	10
W1471103...*	10	35	23	20	12.5	47	46	7.5	4	9	18	M4	6	2	4.5	11	15.5	N/2	11	11	19	12
W1471163...*	16	42	27	25	12.5	53.5	52.5	10	3.75	10	26	M4	7	3	7.5	16	19	N/2	14	16	24	12
W1471203...*	20	52.5	34	32	15	64.5	63.5	11	4.5	10.5	34	M5	9	3	7.5	20	23	N/2	14	20	31	15

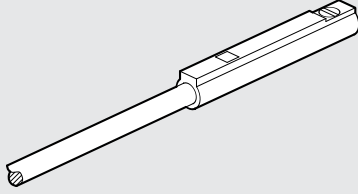
Ø	T	U	V	W	X	Y	ØL	pn	ML	DL
6	5	9	16	10.5	18	19	6	3.5	M4	4
10	5	13	20	13	20	23	7.5	4.5	M5	5
16	10	17	25	17	25	27	7.5	4.5	M5	5
20	10	20	32	20	32	34	9.5	7.5	M6	6

* Enter the stroke in mm (e.g. Ø 6 stroke 10=W1471063010)

- Standard strokes:
 Bore Ø 6 -> 10; 25 mm
 Bore Ø 10 -> 10; 25 mm
 Bore Ø 16 -> 10; 25; 50 mm
 Bore Ø 20 -> 10; 25; 50 mm

ACCESSORIES

MAGNETIC SENSOR Ø 4, FOR SLIDE S13



Code	Description
W0950044180	Sensor REED 2 wires 24 VDC 1 m
W0950045390*	Sensor HALL 3 wires 24 VDC 2 m

* For technical data see page 1-247

NOTES

NOTES

ACTUATORS



● **HYDRAULIC BRAKE SERIES BRK**

PAGE 1-230



● **INTEGRATED HYDRAULIC BRAKE**

PAGE 1-235

HYDRAULIC BRAKE SERIES BRK FOR ISO 15552 (EX ISO 6431) CYLINDER Ø 40-80 mm

The hydraulic brake is the closed loop type without its own power source. It is normally linked to an ISO 15552 pneumatic cylinder. It consists of a cylinder full of oil, one or more flow regulation valves and a top-up tank to compensate for any oil leakage.

The following versions are available:

- With piston rod adjustment in either direction or both;
- With SKIP valve (slow-fast) or stop valve or both.

The compensation tank needs to be topped up from time to time.

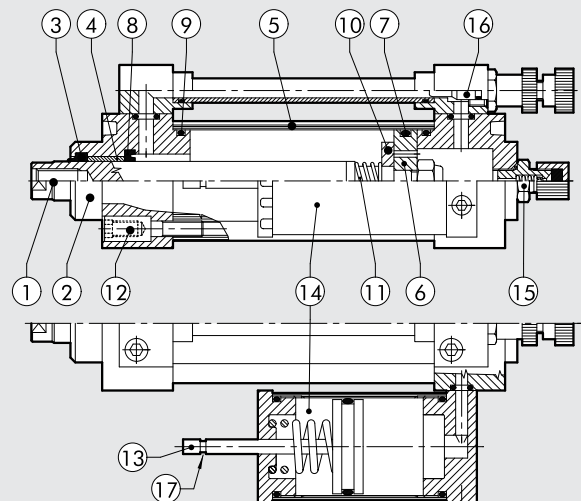
This should be done when the oil reaches the minimum level marked on the rod. With the piston rod right out, the stick must project not less than 20 mm from the tank cap. COMLUBE-DEXRON ATF oil should be used. During the first few cycles, any excess oil is ejected through a hole in the tank.



TECHNICAL DATA		NBR
Temperature range °C		-10 to +70
Fluid		Filtered lubricated or unlubricated air. Lubrication, if used, must be continuous.
Adjustable load:	standard version N with valves N	6000
Speed	mm/min	3500 at 6 bar; 5000 at 8 bar 10 to 6000
Standard strokes	mm	50, 100, 150, 200, 250, 300, 350, 400, 450, 500 On request other special strokes, up to 1000
Configurations		Piston rod thrust adjustment; Piston rod retract adjustment Adjustment on both strokes; Thrust adjustment + skip valve Retract adjustment + skip valve; Double adjustment + double skip valve Thrust adjustment + stop valve; Retract adjustment + stop valve Twin adjustment + double stop valve; Thrust adjustment + skip/stop valve Retract adjustment + skip/stop valve With flange kit ISO 15552 cylinders with bores Ø 40 to Ø 80 See page 1-9
Fixing to cylinder		
Connectable cylinders	mm	
Weights		

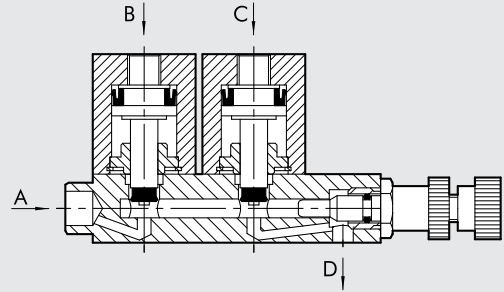
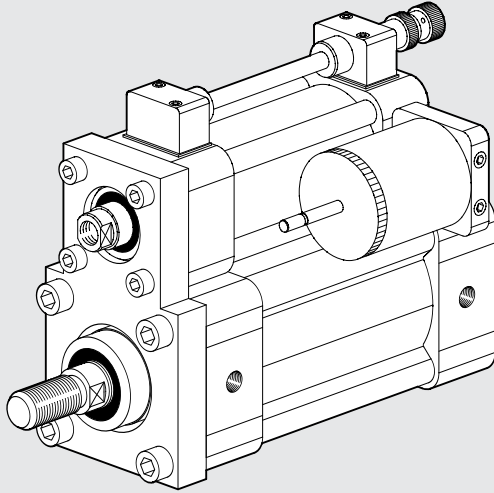
COMPONENTS

- PISTON ROD: thick chromed steel
- HEADS: die cast aluminium alloy
- PISTON ROD GASKET: NBR rubber
- PISTON ROD GUIDE BUSHING: steel strip with bronze and PTFE insert
- JACKET: drawn anodised aluminium alloy
- PISTON: aluminium alloy
- PISTON GASKET: NBR rubber
- OIL SEAL GASKET: polyurethane
- Static O-rings: NBR rubber
- SEALING DISK: plastic
- SPRINGS: zinc-plated steel
- SECURING/ASSEMBLY SCREW: Tap Tite screw
- OIL LEVEL STICK: zinc-plated steel
- OIL RECOVERY TANK
- VALVE for OIL FILLING
- FLOW REGULATION NEEDLE
- MINIMUM LEVEL



HYDRAULIC BRAKE + ISO 15552 CYLINDER Ø 40-80

SKIP-STOP VALVE



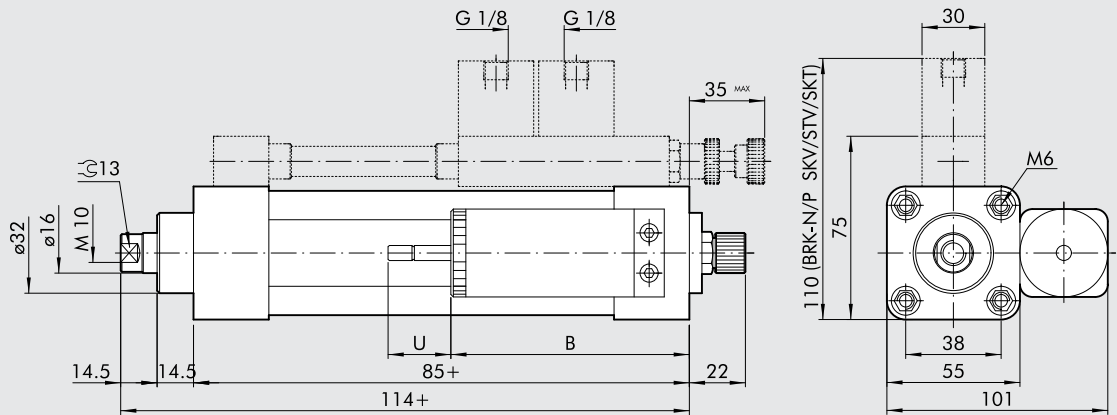
Both the skip valve and the stop valve are normally open and the fluid flows freely from A to D.
 With supply from port C, the skip valve is controlled and the fluid is forced to pass through a choke generated by the regulation pin.
 With supply from port B, the stop valve is controlled and the flow of fluid is interrupted.

DIMENSIONS OF HYDRAULIC BRAKE

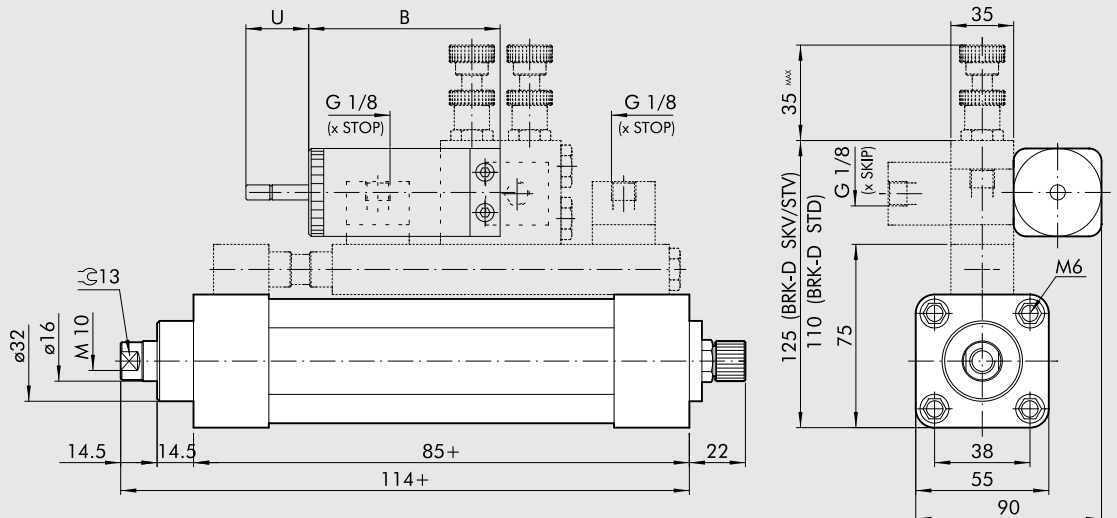
Stroke	B	U
1 to 50	90	28
51 to 100	110	37
101 to 150	110	44
151 to 200	135	52
201 to 250	135	60
251 to 300	155	68
301 to 350	155	77
351 to 400	185	85
401 to 450	185	92
451 to 500	205	100

TYPE: BRK-P STD/SKV/STV/SKT

BRK-N STD/SKV/STV/SKT

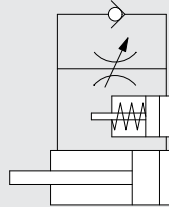
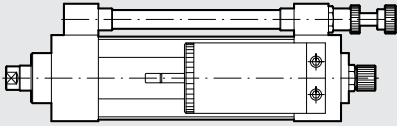


TYPE: BRK-D STD/STV/SKT



+ = ADD THE STROKE

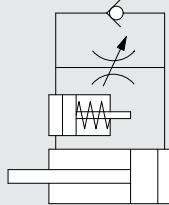
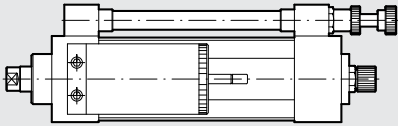
HYDRAULIC BRAKE WITH PISTON ROD THRUST ADJUSTMENT



Code **Description**
W170001 Hydraulic brake BRK-P STD

. . . . = Enter the stroke

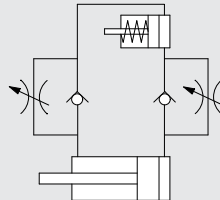
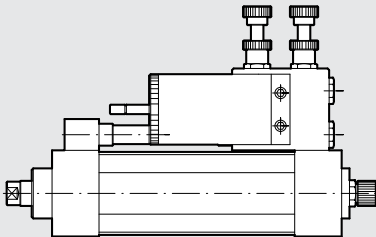
HYDRAULIC BRAKE WITH PISTON ROD RETRACT ADJUSTMENT



Code **Description**
W170011 Hydraulic brake BRK-N STD

. . . . = Enter the stroke

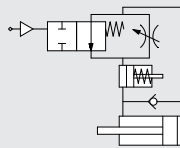
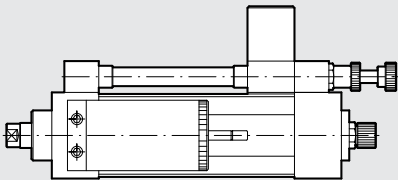
HYDRAULIC BRAKE WITH PISTON ROD THRUST/RETRACT ADJUSTMENT



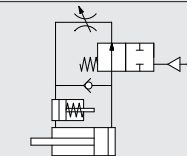
Code **Description**
W170021 Hydraulic brake BRK-D STD

. . . . = Enter the stroke

HYDRAULIC BRAKE WITH RETRACT ADJUSTMENT + SKIP VALVE
HYDRAULIC BRAKE WITH RETRACT ADJUSTMENT + STOP VALVE



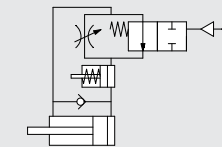
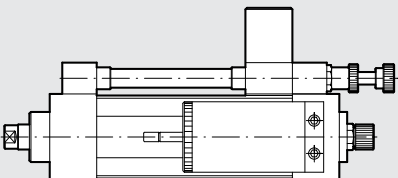
Code **Description**
HYDRAULIC BRAKE WITH RETRACT ADJUSTMENT + SKIP VALVE
W170111 Hydraulic brake BRK-N SKV



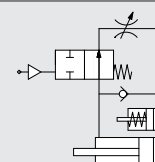
HYDRAULIC BRAKE WITH RETRACT ADJUSTMENT + STOP VALVE
W170211 Hydraulic brake BRK-N STV

. . . . = Enter the stroke

HYDRAULIC BRAKE WITH THRUST ADJUSTMENT + SKIP VALVE
HYDRAULIC BRAKE WITH THRUST ADJUSTMENT + STOP VALVE



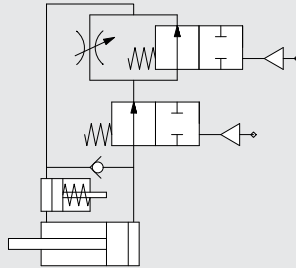
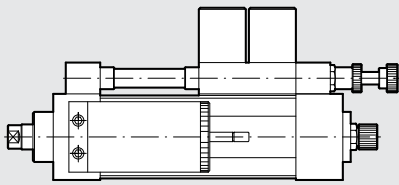
Code **Description**
HYDRAULIC BRAKE WITH THRUST ADJUSTMENT + SKIP VALVE
W170101 Hydraulic brake BRK-P SKV



HYDRAULIC BRAKE WITH THRUST ADJUSTMENT + STOP VALVE
W170201 Hydraulic brake BRK-P STV

. . . . = Enter the stroke

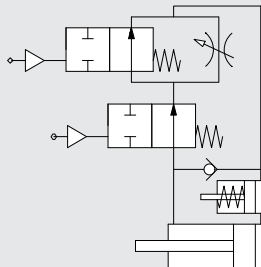
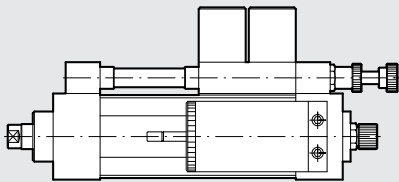
HYDRAULIC BRAKE WITH RETRACT ADJUSTMENT + SKIP/STOP VALVES



Code **Description**
W170311 Hydraulic brake BRK-N SKT

. . . . = Enter the stroke

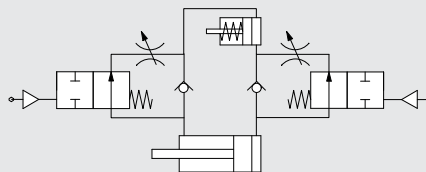
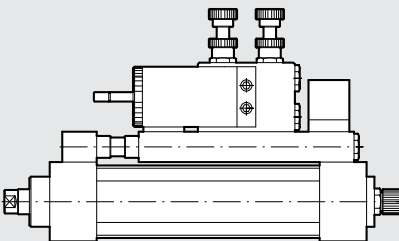
HYDRAULIC BRAKE WITH THRUST ADJUSTMENT + SKIP/STOP VALVE



Code **Description**
W170301 Hydraulic brake BRK-P SKT

. . . . = Enter the stroke

HYDRAULIC BRAKE WITH PISTON ROD THRUST/RETRACT ADJUSTMENT+ DOUBLE STOP VALVE

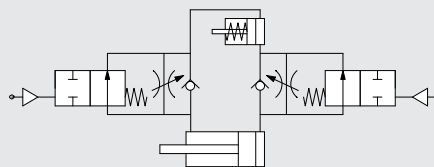
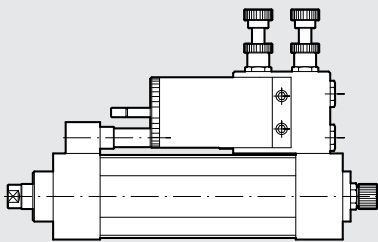


Code **Description**
W170221 Hydraulic brake BRK-D STV

. . . . = Enter the stroke

NOTE: minimum stroke 150 mm

HYDRAULIC BRAKE WITH PISTON ROD THRUST/RETRACT ADJUSTMENT + DOUBLE SKIP VALVE



Code **Description**
W170121 Hydraulic brake BRK-D SKV

. . . . = Enter the stroke

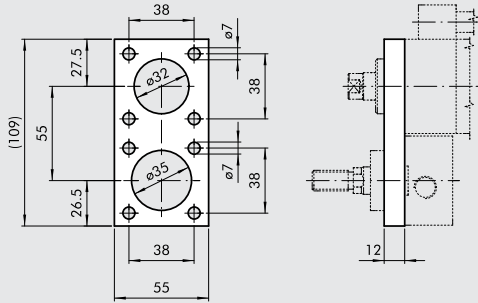
KEY TO CODES

W 1 7 0	0 0 1	0 2 0 0
W170 Hydraulic brake	001 Piston rod thrust adjustment 011 Piston rod retract adjustment 021 Piston rod retract/thrust adjustment 101 Thrust adjustment + SKIP VALVE 111 Retract adjustment + SKIP VALVE 121 Double adjustment + DOUBLE SKIP VALVE 201 Thrust adjustment + STOP VALVE 211 Retract adjustment + STOP VALVE + 221 Double adjustment + DOUBLE STOP VALVE 301 Thrust adjustment + SKIP/STOP VALVE 311 Retract adjustment + SKIP/STOP VALVE	Enter the desired stroke in 4 digits. Example: for a 50 mm-stroke cylinder enter 0050.

+ Minimum stroke 150 mm

ACCESSORIES: FLANGE

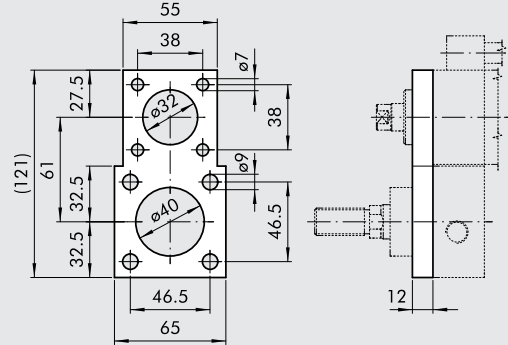
FLANGE Ø 40



Code	Description	Weight [g]
W0950402012	Flange acc. MOD. CF-040	418

Note: Supplied complete with 4+4 screws.

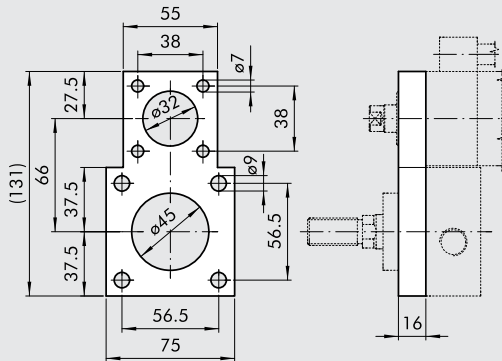
FLANGE Ø 50



Code	Description	Weight [g]
W0950502012	Flange acc. MOD. CF-050	540

Note: Supplied complete with 4+4 screws.

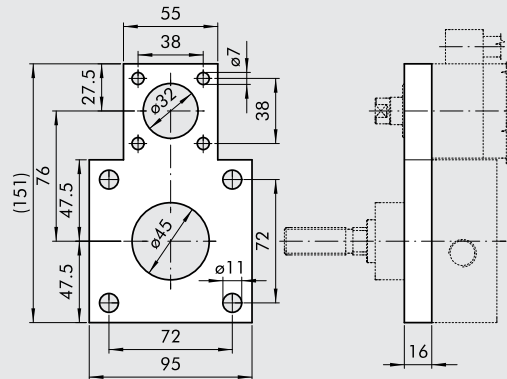
FLANGE Ø 63



Code	Description	Weight [g]
W0950632012	Flange acc. MOD. CF-063	792

Note: Supplied complete with 4+4 screws.

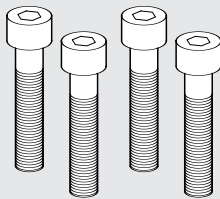
FLANGE Ø 80



Code	Description	Weight [g]
W0950802012	Flange acc. MOD. CF-080	1216

Note: Supplied complete with 4+4 screws.

SET OF SCREWS FOR FLANGE



Code	Description	Weight [g]
W0950402111	Kit BRK-P/C-040	58
W0950502111	Kit BRK-P/C-050	93
W0950632111	Kit BRK-P/C-063	97
W0950802111	Kit BRK-P/C-080	151

Note: the code corresponds to 4+4 screws.

NOTES

INTEGRATED HYDRAULIC BRAKE

The integrated hydraulic brake is comprised of a pneumatic cylinder that acts as an actuator and an oleo-dynamic circuit that acts as a brake. The dimensions of the pneumatic cylinder (bore 63) comply with ISO 15552. The hydraulic circuit is comprised of a brake fluid tank and one or two flow regulation pins. It can mount one or more (slow-fast) SKIP or STOP valves that are normally open (NO) or normally closed (NC), for the piston rod extension and retraction.

The basic feature of this device is that the driving force and the braking force are coaxial, so they do not generate undesired bending moments on the piston rod and the external structures connected to it. Due to its conception, this brake is particularly compact and has reduced dimensions compared to BRK external hydraulic brakes.

After a certain operating time, the brake fluid tank must be topped up with oil. This needs doing when the oil level reaches the minimum mark on the rod. With the piston rod right out, the minimum level mark must not project less than 8-10 mm from the cap.

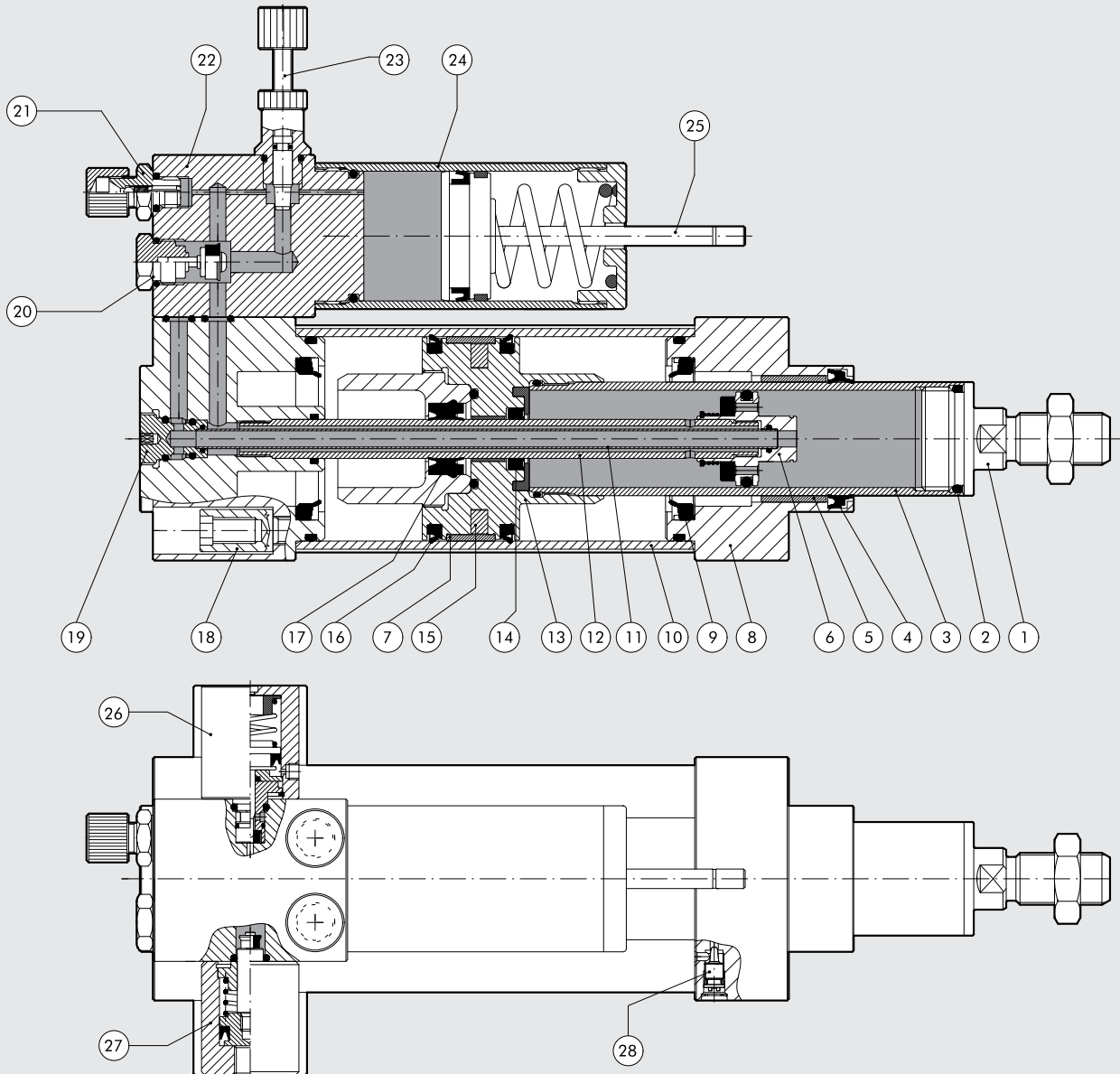
Always use Comlube DEXRON ATF hydraulic oil or another compatible product. During the first operating cycles, excess oil is expelled through a hole in the tank.



TECHNICAL DATA		NBR-POLYURETHANE
Operating pressure	bar	1 to 8
	MPa	0.1 to 0.8
	psi	14.5 to 116
NC valve actuation pressure	bar	3 to 8
	MPa	0.3 to 0.8
	psi	43.5 to 116
Operating temperature range	°C	-10 to +70
	°F	14 to 156
Pneumatic circuit fluid		Lubricated or unlubricated filtered air.
Hydraulic circuit fluid		DEXRON ATF (Comlube) – the list of compatible oils is available on the web site www.metalwork.it
Bore	mm	63
Thrust force generated at 6 bar	N	1.725
Pull force generated at 6 bar	N	1.150
Maximum load which can be applied from outside while the rod is lock N		
• Version without valves and with closed pins:		
Thrust Load on the rod		6.000
Traction Load on the rod		5.000
• Version with STOP NC valves not operated:		
Thrust Load on the rod		6.000
Traction Load on the rod		5.000
• Version with STOP NO valves operated at 6 bar:		
Thrust Load on the rod		3.000
Traction Load on the rod		2.500
• Version with STOP NO valves operated at 8 bar:		
Thrust Load on the rod		4.000
Traction Load on the rod		3.500
Speeds at 6 bar and 20°C:	mm/min	
with regulation pin		30 to 7.000
with pin and NO STOP valve		30 to 6.000
with pin and NC STOP valve		30 to 4.500
with pin and NO SKIP valve		30 to 6.000
with pin and NC SKIP valve		30 to 5.000
with pin and NO STOP+SKIP valves		30 to 5.000
with pin and NC STOP+SKIP valves		30 to 4.000
without pin nor regulation (fast retraction)		30.000
Standard strokes	mm	(Speeds measured on the brake with 500 mm stroke and using 10 mm Ø pipes) 50, 100, 150, 200, 250, 300, 350, 400, 450, 500
Valve combinations		Other special strokes up to 500 available on request, but the dimensions of the brake are the same of the immediately higher stroke ones, and the front damping has no action. Piston-out, piston-in and dual regulation The following combinations of valves can be mounted on each regulated section: STOP NO, STOP NC, SKIP NO, SKIP NC, DOPPIO STOP NO, DOPPIO STOP NC, DOPPIO SKIP NO, DOPPIO SKIP NC, STOP NO+STOP NC, SKIP NO+SKIP NC, STOP NO+SKIP NO, STOP NC+SKIP NC, STOP NO+SKIP NC, STOP NC+SKIP NO All versions are provided with a magnet
Sensor magnet		

COMPONENTS

■ OIL



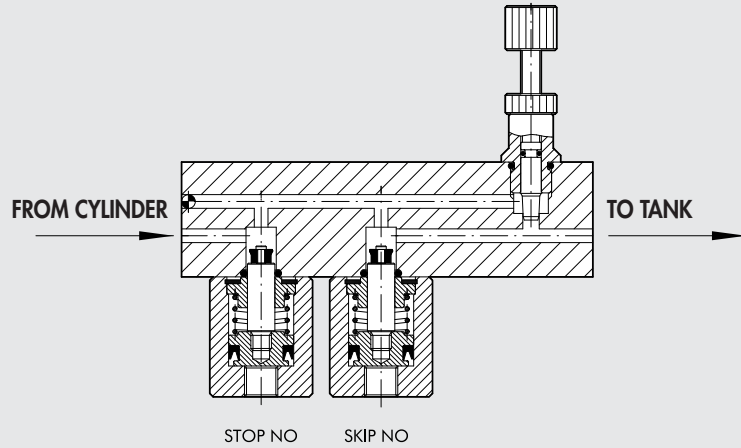
- | | | |
|--|---|---------------------------------------|
| ① GUIDE HOLD: galvanised steel | ⑩ JACKET: anodised and calibrated aluminium section | ⑲ BUSH: nickel-plated brass |
| ② O-RING: NBR | ⑪ INTERNAL PIPE: brass | ⑳ CHECK VALVE |
| ③ PISTON ROD: thickly chromed steel | ⑫ INTERMEDIATE PIPE: steel | ㉑ OIL FILLING VALVE |
| ④ PISTON ROD GASKET: polyurethane | ⑬ PISTON: aluminium | ㉒ REGULATION UNIT: anodised aluminium |
| ⑤ GUIDE BUSHING: steel strip with bronze and PTFE insert | ⑭ PISTON ROD GASKET: polyurethane | ㉓ REGULATION PIN |
| ⑥ INSIDE PISTON: brass | ⑮ MAGNET: plastoferrite | ㉔ OIL RECOVERY TANK |
| ⑦ GUIDE RING: PTFE | ⑯ PISTON GASKET: NBR | ㉕ OIL LEVEL ROD: galvanised steel |
| ⑧ HEAD: anodized aluminium | ⑰ PISTON ROD GASKET: polyurethane | ㉖ NC VALVE |
| ⑨ CUSHIONING GASKET: NBR | ⑱ SECURING/ASSEMBLY SCREW: self-tapping | ㉗ NO VALVE |
| | | ㉘ CUSHIONING PIN |

SKIP AND STOP VALVES

When the NO STOP valve is actuated, it halts cylinder movement. The NC STOP valve locks the cylinder when not actuated.

The NO SKIP valve, when actuated, allows regulation of the cylinder speed via the pin provided.

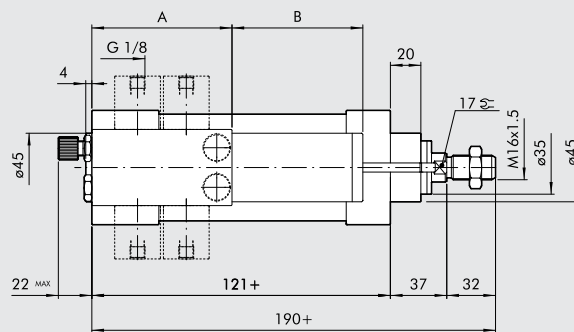
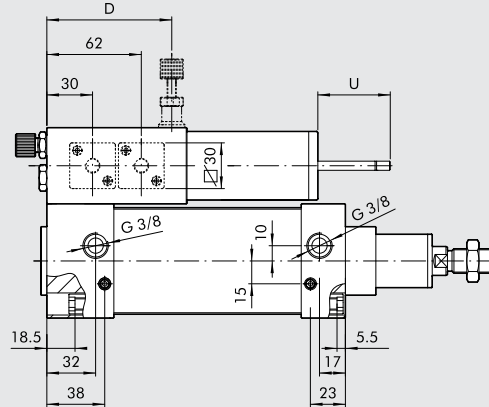
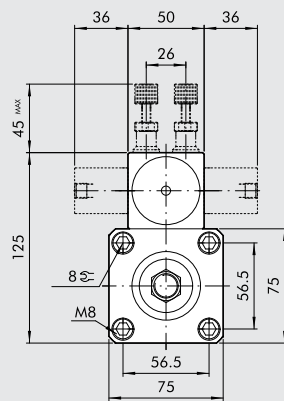
The NC SKIP valve allows regulation of the cylinder speed when not actuated.



OVERALL DIMENSIONS OF THE VARIOUS VERSIONS

Stroke	B	U max
50	96	25
100	96	29
150	121	34
200	121	38
250	161	43
300	161	47
350	161	52
400	206	56
450	206	61
500	291	65

Type	A	D
Regulation only	50	40
1 valve per side	50	40
2 valve per side	82	72



KEY TO CODES

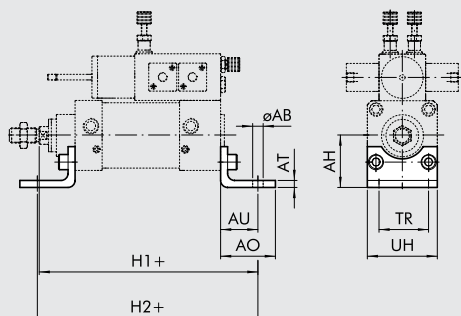
W 1 7 3	2	3	1	0	0 5 0 0
INTEGRATED BRAKE	REGULATION	PISTON ROD EXTENSION CONTROL VALVES	PISTON ROD RETRACTION CONTROL VALVES	BORE	STROKE
W173 Integrated brake	0 Out 1 In 2 Dual	0 Without valves 1 NO Stop 2 NC Stop 3 NO Skip 4 NC Skip 5 NO Stop NO Skip 6 NO Stop NC Skip 7 NC Stop NO Skip 8 NC Stop NC Skip	0 Without valves 1 NO Stop 2 NC Stop 3 NO Skip 4 NC Skip 5 NO Stop NO Skip 6 NO Stop NC Skip 7 NC Stop NO Skip 8 NC Stop NC Skip	0 D63	Specify the desired stroke in 4 digits (e.g. 0500 for stroke 500)

N.B. With at least one extension control valve and one retraction control valve, type W1732__ is required.

ACCESSORIES FOR INTEGRATED HYDRAULIC BRAKE

FOOT - MODEL A

+ = ADD THE STROKE



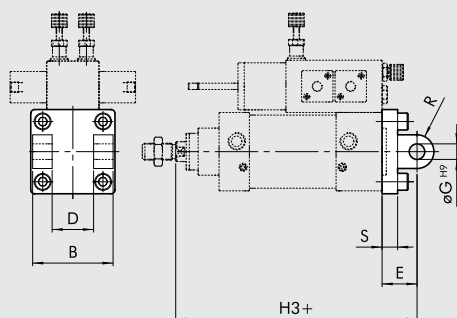
Code	Ø	Ø AB	AH	AO	AT	AU	TR	UH	H ₁	H ₂	Weight [g]
W0950632001	63	9	50	47	6	32	50	75	190	185	266

Note: Individually packed with 2 screws.

N.B.: M8x40 UNI 5931 screws are required for fixing the rear head (see kit 0950636092)

FEMALE HINGE - MODEL B

+ = ADD THE STROKE



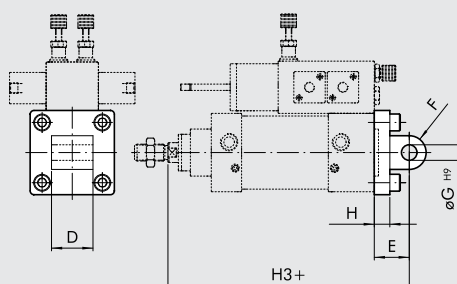
Code	Ø	B	D	E	Ø G	H ₃	R	S	Weight [g]
W0950632003	63	70	40	32	16	190	17	12	394

Note: Supplied with 4 screws, 4 washers, 2 snap rings and 1 pin.

N.B.: M8x40 UNI 5931 screws are required for fixing the rear head (see kit 0950636092)

MALE HINGE - MODEL BA

+ = ADD THE STROKE



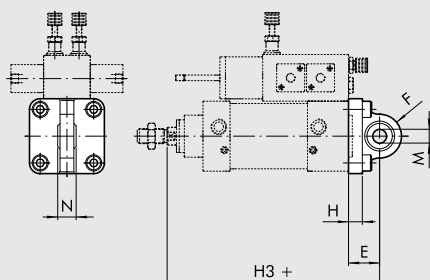
Code	Ø	D	E	F	Ø G	H	H ₃	Weight [g]
W0950632004	63	40	32	17	16	12	190	316

Note: Supplied with 4 screws, 4 washers.

N.B.: M8x40 UNI 5931 screws are required for fixing the rear head (see kit 0950636092)

ARTICULATED MALE HINGE - MODEL BAS

+ = ADD THE STROKE

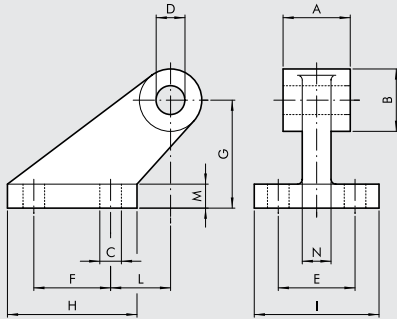


Code	Ø cil.	E	F	H	H ₃	M	N	Weight [g]
W0950632006	63	32	24	12	190	16	21	336

Note: Supplied with 4 screws, 4 washers.

N.B.: M8x40 UNI 5931 screws are required for fixing the rear head (see kit 0950636092)

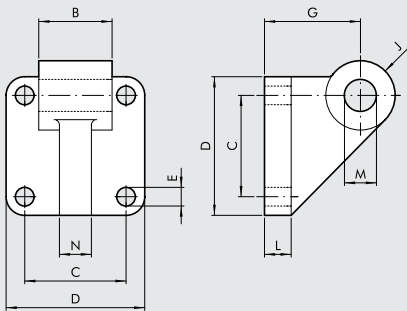
CETOP HINGE FOR MODEL B - MODEL GL



Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	Weight [g]
W0950632008	63	40	33	11	16	40	50	63	75	63	32	12	15	440

Note: Supplied with 4 screws, 4 washers.

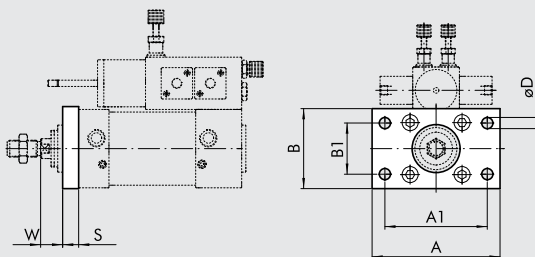
ISO HINGE FOR MODEL B - MODEL GS



Code	Ø	B	C	D	E	G	J	L	M	N	Weight [g]
W0950632108	63	39.5	56.5	75	9	50	17	12	16	15	350

Note: Supplied with 4 screws, 4 washers.

FRONT FLANGE - MODEL C

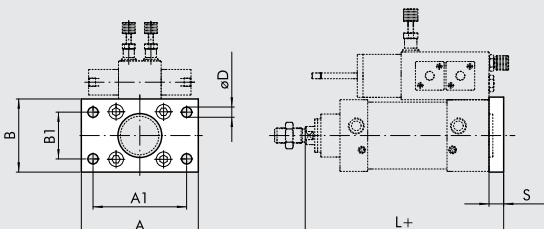


Code	Ø	A ₁	A	B	S	B ₁	ØD ₄	W	Weight [g]
W0950632002	63	100	120	75	12	50	9	25	670

Note: Supplied with 4 screws.

REAR FLANGE - MODEL C

+ = ADD THE STROKE

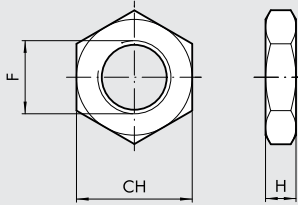


Code	Ø	A ₁	A	B	S	B ₁	ØD ₄	L	Weight [g]
W0950632002	63	100	120	75	12	50	9	170	670

Note: Supplied with 4 screws.

N.B.: M8x40 UNI 5931 screws are required for fixing the rear head (see kit 0950636092)

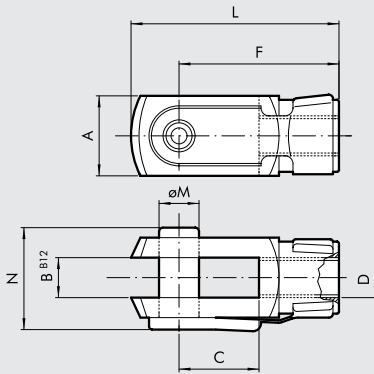
ROD NUT - MODEL S



Code	Ø	F	H	CH	Weight [g]
0950502010	63	M16x1.5	8	24	20

Note: Individually packed.

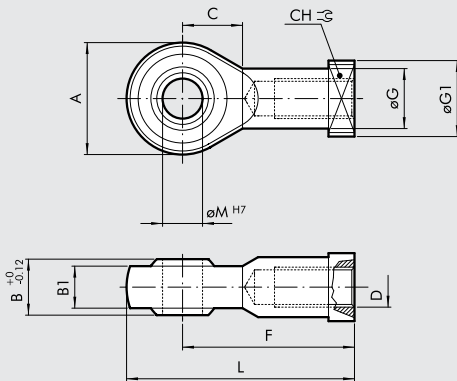
FORK MODEL GK-M



Code	Ø	ØM	C	B	A	L	F	D	N	Weight [g]
W0950502020	63	16	32	16	32	83	64	M16x1.5	40	340

Note: Individually packed.

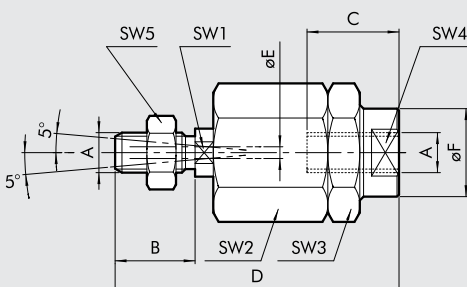
ROD EYE - MODEL GA-M



Code	Ø	ØM	C	B1	B	A	L	F	D	ØG	CH	ØG1	Weight [g]
W0950502025	63	16	22	15	21	42	85	64	M16x1.5	22	22	22	226

Note: Individually packed.

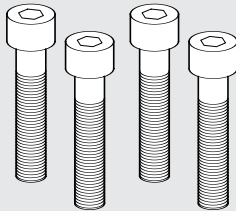
SELF ALIGNING ROD COUPLER - MODEL GA-K



Code	Ø	A	B	C	D	ØF	ØE	SW ₁	SW ₂	SW ₃	SW ₄	SW ₅	Weight [g]
W0950502030	63	M16x1.5	32	32	103	32	4	20	41	41	30	24	620

Note: Individually packed.

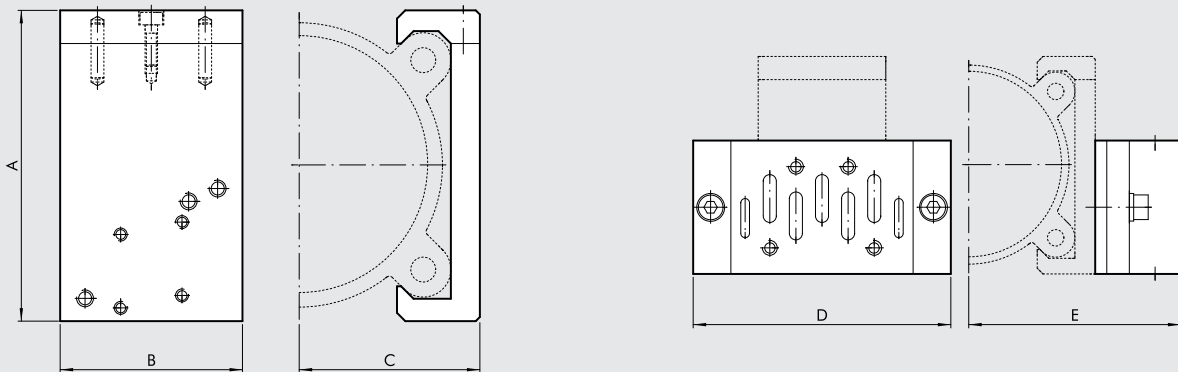
KIT OF REAR HEAD SCREWS



Code	Description
0950636092	Kit of M8x40 UNI 5931 rear head fixing screws

Note: 4 items per pack.

CYLINDER BRACKET - VALVE SERIES KCV

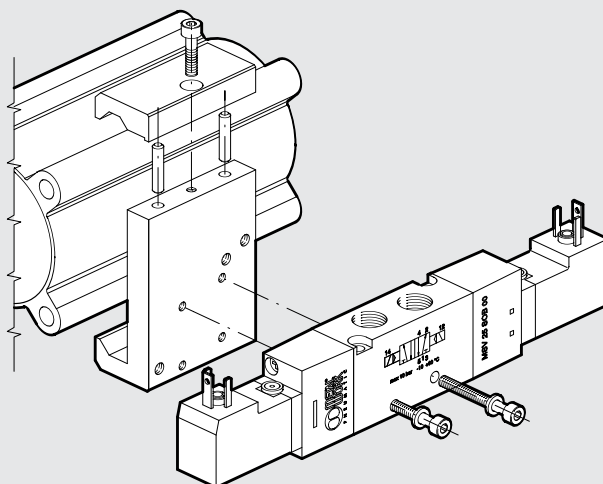


Code	Ø	A	B	C	ISO 1		ISO 1		Applicable valves	Weight [g]
					D	E	D	E		
0950632090	63	81.5	40	42	110	77	1124	83	MACH 16 Series 70 1/8-1/4 ISO 1 - ISO 2	101

KIT FOR FIXING VALVES TO BRACKETS

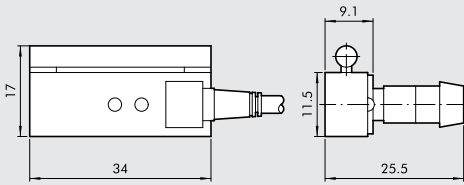
Code	Valve KIT	Composition	Weight [g]
0950002003	MACH 16	2 HEX. screws M3x25 with washer	4
0950002004	Series 70 1/8-1/4	2 HEX. screws M4x50 with washer	8
0950002001	ISO 1	Adaptor + ISO1 base side + screws + washers	230
0950002002	ISO 2	Adaptor + ISO2 base side + screws + washers	350

VALVE ASSEMBLY ON HYDRAULIC BRAKE



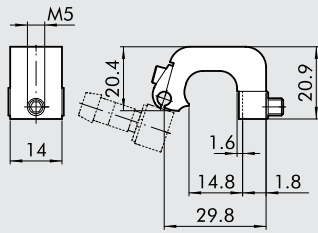
ACCESSORIES: MAGNETIC SENSORS

SENSOR



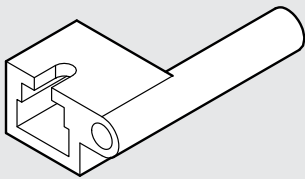
Code	Description
W0950000201	Sensor REED DSM2-C525 HS
W0950000222	Sensor E. HALL PNP DSM3-N225
W0950000232	Sensor E. HALL NPN DSM3-M225

SENSOR BRACKETS



Code	Description
W0950000712	Bracket D.50-63 DST 81

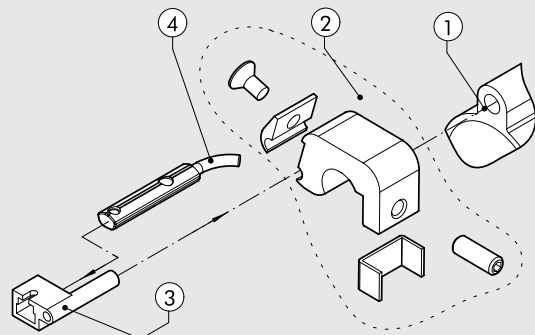
ADAPTOR FOR RETRACTABLE SENSOR



Code	Description
W0950001001	Adaptor DSS005 for DST/ST brackets

ASSEMBLY DIAGRAM

- ① ISO 15552 cylinder with traditional barrel
- ② Sensor bracket mod. DST (Ø 50-63)
- ③ Adaptor
- ④ Retractable sensor with insertion from above

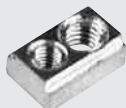


SUMMARY SENSORS AND ACCESSORIES T-SLOT



● **ACCESSORIES: MAGNETIC SENSORS**

PAGE 1-244



● **ACCESSORIES FOR T-SLOT**

PAGE 1-247



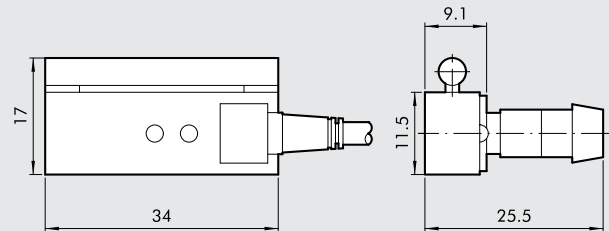
● **SENSOR TESTER**

PAGE 1-249

ACCESSORIES: MAGNETIC SENSORS

SENSOR SERIES DSM

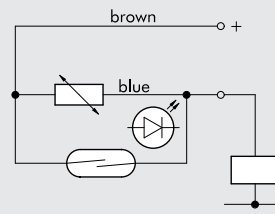
Code	Description
W0950000201	Reed sensor DSM2-C525 HS
W0950000222	E.HALL PNP sensor DSM3-N225
W0950000232	E. HALL NPN sensor DSM3-M225



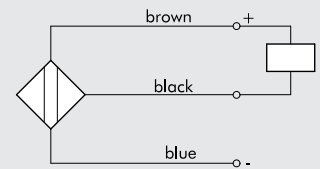
TECHNICAL DATA SERIE DSM

Type		REED + VARISTOR + LED 2 WIRES	HALL VERSION PNP/NPN 3 WIRES
Contact		REED + VARISTOR + LED NO	HALL EFFECT NO PNP/NPN
Max AC/DC voltage	V	3 to 48 V(DC); 3 to 220 (AC)	6-24 V DC
Max current at 25°C	mA	500	250
Power with inductive load	VA	10	-
Power with resistive load	Watt	50	6
Switch-on time	m sec	1.2	0.8
Switch-off time	m sec	0.1	3
Switch-on point	Gauss	110	15
Switch-off point	Gauss	95	8
Operating life		10 ⁷ impulses	10 ⁹ impulses
Contact resistance		0.1	-
Cable length	m	2.5	2.5
Cable cross section	mm ²	0.35	0.35
Cable material		Soft PVC	Soft PVC
Circuit			

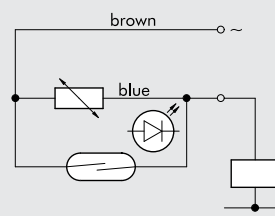
DC



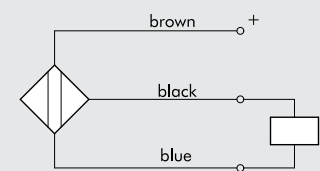
Version NPN



AC

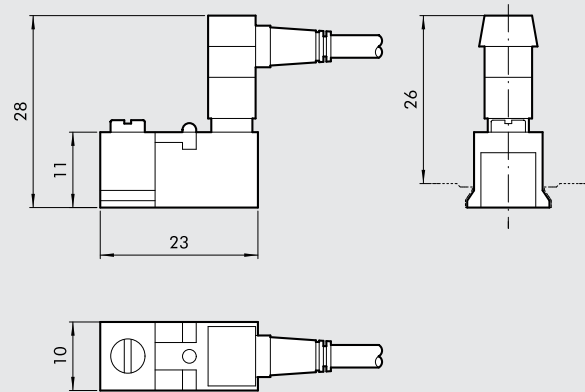


Version PNP



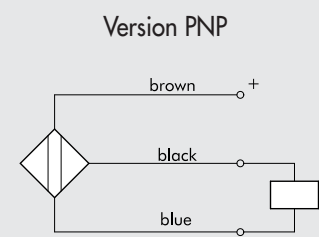
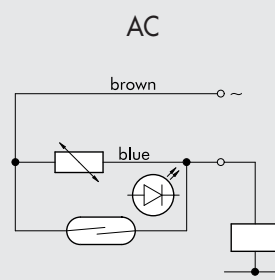
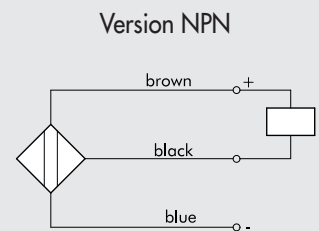
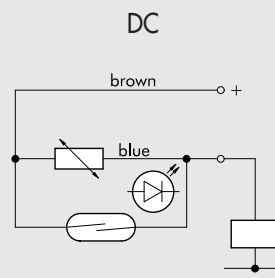
SENSOR SERIE DCB

Code	Bore	Model	Version
W0950000252	12 to 100	REED sensor DCB 2C-425	Reed connector + bracket - CB
W0950000253	12 to 100	HALL PNP sensor DCB3-N225	Hall PNP connector + bracket - CB
W0950014360	12 to 100	HALL NPN sensor DCB3-M225	Hall NPN connector + bracket - CB



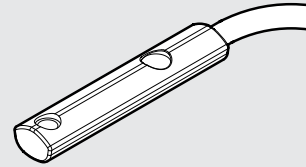
TECHNICAL DATA SERIE DCB

	REED + VARISTOR + LED 2 WIRES		HALL VERSION PNP/NPN 3 WIRES	
		REED + VARISTOR + LED NO		HALL EFFECT NO PNP/NPN
Type		3 to 48 (DC); 3 to 110 (AC)		6-24 V DC
Contact				
Max AC/DC voltage	V	300		250
Max current at 25°C	mA	8		-
Power with inductive load	VA	15		6
Power with resistive load	Watt	0.5		0.8
Switch-on time	m sec	0.1		3
Switch-off time	m sec	110		15
Switch-on point	Gauss	60		8
Switch-off point	Gauss	10 ⁷ impulses		10 ⁹ impulses
Operating life		0.1		-
Contact resistance		2.5		2.5
Cable length	m	0.35		0.35
Cable cross section	mm ²	Soft PVC		Soft PVC
Cable material				
Circuit				



RETRACTABLE SENSOR WITH INSERTION FROM ABOVE

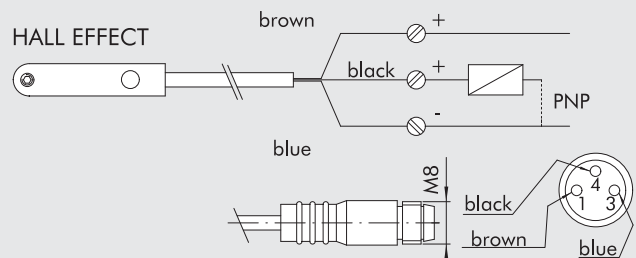
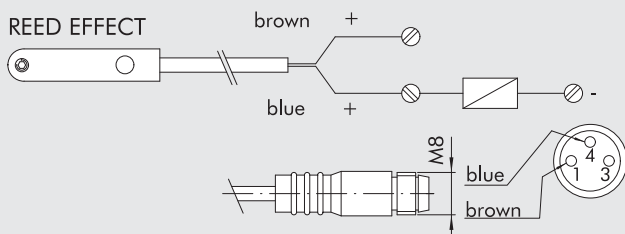
Code	Description
W0952025390	HALL N.O. sensor, vertical insertion 2.5 m
W0952029394	HALL N.O. sensor, vertical insertion 300 mm M8
W0952022180	REED N.O. sensor, vertical insertion 2.5 m
W0952028184	REED N.O. sensor, vertical insertion 300 mm M8
W0952125556	HALL N.O. sensor, vertical insertion 2 m ATEX
W0952025500*	HALL N.O. sensor, vertical insertion HS 2.5 m
W0952029504*	HALL N.O. sensor, vertical insertion HS 300 mm M8
W0952022500*	REED N.O. sensor, vertical insertion HS 2.5 m
W0952128184*	REED N.O. sensor, vertical insertion HS 300 mm M8



* For use on the rodless cylinder guide "V" Ø25 or when standard sensors do not detect the magnet, e.g. near metal masses.

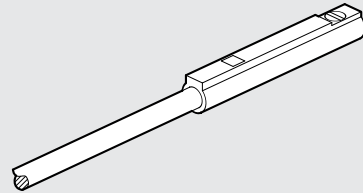
TECHNICAL DATA	REED	EFFETTO HALL	ATEX
Type of contact	N.O.	N.O.	EFFETTO HALL N.O.
Switch	-	PNP	PNP
Supply voltage (Ub)	V 10 to 30 AC/DC	10 to 30 DC	18 to 30 DC
Power	W 3 (peak valve = 6)	3	≤ 1.7
Voltage variation	-	≤ 10% di Ub	≤ 10% di Ub
Voltage drop	V -	≤ 2	≤ 2.2
Input current	mA -	≤ 10	≤ 10
Output current	mA ≤ 100	≤ 100	≤ 70
Switching frequency	Hz ≤ 400	≤ 5000	1000
Short-circuit protection	-	Yes	Yes
Over-voltage suppression	-	Yes	Yes
Polarity inversion protection	-	Yes	Yes
EMC	EN 60 947-5-2	EN 60 947-5-2	EN 60 947-5-2
LED display	Yellow	Yellow	Yellow
Magnetic sensitivity	2.8 mT ± 25%	2.8 mT ± 25%	2.6
Repeatability	≤ 0.1 mT	≤ 0.1 mT	≤ 0.1 (Ub and ta fixed)
Degree of protection (EN 60529)	IP 67	IP 67	IP 68, IP 69K
Vibration and shock resistance	30 g, 11 ms, 10 to 55 Hz, 1 mm	30 g, 11 ms, 10 to 55 Hz, 1 mm	30 g, 11 ms, 10 to 55 Hz, 1 mm
Temperature range °C	-25 to +75	-25 to +75	-20 to +45
Sensor capsule material	PA66 + PA6I/6T	PA66 + PA6I/6T	PA
2.5 m/2 m connecting cable	PVC; 2 x 0.12 mm ²	PVC; 3 x 0.14 mm ²	PVC; 3 x 0.12 mm ²
Connecting cable with M8x1	Polyurethane; 2 x 0.14 mm ²	Polyurethane; 3 x 0.14 mm ²	-
Wire NO.	2	3	3
Category ATEX	-	-	Ex II 3G EEx nA II T4 X/Ex II 3D T1 35°C IP 67
Certifications	CE UL cULus	CE UL cULus	CE UL cULus Ex

WIRING DIAGRAM



SENSOR Ø 4

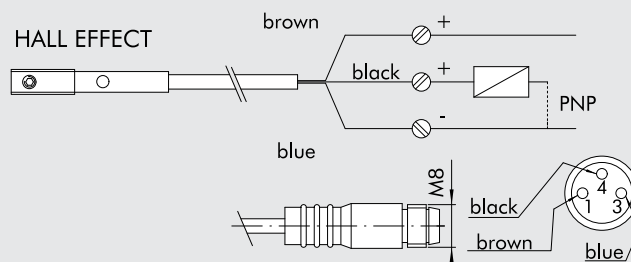
Code	Description
W0950044180	Sensor REED 2 wires 24 VDC 1 m
W0950045390	Sensor HALL 3 wires 24 VDC 2 m



TECHNICAL DATA FOR W0950045390

Switch		EFFETTO HALL
Tension in DC	V	PNP
Tension in AC	V	From 6 to 30
Current at 25°C	A	---
Power (ohmic load)	W	0.2
On time	µs	MAX 6
Off time	µs	0.8
On point	Gauss	0.3
Off point	Gauss	30
Electric life (pulses)		25
On voltage drop	V	10°
Nominal operating point	Gauss	< 1
Operating frequency	Hz	From 30 to 50
Polarity reversal protection		MAX 200
Short-circuit protection		YES
Degree of protection (EN 60529)		NO
Temperature range	°C	IP 67
Sensor capsule material		From -10 to +70
LED display		PA (+G)
Wiring NO.		YELLOW
		3

WIRING DIAGRAM FOR W0950045390

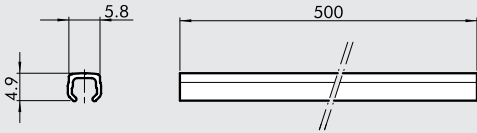


ACCESSORIES T-SLOT

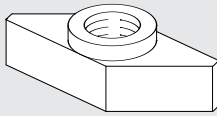
BAR FOR GROOVING

Code	Description
W0950000160	Bar for grooving L = 500 mm

Note: The code corresponds to 1 piece.



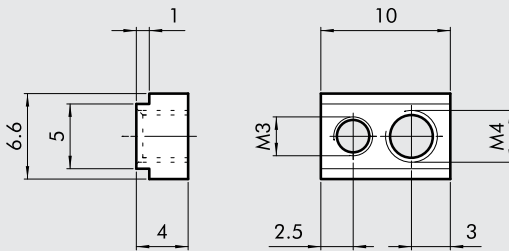
SLOTTED FIXING PLATE



Code	Description	Weight [g]
0950003001	M4 T-slotted fixing plate	1
0950003002	M3 T-slotted fixing plate	1

Note: Individually packed

SLOTTED FIXINGPLATE



Code	Description	Weight [g]
0950003000	Fixing block	2

Note: Supplied complete with 1 M3 grub screw and 1 M4 grub screw

NOTES



DISTRIBUTORS

● VALVES	PAGE 2-2
● VALVE ISLANDS	PAGE 2-127
● SLAVES FIELDBUS	PAGE 2-177

VALVES SUMMARY



● **MINIVALVES, SERIES VME-1 MECHANICALLY/HAND OPERATED**

PAGE 2-4



● **VALVES, SERIES PEV, PEDAL OPERATED**

PAGE 2-8



● **TWO HAND SAFETY VALVE**

PAGE 2-10



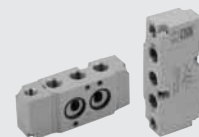
● **VALVES, SERIES 70**

PAGE 2-12



● **VALVES, SERIES 70 ON BASE**

PAGE 2-38



● **VALVES, NAMUR**

PAGE 2-43



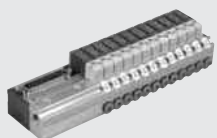
● **COILS AND CONNECTORS FOR SERIES 70 AND NAMUR VALVES**

PAGE 2-46



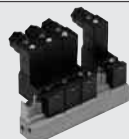
● **10 mm SOLENOID VALVES SERIES PLT-10**

PAGE 2-47



● **BASES FOR PLT-10 MULTIPLE CONNECTION**

PAGE 2-50



● **SOLENOID VALVES PIV.M 15 mm**

PAGE 2-54



● **SOLENOID VALVES PIV ON BASE**

PAGE 2-58



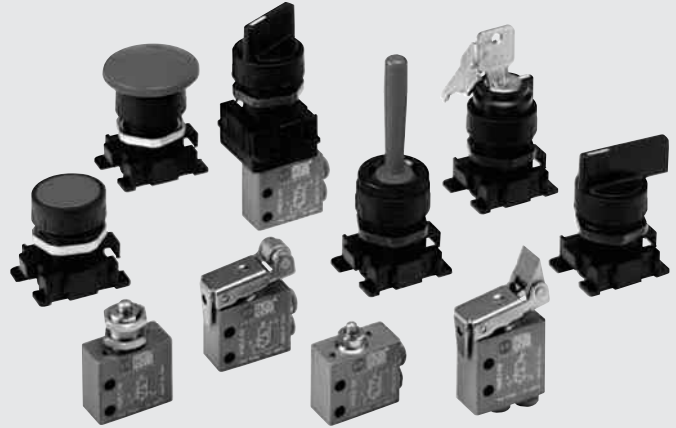
● **SOLENOID VALVES PIV IN LINE**

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	● SOLENOID VALVE CNOMO	PAGE 2-66
	● VALVES MINI MACH	PAGE 2-68
	● VALVES MACH 11	PAGE 2-74
	● VALVES MACH 16	PAGE 2-80
	● MULTIPLE CONNECTOR MACH 16	PAGE 2-87
	● REDUCER WITH GAUGE, SERIES RMV	PAGE 2-100
	● VALVES MACH 18 ISO 15407-1 VDMA 24563-02	PAGE 2-101
	● VALVES ISO 5599/1, SERIES IPV-ISV	PAGE 2-107
	● VALVE ISO 5599/1 SOLENOID/PNEUMATIC, SERIE ISV WITH M12 CONNECTOR	PAGE 2-114
	● SANDWICH REGULATORS FOR ISO 5599/1 BASES ISO 1-2	PAGE 2-122
	● VALVES FOR UL- AND CSA-APPROVED COILS	PAGE 2-123

MINIVALVES, MECHANICALLY AND HAND OPERATED SERIES VME

- Minivalves with 3/2 NO NC poppet,
- Installation in any position
- Push-in fittings for pipe Ø 4 mm and M5 on the valve body
- Low actuation force
- Rapid, accurate signal
- Mechanical actuation
- The 2 places adapter allows manual actuation of 1 or 2 VME valves with manual Ø 22 panel actuators. Thus it is possible to obtain 3/2, 5/2, 5/3 open centre and 5/3 pressure centre pneumatic functions.
- On request, it is possible to place a NC-NO electric switch next to VME valve for mixed solenoid/pneumatic signals.

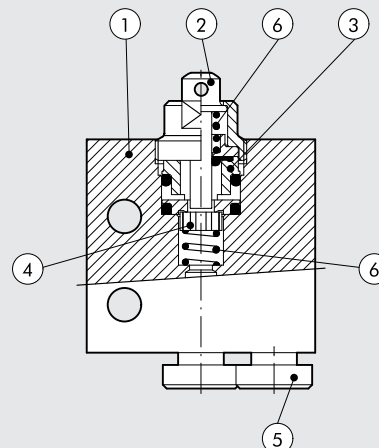


TECHNICAL DATA

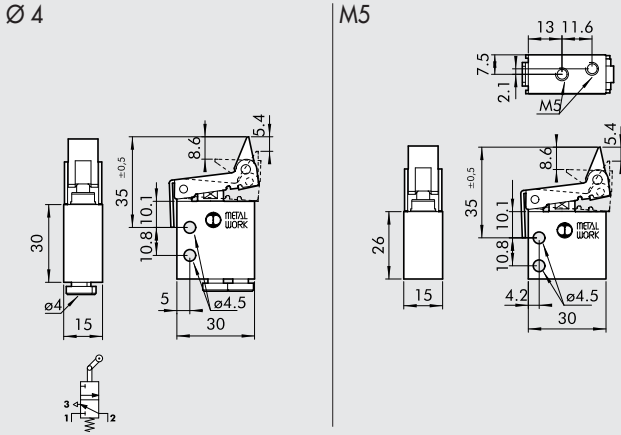
Valve fitting port		Push-in fitting for pipe diam. 4 and M5 (axial or side)
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous
Type		With poppet
Versions		Mechanical and manual
Operators:		With Plunger – Plunger for wall-mounting – Roller lever – Unidirectional roller lever
• mechanical		Depending on the type of actuation panel selected
• manual		
Operating pressure	bar	0.5 to 10
Operating temperature range	°C	-10° to +60
Nominal diameter	mm	2.5
Conductance C	Nl/min · bar	16.5
Critical ratio b	bar/bar	0.03
Flow rate at 6 Bar ΔP 0.5 Bar	Nl/min	35
Flow rate at 6 Bar ΔP 1 Bar	Nl/min	60
Actuation force – Plunger at 6 Bar	N	8
Recommended lubricant		ISO and UNI FD22
Installation		In any position
Compatibility with oils		Please refer to page 6-7 of the technical documentation

COMPONENTS

- ① VALVE BODY: Aluminium
- ② BUTTON: chemically nickel-plated brass
- ③ DISTANCE PLATES: Brass
- ④ GASKETS: NBR
- ⑤ PUSH-IN FITTING CARTRIDGES: stainless steel, brass and plastic
- ⑥ SPRINGS: stainless steel

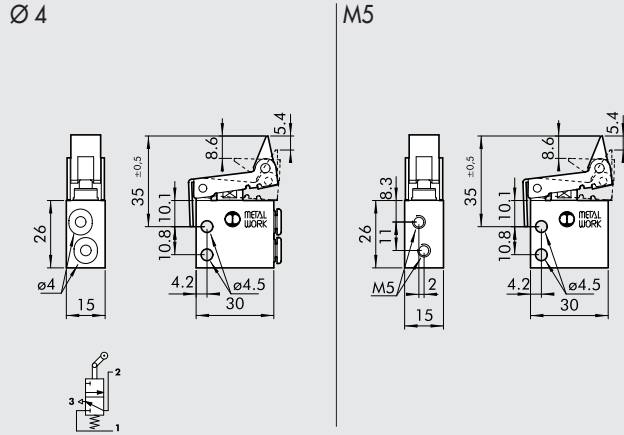


UNIDIRECTIONAL ROLLER LEVER, 3/2 NC - AXIAL FITTINGS



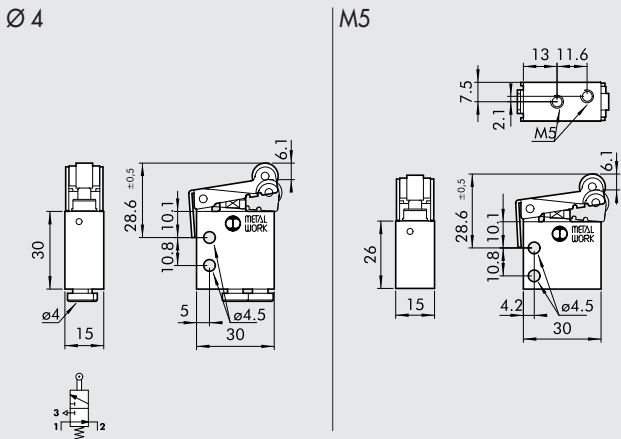
Code	Description	Weight [g]
W3501000300	VME1-03 NC Ø 4	60
W3501000311	VME1-13 NC M5	54

UNIDIRECTIONAL ROLLER LEVER, 3/2 NC - SIDE FITTINGS



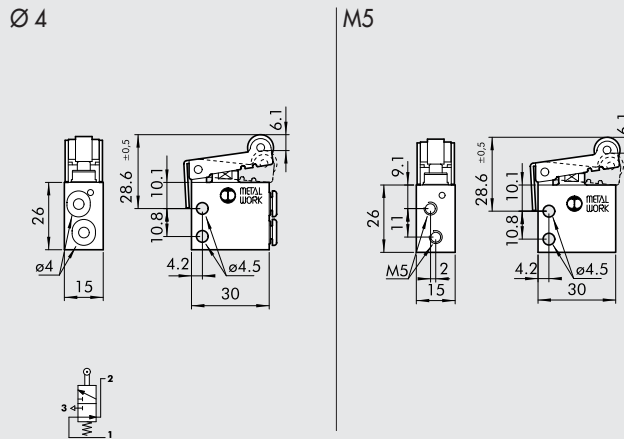
Code	Description	Weight [g]
W3501001301	VME2-03 NC Ø 4	52
W3501001311	VME2-13 NC M5	52

ROLLER LEVER, 3/2 NO - AXIAL FITTINGS



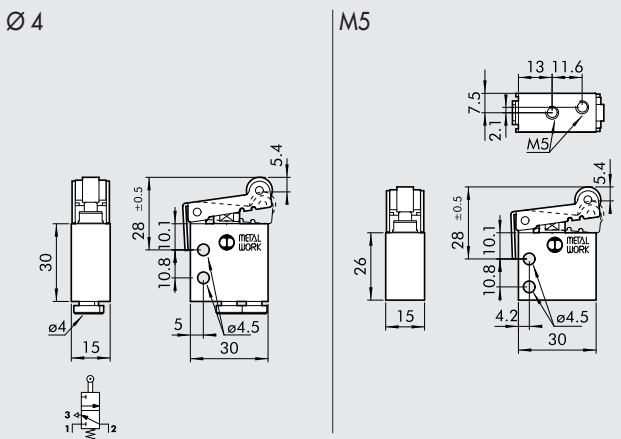
Code	Description	Weight [g]
W3501000201	VME1-05 NO Ø 4	58
W3501000210	VME1-15 NO M5	52

ROLLER LEVER, 3/2 NO - SIDE FITTINGS



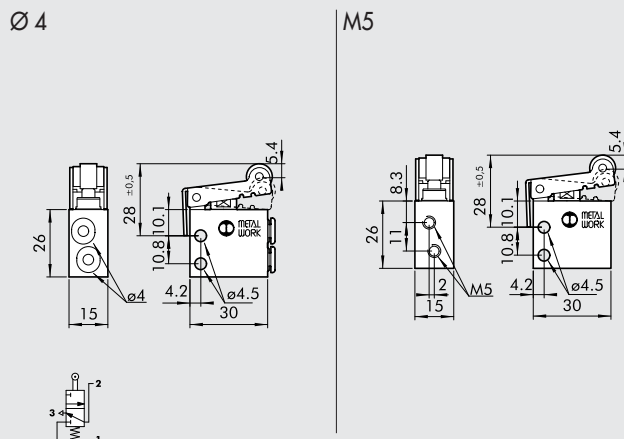
Code	Description	Weight [g]
W3501001200	VME2-05 NO Ø 4	50
W3501001210	VME2-15 NO M5	50

ROLLER LEVER, 3/2 NC - AXIAL FITTINGS



Code	Description	Weight [g]
W3501000200	VME1-02 NC Ø 4	56
W3501000211	VME1-12 NC M5	50

ROLLER LEVER, 3/2 NC - SIDE FITTINGS

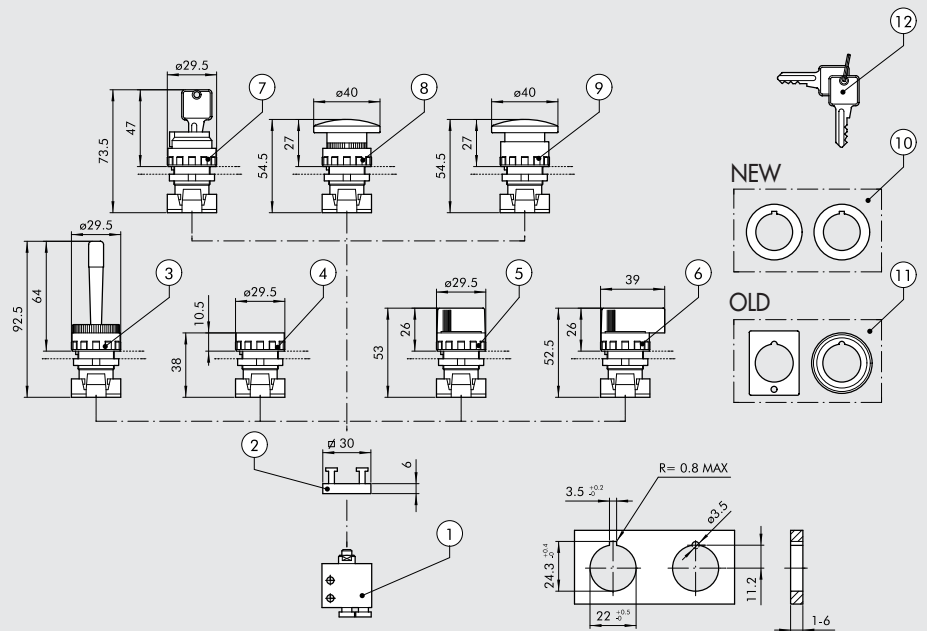


Code	Description	Weight [g]
W3501001201	VME2-02 NC Ø 4	52
W3501001211	VME2-12 NC M5	50












MANUAL VME VALVES – ASSEMBLY DIAGRAM

NOTES:

- For 5/2 pneumatic operation, assemble a 3/2 NC plunger valve and a 3/2 NO one on the adapter.
- For 5/3 pneumatic operation with open centres, assemble two 3/2 NC plunger valves on the adapter.
- For 5/3 pneumatic operation with pressure centres, assemble two 3/2 NO plunger valves on the adapter.



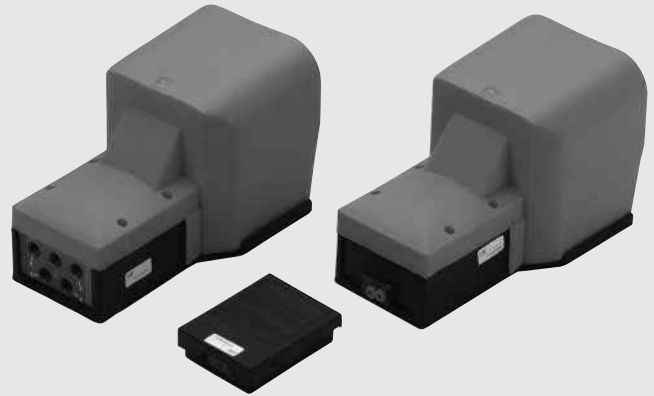
ORDERING CODES

Symbol	Reference	Code	Description	Weight [g]
	①	W3501000100	3/2 NC Axial fittings Ø 4	42
		W3501000111	3/2 NC Axial fittings M5	36
		W3501001101	3/2 NC Side fittings Ø 4	34
		W3501001111	3/2 NC Side fittings M5	34
	①	W3501000101	3/2 NO Axial fittings Ø 4	42
		W3501000110	3/2 NO Axial fittings M5	36
		W3501001100	3/2 NO Side fittings Ø 4	34
		W3501001110	3/2 NO Side fittings M5	34
	②	0351000050	2 places adaptor thickness 6.8 mm	5
	③	W0351000015	Red handler with horizontally pivoted lever	25
	④	W0351000011	Fat push button + 2 red/black coloured disks ◆ Bistable fat push button without disk	15
	⑤	W0351000030	Black selector short lever at 2 positions with return	20
		W0351000031	Black selector short lever at 2 positions	20
	⑤	W0351000032	Black selector short lever at 3 positions with return	20
		W0351000033	Black selector short lever at 3 positions	20
	⑥	W0351000034	Black selector long lever at 2 positions with return	26
		W0351000035	Black selector long lever at 2 positions	26
	⑥	W0351000036	Black selector long lever at 3 positions with return	26
		W0351000037	Black selector long lever at 3 positions	26
	⑦	W0351000016	2 positions key selector with extractable key in 2 positions	50
		W0351000018	2 positions key selector with extractable key in 0	50
	⑧	W0351000013	Red mushroom-head push button Ø 40	27
		W0351000017	Black mushroom-head push button Ø 40	27
	⑨	W0351000014	Red mushroom-head push button with lock Ø 40	29
◆ It can't be supplied. As working replaced by selector with bistable short lever at 2 positions ⑤.	⑩	W0351000049	✚ Reducer from 30 to 22.5 mm	
✚ Usable only with technopolymer body selectors.	⑪	W0351000050	▲ Adapter for bore Ø 30 G2326	
▲ Usable only with metal body selectors.	⑫	W0351000021	✚ Key for ESC selectors	
		W0351000056	Green disk for push button ④	

VALVES SERIES PEV PEDAL OPERATED

The valves series PEV with pedal are available in a wide range:

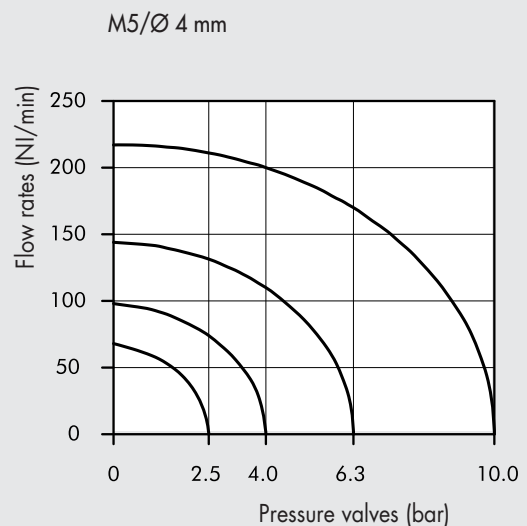
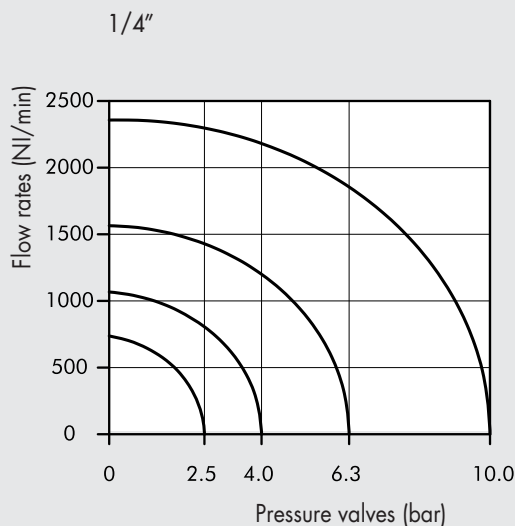
- 5/2 1/4" monostable and bistable with guarded pedal
- 3/2 M5 monostable, pedal not guarded
- 3/2 Ø 4 monostable, pedal not guarded
- 3/2 M5 in monostable and bistable configuration with guarded pedal
- 3/2 Ø 4 in monostable and bistable configuration with guarded pedal



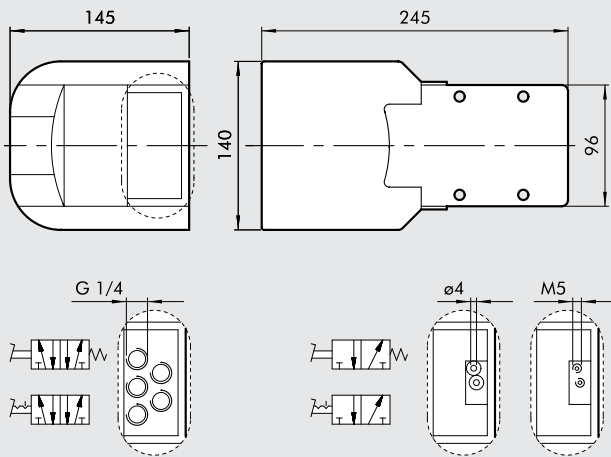
TECHNICAL DATA

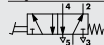

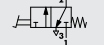
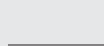
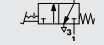

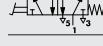
		Ø 4	M5	1/4"
Valve fitting port	Type	Mono/ bistable guarded Monostable not guarded	Monostable not guarded Mono/ bistable guarded	Mono/ bistable guarded -
Operating pressure	bar	2.5 to 10		
	Mpa	0.25 to 1		
	psi	36 to 145		
Operating temperature range	°C	-10 + 60		
Nominal diameter	mm	2.5	2.5	7.5
Conductance C	NI/min · bar	16.5	16.5	264.26
Critical ratio b	bar/bar	0.03	0.03	0.32
Flow rate at 6.3 bar ΔP 0.5 bar	NI/min	60	60	640
Flow rate at 6.3 bar ΔP 1 bar	NI/min	95	95	840
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous		
Compatibility with oils		Please refer to page 6-7 of the technical documentation		

FLOW CHARTS

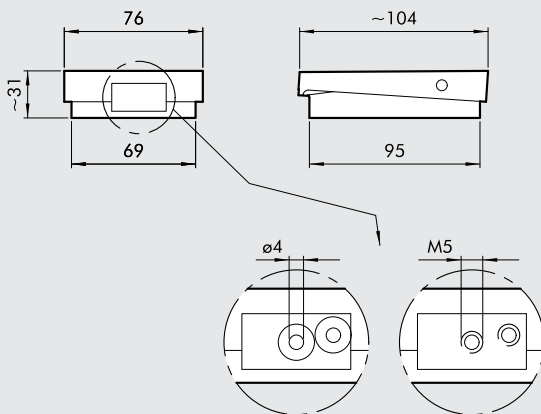


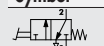
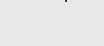
GUARDED PEDAL WITH VALVES 5/2 1/4" - 3/2 M5 - 3/2 Ø 4



Symbol	Code	Description	Abbrev.	Weight [g]
	W312000001	5/2 - 1/4" monostable, guarded	PEV 35 PES PR	1027
	W312000011	5/2 - 1/4" bistable, guarded	PEV 35 PEB PR	1035
	W3120000301	3/2 M5 monostable, guarded	PEV 03 PES PR	883
	W3120000321	3/2 Ø 4 monostable, guarded	PEV F3 PES PR	887
	W3120000331	3/2 M5 bistable, guarded	PEV 03 PEB PR	890
	W3120000311	3/2 Ø 4 bistable, guarded	PEV F3 PEB PR	914
	W3120000021	5/2 - 1/4" monostable, with mechanical block	PEV 35 PEC PR	1014

NOT-GUARDED PEDAL WITH VALVES 3/2 M5 - 3/2 Ø 4

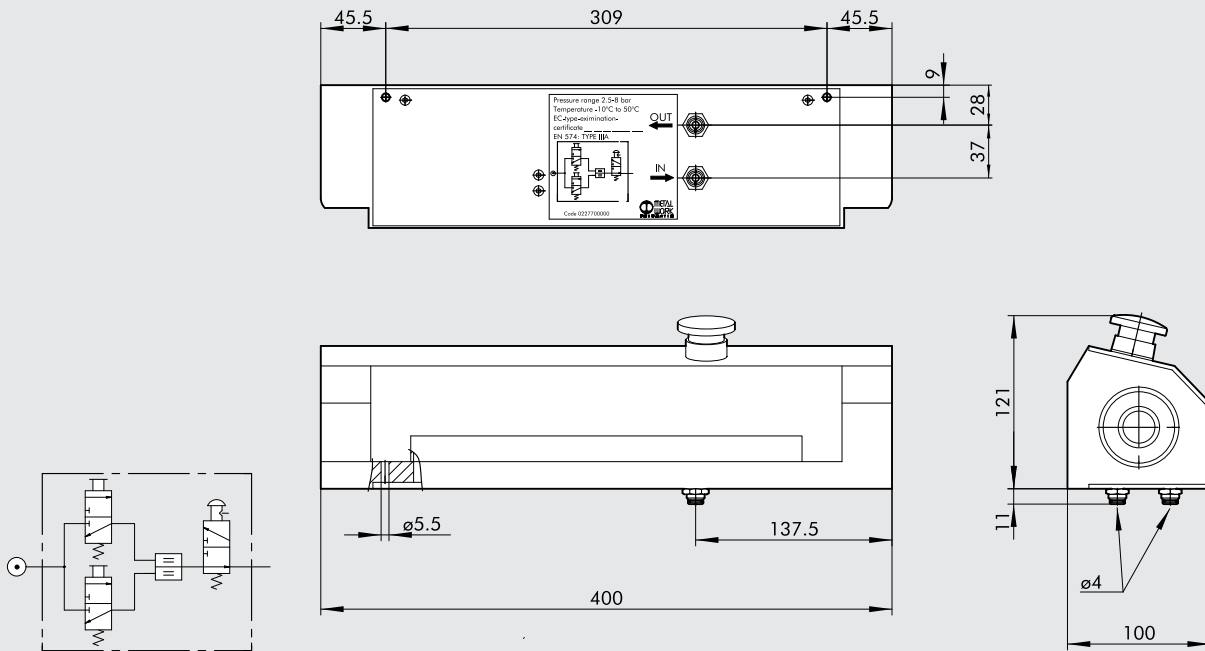


Symbol	Code	Description	Abbrev.	Weight [g]
	W3120000411	3/2 - M5 monostable, not guarded	PEV 03 PES WP	188
	W3120000401	3/2 Ø 4 monostable, not guarded	PEV F3 PES WP	192

KEY TO CODES

PEV FAMILY	F DIMENSIONS	3 FUNCTION	PE OPERATORS 14	C RESETTING (12)	WP FURTHER DETAILS
PEV valve with pedal	3 1/4 0 M5 F Ø 4	3 3/2 5 5/2	PE pedal operated	S mechanical springs C mechanical block B bistable	WP not guarded PR guarded

COMPLETE PUSHBUTTON PANEL



Code	Description
0227700000	Complete pushbutton panel

Materials

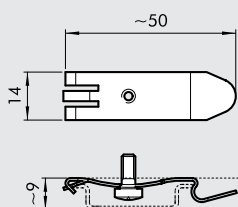
Pressure die-cast and painted aluminium alloy

MAIN COMPONENTS

Code	Description	Quantity
W3605000001	Dual manual safety valve	1
W0351000011	Monostable protected button - black disk	2
W0351000014	Emergency stop button	1
W3501000100	VME1-01 NC Ø 4	2
W3501001100	VME2-01 NO Ø 4	1
0351000050	Valve-button connecting base	3
2L11001	RL10 Ø 4	2

ACCESSORIES

CONNECTION BRACKETS ON THE BAR (DIN EN50022)

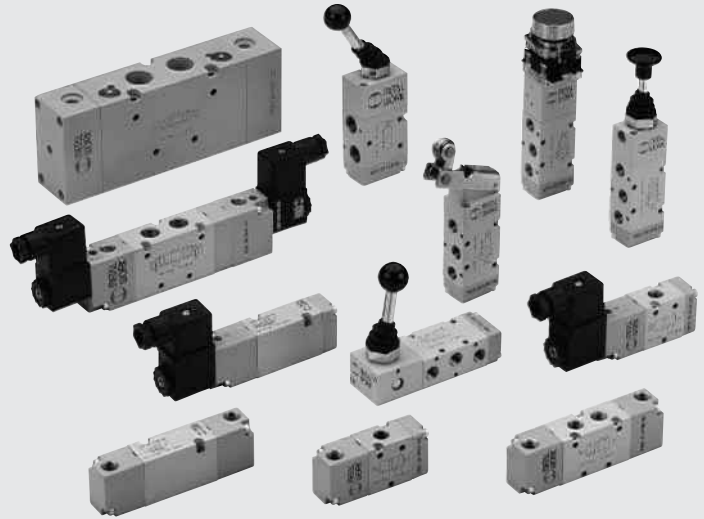


Code	Description
0227300600	Connection brackets on DIN bar

Individually packed

VALVES SERIES 70

This is Metal Work's full range. Available in three sizes: 1/8", 1/4", 1/2".
 Three versions: 3/2; 5/2; 5/3, four different types of actuation (mechanical, manual, pneumatic and electric).
 Series 70 valves can be used for a wide range of applications as they can be mounted in line, on the wall, on the cylinder using a special bracket, or in series on a multiple or manifold base.



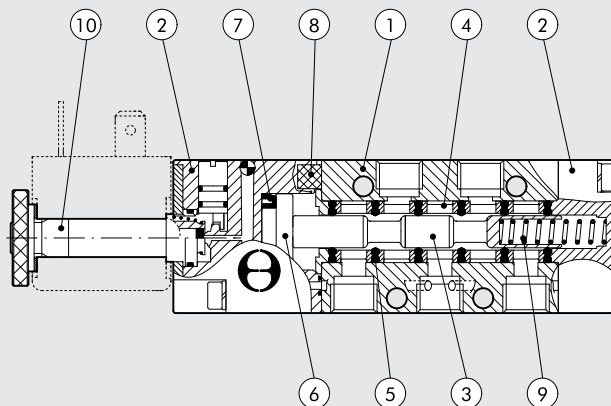
DISTRIBUTORS

VALVES SERIES 70

TECHNICAL DATA		1/8"	1/4"	1/2"
Thread on the valve ports		1/8"	1/4"	1/2"
Operating pressure:				
• monostable	bar		2.5 to 10	
• bistable	bar		1 to 10	
• asserved	bar		vacuum to 10	
Minimum pilot pressure	bar		2.5	
Operating temperature range	°C		-10 to +60	
Nominal diameter	mm	5	7.5	15
Conductance C	Nl/min · bar	121.43	264.26	971.43
Critical ratio b	bar/bar	0.32	0.27	0.43
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	400	750	3200
Flow rate at 6 bar ΔP 1 bar	Nl/min	550	1100	4600
Installation		In any position (vertical assembly is not recommended for bistable valves subjected to vibration)		
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous		
Recommended lubricant		ISO e UNI FD 22		
Maximum coil nut torque	Nm	1		
Compatibility with oils		Please refer to page 6-7 of the technical documentation		

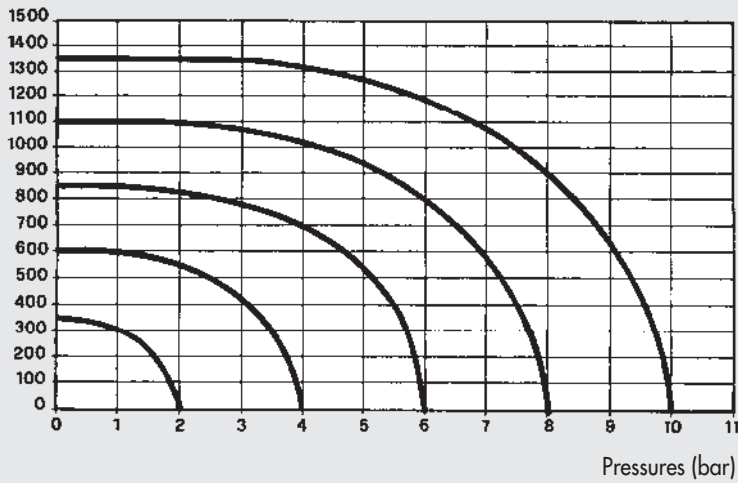
COMPONENTS

- ① VALVE BODY: Aluminium
- ② CONTROL/END CAP: HOSTAFORM®
- ③ SPOOL: chemically nickel-plated aluminium
- ④ DISTANCE PLATES: plastic
- ⑤ GASKETS: NBR
- ⑥ PISTONS: HOSTAFORM®
- ⑦ PISTON GASKET: NBR
- ⑧ FILTER: sintered bronze
- ⑨ SPRINGS: special steel
- ⑩ OPERATOR: Brass pipe - Stainless steel core



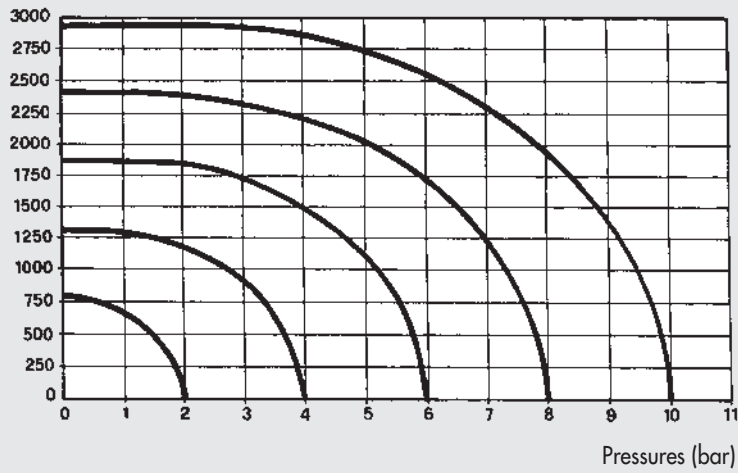
FLOW CHARTS

Flow rates (Nl/min)



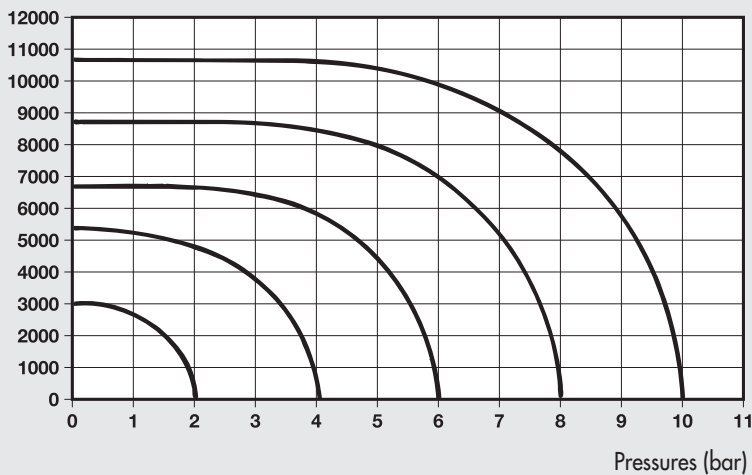
VALVES SERIES 70, 1/8"

Flow rates (Nl/min)



VALVES SERIES 70, 1/4"

Flow rates (Nl/min)



VALVES SERIES 70, 1/2"

VALVES SERIES 70, HAND OPERATED

TECHNICAL DATA		1/8"	1/4"	1/2"
Operating pressure range:				
• version with direct control	bar	Vacuum to 10		
• pilot-assisted version	bar	2.5 to 10		
Operating temperature range		°C -10 to +60		
Nominal diameter		mm 5	7.5	15
Conductance C		Nl/min · bar 121.43	264.26	971.43
Critical ratio b		bar/bar 0.32	0.27	0.43
Flow rate at 6 bar ΔP 0.5 bar		Nl/min 400	750	3200
Flow rate at 6 bar ΔP 1 bar		Nl/min 550	1100	4600



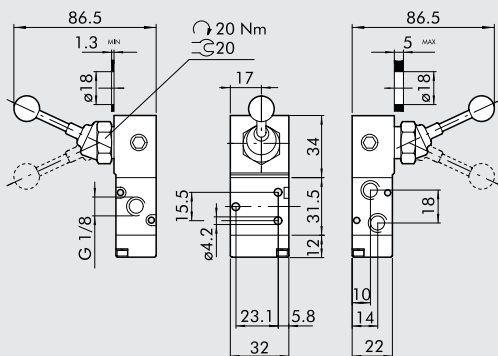
KEY TO CODES

M A V	2	3	PP	S	N C
FAMILY	DIMENSIONS	FUNCTION	OPERATORS 14	RESETTING (12)	FURTHER DETAILS
MAV manual valves	2 1/8"	3 3/2	PP drawer	A pneumatic/mechanical springs*	NC normally closed
	3 1/4"	5 5/2	VL axial lever	S mechanical springs*	NO normally open
	4 1/2"	6 5/3	LE 90° lever	B bistable	OO no indication
		8 2 x 3/2	LE 90° lever arranged for manual panel actuators	D differential	CC closed centres
			BRE	O stable for 5/3	OC open centres
					PC pressure centres

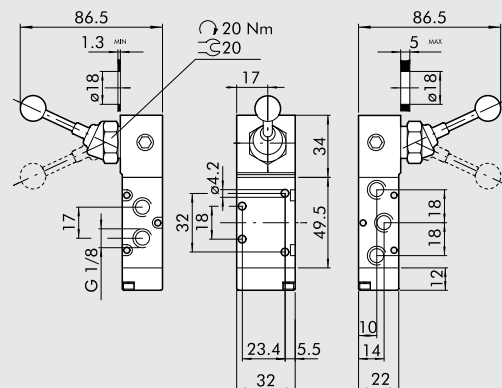
*on demand

VALVES SERIES 70, HAND OPERATED, 1/8"

90° LEVER 3/2 1/8"



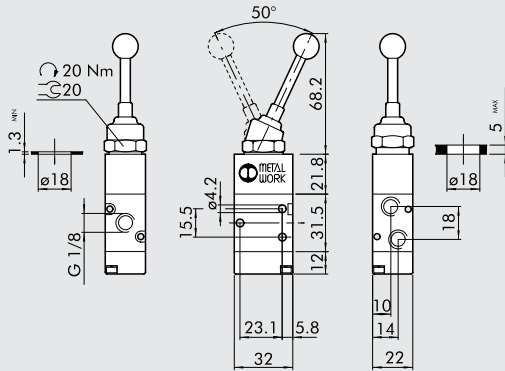
90° LEVER 3/2 1/8"




Symbol	Code	Abbrev.	Weight [g]
	7010000100	MAV 23 LES NC	168
	7010000200	MAV 23 LEB OO	171

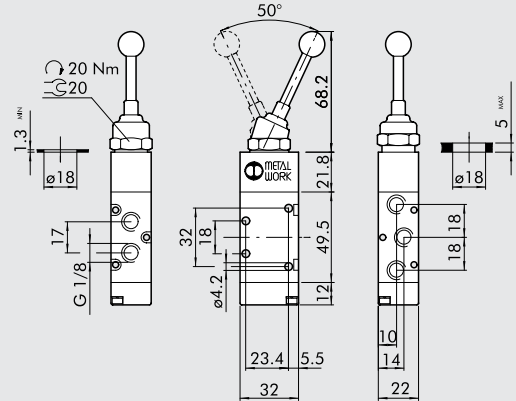
Symbol	Code	Abbrev.	Weight [g]
	7010000300	MAV 25 LES OO	194
	7010000400	MAV 25 LEB OO	197


FRONT LEVER 3/2, 1/8"



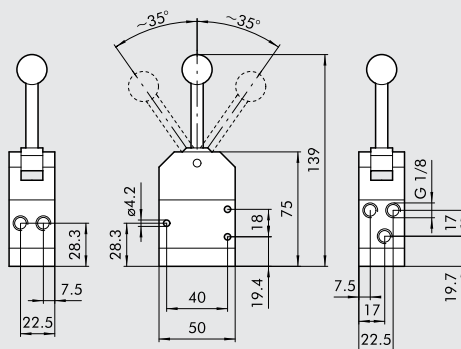
Symbol	Code	Abbrev.	Weight [g]
	7010001400	MAV 23 VLB OO	130

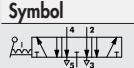

FRONT LEVER 5/2, 1/8"



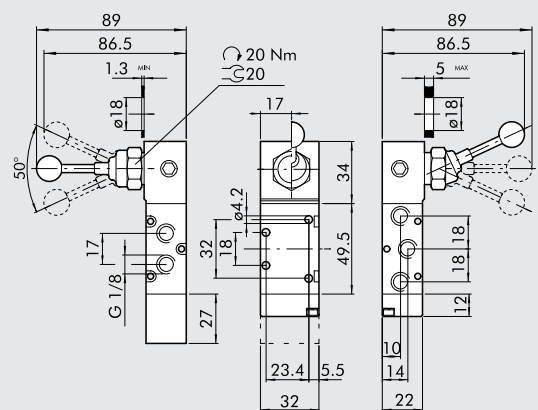
Symbol	Code	Abbrev.	Weight [g]
	7010001700	MAV 25 VLB OO	156

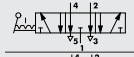
FRONT LEVER 5/3, 1/8"



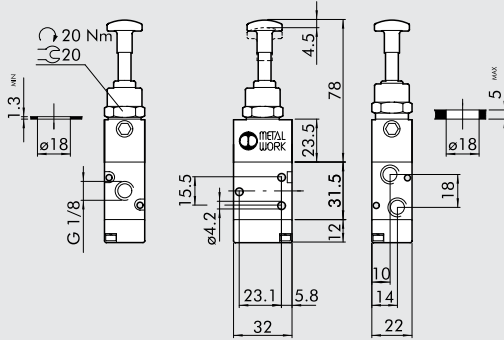
Symbol	Code	Abbrev.	Weight [g]
	7010001150	MAV 28 VLO OC	316
	7010001160	MAV 28 VLS OC	325

ANGULAR LEVER 5/3, 1/8"



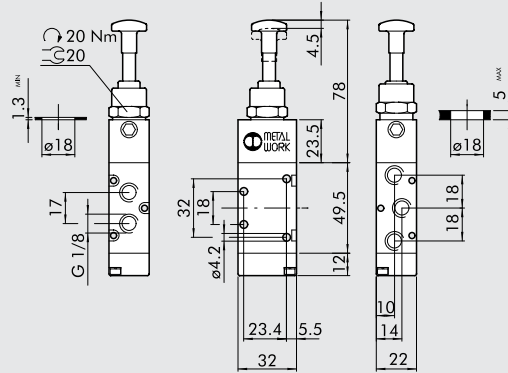
Symbol	Code	Abbrev.	Weight [g]
	7010001000	MAV 26 LES CC	242
	7010000900	MAV 26 LES OC	242
	7010001100	MAV 26 LES PC	242
	7010000500	MAV 26 LEO CC	194
	7010000600	MAV 26 LEO OC	194
	7010000700	MAV 26 LEO PC	194

DRAWER 3/2, 1/8"



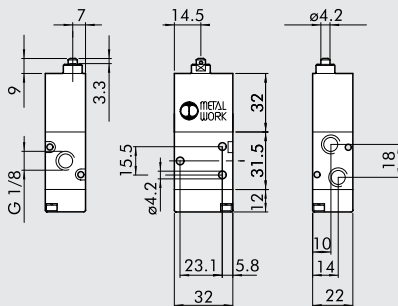
Symbol	Code	Abbrev.	Weight [g]
	7010001300	MAV 23 PPB OO	134
	7010001200	MAV 23 PPS NC	134

DRAWER 5/2, 1/8"



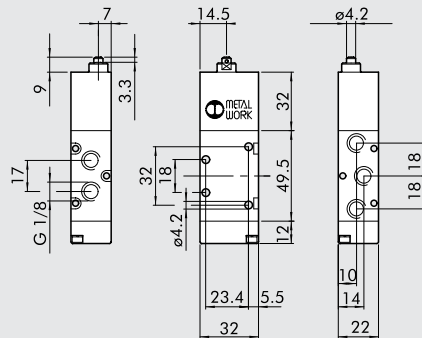
Symbol	Code	Abbrev.	Weight [g]
	7010001600	MAV 25 PPB OO	160
	7010001500	MAV 25 PPS OO	160

PILOT-ASSISTED PLUNGER 3/2 1/8" FOR PANEL ACTUATORS



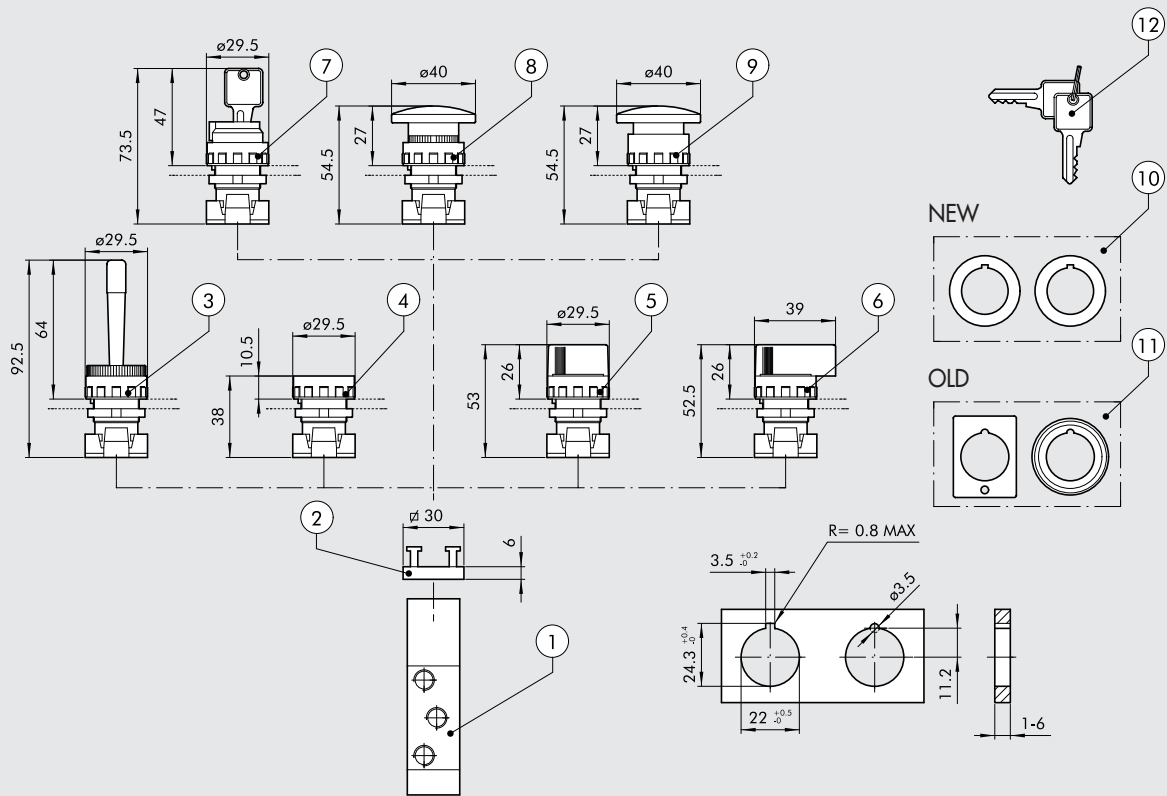
Symbol	Code	Abbrev.	Weight [g]
	7010001800	MAV 23 BRE NC	124

PILOT-ASSISTED PLUNGER 5/2 1/8" FOR PANEL ACTUATORS




















Symbol	Code	Abbrev.	Weight [g]
	7010001900	MAV 25 BRE OO	150

ASSEMBLY DIAGRAM FOR PILOT-ASSISTED HAND-OPERATED VALVES SERIES 70 WITH PANEL ACTUATORS

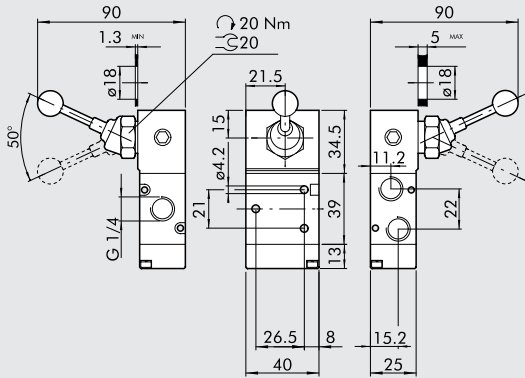


ORDERING CODES

Symbol	Reference	Code	Description	Weight [g]
	①	7010001800	Pilot-assisted plunger 3/2, 1/8"	124
	①	7010001900	Pilot-assisted plunger 5/2, 1/8"	150
	②	0351000050	2 places adaptor thickness 6.8 mm	5
	③	W0351000015	Red handler with horizontally pivoted lever	25
	④	W0351000011	Fat push button + 2 red/black coloured disks ◆ Bistable fat push button without disk	15
	⑤	W0351000030	Black selector short lever at 2 positions with return	20
		W0351000031	Black selector short lever at 2 positions	20
	⑤	W0351000032	Black selector short lever at 3 positions with return	20
		W0351000033	Black selector short lever at 3 positions	20
	⑥	W0351000034	Black selector long lever at 2 positions with return	26
		W0351000035	Black selector long lever at 2 positions	26
	⑥	W0351000036	Black selector long lever at 3 positions with return	26
		W0351000037	Black selector long lever at 3 positions	26
	⑦	W0351000016	2 positions key selector with extractable key in 2 positions	50
		W0351000018	2 positions key selector with extractable key in 0	50
	⑧	W0351000013	Red mushroom-head push button Ø 40	27
		W0351000017	Black mushroom-head push button Ø 40	27
	⑨	W0351000014	Red mushroom-head push button with lock Ø 40	29
◆ It can't be supplied. As working replaced by selector with bistable short lever at 2 positions ⑤.	⑩	W0351000049	✚ Reducer from 30 to 22.5 mm	
✚ Usable only with technopolymer body selectors.	⑪	W0351000050	▲ Adapter for bore Ø 30 G2326	
▲ Usable only with metal body selectors.	⑫	W0351000021	✚ Key for ESC selectors	
		W0351000056	Green disk for push button ④	

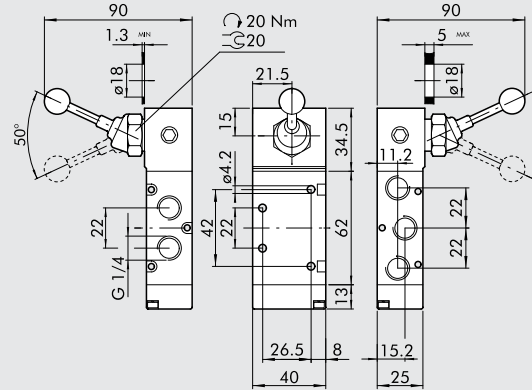
VALVES SERIES 70, HAND-OPERATED, 1/4"

90° LEVER 3/2, 1/4"



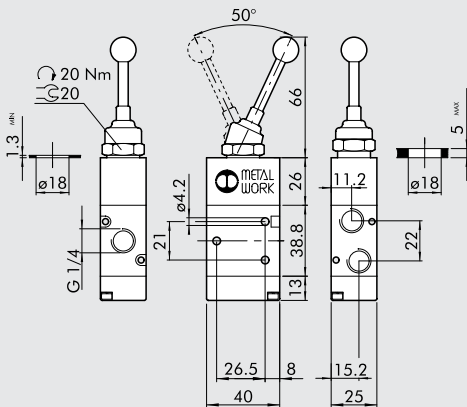
Symbol	Code	Abbrev.	Weight [g]
	7020000100	MAV 33 LES NC	244
	7020000200	MAV 33 LEB OO	244

90° LEVER 5/2, 1/4"



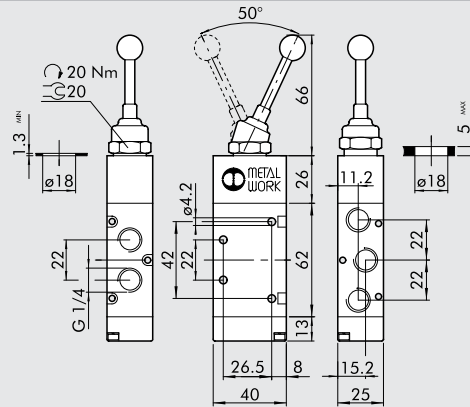
Symbol	Code	Abbrev.	Weight [g]
	7020000300	MAV 35 LES OO	290
	7020000400	MAV 35 LEB OO	290

FRONT LEVER 3/2, 1/4"



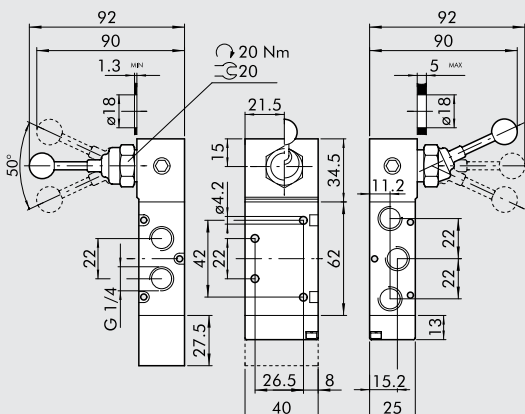
Symbol	Code	Abbrev.	Weight [g]
	7020001400	MAV 33 VLB OO	194

FRONT LEVER 5/2, 1/4"



Symbol	Code	Abbrev.	Weight [g]
	7020001700	MAV 35 VLB OO	244

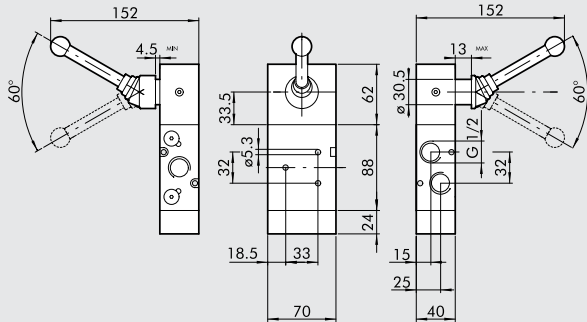
90° LEVER 5/3, 1/4"





Symbol	Code	Abbrev.	Weight [g]
	7020001000	MAV 36 LES CC	354
	7020000900	MAV 36 LES OC	354
	7020001100	MAV 36 LES PC	354
	7020000500	MAV 36 LEO CC	288
	7020000600	MAV 36 LEO OC	288
	7020000700	MAV 36 LEO PC	288

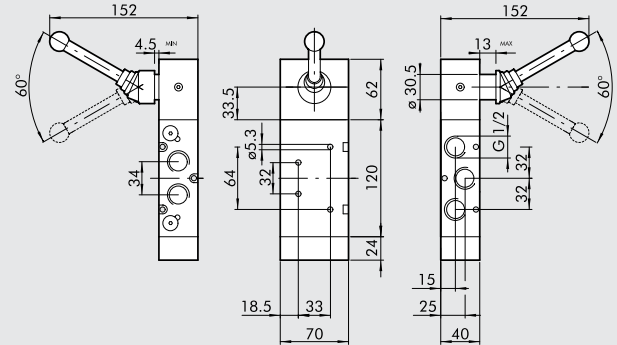
VALVES SERIES 70, HAND OPERATED, 1/2"



90° LEVER 3/2, 1/2"



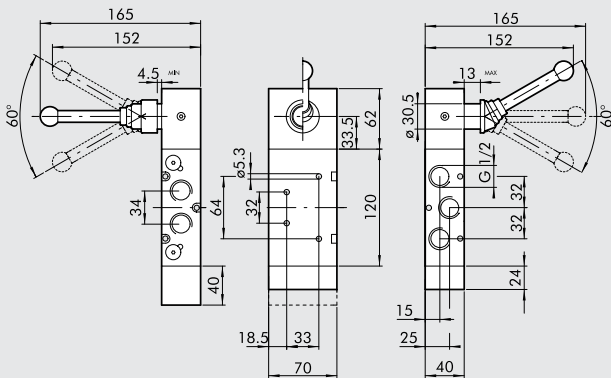
Symbol	Code	Abbrev.	Weight [g]
	7030000100	MAV 43 LES NC	1443
	7030000200	MAV 43 LEB OO	1435

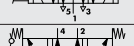
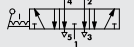
90° LEVER 5/2, 1/2"



Symbol	Code	Abbrev.	Weight [g]
	7030000300	MAV 45 LES OO	1588
	7030000400	MAV 45 LEB OO	1630

90° LEVER 5/3, 1/2"



Symbol	Code	Abbrev.	Weight [g]
	7030001000	MAV 46 LES CC	1810
	7030000900	MAV 46 LES OC	1800
	7030001100	MAV 46 LES PC	1800
	7030000500	MAV 46 LEO CC	1615
	7030000600	MAV 46 LEO OC	1605
	7030000700	MAV 46 LEO PC	1605

NOTES

VALVES SERIES 70, MECHANICALLY OPERATED, 1/8"

TECHNICAL DATA

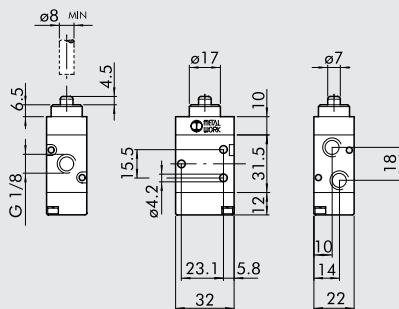
Thread at valve ports		1/8"
Operation force at 6 bar:		
• version with direct control	N	50
• pilot-assisted version	N	6
Operating pressure:		
• version with direct control	bar	Vacuum to 10
• pilot-assisted version	bar	2.5 to 10
Operating temperature range	°C	-10 to +60
Nominal diameter	mm	5
Conductance C	Nl/min · bar	121.43
Critical ratio b	bar/bar	0.32
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	400
Flow rate at 6 bar ΔP 1 bar	Nl/min	550



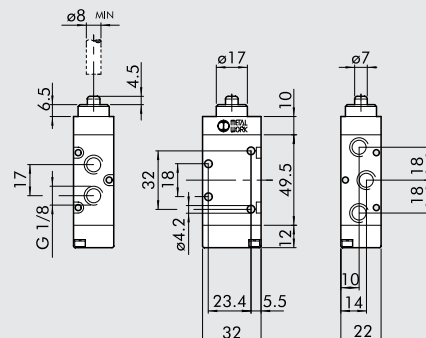
KEY TO CODES

M E V		2		3		T A		S		N C	
FAMILY		DIMENSIONS		FUNCTION		OPERATORS 14		RESETTING (12)		FURTHER DETAILS	
MEV	mechanically-operated valves	2	1/8"	3	3/2	TA	plunger	S	mechanical springs	NC	normally closed
				5	5/2	BR	bidirectional roller	A	pneumatic/mechanical spring*	OO	5/2
						UR	unidirectional roller				
						TS	sensitive plunger				
						RS	sensitive roller				
						AS	sensitive aeral				
						LL	frontal roller lever				
									*on demand		

PLUNGER 3/2, 1/8"



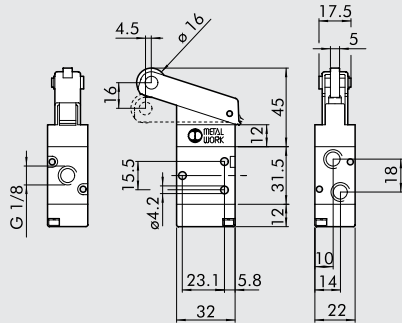
PLUNGER 5/2, 1/8"




Symbol	Code	Abbrev.	Weight [g]
	7001000100	MEV 23 TAS NC	88

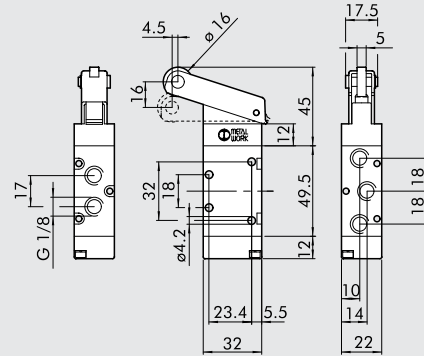
Symbol	Code	Abbrev.	Weight [g]
	7001000110	MEV 25 TAS OO	114


ROLLER LEVER 3/2, 1/8"



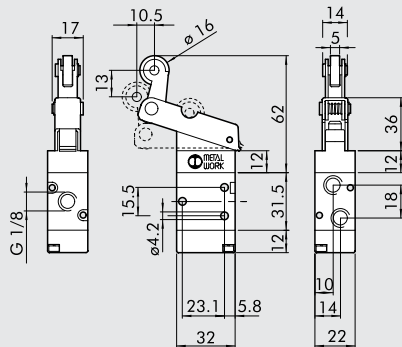
Symbol	Code	Abbrev.	Weight [g]
	7001000500	MEV 23 BRS NC	130

ROLLER LEVER 5/2, 1/8"



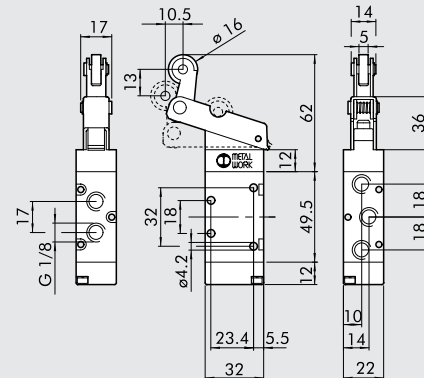
Symbol	Code	Abbrev.	Weight [g]
	7001000510	MEV 25 BRS OO	156


UNIDIRECTIONAL ROLLER 3/2, 1/8" LEVERS



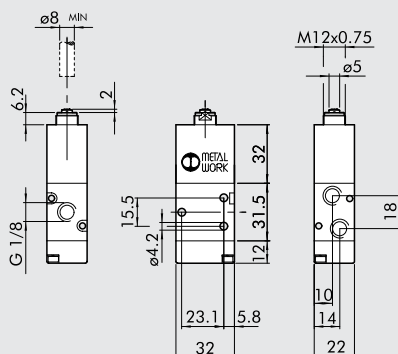
Symbol	Code	Abbrev.	Weight [g]
	7001000600	MEV 23 URS NC	136

UNIDIRECTIONAL ROLLER 5/2, 1/8" LEVERS



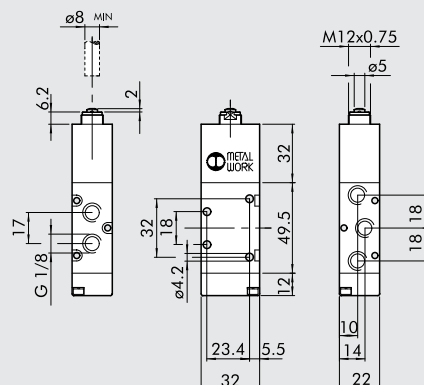
Symbol	Code	Abbrev.	Weight [g]
	7001000610	MEV 25 URS OO	162


PILOT-ASSISTED PLUNGER 3/2 NC, 1/8"



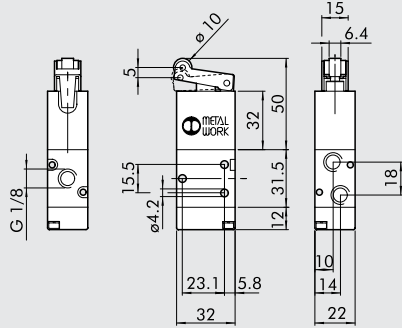
Symbol	Code	Abbrev.	Weight [g]
	7001000200	MEV 23 TSS NC	126

PILOT-ASSISTED PLUNGER 5/2, 1/8"



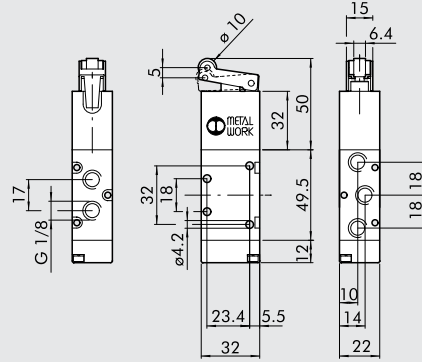
Symbol	Code	Abbrev.	Weight [g]
	7001000210	MEV 25 TSS OO	152

PILOT-ASSISTED ROLLER LEVER 3/2 NC, 1/8"



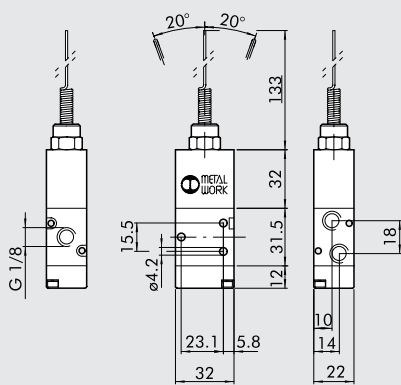
Symbol	Code	Abbrev.	Weight [g]
	7001000400	MEV 23 RSS NC	138

PILOT-ASSISTED ROLLER LEVER 5/2, 1/8"



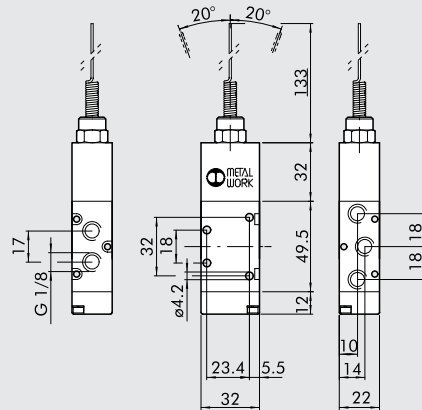
Symbol	Code	Abbrev.	Weight [g]
	7001000410	MEV 25 RSS OO	164

PILOT-ASSISTED AERIAL 3/2 NC, 1/8"



Symbol	Code	Abbrev.	Weight [g]
	7001000700	MEV 23 ASS NC	142

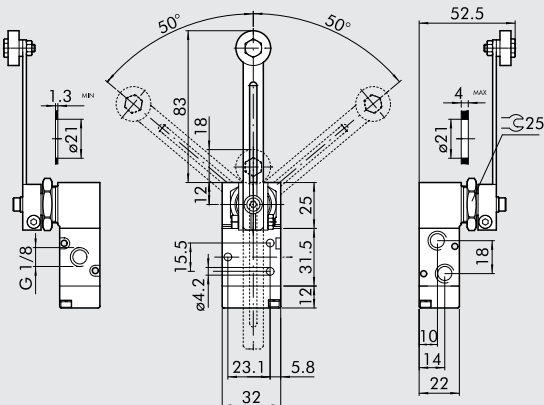
PILOT-ASSISTED AERIAL 5/2 NC, 1/8"



Symbol	Code	Abbrev.	Weight [g]
	7001000710	MEV 25 ASS OO	168

ROLLER-LEVER 3/2 1/8"

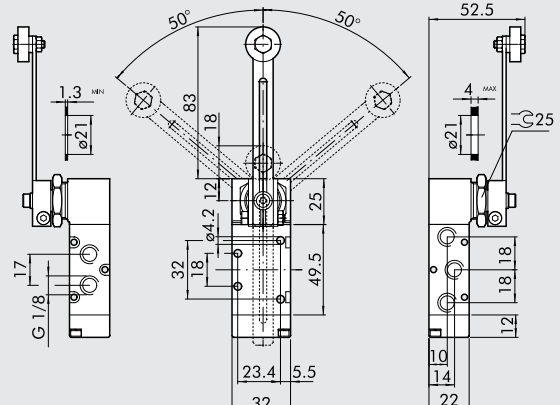
Operating torque: 0.5 Nm



Symbol	Code	Abbrev.	Weight [g]
	7001000900	MEV 23 LLS NC	189

ROLLER-LEVER 5/2 1/8"

Operating torque: 0.5 Nm



Symbol	Code	Abbrev.	Weight [g]
	7001000910	MEV 25 LLS OO	216

VALVES SERIES 70, PNEUMATIC

TECHNICAL DATA		1/8"	1/4"	1/2"
Operating pressure	bar	Vacuum to 10		
Minimum pilot pressure				
• monostable	bar	2.5		
• bistable	bar	1		
Operating temperature range	°C	-10 to +60		
Nominal diameter	mm	5	7.5	15
Conductance C	Nl/min · bar	121.43	264.26	971.43
Critical ratio b	bar/bar	0.32	0.27	0.43
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	400	750	3200
Flow rate at 6 bar ΔP 1 bar	Nl/min	550	1100	4600
TRA / TRR monostable at 6 bar	ms	6/15	7/15	16/46
TRA / TRR bistable at 6 bar	ms	7/7	7/7	16/16

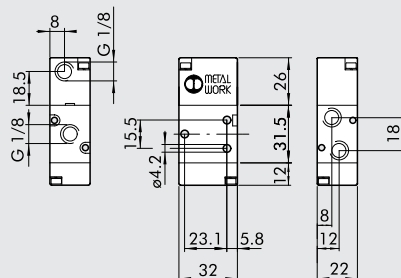


KEY TO CODES

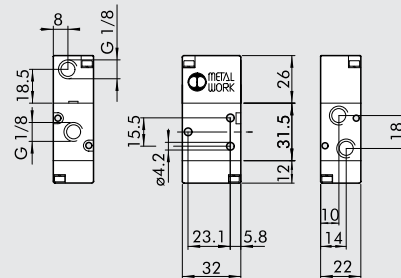
P N V	2	3	P N	S	N C
FAMILY	DIMENSIONS	FUNCTION	OPERATORS 14	RESETTING (12)	FURTHER DETAILS
PNV pneumatic valves	2 1/8"	3 3/2	PN pneumatic	S mechanical springs	OO 5/2
	3 1/4"	5 5/2		B bistable	NC normally closed
	4 1/2"	6 5/3		D differential	NO normally open
				O stable for 5/3	CC closed centres
				A pneumatic/mechanical spring*	OC open centres
				*on demand	PC pressure centres


VALVES SERIES 70, PNEUMATIC, 1/8"


MONOSTABLE 3/2 NO, 1/8"



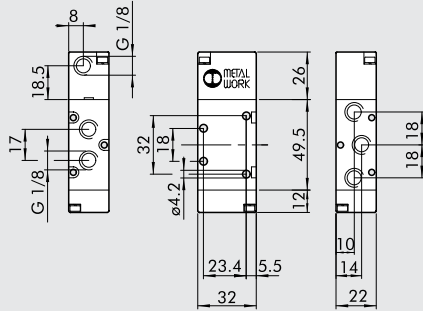
MONOSTABLE 3/2 NC, 1/8"



Symbol	Code	Abbrev.	Weight [g]
	7010010400	PNV 23 PNS NO	82

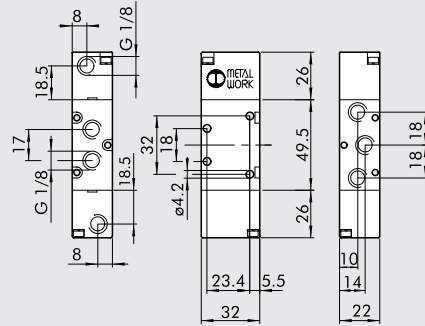
Symbol	Code	Abbrev.	Weight [g]
	7010010200	PNV 23 PNS NC	82

MONOSTABLE 5/2, 1/8"



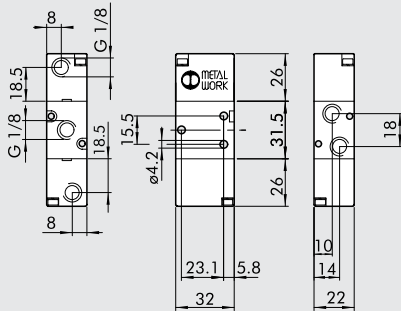
Symbol	Code	Abbrev.	Weight [g]
	7010011100	PNV 25 PNS OO	108

BISTABLE 5/2, 1/8"



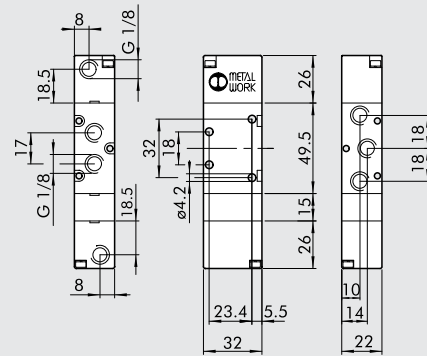
Symbol	Code	Abbrev.	Weight [g]
	7010011200	PNV 25 PNB OO	122
	7010011300	PNV 25 PND OO	128

BISTABLE 3/2, 1/8"



Symbol	Code	Abbrev.	Weight [g]
	7010010100	PNV 23 PNB OO	96

MONOSTABLE 5/3, 1/8"

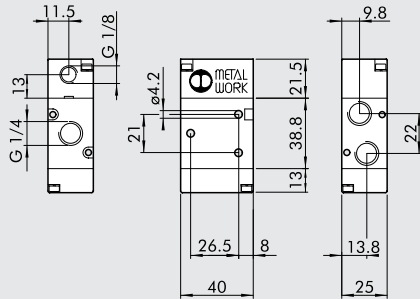



Symbol	Code	Abbrev.	Weight [g]
	7010012100	PNV 26 PNS CC	150
	7010012200	PNV 26 PNS OC	150
	7010012300	PNV 26 PNS PC	150

NOTES

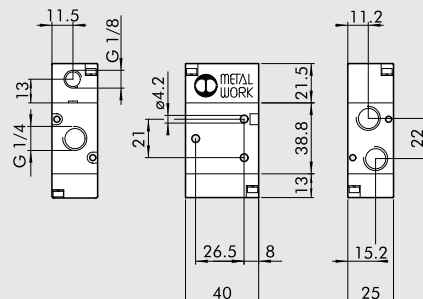
VALVES SERIES 70, PNEUMATIC, 1/4"


MONOSTABLE 3/2 NO, 1/4"



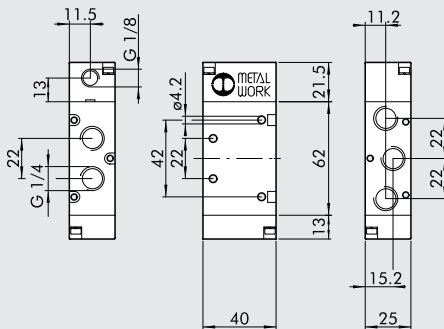
Symbol	Code	Abbrev.	Weight [g]
	7020010400	PNV 33 PNS NO	124


MONOSTABLE 3/2 NC, 1/4"



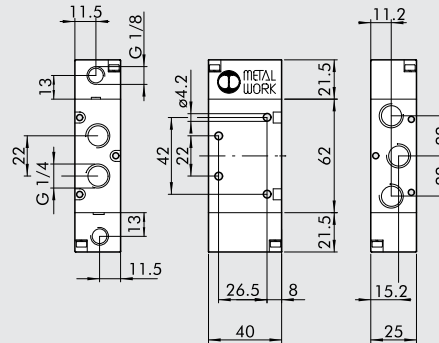
Symbol	Code	Abbrev.	Weight [g]
	7020010200	PNV 33 PNS NC	122



MONOSTABLE 5/2, 1/4"



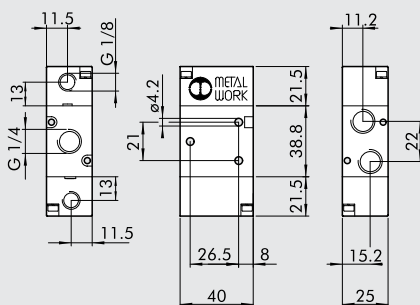
Symbol	Code	Abbrev.	Weight [g]
	7020011100	PNV 35 PNS OO	174


BISTABLE 5/2, 1/4"



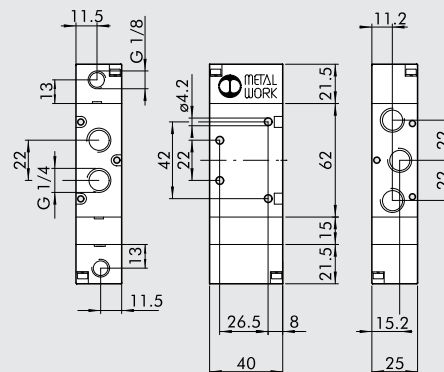
Symbol	Code	Abbrev.	Weight [g]
	7020011200	PNV 35 PNB OO	174
	7020011300	PNV 35 PND OO	198




BISTABLE 3/2, 1/4"



Symbol	Code	Abbrev.	Weight [g]
	7020010100	PNV 33 PNB OO	134

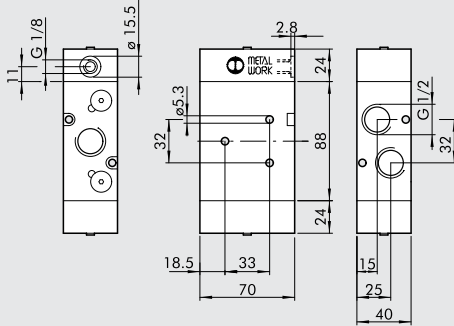
MONOSTABLE 5/3, 1/4"



Symbol	Code	Abbrev.	Weight [g]
	7020012100	PNV 36 PNS CC	124
	7020012200	PNV 36 PNS OC	124
	7020012300	PNV 36 PNS PC	124

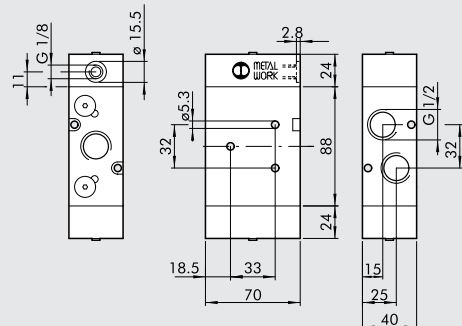
VALVES SERIES 70, PNEUMATIC, 1/2"

MONOSTABLE 3/2 NO, 1/2"



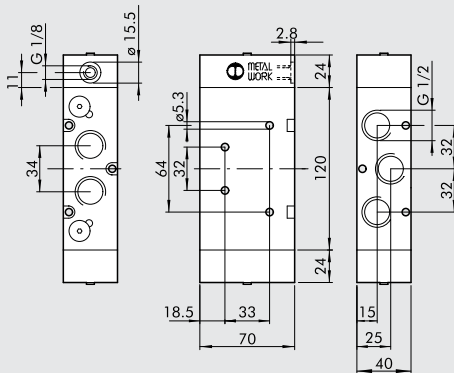
Symbol	Code	Abbrev.	Weight [g]
	7030010400	PNV 43 PNS NO	905

MONOSTABLE 3/2 NC, 1/2"



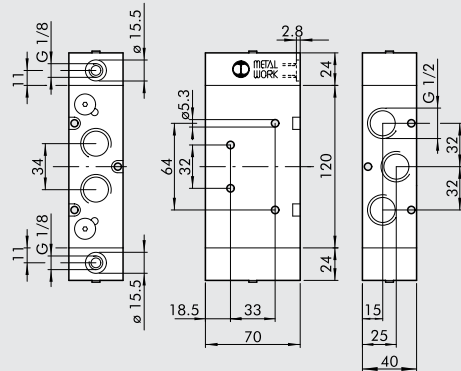
Symbol	Code	Abbrev.	Weight [g]
	7030010200	PNV 43 PNS NC	905

MONOSTABLE 5/2, 1/2"



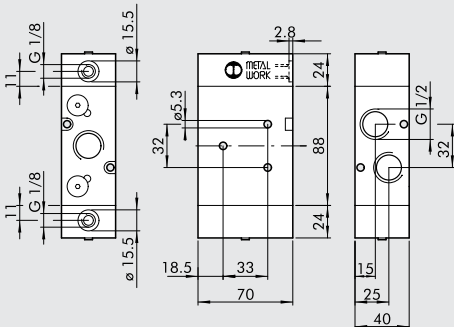
Symbol	Code	Abbrev.	Weight [g]
	7030011100	PNV 45 PNS OO	1090

BISTABLE 5/2, 1/2"



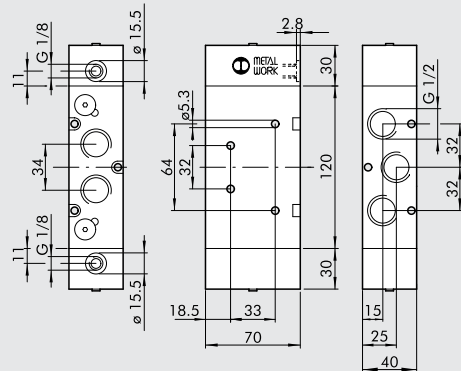
Symbol	Code	Abbrev.	Weight [g]
	7030011200	PNV 45 PNB OO	1077
	7030011300	PNV 45 PND OO	1090

BISTABLE 3/2, 1/2"



Symbol	Code	Abbrev.	Weight [g]
	7030010100	PNV 43 PNB OO	921

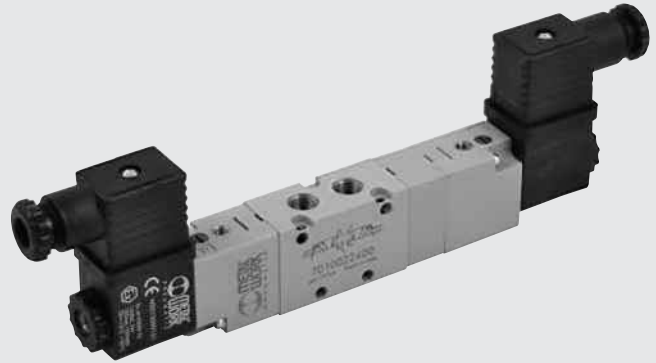
MONOSTABLE 5/3, 1/2"



Symbol	Code	Abbrev.	Weight [g]
	7030012100	PNV 46 PNS CC	1200
	7030012200	PNV 46 PNS OC	1194
	7030012300	PNV 46 PNS PC	1196

VALVES SERIES 70, SOLENOID/PNEUMATIC

TECHNICAL DATA	1/8"	1/4"	1/2"
Operating pressure:			
• monostable	bar	2.5 to 10	
• bistable	bar	1 to 10	
• asserved	bar	Vacuum to 10	
Minimum pilot pressure	bar	2.5	
Operating temperature range	°C	-10 to +60	
Nominal diameter	mm	5	7.5
Conductance C	Nl/min · bar	121.43	264.26
Critical ratio b	bar/bar	0.32	0.27
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	400	750
Flow rate at 6 bar ΔP 1 bar	Nl/min	550	1100
TRA / TRR monostable at 6 bar	ms	15/35	19/45
TRA / TRR bistable at 6 bar	ms	20/20	21/21
Hand operation		bistable	
Coil voltage values		24VDC to 24VAC to 110VAC to 220VAC 50/60Hz	
Power		2 W (DC) 3VA (AC)	2 W (DC) 3VA (AC) 5W (DC) 5VA (AC)
Voltage tolerance	%	-10 to +15	
Insulation class		F 155	
Maximum coil nut torque	Nm	1	



DISTRIBUTORS

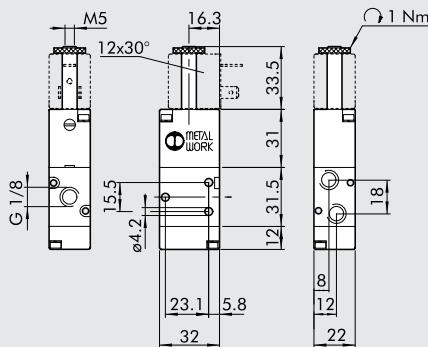
KEY TO CODES

SOV	2	3	SO	S	NC
FAMILY	DIMENSIONS	FUNCTION	OPERATORS 14	RESETTING (12)	FURTHER DETAILS
SOV solenoid/pneumatic	3 1/8" 2 1/4" 4 1/2"	3 3/2 5 5/2 6 5/3	SO solenoid SE solenoid assisted	S mechanical springs B bistable D differential P pneumatic A pneumatic/mechanical spring*	NC normally closed NO normally open CC closed centres OC open centres PC pressure centres OO 5/2
				*on demand	

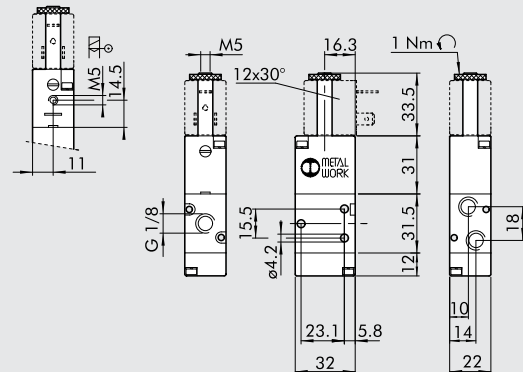
VALVES SERIES 70, SOLENOID/PNEUMATIC

VALVES SERIES 70, SOLENOID/PNEUMATIC-PILOT-ASSISTED SOLENOID/PNEUMATIC, 1/8"

MONOSTABLE 3/2 NO, 1/8"




MONOSTABLE 3/2 NC, 1/8"

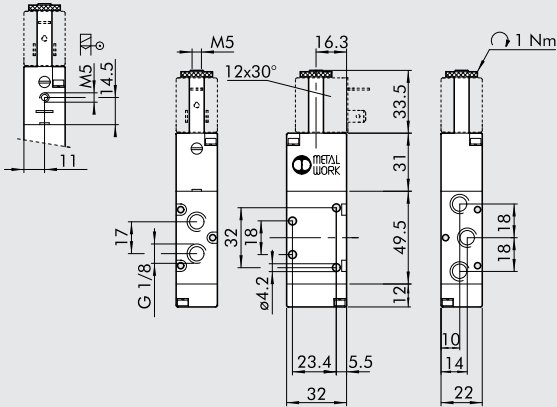


Symbol	Code	Abbrev.	Weight [g]
	7010020400	SOV 23 SOS NO	100

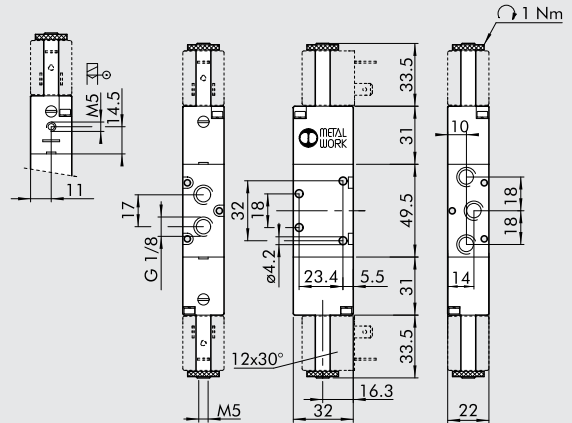
Symbol	Code	Abbrev.	Weight [g]
	7010020200	SOV 23 SOS NC	100

	7010020500	SOV 23 SES NC	100
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MONOSTABLE 5/2, 1/8"



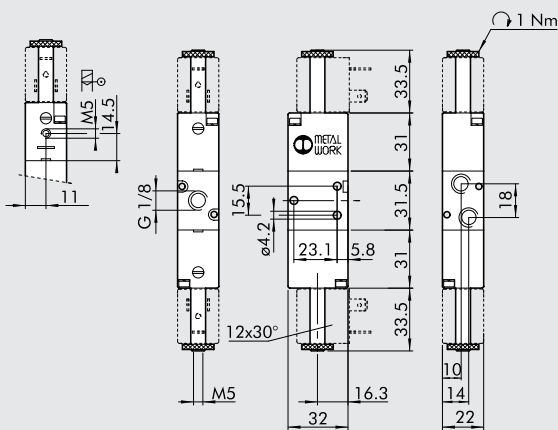
BISTABLE 5/2, 1/8"



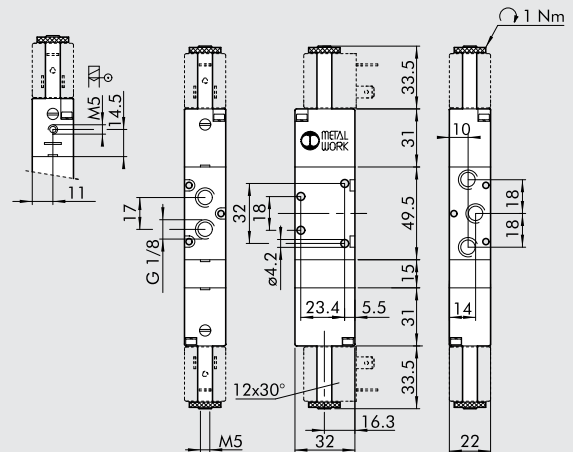
Symbol	Code	Abbrev.	Weight [g]
	7010021100	SOV 25 SOS OO	128
	7010021500	SOV 25 SES OO	129

Symbol	Code	Abbrev.	Weight [g]
	7010021200	SOV 25 SOB OO	160
	7010021300	SOV 25 SOD OO	166
	7010021600	SOV 25 SEB OO	160

BISTABLE 3/2, 1/8"



MONOSTABLE 5/3, 1/8"

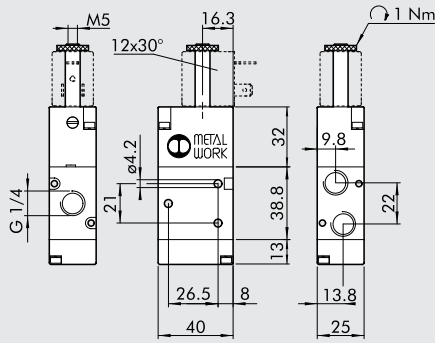


Symbol	Code	Abbrev.	Weight [g]
	7010020100	SOV 23 SOB OO	135
	7010020300	SOV 23 SEB OO	136

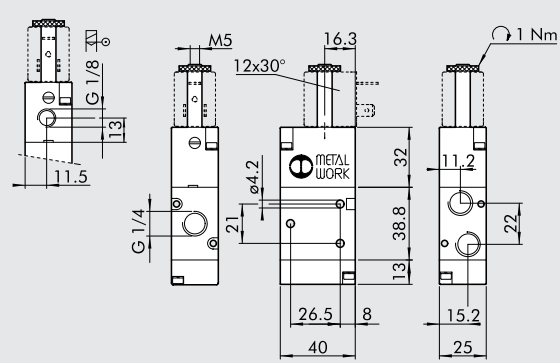
Symbol	Code	Abbrev.	Weight [g]
	7010022100	SOV 26 SOS CC	190
	7010022200	SOV 26 SOS OC	190
	7010022300	SOV 26 SOS PC	190
	7010022400	SOV 26 SES CC	188
	7010022500	SOV 26 SES OC	188
	7010022600	SOV 26 SES PC	188

VALVES SERIES 70, SOLENOID/PNEUMATIC-PILOT-ASSISTED SOLENOID/ PNEUMATIC, 1/4"



MONOSTABLE 3/2 NO, 1/4"



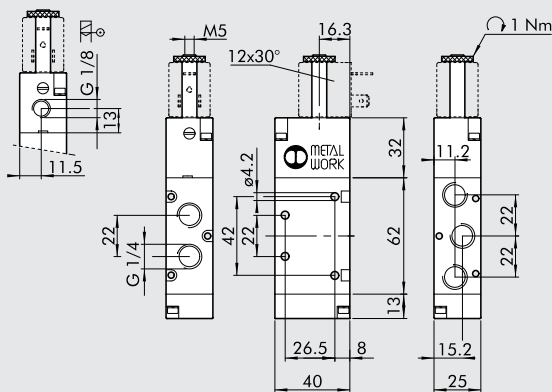
MONOSTABLE 3/2 NC, 1/4"



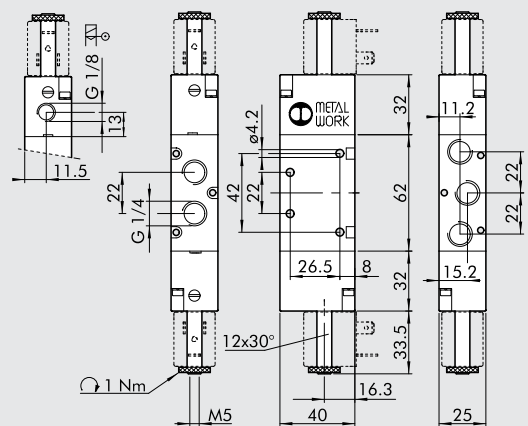
Symbol	Code	Abbrev.	Weight [g]
	7020020400	SOV 33 SOS NO	152


Symbol	Code	Abbrev.	Weight [g]
	7020020200	SOV 33 SOS NC	152
	7020020500	SOV 33 SES NC	152

5/2 1/4" MONOSTABLE



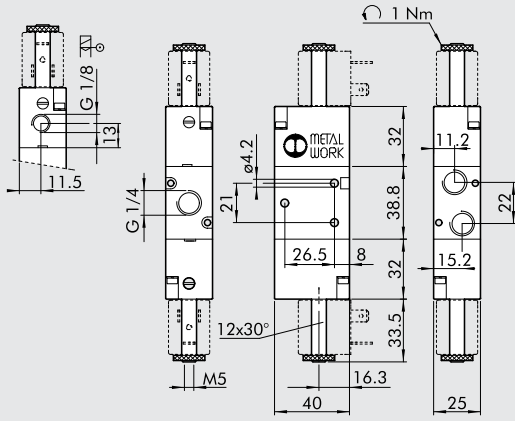
5/2 1/4" BISTABLE



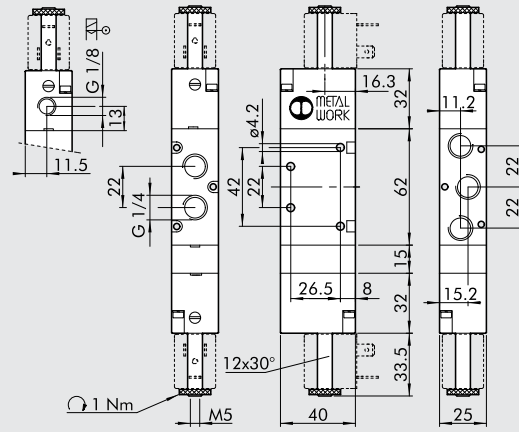
Symbol	Code	Abbrev.	Weight [g]
	7020021100	SOV 35 SOS OO	200
	7020021500	SOV 35 SES OO	200

Symbol	Code	Abbrev.	Weight [g]
	7020021200	SOV 35 SOB OO	236
	7020021300	SOV 35 SOD OO	252
	7020021600	SOV 35 SEB OO	242

BISTABLE 3/2, 1/4"



MONOSTABLE 5/3, 1/4"



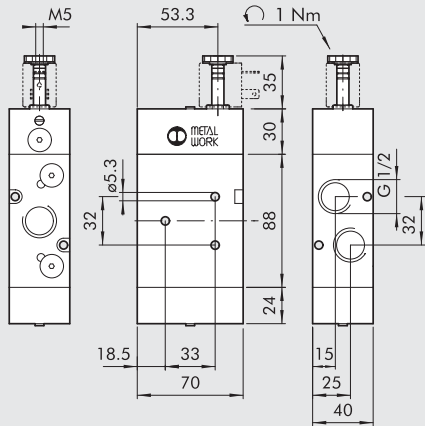
Symbol	Code	Abbrev.	Weight [g]
	7020020100	SOV 33 SOB OO	190
	7020020300	SOV 33 SEB OO	190

Symbol	Code	Abbrev.	Weight [g]
	7020022100	SOV 36 SOS CC	274
	7020022200	SOV 36 SOS OC	274
	7020022300	SOV 36 SOS PC	274
	7020022400	SOV 36 SES CC	277
	7020022500	SOV 36 SES OC	277
	7020022600	SOV 36 SES PC	277

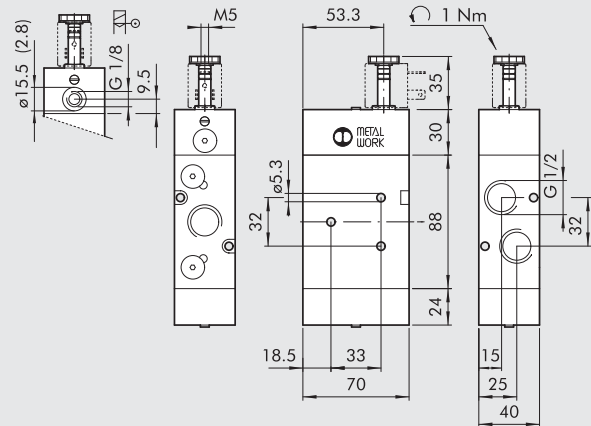
NOTES


VALVES SERIES 70, SOLENOID/PNEUMATIC-PILOT-ASSISTED SOLENOID/PNEUMATIC, 1/2"



MONOSTABLE 3/2 NO, 1/2"



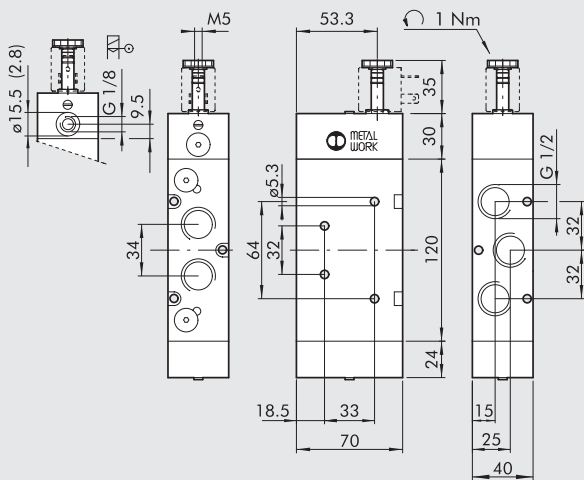
MONOSTABLE 3/2 NC, 1/2"



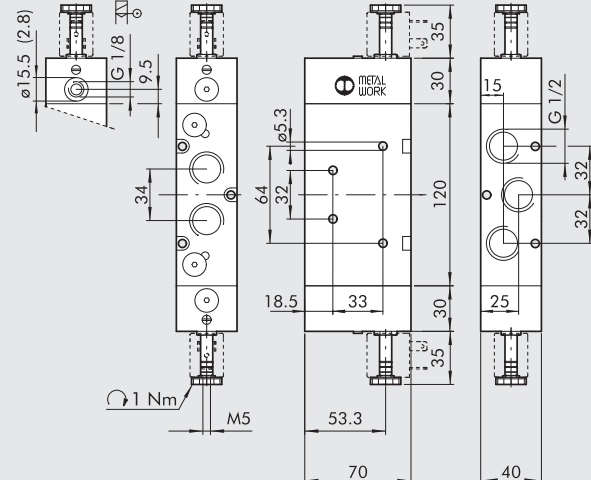
Symbol	Code	Abbrev.	Weight [g]
	7030020400	SOV 43 SOS NO	930


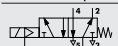
Symbol	Code	Abbrev.	Weight [g]
	7030020200	SOV 43 SOS NC	930
	7030020500	SOV 43 SES NC	923

MONOSTABLE 5/2, 1/2"



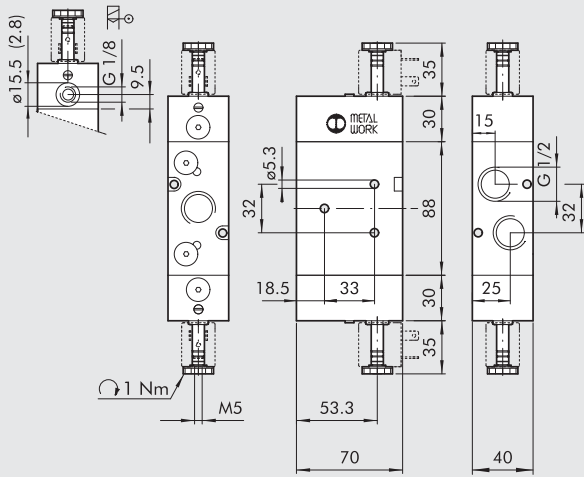
BISTABLE 5/2, 1/2"



Symbol	Code	Abbrev.	Weight [g]
	7030021100	SOV 45 SOS OO	1120
	7030021500	SOV 45 SES OO	1113

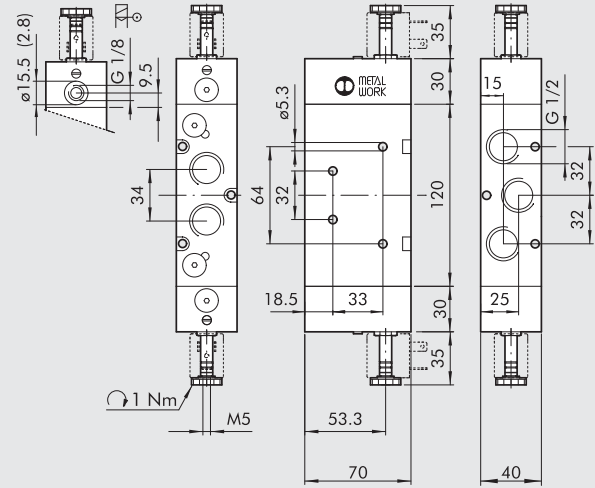
Symbol	Code	Abbrev.	Weight [g]
	7030021200	SOV 45 SOB OO	1140
	7030021300	SOV 45 SOD OO	1152
	7030021600	SOV 45 SEB OO	1127

BISTABLE 3/2, 1/2"



Symbol	Code	Abbrev.	Weight [g]
	7030020100	SOV 43 SOB OO	955
	7030020300	SOV 43 SEB OO	942

MONOSTABLE 5/3, 1/2"



Symbol	Code	Abbrev.	Weight [g]
	7030022100	SOV 46 SOS CC	1265
	7030022200	SOV 46 SOS OC	1265
	7030022300	SOV 46 SOS PC	1265
	7030022400	SOV 46 SES CC	1252
	7030022500	SOV 46 SES OC	1252
	7030022600	SOV 46 SES PC	1252

ACCESSORIES FOR SERIES 70 SOLENOID/PNEUMATIC VALVES

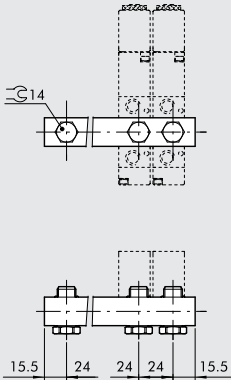
Refer to page 2-46 for coils and connectors



NOTES

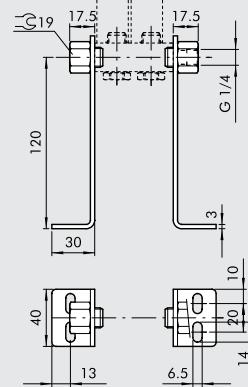
ACCESSORIES: 1/8 MANIFOLDS FOR SERIES 70 PNV-SOV VALVES

MANIFOLD WITH 2 TO 7 POSITIONS + FITTINGS



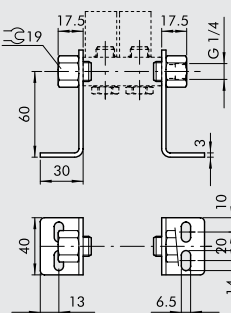
Code	Description	Weight [g]
0221000200	CSA-18-02	70
0221000300	CSA-18-03	99
0221000400	CSA-18-04	131
0221000500	CSA-18-05	162
0221000600	CSA-18-06	192
0221000700	CSA-18-07	229

BRACKET SET H120



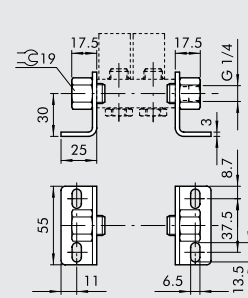
Code	Description	Weight [g]
0221000190	CSA-18-00	309

BRACKET SET H60



Code	Description	Weight [g]
0221000191	CSA-18-0C	213

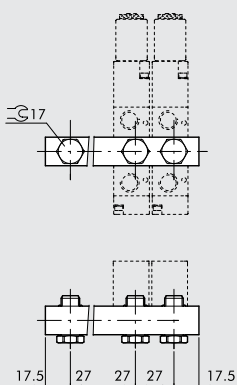
BRACKET SET H30



Code	Description	Weight [g]
0221000192	CSA-18-0E	181

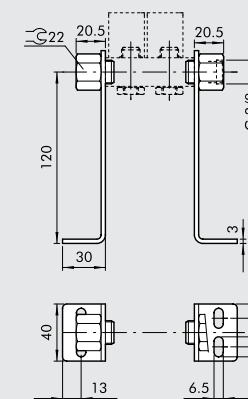
ACCESSORIES: 1/4 MANIFOLDS FOR SERIES 70 PNV-SOV VALVES

MANIFOLD WITH 2 TO 7 POSITIONS + FITTINGS



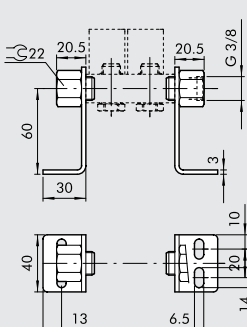
Code	Description	Weight [g]
0222000200	CSA-14-02	89
0222000300	CSA-14-03	131
0222000400	CSA-14-04	174
0222000500	CSA-14-05	213
0222000600	CSA-14-06	252
0222000700	CSA-14-07	328

BRACKET SET H120



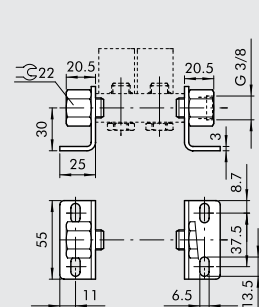
Code	Description	Weight [g]
0222000190	CSA-14-00	338

BRACKET SET H60



Code	Description	Weight [g]
0222000191	CSA-14-0C	242

BRACKET SET H30



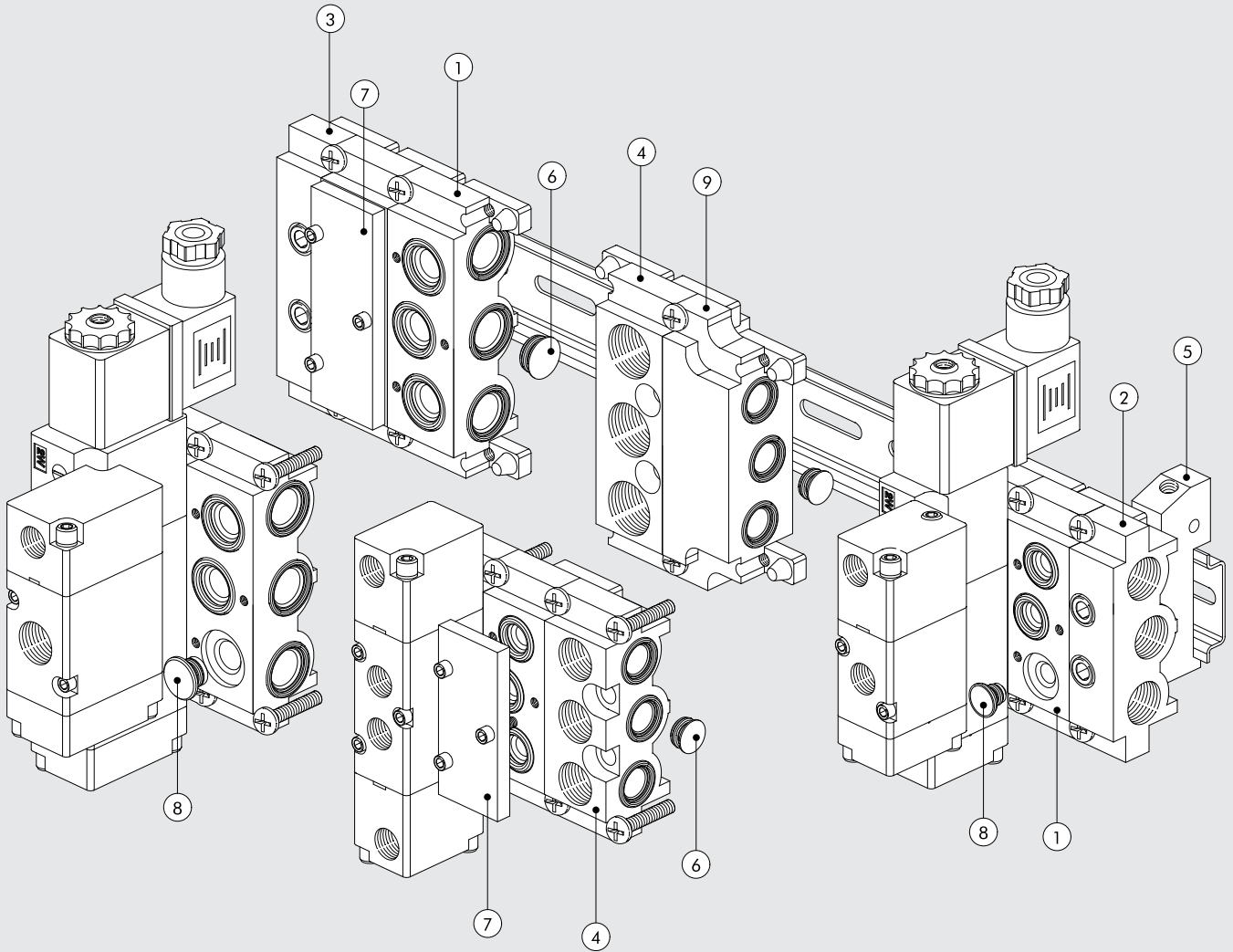
Code	Description	Weight [g]
0222000192	CSA-14-0E	209

ACCESSORIES: MANIFOLD BASES FOR SERIES 70 PNV-SOV VALVES

MODULAR BASES FOR SERIES 70 SOV-PNV VALVES

DISTRIBUTORS

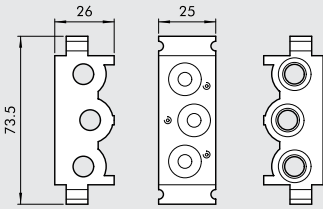
ACCESSORIES FOR VALVES SERIES 70



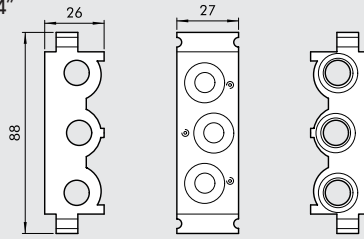
	1/8"	1/4"	
Reference	Code	Code	Description
①	0226004150	0226005150	Modular manifold base
②	0226004201	0226005201	End plate without OR
③	0226004200	0226005200	End plate with OR
④	0226004300	0226005300	Intermediate part for upper feed
⑤	0226004600	0226005600	Adapter for omega bar
⑥	0226004000	0226005000	Intermediate diaphragm
⑦	0226004500	0226005500	Blanking plate
⑧	0226004001	0226005001	3/2 cap
⑨	0226006600	-	Dimensional adapter

① MODULAR BASE

1/8"



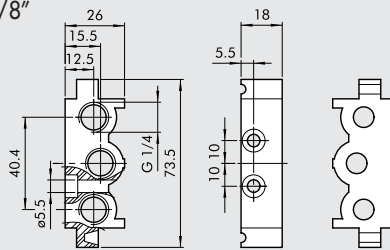
1/4"



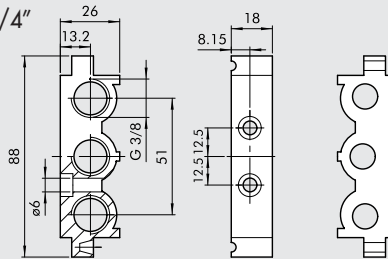
Code	Description	Weight [g]
0226004150	Comp. MANIFOLD 1/8"	110
0226005150	Comp. MANIFOLD 1/4"	131

② END PLATE WITHOUT OR

1/8"



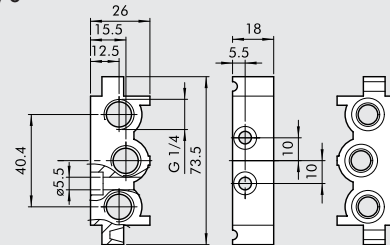
1/4"



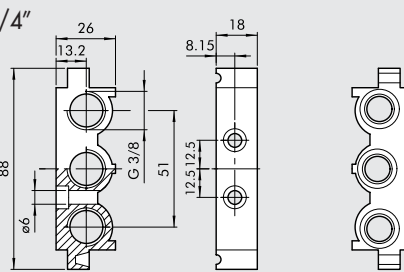
Code	Description	Weight [g]
0226004201	End plate without OR 1/8"	52
0226005201	End plate without OR 1/4"	57

③ END PLATE WITH OR

1/8"



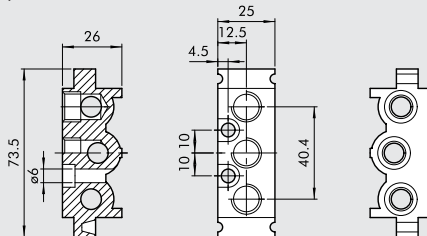
1/4"



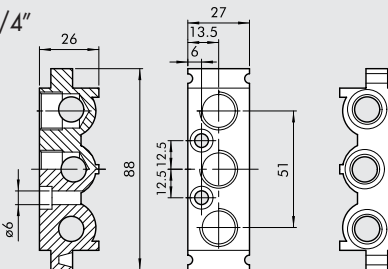
Code	Description	Weight [g]
0226004200	End plate with OR 1/8"	74
0226005200	End plate with OR 1/4"	80

④ INTERMEDIATE PART FOR UPPER FEED

1/8"



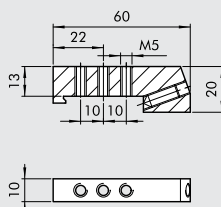
1/4"



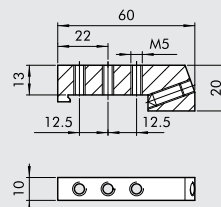
Code	Description	Weight [g]
0226004300	Intermediate part for upper feed 1/8"	93
0226005300	Intermediate part for upper feed 1/4"	109

⑤ ADAPTER FOR OMEGA BAR BASES (DIN EN 50022)

1/8"



1/4"

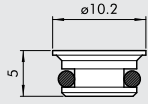


Code	Description	Weight [g]
0226004600	Adapter 1/8"	46
0226005600	Adapter 1/4"	46

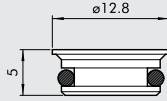
N.B.: Also for multiple bases

⑥ INTERMEDIATE DIAPHRAM

1/8"



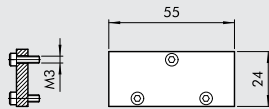
1/4"



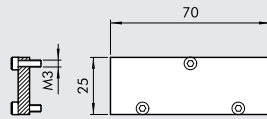
Code	Description	Weight [g]
0226004000	Intermediate diaphragm 1/8"	2
0226005000	Intermediate diaphragm 1/4"	3

⑦ BLANKING PLATE FOR UNUSED POSITIONS

1/8"



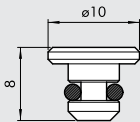
1/4"



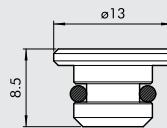
Code	Description	Weight [g]
0226004500	Comp. pcs 1/8"	23
0226005500	Comp. pcs 1/4"	29

⑧ PLUG FOR 3/2

1/8"

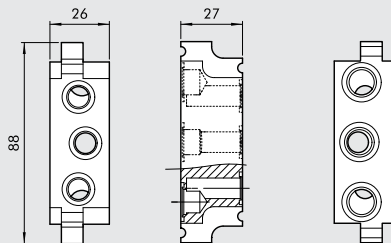


1/4"



Code	Description	Weight [g]
0226004001	Complete plug 3/2 1/8"	2
0226005001	Complete plug 3/2 1/4"	4

⑨ DIMENSIONAL ADAPTER 1/8" - 1/4"

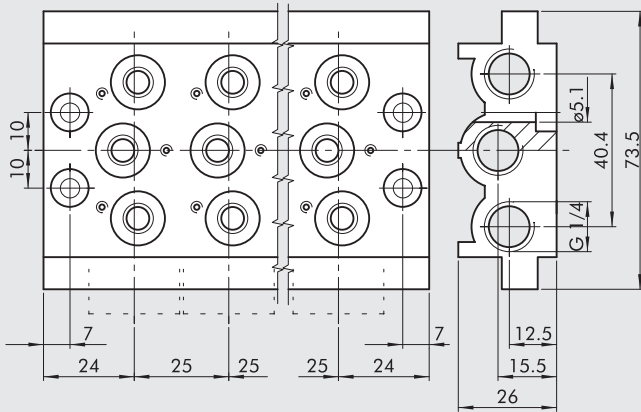


Code	Description	Weight [g]
0226006600	Comp. adapt. 1/8", 1/4"	177

NOTES

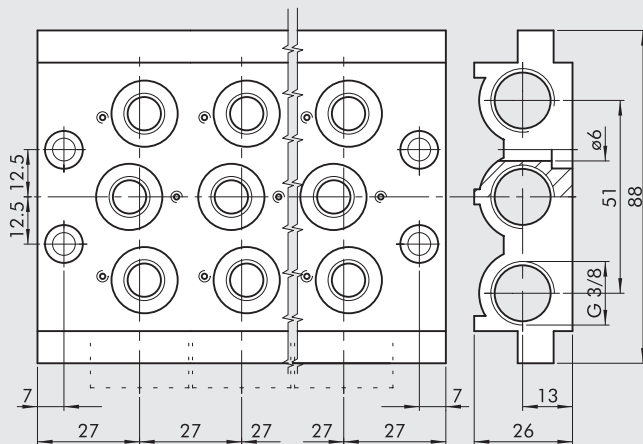
ACCESSORIES: MULTIPLE BASES FOR SERIES 70 PNV-SOV VALVES

MULTIPLE BASES 1/8"



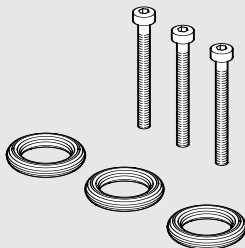
Code	Description	Abbrev.	Weight [g]
0223000201	2-position base	CVM-18-02	236
0223000301	3-position base	CVM-18-03	321
0223000401	4-position base	CVM-18-04	407
0223000501	5-position base	CVM-18-05	494
0223000601	6-position base	CVM-18-06	587
0223000701	7-position base	CVM-18-07	711
0223000801	8-position base	CVM-18-08	760
0223000901	9-position base	CVM-18-09	842
0223001001	10-position base	CVM-18-10	923

MULTIPLE BASES 1/4"



Code	Description	Abbrev.	Weight [g]
0224000201	2-position base	CVM-14-02	296
0224000301	3-position base	CVM-14-03	406
0224000401	4-position base	CVM-14-04	515
0224000501	5-position base	CVM-14-05	624
0224000601	6-position base	CVM-14-06	733
0224000701	7-position base	CVM-14-07	845
0224000801	8-position base	CVM-14-08	956
0224000901	9-position base	CVM-14-09	1055
0224001001	10-position base	CVM-14-10	1086

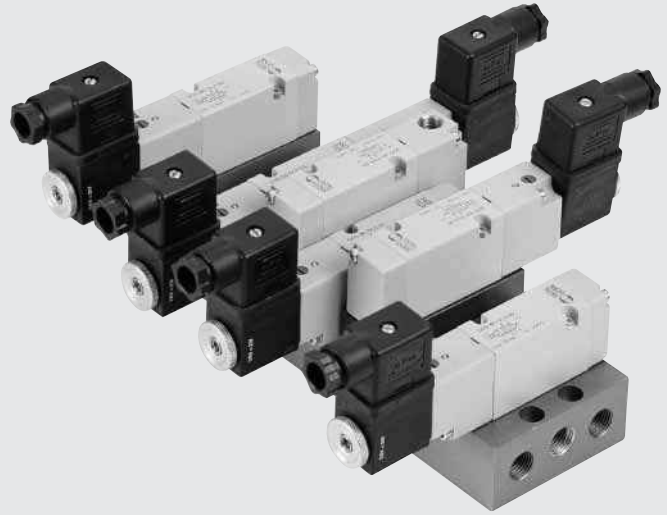
GASKET KIT



Code	Description	Weight [g]
0226004701	Gasket kit for 1/8" base	5
0226005701	Gasket kit for 1/4" base	5

VALVES SERIES 70, ON BASE

The series 70 valves on base, available in the air- and solenoid-actuated versions, is an excellent clean solution for use when it is necessary to intervene on the valves without disconnecting the pipes. Here, the inlet, output and utility ports are in the base.

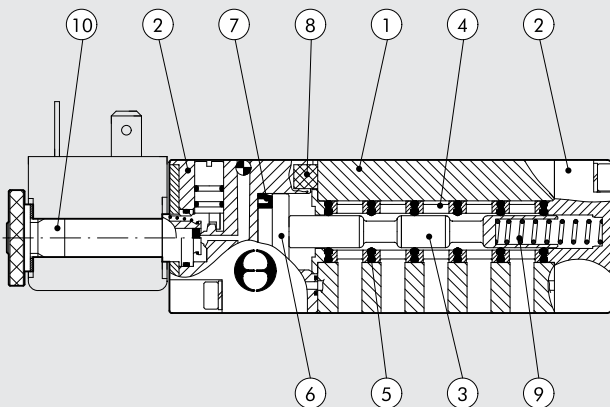


TECHNICAL DATA

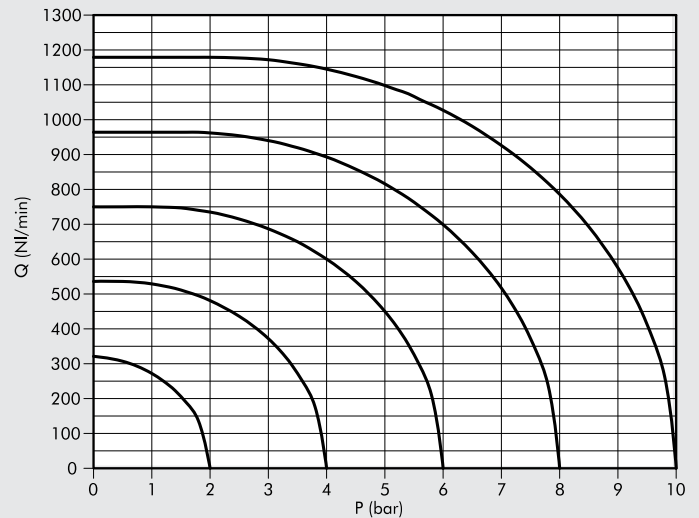
Operating pressure:		
• monostable	bar	2.5 to 10
• bistable	bar	1 to 10
• pilot-assisted	bar	Vacuum to 10
Minimum pilot pressure	bar	2.5
Operating temperature range	°C	-10 to +60
Nominal diameter	mm	5
Conductance C	NI/min · bar	107.69
Critical ratio b	bar/bar	0.29
Flow rate at 6 bar ΔP 0.5 bar	NI/min	320
Flow rate at 6 bar ΔP 1 bar	NI/min	450
Maximum torque coil nut	Nm	1

COMPONENTS

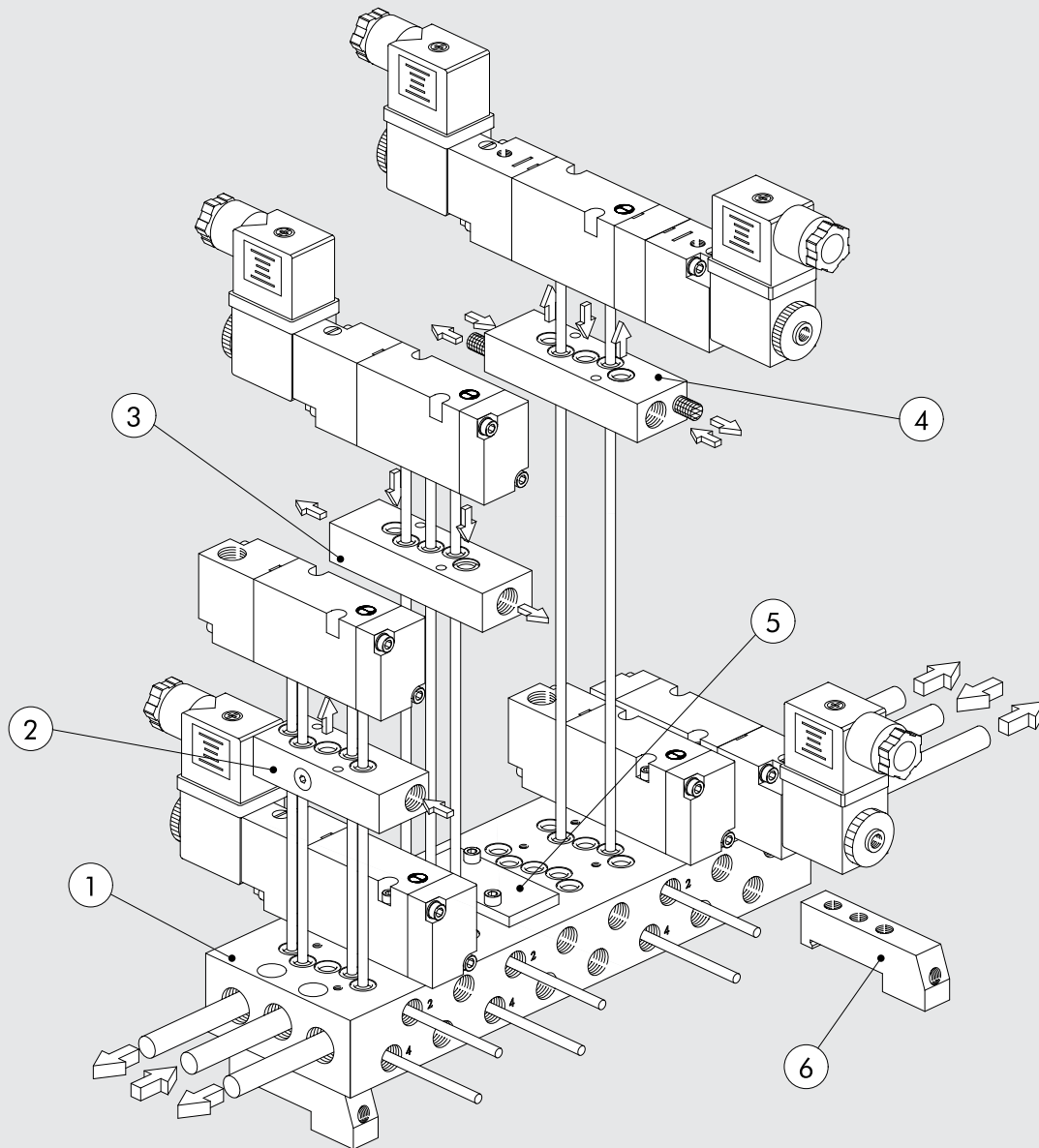
- ① VALVE BODY: Aluminium
- ② CONTROL/BASE: HOSTAFORM®
- ③ SPOOL: chemically nickel-plated aluminium
- ④ DISTANCE PLATES: plastic
- ⑤ GASKETS: NBR
- ⑥ PISTONS: HOSTAFORM®
- ⑦ PISTON GASKET: NBR
- ⑧ FILTER: sintered Bronze
- ⑨ SPRINGS: special steel
- ⑩ OPERATOR: Brass pipe – Stainless steel core



FLOW CHART



MULTI-PURPOSE BASE FOR VALVES SERIES 70 ON BASE



Reference	Code	Description
①	0223100201	2-position base 1/8 on base
	0223100401	4-position base 1/8 on base
	0223100601	6-position base 1/8 on base
	0223100801	8-position base 1/8 on base
	0223101001	10-position base 1/8 on base
②	0223106301	Separate feed kit
③	0223106303	Exhaust regulation kit
④	0223106302	Exhaust feed kit
⑤	0223106500	Blanking plate
⑥	0226004600	Adapter for omega bar

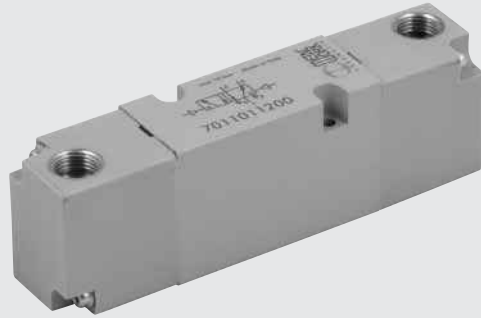
KEY TO CODES

P N V FAMILY	B DIMENSIONS	5 FUNCTION	P N OPERATORS 14	S RESETTING (12)	O O FURTHER DETAILS
PNV pneumatic	B 1/8" on base	5 5/2	PN pneumatic	S mechanical springs	OO 5/2
SOV electro-pneumatic		6 5/3	SO solenoid	B bistable	CC closed centres
			SE solenoid assisted	D differential	OC open centres
					PC pressure centres

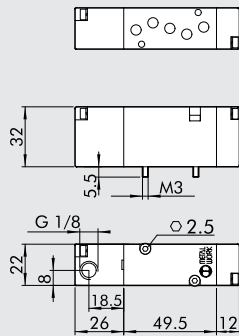
VALVES, SERIES 70, PNEUMATIC, ON BASE

TECHNICAL DATA

Operating pressure	bar	Vacuum to 10
Minimum actuation pressure:		
• monostable	bar	2.5
• bistable	bar	1
Operating temperature range	°C	-10 to +60
Nominal diameter	mm	5
Conductance C	Nl/min · bar	107.69
Critical ratio b	bar/bar	0.29
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	320
Flow rate at 6 bar ΔP 1 bar	Nl/min	450
TRA / TRR monostable at 6 bar	ms	6/15
TRA / TRR bistable at 6 bar	ms	7/7

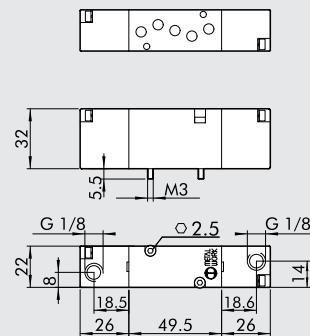


MONOSTABLE 5/2



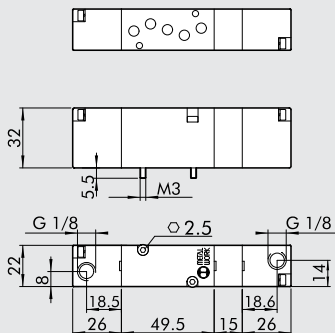
Symbol	Code	Abbrev.	Weight [g]
	7011011100	PNV B5 PNS OO	125

BISTABLE 5/2



Symbol	Code	Abbrev.	Weight [g]
	7011011200	PNV B5 PNB OO	136
	7011011300	PNV B5 PND OO	142

MONOSTABLE 5/3



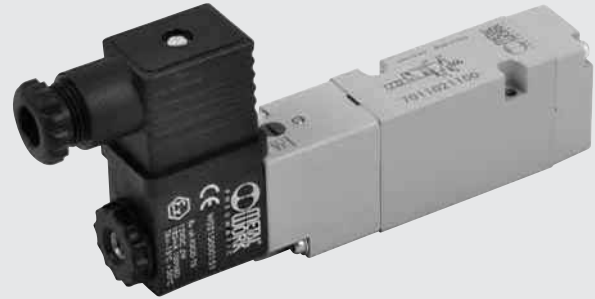
Symbol	Code	Abbrev.	Weight [g]
	7011012100	PNV B6 PNS CC	164
	7011012200	PNV B6 PNS OC	164
	7011012300	PNV B6 PNS PC	164

NOTES

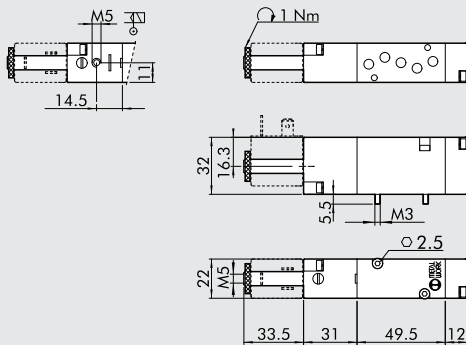
VALVES SERIES 70, SOLENOID/PNEUMATIC ON BASE

TECHNICAL DATA

Operating pressure:			
• monostable	bar	2.5 to 10	
• bistable	bar	1 to 10	
• pilot-assisted	bar	Vacuum to 10	
Minimum pilot pressure	bar	2.5	
Operating temperature range	°C	-10 to +60	
Nominal diameter	mm	5	
Conductance C	Nl/min · bar	107.69	
Critical ratio b	bar/bar	0.29	
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	320	
Flow rate at 6 bar ΔP 1 bar	Nl/min	450	
TRA / TRR monostable at 6 bar	ms	15 / 35	
TRA / TRR bistable at 6 bar	ms	20 / 20	
Electrical technical data			
Coil voltage values	24VDC/24VAC/110VAC/220VAC 50/60Hz		
Power	2 W (DC) 3VA (AC)		
Voltage tolerance	%	-10 to +15	
Insulation class	F 155		
Maximum coil nut torque	Nm	1	

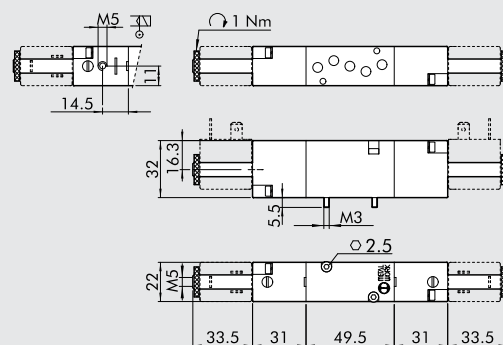


MONOSTABLE 5/2



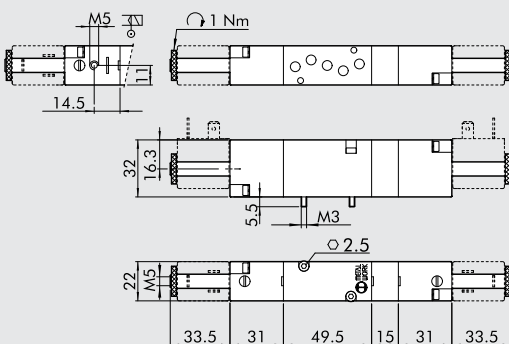
Symbol	Code	Abbrev.	Weight [g]
	7011021100	SOV B5 SOS OO	142
	7011021500	SOV B5 SES OO	143

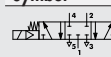
BISTABLE 5/2



Symbol	Code	Abbrev.	Weight [g]
	7011021200	SOV B5 SOB OO	174
	7011021300	SOV B5 SOD OO	180
	7011021600	SOV B5 SEB OO	174

BISTABLE 5/3



Symbol	Code	Abbrev.	Weight [g]
	7011022100	SOV B6 SOS CC	204
	7011022200	SOV B6 SOS OC	204
	7011022300	SOV B6 SOS PC	204
	7011022400	SOV B6 SES CC	202
	7011022500	SOV B6 SES OC	202
	7011022600	SOV B6 SES PC	202

ACCESSORIES



Refer to page 2-46 for coils and connectors

TECHNICAL DATA

Operating pressure:			
• monostable, electric	bar	2.5 to 10	
• bistable, electric	bar	1 to 10	
• pilot-assisted, electric	bar	Vacuum to 10	
Minimum actuation pressure:			
• monostable, pneumatic	bar	2.5	
• bistable, pneumatic	bar	1	
Operating temperature range			
	°C	-10 to +60	
Nominal diameter			
	mm	7.5	
Conductance C			
	Nl/min · bar	264.26	
Critical ratio b			
	bar/bar	0.27	
Flow rate at 6 bar ΔP 0.5 bar			
	Nl/min	750	
Flow rate at 6 bar ΔP 1 bar (0.1 Mpa - 14.5 psi)			
	Nl/min	1100	
Response time at 6 bar:			
• TRA/TRR monostable, pneumatic at 6 bar	ms	7 / 15	
• TRA/TRR bistable, pneumatic at 6 bar	ms	7 / 7	
• TRA/TRR monostable electric at 6 bar	ms	19 / 45	
• TRA/TRR bistable electric at 6 bar	ms	21 / 21	
Compatibility with oils			
		Please refer to page 6-7 of the technical documentation	

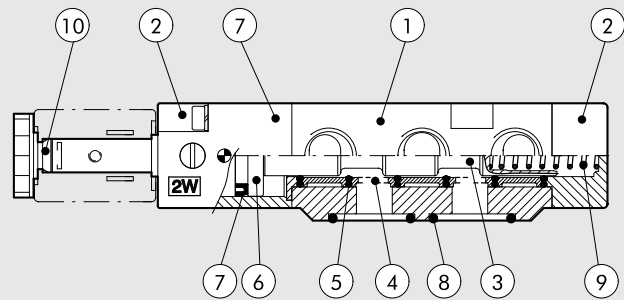


KEY TO CODES

P N V		A		5		P N		S		O O	
FAMILY		DIMENSIONS		FUNCTION		OPERATORS 14		RESETTING (12)		FURTHER DETAILS	
PNV	pneumatic	A	NAMUR	5	5/2	PN	pneumatic	S	mechanical springs	OO	5/2
SOV	electro-pneumatic			4	4/2	SO	solenoid	B	bistable	NC	normally closed

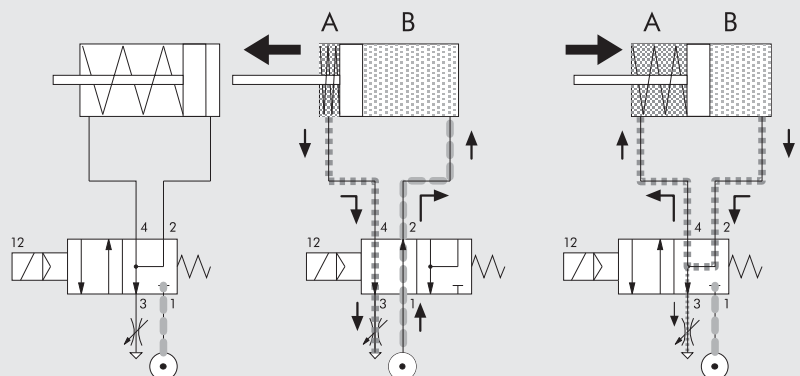
COMPONENTS

- ① VALVE BODY: Aluminium
- ② CONTROL/BASE: HOSTAFORM®
- ③ SPOOL: chemically nickel-plated aluminium
- ④ DISTANCE PLATES: plastic
- ⑤ GASKETS: NBR nitrile rubber
- ⑥ PISTONS: HOSTAFORM®
- ⑦ PISTON GASKET: NBR nitrile rubber
- ⑧ INTERFACE GASKETS: NBR nitrile rubber
- ⑨ SPRINGS: special steel
- ⑩ OPERATOR: Brass pipe – Stainless steel core

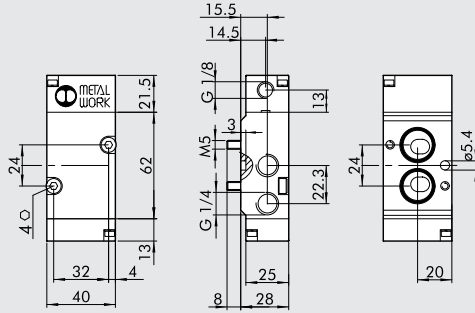


FUNCTIONING DIAGRAM 4/2 NAMUR VALVE

During the piston retraction stage, the air for chamber A is taken from the air leaving chamber B. This prevents the dirty air from getting in from the outside environment.

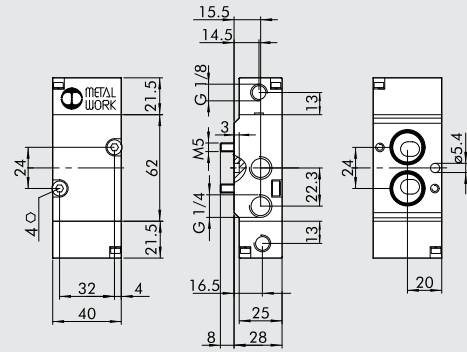


MONOSTABLE, PNEUMATIC 4/2



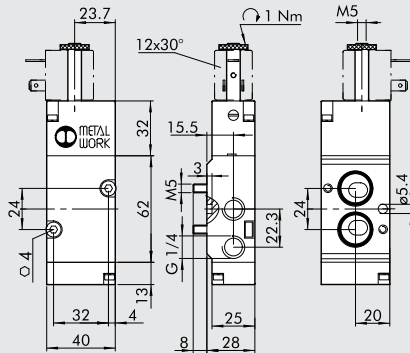
Symbol	Code	Abbrev.	Weight [g]
	7021010110	PNV A4 PNS NC	208

BISTABLE, PNEUMATIC 4/2



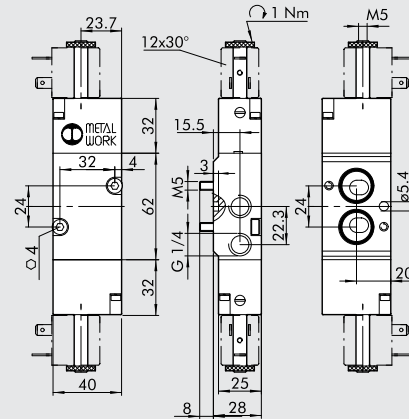
Symbol	Code	Abbrev.	Weight [g]
	7021010210	PNV A4 PNB OO	216

MONOSTABLE, SOLENOID/PNEUMATIC 4/2



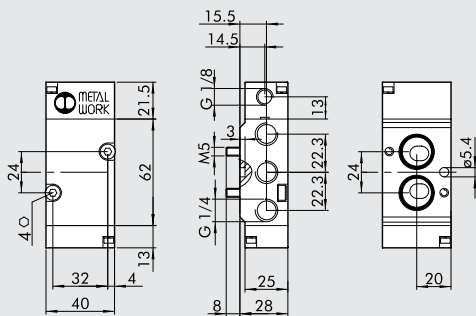
Symbol	Code	Abbrev.	Weight [g]
	7021020110	SOV A4 SOS NC	234

BISTABLE, SOLENOID/PNEUMATIC 4/2



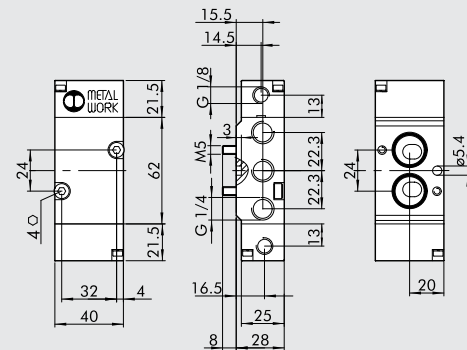
Symbol	Code	Abbrev.	Weight [g]
	7021020210	SOV A4 SOB OO	270

MONOSTABLE, PNEUMATIC 5/2



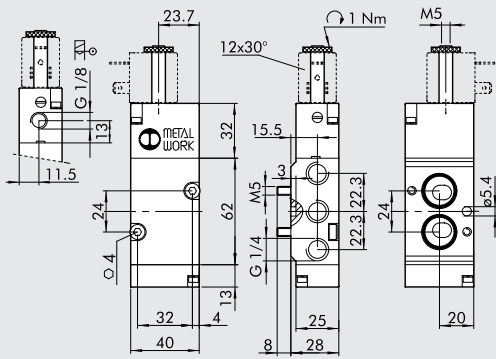
Symbol	Code	Abbrev.	Weight [g]
	7021010100	PNV A5 PNS OO	208

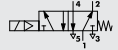
MONOSTABLE, PNEUMATIC 5/2



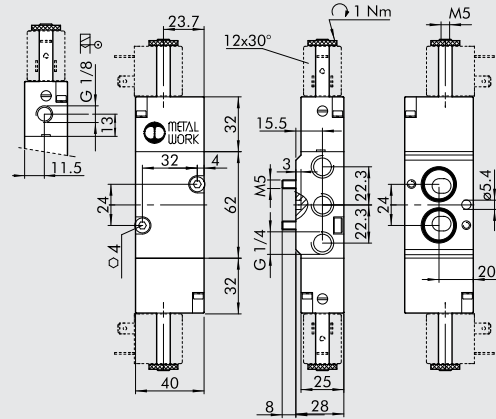
Symbol	Code	Abbrev.	Weight [g]
	7021010200	PNV A5 PNB OO	216

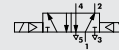
MONOSTABLE, SOLENOID/PNEUMATIC 5/2



Symbol	Code	Abbrev.	Weight [g]
	7021020100	SOV A5 SOS OO	234

BISTABLE, SOLENOID/PNEUMATIC 5/2



Symbol	Code	Abbrev.	Weight [g]
	7021020200	SOV A5 SOB OO	270

ACCESSORIES FOR NAMUR VALVES SOV, SOLENOID/PNEUMATIC

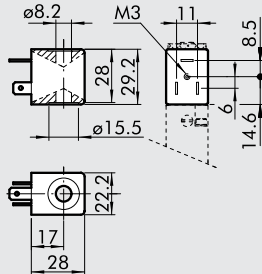
Refer to page 2-46 for coils and connectors



NOTES

COILS AND CONNECTORS FOR SERIES 70 AND NAMUR VALVES

COILS

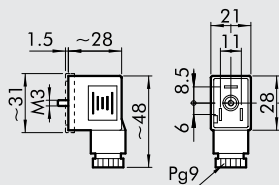


- Voltage tolerance: -10% + 15%
- Insulation class: F155
- Degree of protection: IP65 DIN 40050 with connector
- Avoid prolonged exposure to atmospheric agents

- Coil temperature 100% ED: from 70°C to 20°C – Ambient temperature
- According to Atex 94/9 CE rule, group 2, category 3 GD

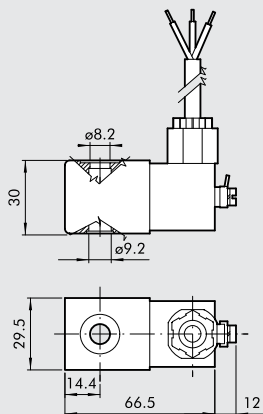
Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0215000151	Coil 22 Ø 8 BA 2W-12VDC	12Vcc	2W	2W
W0215000101	Coil 22 Ø 8 BA 2W-24VDC	24Vcc	2W	2W
W0215000111	Coil 22 Ø 8 BA 3.5VA-24VAC	24V 50/60Hz	5.3VA	3.5VA
W0215000121	Coil 22 Ø 8 BA 3.5VA-110VAC	110V 50/60Hz	5.3VA	3.5VA
W0215000131	Coil 22 Ø 8 BA 3.5VA-220VAC	220V 50/60Hz	5.3VA	3.5VA

COIL CONNECTORS



Code	Type	Colour	Ø Cable
W0970510011	Standard	Black	PG9
W0970510012	LED 24V	Transparent	PG9
W0970510013	LED 110V	Transparent	PG9
W0970510014	LED 220V	Transparent	PG9
W0970510015	LED + VDR 24V	Transparent	PG9
W0970510016	LED + VDR 110V	Transparent	PG9
W0970510017	LED + VDR 220V	Transparent	PG9
W0970510070	Atex	Black	PG9

KIT COIL EEXM



Code	Description
0227606913	Kit for coil 30 24VDC EEXMT5 cable 3 m
0227606915	Kit for coil 30 24VDC EEXMT5 cable 5 m
0227608013	Kit for coil 30 24VAC EEXMT5 cable 3 m
0227608015	Kit for coil 30 24VAC EEXMT5 cable 5 m
0227608023	Kit for coil 30 110VAC EEXMT5 cable 3 m
0227608025	Kit for coil 30 110VAC EEXMT5 cable 5 m
0227608033	Kit for coil 30 230VAC EEXMT5 cable 3 m
0227608035	Kit for coil 30 230VAC EEXMT5 cable 5 m

According to Atex 94/9 CE rule, group 2, category 2 GD

KIT COILS SIDE 22 IP65



Code	Description
0222100100	Kit for coils 22 - IP65

Improved IP65 protection, even after prolonged exposure to atmospheric agents.
Applicable to valves with a technopolymer control.

10-mm SOLENOID VALVES SERIES PLT-10



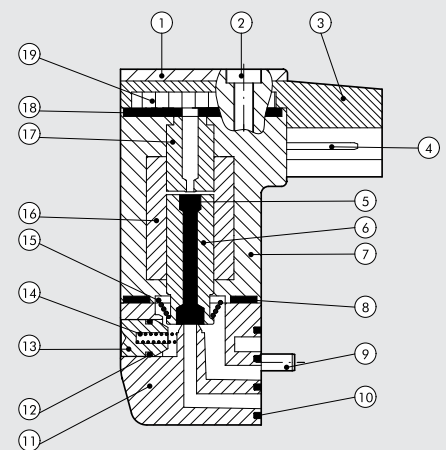
PLT-10 solenoid valves are the latest development in modern pneumatic design, where the main trends focus on miniaturisation, enhanced performance, reduced power and reliability. Numerous versions are available, all with an ISO 15218 pneumatic interface. The power required to operate the PLT-10 has been greatly reduced, ranging from 0.3 to 0.8 Watts. It is available with a LED indicating when it is active. Monostable manual control is also possible. None of the versions will get damaged if the polarity is accidentally inverted.



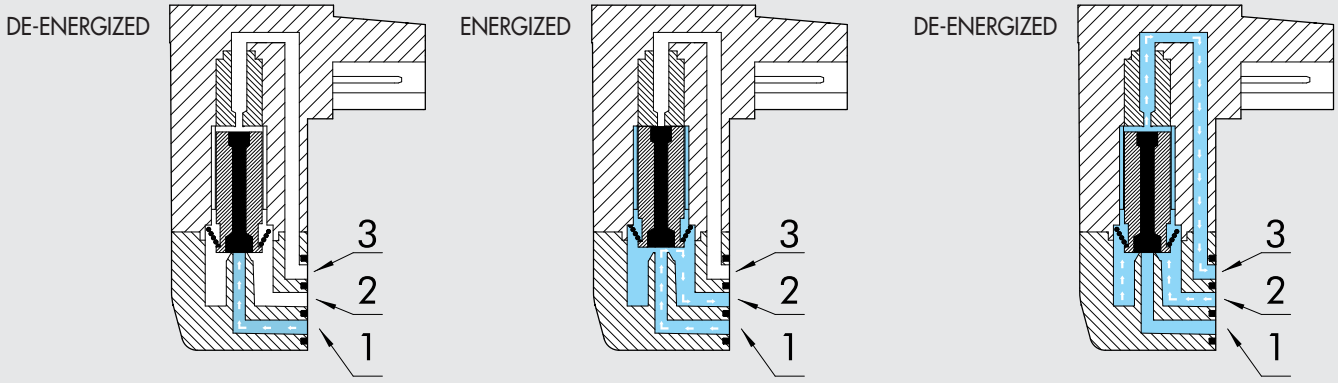
TECHNICAL DATA		
Type		3/2 NC
Operating temperature range (Te)	°C	5 to 50
Fluid temperature (Tg)	°C	5 to 50
Fluid		Filtered, lubricated or unlubricated air
Operating life		Over 50 million cycles
Weight	g	12
Voltage tolerance	ΔV	± 10 %
Max operating frequency	f	30 Hz
Switching factor	ED	100 %
Insulation class		F155
Index of protection		IP51
Power connection		PLUG IN

COMPONENTS

- ① TRANSPARENT COVER: PA612-transparent
- ② ASSEMBLY SCREWS: galvanized steel
- ③ COVER: PA66
- ④ PIN
- ⑤ MOBILE CORE OVER-STAMPING: FKM/FPM
- ⑥ MOBILE CORE: AISI 403F
- ⑦ COIL OVER-STAMPING: PA66
- ⑧ BODY-COIL GASKET: NBR70
- ⑨ ASSEMBLY SCREWS: galvanized steel
- ⑩ BODY GASKET: NBR
- ⑪ BODY: PA66
- ⑫ MANUAL GASKET: NBR (only for version with manual operated)
- ⑬ MANUAL CONTROL: OT58 nickel-plated brass (only for version with manual operated)
- ⑭ MANUAL SPRING: AISI 302 (only for version with manual operated)
- ⑮ SPRING: AISI 302
- ⑯ WINDING: PPS - Copper wire
- ⑰ FIXED CORE: AISI 430F
- ⑱ COIL-COVER GASKET: NBR
- ⑲ ELECTRONIC BOARD (only for version with electronic board)

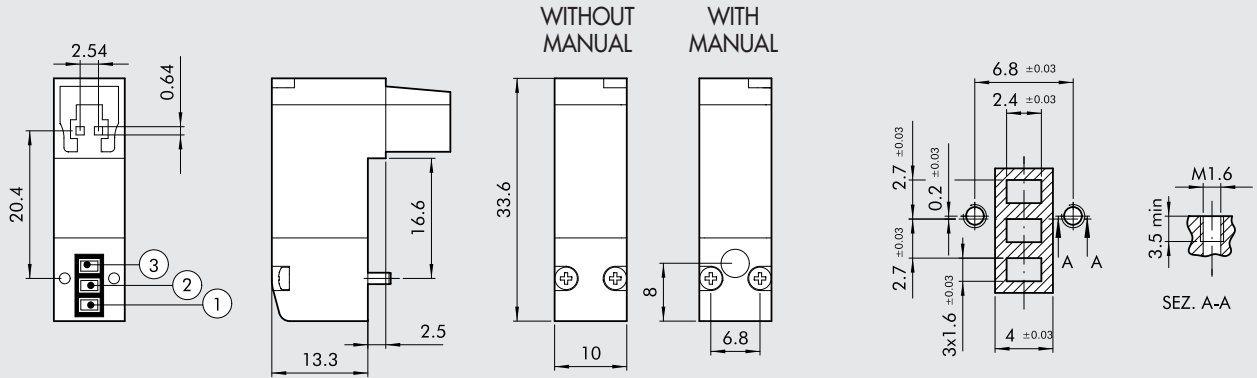


OPERATING CHART



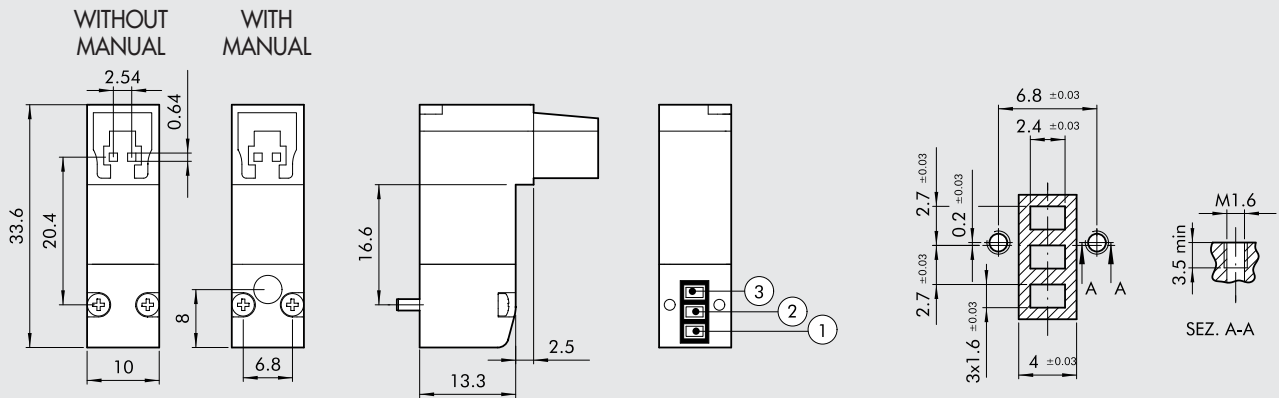
DISTRIBUTORS
10-mm SOLENOID VALVES SERIES PLT-10

PLT-10 WITH BASE AND CONNECTION ON THE SAME SIDE



Version (3/2 NC)	Code	Manual	Voltage [Volt]	Power [Watt]	Through Ø [mm]	Operating press. [bar]	Flow rate at 6 ΔP=1 bar [NI/min]	Tmax coil a 24VDC Te 20°C a ED100% [°C]	Weight [g]
Without LED	722113340000	without	24VDC	0.7	0.6	3 to 7	9	93	12
	722113340100	with	24VDC	0.7	0.6	3 to 7	9	93	12
With LED	722113541000	without	24VDC	0.9	0.6	3 to 7	9	93	12
	722113541100	with	24VDC	0.9	0.6	3 to 7	9	93	12
SPEED-UP e LED	722116841000	without	24VDC	3/0.3	1.2	2 to 7	16	51	12
	722116841100	with	24VDC	3/0.3	1.2	2 to 7	16	51	12

PLT-10 WITH BASE AND CONNECTION ON OPPOSITE SIDES



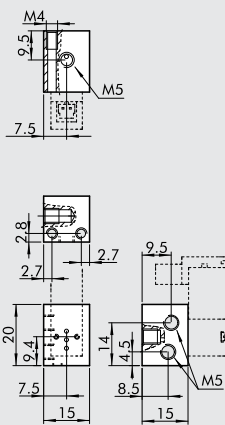
Version (3/2 NC)	Code	Manuale	Voltage [Volt]	Power [Watt]	Through Ø [mm]	Operating press. [bar]	Flow rate at 6 ΔP=1 bar [NI/min]	Tmax coil a 24VDC Te 20°C a ED100% [°C]	Weight [g]
Without LED	722213340000	without	24VDC	0.7	0.6	3 to 7	9	93	12
	722213340100	with	24VDC	0.7	0.6	3 to 7	9	93	12
With LED	722213541000	without	24VDC	0.9	0.6	3 to 7	9	93	12
	722213541100	with	24VDC	0.9	0.6	3 to 7	9	93	12
SPEED-UP e LED	722216841000	without	24VDC	3/0.3	1.2	2 to 7	16	51	12
	722216841100	with	24VDC	3/0.3	1.2	2 to 7	16	51	12

KEY TO CODES

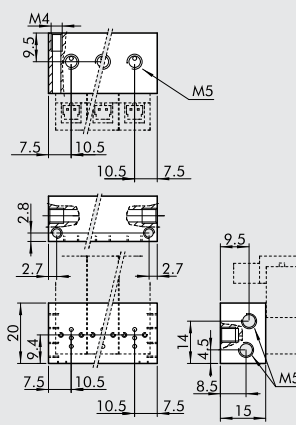
7 2 2 FAMILY	1 POSITIONING	1 POWER CONNECTION	3 Ø THROUGH	3 POWER	4 VOLTAGE	0 LED	1 MANUAL CONTROL	0 0 VERSION
Solenoid valves series "PLT-10"	1 Base and connection on same side 2 Base and connection opposite sides	1 Plug-in	3 0.6 mm 6 1.2 mm	3 0.7 W 5 0.9 W 8 3/0.3 W	4 24VDC	0 - 1 LED	0 - 1 manual monostable	00 Standard

DIMENSIONS OF BASES FOR PLT-10

1 POSN.



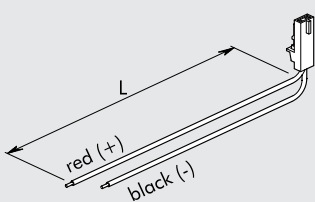
+ POSN.



Code	Description
W0400100101	Base 1 posn. for PLT-10
W0400100102	Base 2 posn. for PLT-10
W0400100103	Base 3 posn. for PLT-10
W0400100104	Base 4 posn. for PLT-10
W0400100105	Base 5 posn. for PLT-10
W0400100106	Base 6 posn. for PLT-10
W0400100107	Base 7 posn. for PLT-10
W0400100108	Base 8 posn. for PLT-10
W0400100109	Base 9 posn. for PLT-10
W0400100110	Base 10 posn. for PLT-10

ACCESSORIES

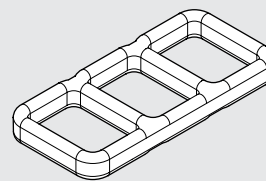
PLUG-IN CONNECTOR



Code	Description
W0970512000	MACH 11 PLUG-IN connector L = 300

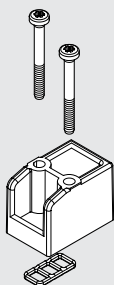
SPARE PARTS

INTERFACE GASKET



Code	Description
0226009701	PLT-10 GASKET
N.B. 50 for pack	

CAP FOR UNUSED POSITION



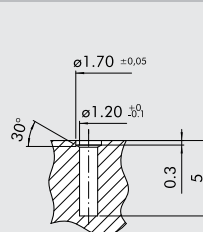
Code	Description	Weight [g]
W0400100200	Acc. cap 10 mm	6

STANDARD SECURING SCREW (FOR ALUMINIUM)



Code	Description
0226009702	PLT-10 screw for aluminium
N.B. 100 for pack	

SECURING SCREWS FOR TECHNOPOLYMER



Code	Description
0226009703	Screw PLT-10 for technopol.
N.B. 100 for pack	
When mounting on technopolymer bodies, use these screws instead of the ones supplied with the PLT-10.	
ATTENTION: approximative dimensions for not added glass plastic materials It's always advisable to effect assembling tests.	

BASES FOR PLT-10 MULTIPLE CONNECTION

Series PLT-10 solenoid valves can be mounted on bases complete with electrical and pneumatic connections, from 4 to 24 positions. The electric contacts of each valve are linked to a single multiple connector via a printed circuit board.

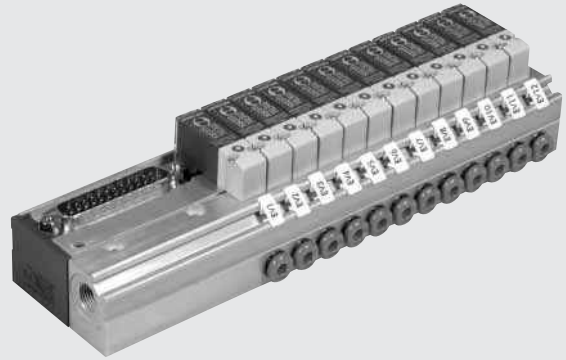
The connector has 9 pins or 25 pins, depending on the model and the number of valves that can be mounted. Versions with 25-pin connectors can interface with standard field buses by means of Profibus-DP, Can-Open and Device-Net modules for Multimach. (see page 2-178).

The compressed-air supply is common to all the valves and can be provided on either side of the base by means of a 1/8" fitting. Connection to the utilities is via automatic integrated cartridges for Ø 4 pipe. The solenoid valve outlet is free, in a slot in the base.

The bases can be secured from above using M3 screws, or on a DIN bar using a bracket (see accessories).

The bases can mount various types of PLT-10 solenoid valves: 3/2 NC, 3/2 NO, with or without a manual actuator.

With this modular system, you can select the desired sequence of valves (NC, NO, blind) and change it at any time.



TECHNICAL DATA

Supply voltage		24 VDC
Max input	W	0.7 W per position for PLT-10 STD without LED 0.9 W per position for PLT-10 STD with LED 3W/0.3W per position for PLT-10 with Speed-up
Valve actuation indicator		Led mounted on the PLT-10 (on versions of solenoid valve where envisaged)
Operating temperature range	°C	5 to 50
Protection degree (with valves and connectors mounted)		IP 40
Maximum number of mountable PLT-10s		24
Number of contacts		9, of which 1 common, for versions with 4 and 8 positions 25, of which 1 common, for versions with 4, 8, 12, 16, 20, 24 positions

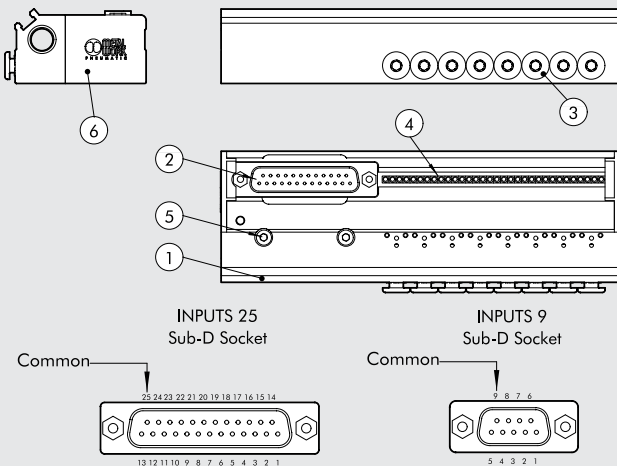
COMPONENTS

- ① Anodized aluminium base
- ② Multi-pin electrical connector
- ③ Automatic integrated cartridges for Ø 4 pipe
- ④ Electrical connectors for PLT-10 solenoid valves mounted on printed circuit board
- ⑤ Securing screw
- ⑥ Technopolymer cover

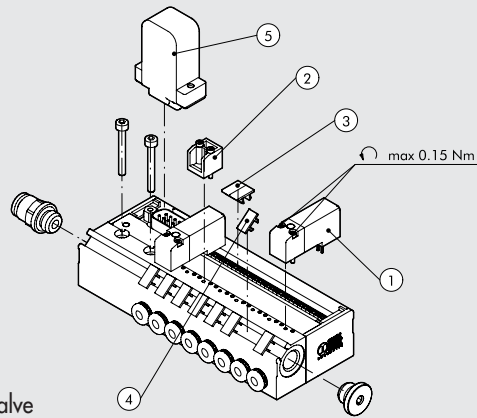
CONNECTION DIAGRAM

25 PIN		9 PIN	
Position of electrical contact	Nr° PLT	Position of electrical contact	Nr° PLT
1	PLT1	1	PLT1
2	PLT2	2	PLT2
3	PLT3	3	PLT3
4	PLT4	4	PLT4
5	PLT5	5	PLT5
6	PLT6	6	PLT6
7	PLT7	7	PLT7
8	PLT8	8	PLT8
9	PLT9	9	COMMON (-)
10	PLT10		
11	PLT11		
12	PLT12		
13	PLT13		
14	PLT14		
15	PLT15		
16	PLT16		
17	PLT17		
18	PLT18		
19	PLT19		
20	PLT20		
21	PLT21		
22	PLT22		
23	PLT23		
24	PLT24		
25	COMMON (-)		

Pilot numbering from left to right, starting from the position closest to the connection.

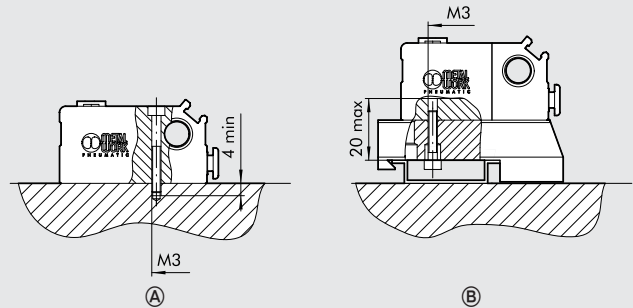


ASSEMBLY OF SOLENOID VALVES AND ACCESSORIES



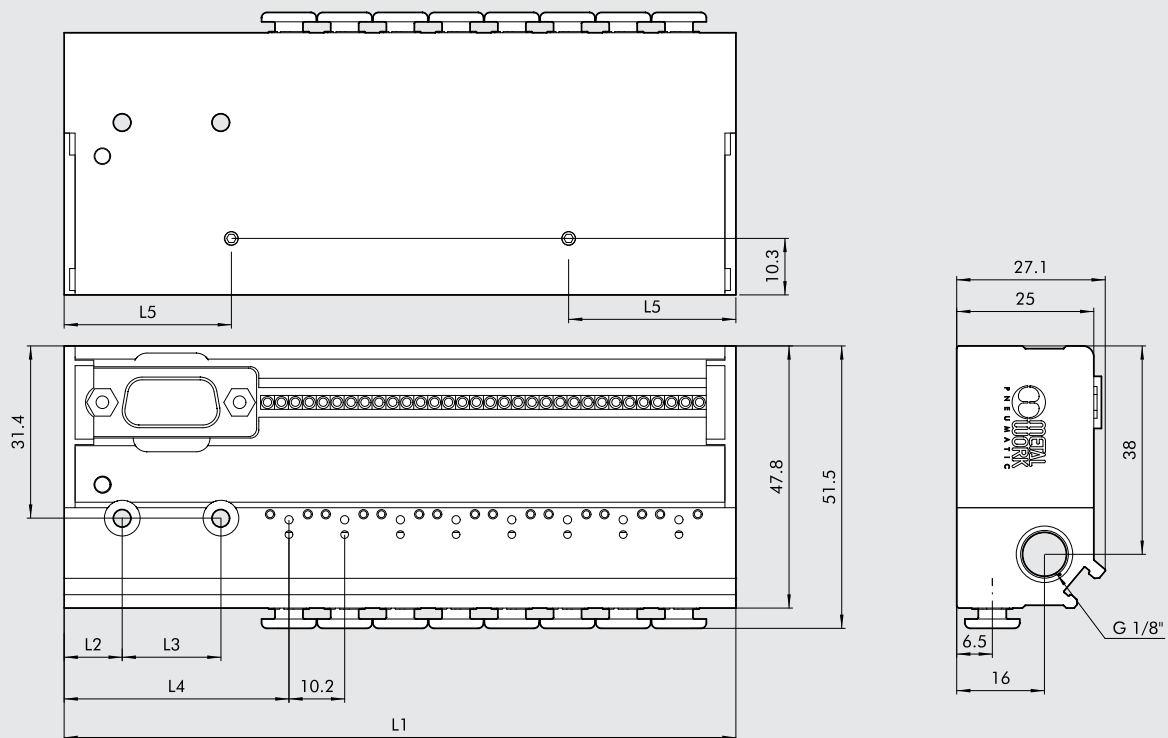
- ① Solenoid valve
- ② Pneumatic circuit cap for blind position
- ③ Electric circuit cap for blind position (use two identification labels)
- ④ Identification label
- ⑤ Electrical connector

HOW TO SECURE THE BASE



- Ⓐ From above using M3 screws
- Ⓑ On a DIN bar, using the bracket and screws provided
The bases come with the rear holes plugged by provided dowels.

CODES AND DIMENSIONS FOR BASES 9 AND 25 PINS

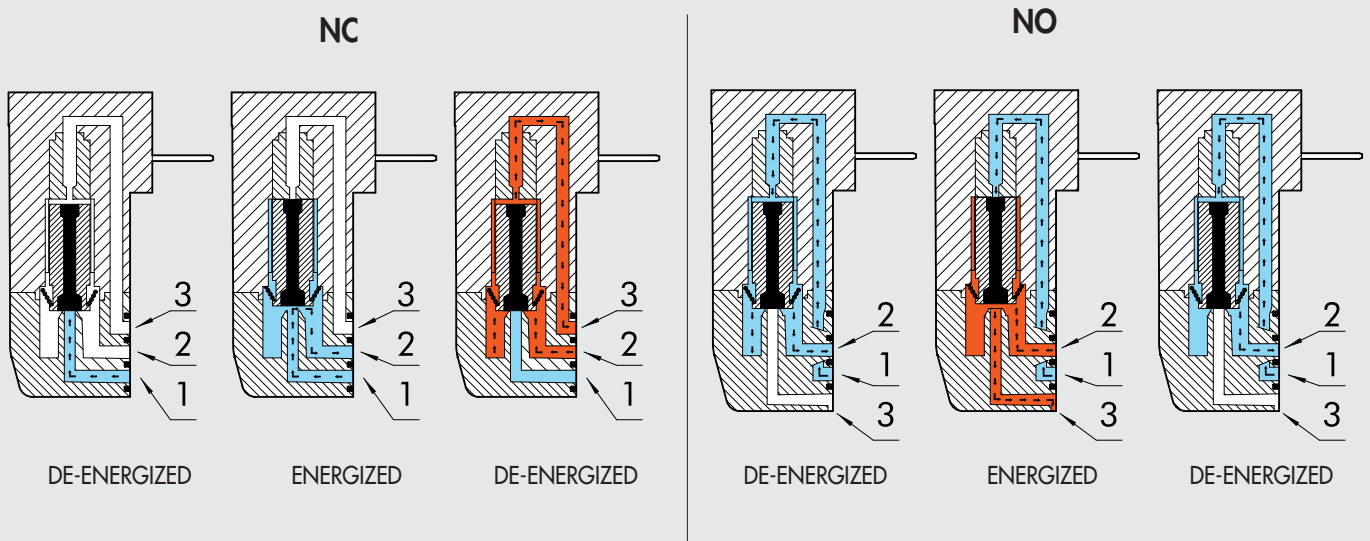


Code	Description	N° of PINS	N° of positions	L1	L2	L3	L4	L5	Weight [g]
0210040004	4-posn. base PLT 10 9-PIN mult conn.	9	4	81.9	10.6	18	41	19.6	160
0210040008	8-posn. base PLT 10 9-PIN mult conn.	9	8	122.5	10.6	18	41	19.6	235
0210240004	4-posn. base PLT 10 25-PIN mult conn.	25	4	104.8	15.5	30	63.9	30.5	210
0210240008	8-posn. base PLT 10 25-PIN mult conn.	25	8	145.4	15.5	30	63.9	30.5	280
0210240012	12-posn. base PLT 10 25-PIN mult conn.	25	12	186	15.5	30	63.9	30.5	355
0210240016	16-posn. base PLT 10 25-PIN mult conn.	25	16	226.6	15.5	30	63.9	30.5	430
0210240020	20-posn. base PLT 10 25-PIN mult conn.	25	20	267.2	15.5	30	63.9	30.5	500
0210240024	24-posn. base PLT 10 25-PIN mult conn.	25	24	307.8	15.5	30	63.9	30.5	575

PLT-10 FOR MULTIPLE ELECTRIC CONNECTION

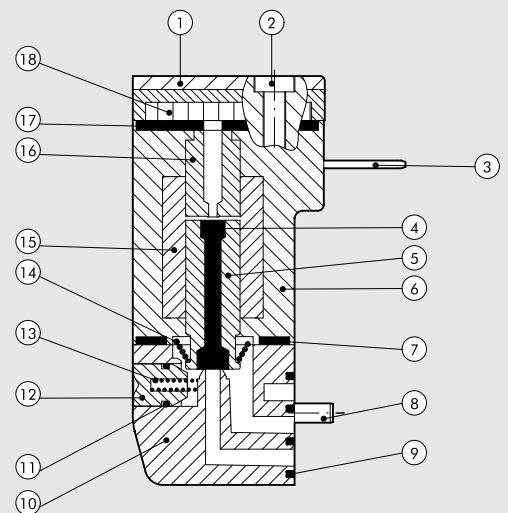
TECHNICAL DATA		NC	NO
Type		3/2 NC ed NO	
Operating temperature range (Te)	°C	5 to 50	
Fluid temperature (Tg)	°C	5 to 50	
Fluid		Filtered, lubricated or unlubricated air	
Operating life		Over 50 million cycles	
Weight	g	12	
Voltage tolerance	ΔV	± 10 %	
Max operating frequency	f	30 Hz	
Switching factor	ED	100 %	
Insulation class		F155	
Degree of protection		IP 51	IP 50
Power connection		PLUG IN	PIN

OPERATING CHART

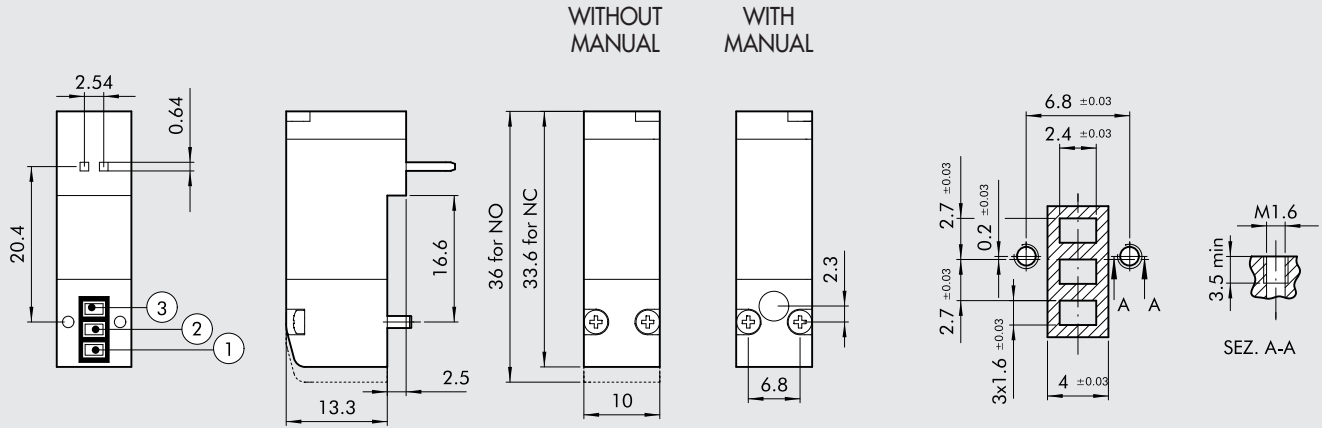


COMPONENTS

- ① TRANSPARENT COVER: PA612-transparent
- ② ASSEMBLY SCREWS: galvanized steel
- ③ PIN
- ④ MOBILE CORE OVER-STAMPING: FKM/FPM
- ⑤ MOBILE CORE: AISI 403F
- ⑥ COIL OVER-STAMPING: PA66
- ⑦ BODY-COIL GASKET: NBR70
- ⑧ ASSEMBLY SCREWS: galvanized steel
- ⑨ BODY GASKET: NBR
- ⑩ BODY: PA66
- ⑪ MANUAL GASKET: NBR (only for version with manual operated)
- ⑫ MANUAL CONTROL: OT58 nickel-plated brass (only for version with manual operated)
- ⑬ MANUAL SPRING: AISI 302 (only for version with manual operated)
- ⑭ SPRING: AISI 302
- ⑮ WINDING: PPS - Copper wire
- ⑯ FIXED CORE: AISI 430F
- ⑰ COIL-COVER GASKET: NBR
- ⑱ ELECTRONIC BOARD (only for version with electronic board)



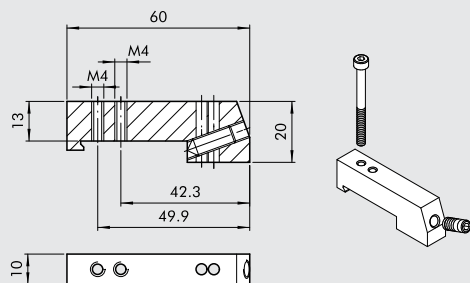
PLT-10 NC-NO FOR MULTIPLE ELECTRIC CONNECTION



Version (3/2 NC)	Code	Manual	Voltage [Volt]	Power [Watt]	Ø Through [mm]	Operating pressure [bar]	Flow rate at 6 ΔP=1 bar [NI/min]	T Max coil T at 24VDC Te 20°C a ED100% [°C]	Weight [g]
Without LED	722123340000	without	24VDC	0.7	0.6	3 to 7	9	93	12
	722123340100	with	24VDC	0.7	0.6	3 to 7	9	93	12
With LED	722123541000	without	24VDC	0.9	0.6	3 to 7	9	93	12
	722123541100	with	24VDC	0.9	0.6	3 to 7	9	93	12
SPEED-UP and LED	722126841000	without	24VDC	3/0.3	1.2	2 to 7	16	51	12
	722126841100	with	24VDC	3/0.3	1.2	2 to 7	16	51	12
<hr/>									
Version (3/2 NO)	Code	Manual	Voltage [Volt]	Power [Watt]	Ø Through [mm]	Operating pressure [bar]	Flow rate at 6 ΔP=1 bar [NI/min]	T Max coil T at 24VDC Te 20°C a ED100% [°C]	Weight [g]
Without LED	722123340010	without	24VDC	0.7	0.6	3 to 7	9	93	12
	722123340110	with	24VDC	0.7	0.6	3 to 7	9	93	12
With LED	722123541010	without	24VDC	0.9	0.6	3 to 7	9	93	12
	722123541110	with	24VDC	0.9	0.6	3 to 7	9	93	12
SPEED-UP and LED	722126841010	without	24VDC	3/0.3	1.0	2 to 7	14	51	12
	722126841110	with	24VDC	3/0.3	1.0	2 to 7	14	51	12

ACCESSORIES

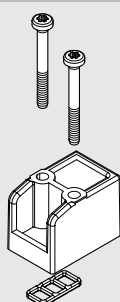
CONNECTION BRACKETS ON BAR OMEGA (DIN EN 50022)



Code	Description	Weight [g]
0227301600	Connection brackets on din BAR HDM/CM	30

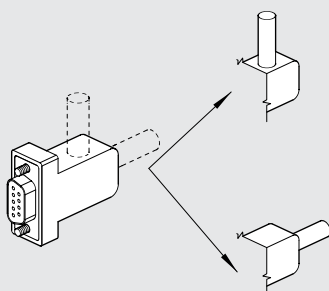
Supplied complete with one M4x45 screws and one M6 grub screw
Individually packed

CAP FOR UNUSED POSITION



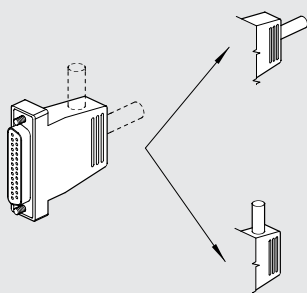
Code	Description	Weight [g]
W0400100200	Cap 10 mm	6

STRAIGHT AND 90° CONNECTOR KIT, 9 WIRES



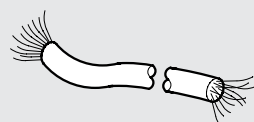
Code	Description	Weight [g]
0226180102	Straight and 90° connector kit, 9 wires	31

STRAIGHT AND 90° CONNECTOR KIT, 25 WIRES



Code	Description	Weight [g]
0226180101	Straight and 90° connector kit, 25 wires	48

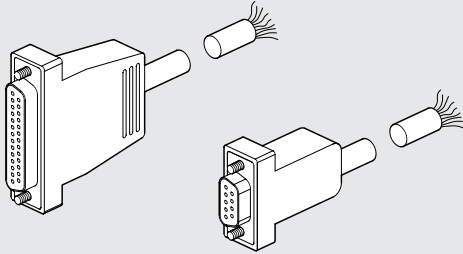
CABLES



Code	Description	Weight [g]
0226107201	10-wire cable	86
0226107101	19-wire cable	122
0226107102	25-wire cable	130

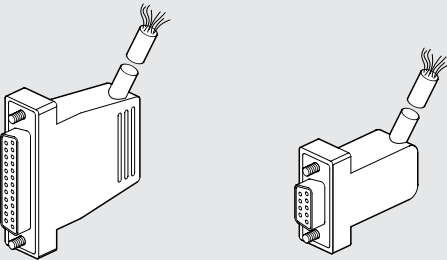
Specify the number of metres desired

STRAIGHT PRE-WIRED CONNECTOR KIT



Code	Description	Weight [g]
0226900100	Connector + 9-wire axial cable L = 1 m	90
0226900250	Connector + 9-wire axial cable L = 2.5 m	220
0226900500	Connector + 9-wire axial cable L = 5 m	434
0226920100	Connector + 25-wire axial cable L = 1 m	132
0226920250	Connector + 25-wire axial cable L = 2.5 m	320
0226920500	Connector + 25-wire axial cable L = 5 m	636

PRE-WIRED 90° CONNECTOR

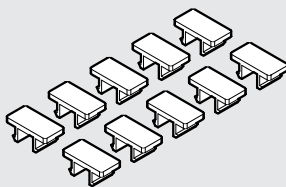


Code	Description	Weight [g]
0226910100	Connector + 9-wire 90° cable L = 1 m	90
0226910250	Connector + 9-wire 90° cable L = 2.5 m	220
0226910500	Connector + 9-wire 90° cable L = 5 m	434
0226930100	Connector + 25-wire 90° cable L = 1 m	132
0226930250	Connector + 25-wire 90° cable L = 2.5 m	320
0226930500	Connector + 25-wire 90° cable L = 5 m	636

WIRING DIAGRAM FOR PRE-WIRED PLUG CONNECTORS

25 PIN				9 PIN			
Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire
1	blue/black	10	brown/white	19	yellow/black	1	green/black
2	red/brown	11	red/orange	20	white	2	white
3	white/black	12	light blue	21	blue/white	3	blue/black
4	red/blue	13	yellow/white	22	brown	4	blue
5	black/orange	14	yellow	23	green/white	5	yellow/black
6	yellow/red	15	red/green	24	red	6	yellow
7	black/brown	16	orange	25	green/black	7	red/black
8	white/red	17	orange/white			8	green
9	red/black	18	green			9	white/black

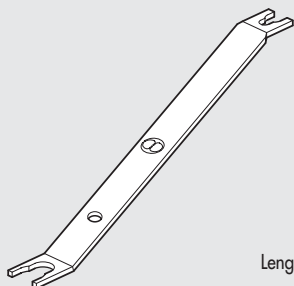
IDENTIFICATION PLATE KIT



Code	Description	Weight [g]
0226107000	Identification plate kit	30

Comes in 10-pc. packs

R17 - PIPE RELEASE SPANNER

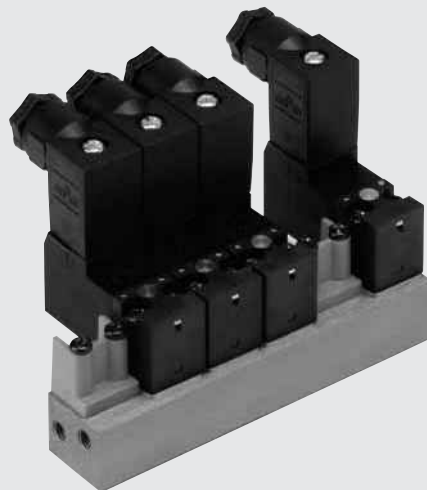


Length = 140 mm

Code	Description	Ø Tube
2L17001	RL17	from Ø 3 to Ø 10

SOLENOID VALVES PIV.M 15 mm

- 3/2 NC/NO direct control microvalves
- Possible assembly on single and multiple bases
- Monostable manual actuation as standard
- Assembly in any position
- Operation with filtered lubricated or unlubricated air
- Maximum ambient temperature: 50°C
- Low power absorption



DISTRIBUTORS

SOLENOID VALVES PIV.M 15 mm

TECHNICAL DATA		
Voltage tolerance	%	-10 to +15
Frequenza tensione alternativa (AC)	Hz	50/60
Max operating frequency	Hz	30
Solenoid rating		100% ED
Response time	ms	~ 10
Type of protection		IP 65 EN 60529
Power connection		9.4 mm micro centre distance
Insulation class		155
Ambient temperature	°C	-10 to + 50
Fluid temperature	°C	-10 to + 50
Fluid		Filtered lubricated or unlubricated air
Operating life		100 million cycles
Materials		Body: PPS Spring: 302 stainless steel FKM/FPM gaskets
Weight	g	30
Manual control		Monostable
Assembly position		In any position

KEY TO CODES

P I V FAMILY	1 AIR HOLE	3 NUMBER OF WAYS	M DIMENSIONS	0 THREAD	1 VERSION	N C FURTHER DETAILS
	1 1 mm	3 3 ways	M 15 x 15	0 on base	1 24 VDC	NC normally closed
	3 1.1 mm				3 24 VAC	NO normally open
	6 1.5 mm				5 110 VAC	
					7 220 VAC	

PIV VALVES ON BASE

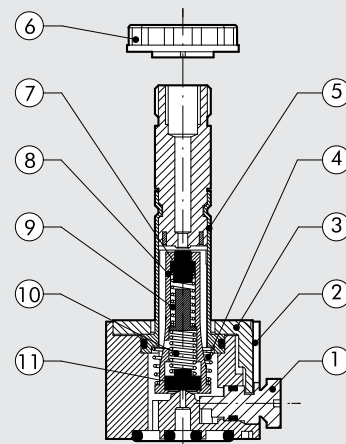
- PIV.I - PIV.T and PIV.B solenoid valves
- Assembly on base
- Bistable manual actuation
- Normally closed/normally open solenoid valves 2/2 – 3/2
- Installation in any position
- Particularly suitable for high operating frequencies and low response times



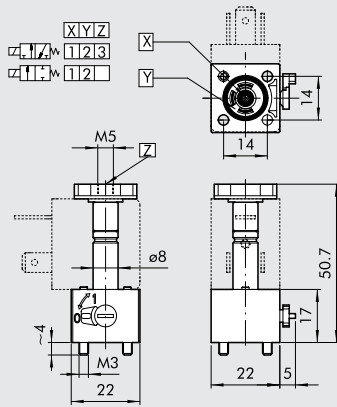
TECHNICAL DATA	PIV.I ON BASE	PIV.T ON BASE	PIV.B ON BASE
Absorption	5W - 5VA	3.8W - 6.5VA	10W - 13VA
Voltage available	12-24 VDC / 24-110-220 VAC	24VDC / 24-110-220 VAC	24VDC / 24-110-220 VAC
	50/60 Hz	50/60 Hz	50/60 Hz
Voltage tolerance	% -10 to +15	% -10 to +15	% -10 to +15
Max operating frequency	Hz 30	Hz 30	Hz 15
Solenoid rating	% 100	% 100	% 100
Response time	ms 8 to 15	ms 8 to 15	ms 10 to 15
Type of protection	IP 65	IP 65	IP 65
Type of coil	Coil side 22 Ø 8 DIN 43650	Coil side 22 Ø 9 DIN 43650	Coil side 30 DIN 43650
Insulation class	155	155	155
Ambient temperature	°C -15 to 50	°C -15 to 50	°C -15 to 50
Fluid temperature	°C -15 to 50	°C -15 to 50	°C -15 to 50
Fluid	Filtered lubricated or unlubricated air 25 million cycles	Filtered lubricated or unlubricated air 25 million cycles	Filtered lubricated or unlubricated air
Working life			-
Weight	g 80 to 120 (according to the version)	g 85	g 250
Maximum coil nut torque	Nm 1	Nm 1	Nm 1



COMPONENTS

- ① Manual control: technopolymer
- ② Body: technopolymer
- ③ Sleeve locking plate
- ④ Spring: stainless steel
- ⑤ Sleeve: brass OT 58
- ⑥ Ring nut for coil fixing
- ⑦ Gasket: NBR
- ⑧ Mobile core
- ⑨ Spring: stainless steel
- ⑩ Spring: stainless steel
- ⑪ Gasket: NBR

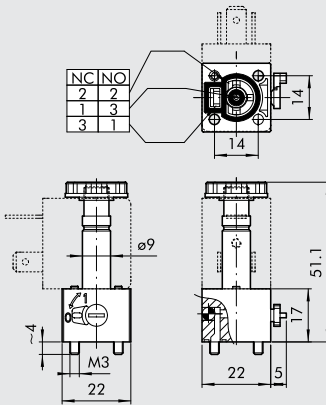




PIV.I VALVES, OPERATOR Ø 8, ON BASE



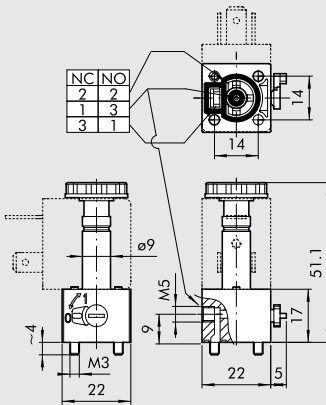
Symbol	Code	Description	Air hole Ø [mm]	Kv Factor	Max oper. pressure [bar]	
					DC	AC
	W4018000200	PIV42IOS NC	1.2	0.65	10	10
	W4018000300	PIV72IOS NC	1.6	1	8	8
	W4018001200	PIV43IOS NC	1.2	0.65	10	10
	W4018001300	PIV73IOS NC	1.6	1	8	8



PIV.T VALVES, OPERATOR Ø 9, ON BASE



Symbol	Code	Description	Air hole Ø [mm]	Kv Factor	Pressure range [bar]	
					DC	AC
	W4025002101	PIV73TOB NO	1.6	0.75	0.5 to 7	0.5 to 7
	W4025002301	PIV83TOB NO	1.8	0.85	0.5 to 6.5	0.5 to 6.5
	W4025002100	PIV73TOB NC	1.6	0.8	0.5 to 10	0.5 to 10
	W4025002300	PIV83TOB NC	1.8	1	0.5 to 8	0.5 to 8

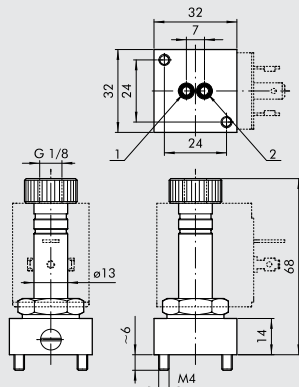
PIV.T VALVES, OPERATOR Ø 9, ON BASE WITH CONVEYED EXHAUST




Symbol	Code	Description	Air hole Ø [mm]	Kv Factor	Pressure range [bar]	
					DC	AC
	W4025002001	PIV73T00 NO	1.6	0.75	0.5 to 7	0.5 to 7
	W4025002501	PIV83T00 NO	1.8	0.85	0 to 6	0.5 to 6.5
	W4025002000	PIV73T00 NC	1.6	0.8	0.5 to 10	0.5 to 10
	W4025002500	PIV83T00 NC	1.8	1	0.5 to 8	0.5 to 8

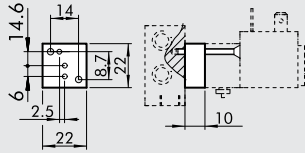
PIV.T VALVES, OPERATOR Ø 13, ON BASE

NORMALLY CLOSED



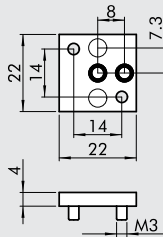
Symbol	Code	Description	Air hole Ø [mm]	Kv Factor	Max oper. pressure [bar]	
					DC	AC
	W4026003000	PIVY3B0S NC	2.4	2.2	10W	13VA

NC/NO ADAPTER FOR PIV.T VALVES



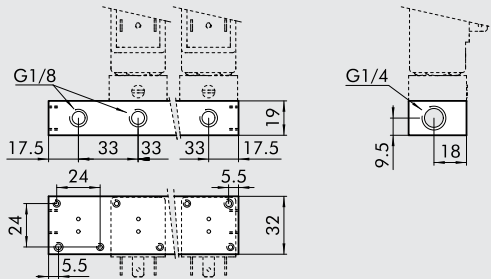
Code	Description	Abbrev.	Weight [g]
W0400101190	NC/NO adapter	I-9000	15

BASE BLANKING PLATE FOR PIV.T VALVES, UNUSED POSITIONS



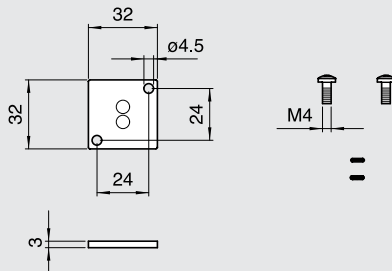
Code	Description	Abbrev.	Weight [g]
W0400112000	Blanking plate	B6000	5

MULTIPLE BASES FOR PIV.B VALVES



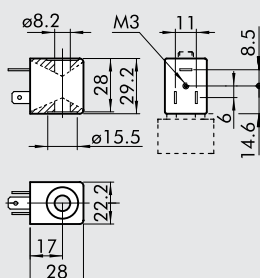
Code	Description	Abbrev.	Weight [g]
W0400101201	Base 1 position	B4001	42
W0400101202	Base 2 positions	B4002	94
W0400101203	Base 3 positions	B4003	142
W0400101204	Base 4 positions	B4004	188
W0400101205	Base 5 positions	B4005	234
W0400101206	Base 6 positions	B4006	280
W0400101207	Base 7 positions	B4007	326
W0400101208	Base 8 positions	B4008	372
W0400101209	Base 9 positions	B4009	418

BASE BLANKING PLATE FOR PIV.B VALVES, UNUSED POSITIONS



Code	Description	Weight [g]
W0400112001	Blanking plate	14

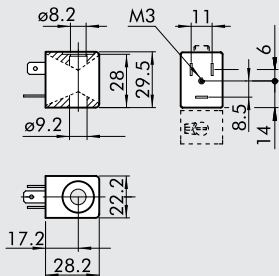
COILS, SIDE 22 mm FOR PIV.I SOLENOID VALVES, OPERATOR Ø 8



- Voltage tolerance: -10 to +15%
- Insulation class: F155
- Degree of protection: IP65 – EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents.
- Maximum coil temperature at 100% use: 70°C at 20° ambient temperature
- According to Atex 94/9 CE rule, group 2, category 3 GD

Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0215000051	Coil 22 Ø 8 5W-12VDC	12Vcc	5W	5W
W0215000001	Coil 22 Ø 8 5W-24VDC	24Vcc	5W	5W
W0215000011	Coil 22 Ø 8 5VA-24VAC	24V 50/60Hz	8VA	5VA
W0215000021	Coil 22 Ø 8 5VA-110VAC	110V 50/60Hz	8VA	5VA
W0215000031	Coil 22 Ø 8 5VA-220VAC	220V 50/60Hz	8VA	5VA

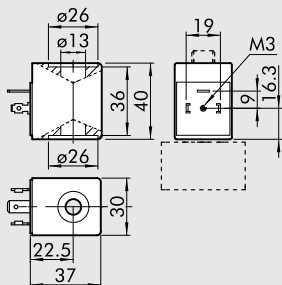
COILS, SIDE 22 mm FOR PIV.T SOLENOID VALVES, OPERATOR Ø 9



- Voltage tolerance: -10 to +15%
- Insulation class: F155
- Degree of protection: IP65 – EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents
- Maximum coil temperature at 100% use: 70°C at 20° ambient temperature

Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W021600001	Coil 22 Ø9 3.8W-24VDC	24Vcc	3.8W	3.8W
W021600011	Coil 22 Ø9 6.5VA-24VAC	24V 50/60Hz	9VA	6.5VA
W021600021	Coil 22 Ø9 6.5VA-110VAC	110V 50/60Hz	9VA	6.5VA
W021600031	Coil 22 Ø9 6.5VA-220VAC	220V 50/60Hz	9VA	6.5VA

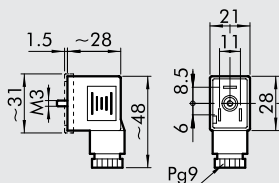
COILS, SIDE 22 mm FOR PIV.B SOLENOID VALVES



- Voltage tolerance: -10 to +15%
- Insulation class: M180
- Degree of protection: IP65 – EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents

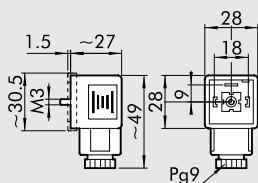
Code	Abbrev.	Nominal voltage	Power absorption (average power input)	
			Inrush	Holding
W021600101	Coil 30 Ø13 10W-24VDC	24Vcc	10W	
W021600111	Coil 30 Ø13 13VA-24VAC	24V 50/60Hz	13VA	
W021600121	Coil 30 Ø13 13VA-110VAC	110V 50/60Hz	13VA	
W021600131	Coil 30 Ø13 13VA-220VAC	220V 50/60Hz	13VA	

CONNECTORS, SIDE 22 mm FOR PIV.I-PIV.T



Code	Type	Colour	Ø Cable
W0970510011	Standard	Black	PG9
W0970510012	LED 24V	Transparent	PG9
W0970510013	LED 110V	Transparent	PG9
W0970510014	LED 220V	Transparent	PG9
W0970510015	LED + VDR 24V	Transparent	PG9
W0970510016	LED + VDR 110V	Transparent	PG9
W0970510017	LED + VDR 220V	Transparent	PG9
W0970510070	Atex	Black	PG9

CONNECTORS, SIDE 30 mm FOR PIV.B



Code	Type	Colour	Ø Cable
W0970520033	Standard	Black	PG9
W0970520034	LED 24V	Transparent	PG9
W0970520035	LED 110V	Transparent	PG9
W0970520036	LED 220V	Transparent	PG9
W0970520037	LED + VDR 24V	Transparent	PG9
W0970520038	LED + VDR 110V	Transparent	PG9
W0970520039	LED + VDR 220V	Transparent	PG9

NOTES

PIV VALVES IN LINE

- PIV.I – PIV.B in-line solenoid valves
- Threaded ports: M5, G1/8", G1/4"
- 2/2 – 3/2 solenoid valves - normally closed/normally open
- Installation in any position
- Particularly suitable for high operating frequencies and low response times.

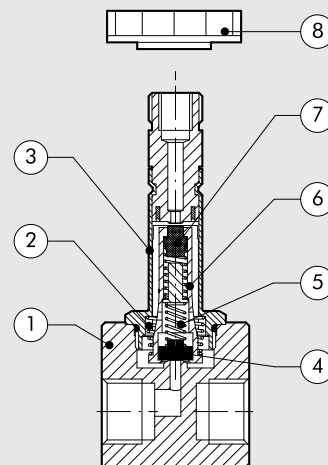


TECHNICAL DATA	PIV.I IN LINE	PIV.B IN LINE
Absorption	5W to 5VA	10W - 13VA
Voltage available	24Vdc - 24-110-220 Vac - 50/60 Hz	24Vdc - 24-110-220 Vac - 50/60 Hz
Voltage tolerance	% -10 to 15	% -10 to 15
Max operating frequency	Hz 30	Hz 15
Solenoid rating	% 100	% 100
Response time	ms 8 to 15	ms 10 to 15
Type of protection	IP 65	IP 65
Type of coil	Coil side 22 Ø 8 DIN 43650	Coil side 30 DIN 43650
Insulation class	155	155
Ambient temperature	°C -15 to 50	°C -15 to 50
Fluid temperature	°C -15 to 50	°C -15 to 50
Fluid	Filtered lubricated or unlubricated air	Filtered lubricated or unlubricated air
Working life	25 million cycles	-
Weight	35 to 40 (depending on version)	130
Maximum coil/nut torque	Nm 1	Nm 1

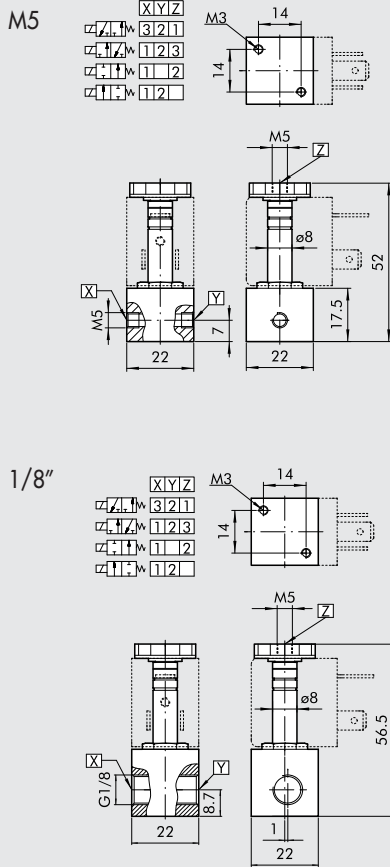
Note on use:
The 2/2 NC and 2/2 NO valves work only with inlet pressure \geq outlet pressure.

COMPONENTS

- ① Body: aluminium
- ② Springs: steel
- ③ Sleeve
- ④ Gasket: NBR
- ⑤ Springs: steel
- ⑥ Mobile core
- ⑦ Gasket: FKM/FPM
- ⑧ Coil locking ring

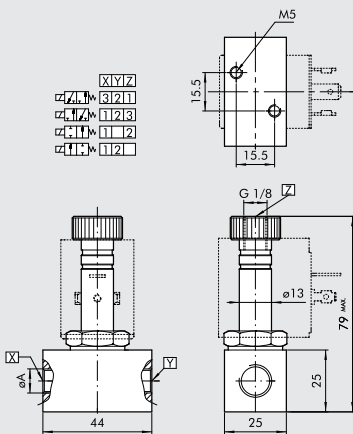


PIV.I VALVES, OPERATOR Ø 8 mm, IN LINE – M5 – 1/8"



Symbol	Code	Description	Input thread	Air hole Ø [mm]	Kv Factor	Max oper. pressure [bar]	
						DC	AC
	W4017000100	PIV42I5S NC	M5	1.2	0.65	30	30
	W4017001300	PIV92I8S NC	G1/8"	2.4	2	6	7
	W4017001100	PIV42I8S NC	G1/8"	1.2	0.65	30	30
	W4017001200	PIV72I8S NC	G1/8"	1.6	1.2	15	14
	W4017000101	PIV72I5S NO	M5	1.4	0.8	10	10
	W4017001201	PIV72I8S NO	G1/8"	1.4	0.8	10	10
	W4017003100	PIV43I5S NC	M5	1.2	0.65	10	10
	W4017004100	PIV43I8S NC	G1/8"	1.2	0.65	10	10
	W4017004200	PIV73I8S NC	G1/8"	1.6	1	6.5	6.5
	W4017004201	PIV73I8S NO	M5	1.4	0.7	6	7

PIV.B VALVES, OPERATOR Ø 13, IN LINE



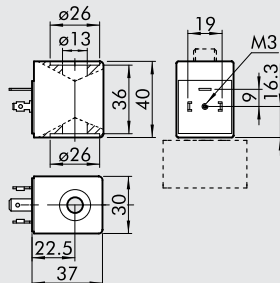
Symbol	Code	Description	Input thread	Ø Air hole [mm]	Factor kv	Max oper. pressure [bar]	
						DC	AC
	W4026005001	PIV73B8S NO	G1/8"	1.6	1.2	6	12
	W4026005101	PIV73B4S NO	G1/4"	1.6	1.2	6	12
	W4026005111	PIV93B4S NO	G1/4"	2.4	2	3	4
	W4026005010	PIV93B8S NC	G1/8"	2.4	2.8	8	10
	W4026005020	PIVW3B8S NC	G1/8"	3	4	5.5	6
	W4026005000	PIV73B8S NC	G1/8"	1.6	1.4	14	17
	W4026005100	PIV73B4S NC	G1/4"	1.6	1.4	14	17
	W4026005110	PIV93B4S NC	G1/4"	2.4	2.8	8	8
	W4026005120	PIVW3B4S NC	G1/4"	3	4	5.5	6
	W4026004000	PIV92B4S NC	G1/4"	2.4	3	15	30
	W4026004010	PIVX2B4S NC	G1/4"	4	7	6	12
	W4026004020	PIVZ2B4S NC	G1/4"	6	9	1.5	5
	W4026004001	PIV92B4S NO	G1/4"	2.4	2.6	13	15

KEY TO CODES

P I V FAMILY	7 AIR HOLE	2 NUMBER OF WAYS	B CONNECTION	4 THREAD	5 VERSION	N C FURTHER DETAILS
	4 1.2 mm	2 2 ways	I 22 x 22	5 M5	S standard	NC normally closed
	7 1.6 mm	3 3 ways	operator Ø 8	4 G1/4"		NO normally open
	9 2.4 mm		30 x 30	8 G1/8"		
	W 3 mm		operator Ø 13			
	X 4 mm					
	Z 6 mm					

ACCESSORIES

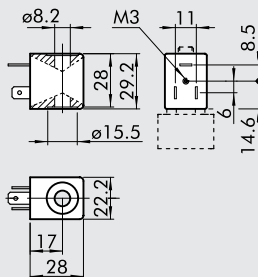
COIL, SIDE 30 mm - FOR PIV.B SOLENOID VALVES



- Voltage tolerance: -10 to +15%
- Insulation class: M180
- Degree of protection: IP65 – EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents

Code	Abbrev.	Nominal voltage	Absorption (average)
W0216001001	Coil 30 Ø13 10W-24VDC	24Vcc	10W
W0216001011	Coil 30 Ø13 13VA-24VAC	24V 50/60Hz	13VA
W0216001021	Coil 30 Ø13 13VA-110VAC	110V 50/60Hz	13VA
W0216001031	Coil 30 Ø13 13VA-220VAC	220V 50/60Hz	13VA

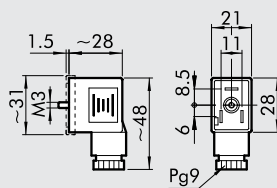
COIL, SIDE 22 mm - FOR PIV.I SOLENOID VALVES



- Voltage tolerance: -10 to +15%
- Insulation class: F155
- Degree of protection: IP65 – EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents
- Maximum temperature of coil at 100% use: 70°C at 20° ambient temperature
- According to Atex 94/9 CE rule, group 2, category 3 GD

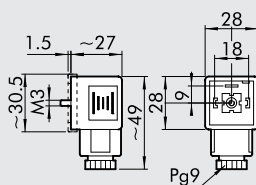
Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0215000051	Coil 22 Ø8 5W-12VDC	12Vcc	5W	5W
W0215000001	Coil 22 Ø8 5W-24VDC	24Vcc	5W	5W
W0215000011	Coil 22 Ø8 5VA-24VAC	24V 50/60Hz	8VA	5VA
W0215000021	Coil 22 Ø8 5VA-110VAC	110V 50/60Hz	8VA	5VA
W0215000031	Coil 22 Ø8 5VA-220VAC	220V 50/60Hz	8VA	5VA

CONNECTOR, SIDE 22 mm



Code	Type	Colour	Ø Cable
W0970510011	Standard	Black	PG9
W0970510012	LED 24V	Transparent	PG9
W0970510013	LED 110V	Transparent	PG9
W0970510014	LED 220V	Transparent	PG9
W0970510015	LED + VDR 24V	Transparent	PG9
W0970510016	LED + VDR 110V	Transparent	PG9
W0970510017	LED + VDR 220V	Transparent	PG9
W0970510070	Atex	Black	PG9

CONNECTOR, SIDE 30 mm



Code	Type	Colour	Ø Cable
W0970520033	Standard	Black	PG9
W0970520034	LED 24V	Transparent	PG9
W0970520035	LED 110V	Transparent	PG9
W0970520036	LED 220V	Transparent	PG9
W0970520037	LED + VDR 24V	Transparent	PG9
W0970520038	LED + VDR 110V	Transparent	PG9
W0970520039	LED + VDR 220V	Transparent	PG9

CNOMO SOLENOID VALVE

Solenoid valve to CNOMO 060580.

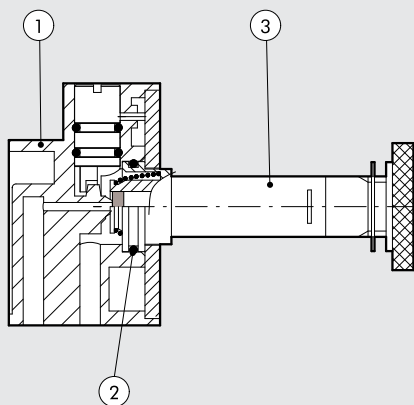
- 3/2 version normally closed
- Bistable and monostable manual actuation
- Assembly on manifold base



TECHNICAL DATA

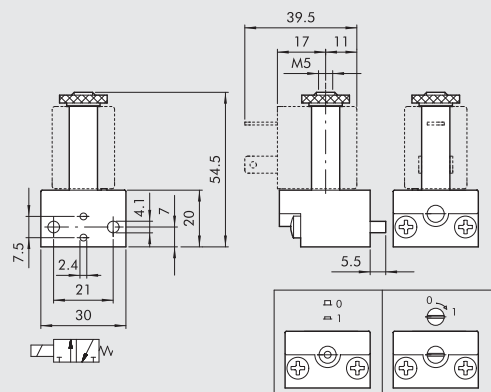
Operating pressure	bar	Max 10
Operating temperature range	°C	-10 to 60
Solenoid rating		100% ED
Fluid		Filtered lubricated or unlubricated air
System		With poppet
Nominal flow rate	NI/min	40
TRA/TRR at 6 bar	ms	22/32
Maximum coil nut torque	Nm	10

COMPONENTS



- 1 VALVE BODY: HOSTAFORM®
- 2 GASKETS: NBR
- 3 OPERATOR: Brass pipe – Stainless steel core

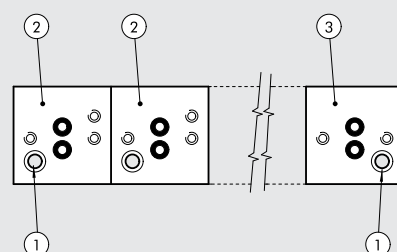
DIMENSIONS



Code	Description
9453920	Cnomo 3/2 with monostable manual actuation
9453922	Cnomo 3/2 with bistable manual actuation

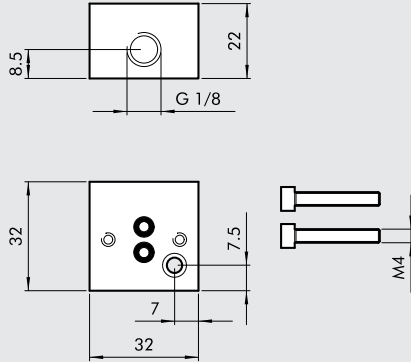
MODULAR CONFIGURATION OF CNOMO BASES

- 1 Two fixing screws (included in input kit)
- 2 CNOMO manifold base kit
- 3 CNOMO manifold base input kit



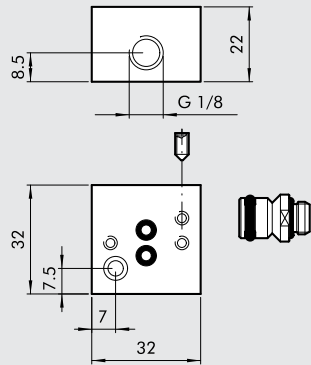
ACCESSORIES

CNOMO MANIFOLD BASE INPUT KIT



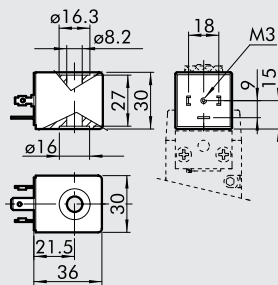
Code	Description
0227000200	Cnomo manifold base input kit

CNOMO MANIFOLD BASE KIT



Code	Description
0227000150	Cnomo manifold base kit

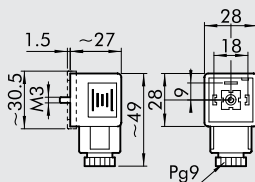
COILS, SIDE 30 mm



- Electric contact DIN 43650 Shape A
- Voltage tolerance: -10% to +10%
- Insulation class: F155
- Degree of protection: IP65 EN 60529 with connector
- Solenoid rating: 100% ED
- Maximum coil temperature at 100% ED use 70°C at 20° ambient temperature

Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0210010100	Coil 30 Ø8 4W-24VDC	24Vcc	5W	4W
W0210011100	Coil 30 Ø8 4VA-24VAC	24V 50/60Hz	10VA	4VA
W0210012100	Coil 30 Ø8 4VA-110VAC	110V 50/60Hz	10VA	4VA
W0210013100	Coil 30 Ø8 4VA-220VAC	220V 50/60Hz	10VA	4VA

CONNECTOR ON SIDE 30 mm



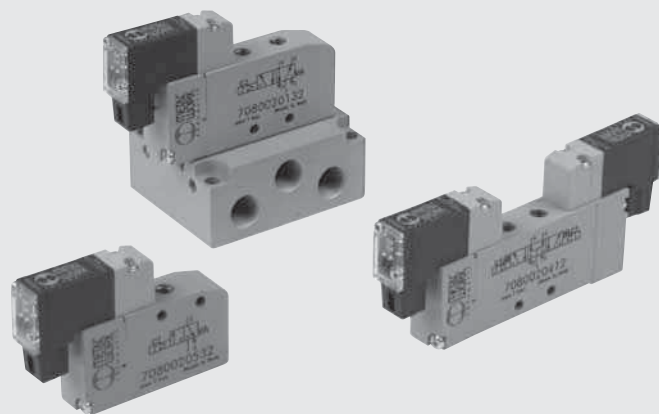
Code	Type	Colour	Ø Cable
W0970520033	Standard	Black	PG9
W0970520034	LED 24V	Transparent	PG9
W0970520035	LED 110V	Transparent	PG9
W0970520036	LED 220V	Transparent	PG9
W0970520037	LED + VDR 24V	Transparent	PG9
W0970520038	LED + VDR 110V	Transparent	PG9
W0970520039	LED + VDR 220V	Transparent	PG9

VALVES MINIMACH

Space-saving valve, ideal for in industrial automation applications. Made according to the well-proven design of the Mach series, the Minimach has a painted aluminium body to ensure extra sturdiness and reliable operation in even the harshest of environments. The internal seals are made of FKM/FPM and are compatible with all oils used in compressors. The pneumatic couplings are M5 threaded, allowing the user to choose the diameter, type and angle of the fitting. The valve can be mounted in line or on a panel or multiple-port base. The following versions are available:

- 3/2 normally open or normally closed
- 5/2 monostable or bistable
- 5/3 closed centres, open centres, pressure centres.

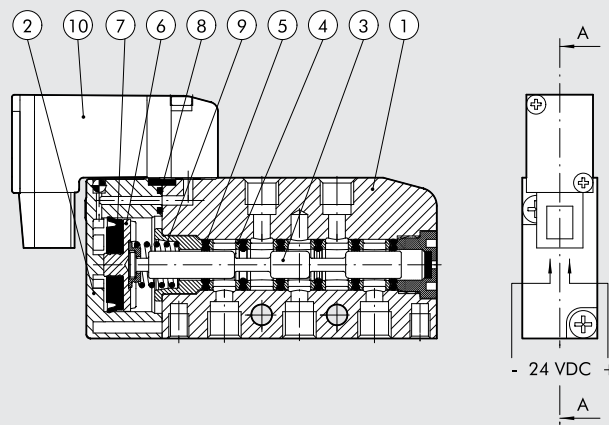
Electropneumatic actuation with a 24V DC pilot.



TECHNICAL DATA		
Valve port thread		M5
Type of actuation		electric-pneumatic
Maximum external diameter of fittings	mm	Ø 11
Operating temperature range	°C	-10 to +60
	°F	14 to +140
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous
Pressure range	MPa	0.3 to 0.7
	bar	3 to 7
	psi	44 to 102
Flow rate at 6 bar ΔP 1 3/2	NI/min	140
Flow rate at 6 bar ΔP 1 5/2	NI/min	170
Flow rate at 6 bar ΔP 1 5/3	NI/min	80
Voltage range		24 VDC ± 10%
Power	W	0.9
Solenoid rating		100% ED
Manual operator		Monostable
TRA/TRR 3/2 at 6 bar	ms	8/23
TRA/TRR 5/2 monostable at 6 bar	ms	8/30
TRA/TRR 5/2 bistable at 6 bar	ms	9/30
TRA/TRR 5/3 at 6 bar	ms	9/30
Insulation class		F155
Degree of protection		IP 51
Installation		In any position. As for the bistable ones, if subject to vibration, the vertical assembly is not advisable
Compatibility with oils		Please refer to page 6-7 of the technical documentation

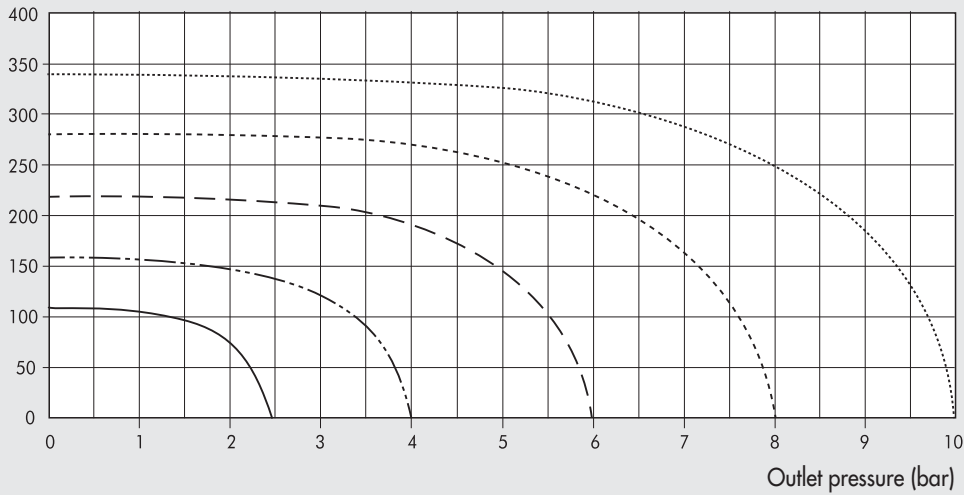
COMPONENTS

- ① VALVE BODY: chemically nickel-plated aluminium
- ② CONTROL/END CAP: Hostaform®
- ③ SPOOL: aluminium
- ④ DISTANCE PLATES: tecnopolymer
- ⑤ GASKETS: FKM-FPM
- ⑥ PISTONS: HOSTAFORM®
- ⑦ PISTON GASKET: Polyurethane
- ⑧ FILTER: sintered bronze
- ⑨ SPRINGS: special steel
- ⑩ PILOT: with integrated coil



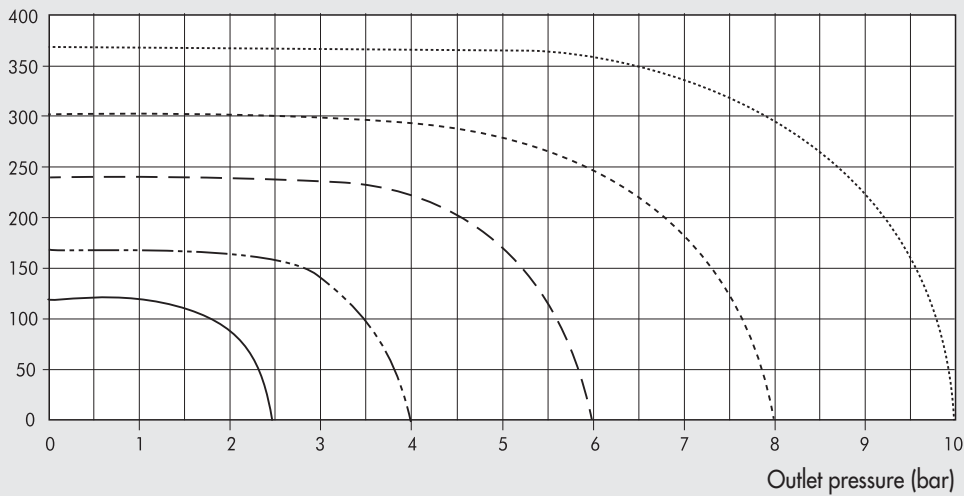
FLOW CHART

Flow rates (Nl/min)



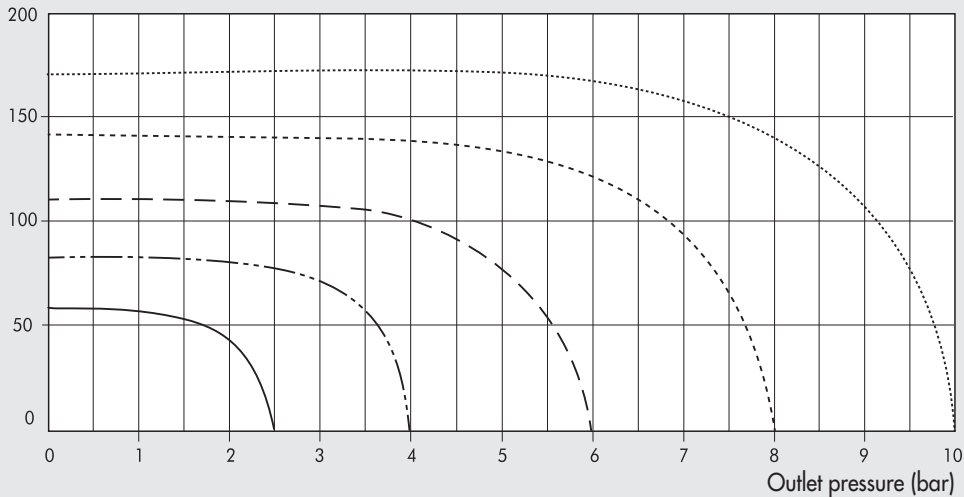
3/2

Flow rates (Nl/min)



5/2

Flow rates (Nl/min)



5/3

HOW TO FIX THE VALVE TO THE BASE

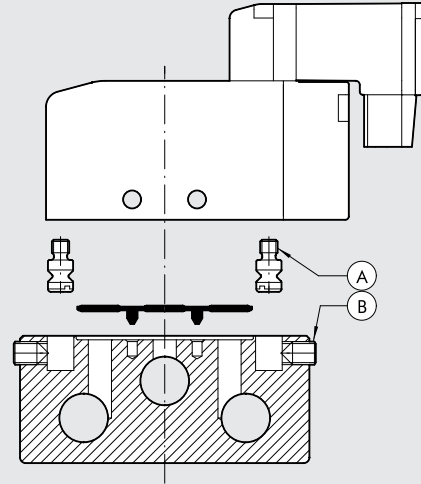
Proceed as follows:

1. screw the pins **A** onto the valve
2. secure them with the ready-mounted grub screws **B** on the base (0.5 Nm max)

IMPORTANT

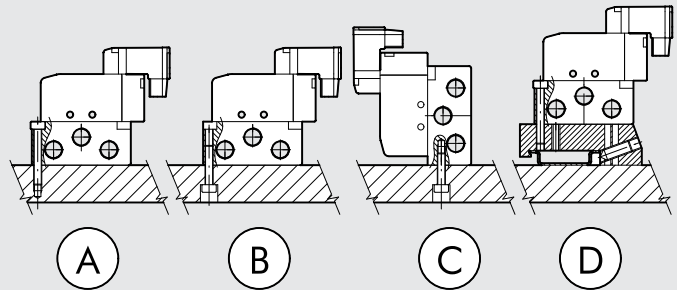
To secure properly, press the valve down onto the base while tightening the two grub screws.

Do not tighten one grub screw completely before starting to tighten the other.



HOW TO FIX THE BASE

- A** From the top using M4 screws
- B** From below using M5 screws
- C** From the side using M4 screws
- D** From the top on the DIN bar via the M4 screws and bracket code 0225004600 (using 1 screw per bracket)

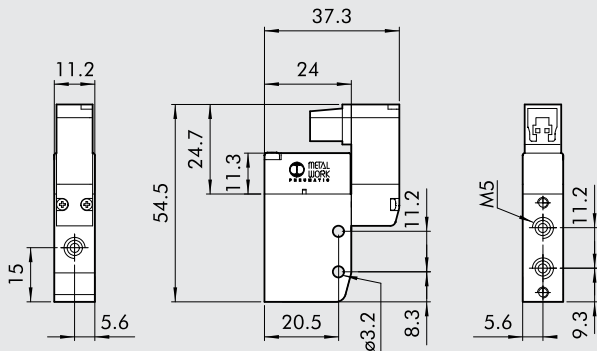


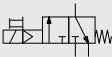
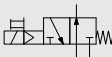
KEY TO CODES

M S V	0	5	S O	B	O O	2 4 V D C
FAMILY	DIMENSIONS	FUNCTION	OPERATORS 14	RESETTING (12)	FURTHER DETAILS	
MSV minivalves solenoid	0 M5	3 3/2 5 5/2 6 5/3	SO solenoid	B bistable S mechanical springs	NC normally closed NO normally open OO 5/2 standard CC closed centres OC open centres PC pressure centres	24VDC

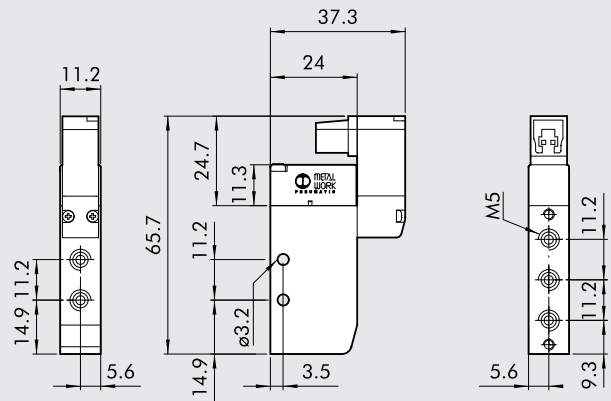
MINIMACH VALVES SOLENOID-PNEUMATIC

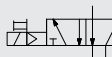
MONOSTABLE 3/2



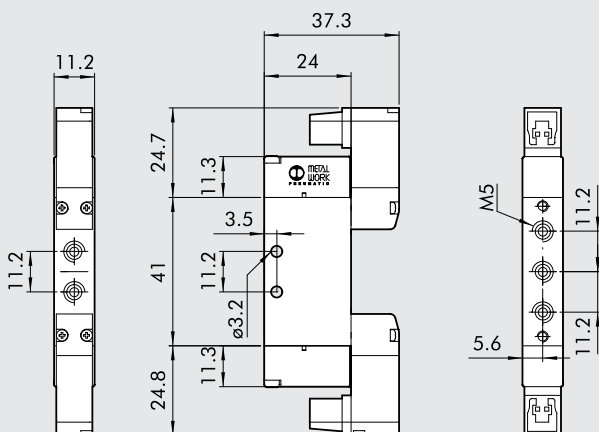
Symbol	Code	Abbrev.	Weight [g]
	7080020532	MSV 03 SOS NC 24VDC	36.2
	7080020632	MSV 03 SOS NO 24VDC	36.2


MONOSTABLE 5/2



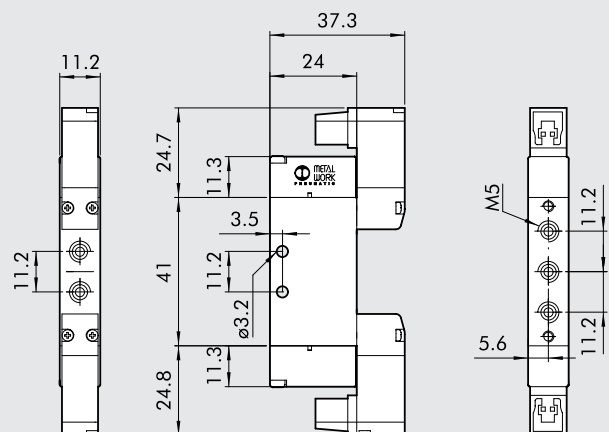
Symbol	Code	Abbrev.	Weight [g]
	7080020132	MSV 05 SOS OO 24VDC	43.3

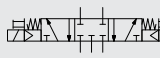
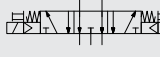

BISTABLE 5/2



Symbol	Code	Abbrev.	Weight [g]
	7080020112	MSV 05 SOB OO 24VDC	57

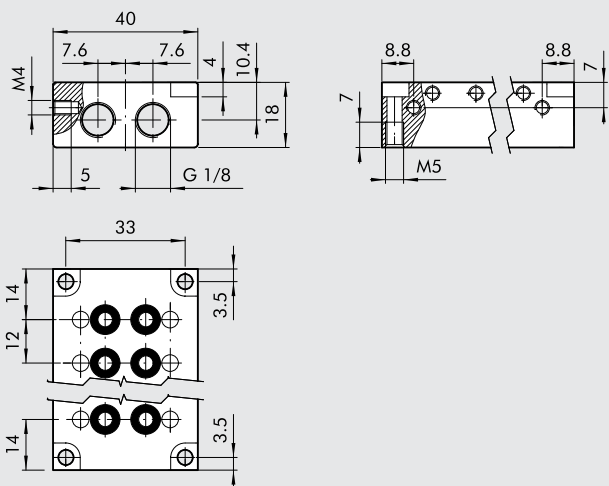
MONOSTABLE 5/3



Symbol	Code	Abbrev.	Weight [g]
	7080020212	MSV 06 SOS CC 24VDC	57
	7080020312	MSV 06 SOS OC 24VDC	57
	7080020412	MSV 06 SOS PC 24VDC	57

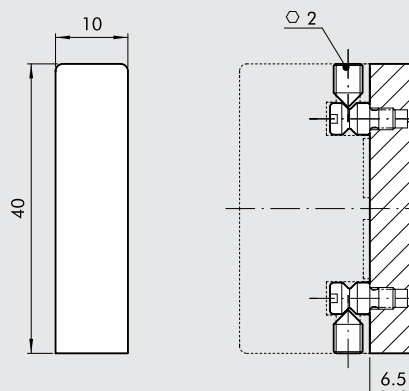
ACCESSORIES: MULTIPLE BASE

3/2 MULTIPLE BASE



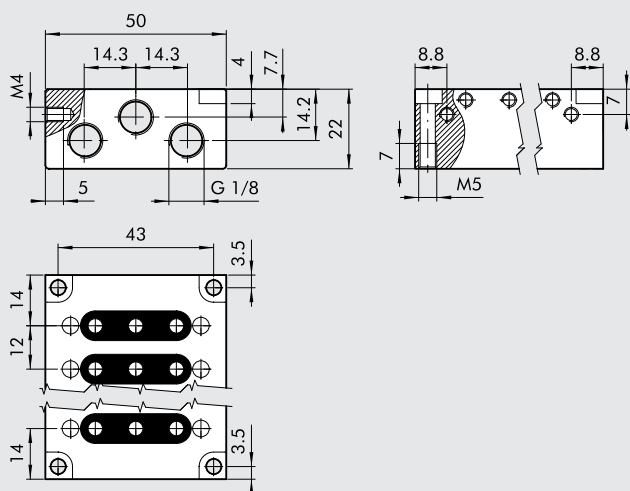
Code	Description	Position	Weight [g]
0225010201	Base 2 posn. for 3/2 valves Minimach	2	60
0225010401	Base 4 posn. for 3/2 valves Minimach	4	99
0225010601	Base 6 posn. for 3/2 valves Minimach	6	135
0225010801	Base 8 posn. for 3/2 valves Minimach	8	178

BLANKING PLATE FOR 3/2 VALVES



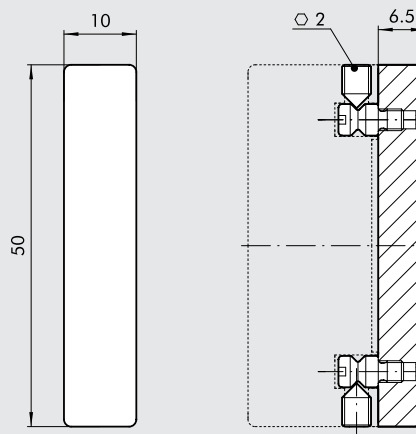
Code	Description	Weight [g]
0226009500	Blanking plate for 3/2 bases Minimach	9.5

5/2 - 5/3 MULTIPLE BASE



Code	Description	Position	Weight [g]
0225020201	Base 2 posn. for 5/2-5/3 valves Minimach	2	95
0225020401	Base 4 posn. for 5/2-5/3 valves Minimach	4	154
0225020601	Base 6 posn. for 5/2-5/3 valves Minimach	6	211
0225020801	Base 8 posn. for 5/2-5/3 valves Minimach	8	270

BLANKING PLATE FOR 5/2 - 5/3 VALVES

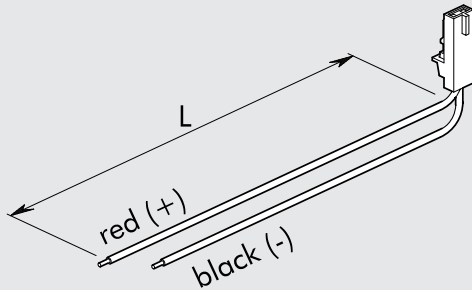


Code	Description	Weight [g]
0226009501	Blanking plate for 5/2-5/3 bases Minimach	11

ACCESSORIES

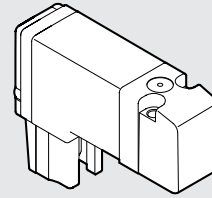
SPARE PARTS

PLUG-IN CONNECTOR



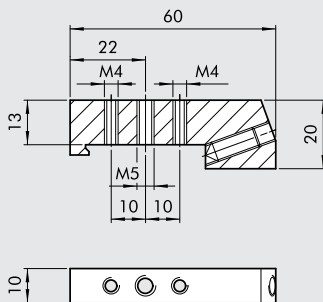
Code	Description
W0970512000	Plug-in connector for MACH 11 L = 300

PLUG-IN PILOT



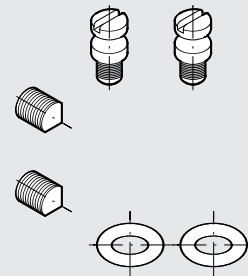
Code	Description
722113541100	PLT-10 722113541100

ADAPTER FOR BAR OMEGA (DIN EN 50022)



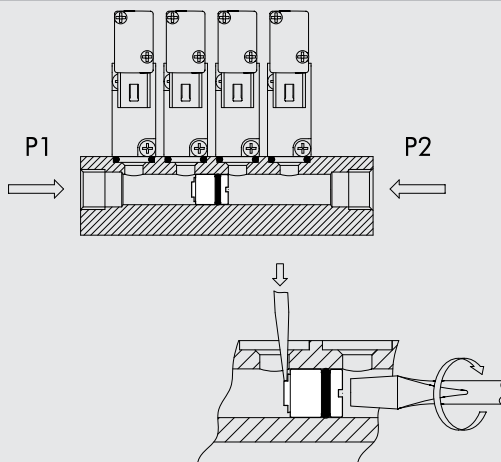
Code	Descrizione	Weight [g]
0225004600	Adapter for bar omega	46

KIT OF SPARE GASKET BASES FOR 3/2 VALVES



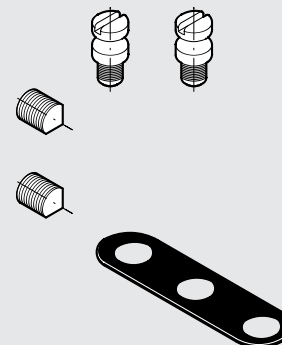
Code	Description	Weight [g]
0226009000	Kit of spare gasket bases for 3/2 valves	2.5

INTERMEDIATE DIAPHRAGM



Code	Description	Weight [g]
0226009010	Multiple base diaphragm	3.5

KIT OF SPARE GASKET BASES FOR 5/2 - 5/3 VALVES



Code	Description	Weight [g]
0226009001	Kit of spare gasket bases for 5/2-5/3 valves	2.5

MACH 11 VALVES

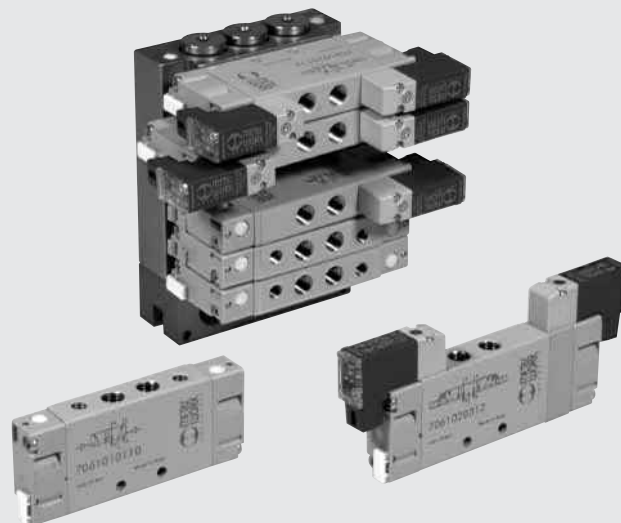
The Mach 11 in-line valves with M7 threaded connection come in the following versions:

- 5/2 monostable and bistable
- 5/3 with closed, open or pressure centres.

Control:

- pneumatic
- solenoid/pneumatic 24 V

With an exceptional compact design only 11 mm wide, and excellent high performance, these valves can be used in numerous applications in industrial automation.

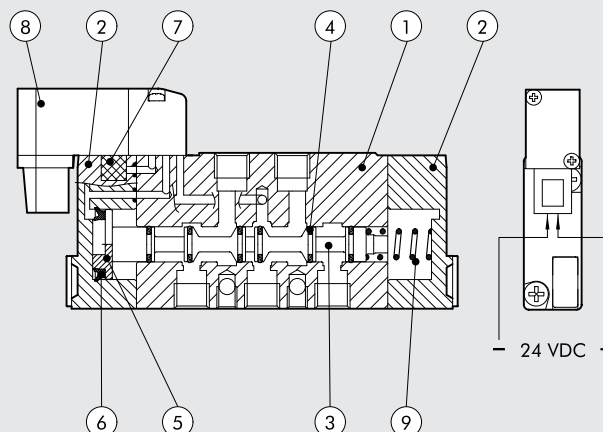


TECHNICAL DATA				
Valve port thread		M7		
Pilot thread		M5		
Maximum external diameter of fittings	mm	Pneumatic: M7 = Ø 11 - M5 = Ø 9 - Electric: M7 - M5 = Ø 11		
Operating temperature range	°C	-10 to +60		
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous		
Screw for valve wall-mounting		M3		
Flow rate at 6 bar ΔP 1 bar	NI/min	400		
Pressure range	bar			
		Electric	Electric pilot-assisted	Pneumatic
		monostable: 2 to 7	pilot pressure: 2 to 7	monostable control pres.values: 2 to 10
		bistable: 2 to 7	valve: vacuum to 10	bistable control pres. values: 1 to 10
		5/3: 2 to 7		control pressure 5/3: 2 to 10
				valve: vacuum to 10
Voltage range		24 VDC ± 10%	24 VDC ± 10%	-
Power	W	0.9	0.9	-
Insulation class		F155	F155	-
Degree of protection		IP 51	IP 51	-
Solenoid rating		100% ED	100% ED	-
TRA/TRR monostable at 6 bar	ms	10 / 45	10 / 45	4 / 9
TRA/TRR bistable at 6 bar	ms	22 / 22	22 / 22	4 / 4
TRA/TRR 5/3 monostable at 6 bar	ms	22 / 22	22 / 22	4 / 4
Compatibility with oils				

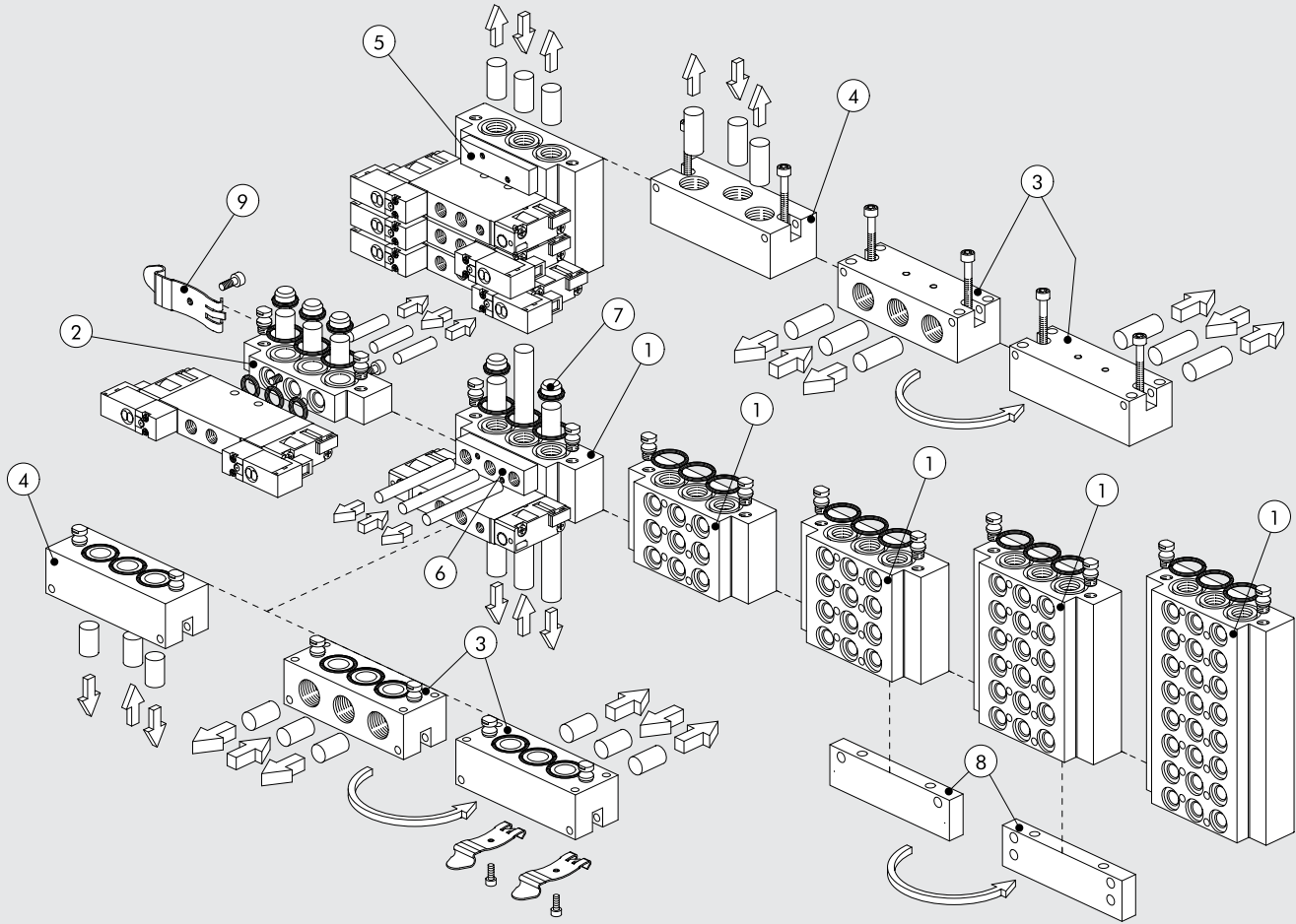
Please refer to page 6-7 of the technical documentation

COMPONENTS

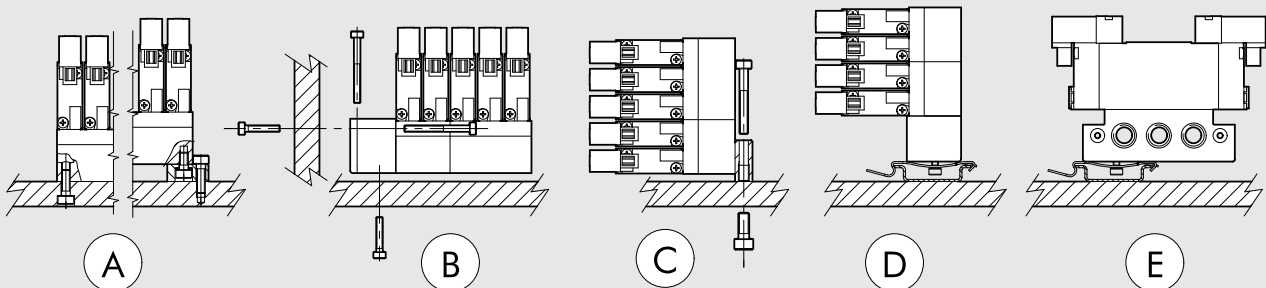
- ① VALVE BODY: Aluminium
- ② CONTROL/BASE: HOSTAFORM®
- ③ SPOOL: Aluminium
- ④ GASKETS: Polyurethane
- ⑤ PISTONS: HOSTAFORM®
- ⑥ PISTON GASKET: Polyurethane
- ⑦ FILTER: sintered bronze
- ⑧ PILOT: with integrated coil
- ⑨ SPRINGS: special steel
- ⑩ REMOVABLE IDENTIFICATION PLATE



MODULARITY



HOW TO FIX THE BASE

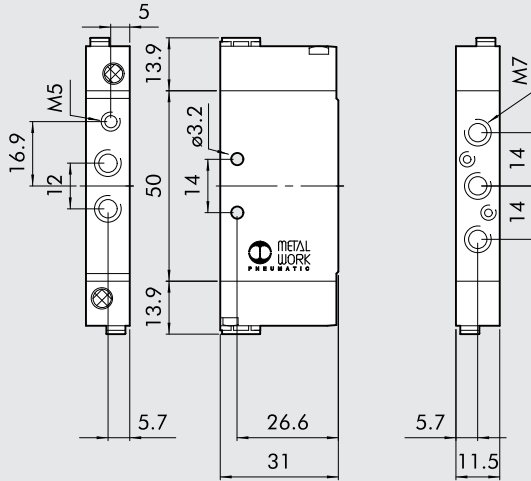


KEY TO CODES

M S V FAMILY	1 DIMENSIONS	5 FUNCTION	S O OPERATORS 14	B RESETTING (12)	O O FURTHER DETAILS	2 4 V D C
MSV mini-solenoid valve	1 M7	5 5/2 6 5/3	SO solenoid SE solenoid assisted PN pneumatic	B bistable S mechanical springs	OO 5/2 standard CC closed centres OC open centres PC pressure centres	24VDC
MSV mini-pneumatic valve						

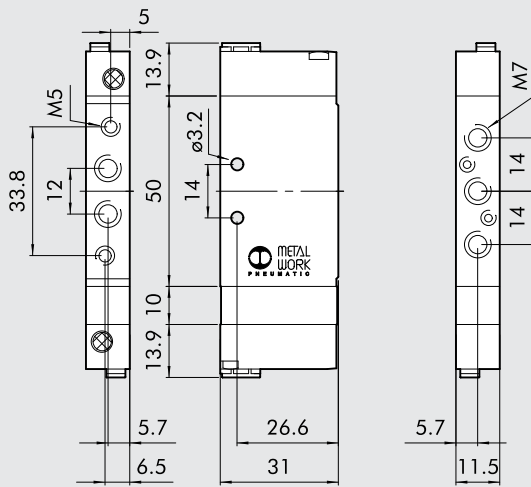
MACH 11 VALVES, PNEUMATIC

MONOSTABLE 5/2



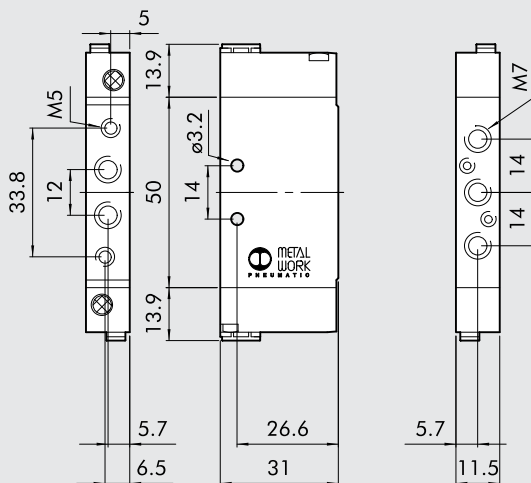
Symbol	Code	Abbrev.	Weight [g]
	7061010130	MPV 15 PNS OO	52

MONOSTABLE 5/3



Symbol	Code	Abbrev.	Weight [g]
	7061010210	MPV 16 PNS CC	62
	7061010310	MPV 16 PNS OC	62
	7061010410	MPV 16 PNS PC	62

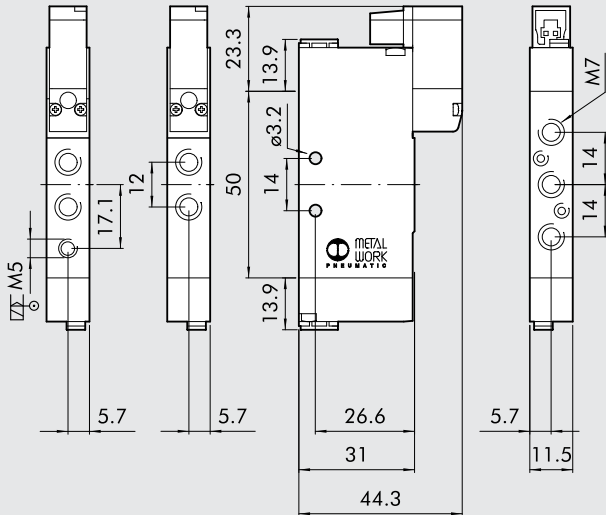
BISTABLE 5/2

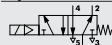
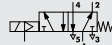


Symbol	Code	Abbrev.	Weight [g]
	7061010110	MPV 15 PNB OO	52

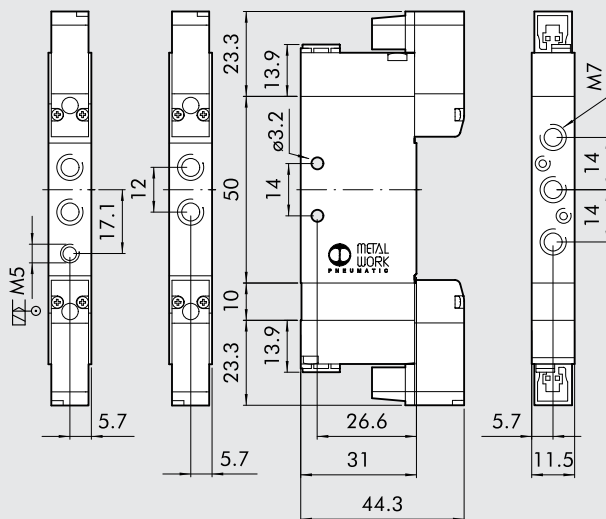
MACH 11 VALVES, SOLENOID-PNEUMATIC

MONOSTABLE 5/2



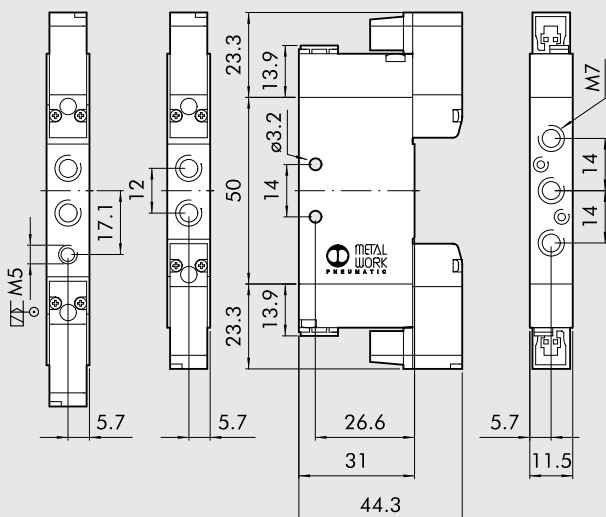
Symbol	Code	Abbrev.	Weight [g]
	7061020132	MSV 15 SOS OO 24VDC	60
	7061030132	MSV 15 SES OO 24VDC	60

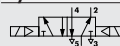
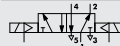
MONOSTABLE 5/3



Symbol	Code	Abbrev.	Weight [g]
	7061020212	MSV 16 SOS CC 24VDC	82
	7061020312	MSV 16 SOS OC 24VDC	82
	7061020412	MSV 16 SOS PC 24VDC	82
	7061030212	MSV 16 SES CC 24VDC	82
	7061030312	MSV 16 SES OC 24VDC	82
	7061030412	MSV 16 SES PC 24VDC	82

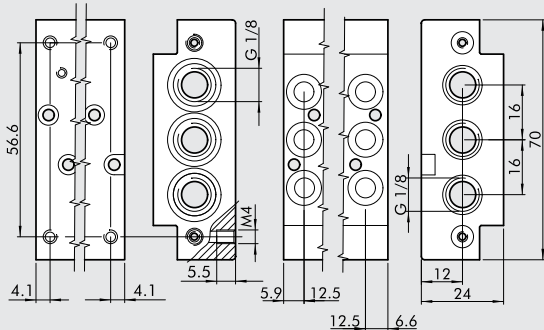
BISTABLE 5/2



Symbol	Code	Abbrev.	Weight [g]
	7061020112	MSV 15 SOB OO 24 VDC	72
	7061030112	MSV 15 SEB OO 24 VDC	88

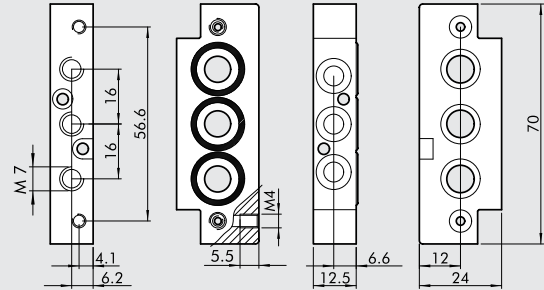
ACCESSORIES: MANIFOLD BASES

① MULTIPLE MANIFOLD BASE



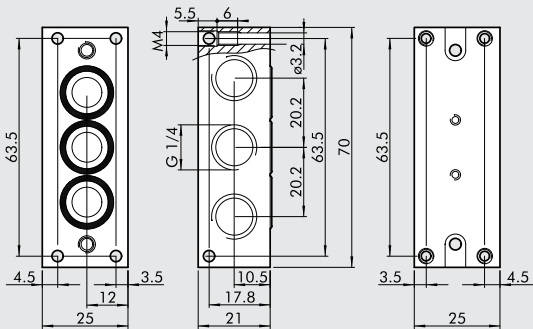
Code	Description	Weight [g]
0227400201	Base, 2 posn. for Mach 11	94
0227400301	Base, 3 posn. for Mach 11	140
0227400401	Base, 4 posn. for Mach 11	186
0227400601	Base, 6 posn. for Mach 11	282
0227400801	Base, 8 posn. for Mach 11	378

② SEPARATE FEED MANIFOLD BASE



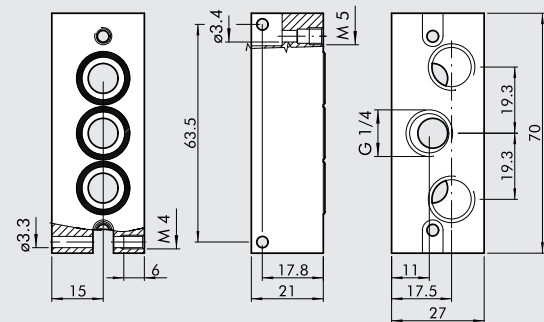
Code	Description	Weight [g]
0227400200	Separate feed manifold base for Mach 11	44

③ 90° END PLATE



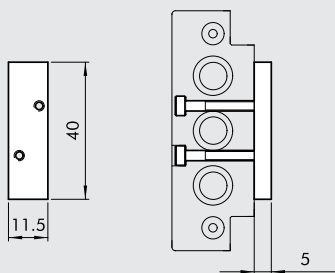
Code	Description	Weight [g]
0227400101	90° end plate 1/4 Mach 11	82

④ STRAIGHT END PLATE



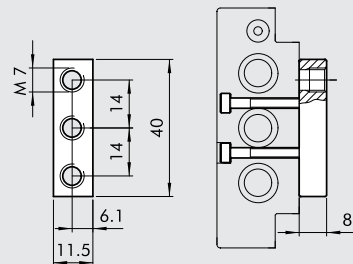
Code	Description	Weight [g]
0227400100	Straight end plate 1/4 for Mach 11	93

⑤ BLANKING PLATE



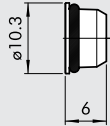
Code	Description	Weight [g]
0227400500	Blanking plate for Mach 11	13

⑥ FEED BLOCK



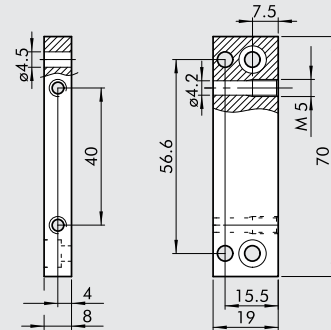
Code	Description	Weight [g]
0227400503	M7 feed block for Mach 11	11

7 DIAPHRAGM



Code	Description	Weight [g]
0227400000	Diaphragm for Mach 11 bases	3

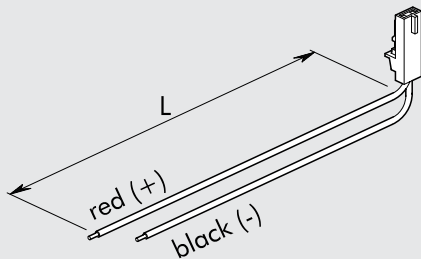
8 BASE FIXING PLATE



Code	Description	Weight [g]
0227400504	Fixing plate for Mach 11 bases	28

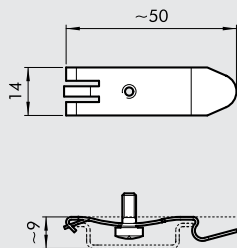
ACCESSORIES

PLUG-IN CONNECTOR



Code	Description
W0970512000	Plug-in connector for Mach 11 L = 300

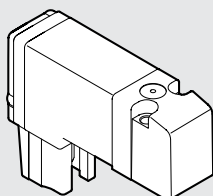
CONNECTION BRACKET ON BAR OMEGA (DIN EN 50022)



Code	Description
0227300600	Connection bracket on DIN bar

SPARE PARTS

PLUG-IN PILOT

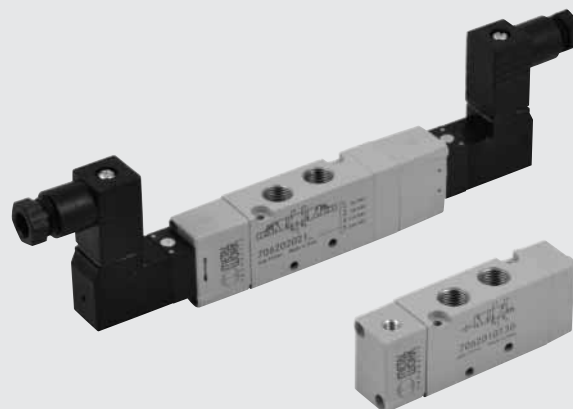


Code	Description
722113541100	PLT-10 722113541100

MACH 16 VALVES

Available in size 1/8" only, versions 5/2 and 5/3 and with pneumatic and solenoid actuation. The Mach 16 valve is a typical small size valve, only 16 mm wide, with excellent performance 750 NL/min flow rate at 6 bar ΔP 1 bar.

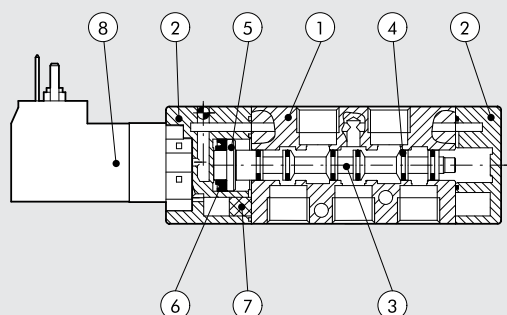
The valve can be used in line, on a panel or on a base (multiple or manifold) The Mach design is the result of the miniaturisation concept with the same durability, sturdiness and reliability.



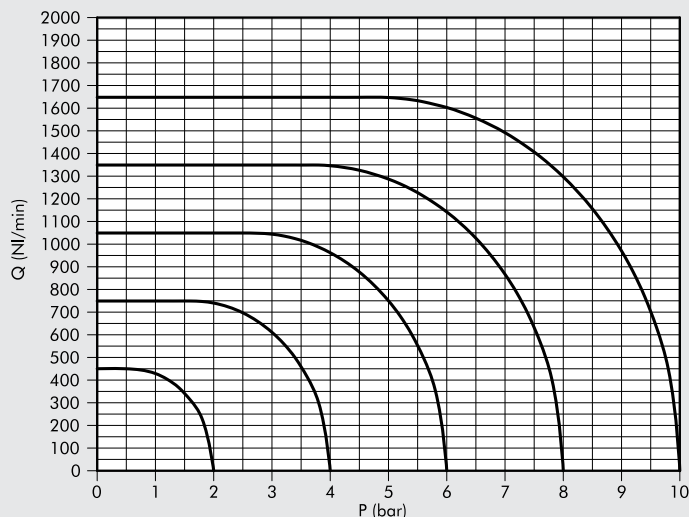
TECHNICAL DATA	
Valve port thread	1/8"
Type of control	M5 pneumatic actuation - Solenoid/pneumatic operation with integrated coil
Maximum outer diameter of gaskets for ports 1 - 3 - 5	mm 15
Maximum outer diameter for ports 2 - 4	mm 15
Operating temperature range	°C -10 to +60
Minimum pressure pilot-pneumatic controls	bar Monostable with pneumatic spring: see picture on page 2-82
	bar 1.6 bar for monostable valves – mechanical spring
	bar 1 bar for bistable valves – 1.9 bar for valves 5/3
Operating pressure	bar vacuum -10
Fluid	Filtered lubricated or unlubricated air lubrication, if used, must be continuous
Recommended lubricant	ISO e UNI FD22
Solenoid pilot	Integrated coil DIN 43650 C shape
Manual	Monostable on solenoid pilot (with bistable manual valve on request)
Number of ways in base	1-3-5 and pilot exhaust
Screws for wall-mounting single valve	2 screws M3
Screws for base-mounting valve	2 screws M2.5x30
Installation	In any position (vertical assembly is not recommended for bistable valves subjected to vibration)
Flow rate at 6 bar ΔP 0.5 bar	Nl/min 540
Flow rate at 6 bar ΔP 1 bar	Nl/min 750
Conductance C	Nl/min · bar 149.8
Critical ratio b	bar/bar 0.525
Compatibility with oils	Please refer to page 6-7 of the technical documentation

COMPONENTS

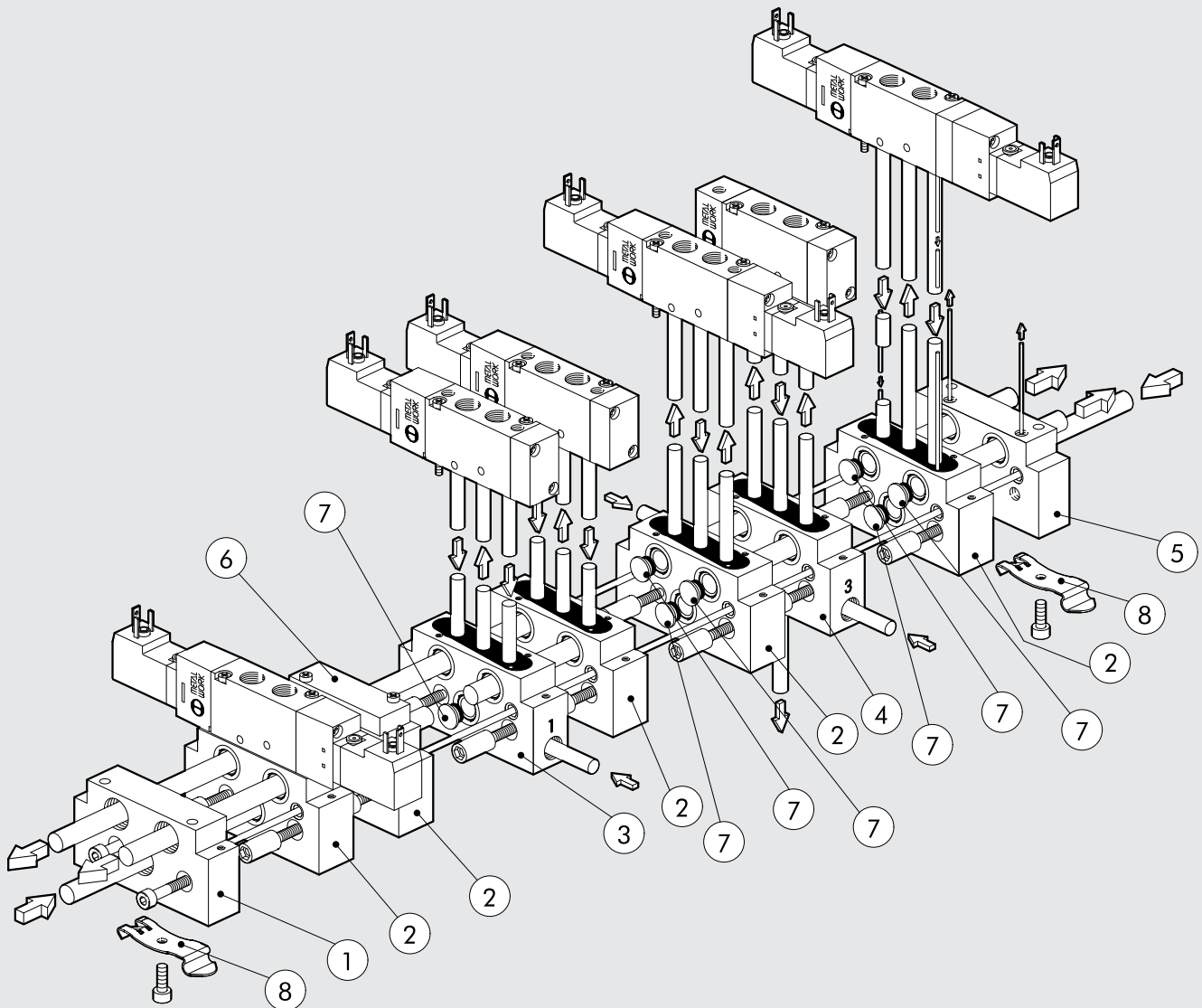
- ① VALVE BODY: Aluminium
- ② CONTROL/BASE: HOSTAFORM®
- ③ SPOOL: Aluminium
- ④ GASKETS: Polyurethane
- ⑤ PISTONS: HOSTAFORM®
- ⑥ PISTON GASKET: Polyurethane
- ⑦ INTERFACE GASKETS: NBR nitrile rubber
- ⑧ PILOT: with integrated coil



FLOW CHART



MANIFOLD BASES



Reference	Code	Description
①	0227100201	M16/VDMA Input end-plate kit
②	0227100150	M16 manifold base kit
③	0227100301	M16 separate feed manifold base kit
④	0227100302	M16 exhaust feed manifold base kit
⑤	0227100200	M16/VDMA output end-plate kit
⑥	0225004500	M16 blanking plate
⑦	0227100000	Intermediate diaphragm
⑧	0227300600	Connection bracket on DIN-bar

KEY TO CODES

M S V FAMILY	2 DIMENSIONS	5 FUNCTION	S O OPERATORS 14	B RESETTING 12	O O FURTHER DETAILS	2 4 V D C VOLTAGE
MSV solenoid/pneumatic	2 1/8"	5 5/2	SO solenoid/pneumatic	P pneumatic spring	OO 5/2	24VDC
MPV pneumatic		6 5/3	SE solenoid pilot	S mechanical springs	CC closed centres	24VAC
			PN pneumatic	B bistable	OC open centres	110VAC
					PC pressure centres	220VAC

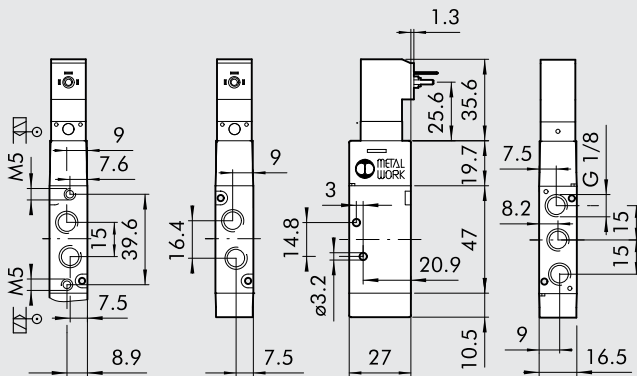
MACH 16 VALVES MPV, SOLENOID/PNEUMATIC




TECHNICAL DATA

Operating pressure:	bar	
• monostable		1.9 to 10
• bistable		1 to 10
• pilot-assisted		Vacuum to 10
Minimum pilot pressure	bar	2
Operating temperature range	°C	-10 to +60
Conductance C	Nl/min · bar	149.8
Critical ratio b	bar/bar	0.525
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	540
Flow rate at 6 bar ΔP 1 bar	Nl/min	750
TRA / TRR monostable at 6 bar	ms	12 / 26
TRA / TRR bistable at 6 bar	ms	21 / 21
Type of operation: Manual		monostable on the solenoid pilot (also with bistable manual valve on request)
Pilot with integrated coil		24 VDC - 24 VAC - 110 VAC - 220 VAC
Power	W	1
Voltage tolerance		-10% to +15%
Insulation class		F 155
Degree of protection		IP 65 EN60529 with connector
Solenoid rating		100% ED
Electrical contacts		DIN 43650 C shape

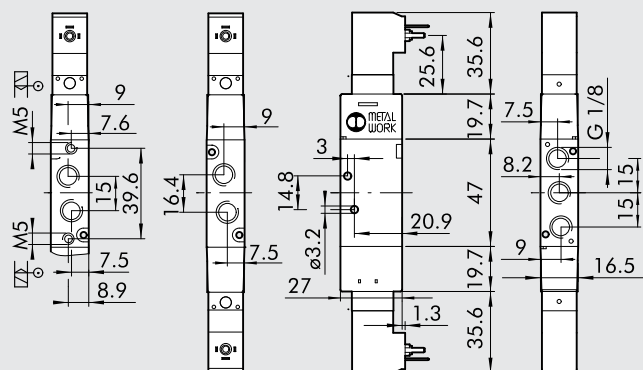




MONOSTABLE 5/2



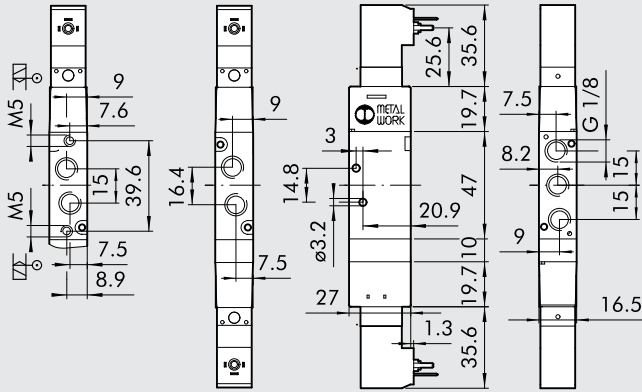
Symbol	Code	Abbrev.	Weight [g]	
	7062020102	MSV 25 SOP OO 24VDC	92	
	7062020103	MSV 25 SOP OO 24VAC	92	
	7062020104	MSV 25 SOP OO 110VAC	92	
	7062020105	MSV 25 SOP OO 220VAC	92	
	7062020132	MSV 25 SOS OO 24VDC	93	
	7062020133	MSV 25 SOS OO 24VAC	93	
	7062020134	MSV 25 SOS OO 110VAC	93	
	7062020135	MSV 25 SOS OO 220VAC	93	
		7062030132	MSV 25 SES OO 24VDC	93
		7062030133	MSV 25 SES OO 24VAC	93
7062030134		MSV 25 SES OO 110VAC	93	
7062030135	MSV 25 SES OO 220VAC	93		

BISTABLE 5/2



Symbol	Code	Abbrev.	Weight [g]
	7062020112	MSV 25 SOB OO 24VDC	124
	7062020113	MSV 25 SOB OO 24VAC	124
	7062020114	MSV 25 SOB OO 110VAC	124
	7062020115	MSV 25 SOB OO 220VAC	124
	7062030112	MSV 25 SEB OO 24VDC	125
	7062030113	MSV 25 SEB OO 24VAC	125
	7062030114	MSV 25 SEB OO 110VAC	125
	7062030115	MSV 25 SEB OO 220VAC	125

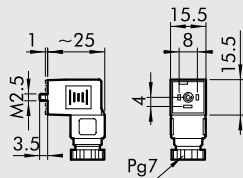
MONOSTABLE 5/3



Symbol	Code	Abbrev.	Weight [g]
	7062020212	MSV 26 SOS CC 24VDC	142
	7062020213	MSV 26 SOS CC 24VAC	142
	7062020214	MSV 26 SOS CC 110VAC	142
	7062020215	MSV 26 SOS CC 220VAC	142
	7062020312	MSV 26 SOS OC 24VDC	142
	7062020313	MSV 26 SOS OC 24VAC	142
	7062020314	MSV 26 SOS OC 110VAC	142
	7062020315	MSV 26 SOS OC 220VAC	142
	7062020412	MSV 26 SOS PC 24VDC	142
	7062020413	MSV 26 SOS PC 24VAC	142
	7062020414	MSV 26 SOS PC 110VAC	142
	7062020415	MSV 26 SOS PC 220VAC	142
	7062030212	MSV 26 SES CC 24VDC	143
	7062030213	MSV 26 SES CC 24VAC	143
	7062030214	MSV 26 SES CC 110VAC	143
	7062030215	MSV 26 SES CC 220VAC	143
	7062030312	MSV 26 SES OC 24VDC	143
	7062030313	MSV 26 SES OC 24VAC	143
	7062030314	MSV 26 SES OC 110VAC	143
	7062030315	MSV 26 SES OC 220VAC	143
	7062030412	MSV 26 SES PC 24VDC	143
	7062030413	MSV 26 SES PC 24VAC	143
	7062030414	MSV 26 SES PC 110VAC	143
	7062030415	MSV 26 SES PC 220VAC	143

ACCESSORIES FOR MACH 16 VALVES MSV, SOLENOID/PNEUMATIC

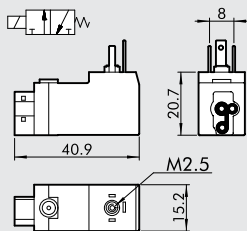
CONNECTOR 15 mm SHAPE C TO DIN 43650



Code	Description
W0970501021	Connector 15 mm shape C DIN 43650
W0970501022	Connector 15 mm shape C DIN 43650 LED 24V
W0970501025	Connector 15 mm shape C DIN 43650 LED+VDR 24V

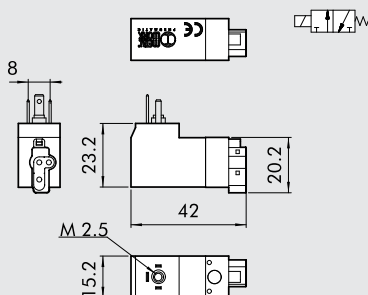
SPARE PARTS FOR MACH 16 VALVES MSV, SOLENOID/PNEUMATIC

COIL MACH 16 (OLD)



Code	Description
W4015101000	In-line pilot M16 24VDC
W4015101010	In-line pilot M16 24VAC 50/60 HZ
W4015101020	In-line pilot M16 110VAC 50/60 HZ
W4015101030	In-line pilot M16 220VAC 50/60 HZ

COIL MACH 16 (NEW)

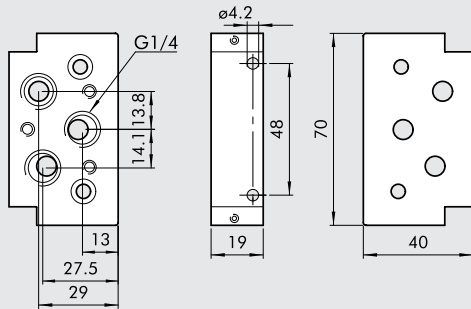


Code	Description
W4015301000	In-line pilot M16 24VDC
W4015301010	In-line pilot M16 24VAC 50/60 HZ
W4015301020	In-line pilot M16 110VAC 50/60 HZ
W4015301030	In-line pilot M16 220VAC 50/60 HZ

NB: if the pilot to be replaced bears the writing **CE**, you have to order among the NEW pilots, otherwise order among the OLD pilots

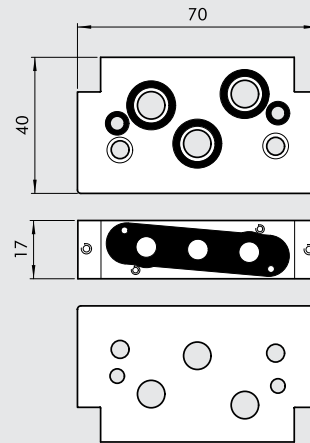
MANIFOLD BASES FOR MACH 16 VALVES

① MACH 16 INPUT END-PLATE



Code	Description	Weight [g]
0227100201	Input end-plate kit M16/VDMA	125

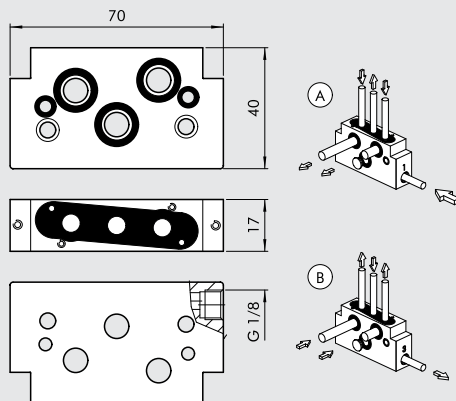
② MACH 16 MANIFOLD BASE



Code	Description	Weight [g]
0227100150	Manifold base kit M16	121

③ MACH 16 SEPARATE FEED MANIFOLD BASE

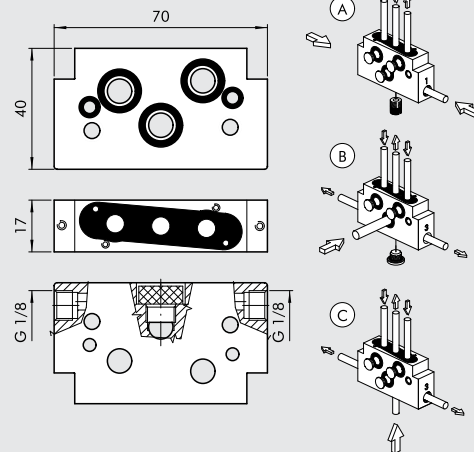
- Ⓐ Separate feed
- Ⓑ Separate exhaust



Code	Description	Weight [g]
0227100301	Manifold base kit-separate feed M16	119

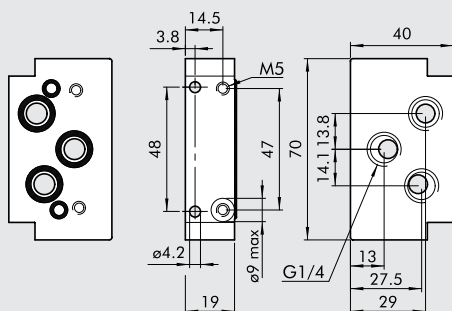
④ MACH 16 EXHAUST FEED MANIFOLD BASE

- Ⓐ Exhaust feed
- Ⓑ Separate exhausts
- Ⓒ Separate feed/exhausts



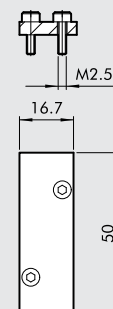
Code	Description	Weight [g]
0227100302	Manifold base kit-exhaust feed M16	113

⑤ MACH 16 OUTPUT END-PLATE



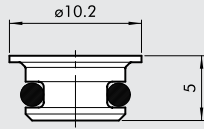
Code	Description	Weight [g]
0227100200	Output end-plate kit M16/VDMA	122

⑥ BLANKING PLATE – UNUSED POSITION



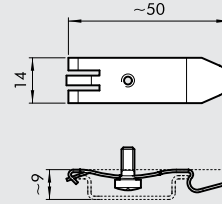
Code	Description	Weight [g]
0225004500	Accessories - blanking plate for Mach 16	18

7 INTERMEDIATE DIAPHRAGM



Code	Description	Weight [g]
0227100000	Intermediate diaphragm	1

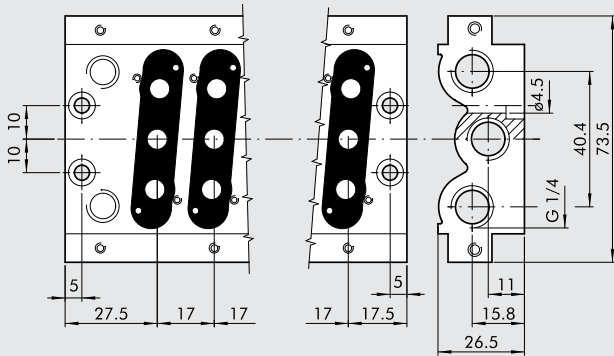
8 CONNECTION BRACKET ON BAR OMEGA (DIN EN 50022)



Code	Description	Weight [g]
0227300600	Connection bracket on DIN bar	7

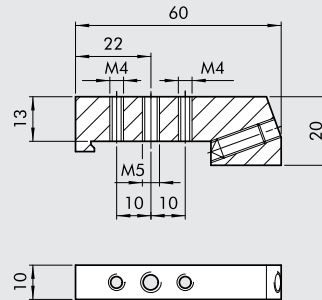
MULTIPLE BASES FOR MACH 16 VALVES

MULTIPLE BASE FOR MACH 16



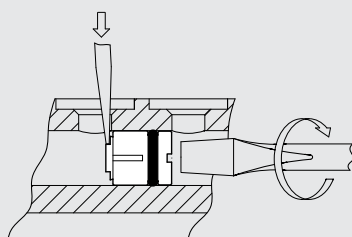
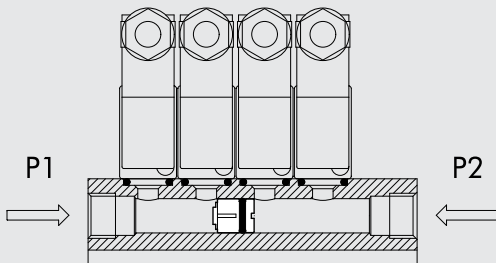
Code	Description	N° of positions	Weight [g]
0225000201	Base CVM.PN-08-02-0-000	2	180
0225000401	Base CVM.PN-08-04-0-000	4	286
0225000601	Base CVM.PN-08-06-0-000	6	390
0225000801	Base CVM.PN-08-08-0-000	8	500
0225001001	Base CVM.PN-08-10-0-000	10	613
0225001201	Base CVM.PN-08-12-0-000	12	706

ADAPTER FOR BAR OMEGA (DIN EN 50022)



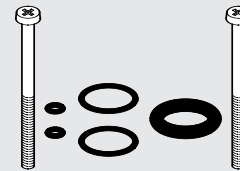
Code	Description	Weight [g]
0225004600	Omega-adapter Mach 16	46

INTERMEDIATE DIAPHRAGM



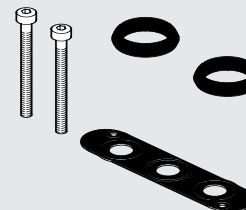
Code	Description	Weight [g]
0227100001	Acc. multiple base diaphragm	6

GASKET KIT (FOR OLD BASES)



Code	Description	Weight [g]
0226007001	M16 multiple base gasket kit	5

KIT OF SPARE INTEGRATED GASKET



Code	Description	Weight [g]
0226007003	M16 multiple base gasket kit	5

MULTIPLE CONNECTORS MACH 16



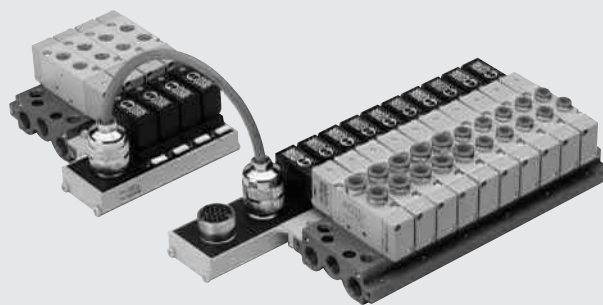
Mach 16 valves can be mounted on bases with pneumatic or electrical connection. The electric contacts of the individual valves are connected by means of a printed circuit board in a sealed conduit to a single connection point suitable for up to 16 controls. The number 16 was chosen because the number of outputs of most PLC output boards is 16 or a multiple of it.

The system has numerous alternatives and variants for a wide range of requirements:

- Base for monostable or bistable valves.
- Connection via a multiple connector or wired cable.
- Supply of individual parts or ready prepared bases or complete valve units
- The configuration can be modified at any time to convert bases for monostable valves into bases for bistable valves.
- The return cable can be used to connect two monostable valve units to a single multiple connector.

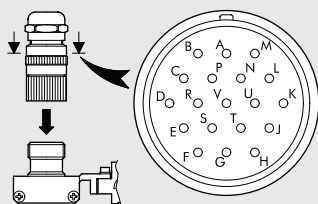
All versions are certified for electromagnetic compatibility and hence they bear the CE mark. The system is prearranged for mounting a slave for field buses, which can be added at any time. Valve units with multiple pneumatic/electrical connection are supplied complete with valves and are tested.

System modularity means that the valve sequence can be ordered to meet your own requirements (see key to codes).



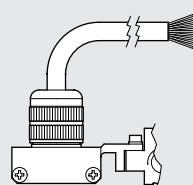
TECHNICAL DATA		
Supply voltage		24VDC - 24VAC
Maximum absorption		50 mA for each position
Valve actuation indicator		Yellow LED
Protection		Fuse
Operating temperature range	°C	-10 to +60
Degree of protection with valves mounted		IP65
Insulation class		In compliance with IEC 664-1 and VDE 0110 Group C
Electromagnetic compatibility		In compliance with EEC 366/89
Maximum number of solenoid valves which can be applied		16
n° of contacts		19, 16 of which for solenoid valves, 2 common and 1 earth
Version with connectors		
Connector insulation class		In compliance with MIL 26485
Section of cables to weld to connector	mm ²	max. 0.6
n° of contacts		19, 16 of which for solenoid valves, 2 common and 1 earth
Pre-wired version		
Cable length	m	5
n° of wires		19, 16 of which for solenoid valves, 2 common and 1 earth
Wire section	mm ²	0.22
Shielding		Tin plated – covering 80 to 90%
Cable		Outer oil-proof and flame-proof PVC sheath
Cable outside diameter	mm	8.5

WIRING DIAGRAM FOR PRE-WIRED VERSION



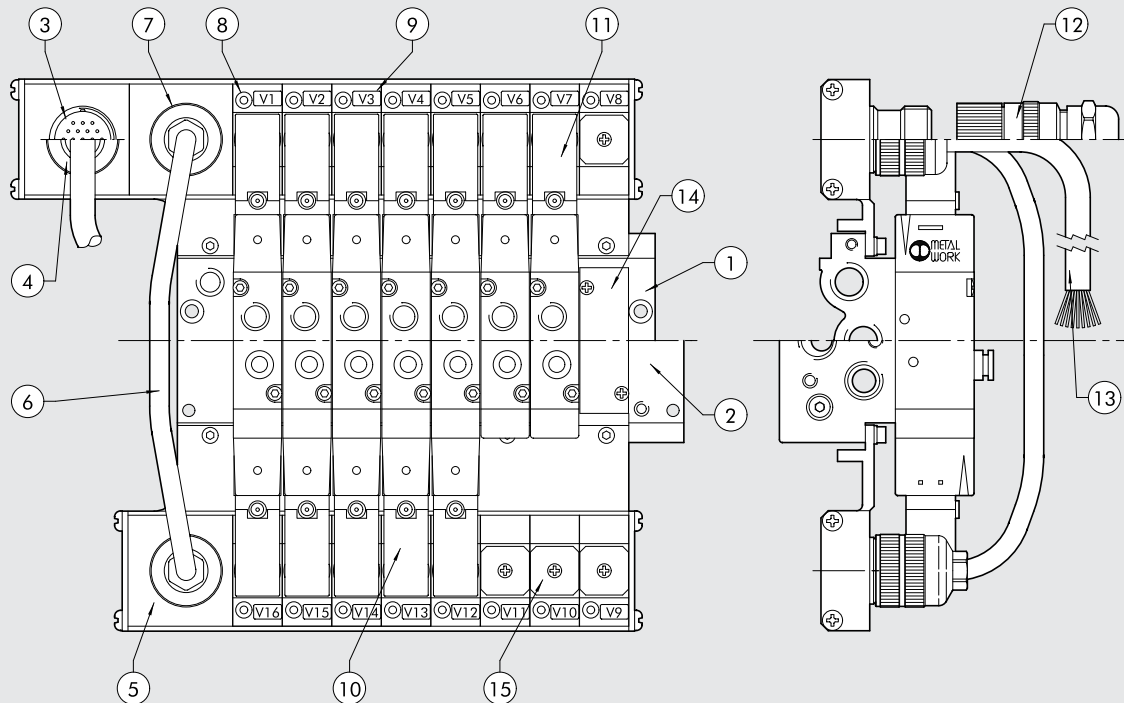
Position of electrical contact	Pin on flying connector
V1	S
V2	F
V3	U
V4	H
V5	V
V6	G
V7	T
V8	J
V9	A
V10	N
V11	M
V12	L
V13	D
V14	C
V15	B
V16	P
EARTH	K
- COM	E
- COM	R

WIRING DIAGRAM FOR VERSION WITH CONNECTOR



Position of electrical contact	Colour of the corresponding wire
V1	Green /black
V2	Yellow
V3	White/black
V4	Blue
V5	Red
V6	Yellow/black
V7	White
V8	Brown/red
V9	Red/white
V10	Red/black
V11	Green/red
V12	Blue/red
V13	Brown
V14	Orange/black
V15	Orange
V16	Blue/black
TERRA	Yellow/red
- COM	Brown/black
- COM	Green

COMPONENTS



- ① Multiple base: extruded anodised aluminium
- ② Modular base: anodised aluminium
- ③ Main assembly, version with connector
- ④ Main assembly, pre-wired version
- ⑤ Secondary unit/additional secondary unit
- ⑥ 10-wire return cable
- ⑦ Socket for 10-wire return cable
- ⑧ LED (LED on = Solenoid valve energised)
- ⑨ Identification label (for writing on)
- ⑩ Bistable solenoid valve MACH 16
- ⑪ Monostable solenoid valve MACH 16
- ⑫ Flying 19-wire connector for version with connector: nickel-plated aluminium, silver-plated contacts
- ⑬ 19-wire cable for pre-wired version
- ⑭ Blanking plate - pneumatic position: anodised aluminium
- ⑮ Small blanking plate - electric connector: painted aluminium

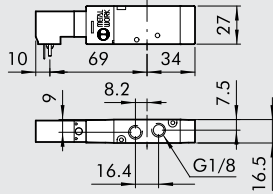
KEY TO CODES



A FAMILY	0 8 NO. OF POSITIONS	B	W C 5	0 8 SIZE	M M 6 V L	2 4 V D C VOLTAGE
A multiple base for solenoid/pneumatic connection Mach 16	04 4 posn. 06 6 posn. 08 8 posn. 10 10 posn.	M electrical connection only for monostable valves	MCN electrical connection	08 G 1/8"	M MSV 25 SMS OO M6 MSV G5 SMS OO M8 MSV H5 SMS OO V MSV 25 SCS OO L MSV 25 SMP OO L6 MSV G5 SMP OO L8 MSV H5 SMP OO J MSV 25 SMB OO J6 MSV G5 SMB OO J8 MSV H5 SMB OO K MSV 25 SCB OO G MSV 26 SMS CC G6 MSV G6 SMS CC G8 MSV H6 SMS CC O MSV 26 SCS CC E MSV 26 SMS OC E6 MSV G6 SMS OC E8 MSV H6 SMS OC F MSV 26 SCS OC B MSV 26 SMS PC B6 MSV G6 SMS PC B8 MSV H6 SMS PC C MSV 26 SCS PC	24VDC 24VAC
B manifold base for Mach 16 solenoid/pneumatic connection	12 12 posn.	B electrical connection for bistable valves	W C5 pre-wired cable 5 m ACM additional connection for monostable battery		A blanking plate D intermediate diaphragm	

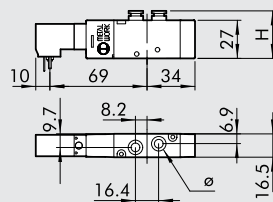
N.B.: The valve insertion order inside the descriptive key is the following, starting from the connector, from the left towards the right: the first left square corresponds to the first valve close to the connector on the base. There are 12 squares available for the description: if you order a base with less than 12 positions, complete by placing a 0 in the remaining boxes.





MACH 16 VALVES FOR MULTIPLE CONNECTOR

(M) MONOSTABLE 5/2, SOLENOID/PNEUMATIC - MECHANICAL SPRING

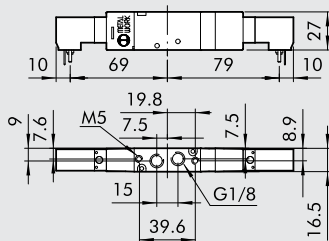


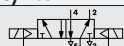
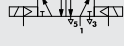
Symbol	Code	Description	Weight [g]
	7062040132	MSV 25 SMS OO 24VDC	92
	7062040133	MSV 25 SMS OO 24VAC	92



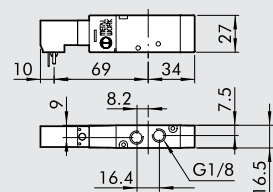
Symbol	Code	Description	Ø	H	Weight [g]
	7066040132	MSV G5 SMS OO 24VDC	6	32.7	96
	7067040132	MSV H5 SMS OO 24VDC	8	34	98
	7066040133	MSV G5 SMS OO 24VAC	6	32.7	96
	7067040133	MSV H5 SMS OO 24VAC	8	34	98



(V) MONOSTABLE 5/2, SOLENOID/PNEUMATIC, PILOT-ASSISTED - MECHANICAL SPRING

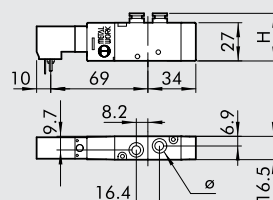






Symbol	Code	Description	Weight [g]
	7062060132	MSV 25 SCS OO 24VDC	93
	7062060133	MSV 25 SCS OO 24VAC	93

(L) MONOSTABLE 5/2, SOLENOID/PNEUMATIC - PNEUMATIC SPRING

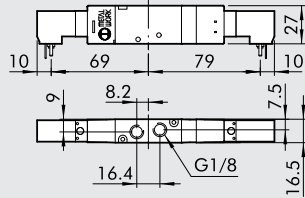


Symbol	Code	Description	Weight [g]
	7062040102	MSV 25 SMP OO 24VDC	93
	7062040103	MSV 25 SMP OO 24VAC	93

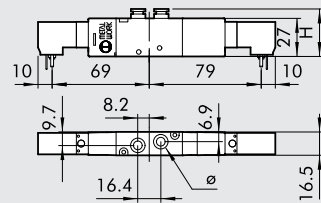


Symbol	Code	Description	Ø	H	Weight [g]
	7066040102	MSV G5 SMP OO 24VDC	6	32.7	96
	7067040102	MSV H5 SMP OO 24VDC	8	34	98
	7066040103	MSV G5 SMP OO 24VAC	6	32.7	96
	7067040103	MSV H5 SMP OO 24VAC	8	34	98

J BISTABLE 5/2, SOLENOID/PNEUMATIC

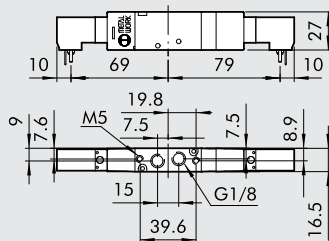


Symbol	Code	Description	Weight [g]
	7062040112	MSV 25 SMB OO 24VDC	139
	7062040113	MSV 25 SMB OO 24VAC	139



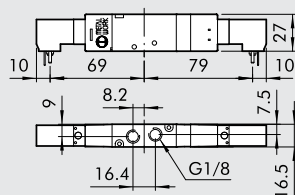
Symbol	Code	Description	Ø	H	Weight [g]
	7066040112	MSV G5 SMB OO 24VDC	6	32.7	143
	7067040112	MSV H5 SMB OO 24VDC	8	34	146
	7066040113	MSV G5 SMB OO 24VAC	6	32.7	143
	7067040113	MSV H5 SMB OO 24VAC	8	34	146

K BISTABLE 5/2, SOLENOID/PNEUMATIC, PILOT-ASSISTED

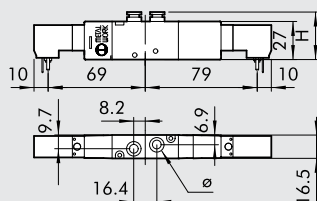


Symbol	Code	Description	Weight [g]
	7062060112	MSV 25 SCB OO 24VDC	140
	7062060113	MSV 25 SCB OO 24VAC	140

G MONOSTABLE 5/3, SOLENOID/PNEUMATIC - CLOSED CENTRES

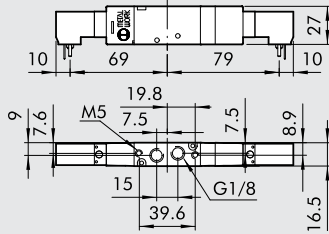


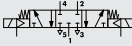
Symbol	Code	Description	Weight [g]
	7062040212	MSV 26 SMS CC 24VDC	142
	7062040213	MSV 26 SMS CC 24VAC	142



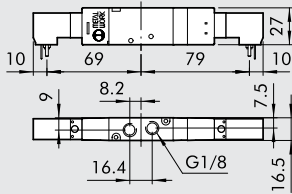
Symbol	Code	Description	Ø	H	Weight [g]
	7066040212	MSV G6 SMS CC 24VDC	6	32.7	146
	7067040212	MSV H6 SMS CC 24VDC	8	34	146
	7066040213	MSV G6 SMS CC 24VAC	6	32.7	146
	7067040213	MSV H6 SMS CC 24VAC	8	34	146


© MONOSTABLE 5/3, SOLENOID/PNEUMATIC, PILOT-ASSISTED - CLOSED CENTRES

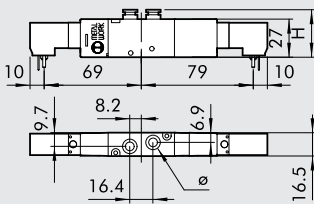



Symbol	Code	Description	Weight [g]
	7062060212	MSV 26 SCS CC 24VDC	143
	7062060213	MSV 26 SCS CC 24VAC	143

© MONOSTABLE 5/3 SOLENOID/PNEUMATIC - OPEN CENTRES

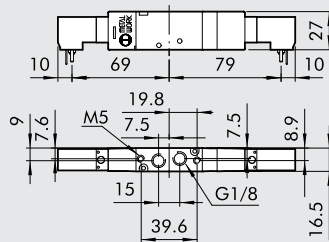



Symbol	Code	Description	Weight [g]
	7062040312	MSV 26 SMS OC 24VDC	142
	7062040313	MSV 26 SMS OC 24VAC	142



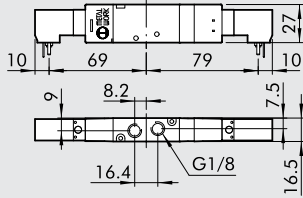
Symbol	Code	Description	Ø	H	Weight [g]
	7066040312	MSV G6 SMS OC 24VDC	6	32.7	146
	7067040312	MSV H6 SMS OC 24VDC	8	34	146
	7066040313	MSV G6 SMS OC 24VAC	6	32.7	146
	7067040313	MSV H6 SMS OC 24VAC	8	34	146

© MONOSTABLE 5/3 SOLENOID/PNEUMATIC, PILOT-ASSISTED - OPEN CENTRES

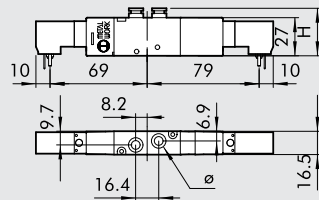


Symbol	Code	Description	Weight [g]
	7062060312	MSV 26 SCS OO 24VDC	143
	7062060313	MSV 26 SCS OO 24VAC	143

B) MONOSTABLE 5/3, SOLENOID/PNEUMATIC - PRESSURE CENTRES

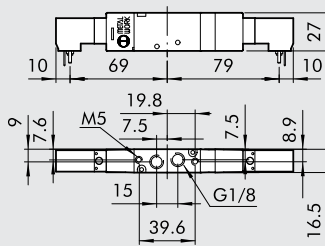


Symbol	Code	Description	Weight [g]
	7062040412	MSV 26 SMS PC 24VDC	142
	7062040413	MSV 26 SMS PC 24VAC	142



Symbol	Code	Description	Ø	H	Weight [g]
	7066040412	MSV G6 SMS PC 24VDC	6	32.7	146
	7067040412	MSV H6 SMS PC 24VDC	8	34	146
	7066040413	MSV G6 SMS PC 24VAC	6	32.7	146
	7067040413	MSV H6 SMS PC 24VAC	8	34	146

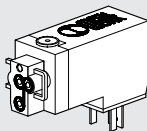
C) MONOSTABLE 5/3, SOLENOID/PNEUMATIC, PILOT-ASSISTED - PRESSURE CENTRES



Symbol	Code	Description	Weight [g]
	7062060412	MSV 26 SCS PC 24VDC	143
	7062060413	MSV 26 SCS PC 24VAC	143

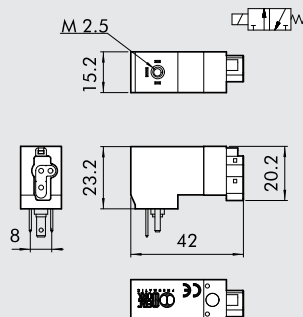
SPARE PARTS

COIL MACH 16 (OLD)



Code	Description
W4015201000	Pilot - multiple connection 24 VDC
W4015201010	Pilot - multiple connection 24 VAC

COIL MACH 16 (NEW)

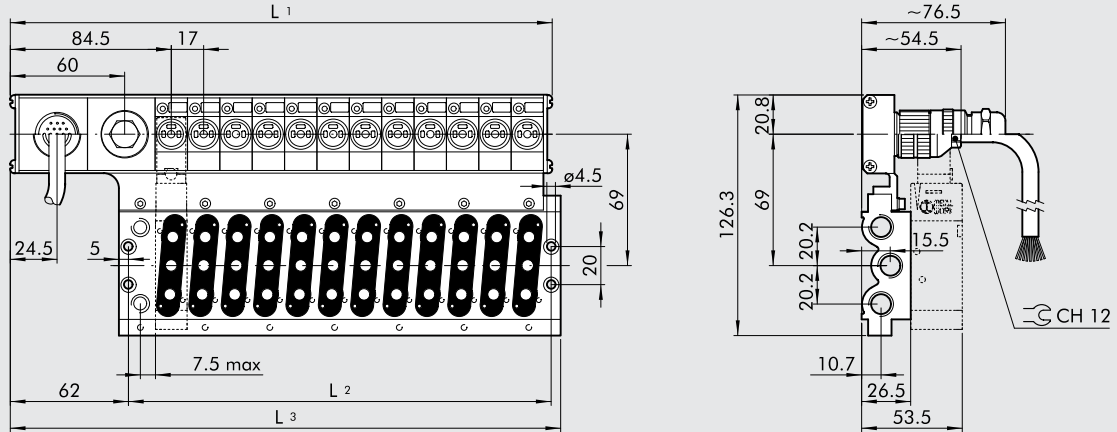


Code	Description
W4015401000	In-line pilot 24 VDC
W4015401010	In-line pilot 24 VAC 50/60 Hz

N.B.: if the pilot to be replaced bears the writing **CE**, you have to order among the NEW pilots, otherwise order among the OLD pilots.

BASES WITH MULTIPLE CONNECTION

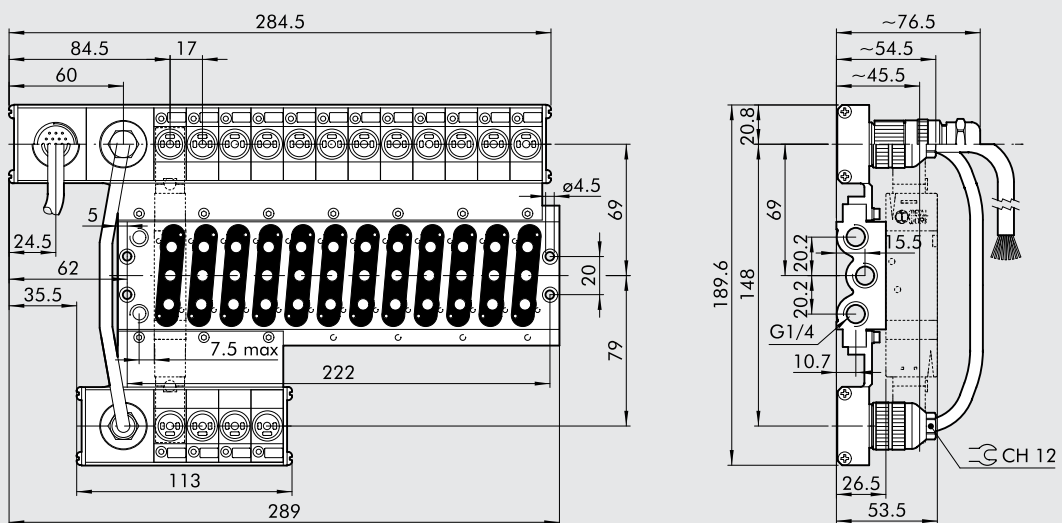
MONOSTABLE SOLENOID/PNEUMATIC BASE WITH 4, 6, 8, 10, 12 POSITIONS



	Pos.-Nr.	L1	L2	L3	Description	Code 24VDC	Code 24VAC	Weight [g]
With connector	4	148.5	86	153	CVM EP 08 04 M MCN	0225100401	0225110401	504
	6	182.5	120	187	CVM EP 08 06 M MCN	0225100601	0225110601	644
	8	216.5	154	221	CVM EP 08 08 M MCN	0225100801	0225110801	784
	10	250.5	188	255	CVM EP 08 10 M MCN	0225101001	0225111001	924
	12	284.5	222	289	CVM EP 08 12 M MCN	0225101201	0225111201	1264
With pre-wired cable	4	148.5	86	153	CVM EP 08 04 M WCS	0225400401	0225410401	3642
	6	182.5	120	187	CVM EP 08 06 M WCS	0225400601	0225410601	3781
	8	216.5	154	221	CVM EP 08 08 M WCS	0225400801	0225410801	3923
	10	250.5	188	255	CVM EP 08 10 M WCS	0225401001	0225411001	4070
	12	284.5	222	289	CVM EP 08 12 M WCS	0225401201	0225411201	4195

. : • 24VDC = direct current
 • 24VAC = alternating current

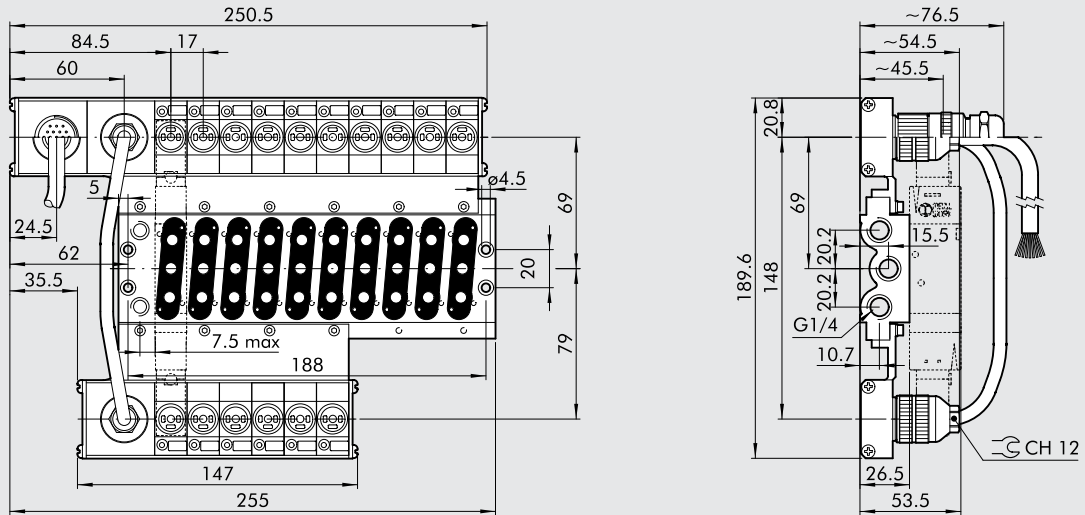
BISTABLE SOLENOID/PNEUMATIC BASE WITH 12 POSITIONS



	Pos.-Nr.	Description	Code 24VDC	Code 24VAC	Weight [g]
With multiple connector	12	CVM EP 08 12 B MCN	0225201201	0225211201	1315
With pre-wired cable	12	CVM EP 08 12 B WCS	0225501201	0225511201	4700

. : • 24VDC = direct current
 • 24VAC = alternating current

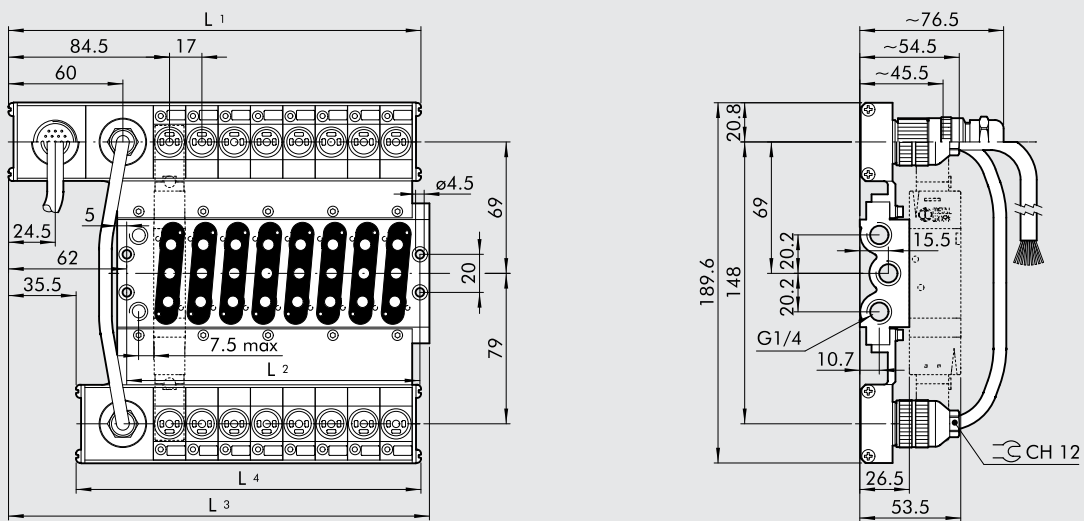
BISTABLE SOLENOID/PNEUMATIC BASE WITH 10 POSITIONS



	Pos.-Nr.	Description	Code 24VDC	Code 24VAC	Weight [g]
With multiple connector	10	CVM EP 08 10 B MCN	0225201001	0225211001	1245
With pre-wired cable	10	CVM EP 08 10 B WC5	0225501001	0225511001	4600

- 24VDC = direct current
- 24VAC = alternating current

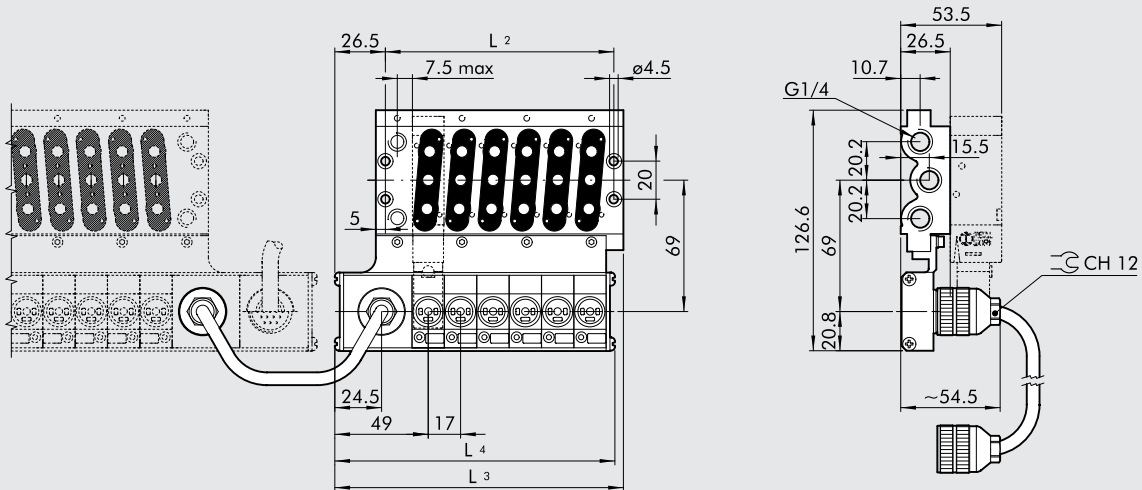
BISTABLE SOLENOID/PNEUMATIC BASE WITH 4, 6, 8 POSITIONS



	Pos.-Nr.	L1	L2	L3	L4	Description	Code 24VDC	Code 24VAC	Weight [g]
With multiple connector	4	148.5	86	153	113	CVM EP 08 04 B MCN	0225200401	0225210401	770
	6	182.5	120	187	147	CVM EP 08 06 B MCN	0225200601	0225210601	965
	8	216.5	154	221	181	CVM EP 08 08 B MCN	0225200801	0225210801	1200
With pre-wired cable	4	148.5	86	153	113	CVM EP 08 04 B WC5	0225500401	0225510401	3910
	6	182.5	120	187	147	CVM EP 08 06 B WC5	0225500601	0225510601	4086
	8	216.5	154	221	181	CVM EP 08 08 B WC5	0225500801	0225510801	4264

- 24VDC = direct current
- 24VAC = alternating current

ADDITIONAL MONOSTABLE SOLENOID/PNEUMATIC BASE WITH 4, 6, 8 POSITIONS



Pos.-Nr.	L2	L3	L4	Description	Code 24VDC	Code 24VAC	Weight [g]
4	86	117.5	113	CVM EP 08 04 M ACM	0225300401	0225310401	500
6	120	151.5	147	CVM EP 08 06 M ACM	0225300601	0225310601	640
8	154	185.5	181	CVM EP 08 08 M ACM	0225300801	0225310801	780

- : • 24VDC = direct current
- 24VAC = alternating current

NOTES

MODULAR MULTIPLE CONNECTOR KIT

It is possible to buy the various assembly kits separately, to obtain a wide range of customised applications.

The main units of the version with connector ① or the pre-wired version ② can easily be assembled with the multiple base ⑫ or the modular manifold base ⑬. The manifold base allows particular circuits on the individual valves (feed from exhaust outlets, pressure differentiation, etc.)

Likewise, on the other side it is also simple to mount the secondary unit ③. This possibility is very interesting because it allows you to convert a base for monostable valves into a base for bistable valves.

If you fit an additional secondary unit ④ on a base, you obtain an additional solenoid base that can be connected by means of return cables to a main base for monostable valves. The only thing to remember is that in all cases the total number of positions (connection to solenoid valve coil) must not exceed sixteen.

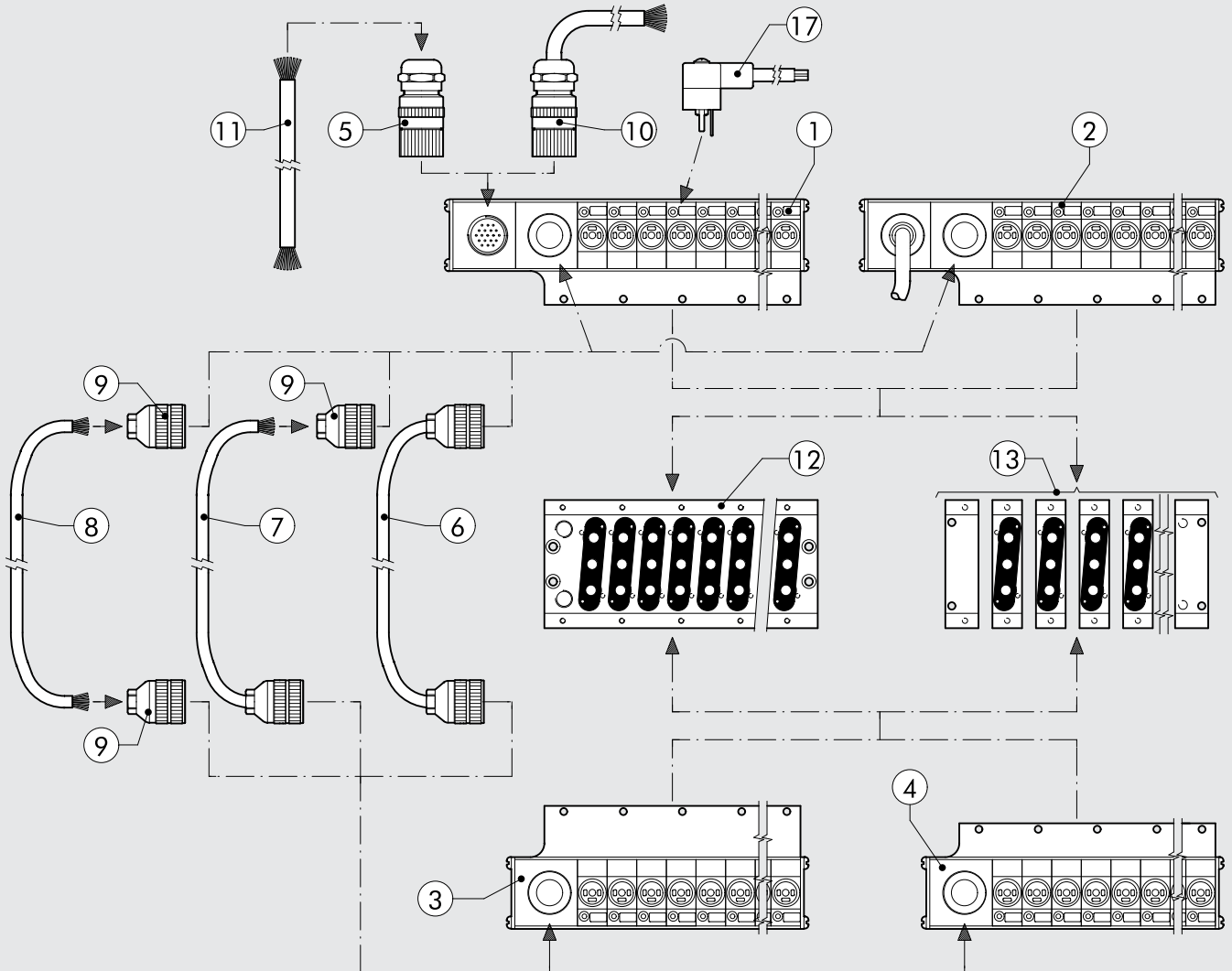
The 10 pin return cable ⑥ is used when a main unit and a secondary

unit, or only one additional secondary unit, are mounted together on the multiple (or manifold) base. It has to be connected to the sockets shown in the diagram.

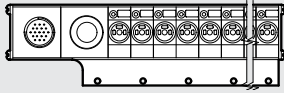
For different requirements, it is also possible to have return cables with a connector at one end only ⑦, or just the 10-wire cable ⑧. These types are available in different lengths. A 10-wire connector kit ⑨ is also available if you need to complete the wiring.

In the version with a connector, the 19-wire flying connector ⑤ pilots the entire assembled base. This connector must be welded onto the 19-wire cable ⑪, which is available in different lengths. The 19-wire connector complete with cable ⑩ is available in various lengths.

The male connector ⑭ allows the free electrical connection of the multiple connector to be used, in order to control the valves placed in the system or to control the bistable valves by a monostable multiple electrical connection base.

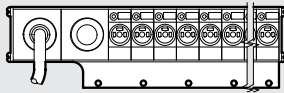


① MAIN KIT - VERSION WITH CONNECTOR



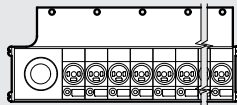
Code	Description	Weight [g]
0226500401	Main multiple connection kit, 4 positions 24VDC	245
0226510401	Main multiple connection kit, 4 positions 24VAC	245
0226500601	Main multiple connection kit, 6 positions 24VDC	280
0226510601	KMain multiple connection kit, 6 positions 24VAC	280
0226500801	Main multiple connection kit, 8 positions 24VDC	308
0226510801	Main multiple connection kit, 8 positions 24VAC	308
0226501001	Main multiple connection kit, 10 positions 24VDC	344
0226511001	Main multiple connection kit, 10 positions 24VAC	344
0226501201	Main multiple connection kit, 12 positions 24VDC	396
0226511201	Main multiple connection kit, 12 positions 24VAC	396

② MAIN MULTIPLE PRE-WIRED CONNECTION KIT



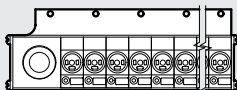
Code	Description	Weight [g]
0226400401	Pre-wired multiple main connector kit, 4 positions 24VDC	3350
0226410401	Pre-wired multiple main connector kit, 4 positions 24VAC	3350
0226400601	Pre-wired multiple main connector kit, 6 positions 24VDC	3400
0226410601	Pre-wired multiple main connector kit, 6 positions 24VAC	3400
0226400801	Pre-wired multiple main connector kit, 8 positions 24VDC	3423
0226410801	Pre-wired multiple main connector kit, 8 positions 24VAC	3423
0226401001	Pre-wired multiple main connector kit, 10 positions 24VDC	3460
0226411001	Pre-wired multiple main connector kit, 10 positions 24VAC	3460
0226401201	Pre-wired multiple main connector kit, 12 positions 24VDC	3490
0226411201	Pre-wired multiple main connector kit, 12 positions 24VAC	3490

③ SECONDARY KIT



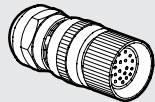
Code	Description	Weight [g]
0226200401	Multiple secondary connector kit, 4 positions 24VDC	166
0226210401	Multiple secondary connector kit, 4 positions 24VAC	166
0226200601	Multiple secondary connector kit, 6 positions 24VDC	210
0226210601	Multiple secondary connector kit, 6 positions 24VAC	210
0226200801	Multiple secondary connector kit, 8 positions 24VDC	257
0226210801	Multiple secondary connector kit, 8 positions 24VAC	257

④ ADDITIONAL SECONDARY KIT



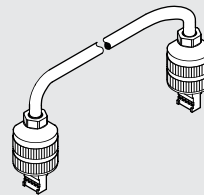
Code	Description	Weight [g]
0226300401	Multiple secondary connector kit, 4 positions 24VDC	158
0226310401	Multiple secondary connector kit, 4 positions 24VAC	158
0226300601	Multiple secondary connector kit, 6 positions 24VDC	199
0226310601	Multiple secondary connector kit, 6 positions 24VAC	199
0226300801	Multiple secondary connector kit, 8 positions 24VDC	243
0226310801	Multiple secondary connector kit, 8 positions 24VAC	243

5 19-WIRE CONNECTOR KIT



Code	Description
0226170001	19-wire connector kit

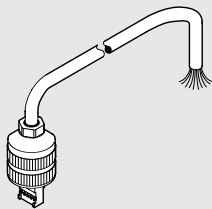
6 10-WIRE RETURN CABLE



Code	Description
0226150022	10-wire return cable L = 22 cm
022615....	10-wire return cable

....Length in cm
Please contact our sales offices

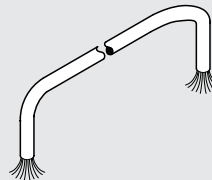
7 10-WIRE RETURN CABLE - ONE END WITH CONNECTOR



Code	Description
022613....	10-wire return cable - one end with connector

....Length in cm
Please contact our sales offices

8 CABLE WITH 10 CONNECTORS



Code	Description
0226107201	10-wires cable

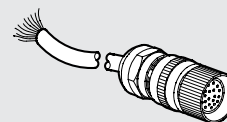
Please specify the desired length in metres

9 10-WIRE CONNECTOR KIT



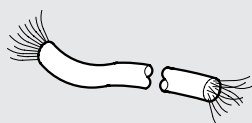
Code	Description
0226170002	10-wire connector kit

10 19-WIRE CABLE, ONE END WITH CONNECTOR



Code	Description
0226140250	19-wire cable, one end with connector L = 2.5 m
0226140500	19-wire cable, one end with connector L = 5 m
0226141000	19-wire cable, one end with connector L = 10 m
0226141500	19-wire cable, one end with connector L = 15 m
0226142000	19-wire cable, one end with connector L = 20 m
0226143000	19-wire cable, one end with connector L = 30 m

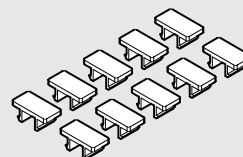
11 19-WIRE CABLE



Code	Description
0226107101	19-wire cable

Please specify the desired length in metres

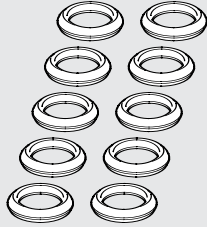
12 SET OF IDENTIFICATION PLATES



Code	Description
0226107000	Set of identification plates

Package: 10 pieces

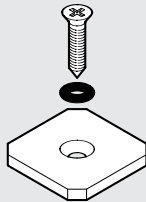
13 ELECTRIC CONTACT GASKETS



Code 0226107001 **Description** Set of electric contact gaskets

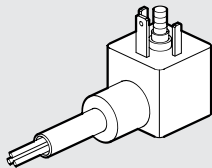
Package: 10 pieces

15 ELECTRIC CONNECTION BLANKING PLATE



Code 0225004502 **Description** Mach 16 electric connection blanking plate

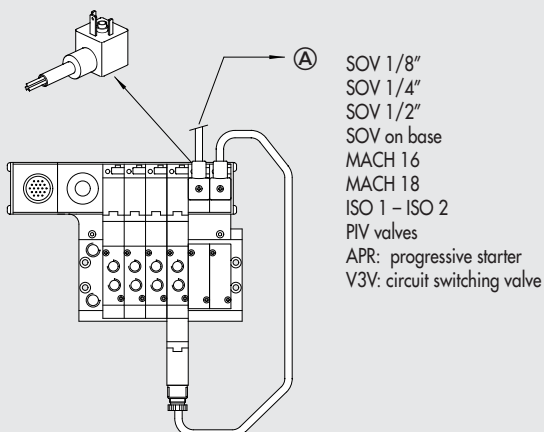
17 MALE CONNECTOR



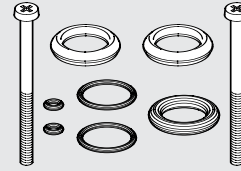
Code W0970504021 **Description** Male connector 2 mm

Max power for each position = 5W
Max total power of multiple connector = 36W

Example of a male connector

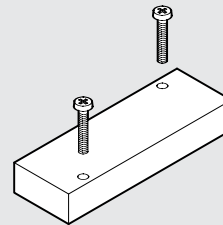


14 SET OF MULTIPLE BASE GASKETS



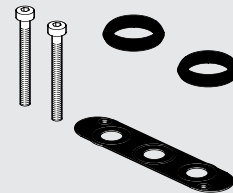
Code 0226007001 **Description** Set of M16 multiple base gaskets

16 BASE BLANKING PLATE



Code 0225004500 **Description** Mach 16 base blanking plate

18 KIT OF MULTIPLE BASE GASKETS



Code 0226007003 **Description** Kit of M16 multiple base integrate gaskets

REDUCER WITH GAUGE FOR VALVES, SERIES RMV

The RMV-series miniature pressure regulator with pressure gauge for valves is specifically conceived for mounting on the outlets of valves with a 1/8" port. With limited cross dimension, it can be fitted to a series of small valves. The body is 16.5 mm wide and fits exactly on the valves of the Mach 16 series for multiple electrical connection.

Using the RMV, it is possible to differentiate the pressure of each single output of the valves. For example, if you mount it on port 2 and not on port 4, the pressure can be reduced on port 2 only. If you mount one for each port, the pressure on port 2 will differ from that on port 4, which in turn is less than the feed pressure (outlet 1).

There are three 1/8" threaded RMV ports that are pneumatically connected in parallel. A small pressure gauge is mounted in one port; another port is plugged by an A7-type fitting and a third can take a fitting.

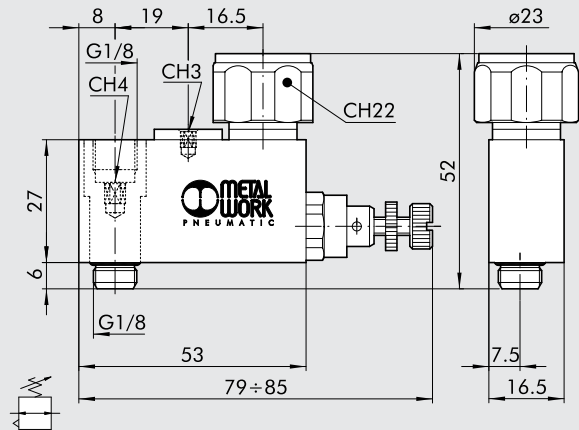
The user, however, can decide whether the layout of components is to be modified or not. He might, for example, decide to mount three fittings to create a three-port reduced-pressure distributor.



TECHNICAL DATA

Threaded input connection		1/8" male
Threaded output connection		1/8" female
Regulation range	bar	1 to 8
	Mpa	0.1 to 0.8
	psi	14.5 to 116
Input pressure	bar	2 to 10
	Mpa	0.2 to 1
	psi	29 to 145
Flow rate at 6.3 bar (0.63 Mpa - 91 psi) ΔP 1 bar	Nl/min	140
Flow rate at free exhaust at 6.3 bar (0.63 Mpa - 91 psi)	Nl/min	360
Fluid		Filtered lubricated or unlubricated air
Maximum temperature at 10 bar (1 Mpa - 145 psi)	°C	-10 to +60
	°F	+14 to +140
Assembly position		On valves
Use instructions		The pressure must always be regulated in increasing values

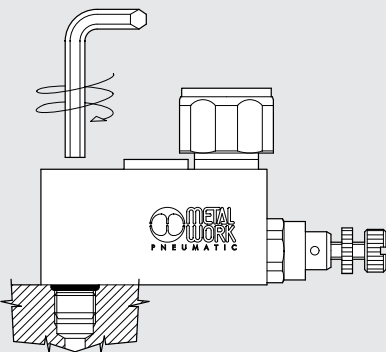
DIMENSIONES



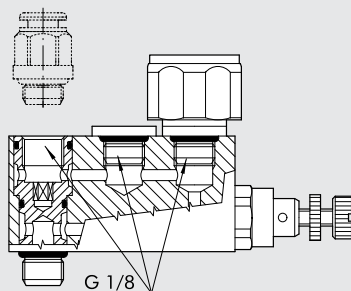
Code	Description
9061601	RMV 1/8"

APPLICATIONS - ASSEMBLY

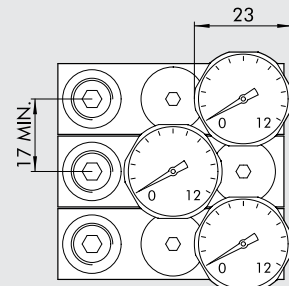
Fixing the reducer onto the valve



3 outputs with G1/8" thread



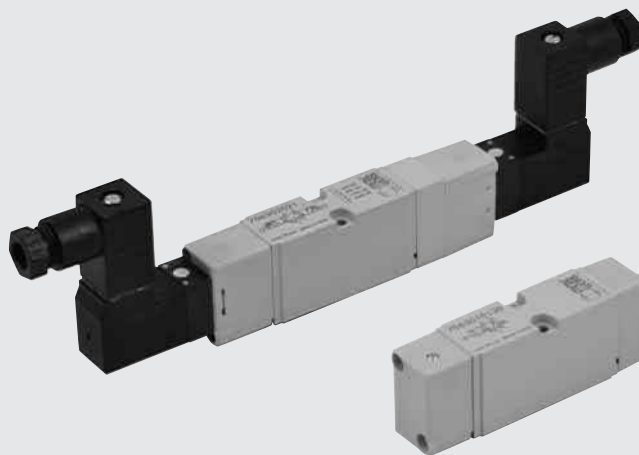
When mounting on valve units, with a pitch of less than 23 mm, alternate the gauge positions



VALVES TO ISO 15407-1/ VDMA 24563-02 SERIES MACH 18



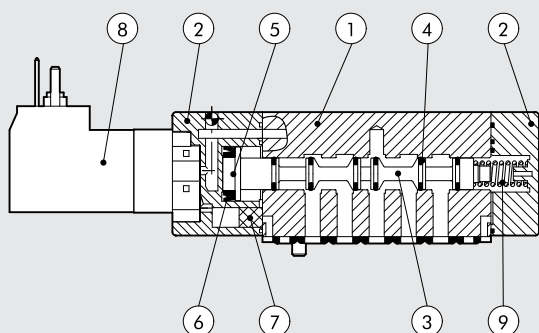
Mach 18 valve is manufactured according to the ISO 1507-1 standard, which in turn absorbs the VDMA 24563-02 rule. It comes in 5-way versions with 2 and 3 positions with solenoid or pneumatic actuation.



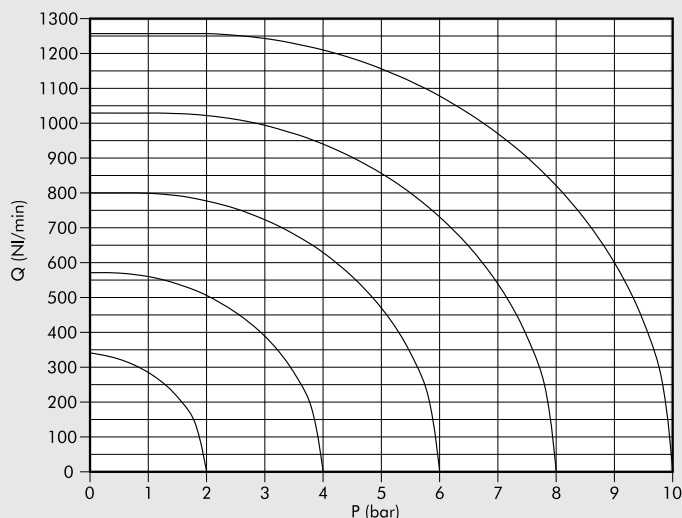
TECHNICAL DATA		
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous
Operating pressure:	bar	1.5 to 10
• monostable		Vacuum to 10 pneumatic/1.9 to 10 solenoid/pneumatic
• monostable 5/3		Vacuum to 10 pneumatic/1 to 10 solenoid/pneumatic
• bistable		Vacuum to 10
• pilot-assisted		2 to 10
Minimum pilot pressure	bar	-10 to +60
Operating temperature range	°C	114.86
Conductance C	Nl/min · bar	0.25
Critical ratio b	bar/bar	340
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	470
Flow rate at 6 bar ΔP 1 bar	Nl/min	In any position (vertical assembly is not recommended for bistable valves subjected to vibration)
Installation		On manifold bases
Assembly		ISO and UNI FD 22
Recommended lubricant		Integrated coil to DIN 43650 C-shape
Solenoid pilot		Monostable on solenoid pilot (with manual monostable on request)
Manual		Please refer to page 6-7 of the technical documentation
Compatibility with oils		

COMPONENTS

- ① VALVE BODY: Aluminium
- ② CONTROL/END CAP: HOSTAFORM®
- ③ SPOOL: Aluminium
- ④ GASKETS: Polyurethane
- ⑤ PISTONS: HOSTAFORM®
- ⑥ PISTON GASKET: Polyurethane
- ⑦ FILTER: sintered bronze
- ⑧ PILOT: with integrated coil
- ⑨ SPRINGS: special steel



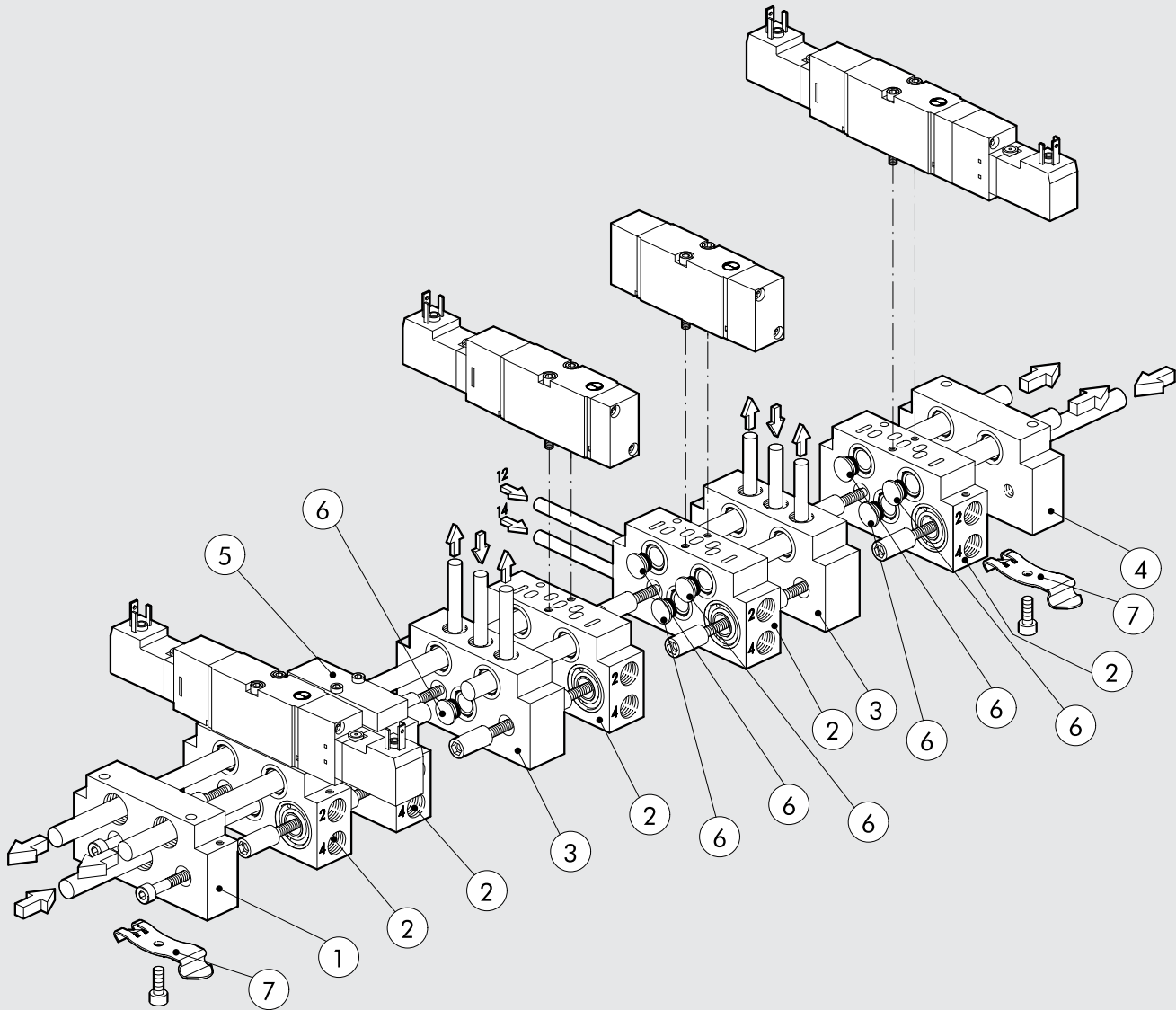
FLOW CHART



DISTRIBUTORS

VALVES TO ISO 15407-1/VDMA 24563-02 SERIES MACH 18

MODULARITY



Reference	Code	Description
①	0227100201	VDMA input end plate kit
②	0227200150	Manifold side base kit size 2
③	0227200300	VDMA intermediate bases size 2
④	0227100200	VDMA output end plate kit
⑤	0227200500	VDMA blanking plate size 2
⑥	0227100000	Intermediate diaphragm
⑦	0227300600	Connection bracket on DIN bar

KEY TO CODES

M S V FAMILY	D DIMENSIONS	5 FUNCTION	S O OPERATORS 14	S RESETTING (12)	O O FURTHER DETAILS	2 4 V D C VOLTAGE
MSV solenoid/pneumatic MPV pneumatic	D ISO 15407-1/ VDMA 24563-02	5 5/2 6 5/3	SO solenoid/pneumatic SE solenoid-pilot-assisted PN pneumatic	S mechanical springs B bistable	OO 5/2 CC closed centres OC open centres PC pressure centres	24VDC 24VAC 110VAC 220VAC

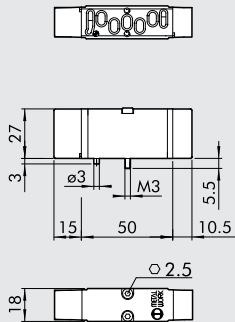
MACH 18 ISO 15407-1/VDMA 24563-02 MPV PNEUMATIC

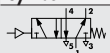
TECHNICAL DATA

Operating pressure:	bar	Vacuum to 10
Minimum operating pressure:	bar	
• monostable		1.5
• monostable 5/3		1.9
• bistable		1
Conductance C	Nl/min · bar	114.86
Critical ratio b	bar/bar	0.25
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	340
Flow rate at 6 bar ΔP 1 bar	Nl/min	470
Actuation response times at 6 bar:	ms	
• monostable		4
• bistable		4
Repositioning response times at 6 bar	ms	
• monostable		8,4
• bistable		4
Operating temperature range	°C	-10 + 60

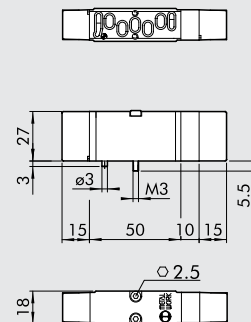


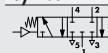
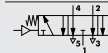
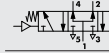
MONOSTABLE 5/2



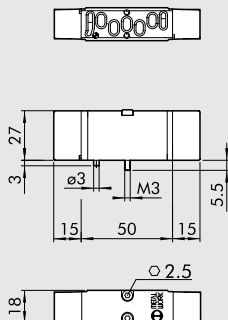
Symbol	Code	Abbrev.	Weight [g]
	7063010130	MPV D5 PNS 00	80

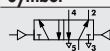
MONOSTABLE 5/3



Symbol	Code	Abbrev.	Weight [g]
	7063010210	MPV D6 PNS CC	93
	7063010310	MPV D6 PNS OC	93
	7063010410	MPV D6 PNS PC	93

BISTABLE 5/2



Symbol	Code	Abbrev.	Weight [g]
	7063010110	MPV D5 PNB 00	78

NOTES

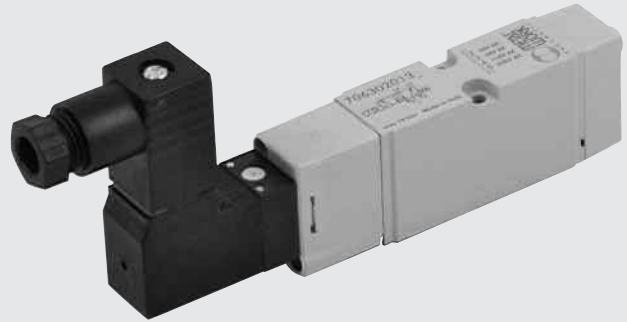
MACH 18 ISO 15407-1/VDMA 24563-02 SOLENOID/PNEUMATIC MSV

DISTRIBUTORS

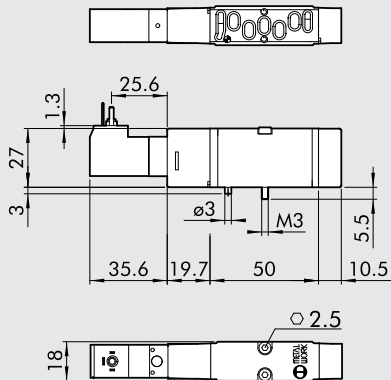
VALVES TO ISO 15407-1/VDMA 24563-02 SERIES MACH 18

TECHNICAL DATA

Operating pressure:	bar	
• monostable		1.5 to 10
• monostable 5/3		1.9 to 10
• bistable		1 to 10
• pilot-assisted		Vacuum to 10
Minimum pilot pressure	bar	2
Operating temperature range	°C	-10 to +60
Conductance C	Nl/min · bar	114.86
Critical ratio b	bar/bar	0.25
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	340
Flow rate at 6 bar ΔP 1 bar	Nl/min	470
TRA / TRR monostable at 6 bar	ms	12 / 26
TRA / TRR bistable at 6 bar	ms	21 / 21
Type of manual actuation		Monostable on solenoid pilot (with bistable manual valve on request)
Pilot with integrated coil		24 VDC - 24 VAC - 110 VAC - 220 VAC
Power	W	1
Voltage tolerance		-10% to -15%
Insulation class		F 155
Degree of protection		IP 65 EN60529 with connector
Solenoid rating		100% ED
Electrical contacts		DIN 43650 C Shape

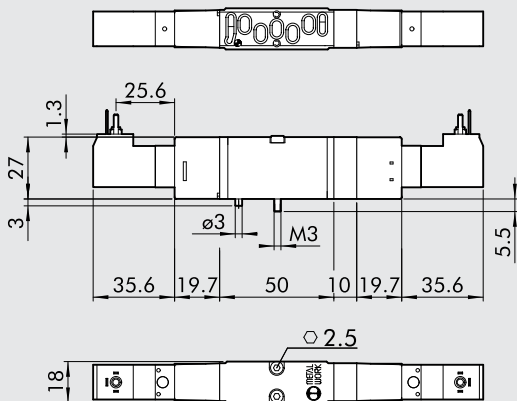


MONOSTABLE 5/2



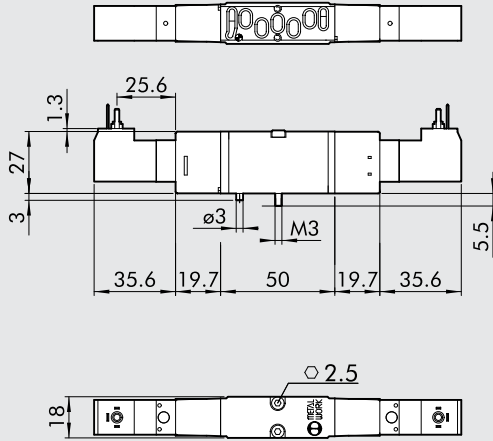
Symbol	Code	Abbrev.	Weight [g]
	7063020132	MSV D5 SOS OO 24VDC	110
	7063020133	MSV D5 SOS OO 24VAC	110
	7063020134	MSV D5 SOS OO 110VAC	110
	7063020135	MSV D5 SOS OO 220VAC	110
		7063030132	MSV D5 SES OO 24VDC	110
7063030133		MSV D5 SES OO 24VAC	110
7063030134		MSV D5 SES OO 110VAC	110
7063030135		MSV D5 SES OO 220VAC	110

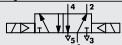
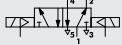
MONOSTABLE 5/3



Symbol	Code	Abbrev.	Weight [g]
	7063020212	MSV D6 SOS CC 24VDC	156
	7063020213	MSV D6 SOS CC 24VAC	156
	7063020214	MSV D6 SOS CC 110VAC	156
	7063020215	MSV D6 SOS CC 220VAC	156
		7063020312	MSV D6 SOS OC 24VDC	156
7063020313		MSV D6 SOS OC 24VAC	156
7063020314		MSV D6 SOS OC 110VAC	156
7063020315		MSV D6 SOS OC 220VAC	156
		7063020412	MSV D6 SOS PC 24VDC	156
	7063020413	MSV D6 SOS PC 24VAC	156
	7063020414	MSV D6 SOS PC 110VAC	156
	7063020415	MSV D6 SOS PC 220VAC	156
		7063030212	MSV D6 SES CC 24VDC	156
7063030213		MSV D6 SES CC 24VAC	156
7063030214		MSV D6 SES CC 110VAC	156
7063030215		MSV D6 SES CC 220VAC	156
		7063030312	MSV D6 SES OC 24VDC	156
	7063030313	MSV D6 SES OC 24VAC	156
	7063030314	MSV D6 SES OC 110VAC	156
	7063030315	MSV D6 SES OC 220VAC	156
		7063030412	MSV D6 SES PC 24VDC	156
7063030413		MSV D6 SES PC 24VAC	156
7063030414		MSV D6 SES PC 110VAC	156
7063030415		MSV D6 SES PC 220VAC	156

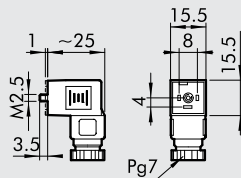
BISTABLE 5/2



Symbol	Code	Abbrev.	Weight [g]
	7063020112	MSV D5 SOB OO 24VDC	143
	7063020113	MSV D5 SOB OO 24VAC	143
	7063020114	MSV D5 SOB OO 110VAC	143
	7063020115	MSV D5 SOB OO 220VAC	143
		7063030112	MSV D5 SEB OO 24VDC	143
7063030113		MSV D5 SEB OO 24VAC	143
7063030114		MSV D5 SEB OO 110VAC	143
7063030115		MSV D5 SEB OO 220VAC	143

ACCESSORIES

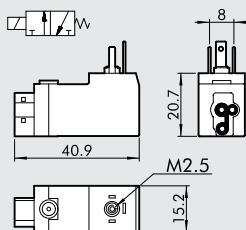
CONNECTOR 15 mm DIN 43650 SHAPE C



Code	Description
W0970501021	Connector 15 mm C shape DIN 43650
W0970501022	Connector 15 mm C shape DIN 43650 LED 24V
W0970501025	Connector 15 mm C shape DIN 43650 LED+VDR 24V

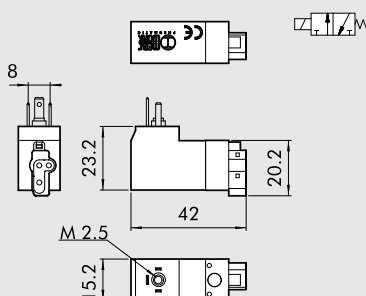
SPARE PARTS

PILOT MACH 18 (OLD)



Code	Description
W4015101000	In-line pilot 24VDC
W4015101010	In-line pilot 24VAC 50/60 Hz
W4015101020	In-line pilot 110VAC 50/60 Hz
W4015101030	In-line pilot 220VAC 50/60 Hz

PILOT MACH 18 (NEW)

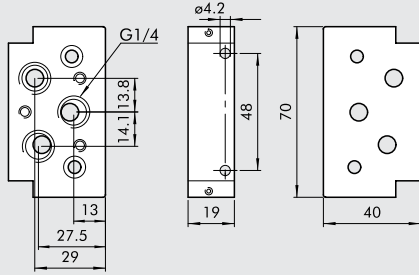


Code	Description
W4015301000	In-line pilot 24VDC
W4015301010	In-line pilot 24VAC 50/60 Hz
W4015301020	In-line pilot 110VAC 50/60 Hz
W4015301030	In-line pilot 220VAC 50/60 Hz

N.B.: if the pilot to be replaced bears the writing **CE**, you have to order among the NEW pilots, otherwise order among the OLD pilots.

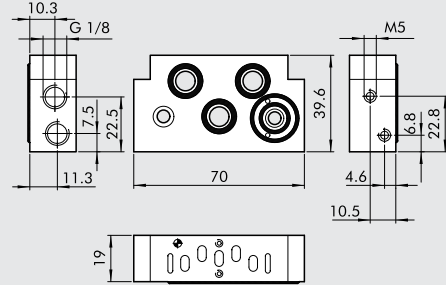
BASES TO ISO 15407-1/VDMA 24563-02 FOR MACH 18 VALVES

① INPUT END PLATE TO VDMA 24563-02



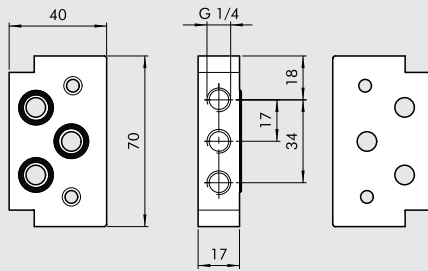
Code	Description	Weight [g]
0227100201	VDMA input end plate kit	125

② INPUT END PLATE TO VDMA 24563-02



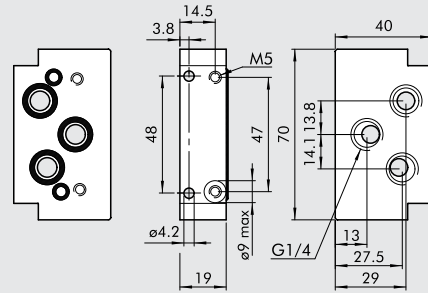
Code	Description	Weight [g]
0227200150	VDMA base kit, manifold side, dimension 2	125

③ INTERMEDIATE UPPER PORTS 24563-02



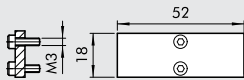
Code	Description	Weight [g]
0227200300	VDMA intermediate upper ports kit	118

④ OUTPUT END PLATE TO VDMA 24563-02



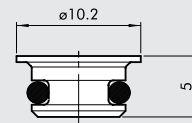
Code	Description	Weight [g]
0227100200	VDMA output end-plate kit	122

⑤ BLANKING PLATE - UNUSED POSITION



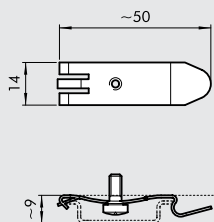
Code	Description	Weight [g]
0227200500	VDMA blanking plate size 2	24

⑥ INTERMEDIATE DIAPHRAGM



Code	Description	Weight [g]
0227100000	Intermediate diaphragm	2

⑦ CONNECTION BRACKETS ON THE BAR OMEGA (DIN EN 50022)



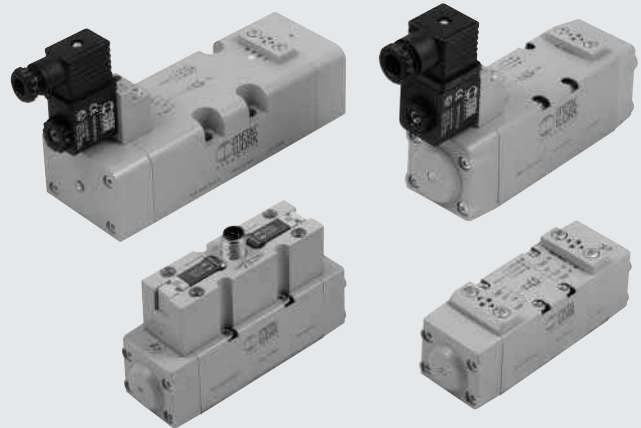
Code	Description	Weight [g]
0227300600	Connection brackets on DIN bar	7

NOTES

VALVES ISO 5599/1, SERIES IPV-ISV



The assembly surface dimensions of ISO1, ISO2 and ISO3 valves are to ISO5599-1. They are available in the 5-way versions with 2 and 3 positions and with pneumatic or solenoid actuation.



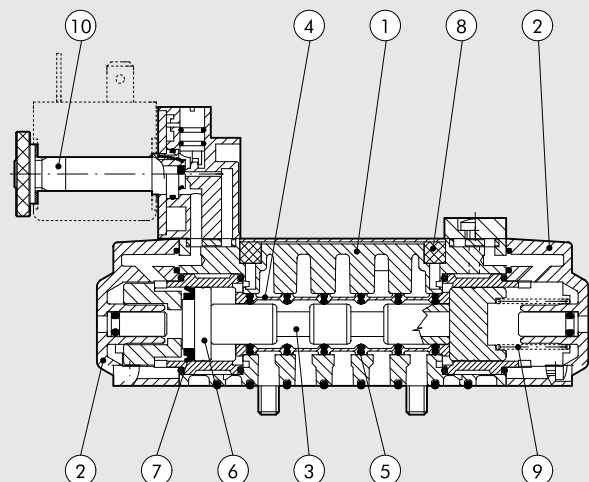
DISTRIBUTORS

VALVES ISO 5599/1, SERIES IPV-ISV

TECHNICAL DATA	ISO 1	ISO 2	ISO 3
Fluid	Filtered air without lubrication; lubrication, if used, must be continuous		
Operating pressure:	bar		
• monostable	Vacuum to 10 pneumatic / 2.5 to 10 solenoid/pneumatic		
• bistable	Vacuum to 10 pneumatic / 1 to 10 solenoid/pneumatic		
• pilot-assisted	Vacuum to 10		
Minimum pilot pressure	bar		
Operating temperature range	°C		
Nominal diameter	mm		
Conductance C	Nl/min · bar		
Critical ratio b	bar/bar		
Flow rate at 6 bar ΔP 0.5 bar	Nl/min		
Flow rate at 6 bar ΔP 1 bar	Nl/min		
Installation	In any position (vertical assembly is not recommended for bistable valves subjected to vibration)		
Assembly	On single and manifold bases according to ISO 5599/1		
Recommended lubricant	ISO and UNI FD 22		
Solenoid pilot	to CNOMO/in-line pilot / M12 | to CNOMO		
Manual	Bistable on solenoid pilot Monostable on valve body		
Maximum coil nut torque	Nm		
Compatibility with oils	Please refer to page 6-7 of the technical documentation		

COMPONENTS

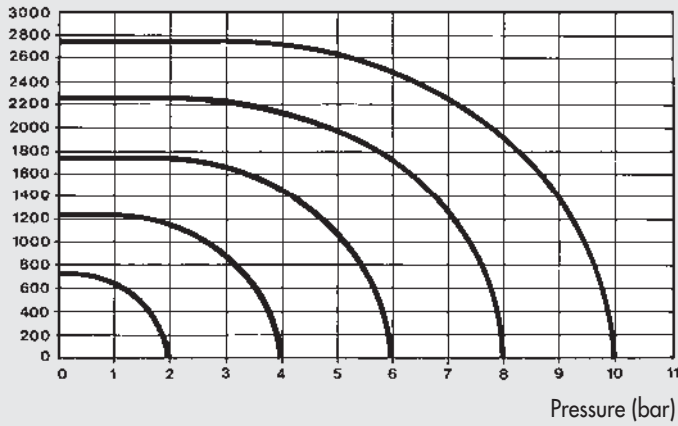
- ① VALVE BODY: Aluminium
- ② END CAP: HOSTAFORM®
- ③ SPOOL: chemically nickel-plated aluminium
- ④ DISTANCE PLATES: plastic
- ⑤ GASKETS: NBR
- ⑥ PISTONS: HOSTAFORM®
- ⑦ PISTON GASKET: NBR
- ⑧ FILTER: sintered bronze
- ⑨ SPRINGS: special steel
- ⑩ OPERATOR: Brass pipe – Stainless steel core



FLOW CHART

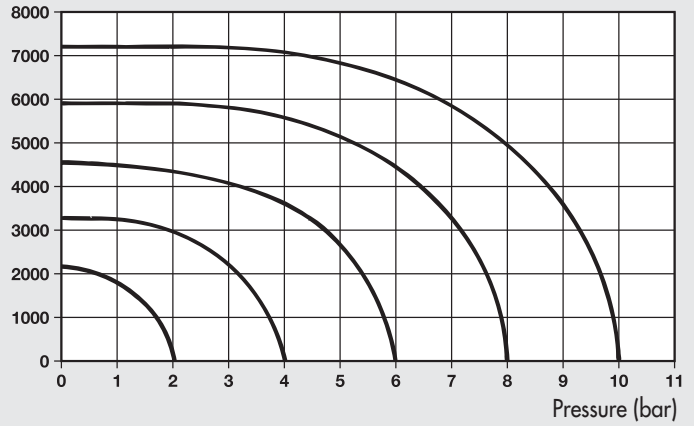
ISO 1

Flow rates (Nl/min)



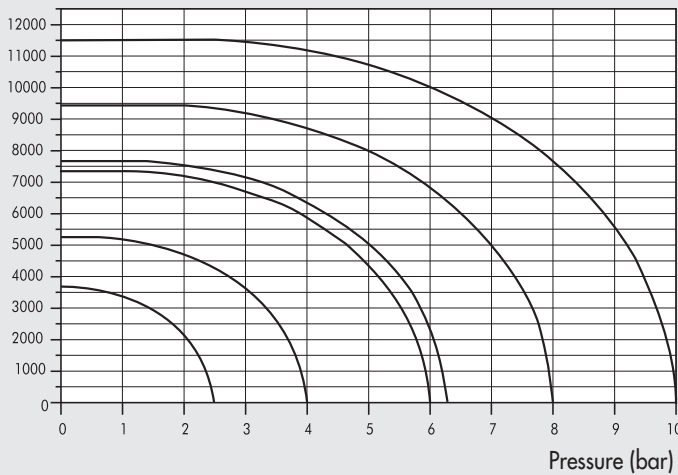
ISO 2

Flow rates (Nl/min)



ISO 3

Flow rates (Nl/min)



KEY TO CODES

I P V FAMILY		5 DIMENSIONS	5 FUNCTION	P N OPERATORS 14	S RESETTING (12)	O O FURTHER DETAILS
IPV	ISO pneumatic	5	5	PN	S	OO
ISV	ISO solenoid/pneumatic	6	6	SO	B	CC
		7		SE	D	OC
				* DO		PC
				* DE		
				● CO		
				● CE		

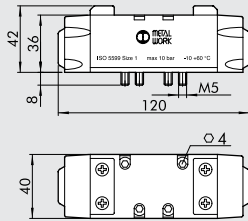
* Only for ISO 1
● Only for ISO 1 and ISO 2







VALVES ISO 5599/1, PNEUMATIC SERIES IPV

TECHNICAL DATA		ISO 1	ISO 2	ISO 3
Operating pressure	bar	Vacuum to 10		
Minimum operation pressure:				
• monostable	bar	2.5		
• bistable	bar	1		
Operating temperature range	°C	-10° to +60		
Nominal diameter	mm	7.5	12	15
Conductance C	NI/min · bar	250	657.14	971.43
Critical ratio b	bar/bar	0.36	0.25	0.43
Flow rate at 6 bar ΔP 0.5 bar	NI/min	700	1800	3200
Flow rate at 6 bar ΔP 1 bar	NI/min	1100	2700	4600
Response times at 6 Bar:				
• monostable	ms	12	24	35
• bistable	ms	20	30	45
Repositioning response times at 6 Bar:				
• monostable	ms	30	43	55
• bistable	ms	20	30	45
Manual		monostable on valve body		

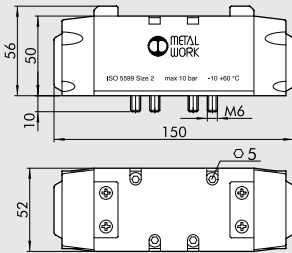








PNEUMATIC ACTUATION ISO 1



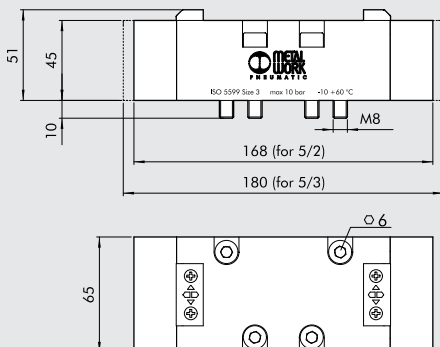
Symbol	Code	Abbrev.	Weight [g]
	7051011100	IPV 55 PNS OO	310
	7051011200	IPV 55 PNB OO	310
	7051011300	IPV 55 PND OO	310
	7051012100	IPV 55 PNS CC	310
	7051012200	IPV 55 PNS OC	310
	7051012300	IPV 55 PNS PC	310







PNEUMATIC ACTUATION ISO 2



Symbol	Code	Abbrev.	Weight [g]
	7052011100	IPV 65 PNS OO	705
	7052011200	IPV 65 PNB OO	705
	7052011300	IPV 65 PND OO	705
	7052012100	IPV 65 PNS CC	705
	7052012200	IPV 65 PNS OC	705
	7052012300	IPV 65 PNS PC	705

PNEUMATIC ACTUATION ISO 3



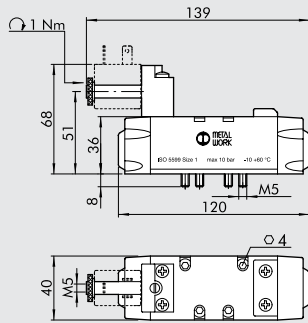
Symbol	Code	Abbrev.	Weight [g]
	7056011100	IPV 75 PNS OO	1175
	7056011200	IPV 75 PNB OO	1175
	7056011300	IPV 75 PND OO	1175
	7056012100	IPV 75 PNS CC	1290
	7056012200	IPV 75 PNS OC	1290
	7056012300	IPV 75 PNS PC	1290

VALVES ISO 5599/1, SOLENOID/PNEUMATIC, SERIES ISV

TECHNICAL DATA		ISO 1	ISO 2	ISO 3
Operating pressure:	bar			
• monostable			2.5 to 10	
• bistable			1 to 10	
• pilot-assisted			Vacuum to 10	
Minimum pilot pressure	bar		2.5	
Operating temperature range	°C		-10 to +60	
Nominal diameter	mm	7.5	12	15
Conductance C	NI/min · bar	250	657.14	971.43
Critical ratio b	bar/bar	0.36	0.25	0.43
Flow rate at 6 bar ΔP 0.5 bar	NI/min	700	1800	3200
Flow rate at 6 bar ΔP 1 bar	NI/min	1100	2700	4600
TRA / TRR monostable at 6 bar	ms	24 / 50	39 / 60	50 / 120
TRA / TRR bistable at 6 bar	ms	20 / 20	25 / 25	35 / 35
Solenoid pilot		Standards CNOMO		
Manual		Bistable on solenoid pilot Monostable on valve body		
Coils		30 mm side DIN 43650 Form A – ISO 22 mm side		
Maximum coil nut torque	Nm		1	

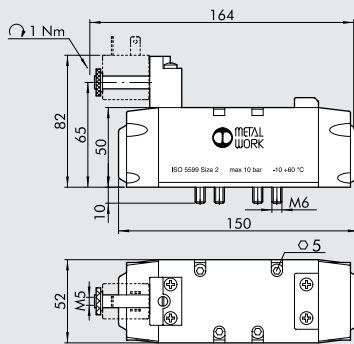


MONOSTABLE 5/2 ISO 1



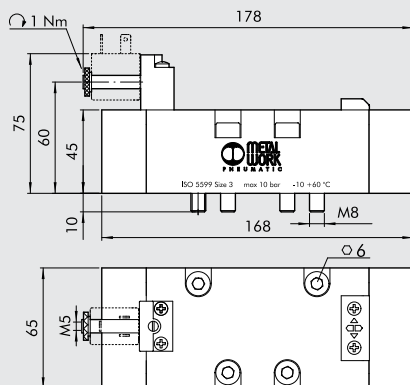
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	7051021100	ISV 55 SOS OO	344
	7051021400	ISV 55 SES OO	344

MONOSTABLE 5/2 ISO 2



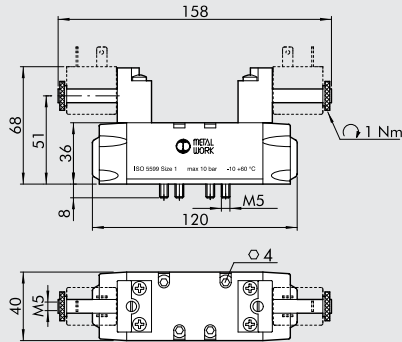
Symbol	Code	Abbrev.	Weight [g]
	7052021100	ISV 65 SOS OO	715
	7052021400	ISV 65 SES OO	715

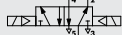
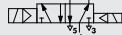
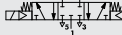
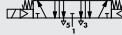
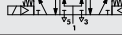
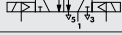
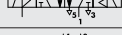
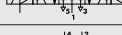
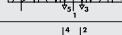
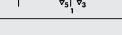
MONOSTABLE 5/2 ISO 3



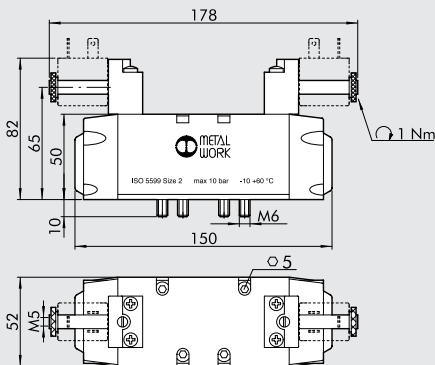
Symbol	Code	Abbrev.	Weight [g]
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	7056021400	ISV 75 SES OO	1207

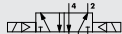
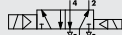
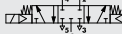
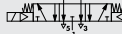
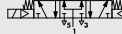
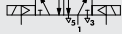
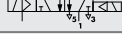
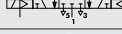
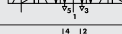
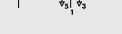
BISTABLE 5/2 ISO 1 - MONOSTABLE 5/3 ISO 1



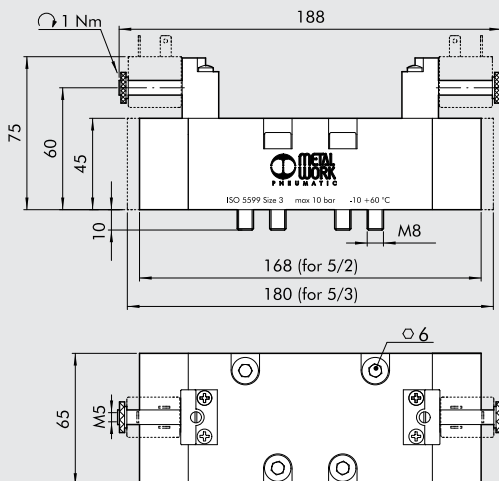
Symbol	Code	Abbrev.	Weight [g]
	7051021200	ISV 55 SOB OO	388
	7051021300	ISV 55 SOD OO	375
	7051022100	ISV 56 SOS CC	372
	7051022200	ISV 56 SOS OC	372
	7051022300	ISV 56 SOS PC	372
	7051021500	ISV 55 SEB OO	388
	7051021600	ISV 55 SED OO	375
	7051022400	ISV 56 SES CC	372
	7051022500	ISV 56 SES OC	372
	7051022600	ISV 56 SES PC	372

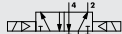
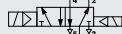
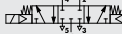
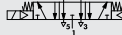
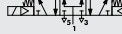
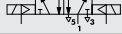
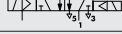
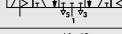
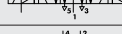
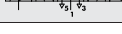
BISTABLE 5/2 ISO 2 - MONOSTABLE 5/3 ISO 2



Symbol	Code	Abbrev.	Weight [g]
	7052021200	ISV 65 SOB OO	740
	7052021300	ISV 65 SOD OO	710
	7052022100	ISV 66 SOS CC	720
	7052022200	ISV 66 SOS OC	720
	7052022300	ISV 66 SOS PC	720
	7052021500	ISV 65 SEB OO	740
	7052021600	ISV 65 SED OO	710
	7052022400	ISV 66 SES CC	720
	7052022500	ISV 66 SES OC	720
	7052022600	ISV 66 SES PC	720

BISTABLE 5/2 ISO 3 - MONOSTABLE 5/3 ISO 3



Symbol	Code	Abbrev.	Weight [g]
	7056021200	ISV 75 SOB OO	1230
	7056021300	ISV 75 SOD OO	1230
	7056022100	ISV 76 SOS CC	1355
	7056022200	ISV 76 SOS OC	1355
	7056022300	ISV 76 SOS PC	1355
	7056021500	ISV 75 SEB OO	1230
	7056021600	ISV 75 SED OO	1230
	7056022400	ISV 76 SES CC	1355
	7056022500	ISV 76 SES OC	1355
	7056022600	ISV 76 SES PC	1355

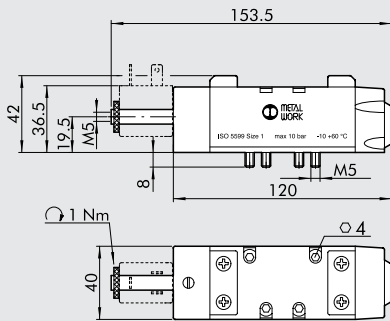
VALVES ISO 5599/1, PNEUMATIC, SERIES ISV WITH IN-LINE SOLENOID PILOT

TECHNICAL DATA

		ISO 1
Operating pressure:	bar	
• monostable		2.5 to 10
• bistable		1 to 10
• pilot-assisted		Vacuum to 10
Minimum pilot pressure	bar	2.5
Operating temperature range	°C	-10 to +60
Nominal diameter	mm	7.5
Conductance C	NI/min · bar	250
Critical ratio b	bar/bar	0.36
Flow rate at 6 bar ΔP 0.5 bar	NI/min	700
Flow rate at 6 bar ΔP 1 bar	NI/min	1100
TRA / TRR monostable at 6 bar	ms	24 / 50
TRA / TRR bistable at 6 bar	ms	20 / 20
Solenoid pilot		In line pilot
Manual		Bistable on solenoid pilot
Coils		30 mm side DIN 43650
		Form A – ISO
		22 mm side
Maximum coil nut torque	Nm	1

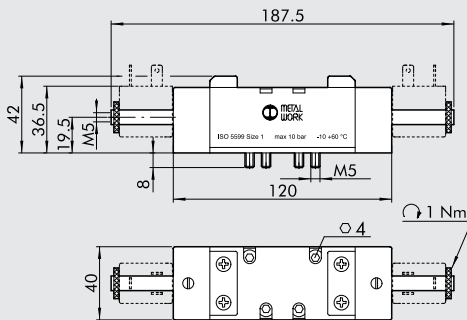


MONOSTABLE 5/2 ISO 1



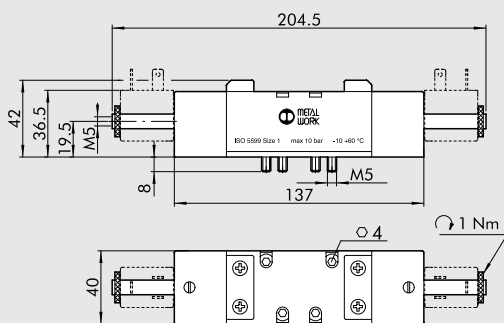
Symbol	Code	Abbrev.	Weight [g]
	7053021100	ISV 55 DOS OO	396
	7053021400	ISV 55 DES OO	396

BISTABLE 5/2 ISO 1



Symbol	Code	Abbrev.	Weight [g]
	7053021200	ISV 55 DOB OO	450
	7053021500	ISV 55 DEB OO	450

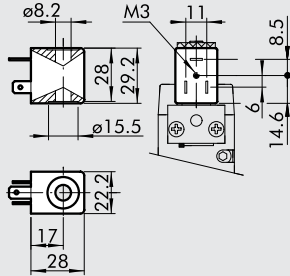
MONOSTABLE 5/3 ISO 1



Symbol	Code	Abbrev.	Weight [g]
	7053022100	ISV 56 DOS CC	517
	7053022200	ISV 56 DOS OC	516
	7053022300	ISV 56 DOS PC	516
	7053022400	ISV 56 DES CC	517
	7053022500	ISV 56 DES OC	516
	7053022600	ISV 56 DES PC	515

COILS AND CONNECTORS FOR ISO 5599/1 SOLENOID VALVES SERIES ISV

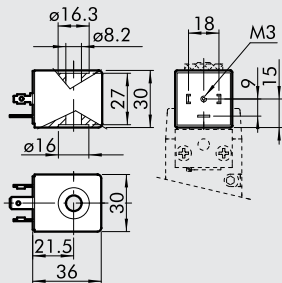
COILS SIDE 22 mm



- Voltage tolerance: -10% to +15%
- Insulation class: F155
- Degree of protection: IP65 EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents
- Coil temperature 100% ED: 70°C at 20°C - Ambient temperature
- According to Atex 94/9 CE rule, group 2, category 3 GD

Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0215000151	Coil 22 Ø 8 BA 2W-12VDC	12Vcc	2W	2W
W0215000101	Coil 22 Ø 8 BA 2W-24VDC	24Vcc	2W	2W
W0215000111	Coil 22 Ø 8 BA 3.5VA-24VAC	24V 50/60Hz	5.3VA	3.5VA
W0215000121	Coil 22 Ø 8 BA 3.5VA-110VAC	110V 50/60Hz	5.3VA	3.5VA
W0215000131	Coil 22 Ø 8 BA 3.5VA-220VAC	220V 50/60Hz	5.3VA	3.5VA

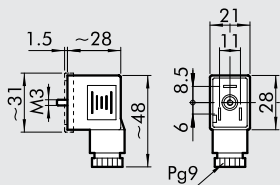
COILS SIDE 30 mm



- Electric contact DIN43650 shape A - ISO 4400
- Voltage tolerance: -10% + 10%
- Insulation class: F155
- Degree of protection: IP65 EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents
- According to Atex 94/9 CE rule, group 2, category 3 GD

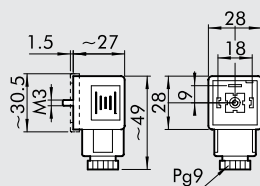
Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0210010100	Coil 30 Ø 8 4W-24VDC	24Vcc	5W	4W
W0210011100	Coil 30 Ø 8 4VA-24VAC	24V 50/60Hz	10VA	4VA
W0210012100	Coil 30 Ø 8 4VA-110VAC	110V 50/60Hz	10VA	4VA
W0210013100	Coil 30 Ø 8 4VA-220VAC	220V 50/60Hz	10VA	4VA

CONNECTOR FOR COILS SIDE 22 mm



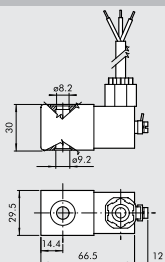
Code	Type	Colour	Ø Cable
W0970510011	Standard	Black	PG9
W0970510012	LED 24V	Transparent	PG9
W0970510013	LED 110V	Transparent	PG9
W0970510014	LED 220V	Transparent	PG9
W0970510015	LED + VDR 24V	Transparent	PG9
W0970510016	LED + VDR 110V	Transparent	PG9
W0970510017	LED + VDR 220V	Transparent	PG9
W0970510070	Atex	Black	PG9

CONNECTOR FOR COILS SIDE 30 mm



Code	Type	Colour	Ø Cable
W0970520033	Standard	Black	PG9
W0970520034	LED 24V	Transparent	PG9
W0970520035	LED 110V	Transparent	PG9
W0970520036	LED 220V	Transparent	PG9
W0970520037	LED + VDR 24V	Transparent	PG9
W0970520038	LED + VDR 110V	Transparent	PG9
W0970520039	LED + VDR 220V	Transparent	PG9

KIT COIL EEXM



Code	Description
0227606913	Kit for coil 30 24 VDC EEXMT5 cable 3 m
0227606915	Kit for coil 30 24 VDC EEXMT5 cable 5 m
0227608013	Kit for coil 30 24 VAC EEXMT5 cable 3 m
0227608015	Kit for coil 30 24 VAC EEXMT5 cable 5 m
0227608023	Kit for coil 30 110 VAC EEXMT5 cable 3 m
0227608025	Kit for coil 30 110 VAC EEXMT5 cable 5 m
0227608033	Kit for coil 30 230 VAC EEXMT5 cable 3 m
0227608035	Kit for coil 30 230 VAC EEXMT5 cable 5 m

According to Atex 94/9 CE rule, group 2, category 2 GD

KIT COILS SIDE 22 IP65



Code	Description
0222100100	Kit for coil 22 - IP65

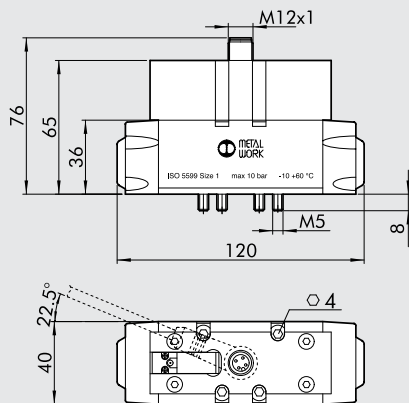
Improved IP65 protection, even after prolonged exposure to atmospheric agents.
Applicable to valves with a technopolymer control.

VALVES ISO 5599/1, SOLENOID/PNEUMATIC, SERIES ISV WITH M12 CONNECTOR

TECHNICAL DATA		ISO 1	ISO 2
Operating pressure:	bar		
• monostable		2.5 to 10	
• bistable		1 to 10	
• pilot-assisted		Vacuum to 10	
Minimum pilot pressure	bar	2.5	
Operating temperature range	°C	-10 to +60	
Nominal diameter	mm	7.5	12
Conductance C	NI/min · bar	250	657.14
Critical ratio b	bar/bar	0.36	0.25
Flow rate at 6 bar ΔP 0.5 bar	NI/min	700	1800
Flow rate at 6 bar ΔP 1 bar	NI/min	1100	2700
TRA / TRR monostable at 6 bar	ms	22 / 60	78 / 180
Solenoid pilot		With built-in coil	
Manual		Monostable on solenoid pilot Monostable on valve body	
Coil power	W	1.2 W	
Voltage		24 VDC ±10%	
Electrical connection		M12	
Degree of protection		IP65 EN60529	
Electrical protection		Transil	

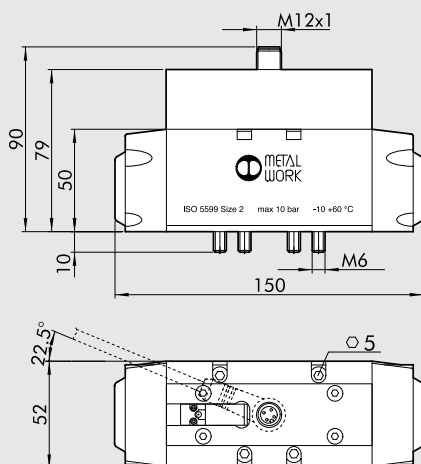


MONOSTABLE 5/2 ISO 1



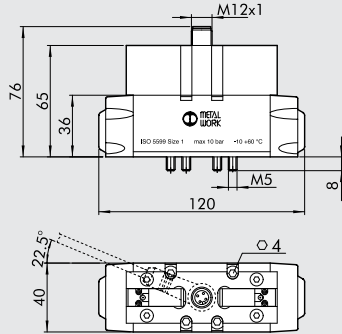
Symbol	Code	Abbrev.	Weight [g]
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	7054021400	ISV 55 CES OO	508

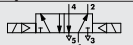
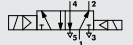
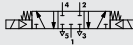

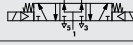
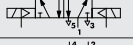
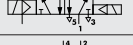

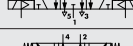
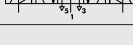
MONOSTABLE 5/2 ISO 2



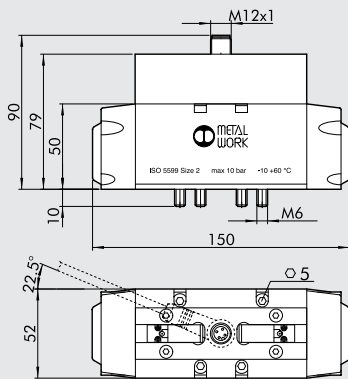
Symbol	Code	Abbrev.	Weight [g]
	7055021100	ISV 65 COS OO	901
	7055021400	ISV 65 CES OO	901

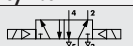
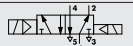
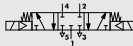


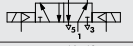
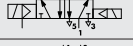
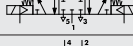
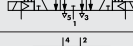
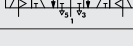
BISTABLE 5/2 ISO 1 - MONOSTABLE 5/3 ISO 1



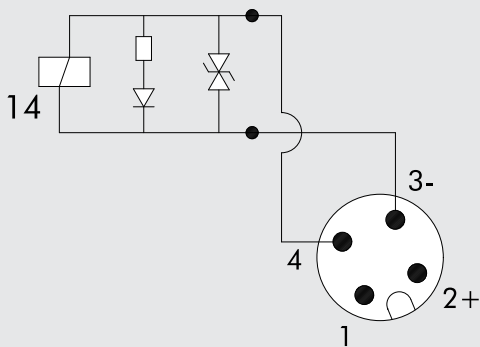
Symbol	Code	Abbrev.	Weight [g]
	7054021200	ISV 55 COB OO	512
	7054021300	ISV 55 COD OO	490
	7054022100	ISV 56 COS CC	496
	7054022200	ISV 56 COS OC	496
	7054022300	ISV 56 COS PC	496
	7054021500	ISV 55 CEB OO	512
	7054021600	ISV 55 CED OO	490
	7054022400	ISV 56 CES CC	496
	7054022500	ISV 56 CES OC	496
	7054022600	ISV 56 CES PC	496

BISTABLE 5/2 ISO 2 - MONOSTABLE 5/3 ISO 2

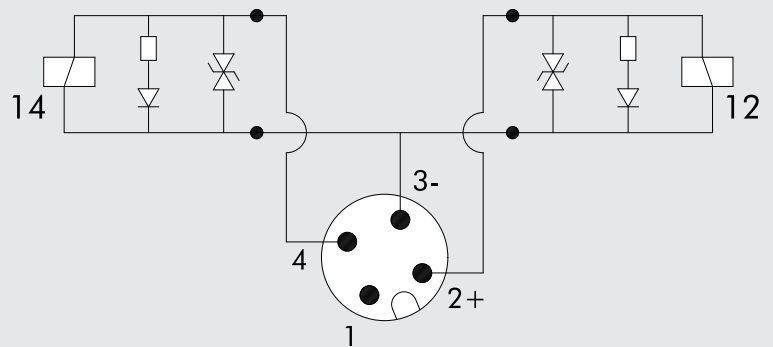


Symbol	Code	Abbrev.	Weight [g]
	7055021200	ISV 65 COB OO	860
	7055021300	ISV 65 COD OO	860
	7055022100	ISV 66 COS CC	868
	7055022200	ISV 66 COS OC	868
	7055022300	ISV 66 COS PC	868
	7055021500	ISV 65 CEB OO	860
	7055021600	ISV 65 CED OO	860
	7055022400	ISV 66 CES CC	868
	7055022500	ISV 66 CES OC	868
	7055022600	ISV 66 CES PC	868

WIRING DIAGRAM

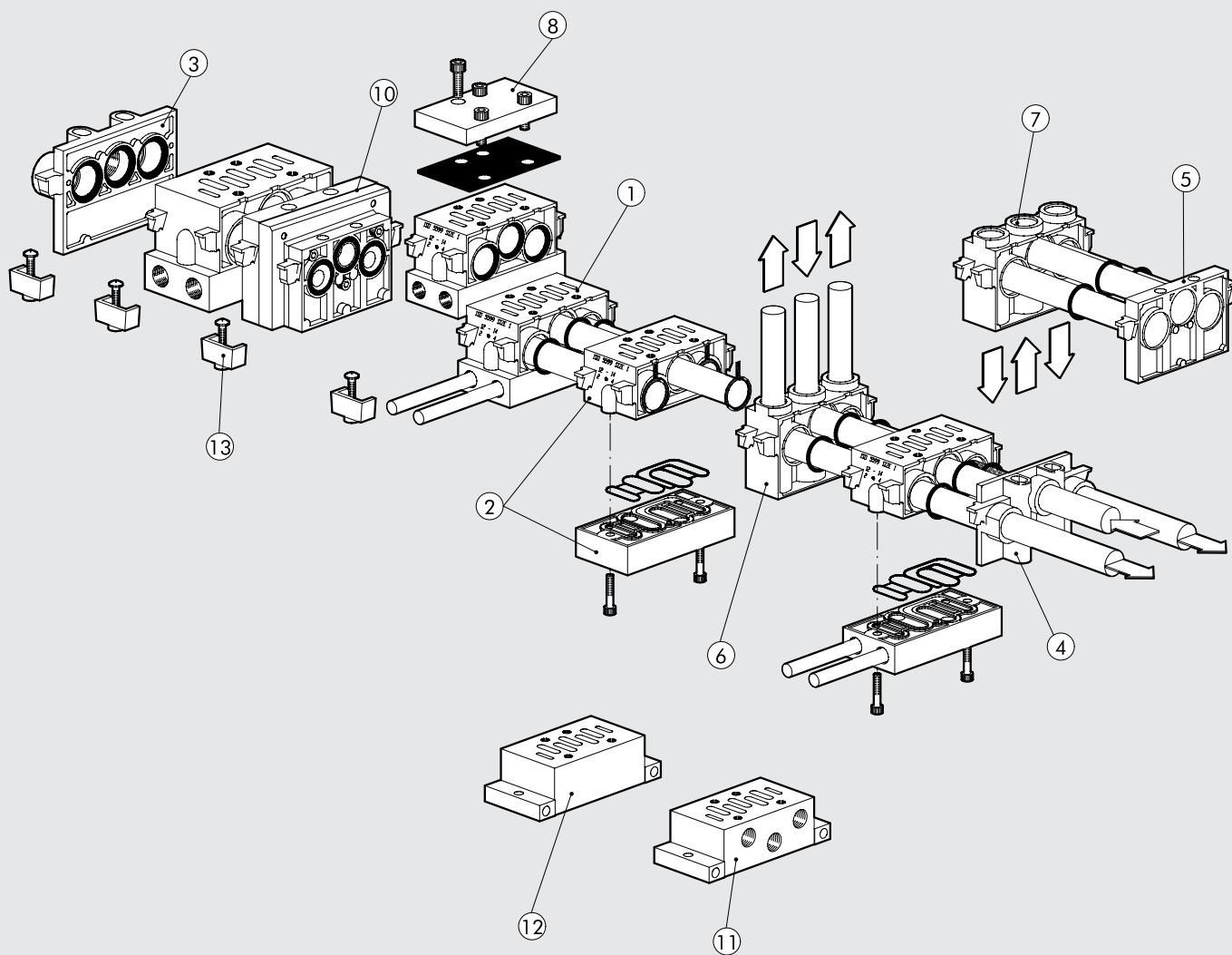


MONOSTABLE



BISTABLE

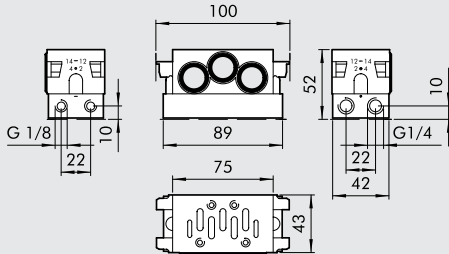
BASES ISO 5599/1 FOR VALVES SERIES IPV-ISV SIZE 1 AND 2



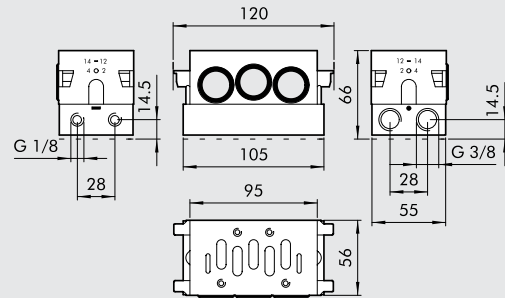
Reference	Code ISO 1	Code ISO 2	Description
①	0228000150	0228001150	Manifold base - side ports
②	0228000155	0228001155	Manifold base with bottom ports
③	0228000200	0228001200	Input end plate
④	0228000201	0228001201	Additional input end plate
⑤	0228000210	0228001210	Blind end plate
⑥	0228000300	0228001300	Intermediate - top ports
⑦	0228000301	0228001301	Intermediate - back ports
⑧	0228000500	0228001500	Blanking plate
⑨	0228000400	0228001400	Intermediate diaphragm
⑩	0228000600	-	ISO 1/ISO 2 port adapter
⑪	0228000100	0228001100	Individual base - side ports
⑫	0228000110	0228001110	Base - bottom ports
⑬	0228000700	0228001700	Assembly kit

① MANIFOLD BASE, SIDE PORTS

ISO 1



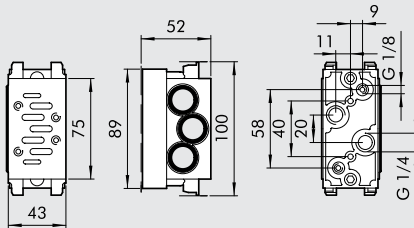
ISO 2



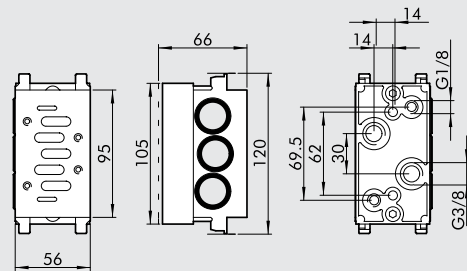
Code	Description	Weight [g]
0228000150	Manifold base, side ports, ISO 1	314
0228001150	Manifold base, side ports, ISO 2	131

② MANIFOLD BASE, BOTTOM PORTS

ISO 1



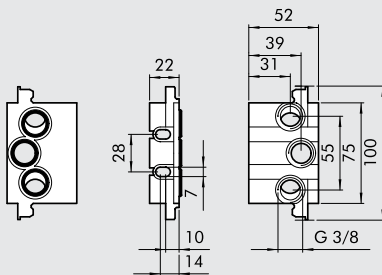
ISO 2



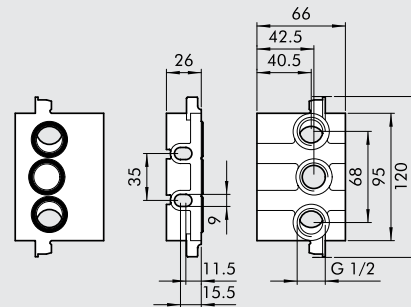
Code	Description	Weight [g]
0228000155	Manifold base, bottom ports, ISO 1	314
0228001155	Manifold base, bottom ports, ISO 2	505

③ INPUT END PLATE

ISO 1



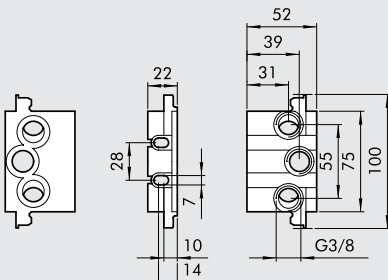
ISO 2



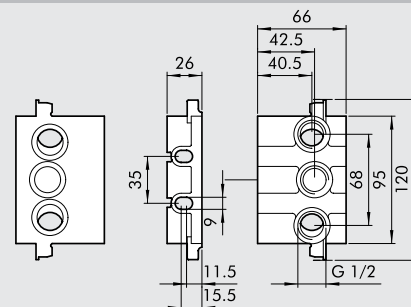
Code	Description	Weight [g]
0228000200	Input end plate ISO 1	129
0228001200	Input end plate ISO 2	206

④ ADDITIONAL INPUT END PLATE

ISO 1



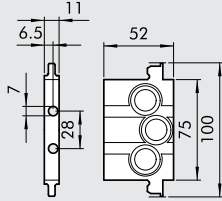
ISO 2



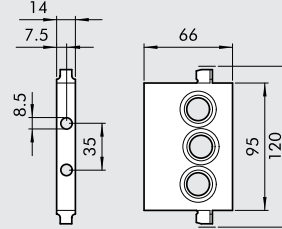
Code	Description	Weight [g]
0228000201	Additional input end plate, ISO 1	84
0228001201	Additional input end plate, ISO 2	162

5 BLIND END PLATE

ISO 1



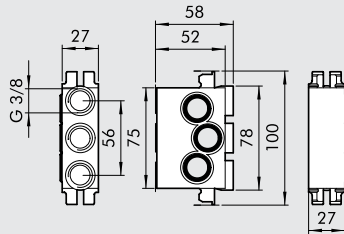
ISO 2



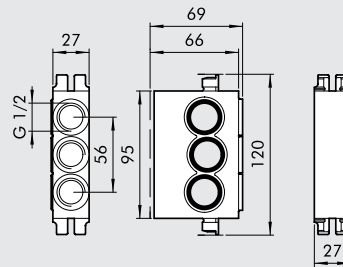
Code	Description	Weight [g]
0228000210	Blind end plate, ISO 1	79
0228001210	Blind end plate, ISO 2	130

6 INTERMEDIATE TOP PORTS

ISO 1



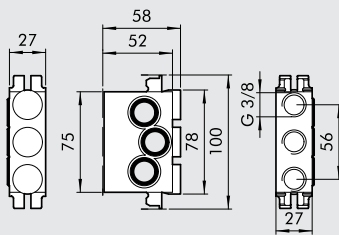
ISO 2



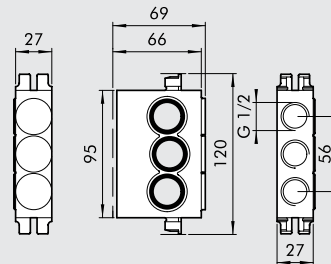
Code	Description	Weight [g]
0228000300	Intermediate top ports, ISO 1	235
0228001300	Intermediate top ports, ISO 2	299

7 INTERMEDIATE REAR PORTS

ISO 1



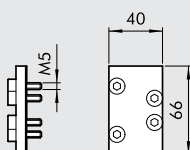
ISO 2



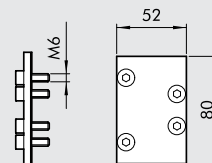
Code	Description	Weight [g]
0228000301	Intermediate rear ports, ISO 1	237
0228001301	Intermediate rear ports, ISO 2	299

8 BLANKING PLATE

ISO 1

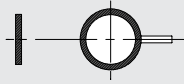


ISO 2



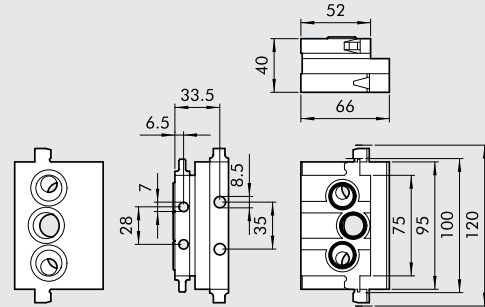
Code	Description	Weight [g]
0228000500	Blanking plate, ISO 1	47
0228001500	Blanking plate, ISO 2	96

9 INTERMEDIATE DIAPHRAGM



Code	Description	Weight [g]
0228000400	Intermediate diaphragm, ISO 1	4
0228001400	Intermediate diaphragm, ISO 2	7

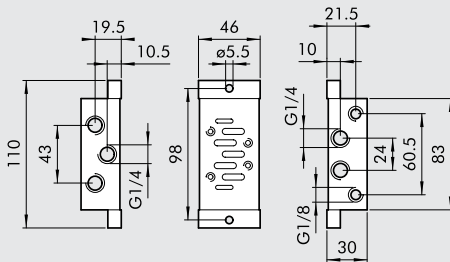
10 DIMENSION ADAPTER



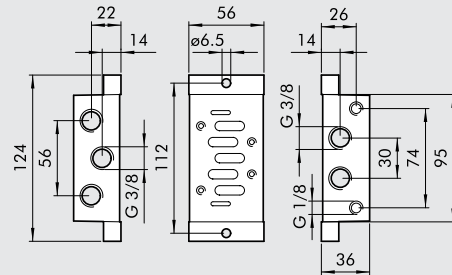
Code	Description	Weight [g]
0228000600	Dimension adapter ISO 1-2	454

11 INDIVIDUAL BASE SIDE PORTS

ISO 1



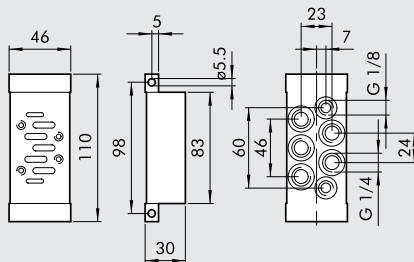
ISO 2



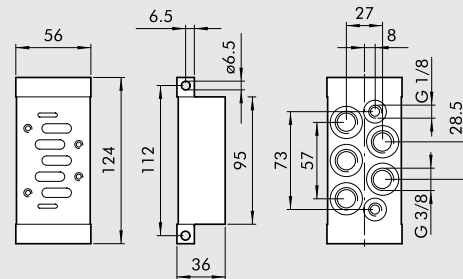
Code	Description	Weight [g]
0228000100	Individual base side ports, ISO 1	165
0228001100	Individual base side ports, ISO 2	257

12 INDIVIDUAL BASE BOTTOM PORTS

ISO 1



ISO 2



Code	Description	Weight [g]
0228000110	Individual base bottom ports, ISO 1	197
0228001110	Individual base bottom ports, ISO 2	304

13 ASSEMBLY KIT

ISO 1

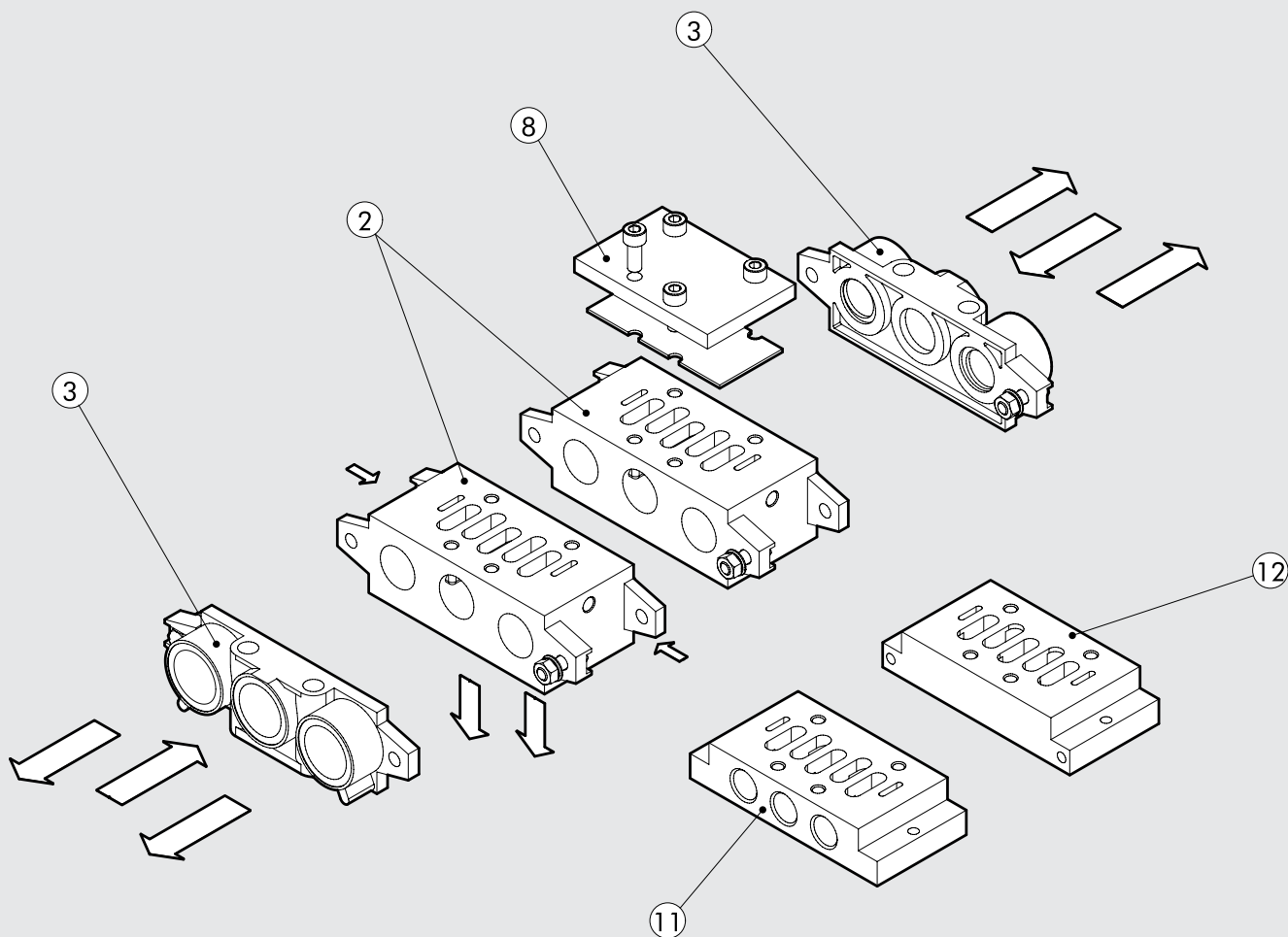


ISO 2



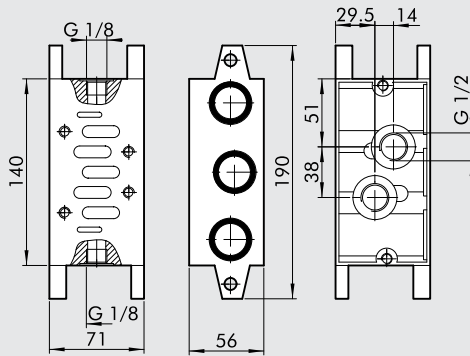
Code	Description	Weight [g]
0228000700	Assembly kit, ISO 1	47
0228001700	Assembly kit, ISO 2	47

BASES ISO 5599/1 FOR VALVES SERIES IPV-ISV SIZE ISO 3



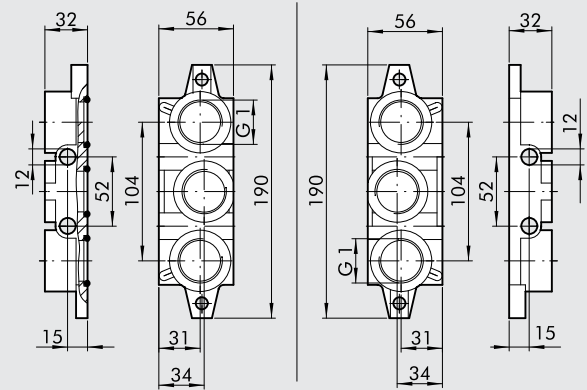
Reference	Code ISO 3	Description
②	0228002155	Manifold base with bottom ports
③	0228002200	Input end plate
⑧	0228002500	Blanking plate
⑪	0228002100	Individual base - side ports
⑫	0228002110	Base - bottom ports

② MANIFOLD BASE, BOTTOM PORTS



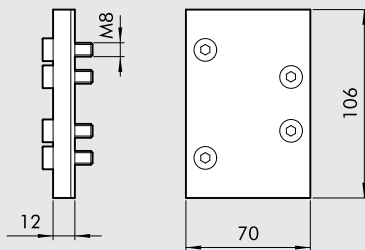
Code	Description	Weight [g]
0228002155	Manifold base, bottom ports, ISO 3	720

③ INPUT END PLATE



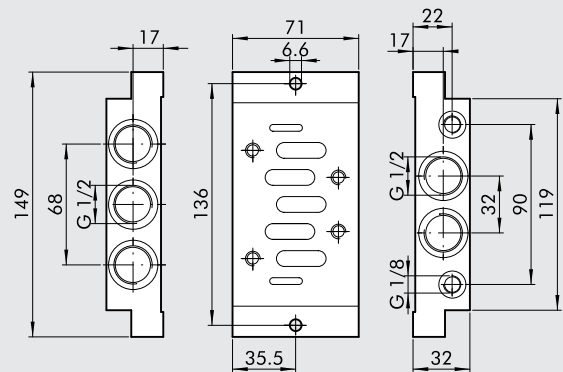
Code	Description	Weight [g]
0228002200	Input end plate, ISO 3	670

⑧ BLANKING PLATE



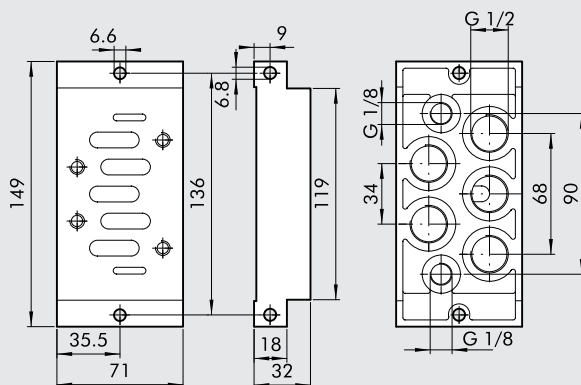
Code	Description	Weight [g]
0228002500	Blanking plate, ISO 3	265

⑪ INDIVIDUAL BASE SIDE PORTS



Code	Description	Weight [g]
0228002100	Individual base side ports, ISO 3	360

⑫ INDIVIDUAL BASE BOTTOM PORTS



Code	Description	Weight [g]
0228002110	Individual base bottom ports, ISO 3	420

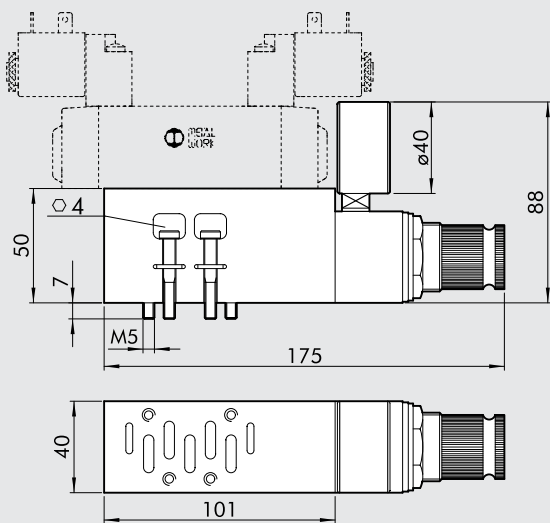
NOTES

SANDWICH REGULATORS FOR ISO 5599/1 BASES ISO1-2

TECHNICAL DATA		ISO 1	ISO 2
Max upstream pressure	bar	13	
Pressure range	bar	0 to 12	
Pressure gauge range	bar	0 to 12	
Flow rate at 6 bar ΔP 1 bar	NI/min	400	550
Operating temperature range	$^{\circ}C$	-10 to +60	
Fixing screw on ISO 5599/1 base		M5 anti-extraction	M6 anti-extraction
Installation		In any position	
Instructions for use		Downstream pressure must always be set to increasing values	



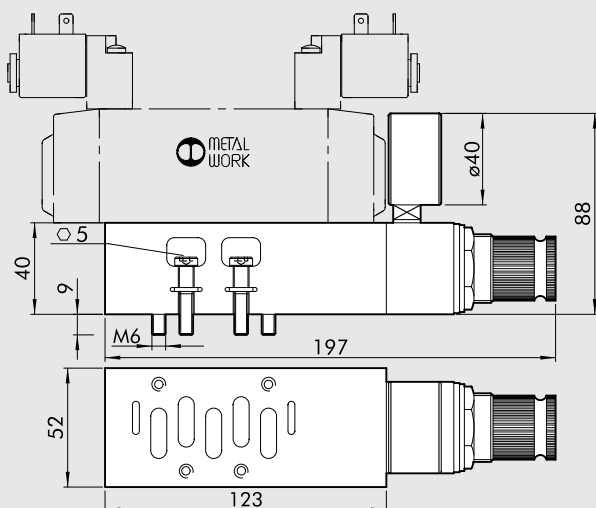
SANDWICH REGULATOR FOR ISO 1 VALVES



Symbol	Code	Description	Weight [g]
	0228000804	Sandwich regulator 1 0 to 12 bar ISO 1	760
	0228000814*	Sandwich regulator 3 0 to 12 bar ISO 1	760

* A pilot-assisted valve needs to be used since port 1 relieves pressure, it is not under pressure

SANDWICH REGULATOR FOR ISO 2 VALVES



Symbol	Code	Description	Weight [g]
	0228001804	Sandwich regulator 1 0 to 12 bar ISO 2	900
	0228001814*	Sandwich regulator 3 0 to 12 bar ISO 2	900

* A pilot-assisted valve needs to be used since port 1 relieves pressure, it is not under pressure

VALVES FOR UL- AND CSA-APPROVED COILS



The following valves come in a version for use with UL and CSA-approved coils.

- Series 70 valves, sizes 1/8", 1/4" and 1/2"
- Series 70 valves on base
- Namur valves
- ISO 5599/1 valves, sizes 1 and 2
- ISO 5599/1 valves with in-line pilot

UL certification refers to the coil system and pilot;
CSA certification refers to the coil only.



DISTRIBUTORS

VALVES FOR UL- AND CSA-APPROVED COILS

NOTES

UL is an independent organisation involved in the safety certification of products for the North American market. Coils and solenoid pilots are certified under UL 429 - Electrically operated valves.

The UR mark concerns UL-recognised components and is used for ones that are part of a larger product or system. This is why UR can be read on the coil. The certification of these components is only valid if they are used in the manufacturer's stated conditions (in our case voltage $\pm 10\%$ etc.).

The company that manufactures the certified components is included in a UL-listing of certified manufacturers. The list does not include the name Metal Work, but rather the name Nass Magnet (UL file: MH13513), with which we have an agreement for the supply and customisation of coils and solenoid valves.

The use of approved coils and pilots does not automatically certify the whole valve, nor application of a specific machine or plant. Such approval will therefore be up to the manufacturer of the machine or plant.

CSA (Canadian Standard Association) safety standards are applicable in Canada. The coil complies with CSA 22.2.

The valves on which these coils can be mounted have the same code and description as those of the corresponding standard valves, followed by the suffix "L".

Example:

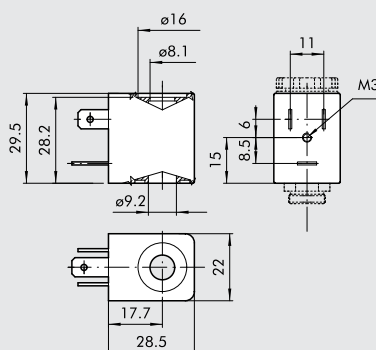
	Standard version	Approved version
Code	7020020400	7020020400 L
Description	SOV 33 SOS NO	SOV 33 SOS NO L

All valves and units of this type have a painted or anodized aluminium control and can only mount Metal Work coils having a code that begins with **W0217** (approved coil). For the technical data, a diagram of the components and the code key, please refer to the section in the catalogue of the corresponding family of standard valves.

UL AND CSA COILS

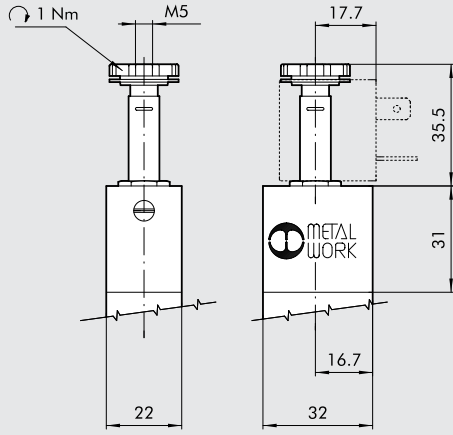
UR-marked coils are therefore components that can form part of a larger product of system. **Approval of the component is valid in the above operating conditions only. The coils must be mounted on suitable valves, ones for which the Metal Work code ends with L.**

- Voltage tolerance: $\pm 10\%$
- Insulation class: F155
- Degree of protection: IP65 EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents
- Temperature range:
 - from +20°C at +50°C (DC version)
 - from +20°C at +40°C (AC version)
 - from +58°C at +20°C (DC version)
 - from +81°C at +20°C (AC version)
- Max coil temperature at ED 100%:



Code	Abbrev.	Nominal voltage	Absorption
W0217000151	Coil 22 Ø 9 2,9W 12VDC UR	12Vcc	2.9 W
W0217000101	Coil 22 Ø 9 2,6W 24VDC UR	24Vcc	2.6 W
W0217000111	Coil 22 Ø 9 6/4.9 VA 24V 50/60Hz UR	24V 50 Hz	6VA
		24V 60 Hz	4.9VA
W0217000121	Coil 22 Ø 9 6/4.9 VA 110V 50/60Hz UR	110V 50 Hz	6 VA
		110V 60 Hz	4.9 VA
		48 Vcc	2.7 VA
W0217000131	Coil 22 Ø 9 6/4.9 VA 230V 50/60Hz UR	230V 50 Hz	6 VA
		230V 60 Hz	4.9 VA

ELECTROPNEUMATIC CONTROL FOR: SERIES 70 VALVES 1/8", SERIES 70 VALVES ON BASE



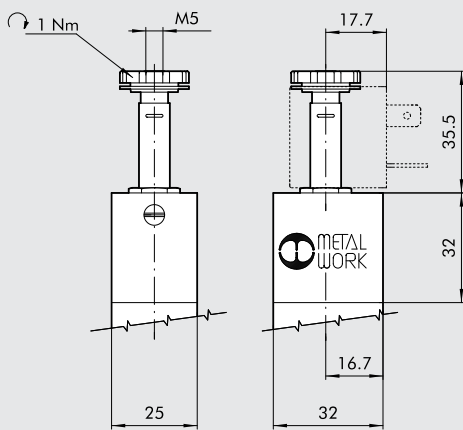
SERIES 70 VALVES 1/8"

Symbol	Code	Abbrev.	Weight [g]
	7010020400L	SOV 23 SOS NO L	130
	7010020200L	SOV 23 SOS NC L	130
	7010021100L	SOV 25 SOS OO L	158
	7010021200L	SOV 25 SOB OO L	220
	7010020100L	SOV 23 SOB OO L	195
	7010022100L	SOV 26 SOS CC L	250
	7010022200L	SOV 26 SOS OC L	250
	7010022300L	SOV 26 SOS PC L	250

SERIES 70 VALVES ON BASE

	7011021100L	SOV B5 SOS OO L	172
	7011021200L	SOV B5 SOB OO L	234
	7011022100L	SOV B6 SOS CC L	264
	7011022200L	SOV B6 SOS OC L	264
	7011022300L	SOV B6 SOS PC L	264

ELECTROPNEUMATIC CONTROL FOR: SERIES 70 VALVES 1/4", NAMUR VALVES



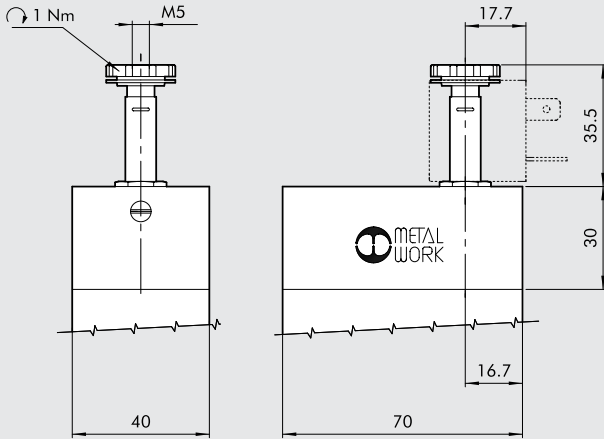
SERIES 70 VALVES 1/4"

Symbol	Code	Abbrev.	Weight [g]
	7020020400L	SOV 33 SOS NO L	197
	7020020200L	SOV 33 SOS NC L	197
	7020021100L	SOV 35 SOS OO L	245
	7020021200L	SOV 35 SOB OO L	326
	7020020100L	SOV 33 SOB OO L	280
	7020022100L	SOV 36 SOS CC L	364
	7020022200L	SOV 36 SOS OC L	364
	7020022300L	SOV 36 SOS PC L	364

VALVES NAMUR

	7021020100L	SOV A5 SOS OO L	280
	7021020200L	SOV A5 SOB OO L	360

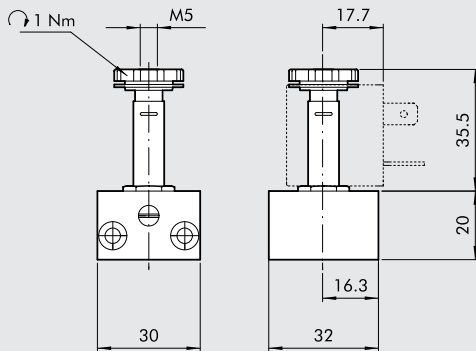
ELECTROPNEUMATIC CONTROL FOR: SERIES 70 VALVES 1/2"



Symbol	Code	Abbrev.	Weight [g]
	7030020400L	SOV 43 SOS NO L	930
	7030020200L	SOV 43 SOS NC L	930
	7030021100L	SOV 45 SOS OO L	1120
	7030021200L	SOV 45 SOB OO L	1140
	7030020100L	SOV 43 SOB OO L	955
	7030022100L	SOV 46 SOS CC L	1265
	7030022200L	SOV 46 SOS OC L	1265
	7030022300L	SOV 46 SOS PC L	1265

ELECTROPNEUMATIC CONTROL FOR: ISO 5599/1 VALVES

- Overall length of monostable valves 5/2 (included solenoid pilot): add 2 mm to the length of the corresponding standard ones.
- Overall length of bistable valves 5/2 and monostable valves 5/3 (included solenoid pilot): add 4 mm to the length of the corresponding standard ones.



ISO 5599/1 VALVES - ISO 1

Symbol	Code	Abbrev.	Weight [g]
	7051021100L	ISV 55 SOS OO L	374
	7051021200L	ISV 55 SOB OO L	448
	7051022100L	ISV 56 SOS CC L	432
	7051022200L	ISV 56 SOS OC L	432
	7051022300L	ISV 56 SOS PC L	432

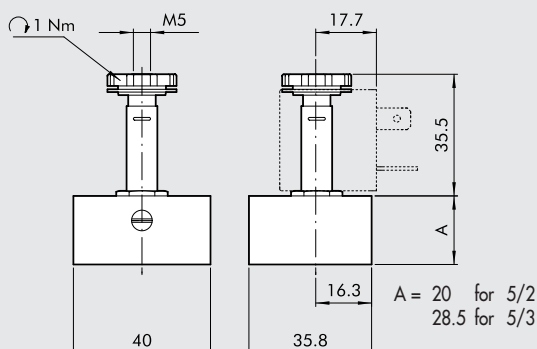
ISO 5599/1 VALVES - ISO 2

	7052021100L	ISV 65 SOS OO L	745
	7052021200L	ISV 65 SOB OO L	800
	7052022100L	ISV 66 SOS CC L	780
	7052022200L	ISV 66 SOS OC L	780
	7052022300L	ISV 66 SOS PC L	780

CNOMO SOLENOID VALVE

Code	Description
9453922L	Cnomo 3/2 with bistable manual actuation

ELECTROPNEUMATIC CONTROL FOR: VALVES ISO 5599/1 WITH IN-LINE SOLENOID PILOT



Symbol	Code	Abbrev.	Weight [g]
	7053021100L	ISV 55 DOS OO L	396
	7053021200L	ISV 55 DOB OO L	450
	7053022100L	ISV 56 DOS CC L	516
	7053022200L	ISV 56 DOS OC L	516
	7053022300L	ISV 56 DOS PC L	516

NOTES

DISTRIBUTORS

SUMMARY OF VALVE ISLANDS

	● HDM + MULTI-POLE CONNECTION		PAGE 2-128
	● HDM + AS-Interface		PAGE 2-132
	● HDM + PROFIBUS-DP		PAGE 2-137
	● HDM + CANopen		PAGE 2-141
	● HDM + B&R		PAGE 2-147
	● HDM - VALVES, INTERMEDIATES ELEMENTS AND ACCESSORIES		PAGE 2-150
	● MULTIMACH		PAGE 2-154
	● MULTIMACH + PROFIBUS	SEE	PAGE 2-178
	● MULTIMACH + CANopen	SEE	PAGE 2-178
	● MULTIMACH + DEVICE-NET	SEE	PAGE 2-178
	● MULTIMACH + B&R		PAGE 2-162
	● CM CLEVER MULTIMACH		PAGE 2-163

HDM + MULTI-POLE CONNECTION

HDMs are the ideal solution for those requiring the unbeatable performance, flexibility and modularity of Multimach valves combined with sturdy mechanics and a high degree of protection against external agents. Each valve is enclosed in a reinforced technopolymer protective shell that acts as a shock-absorber and prevents the infiltration of dirt. The class of protection is IP65.

The smooth, rounded design makes HDMs ideal for applications requiring frequent washing without the deposit of residues. All the pneumatic connections are on one side, with built-in push-in fittings. The user interface is on another side so that the fitter and the service engineer have everything at hand.

Flexibility is total: there are 1-16 valves, input and output terminals for pipes of different sizes and intermediate modules for separate inputs and outputs. One very important new feature is that valves of different capacities can be mounted as required. Three different valve sizes can be combined at will. This means a valve can be replaced at any time by another one offering a different performance. It only takes a few seconds to replace or add a valve. To do this, merely loosen the two grub screws fixing the valve to the adjacent ones. Since the electrical signal is relayed from one valve to the next by means of gold-plated contacts connected to an electronic board, the electrical connections are entirely automatic.

The ratio of the HDM's flow rate to its dimensions is unrivalled – miniaturisation and efficiency have reached a peak.

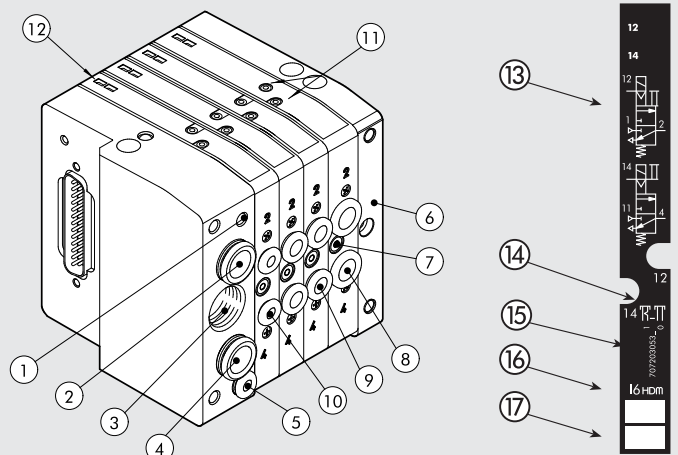


TECHNICAL DATA

Valve port connections	Ø 4,6,8 mm automatic fitting for ports 2 and 4 / power supply port for Ø10 automatic fitting / 3/8 thread for exhaust port, M5 thread for exhaust pilot port		
Connection on the end-plate for the supply of pilots	Automatic fitting Ø 4 mm		
Maximum number of pilots	16		
Maximum number of valves	16 (same as the max. no. of pilots)		
Operating temperature range	°C -10 to +60		
Fluid	Filtered air without lubrication; lubrication, if used, must be continuous		
Flow rate at 6 bar ΔP 1bar	Nl/min	11 mm Ø 4 = 200	11 mm Ø 6 = 500 14 mm Ø 8 = 700
Pressure range		X (pilot supply)	1-11 (valve supply)
	Terminal 1-11	3 to 7 bar	vacuum at 10 bar
	Terminal 1	3 to 7 bar	
Voltage range		24 VDC ± 10%	
Power	W	0.6	
Control		PNP o NPN	
Insulation class		F155	
Degree of protection		IP65 (with conveyed exhaust)	
Solenoid rating		100% ED	
TRA/TRR 2x3/2 monostable at 6 bar	ms	8 / 45	
TRA/TRR 5/2 monostable at 6 bar	ms	8 / 33	
TRA/TRR 5/2 bistable at 6 bar	ms	20 / 20	
TRA/TRR 5/3 cc monostable at 6 bar	ms	20 / 20	
Note on use	Insert the pipes in the fittings, before passing air through the valves, otherwise the basket may be pulled out of its seat by the flow of air. Please refer to page 6-7 of the technical documentation		
Compatibility with oils			

COMPONENTS

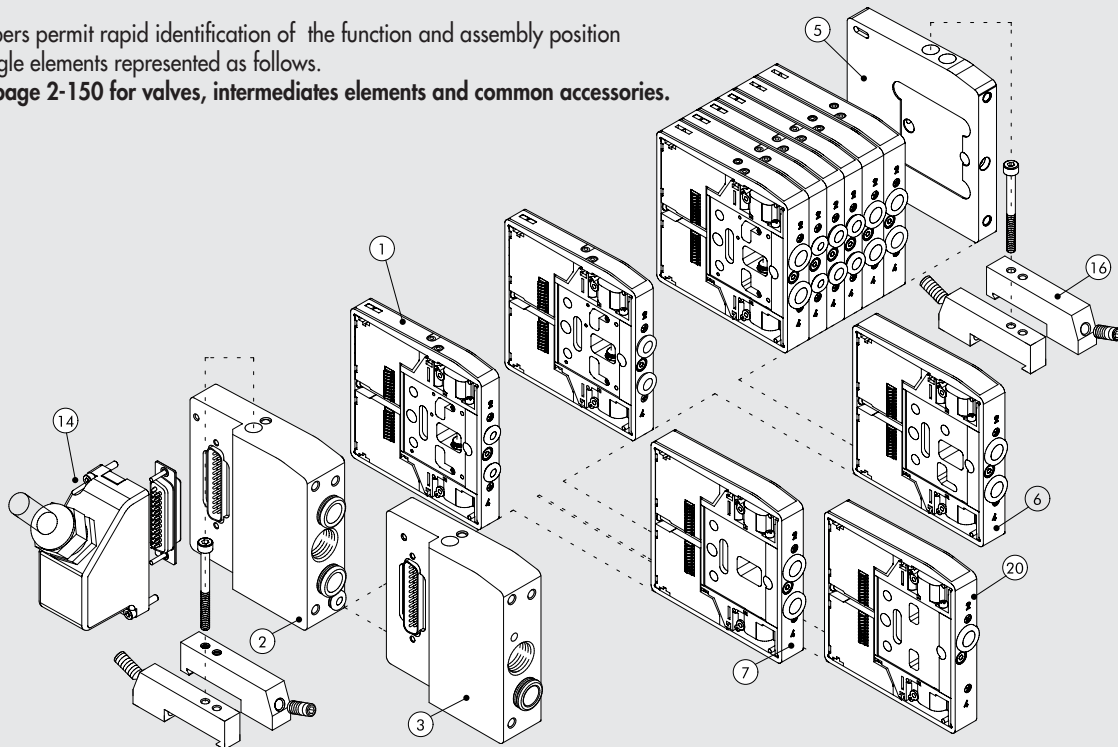
- ① Exhaust - Solenoid pilot 82/84
- ② Valve supply - port 1
- ③ Threaded connection of exhausts 3/5
- ④ Valve supply - port 11
- ⑤ Electrical control supply X
- ⑥ Blind end-plate
- ⑦ Screw for valve wall-mounting
- ⑧ Utility port for pipe Ø 8 mm
- ⑨ Utility port for pipe Ø 6 mm
- ⑩ Utility port for pipe Ø 4 mm
- ⑪ Manual control
- ⑫ LED (LED on, solenoid valve energised)
- ⑬ Pneumatic symbol
- ⑭ Identification of the monostable or bistable manual control
- ⑮ Valve ordering code
- ⑯ Valve identification code
- ⑰ Blank space for valve number



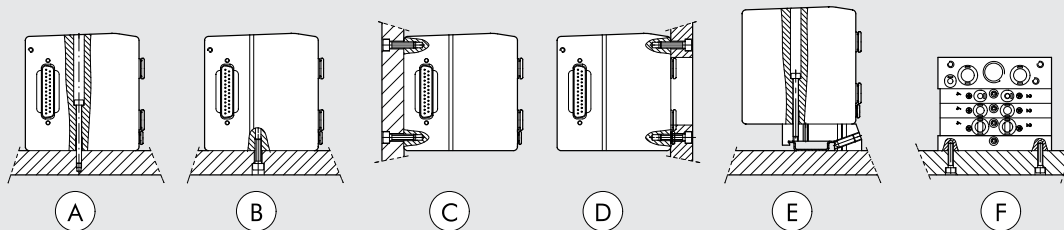
THE MULTIMACH WORLD: FLEXIBILITY

The numbers permit rapid identification of the function and assembly position of the single elements represented as follows.

Refer to page 2-150 for valves, intermediates elements and common accessories.



FIXING THE BASE



- Ⓐ Fixing from above using the 1 or 1-1 input terminal and the blind terminal.
- Ⓑ Ⓒ Fixing from above using the 1 or 1-1 input terminal and the blind terminal, using the M5 threads on the bottom and the rear of the terminals.
- Ⓓ Fixing from above using the 1 or 1-1 input terminal and the blind terminal, using the M5 threads on the front of the terminals.
An opening for the pipes is made in the plate.
- Ⓔ Fixing on the DIN bar with end-plate 1 or 1-11 and blind and plate, using the push-in bracket code 0227301600.
- Ⓕ Lateral fixing using the blind terminal, and its the M4 threads on the side lateral.

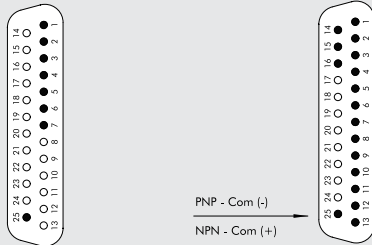
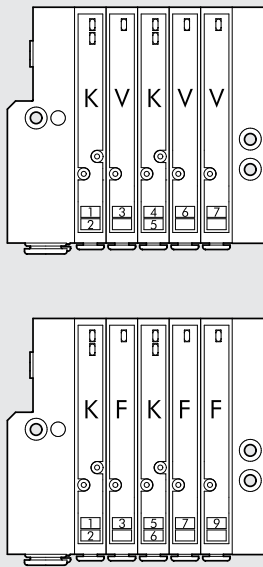
Note: The sole fixing admitted is the one showed.

KEY TO CODES

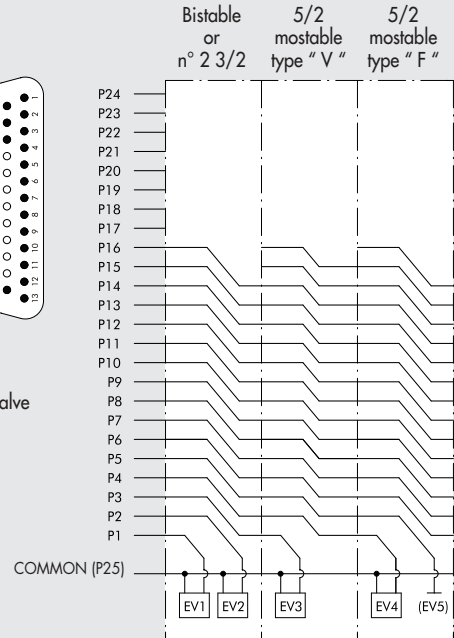
H D M VALVE	2 INPUT END-PLATE	8 ELECTRICAL BASE	M MANUAL TYPE	I6 - W 8 - W 6 - O 4 - L 8 - 5 TYPE OF VALVE	1 4 - 1 6 FURTHER DETAILS
Heavy duty Multimach IP65	2 End-plate 1-11 3 End-plate 1	8 D-Sub 25 wire	M Monostable manual control B Bistable manual control	I n° 2 3/2 NC W n° 2 3/2 NO L 3/2 NO + 3/2 NC V 5/2 monostable K 5/2 bistable O 5/3 monostable *F 5/2 monostable 5 blind end-plate 6 Passing-intermede 7 Blind intermediate 20 Exhaust section 4 Cartridge 4 6 Cartridge 6 8 Cartridge 8	14 IP65 25-wire shell 16 n° 2 brackets for DIN bar

* Uses a single PIN (like the V) and occupies 2 signals.

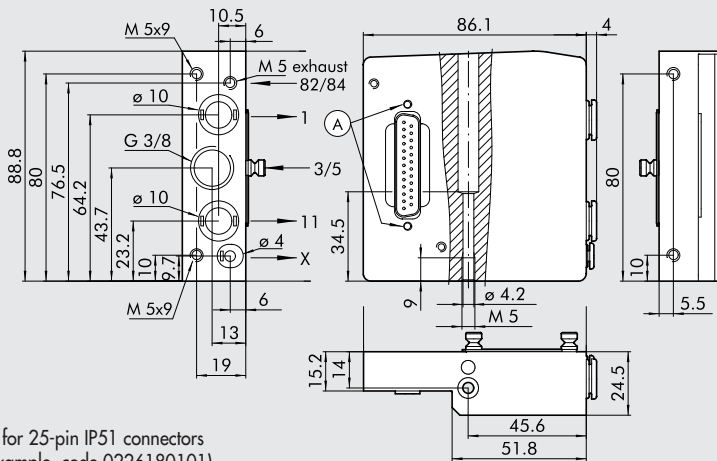
WIRING DIAGRAM



NOTE: The type F monostable valve uses one PIN only (like the V) but occupies 2 signals.



2 END-PLATE 1-11-25D



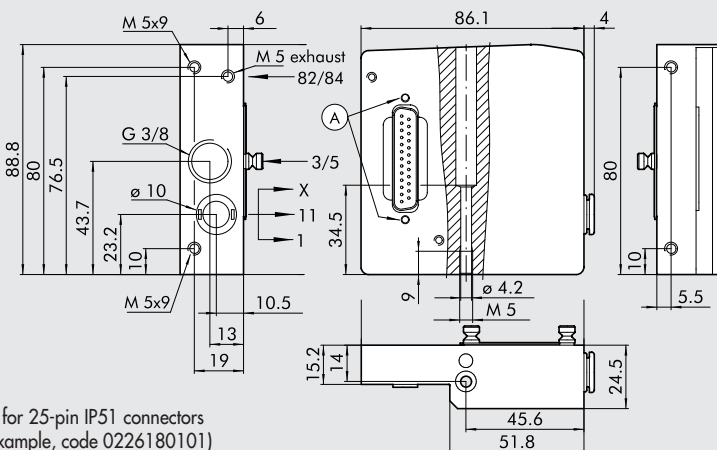
Ⓐ = Holes for 25-pin IP51 connectors (for example, code 0226180101)

Code	Description	Weight [g]
0227301200	End-plate HDM 1-11-25D	370

This end-plate allows for supplies to be differentiated

- Port 2
- Port 4
- Pilot supply

3 END-PLATE 1-25D

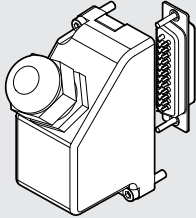


Ⓐ = Holes for 25-pin IP51 connectors (for example, code 0226180101)

Code	Description	Weight [g]
0227301201	End-plate HDM 1-25D	370

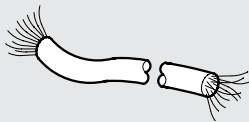
ACCESSORIES

⑭ 45° CONNECTOR KIT, 25 WIRES IP65



Code	Description	Weight [g]
0226180107	45° connector kit, 25 wires IP 65	65

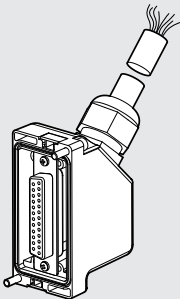
CABLES



Code	Description	Weight [g]
0226107201	10-wire cable	86
0226107101	19-wire cable	122
0226107102	25-wire cable	130

Specify the number of metres desired.

PRE-WIRED 45° CONNECTOR KIT, 25 WIRES IP65



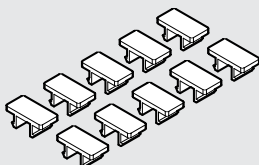
Code	Description	Weight [g]
0226960100	Connector IP 65 + 25-wire 45° cable L = 1 m	190
0226960250	Connector IP 65 + 25-wire 45° cable L = 2.5 m	390
0226960500	Connector IP 65 + 25-wire 45° cable L = 5 m	740

WIRING DIAGRAM FOR PRE-WIRED PLUG CONNECTOR

25 PIN

Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire
1	blue/black	10	brown/white	19	yellow/black
2	red/brown	11	red/orange	20	white
3	white/black	12	light blue	21	blue/white
4	red/blue	13	yellow/white	22	brown
5	black/orange	14	yellow	23	green/white
6	yellow/red	15	red/green	24	red
7	black/brown	16	orange	25	green/black
8	white/red	17	orange/white		
9	red/black	18	green		

IDENTIFICATION PLATE KIT



Code	Description
0226107000	Identification plate kit

Comes in 10-pc. packs

HDM + AS-Interface

The HDM+AS-Interface system has been designed in such a way that the pneumatic input terminal contains all the electronics, signals and AS-I connectors. It is a very compact and sturdy system where everything is housed in a thick casing aluminium to protect the delicate components against impact. The valves and accessories are HDM standard, which means that you only need to replace the input terminal to convert the valve island with multiple connector into an AS-I island. All the advantages of the HDM system can be exploited: the possibility of mounting valves of different size, with fittings for pipes 4, 6 or 8; the insertion of intermediate modules with separate power supply or outlets; aluminium valves with chemical nickel plating enclosed in a protective casing in reinforced technopolymer, with an index of protection IP65. The arrangement of the functions continues the traditional optimisation of the HDMs: the user interface of the valves and bus all on one side, so that the fitter and service engineer have everything within easy reach: all compressed air connections on the other side; the connectors for AS-I cables on the opposite side longitudinally, so that several valve islands can be arranged in line, fixed on a DIN bar.

There are many AS-I terminal variants to meet all possible requirements:

- with 1 node, for controlling up to 4 valve solenoid pilots;
- with 2 nodes, for controlling up to 8 solenoid pilots;
- with 1 node for output and input for controlling up to 4 solenoid pilots and receiving up to 4 input signals. The input connectors are M8 or M12;
- with 2 nodes for output and input for controlling up to 8 solenoid pilots and receiving up to 8 input signals with M8 connectors;
- power supply with the AS-I yellow cable only;
- power supply with two cables: the yellow AS-I cable and the black power supply cable.
- traditional V.2.1 addressing or extended AB V.3.0 address for an increase in the node numbers which can be connected up to 62 and for a better diagnostics

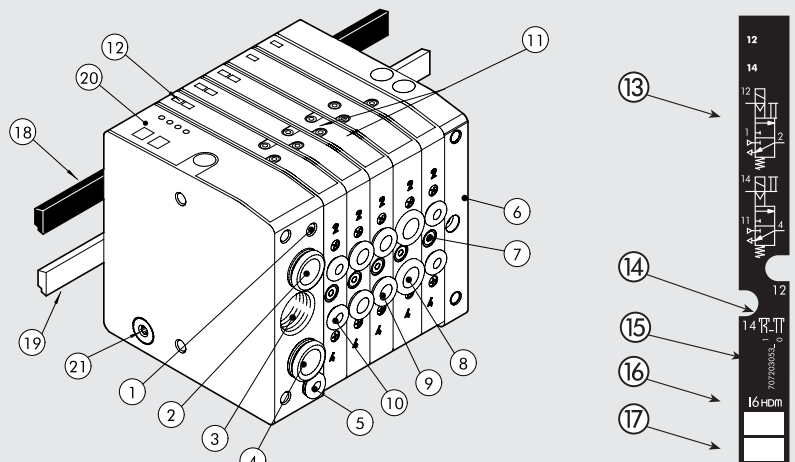


TECHNICAL DATA

Valve port connections	Ø 4,6,8 mm automatic fitting for ports 2 and 4 / power supply port for Ø10 automatic fitting / 3/8 thread for exhaust port, M5 thread for exhaust pilot port		
Connection on the end-plate for the supply of pilots	Automatic fitting Ø 4 mm		
Maximum number of pilots	Terminal with 1 node = 4 / terminal with 2 node = 8		
Maximum number of valves	Terminal with 2 node = 4 (same as the max. no. of pilots) / terminal with 2 node = 8 (same as the max. no. of pilots)		
Operating temperature range	-10 to +60 °C		
Fluid	Filtered air without lubrication; lubrication, if used, must be continuous		
Flow rate at 6 bar ΔP 1bar	Nl/min	11 mm Ø 4 = 200	11 mm Ø 6 = 500 14 mm Ø 8 = 700
Pressure range	Terminal 1-11	X (pilot supply)	1-11 (valve supply)
	Terminal 1	3 to 7 bar	vacuum at 10 bar
Voltage range		3 to 7 bar	24 VDC ±10%
Power for each pilot	W		0.6
Solenoid Pilot Insulation class			F155
Degree of protection		IP 65 (with conveyed exhaust, and unused INPUTS sealed with caps/plugs)	
Solenoid rating			100% ED
TRA/TRR 2x3/2 monostable at 6 bar	ms		8 / 45
TRA/TRR 5/2 monostable at 6 bar	ms		8 / 33
TRA/TRR 5/2 bistable at 6 bar	ms		20 / 20
TRA/TRR 5/3 cc monostable at 6 bar	ms		20 / 20
Note on use		Insert the pipes in the fittings, before passing air through the valves, otherwise the basket may be pulled out of its seat by the flow of air. Please refer to page 6-7 of the technical documentation	
Compatibility with oils			

COMPONENTS

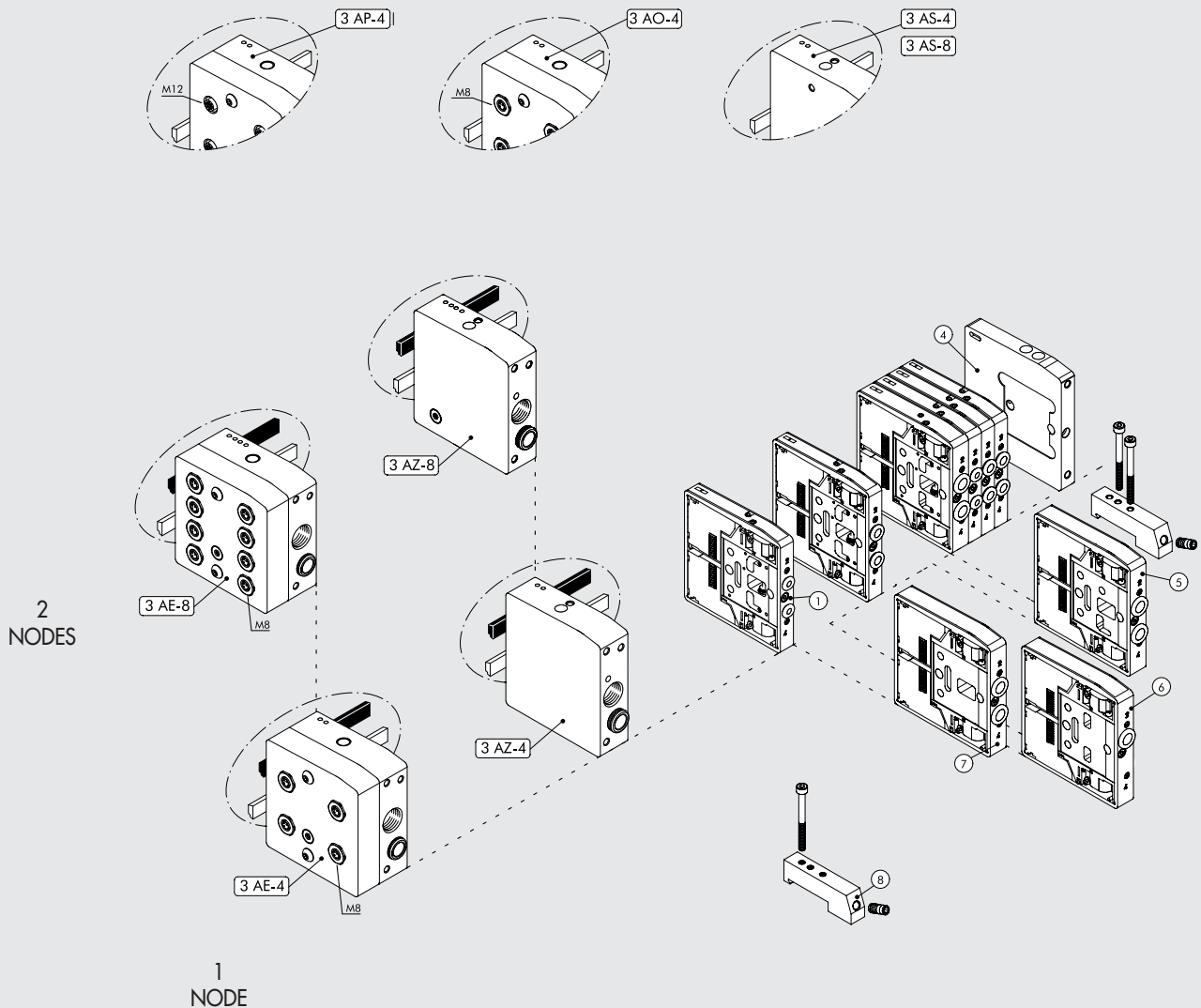
- Exhaust - Solenoid pilot 82/84
- Valve supply - port 1
- Threaded connection of exhausts 3/5
- Valve supply - port 11
- Electrical control supply X
- Blind end-plate
- Screw for valve wall-mounting
- Utility port for pipe Ø 8 mm
- Utility port for pipe Ø 6 mm
- Utility port for pipe Ø 4 mm
- Manual control
- LED (LED on, solenoid valve energised)
- Pneumatic symbol
- Identification of the monostable or bistable manual control
- Valve ordering code
- Valve identification code
- Blank space for valve number
- Black cable for 24V (if present)
- AS-INTERFACE yellow cable
- AS-INTERFACE led



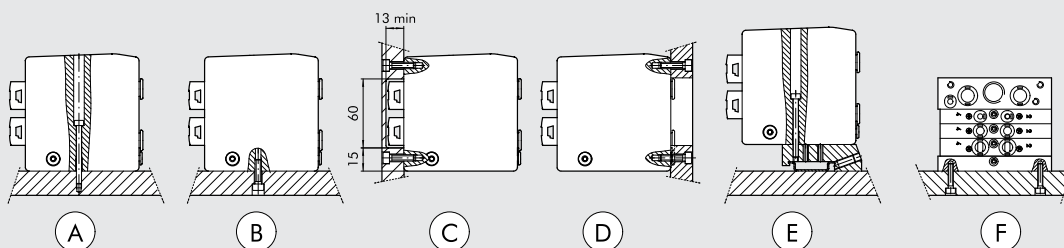
THE MULTIMACH WORLD: FLEXIBILITY

The numbers permit rapid identification of the function and assembly position of the single elements represented as follows.

Refer to page 2-150 for valves, intermediates elements and common accessories.



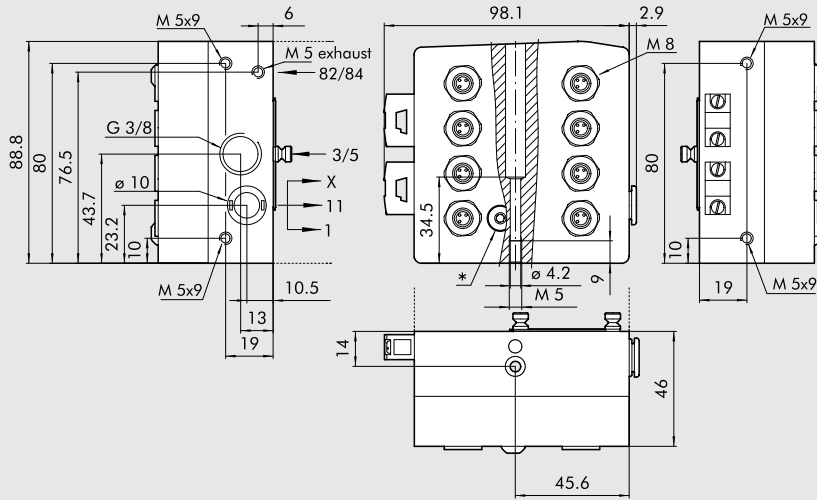
FIXING THE BASE



- Ⓐ Fixing from above using the 1 or 1-1 input terminal and the blind terminal.
- Ⓑ Ⓒ Fixing from above using the 1 or 1-1 input terminal and the blind terminal, using the M5 threads on the bottom and the rear of the terminals.
- Ⓓ Fixing from above using the 1 or 1-1 input terminal and the blind terminal, using the M5 threads on the front of the terminals.
An opening for the pipes is made in the plate.
- Ⓔ Fixing on the DIN bar with end-plate 1 or 1-11 and blind and plate, using the push-in bracket code 0227301600.
- Ⓕ Lateral fixing using the blind terminal, and its M4 threads on the side lateral.

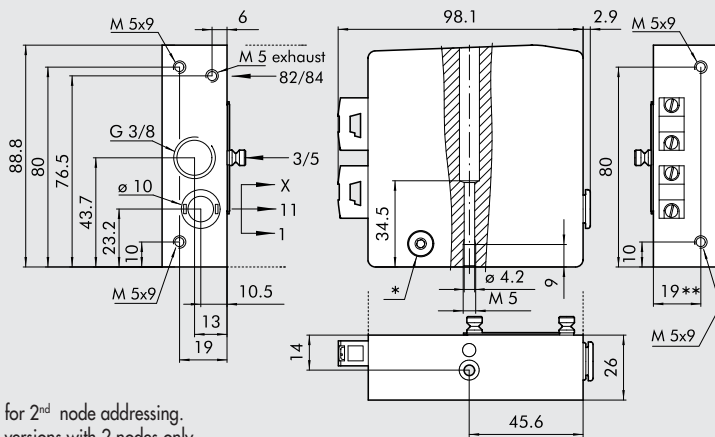
Note: The sole fixing admitted is the one showed.

③ END-PLATE 1 AE-8, M8



Code	Description	Weight [g]
0227301216	End-plate HDM 1 AE-8 2 nodes, 8 Out and 8 In M8, yellow cable and black cable	773

③ END-PLATE 1 AZ-4, AZ-8

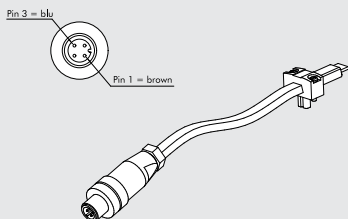


Code	Description	Weight [g]
0227301204	End-plate HDM 1 AZ-4 1 node, 4 Out, yellow cable and black cable	467
0227301210	End-plate HDM 1 AZ-8 2 nodes, 8 Out, yellow cable and black cable	456

* M7 plug for 2nd node addressing.
N.B. For versions with 2 nodes only
** 21 for AZ-8

ACCESSORIES

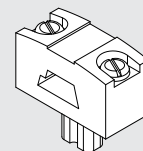
AS-interface ADDRESS CONNECTOR KIT



Code	Description
0226950150	AS-interface address connector cable L = 1 m

SPARES

AS-interface CONNECTOR KIT



Code	Description
0226950151	AS-interface connector kit

M8 - M12 PLUG



Code	Description
0240009039	PLUG M8
0240009040	PLUG M12

The HDM+PROFIBUS system has been designed in such a way that the pneumatic input terminal contains all the electronics, signals and connectors. It is a very compact and sturdy system where everything is housed in a thick casing aluminium to protect the delicate components against impact. The valves and accessories are HDM standard, which means that you only need to replace the input terminal to convert the valve island with multiple connector into an PROFIBUS island. All the advantages of the HDM system can be exploited: the possibility of mounting valves of different size, with fittings for pipes 4, 6 or 8; the insertion of intermediate modules with separate power supply or outlets; aluminium valves with chemical nickel plating enclosed in a protective casing in reinforced technopolymer, with an index of protection IP65.

The arrangement of the functions continues the traditional optimisation of the HDM: the user interface of the valves and bus all on one side, so that the fitter and service engineer have everything within easy reach: all compressed air connections are on the other side, and the electrical connectors and selectors are at the end of the island.

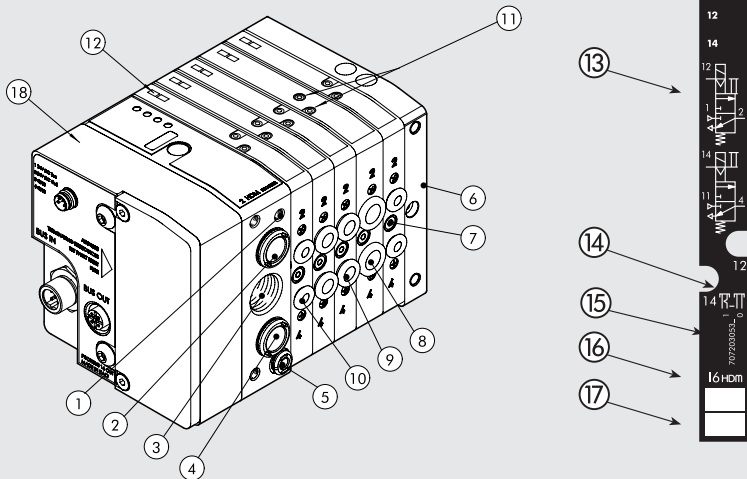
It is advisable to earth the system to prevent electrical or electrostatic discharge from damaging the electronic circuit.



TECHNICAL DATA				
Valve port connections		Ø 4,6,8 mm automatic fitting for ports 2 and 4 / power supply port for Ø10 automatic fitting / 3/8 thread for exhaust port, M5 thread for exhaust pilot port		
Connection on the end-plate 1-11 for the supply of pilots		Automatic fitting Ø 4 mm		
Maximum number of pilots		16		
Maximum number of valves		16 (same as the max. no. of pilots)		
Operating temperature range	°C	-10 to +60		
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous		
Flow rate at 6 bar ΔP 1bar	NI/min	11 mm Ø 4 = 200	11 mm Ø 6 = 500	14 mm Ø 8 = 700
Pressure range	Terminal 1-11	X (pilot supply)		1-11 (valve supply)
	Terminal 1	3 to 7 bar		vacuum at 10 bar
Voltage range		3 to 7 bar		
		24 VDC ±10% (slave protected against overload and reverse polarity)		
Power for each pilot	W	0,6		
Solenoid Pilot Insulation class		F155		
Degree of protection		IP65 (with conveyed exhaust, and that - in case of no use - the BUS OUT connector gets plugged)		
Solenoid rating		100% ED		
TRA/TRR 2x3/2 monostable at 6 bar	ms	8 / 45		
TRA/TRR 5/2 monostable at 6 bar	ms	8 / 33		
TRA/TRR 5/2 bistable at 6 bar	ms	20 / 20		
TRA/TRR 5/3 cc monostable at 6 bar	ms	20 / 20		
Note on use		Insert the pipes in the fittings, before passing air through the valves, otherwise the gasket may be pulled out of its seat by the flow of air.		
Compatibility with oils		Please refer to page 6-7 of the technical documentation		
Profibus DP module for HDM valves				
Protection		Outputs protected against overloads and shortcircuits		
Max input power (all valves ON)		~500 mA		
Addressing		By rotary selectors		
Highest settable address number		99		
Default address		3		
Peripheral defect diagnosis		Local LED indicator and relay to Master		
Defects reported		Output shortcircuit or overload.		
		Auxiliary power supply failure.		
		Profibus communication active.		
Module status in the event of peripheral defect		The "peripheral defect" bit is active and accessible at the master station.		
Data bit value		0 = not enabled		
		1 = enabled		
Output status in the absence of communication		Disabled		

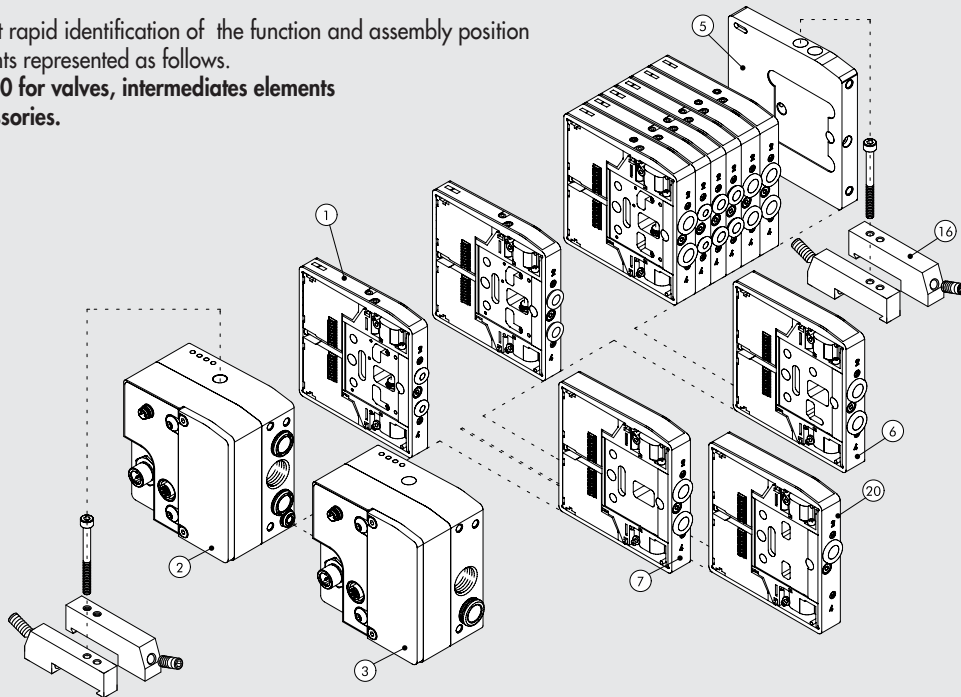
COMPONENTS

- ① Exhaust - Solenoid pilot 82/84
- ② Valve supply - port 1
- ③ Threaded connection of exhausts 3/5
- ④ Valve supply - port 11
- ⑤ Electrical control supply X
- ⑥ Blind end-plate
- ⑦ Screw for valve wall-mounting
- ⑧ Utility port for pipe Ø 8 mm
- ⑨ Utility port for pipe Ø 6 mm
- ⑩ Utility port for pipe Ø 4 mm
- ⑪ Manual control
- ⑫ LED (LED on, solenoid valve energised)
- ⑬ Pneumatic symbol
- ⑭ Identification of the monostable or bistable manual control
- ⑮ Valve ordering code
- ⑯ Valve identification code
- ⑰ Blank space for valve number
- ⑱ Profibus terminal

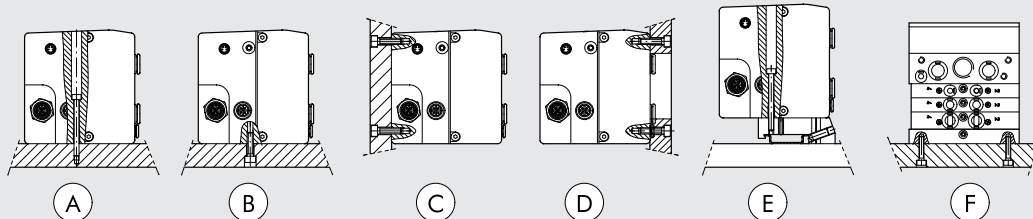


THE MULTIMACH WORLD: FLEXIBILITY

The numbers permit rapid identification of the function and assembly position of the single elements represented as follows.
Refer to page 2-150 for valves, intermediates elements and common accessories.



FIXING THE BASE



- Ⓐ Fixing from above using the 1 or 1-1 input terminal and the blind terminal.
- Ⓑ Ⓒ Fixing from above using the 1 or 1-1 input terminal and the blind terminal, using the M5 threads on the bottom and the rear of the terminals.
- Ⓓ Fixing from above using the 1 or 1-1 input terminal and the blind terminal, using the M5 threads on the front of the terminals.
 An opening for the pipes is made in the plate.
- Ⓔ Fixing on the DIN bar with end-plate 1 or 1-11 and blind and plate, using the push-in bracket code 0227301600.
- Ⓕ Lateral fixing using the blind terminal, and its M4 threads on the side lateral.

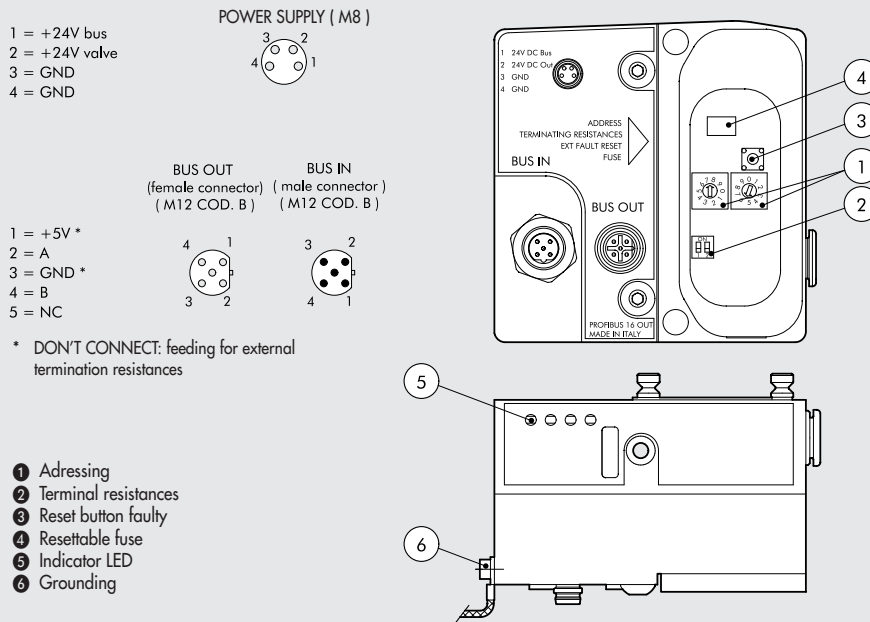
Note: The sole fixing admitted is the one showed.

KEY TO CODES

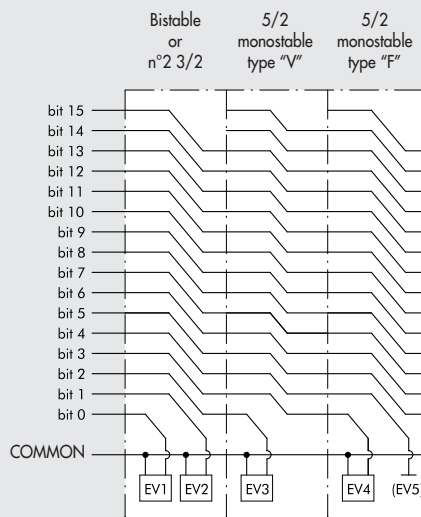
H D M VALVE	2 INPUT END-PLATE	P ELECTRICAL BASE	M MANUAL TYPE	16 - W 8 - W 6 - O 4 - L 8 - 5 TYPE OF VALVE	1 6 FURTHER DETAILS
Heavy duty Multimach IP65	2 End-plate 1-11 3 End-plate 1	P profibus-DP	M Monostable manual control B Bistable manual control	1 n° 2 3/2 NC W n° 2 3/2 NO L 3/2 NO + 3/2 NC V 5/2 monostable K 5/2 bistable O 5/3 monostable *F 5/2 monostable 5 Blind end-plate 6 Passing-intermediate 7 Blind intermediate 20 Exhaust section 4 Cartridge 4 6 Cartridge 6 8 Cartridge 8	16 n° 2 brackets for DIN bar

*uses a single PIN (like the V) and occupies 2 signals

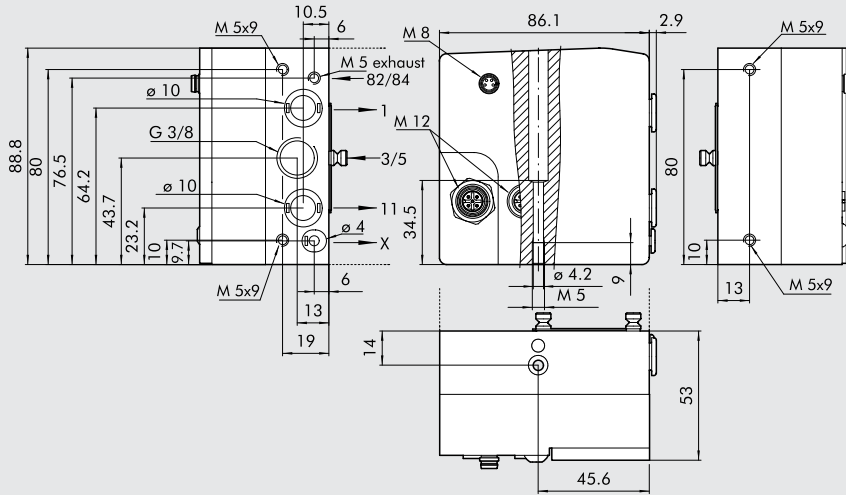
WIRING DIAGRAM



NOTE: The type F monostable valve uses one PIN only (like the V) but occupies 2 signals.

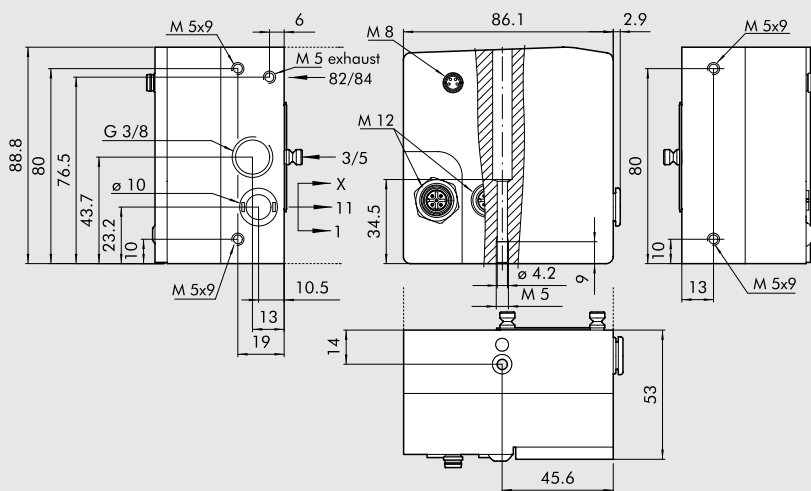


② END-PLATE 1-11 PROFIBUS-DP



Code	Description	Weight [g]
0227301231	End-plate HDM 1-11 PROFIBUS	730

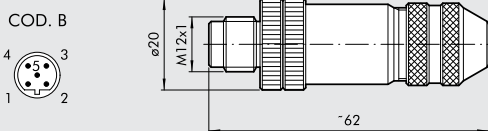
③ END-PLATE 1 PROFIBUS-DP



Code	Description	Weight [g]
0227301230	End-plate HDM 1 PROFIBUS	730

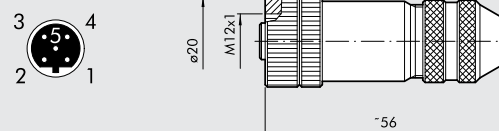
ACCESSORIES

M12 MALE CONNECTOR OUT-BUS



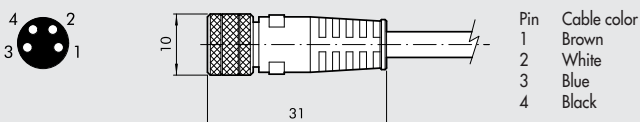
Code	Description
0240009035	Male connector B coding

M12 FEMALE CONNECTOR IN-BUS



Code	Description
0240009036	M12 female connector B coding

M8 CONNECTOR FOR POWER SUPPLY



Code	Description
0240009037	M8 connector for power supply wire 5 m

M8 - M12 PLUG



Code	Description
0240009039	Plug M8
0240009040	Plug M12

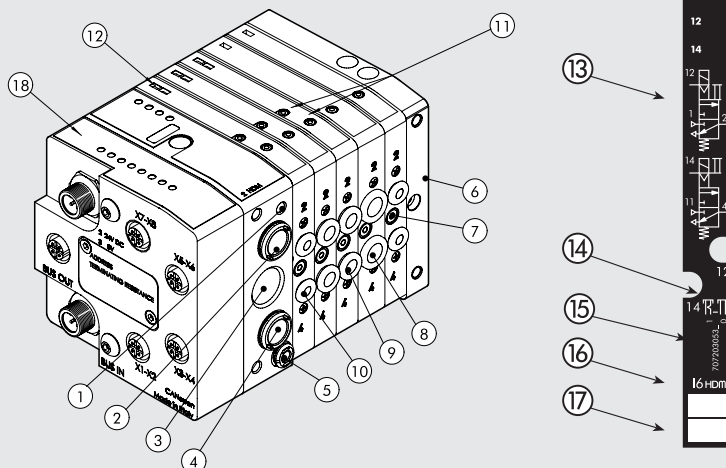
The HDM+CANopen system has been designed in such a way that the pneumatic input terminal contains all the electronics, signals and connectors. It is a very compact and sturdy system where everything is housed in a thick casing aluminium to protect the delicate components against impact. Two versions of end-plate are available: one can handle up to 16 controls (16 Out) and one up to 16 controls and 8 inputs (16 Out + 8 In). The input connectors are M12. Two inputs can be connected to each connector. The functions are arranged to ensure the same optimisation as the HDMs. The user interface is all on one side to facilitate the work of the fitter and service engineer. All pneumatic connections are on one side; the electrical connectors and selectors are on top of the island.



TECHNICAL DATA				
Valve port connections		Ø 4,6,8 mm automatic fitting for ports 2 and 4 / power supply port for Ø10 automatic fitting / 3/8 thread for exhaust port, M5 thread for exhaust pilot port		
Connection on the end-plate 1-11 for the supply of pilots		Automatic fitting Ø 4 mm		
Maximum number of pilots		16		
Maximum number of valves		16 (same as the max. no. of pilots)		
Operating temperature range	°C	-10 to +60		
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous		
Flow rate at 6 bar ΔP 1 bar	NI/min	11 mm Ø 4 = 200	11 mm Ø 6 = 500	14 mm Ø 8 = 700
Pressure range		X (pilot supply)		1-11 (valve supply)
	Terminal 1-11	3 to 7 bar		vacuum at 10 bar
	Terminal 1	3 to 7 bar		
Voltage range		24 VDC ±10%		
		(slave protected against overload and reverse polarity)		
Power for each pilot	W	0.9		
Solenoid Pilot Insulation class		F155		
Degree of protection		IP65 (with conveyed exhausts and with not used connectors plugged)		
Solenoid rating		100% ED		
TRA/TRR 2x3/2 monostable at 6 bar	ms	8 / 45		
TRA/TRR 5/2 monostable at 6 bar	ms	8 / 33		
TRA/TRR 5/2 bistable at 6 bar	ms	20 / 20		
TRA/TRR 5/3 cc monostable at 6 bar	ms	20 / 20		
Note on use		Insert the pipes in the fittings, before passing air through the valves, otherwise the gasket may be pulled out of its seat by the flow of air. Please refer to page 6-7 of the technical documentation		
Compatibility with oils				
CANopen module for HDM valves				
Protection		Outputs protected against overloads and shortcircuits		
Max input power (all valves ON)		~800 mA		
Addressing		By DIP SWITCH		
Highest settable address number		127		
Default address		1		
Peripheral defect diagnosis		Local LED indicator and relay to Master		
Defects reported		Output shortcircuit or overload. Auxiliary power supply failure. CANopen communication active.		
Module status in the event of peripheral defect		The "peripheral defect" bit is active and accessible at the master station.		
Data bit value		0 = not enabled 1 = enabled		
Output status in the absence of communication		Disabled		
INPUT module for HDM valves				
Sensor supply voltage		24 VDC ±10% (depending on the supply of the CANopen module)		
Max sensor power (distributed over eight connectors)	mA	40		
Type of input		PNP for sensor 2-3 wires according to EN 60947-5-2		
Protection		Protected inputs against overload and short-circuit		
Active INPUT signalling		One LED for each INPUT		

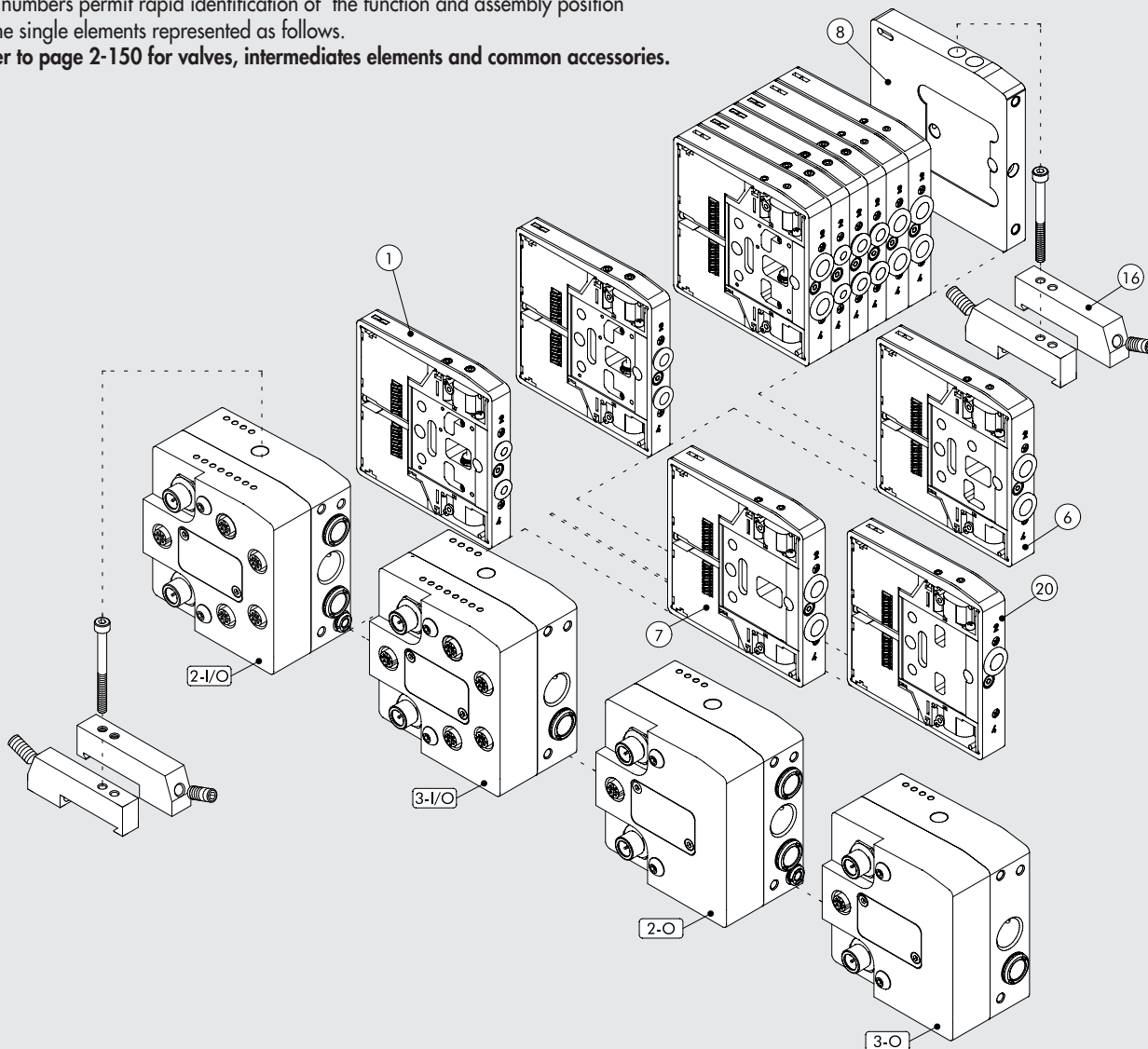
COMPONENTS

- ① Exhaust - Solenoid pilot 82/84
- ② Valve supply - port 1
- ③ Threaded connection of exhausts 3/5
- ④ Valve supply - port 11
- ⑤ Electrical control supply X
- ⑥ Blind end-plate
- ⑦ Screw for valve wall-mounting
- ⑧ Utility port for pipe Ø 8 mm
- ⑨ Utility port for pipe Ø 6 mm
- ⑩ Utility port for pipe Ø 4 mm
- ⑪ Manual control
- ⑫ LED (LED on, solenoid valve energised)
- ⑬ Pneumatic symbol
- ⑭ Identification of the monostable or bistable manual control
- ⑮ Valve ordering code
- ⑯ Valve identification code
- ⑰ Blank space for valve number
- ⑱ CANopen terminal

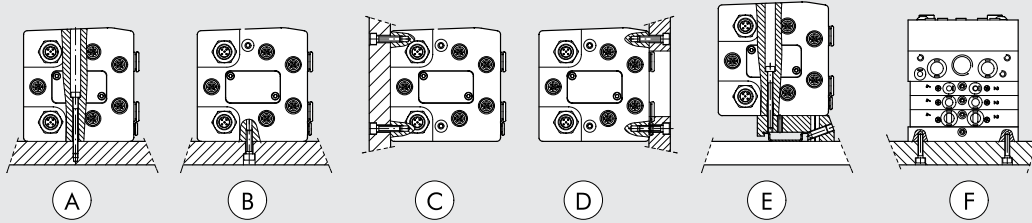


THE MULTIMACH WORLD: FLEXIBILITY

The numbers permit rapid identification of the function and assembly position of the single elements represented as follows.
Refer to page 2-150 for valves, intermediates elements and common accessories.



FIXING THE BASE



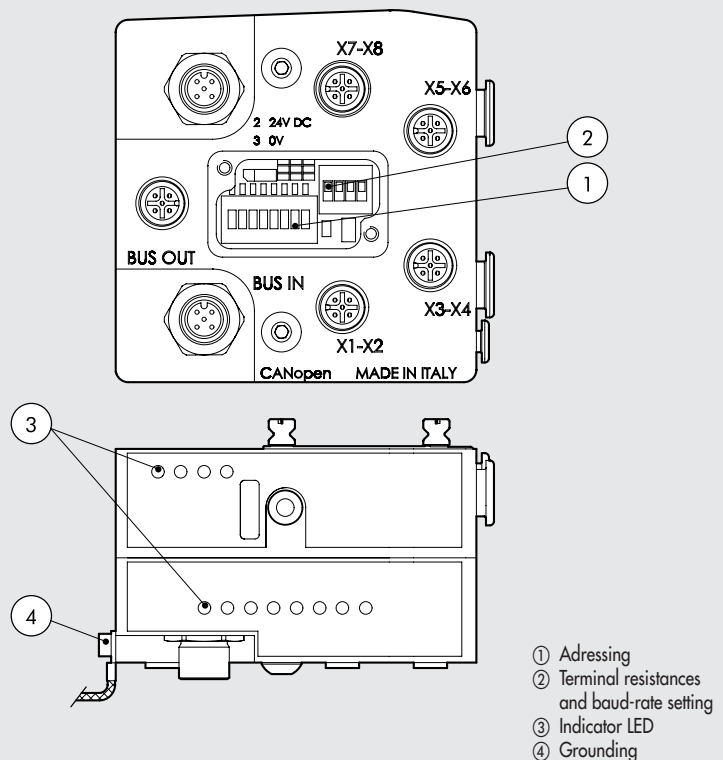
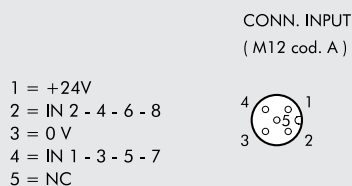
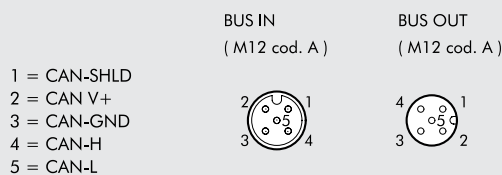
- (A) Fixing from above using the 1 or 1-1 input terminal and the blind terminal.
 - (B) (C) Fixing from above using the 1 or 1-1 input terminal and the blind terminal, using the M5 threads on the bottom and the rear of the terminals.
 - (D) Fixing from above using the 1 or 1-1 input terminal and the blind terminal, using the M5 threads on the front of the terminals.
An opening for the pipes is made in the plate.
 - (E) Fixing on the DIN bar with end-plate 1 or 1-11 and blind and plate, using the push-in bracket code 0227301600.
 - (F) Lateral fixing using the blind terminal, and its the M4 threads on the side lateral.
- Note: The sole fixing admitted is the one showed.**

KEY TO CODES

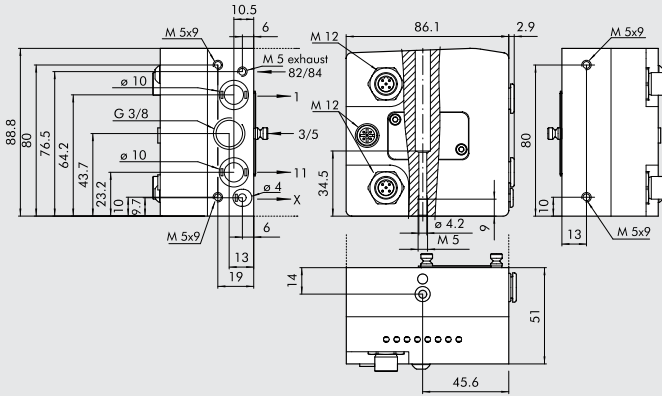
H D M VALVE	2 INPUT END-PLATE	CAN O ELECTRICAL BASE	M MANUAL TYPE	16 - W 8 - W 6 - O 4 - L 8 - 5 TYPE OF VALVE	1 6 FURTHER DETAILS
Heavy duty Multimach IP65	2 End-plate 1-11 3 End-plate 1	CAN O CANopen 16 OUTPUT CAN I/O CANopen 8 INPUT e 16 OUTPUT	M Monostable manual control B Bistable manual control	I n° 2 3/2 NC W n° 2 3/2 NO L 3/2 NO + 3/2 NC V 5/2 monostable K 5/2 bistable O 5/3 monostable *F 5/2 monostable 5 blind end-plate 6 Passing-intermede 7 Blind intermediate 20 Exhaust section 4 Cartridge 4 6 Cartridge 6 8 Cartridge 8	16 n° 2 brackets for DIN bar

*uses a single PIN (like the V) and occupies 2 signals

WIRING DIAGRAM



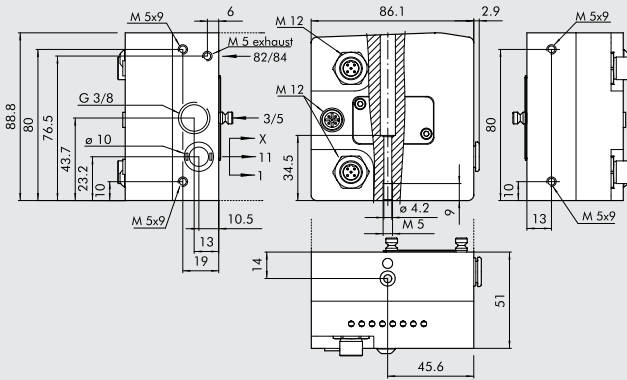
2 - O END-PLATE 1-11 CANopen O



Code	Description	Weight [g]
0227301251	End-plate 1-11 HDM CANopen OUTPUT	745

Handles 16 OUTPUTS (solenoid pilots)

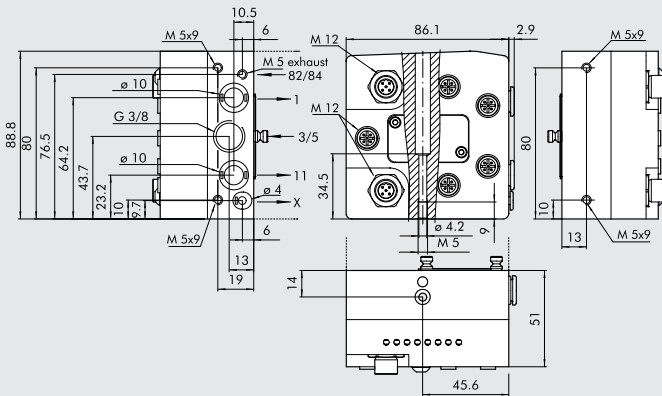
3 - O END-PLATE 1 CANopen O



Code	Description	Weight [g]
0227301253	End-plate 1 HDM CANopen OUTPUT	746

Handles 16 OUTPUTS (solenoid pilots)

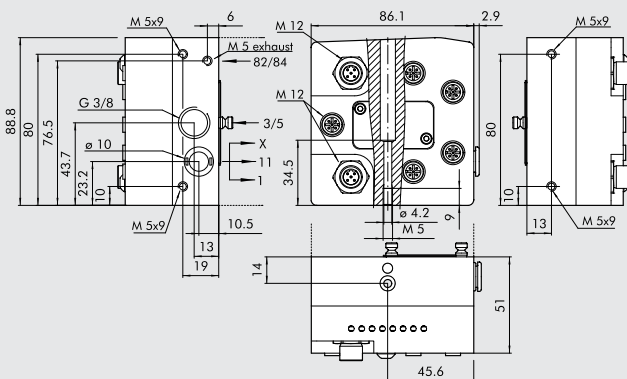
2 - I/O END-PLATE 1-11 CANopen I/O



Code	Description	Weight [g]
0227301250	End-plate 1-11 HDM CANopen IN-OUT	734

Handles 16 OUTPUTS (solenoid pilots)

3 - I/O END-PLATE 1 CANopen I/O



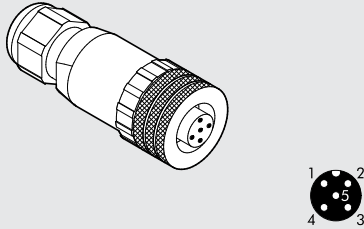
Code	Description	Weight [g]
0227301252	End-plate 1 HDM CANopen IN-OUT	735

Handles 16 OUTPUTS (solenoid pilots)

ACCESSORIES

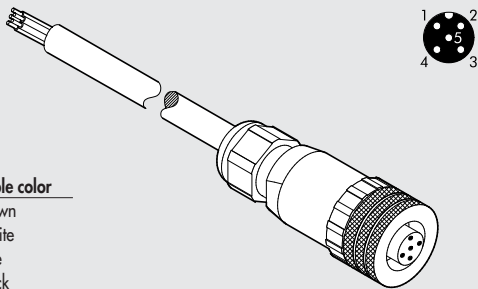
STRAIGHT CONNECTOR FOR CANopen POWER SUPPLY

Code	Description
W0970513001	Acc. 5-pin M12x1 straight connector



STRAIGHT CONNECTOR WITH CANopen POWER CABLE

Code	Description
W0970513002	Acc. 5-pin M12x1 straight connector with wire L = 5 m

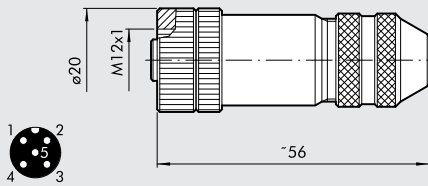


Pin	Cable color
1	Brown
2	White
3	Blue
4	Black
5	Grey



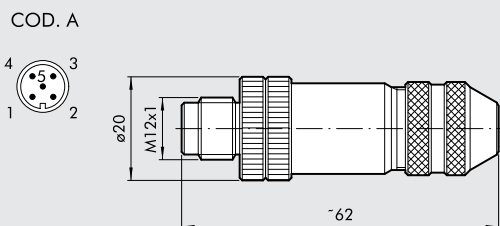
FEMALE CONNECTOR FOR CANopen BUS-IN

Code	Description
0240009055	M12 female connector, A coding

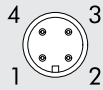
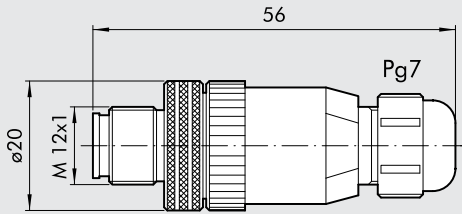


MALE CONNECTOR FOR CANopen BUS-OUT

Code	Description
0240009038	Male connector Bus A coding

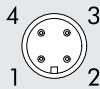
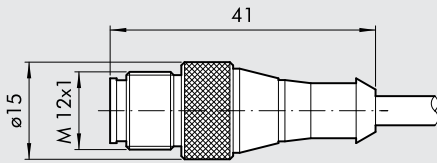


STRAIGHT CONNECTOR WITHOUT CABLE FOR CANopen INPUT



Code	Description
0240009021	Straight fitting without cable

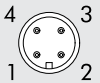
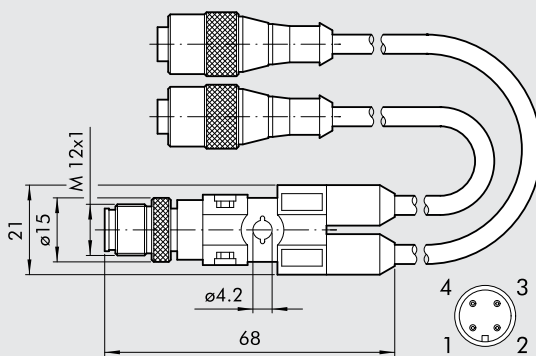
STRAIGHT CONNECTOR WITH CABLE FOR CANopen INPUT



Code	Description
0240009002	Straight, with 1.5 m cable
0240009003	Straight, with 5 m cable

Pin	Cable colour
1	Brown
2	White
3	Blue
4	Black

Y-DISTRIBUTOR WITH CABLE AND M12 STRAIGHT CONNECTORS FOR CANopen INPUT



Code	Description
0240009031	Y-Distributor cable 0.6 m
0240009032	Y-Distributor cable 1.5 m

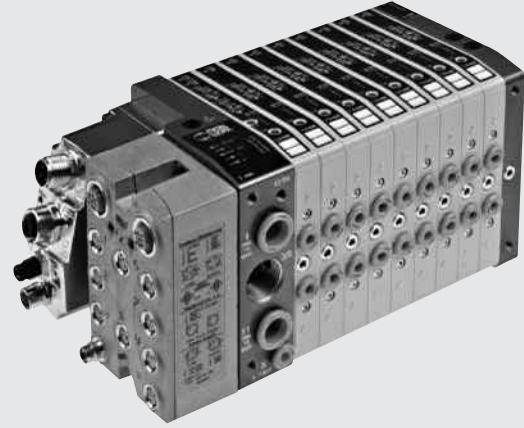
M12 PLUG FOR BUS OUT E INPUT CANopen



Code	Description
0240009040	Plug M12

An advanced field bus system interfacing with the Multimach world. B&R has developed a new standard for automation, called FORMULA X. For further details about features, functions and qualities of this system, reference must be made to the B&R documentation, also available on the web site www.br-automation.com. An overview is given below.

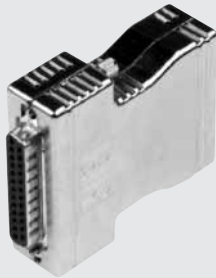
The X-system is a system handling analogue and digital inputs and outputs for local or remote use, which B&R defines as decentralised backplane. Different types of modules are available. We present those designed for connection with Multimach and HDM valve islands. We only indicate the B&R's code root, since each type of module comes in different variants, that differ by number of signals handled, that can be 8, 16 or 24, and by type of signal, that can be input, output or input/output indifferently. Common to all the modules is the presence of 4 connections: a signal input, a signal output for the following modules, a power input (24V DC), a power output for the following modules.



B&R CONNECTORS AND MODULES

IP20 7XV---50-11 SMART CONNECTOR

It is a plug connector with IP20 protection that contains the X system electronics. It can be connected with HDM islands, using the special input end-plate, type 1, code 0227301207 or the special input end-plate type 1-11, code 0227301206.



IP67 7XV---50-51 SMART CONNECTOR

It is a plug connector with IP67 protection, that contains the X system electronics. It can be connected with HDM islands, using the special input end-plate type 1, code 0227301207, or the special input end-plate, type 1-11 code 0227301206.

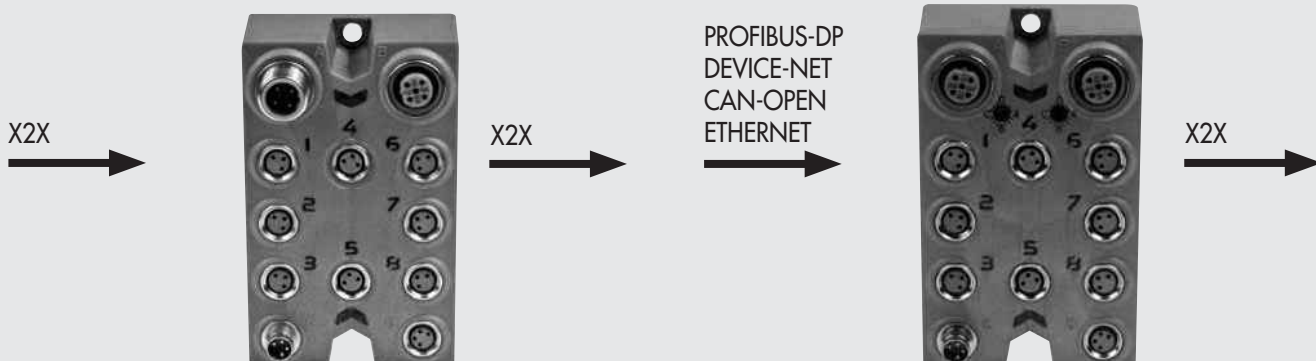


X67 I/O SYSTEM MODULES

These are modules with IP67 protection, connected to the X system, for handling inputs and outputs. It is interesting to note that their size is such that they can be fixed directly to the HDM input end-plate type 1-11, code 0227301206
(N.B. NOT to be fixed to the HDM end-plate type 1, code 0227301207).

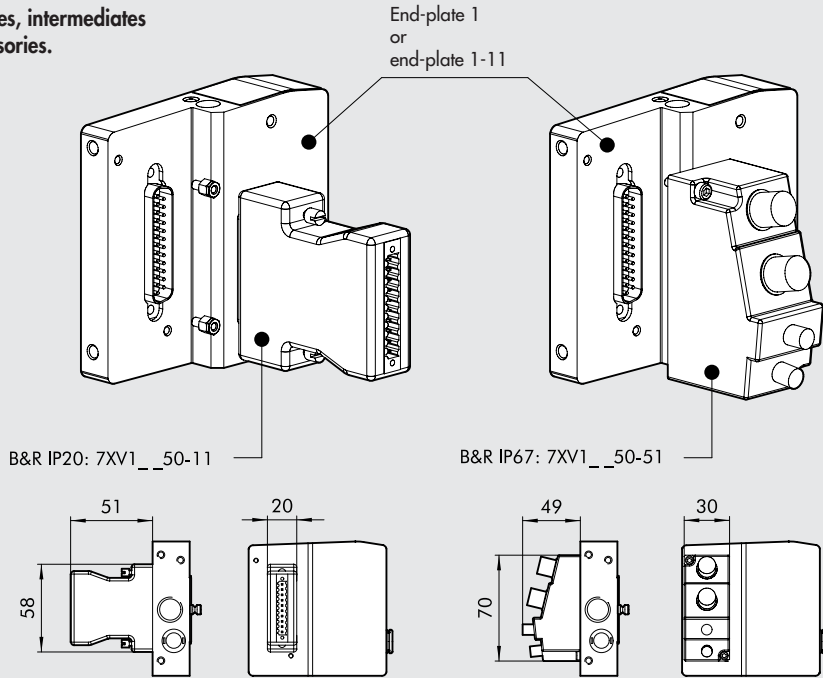
X67 BUS CONTROLLER MODULES

These are modules with protection IP67, receiving a signal according to one of the DP Profibus, CAN open, Device Net, Ethernet Powerlink protocols (the module code differs obviously according to the protocol being controlled). The output signal is according to the X-system. These are gateways converting the signals of a field bus into an X-system. These modules control the inputs and/or outputs via the M8 connectors provided. They can be fixed directly to the HDM input end-plate type 1-11, code 0227301206
(N.B. NOT to be fixed to the HDM end-plate, type 1, code 0227301207).

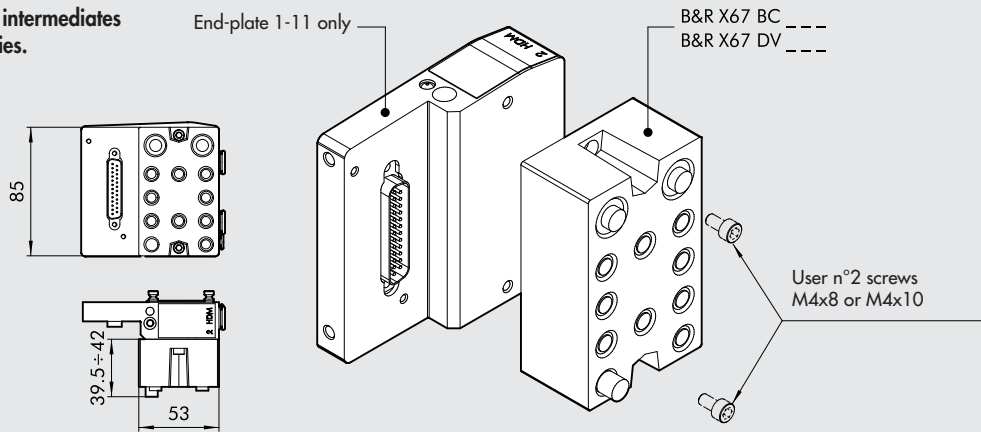


APPLICATIONS OF B&R MODULES TO HDM END-PLATES

Refer to page 2-150 for valves, intermediates elements and common accessories.



Refer to page 2-150 for valves, intermediates elements and common accessories.

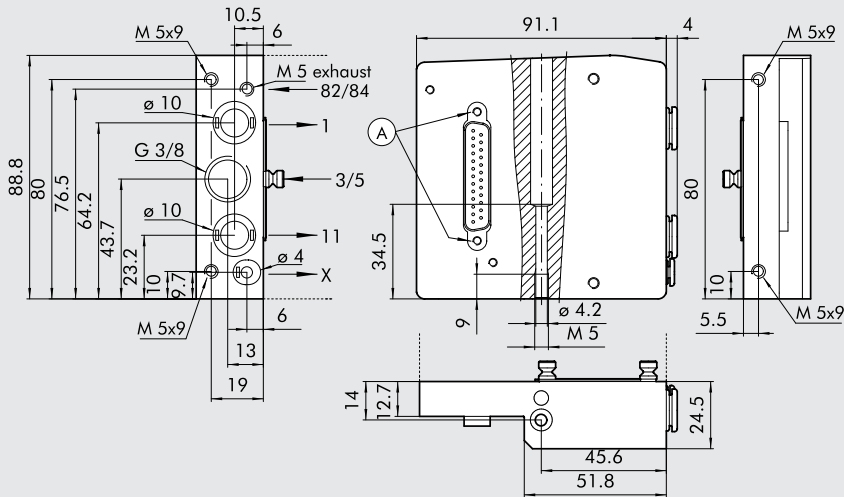


KEY TO CODES

H D M VALVE	2 INPUT END-PLATE	B & R ELECTRICAL BASE	M MANUAL TYPE	I6 - W8 - W6 - O4 - L8 - 5 TYPE OF VALVE	1 6 FURTHER DETAILS
Heavy duty Multimach IP65	2 End-plate 1-11 3 End-plate 1	B&R Fit for B&R	M Monostable manual control B Bistable manual control	I n° 2 3/2 NC W n° 2 3/2 NO L 3/2 NO + 3/2 NC V 5/2 monostable K 5/2 bistable O 5/3 monostable *F 5/2 monostable 5 blind end-plate 6 Passing-intermede 7 Blind intermediate 20 Exhaust section 4 Cartridge 4 6 Cartridge 6 8 Cartridge 8	16 n° 2 brackets for DIN bar

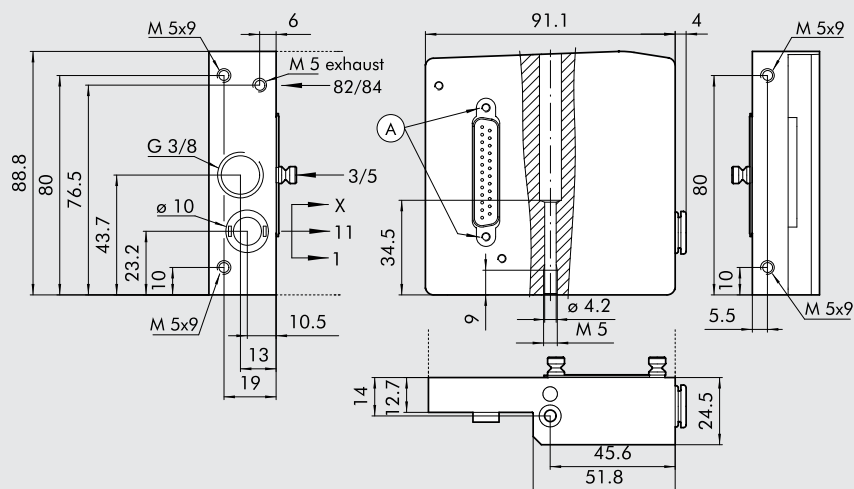
*uses a single PIN (like the V) and occupies 2 signals

HDM 1-11 END-PLATE FOR B&R



Code	Description	Weight [g]
0227301206	HDM 1-11 end-plate kit for B&R	340

HDM 1 END-PLATE FOR B&R



Code	Description	Weight [g]
0227301207	HDM 1 end-plate kit for B&R	380

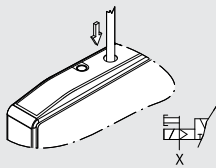
NOTES

HDM - VALVES, INTERMEDIATES ELEMENTS AND ACCESSORIES

HDM valve can be included in islands with any available input terminal. So the same valve can be connected to the multiple connection terminale, the AS-Interface terminal, the Profi bus-DP, terminal or the CAN-Open terminal.



MANUAL CONTROLS

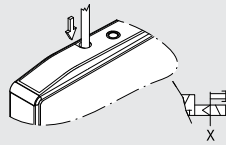
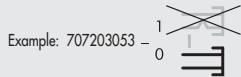


MONOSTABLE OVERRIDE PORT 2
servo-assisted

- Press and hold the manual control in position (not necessary for bistable type K valve)
- Release the manual control:
 - The manual control returns to the home position.
 - Valves type I, W, L, V, F, and O reposition.
 - The type K valve remains switched

N.B.: The pilot power supply X must be present.

- The reference code for the monostable control ends in 0 (2 for type F).

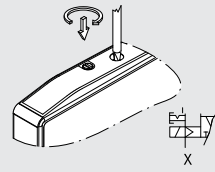


MONOSTABLE OVERRIDE PORT 4
servo-assisted

- Press and hold the manual control in position (not necessary for bistable type K valve)
- Release the manual control:
 - The manual control returns to the home position.
 - Valves type I, W, L, V and F reposition.
 - The type K valve remains switched

With type F and V valves, this manual control is not present.

N.B.: The pilot power supply X must be present.

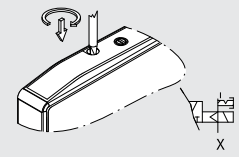


BISTABLE OVERRIDE PORT 2
servo-assisted

- Press the manual control right in then turn it clockwise 90 degrees and Leave it in position.
- Rotate the manual control 90 degrees anticlockwise, and then release it.
 - The manual control returns to the home position.
 - Valves type I, W, L, V, F, and O reposition.
 - The type K valve remains switched

N.B.: The pilot power supply X must be present.

- The reference code for the monostable control ends in 1 (3 for type F).



BISTABLE OVERRIDE PORT 4
servo-assisted

- Press the manual control right in then turn it 90 degrees clockwise and Leave it in position.
- Rotate the manual control 90 degrees anticlockwise, and then release it.
 - The manual control returns to the home position.
 - Valves type I, W, L and O reposition.
 - The type K valve remains switched

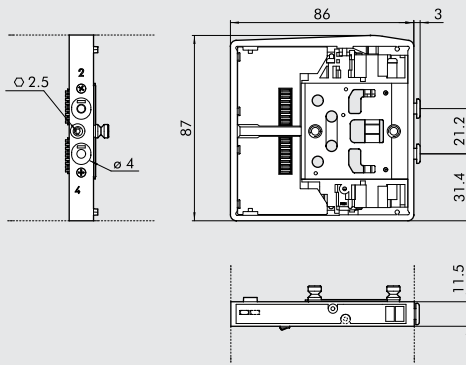
With type F and V valves, this manual control is not present.

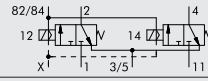
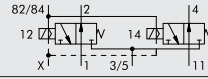
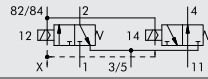
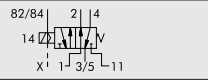
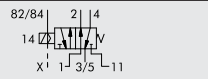
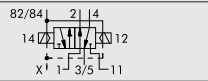
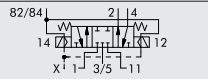
N.B.: The pilot power supply X must be present.

NOTES

1 VALVE DIMENSIONS HDM Ø 4

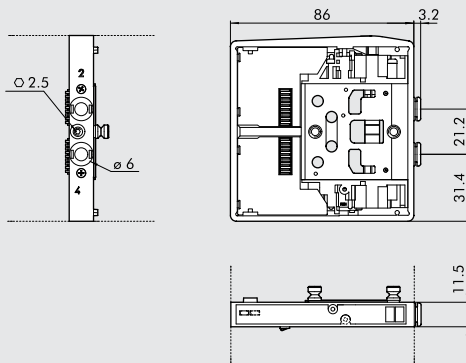
*uses a single PIN (like the V) and occupies 2 signals

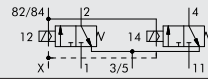
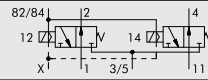
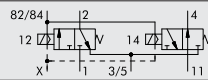
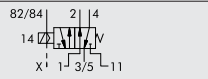
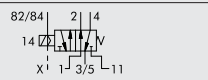
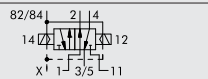
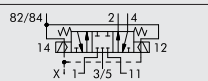


Symbol		Code	Manual control	Weight [g]
HDM I4		7071030530	monostable	130
		7071030531	bistable	
HDM W4		7071030630	monostable	130
		7071030631	bistable	
HDM L4		7071030730	monostable	130
		7071030731	bistable	
HDM V4		7071030130	monostable	115
		7071030131	bistable	
HDM *F4		7071030132	monostable	115
		7071030133	bistable	
HDM K4		7071030110	monostable	130
		7071030111	bistable	
HDM O4		7071030210	monostable	130
		7071030211	bistable	

1 VALVE DIMENSIONS HDM Ø 6

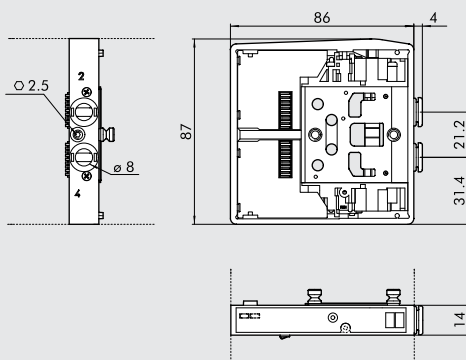
*uses a single PIN (like the V) and occupies 2 signals

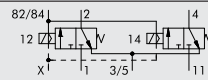
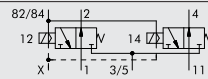
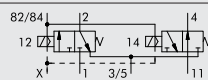
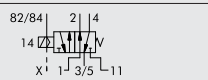

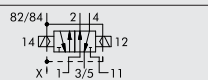
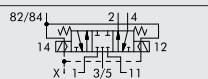


Symbol		Code	Manual control	Weight [g]
HDM I6		7072030530	monostable	130
		7072030531	bistable	
HDM W6		7072030630	monostable	130
		7072030631	bistable	
HDM L6		7072030730	monostable	130
		7072030731	bistable	
HDM V6		7072030130	monostable	115
		7072030131	bistable	
HDM *F6		7072030132	monostable	115
		7072030133	bistable	
HDM K6		7072030110	monostable	130
		7072030111	bistable	
HDM O6		7072030210	monostable	130
		7072030211	bistable	

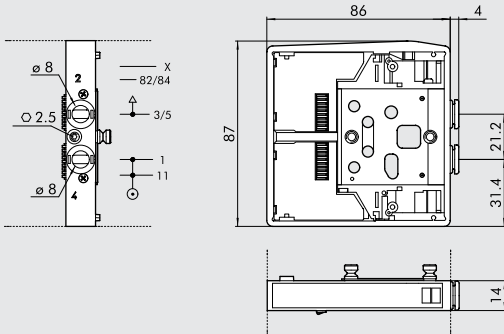
1 VALVE DIMENSIONS HDM Ø 8

*uses a single PIN (like the V) and occupies 2 signals



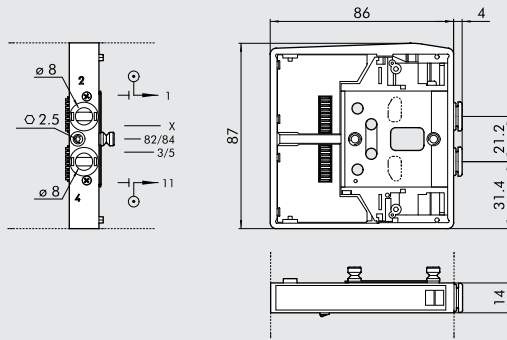
Symbol		Code	Manual control	Weight [g]
HDM I8		7073030530	monostable	140
		7073030531	bistable	
HDM W8		7073030630	monostable	140
		7073030631	bistable	
HDM L8		7073030730	monostable	140
		7073030731	bistable	
HDM V8		7073030130	monostable	130
		7073030131	bistable	
HDM *F8		7073030132	monostable	130
		7073030133	bistable	
HDM K8		7073030110	monostable	140
		7073030111	bistable	
HDM O8		7073030210	monostable	140
		7073030211	bistable	

6 INTERMEDIATE THROUGH



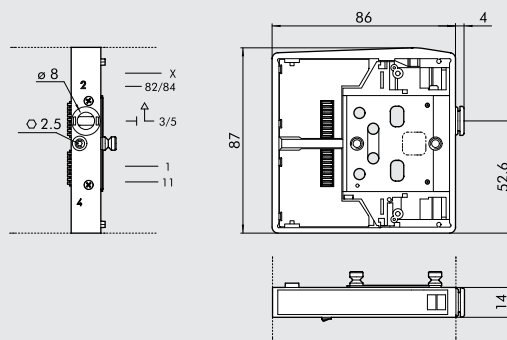
Code	Description	Weight [g]
0227301301	Intermediate through HDM	120

7 INTERMEDIATE BLIND



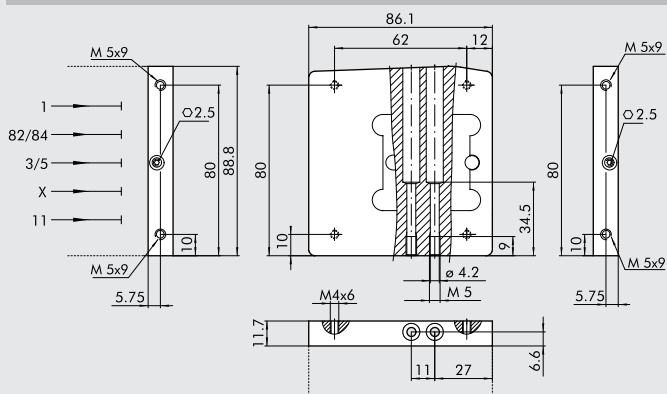
Code	Description	Weight [g]
0227301302	Intermediate blind HDM	117

20 INTERMEDIATE EXHAUST SWITCH



Code	Description	Weight [g]
0227301303	Intermediate exhaust switch HDM	125

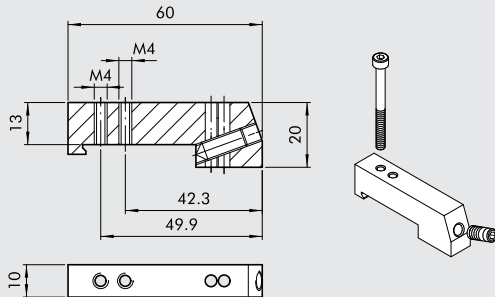
5 BLIND END-PLATE



Code	Description	Weight [g]
0227301500	Blind end-plate HDM	230

ACCESSORIES

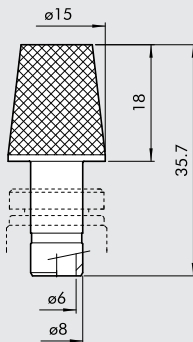
16 CONNECTION BRACKETS ON DIN BAR



Code	Description	Weight [g]
0227301600	Connection brackets on din bar HDM/CM	30

Supplied complete with one M4x45 screws and one M6 grub screw
Individually packed

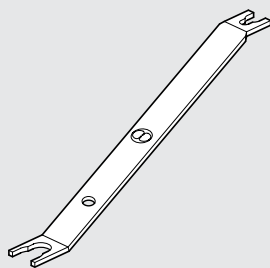
SILENCER FOR FITTING, Ø 8



Code	Description	Weight [g]
W0970530084	Silencer for fitting, Ø 8	15

At the 3/5-exhaust port of the intermediate throughreference 6 and of the exhaust switch reference 20

R17 - PIPE RELEASE SPANNER

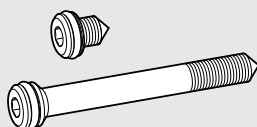


Length = 140 mm

Code	Description	Ø Tube
2L17001	RL17	From Ø 3 to Ø 10

SPARES

GRUB SCREW KIT



Code	Description
0227301800	Grub screw for Multimach HDM/CM

Comes in 1 + 1 pc. packs

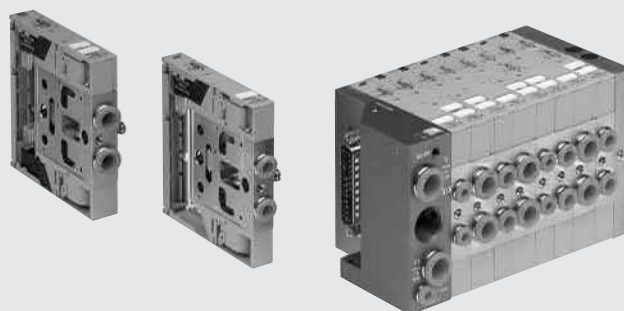
MULTIMACH

Multimach is not a mere valve, it is an electropneumatic distribution "island" - a single block ready for connection to power and air delivery pipes and a multi-pin cable.

All the pneumatic connections are situated on one side with built-in push-in fittings. The user interface is on the other side so that the fitter or serviceman has everything within an easy reach: manual controls, active valve signalling lights, compressed air system diagram, valve identification plates.

The user can count on four different orientations for the electric connector. Multimach provides full flexibility in the application of valves: 1 to 24 valves, power plates and drain for pipes of various sizes, electric 9- or 25-pin plug connector. But the real novelty, is the possibility of mounting valves of different flow rates: three different valves can be mounted at a time and a valve can be replaced with another of a different flow rate. This revolutionary concept enables the user to optimise space and costs and adapt the unit to different performance requirements.

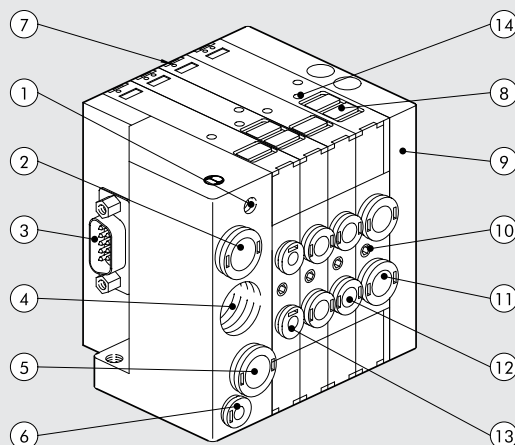
The ratio between the flow rate of the Multimach system and sizes is incomparable: the top in terms of miniaturisation and efficiency.



TECHNICAL DATA				
Valve port connections		Ø 4,6,8 mm automatic fitting for ports 2 and 4 / power supply port for Ø8 or Ø10 automatic fitting / 3/8 thread for exhaust port, M5 thread for exhaust pilot port		
Connection on the end-plate for the supply of pilots		Automatic fitting Ø 4		
Operating temperature range		-10 to +60		
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous		
Screw for valve - wall-mounting		According to the end-plate used: see page 2-155		
Flow rate at 6 bar ΔP 1bar		Nl/min	11 mm Ø 4: 200	11 mm Ø 6: 500 14 mm Ø 8: 700
Voltage range			24 VDC ±10%	
Power		W	1.2	
Insulation class			F155	
Degree of protection			IP51	
Solenoid rating			100% ED	
Pressure range			X (pilot supply)	1-11 (valve supply)
	Terminal 1-11	bar	3 to 7 max	vacuum at 10 bar
	Terminal 1	bar		3 to 7
	Terminal 1 reduced	bar		3 to 7
TRA/TRR 2x3/2 monostable at 6 bar		ms		8 / 45
TRA/TRR 5/2 monostable at 6 bar		ms		8 / 33
TRA/TRR 5/2 bistable at 6 bar		ms		20 / 20
TRA/TRR 5/3 cc monostable at 6 bar		ms		20 / 20
Note on use		Insert the pipes in the fittings, before passing air through the valves, otherwise the basket may be pulled out of its seat by the flow of air. Please refer to page 6-7 of the technical documentation		
Compatibility with oils				

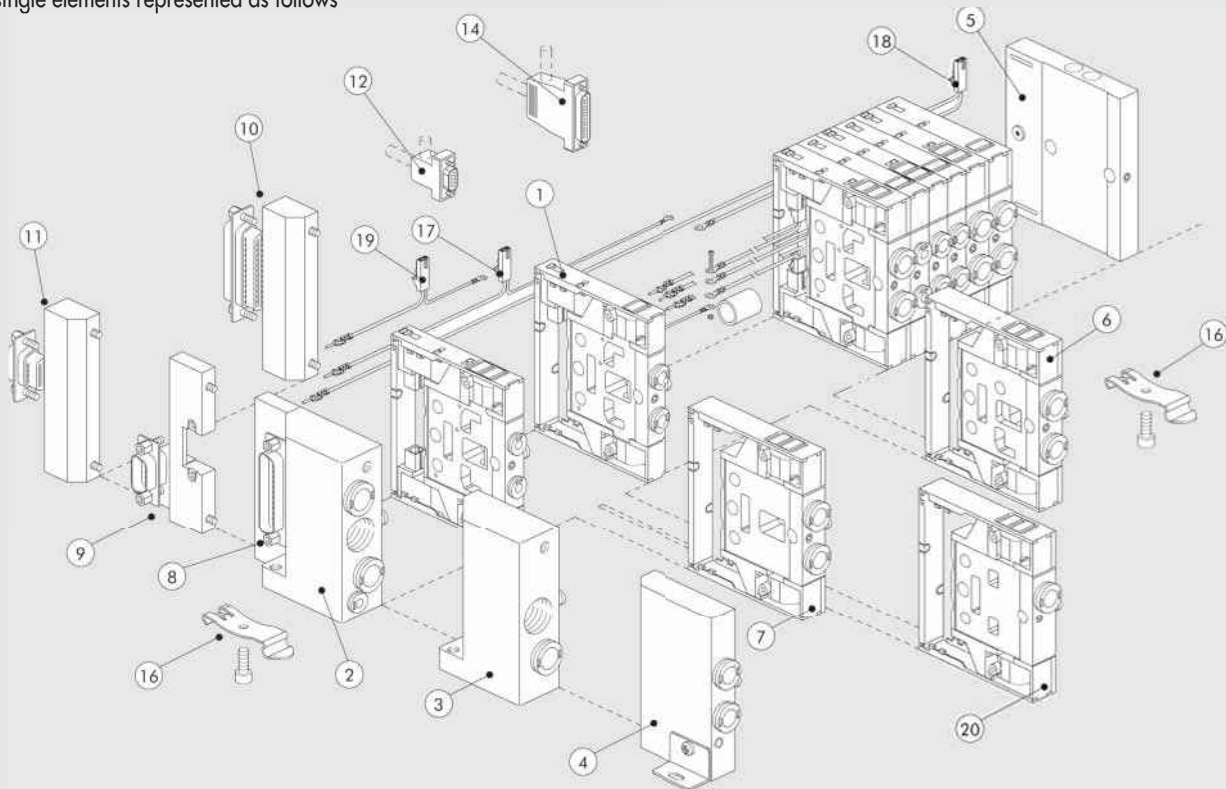
COMPONENTS

- ① Exhaust – Solenoid pilot
- ② Valve supply - port 1
- ③ Electrical multiple connection with 9 or 25 pins
- ④ Threaded connection of exhausts 3/5
- ⑤ Valve supply
- ⑥ Electrical control supply
- ⑦ LED (LED on, solenoid valve energised)
- ⑧ Removable identification labels
- ⑨ Blind end-plate
- ⑩ Screw for valve wall-mounting
- ⑪ Utility port for pipe Ø 8 mm
- ⑫ Utility port for pipe Ø 6 mm
- ⑬ Utility port for pipe Ø 4 mm
- ⑭ Manual control

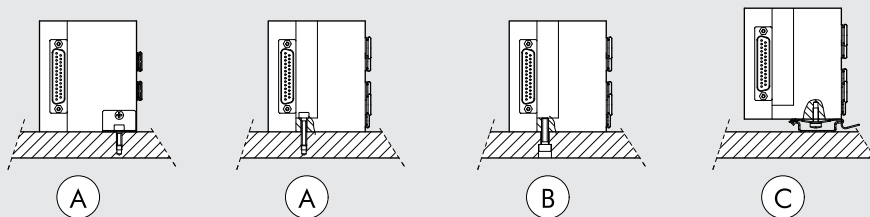


THE MULTIMACH WORLD: FLEXIBILITY

The numbers permit rapid identification of the function and assembly position of the single elements represented as follows



FIXING THE BASE



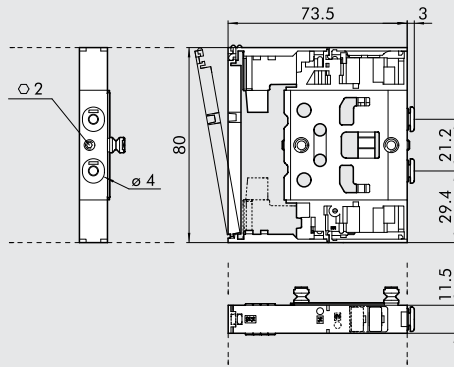
- Ⓐ Fixing with reduced end-plate 1, CODE 0227300300, supplied complete with bracket
- Ⓑ Fixing with end-plate 1-11 CODE 0227300200 or with end-plate CODE 0227300201
- Ⓒ Fixing with end-plate 1-11 CODE 0227300200 or with end-plate 1 CODE 0227300201 using the M4-thread found on the M5 end-plate
- Ⓓ Fixing on the DIN bar with end-plate 1-11 CODE 0227300 using the reduced end-plate 1 CODE 0227300300 or end-plate CODE 0227300201 using the push-in bracket CODE 0227300600.

If you have to remove the base from the bar, this is rapid and can be performed without using any tools.

KEY TO CODES

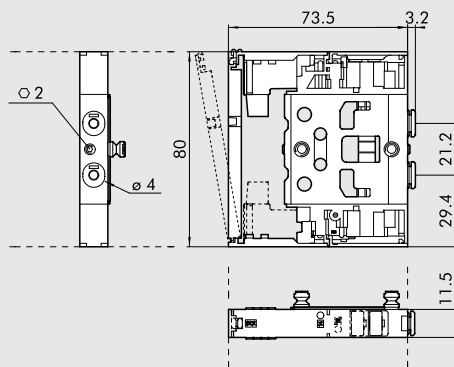
M 5 1 VALVE	2 INPUT END-PLATE	8 ELECTRICAL BASE	16 - W 8 - W 6 - O 4 - L 8 - 5 TYPE OF VALVE	1 2 - 1 4 FURTHER DETAILS
Multimach IP51	2 End-plate 1-11 3 End-plate 1 4 Reduced End-plate 1	8 Axial 25-wire connector base 9 Axial 9-wire connector base 10 25-wire rear connector base 11 9-wire rear connector base	I n° 2 3/2 NC W n° 2 3/2 NO L 3/2 NO + 3/2 NC V 5/2 monostable K 5/2 bistable O 5/3 monostable 5 Blind end-plate 6 Passing-intermediate 7 Blind intermediate 20 Exhaust section 4 Cartridge 4 6 Cartridge 6 8 Cartridge 8	12 9-wire connector 14 25-wire connector 16 Brackets for DIN bar

1 VALVE DIMENSIONS Ø 4



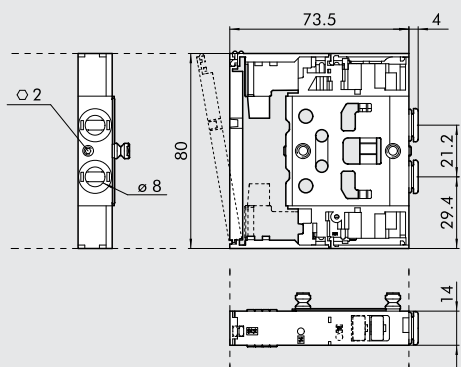
Symbol	Code	Manual control	Weight [g]
I4	7068030532	monostable	118
W4	7068030632	monostable	118
L4	7068030732	monostable	118
V4	7068030132	monostable	100
K4	7068030112	monostable	114
O4	7068030212	monostable	115

1 VALVE DIMENSIONS Ø 6



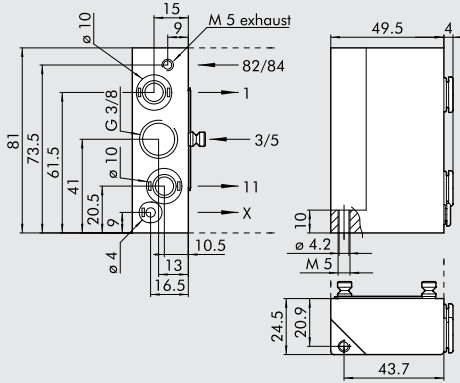
Symbol	Code	Manual control	Weight [g]
I6	7069030532	monostable	110
W6	7069030632	monostable	110
L6	7069030732	monostable	110
V6	7069030132	monostable	90
K6	7069030112	monostable	107
O6	7069030212	monostable	108

1 VALVE DIMENSIONS Ø 8



Symbol	Code	Manual control	Weight [g]
I8	7070030532	monostable	124
W8	7070030632	monostable	124
L8	7070030732	monostable	124
V8	7070030132	monostable	105
K8	7070030112	monostable	120
O8	7070030212	monostable	121

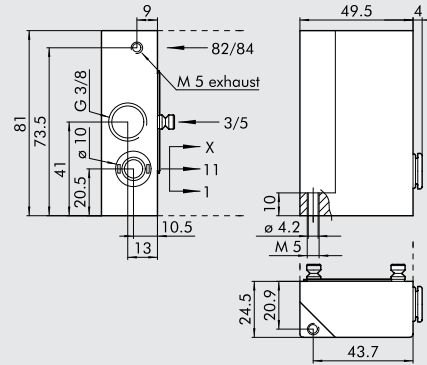
② END-PLATE 1-11



Code	Description	Weight [g]
0227300200	End-plate kit 1-11	223

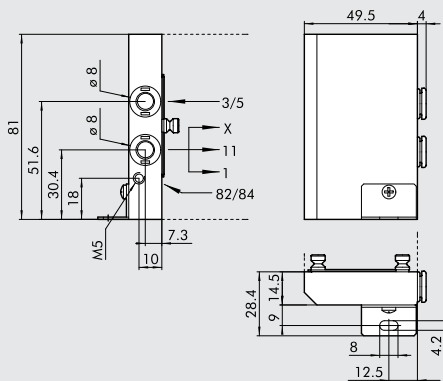
This end-plate allows for supplies to be differentiated:
port 2, port 4 and pilot supply

③ END-PLATE 1



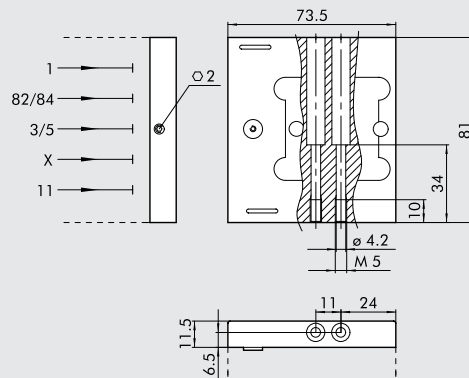
Code	Description	Weight [g]
0227300201	End-plate kit 1	224

④ REDUCED END-PLATE 1



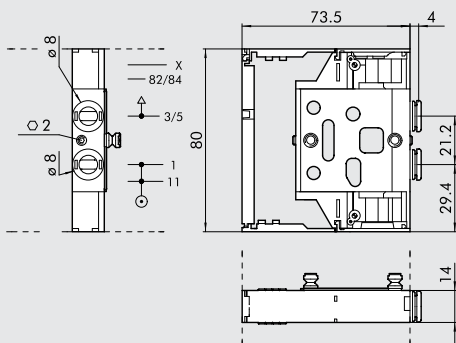
Code	Description	Weight [g]
0227300300	Reduced end-plate kit 1	148

⑤ BLIND END-PLATE



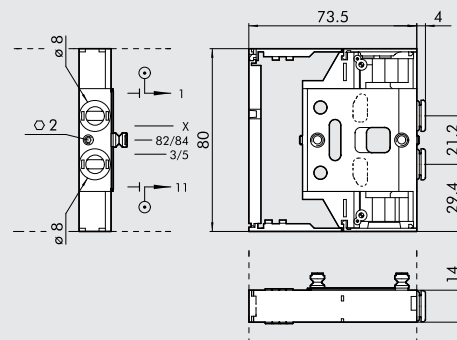
Code	Description	Weight [g]
0227300500	Blind end-plate	168

⑥ INTERMEDIATE THROUGH



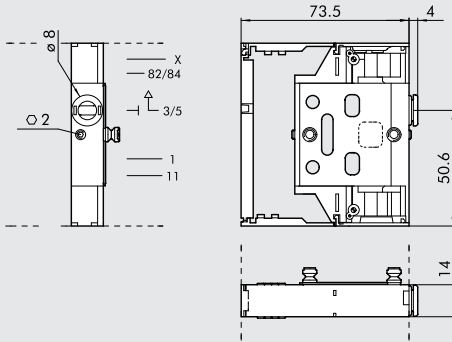
Code	Description	Weight [g]
0227300301	Intermediate through	92

⑦ INTERMEDIATE BLIND



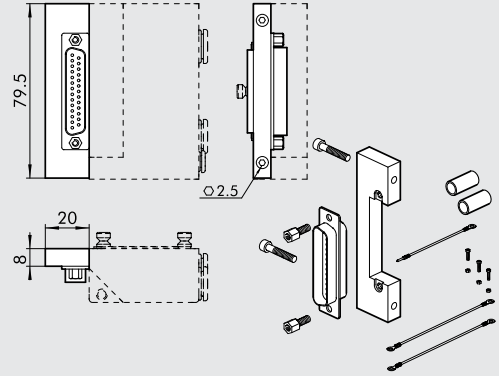
Code	Description	Weight [g]
0227300302	Intermediate blind	89

20 INTERMEDIATE EXHAUST SWITCH



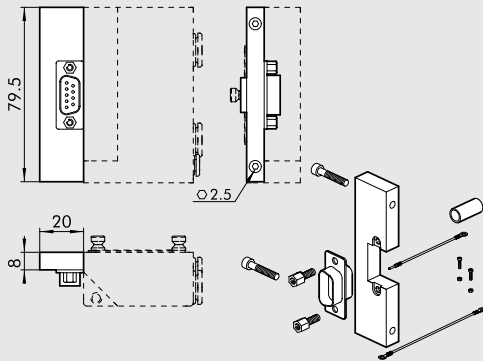
Code	Description	Weight [g]
0227300303	Intermediate exhaust switch	95

8 AXIAL CONNECTOR BASE, 25 WIRES



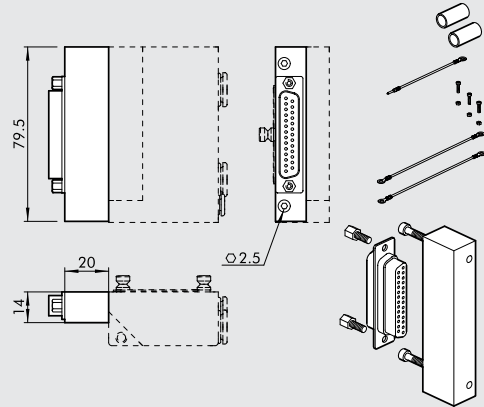
Code	Description	Weight [g]
0226180001	Axial connector base kit, 25 wires	54

9 AXIAL CONNECTOR BASE, 9 WIRES



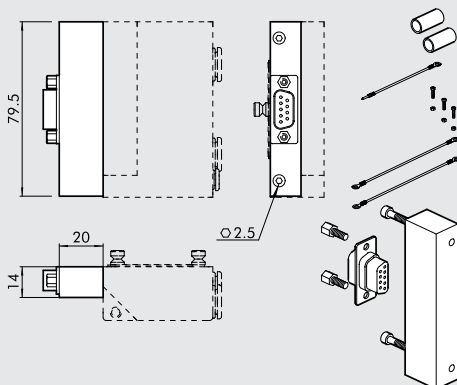
Code	Description	Weight [g]
0226180002	Axial connector base kit, 9 wires	51

10 REAR CONNECTOR BASE, 25 WIRES



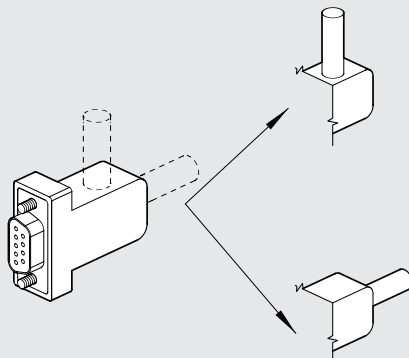
Code	Description	Weight [g]
0226180003	Rear connector base kit, 25 wires	73

11 REAR CONNECTOR BASE, 9 WIRES



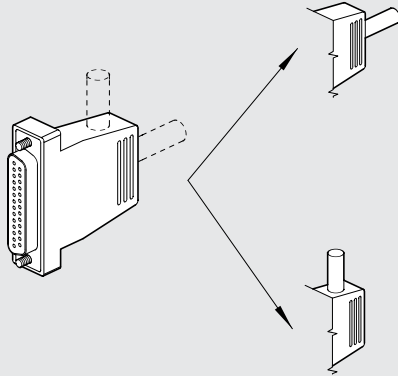
Code	Description	Weight [g]
0226180004	REAR CONNECTOR BASE KIT, 9 WIRES	77

12 STRAIGHT AND 90° CONNECTOR KIT, 9 WIRES



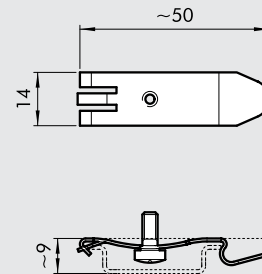
Code	Description	Weight [g]
0226180102	Straight and 90° connector kit, 9 wires	31

14 STRAIGHT AND 90° CONNECTOR KIT, 25 WIRES



Code	Description	Weight [g]
0226180101	Straight and 90° connector kit, 25 wires	48

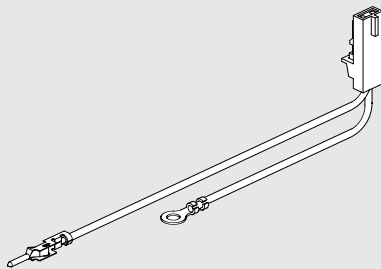
16 CONNECTION BRACKETS ON THE BAR OMEGA (DIN EN 50022)



Code	Description	Weight [g]
0227300600	Connection brackets on din bar	8

Individually packed

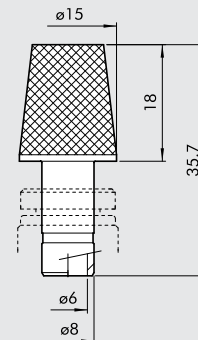
17 18 19 CONNECTOR KIT + WIRE



Code	Description	Weight [g]
0226180399	Connector kit + wire 1-6*	3
0226180400	Connector kit + wire 7-12**	4
0226180401	Connector kit + wire 13-30***	5

- * For valve connection from 1st to 6th position counting from the connector
- ** For valve connection from 7th to 12th position, counting from the connector
- *** For valve connection from 13th to 30th position, counting from the connector

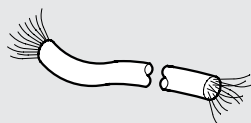
SILENCER FOR FITTING, Ø 8



Code	Description	Weight [g]
W0970530084	Silencer for fitting, Ø 8	15

At the 3/5-exhaust port of the reduced end-plate 1 ref. 4 and of the intermediate through of the exhaust switch ref. 20

CABLES

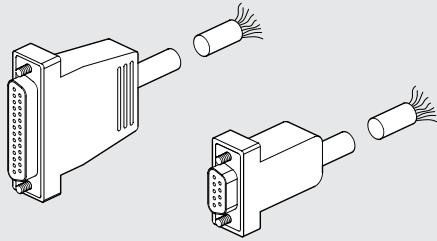


Cod.	Description	Weight [g]
0226107201	10-wire cable	86
0226107101	19-wire cable	122
0226107102	25-wire cable	130

Specify the number of metres desired

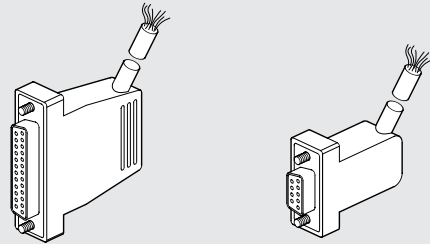
NOTES

STRAIGHT PRE-WIRED CONNECTOR KIT



Code	Description	Weight [g]
0226900100	Connector + 9-wire axial cable L = 1 m	90
0226900250	Connector + 9-wire axial cable L = 2.5 m	220
0226900500	Connector + 9-wire axial cable L = 5 m	434
0226920100	Connector + 25-wire axial cable L = 1 m	132
0226920250	Connector + 25-wire axial cable L = 2.5 m	320
0226920500	Connector + 25-wire axial cable L = 5 m	636

PRE-WIRED 90° CONNECTOR

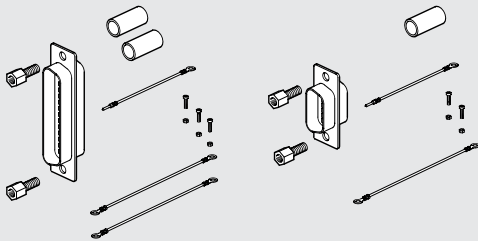


Code	Description	Weight [g]
0226910100	Connector + 9-wire 90° cable L = 1 m	90
0226910250	Connector + 9-wire 90° cable L = 2.5 m	220
0226910500	Connector + 9-wire 90° cable L = 5 m	434
0226930100	Connector + 25-wire 90° cable L = 1 m	132
0226930250	Connector + 25-wire 90° cable L = 2.5 m	320
0226930500	Connector + 25-wire 90° cable L = 5 m	636

WIRING DIAGRAM FOR PRE-WIRED PLUG CONNECTORS

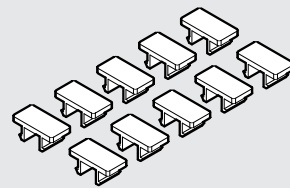
25 PIN				9 PIN			
Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire
1	blue/black	10	brown/white	19	yellow/black	1	green/black
2	red/brown	11	red/orange	20	white	2	white
3	white/black	12	light blue	21	blue/white	3	blue/black
4	red/blue	13	yellow/white	22	brown	4	blue
5	black/orange	14	yellow	23	green/white	5	yellow/black
6	yellow/red	15	red/green	24	red	6	yellow
7	black/brown	16	orange	25	green/black	7	red/black
8	white/red	17	orange/white			8	green
9	red/black	18	green			9	white/black

MALE CONNECTOR KIT + CONTACTS + COMMON TERMINAL



Code	Description
0226180201	Male connector kit - 25 pins
0226180202	Male connector kit - 9 pins

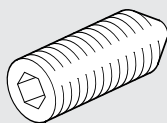
IDENTIFICATION PLATE KIT



Code	Description
0226107000	Identification plate kit

Comes in 10-pc. packs

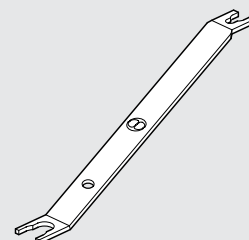
GRUB SCREW



Code	Description
0227300800	Grub screw for Multimach

Comes in 10-pc. pack

R17 - PIPE RELEASE SPANNER

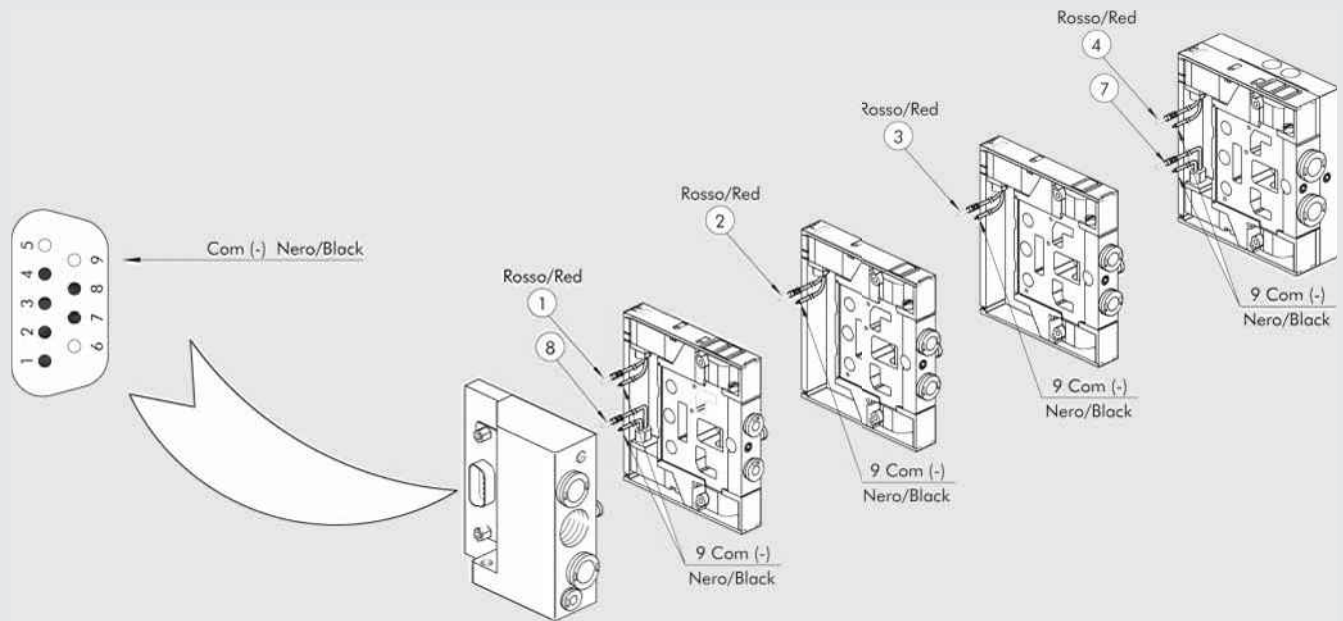


Lenght = 140 mm

Code	Description	Ø Tube
2L17001	RL17	from Ø 3 to Ø 10

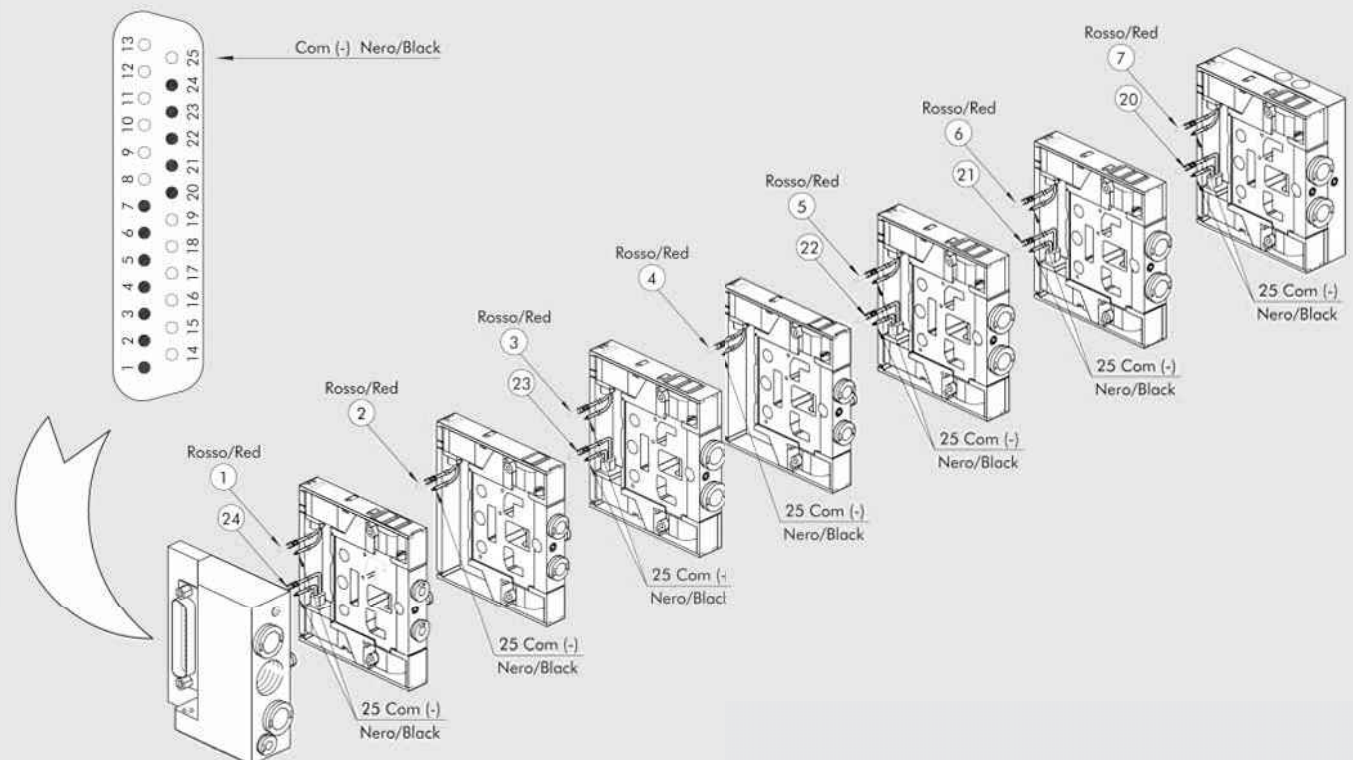
WIRING DIAGRAM OF THE 9-PIN CONNECTOR

Note: available with positive common wire on request.



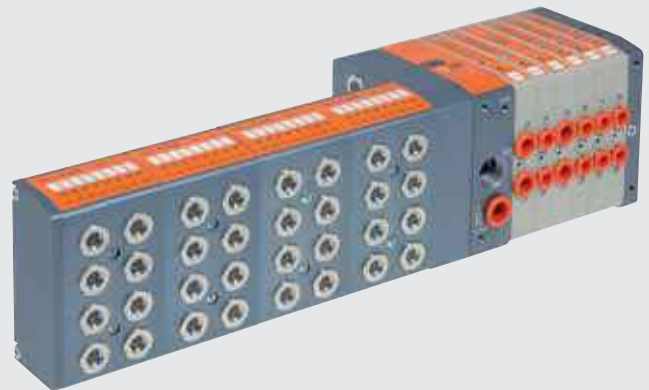
WIRING DIAGRAM OF THE 25-PIN CONNECTOR

Note: available with positive common wire on request.



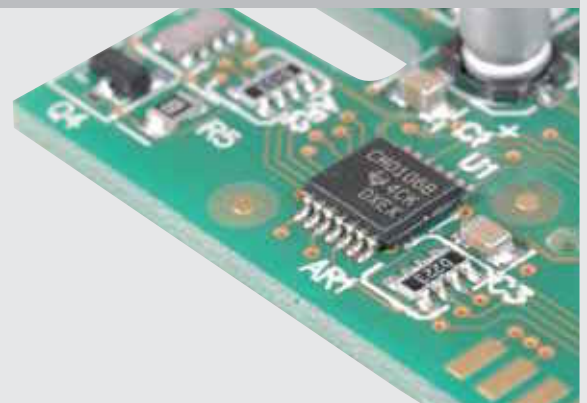
THE VALVE IN DETAIL

Clever Multimach valves can be used to form autonomous and intelligent valve island subsystems. Each valve has a microchip that performs a series of functions connected with operation and dialogue with the valves before and after it. Valves communicate via serial transmission. CM refers to the communication protocol patented by Metal Work. It is a field-bus in its own right, designed specifically for very easy control of islands of pneumatic solenoid valves. CM valves have a diagnosis system that detects electrical faults. It can also be used to verify during installation that all connections are correct. CMs communicate with the PC/PLC via multi-core cables, which means applications with CMs do not require the use of other field-buses or master and slaves. Addressing of single outputs is not required as the connection number of each solenoid pilot is assigned automatically based on the position occupied by the valve.



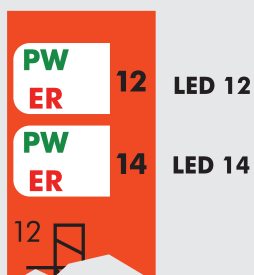
SMART VALVE

Each valve comes with a microchip that controls operation and dialogue with the other valves.



LOCAL DIAGNOSTICS

Each Clever Multimach valve has a LED diagnostic system that identifies immediately whether a pilot is energized, the contact is interrupted or there is a short-circuit.



LED 14	LED 12	DESCRIPTION OF THE FAULT
OFF ○	OFF ○	No fault, EV1-EV2=OFF
ON (green) ●	OFF ○	No fault, EV1=ON - EV2=OFF
ON (green) ●	ON (green) ●	No fault, EV1-EV2=ON
OFF ○	ON (green) ●	No fault, EV1=OFF - EV2=ON
RED (flashing) ☀	OFF ○	Solenoid pilot EV1 interrupted or disconnected
OFF ○	RED (flashing) ☀	Solenoid pilot EV2 interrupted or disconnected
ON (red) ●	OFF ○	Solenoid pilot EV1 short circuit
OFF ○	ON (red) ●	Solenoid pilot EV2 short circuit
GREEN (flashing) ☀	OFF ○	Data update time out, communication faulty

INPUT MODULES

By choosing the specially designed Clever Center you can add INPUT/OUTPUT signal management modules, which can be used for:

- DIGITAL INPUTS, as cylinder sensors for example
- DIGITAL OUTPUTS
- ANALOGUE INPUTS (but the LEDs do not light up)
- ANALOGUE OUTPUTS (but the LEDs do not light up)

They can be combined, even on the same module. You can choose between PNP or NPN connections via a dip switch-type selector. All the INPUTS/OUTPUTS must be the same type, i.e. all PNP or NPN.



CLEVER CENTER

The Clever Center input terminal converts signals in parallel from the connector pins into a serial transmission to the valves. It interprets the return signals from the valve, relays signals to any slave islands and sends diagnosis messages back to the PC/PLC.

44-pin connector
for valves

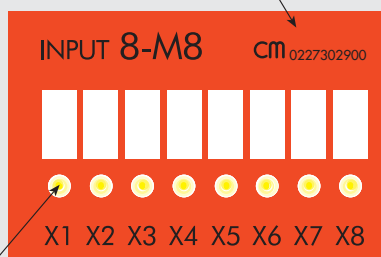
44-pin connector
for inputs



MAXIMUM EXPANSION

Up to 4 modules can be connected, giving a total of 32 input signals.

Ordering code

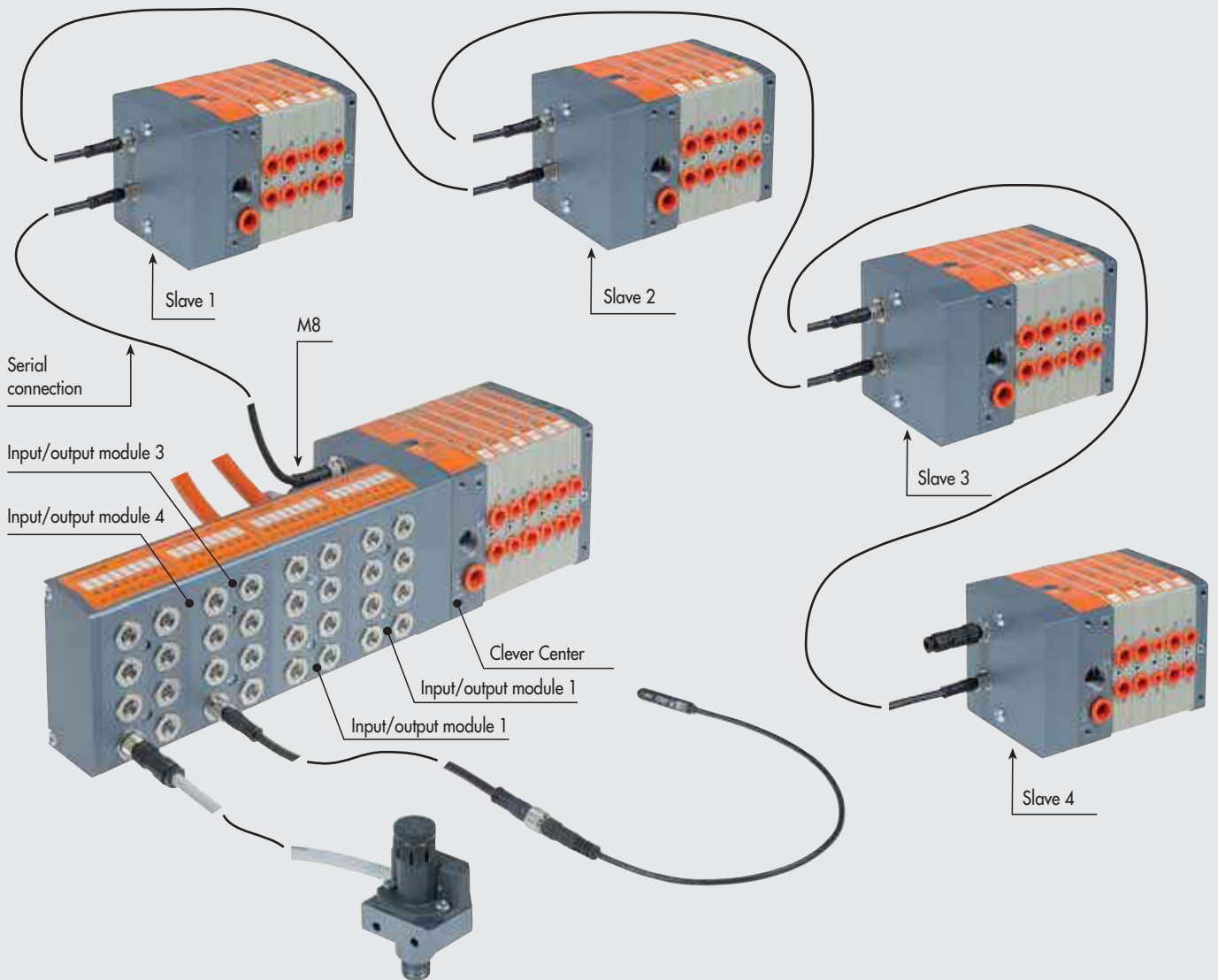


A yellow LED for each input/output
(visible for digital types)



EXAMPLE OF A CM LAYOUT

The Clever Center can relay command signals to other islands of "slaves". Transmission, in serial mode, is via a cable with M8 connectors. Commands can be sent from the first slave island to other slave islands in cascade, again via cables with M8 connectors. Addresses are assigned automatically, based on intuitive sequential logic. This means that other slaves can be added downstream at any time, until all 32 available outputs are in use.



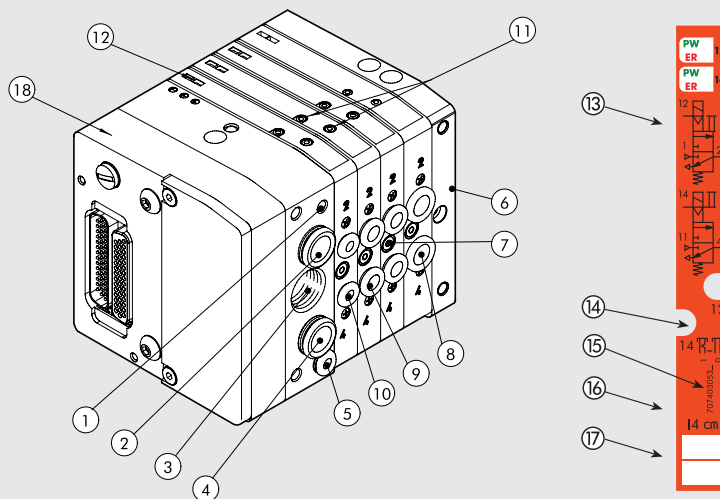
NOTES

TECHNICAL DATA

Valve port connections	Ø 4,6,8 mm automatic fitting for ports 2 and 4 / power supply port for Ø10 automatic fitting / 3/8 thread for exhaust port, M5 thread for exhaust pilot port		
Connection on the end-plate 1-11 for the supply of pilots	Automatic fitting Ø 4 mm		
Maximum number of pilots	32		
Maximum number of valves	32 (same as the max. no. of pilots)		
Operating temperature range	°C -10 to +60		
Fluid	Filtered air without lubrication; lubrication, if used, must be continuous		
Flow rate at 6 bar ΔP 1bar	Nl/min	11 mm Ø 4 = 200	11 mm Ø 6 = 500
Pressure range		X (pilot supply)	14 mm Ø 8 = 800
	Terminal 1-11	3 to 7 bar	1-11 (valve supply)
	Terminal 1		vacuum at 10 bar
Voltage range	3 to 7 bar 24 VDC ±10% (slave protected against overload and reverse polarity)		
Power for each pilot	W	0.9	
Solenoid Pilot Insulation class	F155		
Degree of protection	IP65 (with conveyed exhaust, and that - in case of no use)		
DC input current without valve modules	Nominal Icc 30 mA - Instantaneous Icc (+ ≤ 25 ms) 650 mA		
Max input current with all valves ON	A	1.5	
Diagnosis	Local through LED and OUT fault reporting. For defects signalled look at the manual. Outlets protected against overload and short-circuit		
Solenoid rating	100% ED		
Maximum latency time of the serial transmission	ms	<10	
TRA/TRR 2x3/2 monostable at 6 bar	ms	8 / 45	
TRA/TRR 5/2 monostable at 6 bar	ms	8 / 33	
TRA/TRR 5/2 bistable at 6 bar	ms	20 / 20	
TRA/TRR 5/3 cc monostable at 6 bar	ms	20 / 20	
Note on use	Insert the pipes in the fittings, before passing air through the valves, otherwise the gasket may be pulled out of its seat by the flow of air. For technical data see page		
Compatibility with oils			
INPUT module for CM islands			
Sensor supply voltage	24 VDC ±10%		
Max sensor power	mA	200 (distributed over eight connectors)	
Input impedance	KΩ	3.9	
Max input voltage	Vcc	-5 to +30	
Type of input	PNP/NPN configurable via dip switch		
Protection	Protected inputs against overload and short-circuit		
Active input signalling	One LED for each INPUT		

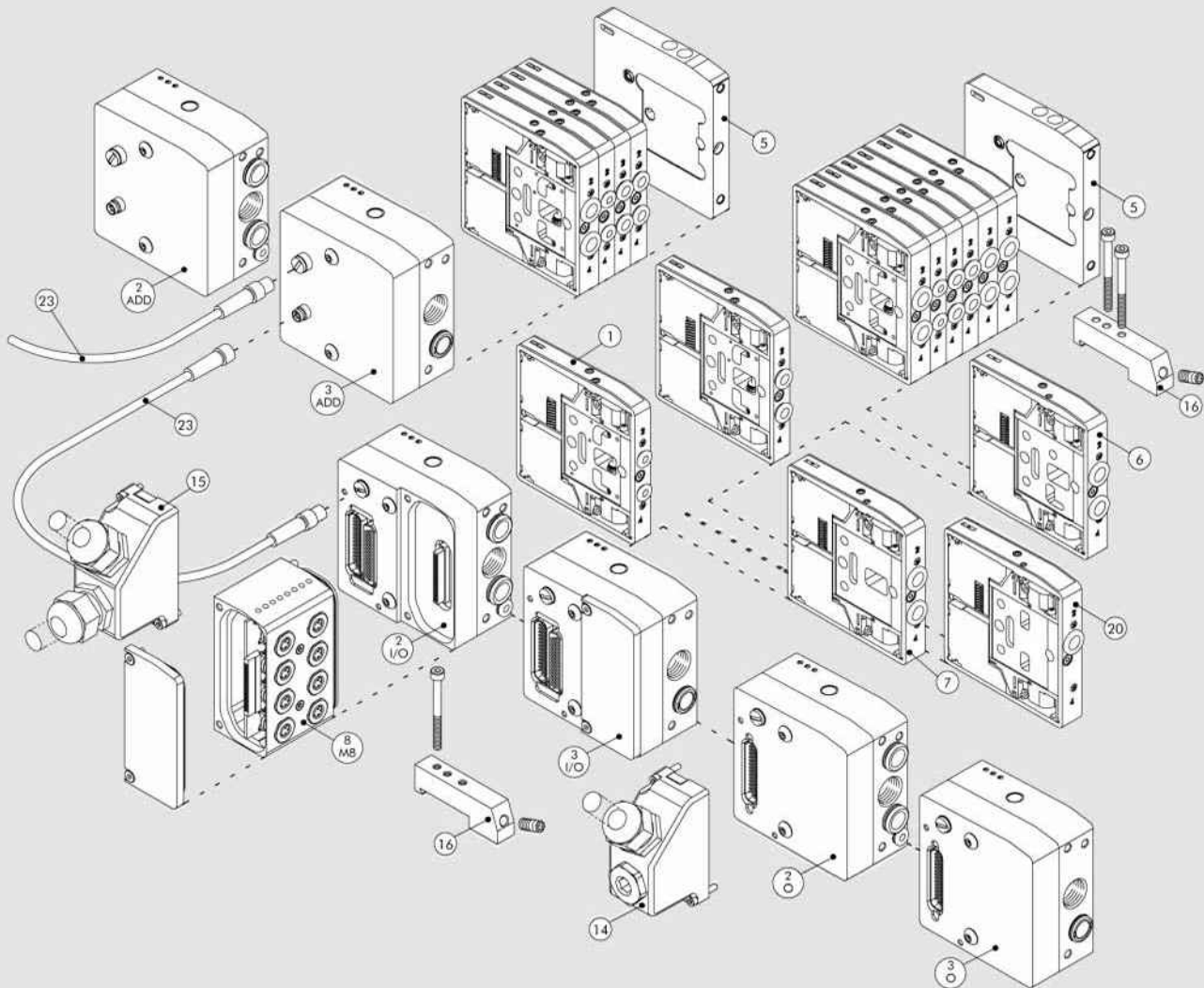
COMPONENTS

- ① Exhaust - Solenoid pilot 82/84
- ② Valve supply - port 1
- ③ Threaded connection of exhausts 3/5
- ④ Valve supply - port 11
- ⑤ Electrical control supply X
- ⑥ Blind end-plate
- ⑦ Screw for valve wall-mounting
- ⑧ Utility port for pipe Ø 8 mm
- ⑨ Utility port for pipe Ø 6 mm
- ⑩ Utility port for pipe Ø 4 mm
- ⑪ Manual control
- ⑫ LED (LED on, solenoid valve energised)
- ⑬ Pneumatic symbol
- ⑭ Identification of the monostable or bistable manual control
- ⑮ Valve ordering code
- ⑯ Valve identification code
- ⑰ Blank space for valve number
- ⑱ Clever Center terminal

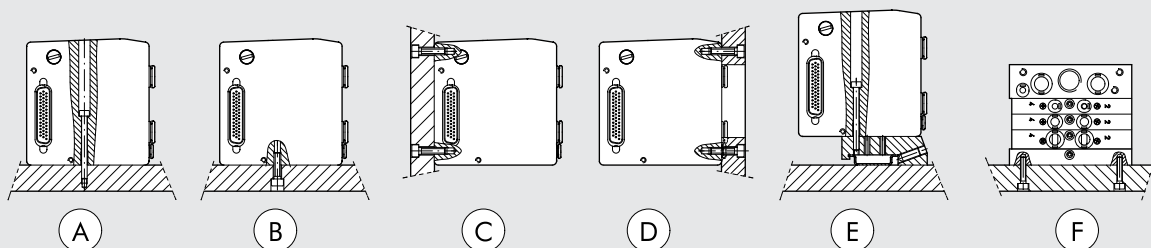


THE CLEVER MULTIMACH WORLD: FLEXIBILITY

The numbers permit rapid identification of the function and assembly position of the single elements represented as follows.



FIXING THE BASE



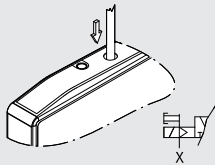
- Ⓐ Fixing from above using the 1 or 1-1 input terminal and the blind terminal.
- Ⓑ Ⓒ Fixing from above using the 1 or 1-1 input terminal and the blind terminal, using the M5 threads on the bottom and the rear of the terminals.
- Ⓓ Fixing from above using the 1 or 1-1 input terminal and the blind terminal, using the M5 threads on the front of the terminals.
An opening for the pipes is made in the plate.
- Ⓔ Fixing on the DIN bar with end-plate 1 or 1-11 and blind and plate, using the push-in bracket code 0227301600.
- Ⓕ Lateral fixing using the blind terminal, and its M4 threads on the side lateral.

Note: The sole fixing admitted is the one showed.

KEY TO CODES – CLEVER MULTIMACH **cm**

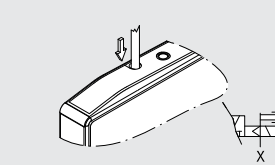
C M VALVE	2 INPUT END-PLATE	I / O FUNCTION	M MANUAL TYPE	16 - W8 - W6 - O4 - L8 - 5 TYPE OF VALVE	M8 - M8 - 15 - 16 FURTHER DETAILS
Clever Multimach	2 End-plate 1-11 3 End-plate 1	O Only valves I/O Input/Output and valves ADD Additional (slave)	M Monostable manual control B Bistable manual control	I n° 2 3/2 NC W n° 2 3/2 NO L 3/2 NO + 3/2 NC V 5/2 monostable K 5/2 bistable O 5/3 monostable 5 blind end-plate 6 Passing-intermede 7 Blind intermediate 20 Exhaust section 4 Cartridge 4 6 Cartridge 6 8 Cartridge 8	M8 Module 8 input M8 14 Shell 44 pin 15 Shell 44 + 44 pin 16 n° 2 brackets for DIN bar

MANUAL CONTROLS



MONOSTABLE OVERRIDE PORT 2
servo-assisted

- Press and hold the manual control in position (not necessary for bistable type K valve)
- Release the manual control:
 - The manual control returns to the home position.
 - Valves type I, W, L, V and O reposition.
 - The type K valve remains switched



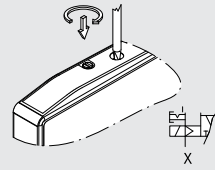
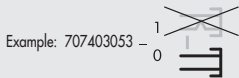
MONOSTABLE OVERRIDE PORT 4
servo-assisted

- Press and hold the manual control in position (not necessary for bistable type K valve)
- Release the manual control:
 - The manual control returns to the home position.
 - Valves type I, W, L, V and O reposition.
 - The type K valve remains switched

With type V valves, this manual control is not present.

N.B.: The pilot power supply X must be present.

- The reference code for the monostable control ends in 0.

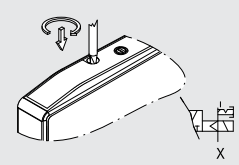
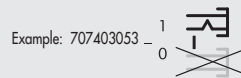


BISTABLE OVERRIDE PORT 2
servo-assisted

- Press the manual control right in then turn it clockwise 90 degrees and Leave it in position.
- Rotate the manual control 90 degrees anticlockwise, and then release it:
 - The manual control returns to the home position.
 - Valves type I, W, L, V and O reposition.
 - The type K valve remains switched

N.B.: The pilot power supply X must be present.

- Il codice di riferimento per il comando bistabile è quello con finale "1"



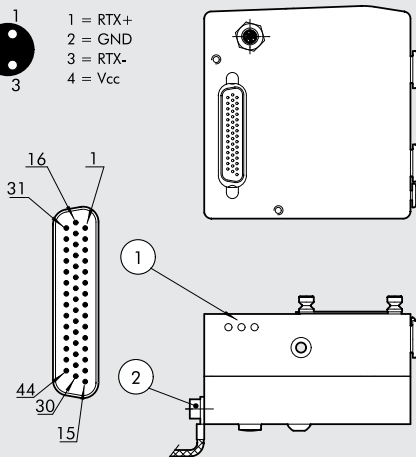
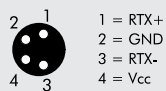
BISTABLE OVERRIDE PORT 4
servo-assisted

- Press the manual control right in then turn it 90 degrees clockwise and Leave it in position.
- Rotate the manual control 90 degrees anticlockwise, and then release it:
 - The manual control returns to the home position.
 - Valves type I, W, L, V and O reposition.
 - The type K valve remains switched

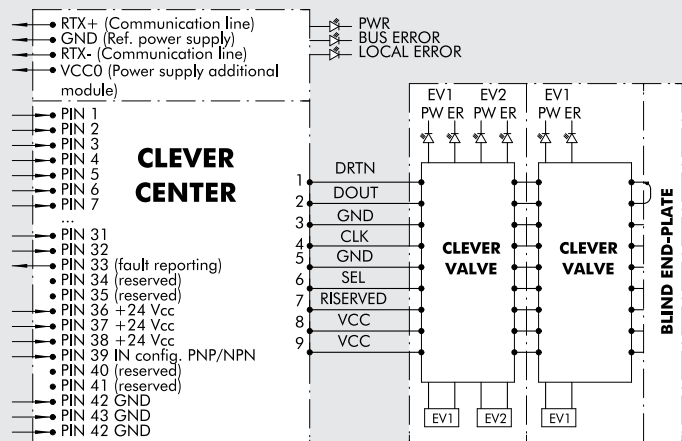
With type V valves, this manual control is not present.

N.B.: The pilot power supply X must be present.

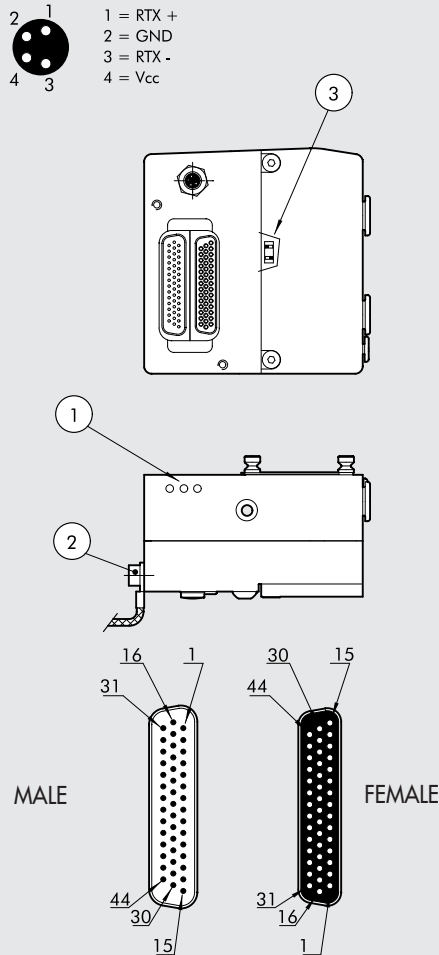
WIRING DIAGRAM FOR THE CLEVER CENTER TERMINAL - OUTPUTS ONLY



- ① Indicator LED
- ② Grounding

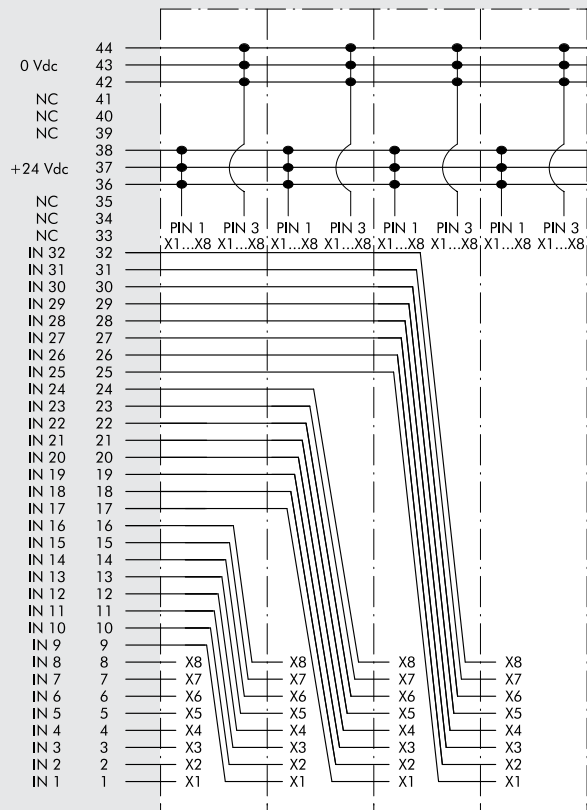


WIRING DIAGRAM FOR THE CLEVER CENTER TERMINAL - INPUTS AND OUTPUTS

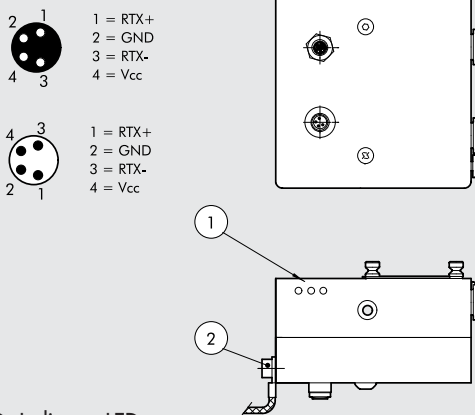


- ① Indicator LED
- ② Grounding
- ③ Input selector type PNP/NPN

INPUT CONNECTION DIAGRAM



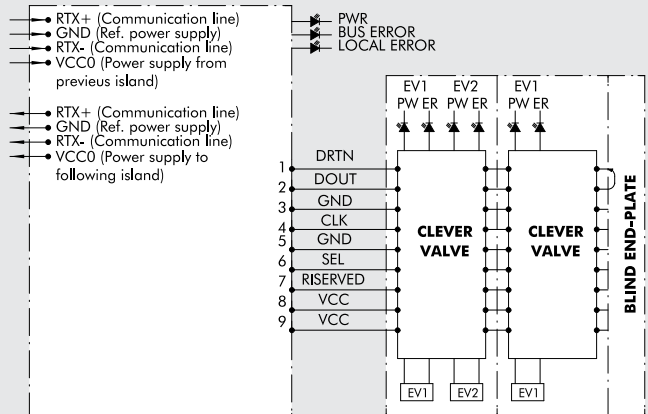
WIRING DIAGRAM FOR THE ADDITIONAL TERMINAL



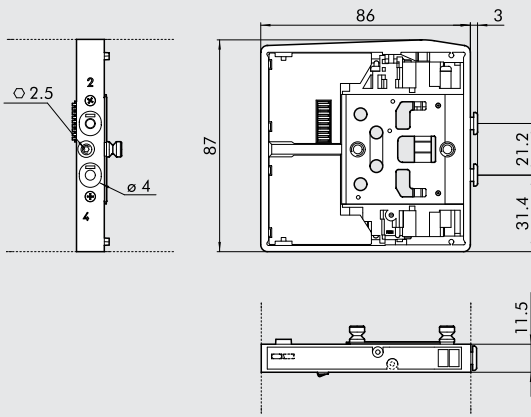
- ① Indicator LED
- ② Grounding

From previous module

Possible additional module

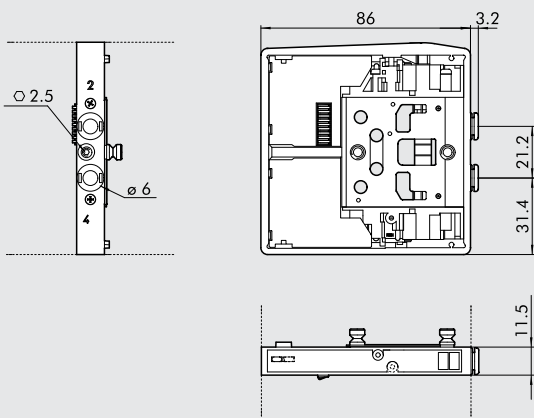


① VALVE DIMENSIONS **CM** Ø 4



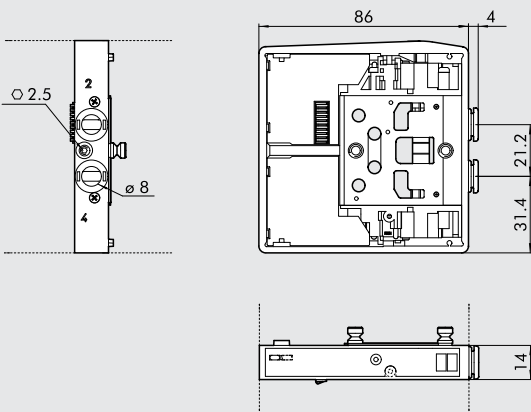
Symbol		Code	Manual control	Weight [g]
CM		7074030530	monostable	130
I4		7074030531	bistable	
CM		7074030630	monostable	130
W4		7074030631	bistable	
CM		7074030730	monostable	130
L4		7074030731	bistable	
CM		7074030130	monostable	115
V4		7074030131	bistable	
CM		7074030110	monostable	130
K4		7074030111	bistable	
CM		7074030210	monostable	130
O4		7074030211	bistable	

① VALVE DIMENSIONS **CM** Ø 6



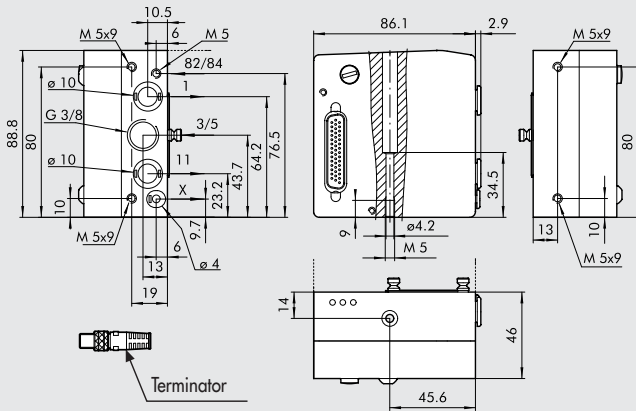
Symbol		Code	Manual control	Weight [g]
CM		7075030530	monostable	130
I6		7075030531	bistable	
CM		7075030630	monostable	130
W6		7075030631	bistable	
CM		7075030730	monostable	130
L6		7075030731	bistable	
CM		7075030130	monostable	115
V6		7075030131	bistable	
CM		7075030110	monostable	130
K6		7075030111	bistable	
CM		7075030210	monostable	130
O6		7075030211	bistable	

① VALVE DIMENSIONS **CM** Ø 8



Symbol		Code	Manual control	Weight [g]
CM		7076030530	monostable	140
I8		7076030531	bistable	
CM		7076030630	monostable	140
W8		7076030631	bistable	
CM		7076030730	monostable	140
L8		7076030731	bistable	
CM		7076030130	monostable	130
V8		7076030131	bistable	
CM		7076030110	monostable	140
K8		7076030111	bistable	
CM		7076030210	monostable	140
O8		7076030211	bistable	

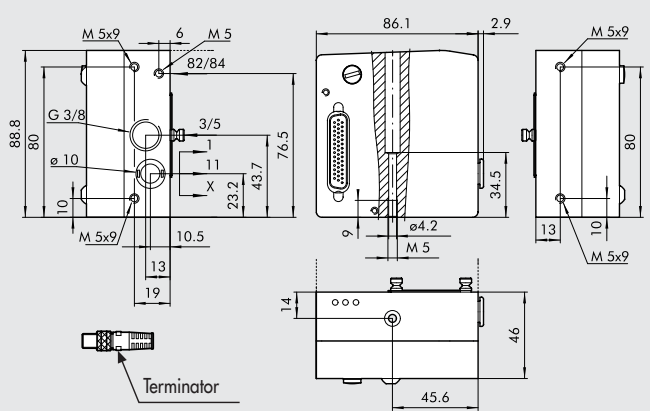
2 - O OUTPUT END-PLATE 1-11



Code	Description	Weight [g]
0227302200	End-plate CM kit 1-11 OUT	722

This end-plate allows for supplies to be differentiated:
port 2, port 4 and pilot supply
Note: terminator included

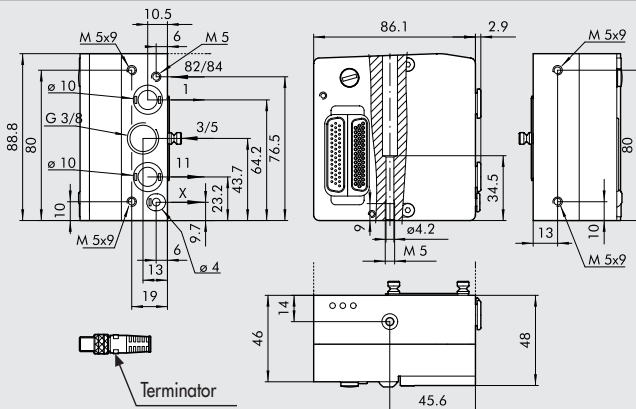
3 - O OUTPUT END-PLATE 1



Code	Description	Weight [g]
0227302201	End-plate CM kit 1 OUT	722

Note: terminator included

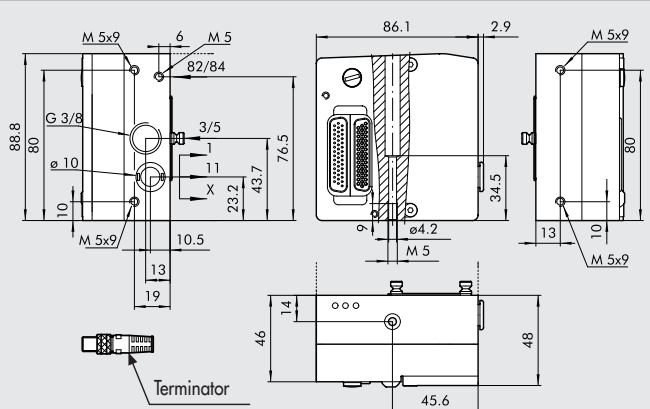
2 - I/O INPUT END-PLATE 1-11



Code	Description	Weight [g]
0227302223	End-plate CM kit 1-11 IN	722

This end-plate allows for supplies to be differentiated:
port 2, port 4 and pilot supply
Note: terminator included

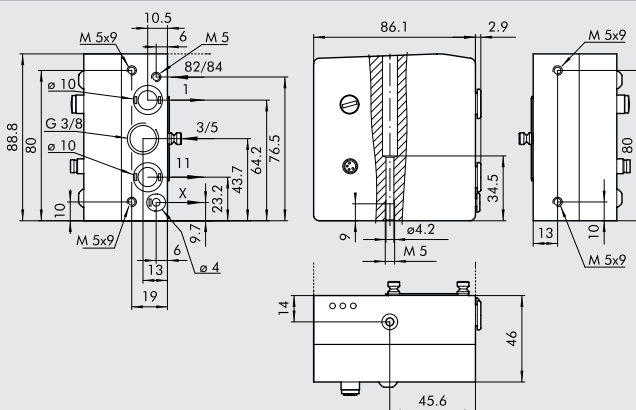
3 - I/O INPUT END-PLATE 1



Code	Description	Weight [g]
0227302225	End-plate CM kit 1 IN	722

Note: terminator included

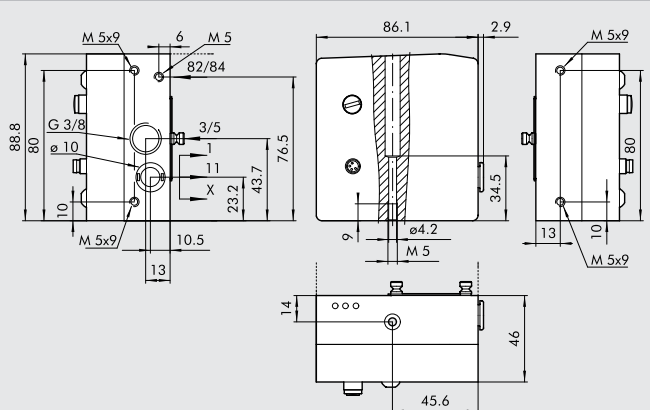
2 - ADD ADDITIONAL END-PLATE 1-11



Code	Description	Weight [g]
0227302224	End-plate CM kit 1-11 ADD	770

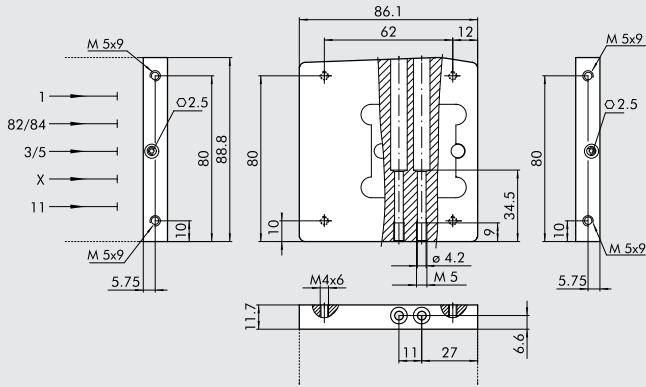
This end-plate allows for supplies to be differentiated:
port 2, port 4 and pilot supply

3 - ADD ADDITIONAL END-PLATE 1



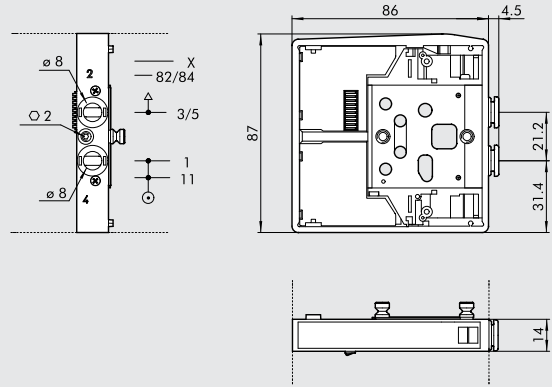
Code	Description	Weight [g]
0227302226	End-plate CM kit 1 ADD	770

5 BLIND EN-PLATE



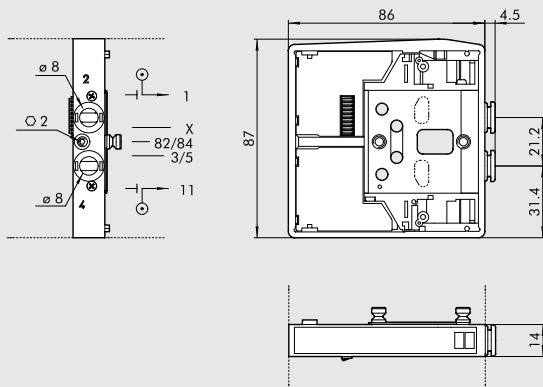
Code	Description	Weight [g]
0227302500	Blind en-plate CM	230

6 INTERMEDIATE THROUGH



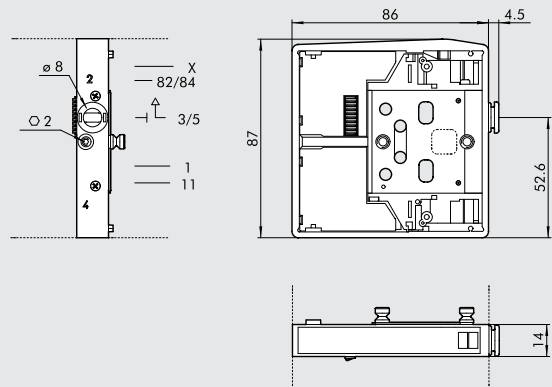
Code	Description	Weight [g]
0227302301	Intermediate through CM	120

7 INTERMEDIATE BLIND



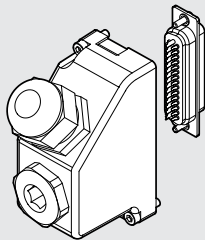
Code	Description	Weight [g]
0227302302	Intermediate blind CM	117

20 INTERMEDIATE EXHAUST SWITCH



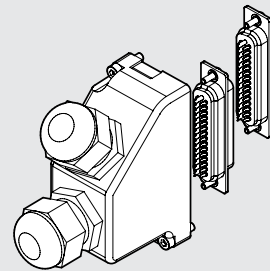
Code	Description	Weight [g]
0227302303	Intermediate exhaust switch CM	125

14 44-PIN CUP CONNECTOR KIT IP 65



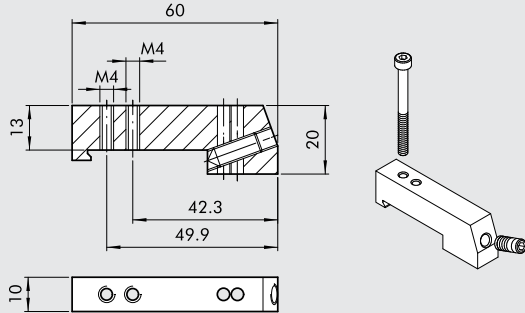
Code	Description	Weight [g]
0226180108	44-pin cup connector kit ip 65	60

15 44+44 PIN CUP CONNECTOR KIT IP 65 FOR I/O



Code	Description	Weight [g]
0226180109	44+44 pin cup connector kit ip 65 for I/O	80

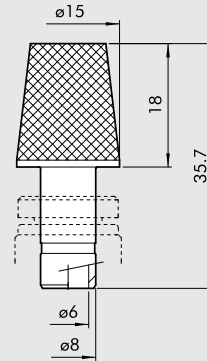
16 CONNECTION BRACKETS ON DIN BAR



Code	Description	Weight [g]
0227301600	Connection brackets on din bar HDM/CM	30

Supplied complete with one M4x45 screws and one grub screw
Individually packed

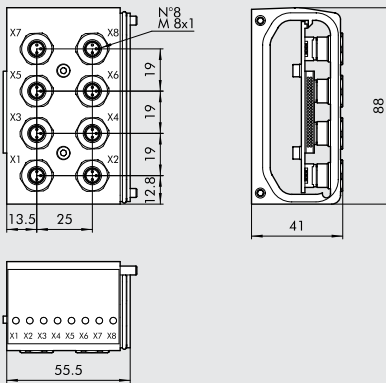
SILENCER FOR FITTING, Ø 8



Code	Description	Weight [g]
W0970530084	Silencer for fitting, Ø 8	15

At the 3/5-exhaust port of the intermediate through reference 6
and the exhaust switch reference 20

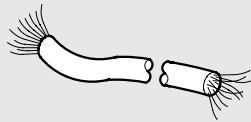
8 - M8 M8 8-INPUT/OUTPUT MODULE



Code	Description	Weight [g]
0227302900	M8 8-input module CM	273

INPUT PNP 1 = + 24 VDC 3 = OVDC 4 = INPUT		INPUT NPN 1 = + 24 VDC 3 = OVDC 4 = INPUT	
OUTPUT PNP 1 = + 24 VDC 3 = OVDC 4 = INPUT		OUTPUT NPN 1 = + 24 VDC 3 = OVDC 4 = INPUT	
DIP SWITCH		DIP SWITCH	
OUTPUT ANALOGIC		INPUT ANALOGIC	

CABLES



Code	Description	Weight [g/m]
0226107201	10-wire cable	86
0226107101	19-wire cable	122
0226107102	25-wire cable	130
0226107103	44-wire cable	160

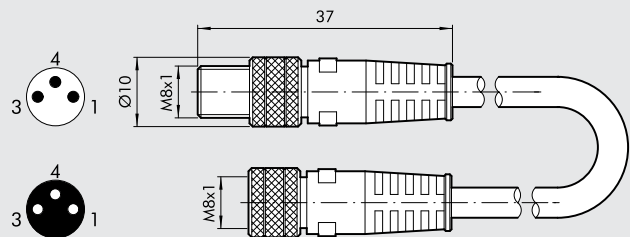
Specify the number of metres desired

M8 PLUG



Code	Description
0240009039	Plug M8

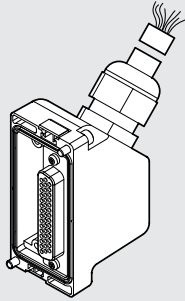
M8 INPUT CONNECTOR



Code	Description
0240009009	M8-M8 straight connector with 3 m cable

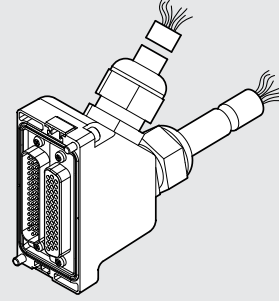
Pin	Cable colour
1	Brown
3	Blue
4	Black

44-PIN PRE-WIRED CUP CONNECTOR



Code	Description	Weight [g]
0226950500	Acc. connet. IP 65 + cable 44-wire L = 5 m	740

44+44-PIN PRE-WIRED CUP CONNECTOR



Code	Description	Weight [g]
0226980500	Acc. connet. IP 65 + cable 44 + 44-wire L = 5 m	1550

WIRING DIAGRAM FOR THE 44-PIN CUP CONNECTOR KIT

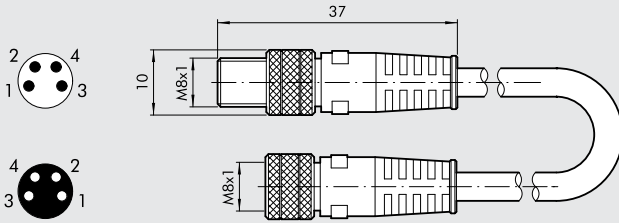
44 PIN FEMALE PRE-WIRED FOR VALVE

Position of electrical contact	Corresponding wire colour	Function
1	white	Out 1
2	brown	Out 2
3	green	Out 3
4	yellow	Out 4
5	gray	Out 5
6	pink	Out 6
7	blue	Out 7
8	violet	Out 8
9	gray/pink	Out 9
10	red/blue	Out 10
11	white/green	Out 11
12	brown/green	Out 12
13	white/yellow	Out 13
14	yellow/brown	Out 14
15	white/gray	Out 15
16	gray/brown	Out 16
17	white/pink	Out 17
18	pink/brown	Out 18
19	white/blue	Out 19
20	brown/blue	Out 20
21	white/red	Out 21
22	brown/red	Out 22
23	white/black	Out 23
24	brown/black	Out 24
25	gray/green	Out 25
26	yellow/gray	Out 26
27	pink/green	Out 27
28	yellow/pink	Out 28
29	green/blue	Out 29
30	yellow/blue	Out 30
31	green/red	Out 31
32	yellow/red	Out 32
33	green/black	Fault reporting
34	gray/blue	NC
35	gray/red	NC
36	red	+24Vdc
37	red	+24Vdc
38	red	+24Vdc
39	yellow/black	Config. PNP/NPN
40	pink/red	NC
41	pink/blue	NC
42	black	0 Vdc
43	black	0 Vdc
44	black	0 Vdc

44 PIN MALE PRE-WIRED FOR INPUT/OUTPUT

Position of electrical contact	Corresponding wire colour	Function
1	white	In 1
2	brown	In 2
3	green	In 3
4	yellow	In 4
5	gray	In 5
6	pink	In 6
7	blue	In 7
8	violet	In 8
9	gray/pink	In 9
10	red/blue	In 10
11	white/green	In 11
12	brown/green	In 12
13	white/yellow	In 13
14	yellow/brown	In 14
15	white/gray	In 15
16	gray/brown	In 16
17	white/pink	In 17
18	pink/brown	In 18
19	white/blue	In 19
20	brown/blue	In 20
21	white/red	In 21
22	brown/red	In 22
23	white/black	In 23
24	brown/black	In 24
25	gray/green	In 25
26	yellow/gray	In 26
27	pink/green	In 27
28	yellow/pink	In 28
29	green/blue	In 29
30	yellow/blue	In 30
31	green/red	In 31
32	yellow/red	In 32
33	green/black	NC
34	gray/blue	NC
35	gray/red	NC
36	red	+24Vdc
37	red	+24Vdc
38	red	+24Vdc
39	yellow/black	NC
40	pink/red	NC
41	pink/blue	NC
42	black	0 Vdc
43	black	0 Vdc
44	black	0 Vdc

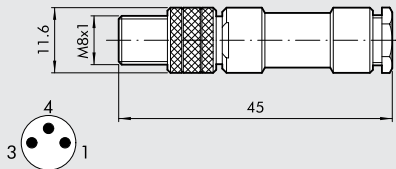
23 M8 PREWIRED CONNECTOR FOR VALVE ISLANDS CONNECTIONS



Code	Description
0240005003	M8 prewired connector for valve islands conn. CM L = 5 m
0240005005	M8 prewired connector for valve islands conn. CM L = 1 m
0240005006	M8 prewired connector for valve islands conn. CM L = 3 m
0240005008	M8 prewired connector for valve islands conn. CM L = 10 m

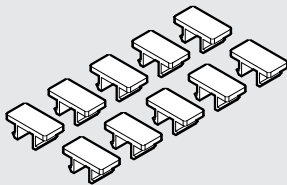
Pin	Cable colour
1	Brown
2	White
3	Blue
4	Black

M8 INPUT CONNECTOR



Code	Description
0240009010	M8 3-pin straight connector

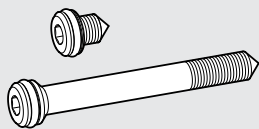
IDENTIFICATION PLATE KIT



Code	Description
0226107000	Identification plate kit

Comes in 10-pc. packs

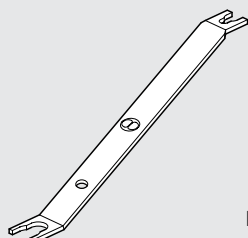
GRUB SCREW KIT



Code	Description
0227301800	Grub screw for Multimach HDM/CM

Comes 1 + 1 packs

R17 - DISASSEMBLY KEY



Length = 140 mm

Code	Description	Ø Tube
2L17001	RL17	from Ø 3 to Ø 10

NOTES

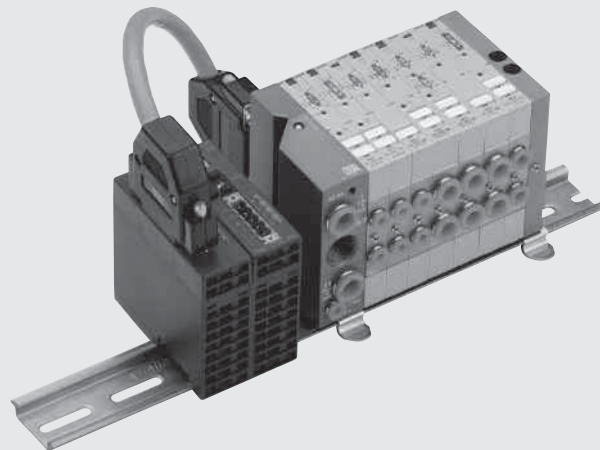
DISTRIBUTORS

	● HDM + AS-Interface	SEE	PAGE 2-132
	● HDM + PROFIBUS-DP	SEE	PAGE 2-137
	● HDM + CANopen	SEE	PAGE 2-141
	● HDM + B&R	SEE	PAGE 2-147
	● PROFIBUS-DP/CANopen/DEVICE NET FOR MULTIMACH AND BASES FOR PLT-10 MULTIPLE CONNECTION		PAGE 2-178
	● MULTIMACH + B&R	SEE	PAGE 2-162
	● INPUT/OUTPUT PROFIBUS-DP IP67 M12		PAGE 2-183
	● INPUT PROFIBUS-DP IP67 M8		PAGE 2-187

PROFIBUS-DP/CANopen/DEVICE-NET FOR MULTIMACH AND BASES FOR PLT-10 MULTIPLE CONNECTION

The expandable modular slaves for Multimach and bases for PLT-10 multiple connection follow the same application philosophy of total modularity common to the Multimach system. With full freedom, the slave can be configured by fitting the various modules offered:

- Slaves are available for 3 alternate bus systems: PROFIBUS-DP, CAN-OPEN, DEVICE NET. Each of these can manage 24 outputs.
- The slaves are mounted on a 35 mm DIN bar, next to the Multimach unit.
- The electric connection between the slave and the unit is simply obtained with a kit comprised of pre-wired, 25-pin Sub-D connectors with a 25-core cable.
- Other modules – up to a maximum of 15 (31 for DeviceNet) can be fitted alongside the slaves to manage other inputs and outputs. These modules are electrically connected together, using a small plate-connector (housed under the modules, inside the DIN bar).
- There are 4 other types of modules available: for 8 digital inputs; for 8 digital outputs; for 4 analogue inputs and for 4 analogue outputs.
- With this system, a maximum of 144 Inputs/Outputs can be managed with just one slave!



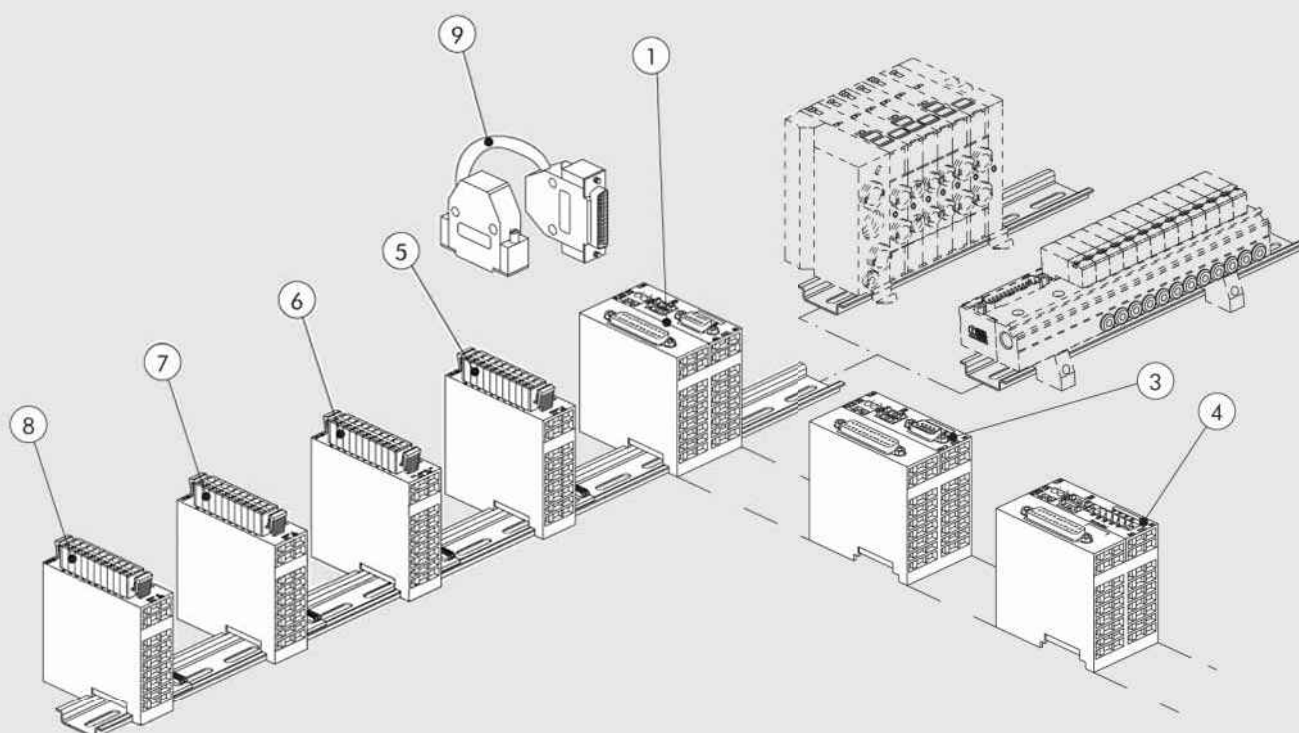
DISTRIBUTORS

PROFIBUS-DP/CANopen/DEVICE-NET FOR MULTIMACH AND BASES FOR PLT-10 MULTIPLE CONNECTION

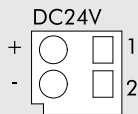
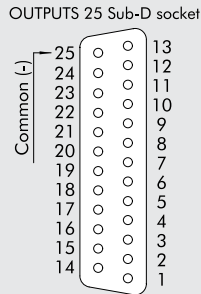
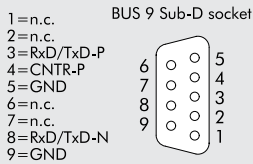
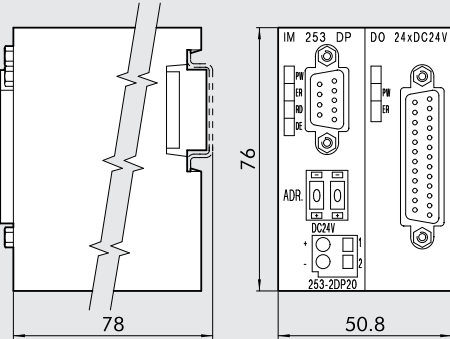
TECHNICAL DATA

Supply voltage	24 VDC + 20% - 15%
EMC and ESD test	in compliance with IEC 801-2/IEC 801/4 (up to level 3: 8kV/2kV)
Resistance to vibration and impacts test	according to IEC68-2-6/IEC 68-2-27 (1g/12g)
Operating temperature range	0 °C to 60 °C
Storage temperature	-40 °C to +85 °C
Admitted relative humidity	95%
Assembly	35 mm DIN bar

THE MULTIMACH WORLD: SLAVES, INPUTS AND OUTPUTS



① SLAVE PROFIBUS-DP 24 OUTPUT



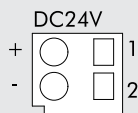
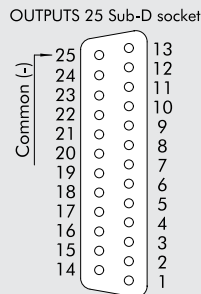
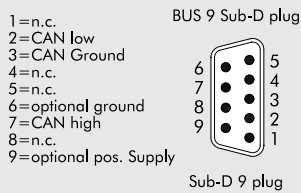
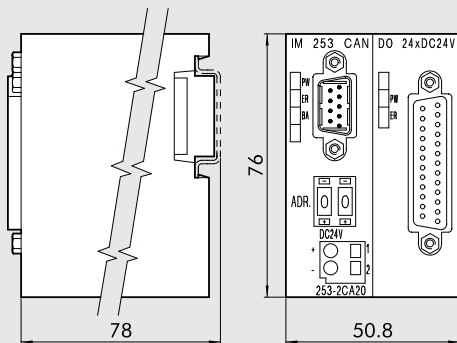
Code
0240004002

Slave kit
SLAVE PROFIBUS+DO24xDC24V

Technical data

PROFIBUS-Interface	RS485: 9 pins SubD
Transmission speed	9.6 kBaud up to 12 Mbaud
Max number of modules which can be connected	31 (depending on the maximum current)
Output interface	25 pins SubD
Number of outputs	24
Output data	4 Byte (3used +1)
Nominal supply voltage	24 VDC
Maximum current for each output	1A, max total 4A
Absorption 24V (out excluded)	800 mA

③ CAN-OPEN SLAVE, 24 OUTPUTS



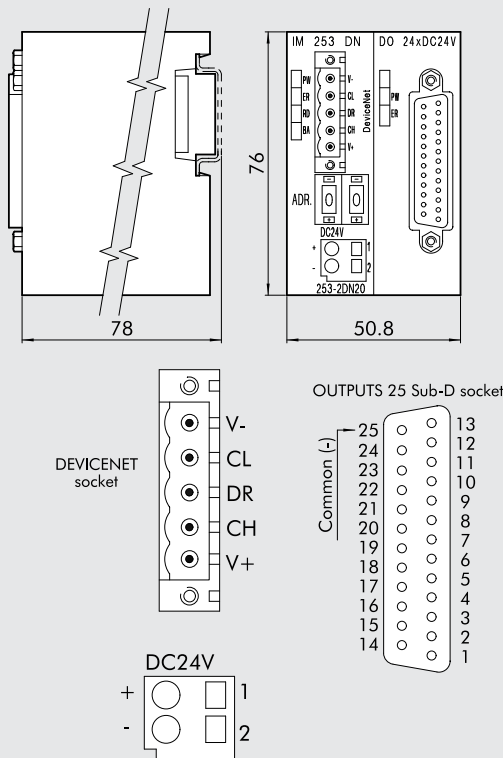
Code
0240004022

Slave kit
SLAVE CAN-OPEN+DO24xDC24V

Technical data

CANopen-Interface	9 pins SubD
Transmission speed	10 k Baud up to 1 Mbaud
Max number of modules which can be connected	31 (depending on the maximum current)
Output interface	25 pins SubD
Number of outputs	24
Nominal supply voltage	24 VDC
Maximum current for each output	1A, max total 4A
Absorption 24 V (out excluded)	700 mA

④ DEVICE NET SLAVE, 24 OUTPUTS



Code
0240004032

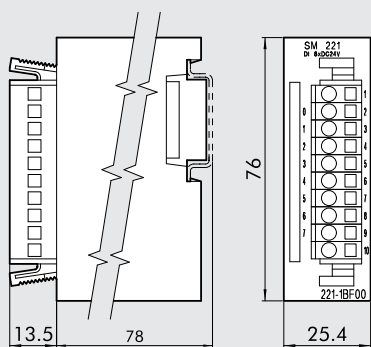
Slave kit
SLAVE DEVICE-NET+DO24xDC24V

Technical data

DEVICE-NET-Interface	DeviceNet Open Style
Transmission speed	125, 250, 500 k Baud
Max number of modules which can be connected	31 (depending on the maximum current)
Output interface	25 pins SubD
Number of outputs	24
Nominal supply voltage	24 VDC
Maximum current for each output	1A, max total 4A
Absorption 24 V (out excluded)	800 mA

DeviceNet.

⑤ 8-DIGITAL INPUT MODULE



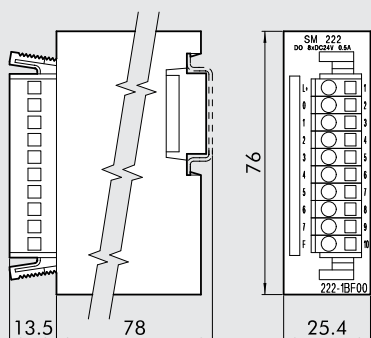
Code
0240004053

Description
DI 8XDC24V unit

Technical data

Nominal input voltage	24 VDC
Number of inputs	8
Input data	1 Byte
Input voltage at "1"	15...30V
Output voltage at "0"	0...5V
Response time	3 ms
Internal Bus voltage	5V
Absorption 5V BUS	20 mA

⑥ 8-DIGITAL OUTPUT MODULE



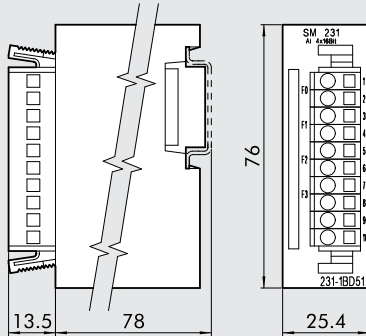
Code
0240004051

Description
DO 8XDC24V 0.5A unit

Technical data

Nominal voltage	24 VDC
Number of outputs	8
Output data	1 Byte
Absorption for each channel	1A (max 8A)
Internal Bus voltage	5V
Absorption 5V BUS	50 mA

7 4-ANALOG INPUT MODULE



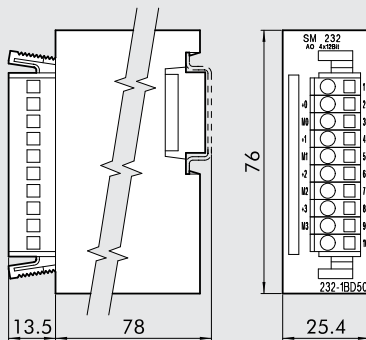
Code
0240004054

Description
AL 4X16 BIT unit

Technical data

Number of Inputs 4
 Input data 8 Byte
 Input range Voltage 0 to 50 mV, 0...10V, ± 4 mV, ± 4 V, ± 10 V,
 Current 0/4...20 mA, \pm 20 mA
 Temperature Pt100, Pt1000, Ni100, Ni1000
 Resistance 60 Ω , 600 Ω , 3000 Ω , 16000 Ω
 Thermoelements J, K, N, R, T, S
 Resolution 12/16 Bit
 Input resistance 20M Ω voltage, 85 Ω current
 Time 5...70 ms
 Internal Bus voltage 5 V
 Absorption 5V BUS 280 mA

8 4-ANALOG OUTPUT MODULE



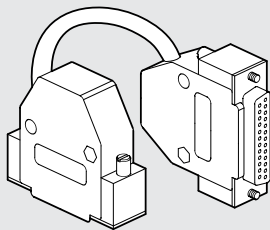
Code
0240004055

Description
AO 4X12 BIT unit

Technical data

Number of outputs 4
 Output data 8 Byte
 Output range Voltage 0...10V, ± 10 V, 1...5V
 Current 0...20 mA, 4...20 mA, ± 20 mA
 Resolution 12 BIT
 Output resistance Minimum voltage 500 Ω , Maximum current 500 Ω
 Conversion time 3 ms
 Internal Bus voltage 5 V
 Absorption 5V BUS 20 mA

9 SLAVE/MULTIMACH CONNECTION KIT

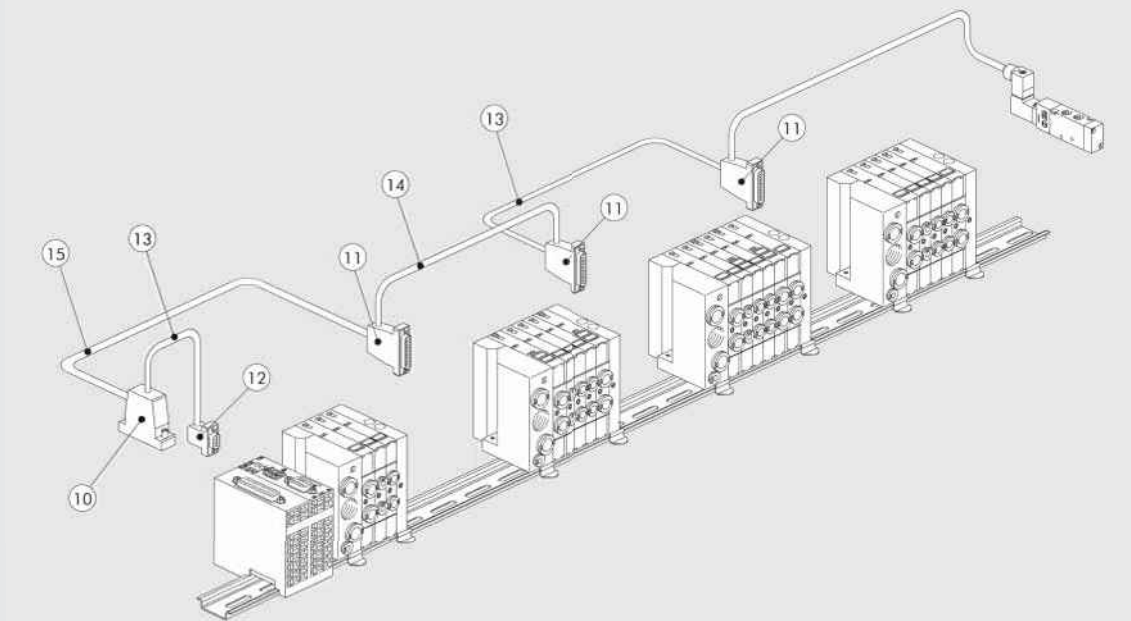


Code
0226940000

Description
Slave/Multimach connection kit

NOTES

CONNECTING ONE SLAVE WITH SEVERAL VALVE UNITS

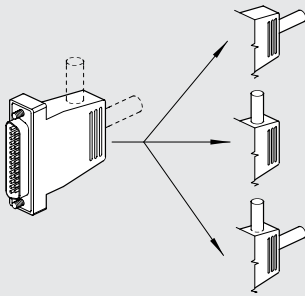


In order to make the best use of the available slave outputs, they can be distributed over several valve units using double-output connectors. The above drawing refers to one possible configuration, but the user can combine cables and connectors as required.

The connector ⑩ mounted on the slave is used to distribute the outputs on two cables.

A cable for a certain number of outputs goes to connectors ⑪ and ⑫. Some wires are soldered to the connector pins and the unused ones can be soldered to the wires of another cable from the second output carrying signals to the next unit.

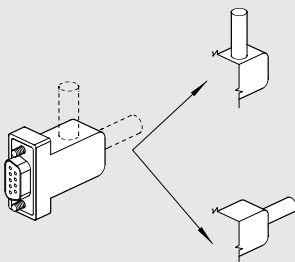
⑩ 25-PIN PLUG CONNECTOR KIT, DOUBLE OUTPUT FOR SLAVE



Code	Description
0226180105	25-pin plug connector for slave

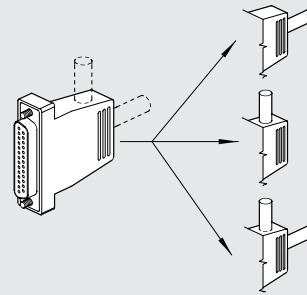
Complete with 2 cable clamps for wiring 2 cables

⑫ 9-PIN PLUG CONNECTOR, STRAIGHT OR 90° OUTPUT FOR MULTIMACH



Code	Description
0226180102	9-pin plug connector

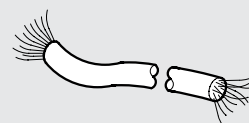
⑪ 25-PIN PLUG CONNECTOR KIT, DOUBLE OUTPUT FOR MULTIMACH AND PLT-10



Code	Description
0226180106	25-wire connector – double output kit

Complete with 2 cable clamps for wiring 2 cables

⑬ ⑭ ⑮ CABLES



Code	Description
0226107201	10-wire cable
0226107101	19-wire cable
0226107102	25-wire cable

Indicate the desired length in metres

INPUT/OUTPUT PROFIBUS-DP IP 67 M12



The Profibus DP IP 67 is a robust metallic slave that can be connected flexibly using M12 connectors to outputs and solenoid valves and/or inputs.

Each connector can be used freely for:

- 1 Output + 1 diagnostic Input
- 2 Outputs
- 1 Output + 1 Input
- 2 Inputs
- 1 Input + 1 diagnostic Input

Each slave can handle a total of 16 signals, each according to one of the above combinations.

Diagnostics provides information on the type and location of the error of each channel with:

- de-activation of the coupling point "involved" and not the complete module;
- signal to the controller;
- display with local LEDs.

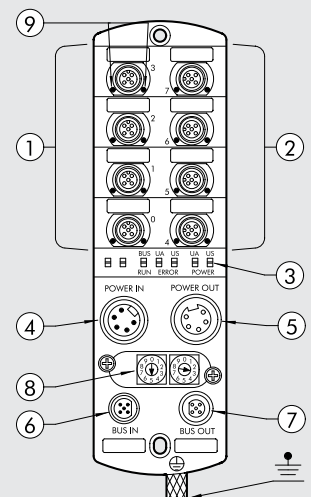
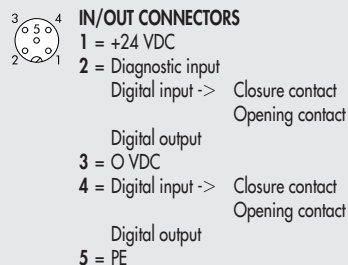
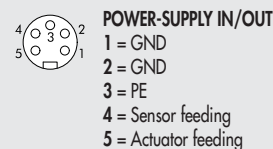
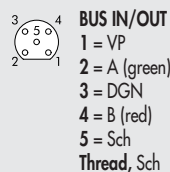
One single slave or an island of solenoid valves complete with slave and connectors can be ordered. The catalogue shows the 1/8" and 1/4" valve islands in the 70 series and the ISO5599 valve islands, size 1 and size 2.



TECHNICAL DATA	
Application	8 inputs or outputs + 8 inputs or outputs or diagnostic
Supply voltage	24 VDC (18V.....30,2V), according to EN 61131-2
Degree of protection	IP67
Temperature	0 to 55°C (32 to 131° F)
Field Bus Data	Transmission protocol Profibus-DP EN 50170
	Transmission mode synchronous or Freeze-Mode
	Transmission speed 12MBit/s
	Addresses rotating switches BCD, 0.....99
Inputs Output Technical Data	Type pnp proximity sensors or EN 61131-2 compatible mechanical limit switch
	Supply 24 VDC (18-30.2V) to EN 61131-2; ≥ 200 mA for M12 coupling point.
	Indicator One LED for each
Output Technical Data	Voltage 24 VDC (18-30.2V) output, to EN 61131-2; cumulative I ≥ 9A
	Maximum current for each actuator 1.6 A, system protected by fuse in case of short-circuit
	Maximum current contemporary 10W
	Maximum signal exchange frequency 20 Hz Ohm, 20 Hz induction
	Indicator LED One LED for each output
Autotest	Field bus RUN-LED
	Insufficient voltage signal LED + alarm signal to master
	Short-circuit sensor INPUT or OUTPUTS Red LED for channel on M12 coupling point
Autotest	Desina® (pin 2) PIN 2 diagnostic with red LED for M12 coupling point and signal to master
N.B.: for the disposition of the contact, please look at the connectors at the following pages	

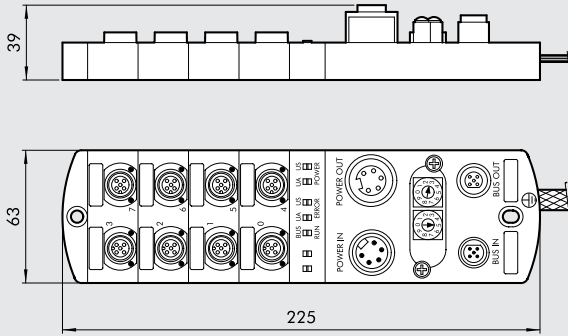
COMPONENTS

- ① ② IN-OUT diagnostic connectors
- ③ Led Power, Error, Run
- ④ IN feeding connector
- ⑤ OUT feeding connector
- ⑥ IN BUS connector
- ⑦ OUT BUS connector
- ⑧ Rotating switches for addressing
- ⑨ Diagnostic LED for single channel

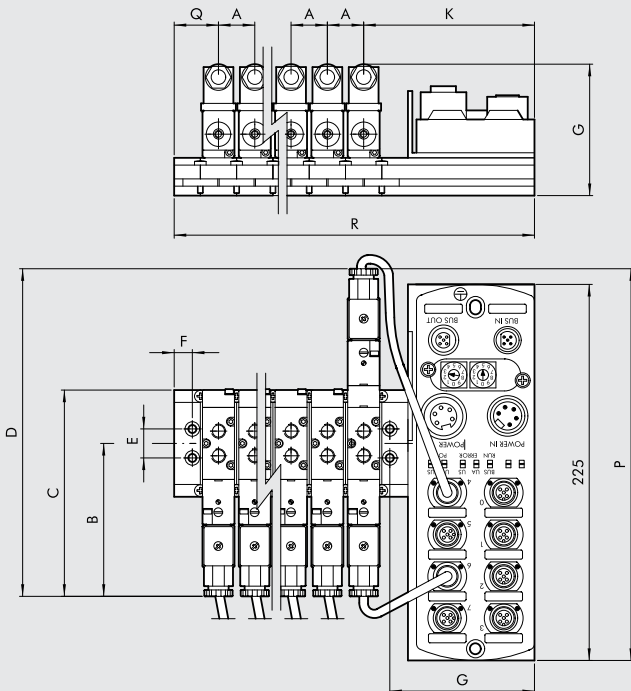


SLAVE IP67

Code 0240008001 **Description** 8 I/O + 8 I/O/autotest Profibus



IP67 SLAVE, COMPLETE WITH SERIES 70 VALVES



A	B	C	D	E	F	G	K	P	Q	R
1/8" Manifold										
25	105	142	225	20	12.5	85.8	103.5	230	305	Q + K + (A x *n ² -1)
1/8" Multiple										
25	105	142	225	20	7	98	115	230	24	Q + K + (A x *n ² -1)
1/4" Manifold										
27	112	156	239	25	10	85.5	104.5	237	31.5	Q + K + (A x *n ² -1)
1/4" Multiple										
27	112	156	239	25	7	98	118	237	27	Q + K + (A x *n ² -1)

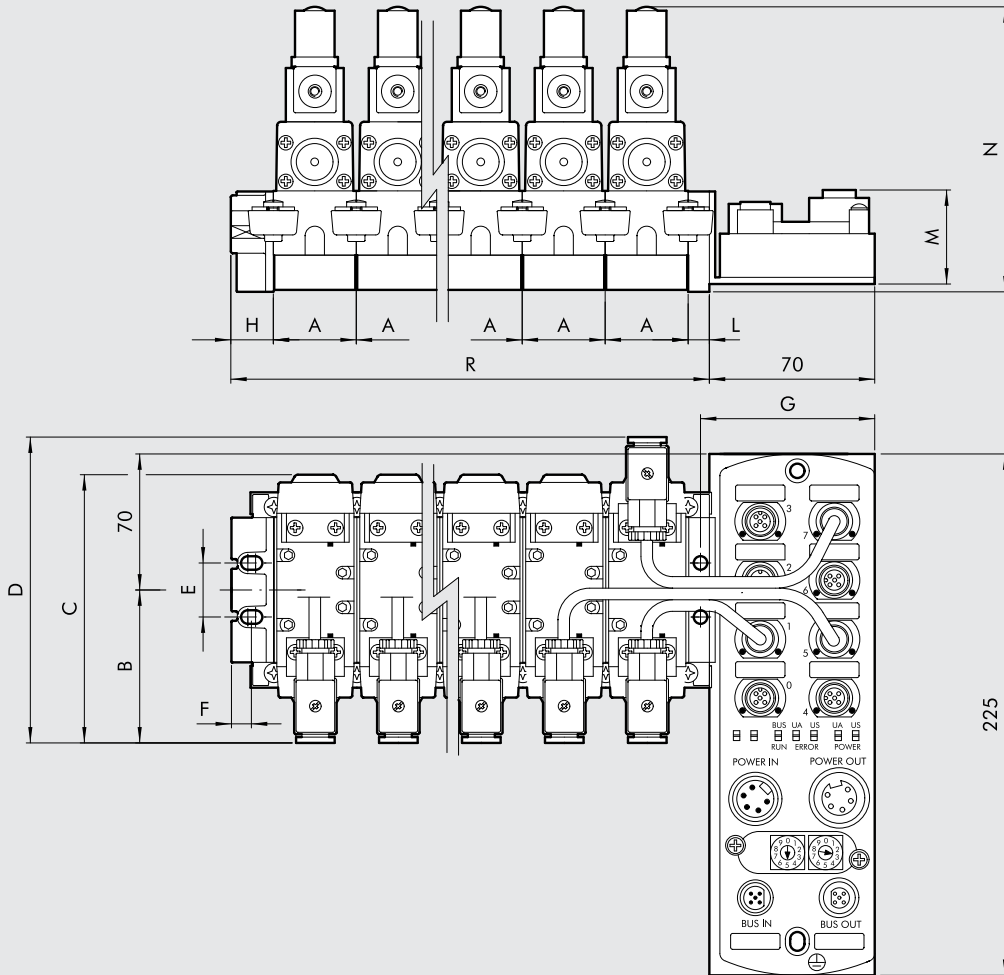
*n = number of mounted valves

N.B.: the unit is supplied complete with cables for valves

KEY TO CODES

B U S	P	V	B	O	0 2	D D
	P Profibus	V IP67	B 70 1/8" C 70 1/4"	O Multiple base	02 2 positions 04 4 positions 06 6 positions 08 8 positions 10 10 positions 12 12 positions 14 14 positions 16 16 positions	D SOV 23 SOS NO - SOV 33 SOS NO H SOV 23 SOS NC - SOV 33 SOS NC Z SOV 23 SOB 00 - SOV 33 SOB 00 M SOV 25 SOS 0 - SOV 35 SOS 00 J SOV 25 SOB 00 - SOV 35 SOB 00 G SOV 26 SOS CC - SOV 36 SOS CC E SOV 26 SOS OC - SOV 36 SOS OC B SOV 26 SOS PC - SOV 36 SOS PC A Blanking plate

IP67 SLAVE, COMPLETE WITH ISO VALVES



	A	B	C	D	E	F	G	H	L	M	N	P	R
ISO1	43	80	140	158	28	10.5	76.4	22	11	47	150	230	H + L + (A x *n°)
ISO2	56	90	165	180	35	12.5	77.5	26	14	61	178	240	H + L + (A x *n°)

*n = number of mounted valves

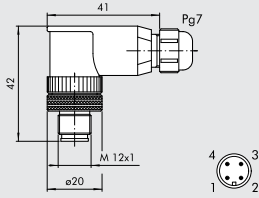
N.B.: the unit is supplied complete with cables for valves

KEY TO CODES

B U S	P	V	D	I	0 2	M M
	P Profibus	V IP67	D ISO1 E ISO2	I Manifold base side	02 2 positions 04 4 positions 06 6 positions 08 8 positions 10 10 positions 12 12 positions 14 14 positions 16 16 positions	M ISV 55 SOS 00 - ISV 65 SOS 00 J ISV 55 SOB 00 - ISV 65 SOB 00 G ISV 56 SOS CC - ISV 66 SOS CC E ISV 56 SOS OC - ISV 66 SOS OC B ISV 56 SOS PC - ISV 66 SOS PC A Blanking plate

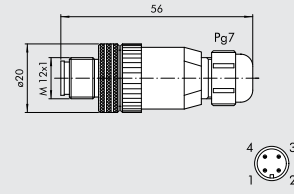
ACCESSORIES

90° ELBOW WITHOUT CABLE



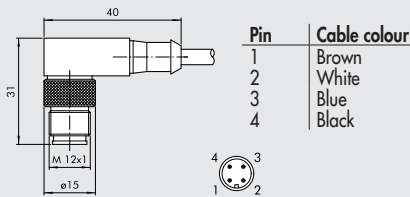
Code	Description
0240009001	90° Elbow without cable

STRAIGHT FITTING WITHOUT CABLE



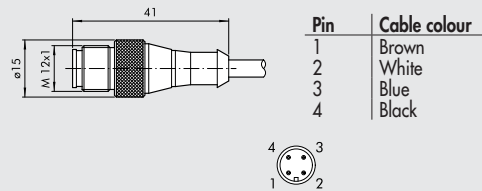
Code	Description
0240009021	Straight fitting without cable

90° ELBOW WITH CABLE



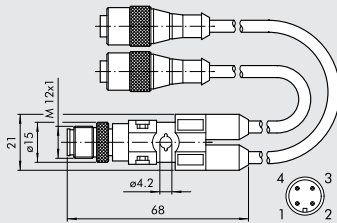
Code	Description
0240009022	90° curve with cable 1.5 m
0240009023	90° curve with cable 5 m

STRAIGHT FITTING WITH CABLE



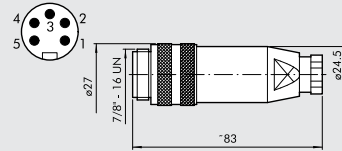
Code	Description
0240009002	Straight, with 1.5 m cable
0240009003	Straight, with 5 m cable

Y-DISTRIBUTOR WITH CABLE AND M12 STRAIGHT CONNECTORS



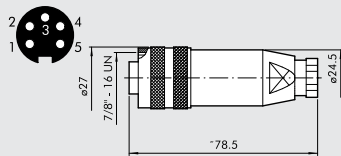
Code	Description
0240009031	Y-Distributor cable 0.6 m
0240009032	Y-Distributor cable 1.5 m

MALE CONNECTOR FOR FEEDING "IN"



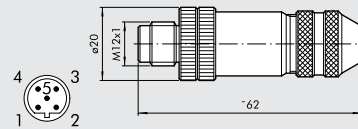
Code	Description
0240009033	Male connector "IN" feeding

FEMALE CONNECTOR FOR FEEDING "OUT"



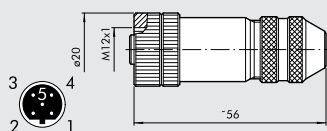
Code	Description
0240009034	Female connector "OUT" feeding

M12 MALE CONNECTOR OUT-BUS



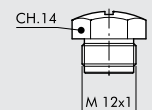
Code	Description
0240009035	M12 male connector B coding

M12 FEMALE CONNECTOR IN-BUS



Code	Description
0240009036	M12 female connector B coding

PLUG M12



Code	Description
0240009040	M12 plug

INPUT PROFIBUS-DP IP67 M8



The Profibus DP "COMPACT" input module is a sturdy and compact IP67 slave that can be used for connecting up to 8 inputs. A series of diagnostic functions provides information on the state of operation through lights and signals to the controller.



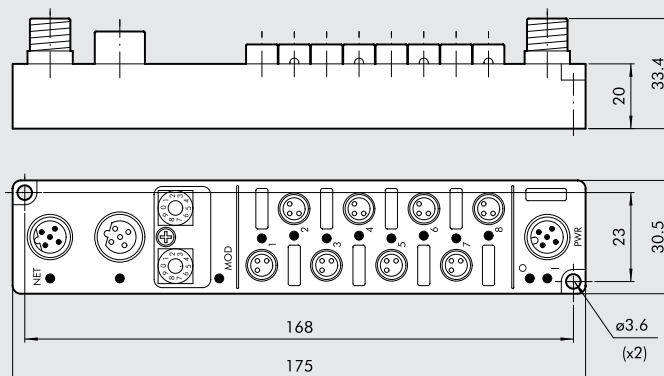
DISTRIBUTORS

INPUT PROFIBUS-DP IP67 M8

TECHNICAL DATA	
Application	8 PNP inputs
Power supply	24 VDC (13-28 V)
Index of protection	IP67
Temperature range	-20 to +70°C RH 5-95% - no condensate
Field Bus technical data	Transmission protocol
	Transmission mode
	Transfer rate
	Addresses
Input technical data	Type
	Power supply
	Signal
	Input 0 signal voltage
	Input 1 signal voltage
Diagnosis	Field bus
	INPUT short-circuit sensor
	DP-VO Profibus to EN 50170
	Synchronous or Freeze-Mode
	Up to 12 MBit/s
	Rotary switches, 1...99
	PNP proximity sensors or IEE 1131-2 compact mechanical stop
	24 VDC (18 to 28 V)
	One green LED for each input
	2...5 V
	10...30 V
	"NET" LED+alarm signal to master
	Red LED for each channel at M8 connection point M8 (600 mA)

SLAVE IP67

Code	Description
0240008002	IP67 M8 PROFIBUS INPUT



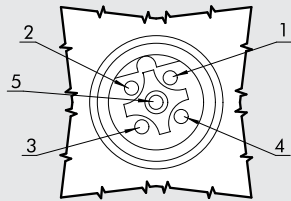
PIN ASSIGNMENT

PROFIBUS CONNECTORS

BUS OUT

M12 female connector
B coding for profibus

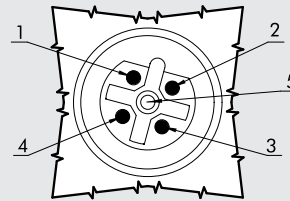
- 1 - 5 VDC power
- 2 - Bus A
- 3 - GND
- 4 - Bus B
- 5 - Screen



BUS IN

M12 male connector
B coding for profibus

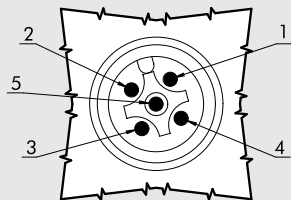
- 1 - 5 VDC power
- 2 - Bus A
- 3 - GND
- 4 - Bus B
- 5 - Screen



POWER CONNECTOR

M12 male connector
A coding

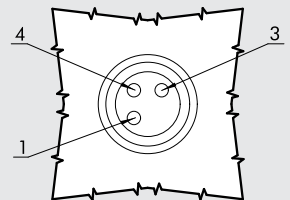
- 1 - Power supply module and input
- 2 - NC
- 3 - GND
- 4 - GND
- 5 - INPUT



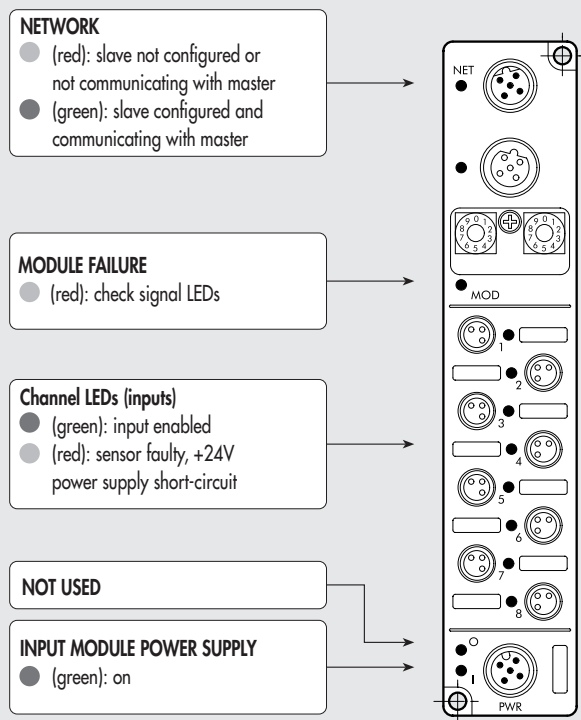
INPUT CONNECTORS

M8 three-pole female connector
A coding

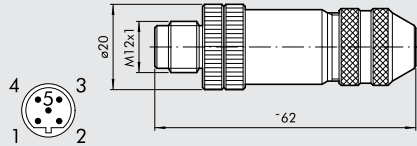
- 1 - 24VDC
- 3 - GND
- 4 - INPUT



LED ASSIGNMENT

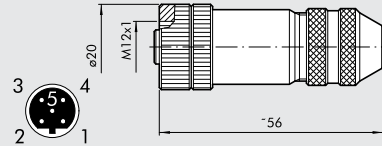


M12 BUS-OUT MALE CONNECTOR



Code	Description
0240009035	M12 male connector, B coding

M12 BUS-IN FEMALE CONNECTOR



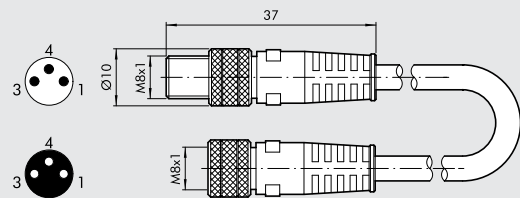
Code	Description
0240009036	M12 female connector, B coding

M8-M12 PLUG



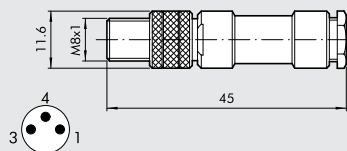
Code	Description
0240009039	M8 plug
0240009040	M12 plug

M8 INPUT CONNECTOR WITH CABLE



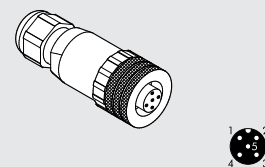
Code	Description
0240009009	M8-M8 straight connector with 3 m cable

M8 INPUT CONNECTOR



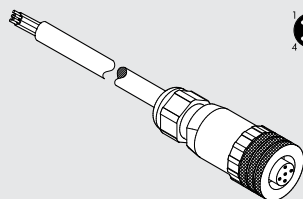
Code	Description
0240009010	M8 3-pin straight connector

M12 STRAIGHT SUPPLY CONNECTOR



Code	Description
W0970513001	5-pin M12x1 straight connector

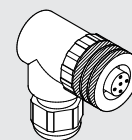
M12 STRAIGHT SUPPLY CONNECTOR WITH CABLE



Pin	Cable colour
1	Brown
2	White
3	Blue
4	Black
5	Grey

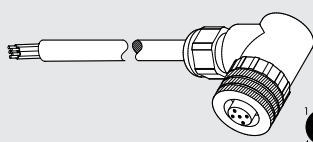
Code	Description
W0970513002	5-pin M12x1 straight connector with 5 m cable

M12 90° SUPPLY CONNECTOR



Code	Description
W0970513003	M12x1 5-pin 90° connector

M12 90° SUPPLY CONNECTOR WITH CABLE



Pin	Cable colour
1	Brown
2	White
3	Blue
4	Black
5	Grey












Code	Description
W0970513004	M12x1 5-pin 90° connector with 5m cable

NOTE



UNITS

● SYNTESI	PAGE	3-2
● BIT	PAGE	3-49
● SKILLAIR	PAGE	3-74
● NEW DEAL	PAGE	3-144
● ONE	PAGE	3-191
● PRECISION REGULATORS, PROPORTIONAL VALVES, PRESSURE SWITCHES	PAGE	3-205

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	● KEY TO CODES	PAGE 3-7
	● FILTER	PAGE 3-8
	● DEPURATOR	PAGE 3-11
	● ACTIVE CARBON FILTER	PAGE 3-14
	● REGULATOR	PAGE 3-17
	● IN-SERIES REGULATOR	PAGE 3-20
	● FILTER-REGULATOR	PAGE 3-23
	● LUBRICATOR	PAGE 3-27
	● SHUT-OFF VALVE	PAGE 3-30
	● PROGRESSIVE STARTER	PAGE 3-33
	● PRESSURE SWITCHES	PAGE 3-35
	● AIR TAKE-OFF	PAGE 3-37



● **FR+LUB**

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● **V3V+FR+LUB**

PAGE 3-40



● **FIL+DEP**

PAGE 3-42



● **FIL+LUB**

PAGE 3-44

● **ACCESSORIES**

PAGE 3-46

● **SPARE PARTS**

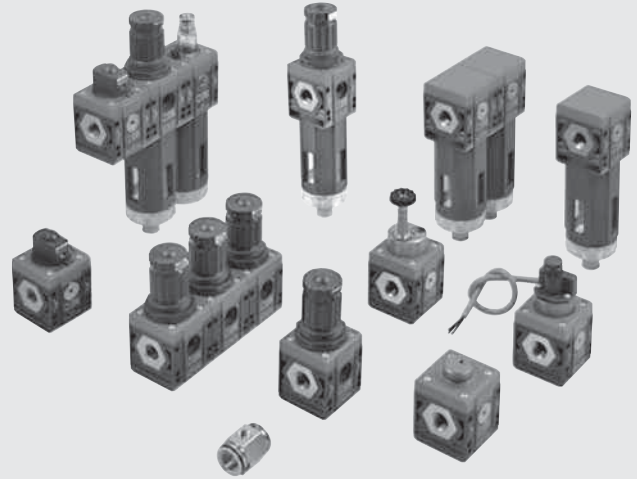
PAGE 3-47

AIR TREATMENT UNIT **SYNTESI**®

Syntesi® is an important milestone achieved by Metal Work, the result of thirty years' experience producing air-treatment units. It has been studied in minute detail to obtain the best possible performance in a reduced space and with limited weight. The capacity is much higher than that of other units of the same size.

This modular unit features a very simple yet effective system that requires no brackets, stay bolts or yoke for assembling the elements.

The basic version of Syntesi® incorporates numerous functions that are not provided or are only optional with traditional units. Examples are padlockable knobs, additional pneumatic ports on the front and back, flow options from left to right or vice versa, regulators with compensation system - which are accurate even when the upstream pressure changes, with rapid downstream pressure relief - full indelible marking, automatic condensate drain even in size 1, and 360° visual inspection of oil and condensate levels.

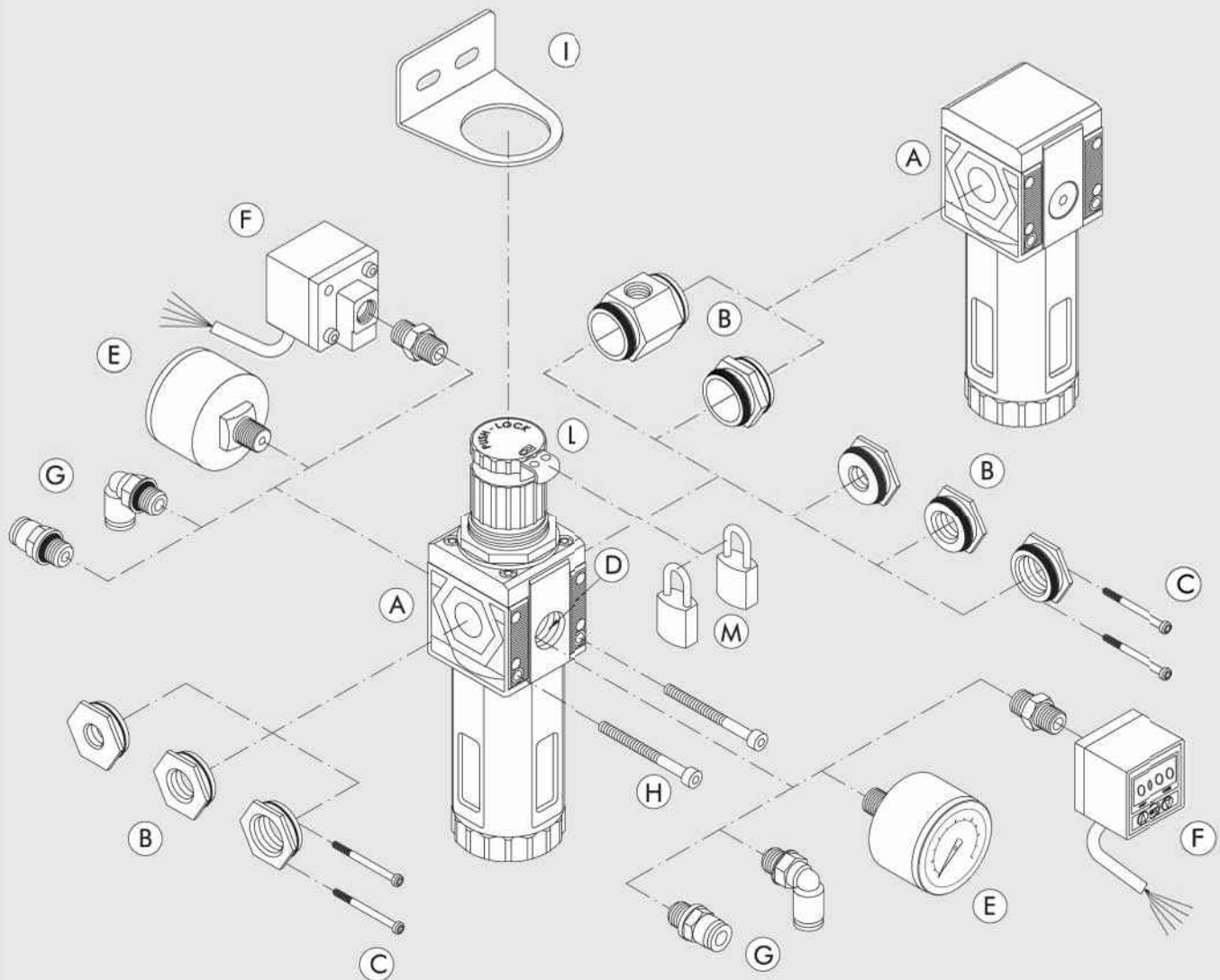


TECHNICAL DATA

	1/8"	1/4"	3/8"
Threaded port	1/8"	1/4"	3/8"
Max. input pressure		15	
		bar	
		MPa	
		1.5	
		psi	
		217	
Flow rate	See catalogue of the various elements		
Min/max temperature at 10 bar; 1 MPa; 145 psi	from -20 to +50		
Padlockable knob	The knobs of the regulators, filter regulators and standard sectioning valves can all be padlocked		
Fluid	Compressed air or other inert gases		
Mounting position	See catalogue of the various elements		
Direction of flow	Flow options right to left or vice versa		
Additional air take-off, for pressure gauges or fittings	1/8", front and rear, on all modules		
Wall fixing screws	No. 2 M4 screws		
Certification for potentially explosive atmosphere according to 94/9/CE	Ex II 2 GD c T5 T 100°C -20°C<Ta<50°C		

NOTE

MODULARITY AND FLEXIBILITY



The various elements **A** of Syntesi® can be fixed together and connected to the air feed and delivery circuit using nickel brass bushes **B**. The bushes are easy to remove by unscrewing the two front screws **C**. This solution has numerous advantages:

- Reduced overall dimensions.
- Free composition of multiple elements, without the need for brackets, stay bolts or yoke.
- The metal threads of the fittings, including taper thread, allow high torques.
- Maximum flexibility, a unit can be transformed at any time by adding an element or replacing a port with another one, e.g. 1/4" instead of 1/8".
- The pneumatic inlet port can be the same or different from the outlet port.

Standard ports for size 1 Syntesi® are: G 1/8", G 1/4", G 3/8", intermediate, air take-off.

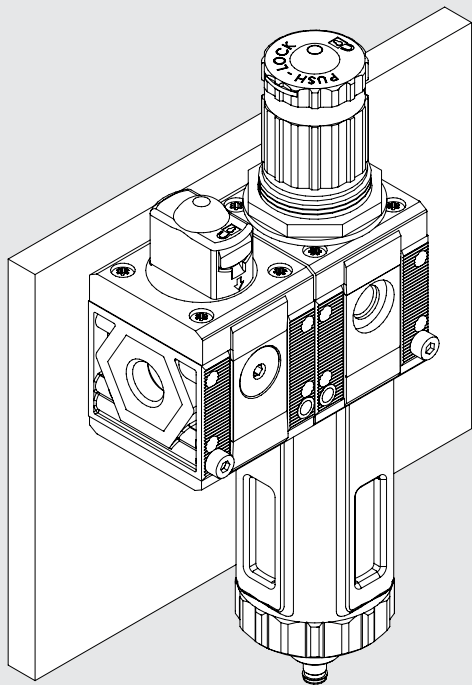
Additional ports **D**. On the front and back of all Syntesi® is a 1/8" port for use with pressure gauges **E** or pressure switches **F** or, considering the high flow rate, as additional air take-off **C**. These ports are downstream of the element, so, for example, a regulator port can supply air at a set pressure or a filter port can supply filtered air (not valid for activated carbon filter and depurator).

Wall fixing. Only two through screws **H** are needed. No bulky brackets or additional flanges are required.

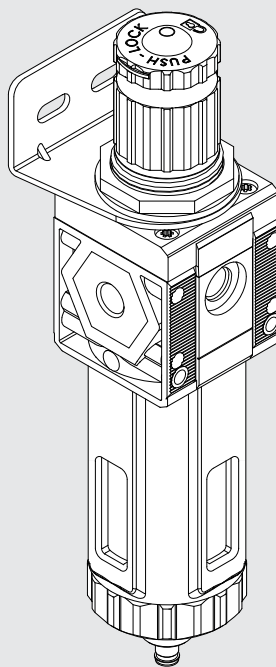
Regulator fixing bracket. The regulators and filter regulators can be fixed in position using a steel bracket **I**.

Padlockable knob **L**. The knobs on the regulators, filter regulator and sectioning valves can all be padlocked. The steel plate is included in the supply. Either one or two padlocks **M** can be applied.

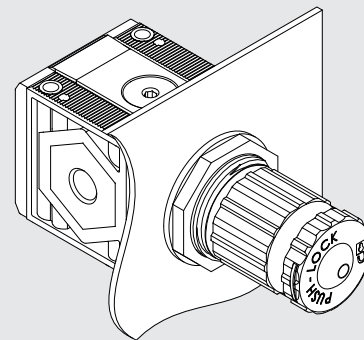
MOUNTING OPTIONS



On the wall, using two screws

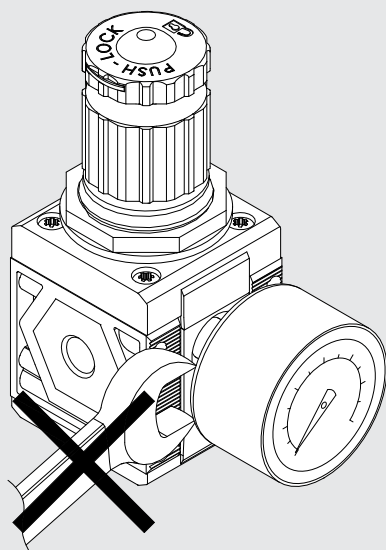


Using a bracket



On a panel

FIXING TO FRONT PORTS



Do not use a spanner for fixing taper threaded elements to the front ports. Mount by hand and apply a liquid sealant (not teflon®).

LASER MARKING



FR 0-12bar 20µm 0: - -
 1: 1/8
561_B26 2: 1/4
 3: 3/8
 Pmax 15 bar T°max 50°C

Made in Italy

19 11
 Ex II 2 GD c T5

The following is marked indelibly on the body:

- Metal Work trademark
- Code
- Maximum pressure and temperature
- Degree of filtration or pressure range, where relevant
- Week and year of manufacture
- Atex category
- Made in Italy

KEY TO CODES SINGLE ELEMENT

56	1	1	F	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	TYPE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port	F Filter D Depurator C Active carbon filter R Pressure regulator B Filter-regulator L Lubricator V Shut off valve A Progressive starter S Pressure switches P Air take-off	Varies from element to element	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port

KEY TO CODES UNIT COMPOSED OF TWO OR THREE ELEMENTS

56	1	1	V	10	B	24	L	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT 1	TYPE	ELEMENT 2	TYPE	ELEMENT 3	TYPE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	1 1/8" port 2 1/4" port 3 3/8" port	F Filter D Depurator C Active carbon filter R Pressure regulator B Filter-regulator L Lubricator V Shut off valve A Progressive starter S Pressure switches P Air Take-off	Varies from element to element	F Filter D Depurator C Active carbon filter R Pressure regulator B Filter-regulator L Lubricator V Shut off valve A Progressive starter S Pressure switches P Air Take-off	Varies from element to element	F Filter D Depurator C Active carbon filter R Pressure regulator B Filter-regulator L Lubricator V Shut off valve A Progressive starter S Pressure switches P Air Take-off	Varies from element to element	1 1/8" port 2 1/4" port 3 3/8" port

SYNTESI® FILTER

The job of the filter is to retain liquid or solid impurities present in the compressed air.

The incoming air is moved by the centrifuge unit, so that liquid particles, which are heavier, are projected against the walls of the container and force to adhere to it. As they accumulate, they create drops that deposit on the bottom by gravity.

The remaining solid particles are held back by the porous filtering element. The condensate is maintained in a quiet state to prevent the deposited impurities from re-entering the circulation. The condensate drains out through the drain cock provided.

The RMSA drain discharges when the pressure in the filter drops to zero. Alternatively the condensate can be drained by hand by pressing the button.

The RA drain discharges condensate from the container automatically whenever necessary, regardless of the pressure level.

On the front and the back is a 1/8" port for use with pressure gauges or pressure switches or, considering the high flow rate, as additional filtered air take-off.

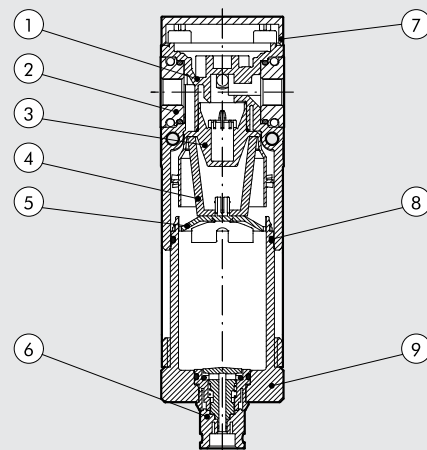


TECHNICAL DATA

	1/8"	1/4"	3/8"	
Threaded port	1/8"	1/4"	3/8"	
Degree of filtration	μm	5 (yellow) - output air purity class ISO8573-1: 3.7.4 20 (black) - output air purity class ISO8573-1: 4.7.4 50 (blue) - output air purity class ISO8573-1: 5.7.4		
Max. input pressure	bar	15		
	MPa	1.5		
	psi	217		
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)	Nl/min	900	1200	1300
	scfm	32	42	46
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	1300	1650	1750
	scfm	46	58	62
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	From -20 to +50		
Weight	g	178	173	164
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure RA: automatic drain with condensate discharge, independent of pressure and flow rate Note: the maximum input pressure for the RA version must not exceed 10 bar		
Fluid		Compressed air or other inert gases		
Condensate cup capacity	cm ³	30		
Mounting position		Vertical		
Port for additional air take-off		1/8", front and rear		
Additional air take-off flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	500		
	scfm	18		
Wall fixing screws		No. 2 M4 screws		

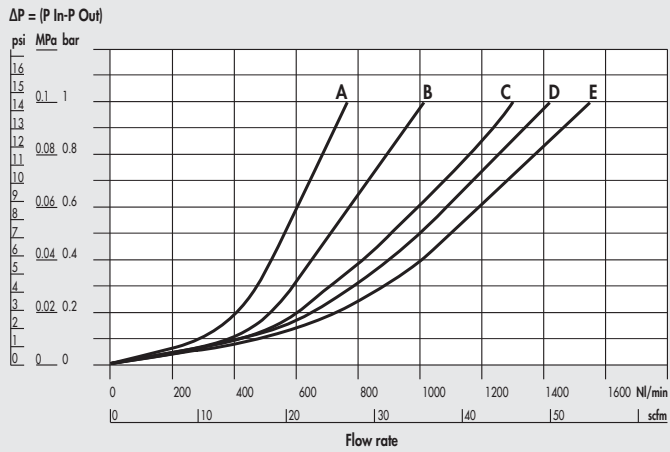
COMPONENTS

- ① Technopolymer filter body
- ② OT58 brass IN/OUT bushing
- ③ Technopolymer centrifuge
- ④ Sintered HDPE filter cartridge
- ⑤ Technopolymer screen
- ⑥ Drain (RMSA)
- ⑦ Technopolymer plate
- ⑧ NBR o-ring gaskets
- ⑨ Clear technopolymer cup

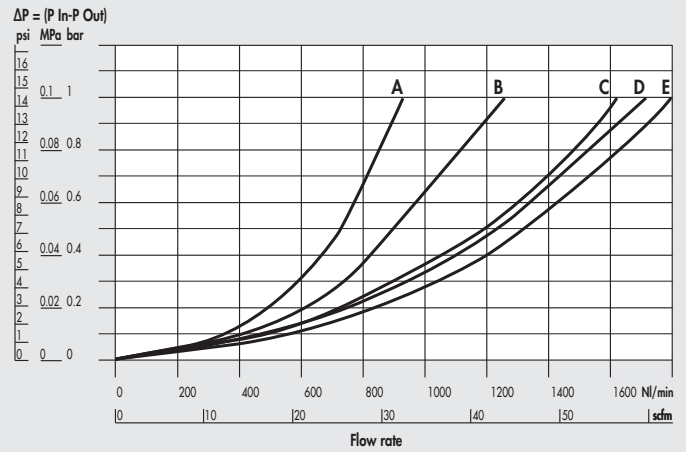


FLOW CHARTS

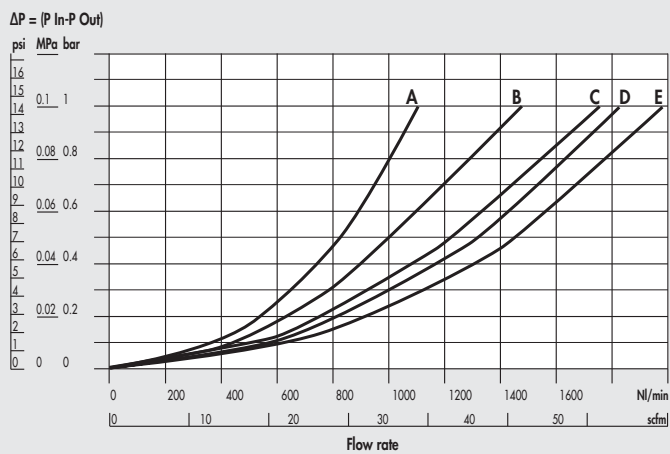
FIL Syntesi® 1/8"



FIL Syntesi® 1/4"

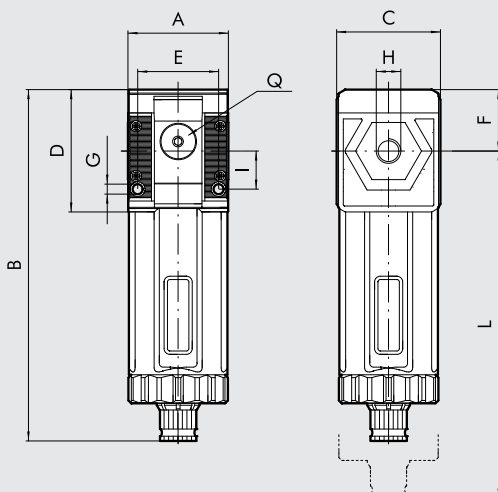


FIL Syntesi® 3/8"



- A = 2.5 bar - 0.25 MPa - 36 psi
- B = 4 bar - 0.4 MPa - 58 psi
- C = 6.3 bar - 0.63 MPa - 91 psi
- D = 8 bar - 0.8 MPa - 116 psi
- E = 10 bar - 1 MPa - 145 psi

DIMENSIONS



H (threaded port)	1/8"	1/4"	3/8"
A	42	42	44
B	RMSA	148	
	RA	152	
C		44	
D		51.5	
E		33.5	
F		25.8	
G		Hole for M4 screws	
I		16	
L	RMSA	202	
	RA	206	
Q (no. 2 additional air takes-off)		1/8"	

KEY TO CODES

56	1	1	F	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	DEGREE OF FILTRATION AND TYPE OF CONDENSATE DRAIN	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port	F Filter	10 5 µm RMSA 20 20 µm RMSA 30 50 µm RMSA 40 5 µm RA 50 20 µm RA 60 50 µm RA	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.
 RA: automatic drain with condensate discharge, independent of pressure and flow rate.

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description			
5610F100	FIL SY 5 RMSA without bushings			
5610F200	FIL SY 20 RMSA without bushings			
5610F400	FIL SY 5 RA without bushings			
5610F500	FIL SY 20 RA without bushings			
5611F101	FIL SY 1/8 5 RMSA			
5611F201	FIL SY 1/8 20 RMSA			
5611F401	FIL SY 1/8 5 RA			
5611F501	FIL SY 1/8 20 RA			
5612F102	FIL SY 1/4 5 RMSA			
5612F202	FIL SY 1/4 20 RMSA			
5612F402	FIL SY 1/4 5 RA			
5612F502	FIL SY 1/4 20 RA			
5613F103	FIL SY 3/8 5 RMSA			
5613F203	FIL SY 3/8 20 RMSA			
5613F403	FIL SY 3/8 5 RA			
5613F503	FIL SY 3/8 20 RA			

NOTES

The job of the filter purifier is to separate liquid and solid particles dispersed in the compressed air with a high degree of efficiency. This separation is achieved by means of a special filtering element called a "coalescence cartridge".

It is particularly indicated for eliminating traces of oil present in the compressed air. The air flow rate must remain below the maximum values to achieve the desired degree of purification. Beyond this value, there may be a decline in the quality of air from the purifier.

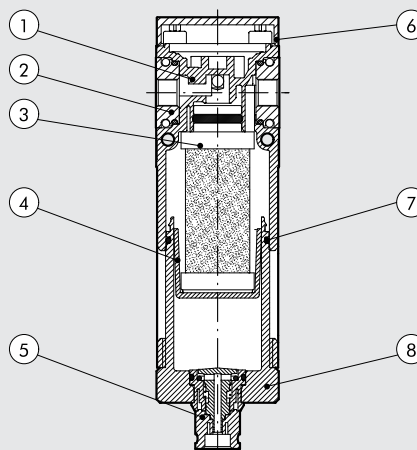
There are two 1/8" ports, one on the front and one on the back, for use with pressure gauges or pressure switches or, considering the high flow rate, as additional air take-off. **The air taken from here is not purified.**



TECHNICAL DATA		1/8"	1/4"	3/8"
Threaded port		1/8"	1/4"	3/8"
Degree of filtration	µm	0.01 - output air purity class ISO8573-1: 1.7.2		
Max. input pressure	bar	15		
	MPa	1.5		
Suggested flow rate at 6.3 bar (0.63 MPa; 91 psi)	psi	217		
	Nl/min	550		
Maximun suggested flow rate	scfm	9		
		See graph on the next page		
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	N.B.: flow rates higher than the recommended value reduces purification efficiency		
Weight	g	From -20 to +50		
Condensate drain		194	189	180
	Fluid	RMSA: drain with manual condensate discharge and automatic discharge at zero pressure		
Cup capacity	cm ³	Compressed air or other inert gases		
Mounting position		15		
Port for additional air take-off (not purified air)		Vertical		
Additional air take-off flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	1/8", front and rear		
	scfm	500		
Wall fixing screws		18		
Notes on use		No. 2 M4 screws		
		It is advisable to mount a 5 µm filter upstream of the purifier to retain solid particles		

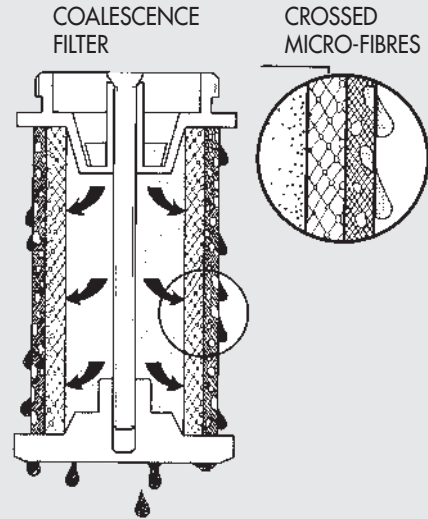
COMPONENTS

- ① Technopolymer depurator body
- ② OT58 brass IN/OUT bushing
- ③ Coalescence cartridge
- ④ Technopolymer cartridge support
- ⑤ Drain (RMSA)
- ⑥ Technolpolymer plate
- ⑦ NBR o-ring gaskets
- ⑧ Clear technopolymer cup



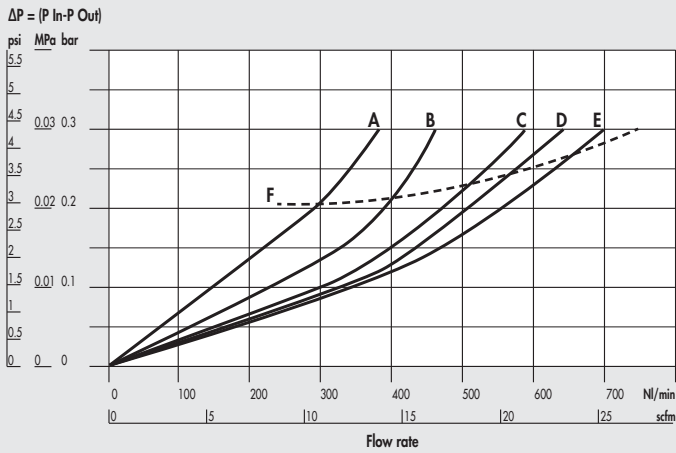
HOW THE COALESCENCE CARTRIDGE WORKS

Air from the mains – full of impurities – flows into the coalescence cartridge and then passes through the crossed micro-fibres that make up the cartridge. During this movement the liquid particles come into contact with the crossed micro-fibres and adhere to them. Due to the air pressure and gravity they join up with other micro-drops at each cross-over point and gradually increase in volume, leading to the physical phenomenon called coalescence. When they stop moving, the drops deposit on the outside of the cartridge, from which they detach and drop to the bottom. Since the volume of liquid leaving the cartridge is exactly the same as the drops arriving, the coalescence cartridge ought to work indefinitely. Solid particles are caught with the same efficiency but, unlike drops, they are not drained out and clog the cartridge. To get round this problem, it is necessary to mount a 5µm prefilter before the fine oil filter to separate the solid particles first.

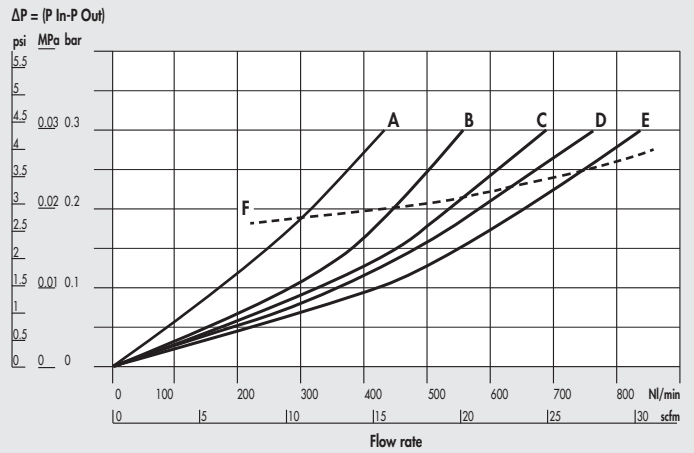


FLOW CHARTS

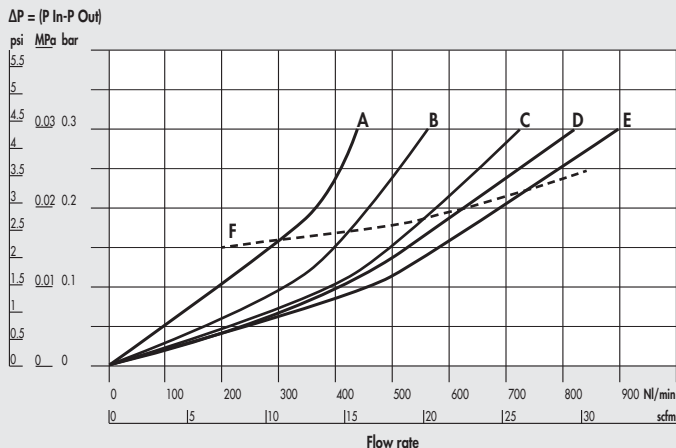
DEP Syntesi® 1/8"



DEP Syntesi® 1/4"

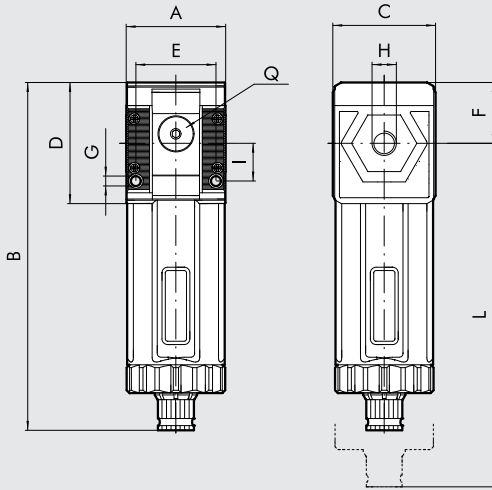


DEP Syntesi® 3/8"



- A = 2.5 bar - 0.25 MPa - 36 psi
- B = 4 bar - 0.4 MPa - 58 psi
- C = 6.3 bar - 0.63 MPa - 91 psi
- D = 8 bar - 0.8 MPa - 116 psi
- E = 10 bar - 1 MPa - 145 psi
- F = max suggested flow

DIMENSIONS



H (threaded port)	1/8"	1/4"	3/8"
A	42	42	44
B	RMSA	148	
	RA	152	
C		44	
D		51.5	
E		33.5	
F		25.8	
G		Hole for M4 screws	
I		16	
L	RMSA	202	
Q (no. 2 additional air takes-off)		1/8"	

KEY TO CODES

56	1	1	D	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	TYPE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port	D Depurator	10 RMSA	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description
5610D100	DEP SY RMSA without bushings
5611D101	DEP SY 1/8 RMSA
5612D102	DEP SY 1/4 RMSA
5613D103	DEP SY 3/8 RMSA

SYNTESI® ACTIVE CARBON FILTER

Activated-carbon filtering systems achieve the highest standard of purification possible in industrial applications. They eliminate all traces of oils, solvents and hydrocarbons, and remove unpleasant odours. The operating principle uses activated carbon, which absorbs most of the polluting particles in the air thanks to minute holes in the granules of carbon.

There are two 1/8" ports, one on the front and one on the back, for use with pressure gauges or pressure switches or, considering the high flow rate, as additional air take-off. **The air taken from here is not filtered by the activated-carbon cartridge.**

Cartridge life and efficiency can be increased by using pre-filtered (5µm) and purified (0.01µm) air.

The cartridge must be replaced at set intervals as there is no difference in load loss between an efficient cartridge and a saturated one.

N.B.: to ensure the performance and duration stated on the data sheet, the load loss (ΔP) must not exceed 75 mbar.



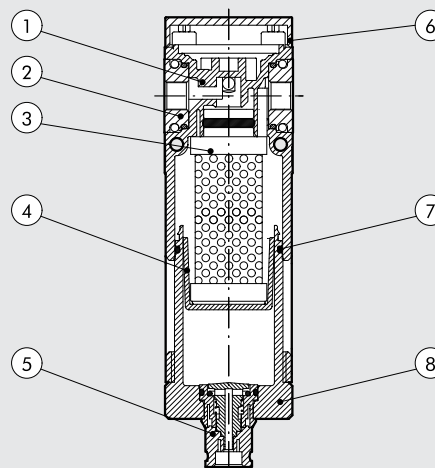
UNITS

Syntesi® ACTIVE CARBON FILTER

TECHNICAL DATA		1/8"	1/4"	3/8"
Threaded port				
Residual oil at 20°C *	mg/m ³	0.003 - output air purity class ISO8573-1: 1.7.1		
Duration of cartridge *	ore	4000		
Max. inlet pressure	bar	15		
	MPa	1.5		
	psi	217		
Suggested flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	350		
	scfm	12		
N.B.: flow rates higher than the recommended value reduces purification efficiency				
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	From -20 to +50		
Weight	g	195	190	181
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure		
Fluid		0.01 µm filtered and deperated air		
Mounting position		In any position		
Additional air take-off port (unfiltered air from cartridge CA)		1/8", front and rear		
Additional air take-off flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	500		
	scfm	18		
Wall fixing screws		No. 2 M4 screws		
Notes on use		Upstream it's necessary to mount a coalescence filter deperator of 0.01 µm.		
* if the load loss of 75 mbar is not exceeded				

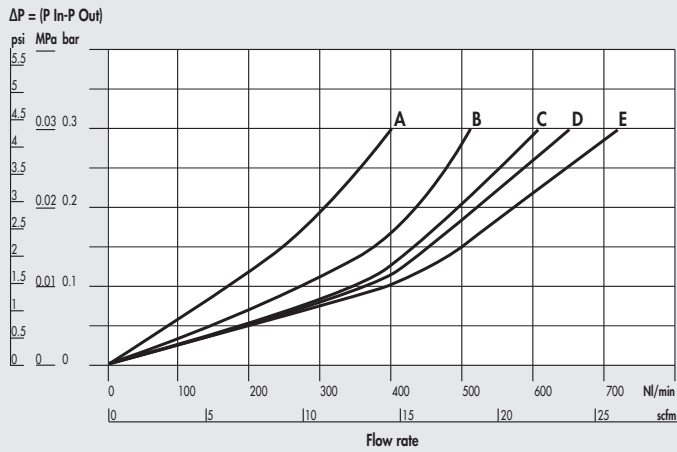
COMPONENTS

- ① Technopolymer deperator body
- ② OT58 brass IN/OUT bushing
- ③ Active carbon cartridge
- ④ Technopolymer cartridge support
- ⑤ Drain (RMSA)
- ⑥ Technopolymer plate
- ⑦ NBR o-ring gasket
- ⑧ Clear technopolymer cup

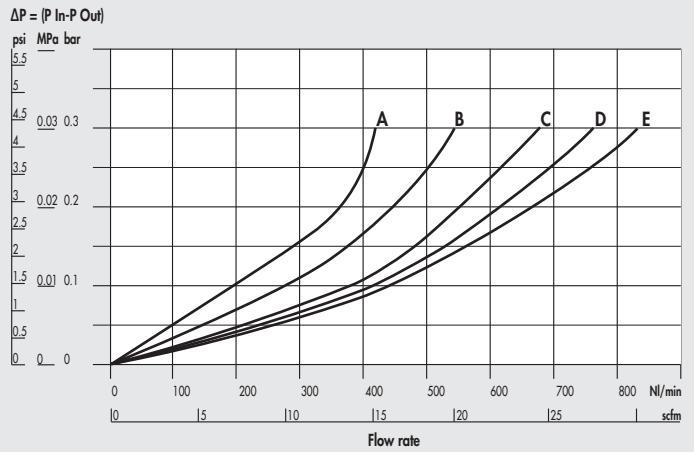


FLOW CHARTS

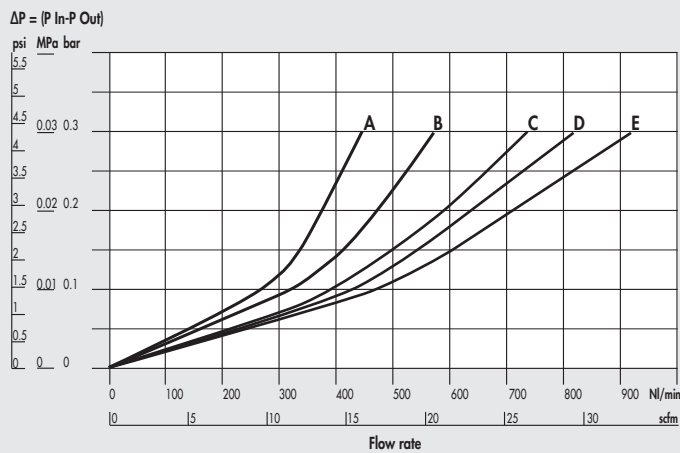
FIL CA Syntesi® 1/8"



FIL CA Syntesi® 1/4"

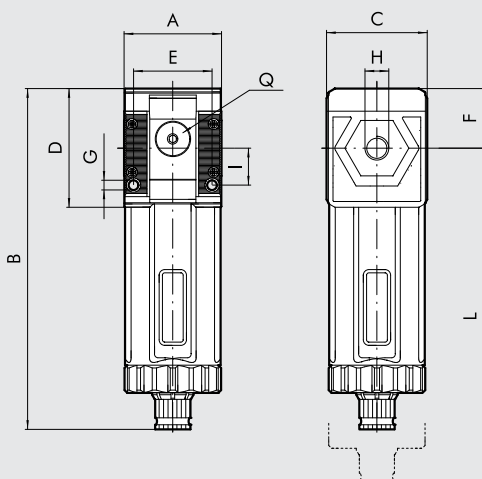


FIL CA Syntesi® 3/8"



- A = 2.5 bar - 0.25 MPa - 36 psi
- B = 4 bar - 0.4 MPa - 58 psi
- C = 6.3 bar - 0.63 MPa - 91 psi
- D = 8 bar - 0.8 MPa - 116 psi
- E = 10 bar - 1 MPa - 145 psi

DIMENSIONS



H (threaded port)	1/8"	1/4"	3/8"
A	42	42	44
B	RMSA	148	
C		44	
D		51.5	
E		33.5	
F		25.8	
G		Hole for M4 screws	
I		16	
L	RMSA	202	
Q (no. 2 additional air takes-off)		1/8"	

KEY TO CODES

56 SYNTESI	1 SIZE	1 THREADED INPUT CONNECTION	C ELEMENT	10 TYPE	1 THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port	C Active carbon filter	10 RMSA	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description
5610C100	AC SY RMSA without bushings
5611C101	AC SY 1/8 RMSA
5612C102	AC SY 1/4 RMSA
5613C103	AC SY 3/8 RMSA

NOTES

Syntesi® pressure regulator is based on the rolling diaphragm principle, which offers numerous advantages compared to systems using a flat diaphragm:

- Increased stroke, allowing wider valve aperture and hence greater flow rate.
- Decreased dynamic and pick-up friction, and hence quicker response and enhanced sensitivity.
- Greater accuracy in maintaining the pressure setting, both with both variable flow rates and different supply pressures.

The regulator includes a compensation system that keeps the pressure setting virtually constant, even when the upstream pressure changes. This is achieved mainly by the design of the valve, which is pneumatically balanced.

If the downstream pressure rises above the threshold value, the air is discharged (relief valve) until it drops below the maximum value.

A special device relieves downstream pressure rapidly when the upstream pressure drops to zero. This means the regulator can be positioned between a valve and a cylinder because the air can flow in both directions, towards the cylinder with regulated pressure, or return towards the valve during relief.

The knob is the push-lock type – once the pressure has been set, press it and it locks in position. In this position you can pull out the plate and attach one or two padlocks to prevent manipulation.

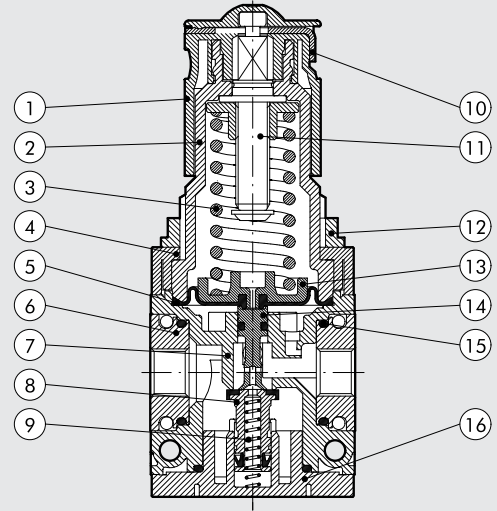
There are two 1/8" ports, one on the front and one on the back, for use with pressure gauges or pressure switches or, considering the high flow rate, as additional regulated air take-off.



TECHNICAL DATA				
Threaded port		1/8"	1/4"	3/8"
Max. inlet pressure	bar		15	
	MPa		1.5	
	psi		217	
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.5 MPa; 7 psi)	Nl/min	570	1600	2900
	scfm	20	57	103
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	1200	2800	3350
	scfm	42	99	119
Relief valve flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min		70	
	scfm		2.5	
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	From -20 to +50		
Full outflow with zero inlet pressure		Included		
Padlockable knob		Included		
Upstream pressure compensation		Included, via balanced valve		
Weight	g	193	188	179
Fluid		Compressed air or other inert gases		
Mounting position		In any position		
Additional air take-off, for pressure gauges or fittings		1/8", front and rear		
Additional air take-off flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	500		
	scfm	18		
Wall fixing screws		No. 2 M4 screws		
Notes on use		The pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value. On request version without overpressure exhaust		

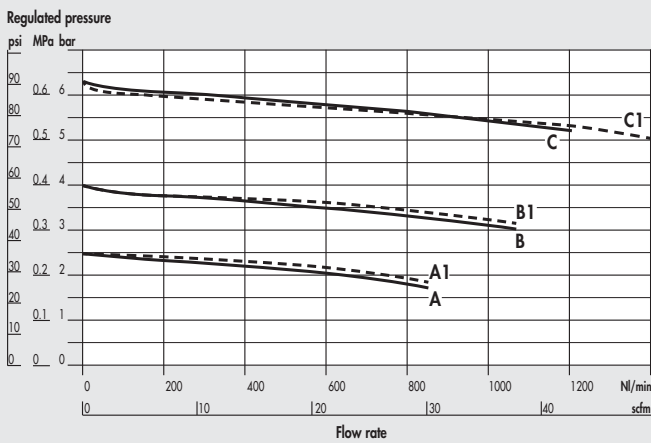
COMPONENTS

- ① Technopolymer adjusting knob
- ② Technopolymer bell
- ③ Steel adjusting spring
- ④ Technopolymer flange
- ⑤ Rolling diaphragm
- ⑥ OT58 brass IN/OUT bushing
- ⑦ Technopolymer regulator body
- ⑧ OT58 brass valve, with NBR vulcanized gasket
- ⑨ Stainless steel valve spring
- ⑩ Plate for knob locking
- ⑪ OT58 brass adjusting screw
- ⑫ Technopolymer ring nut
- ⑬ Technopolymer plate
- ⑭ Technopolymer rod
- ⑮ NBR o-ring gasket
- ⑯ Technopolymer plug

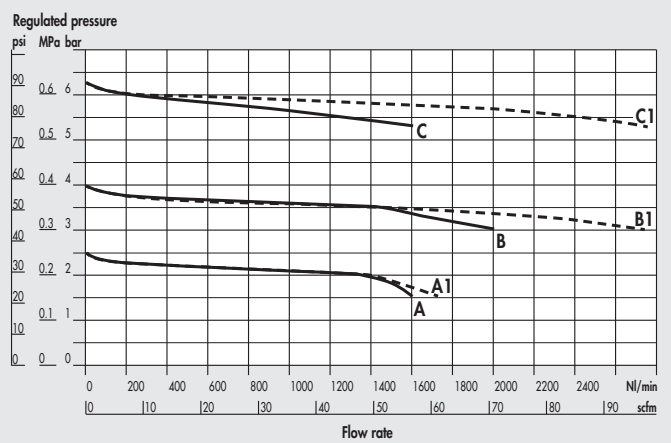


FLOW CHARTS

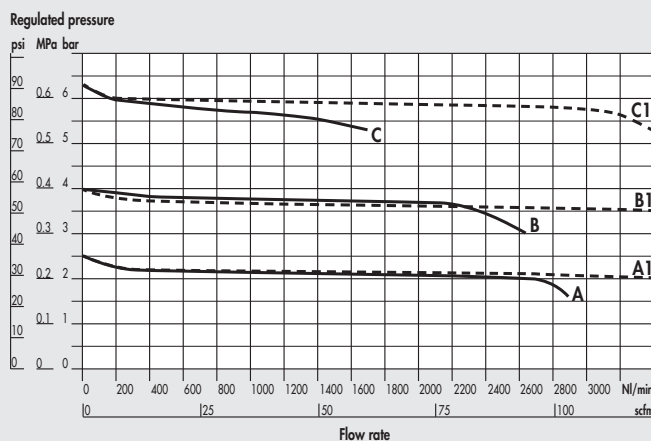
REG Syntesi® 1/8"



REG Syntesi® 1/4"

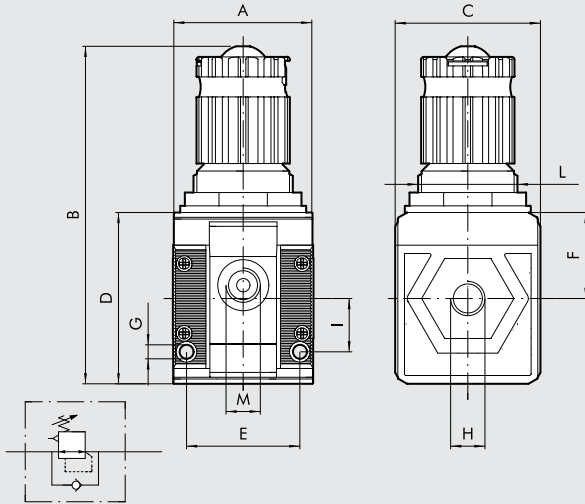


REG Syntesi® 3/8"



- A = P In 7 bar - P Out 2.5 bar
- B = P In 7 bar - P Out 4 bar
- C = P In 7 bar - P Out 6.3 bar
- A1 = P In 10 bar - P Out 2.5 bar
- B1 = P In 10 bar - P Out 4 bar
- C1 = P In 10 bar - P Out 6.3 bar

DIMENSIONS



H (threaded port)	1/8"	1/4"	3/8"
A	42	42	44
B		102	
C		44	
D		51.5	
E		33.5	
F		25.8	
G		Hole for M4 screws	
I		16	
L		M30x1.5	
M (pressure gauge port or air takes-off)		1/8"	

KEY TO CODES

56	1	1	R	14	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	SETTING RANGE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port	R Pressure regulator	10 0 to 2 bar 12 0 to 4 bar 14 0 to 8 bar 16 0 to 12 bar	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description
5610R140	REG SY 08 without bushings
5610R160	REG SY 012 without bushings
5611R141	REG SY 1/8 08
5611R161	REG SY 1/8 012
5612R142	REG SY 1/4 08
5612R162	REG SY 1/4 012
5613R143	REG SY 3/8 08
5613R163	REG SY 3/8 012

SYNTESI® IN-SERIES REGULATOR

The in-series regulator is used to take air at a set pressure from the ports on the front and back of the body, while the pneumatic inlet and outlet ports are connected directly.

It is possible for instance to assemble several regulators side by side, all supplied at the same pressure, and obtain different regulated pressures, regardless of the pressure of the previous module.

The in-series regulator uses the same construction principles as the standard regulator, so the advantages are the same, such as compensation for upstream pressure changes, relief valve, rapid relief of the downstream pressure and a padlockable push-lock knob.



UNITS

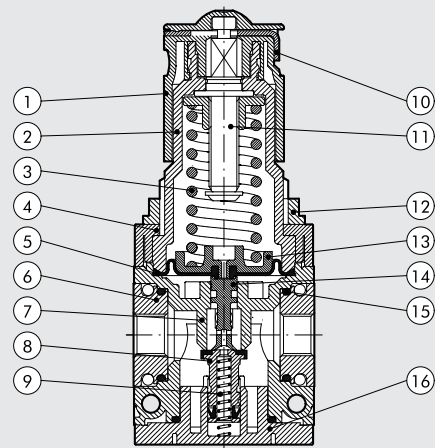
Syntesi® IN-SERIES REGULATOR

TECHNICAL DATA

Threaded inlet port, through		1/8"	1/4"	3/8"
Utility threaded port			1/8"	
Max. input pressure	bar		15	
	MPa		1.5	
	psi		217	
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)	Nl/min		330	
	scfm		12	
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min		500	
	scfm		18	
Relief valve flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min		70	
	scfm		2.5	
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C		From -20 to +50	
Full outflow with zero inlet pressure			Included	
Padlockable knob			Included	
Upstream pressure compensation			Included, via balanced valve	
Weight	g	193	188	179
Fluid			Compressed air or other inert gases	
Mounting position			In any position	
Wall fixing screws			No. 2 M4 screws	
Notes on use			The pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value. On request version without overpressure exhaust	

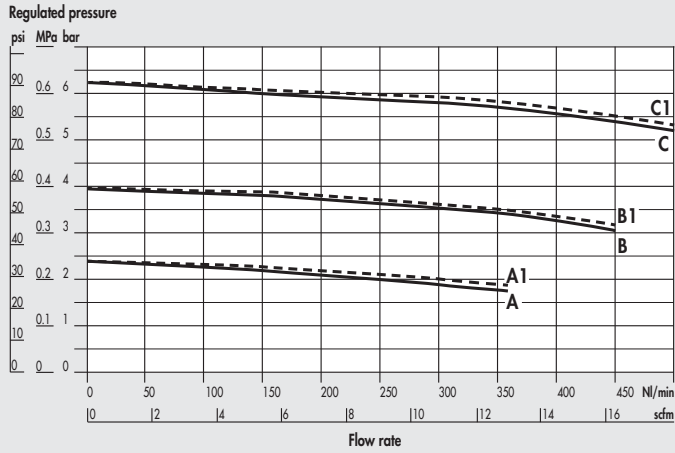
COMPONENTS

- ① Technopolymer adjusting knob
- ② Technopolymer bell
- ③ Steel adjusting spring
- ④ Technopolymer flange
- ⑤ Rolling diaphragm
- ⑥ OT58 brass IN/OUT bushing
- ⑦ Technopolymer body
- ⑧ OT58 brass valve, with NBR vulcanized gasket
- ⑨ Stainless steel valve spring
- ⑩ Plate for knob locking
- ⑪ OT58 brass adjusting screw
- ⑫ Technopolymer ring nut
- ⑬ Technopolymer plate
- ⑭ Technopolymer rod
- ⑮ NBR o-ring gaskets
- ⑯ Technopolymer plug



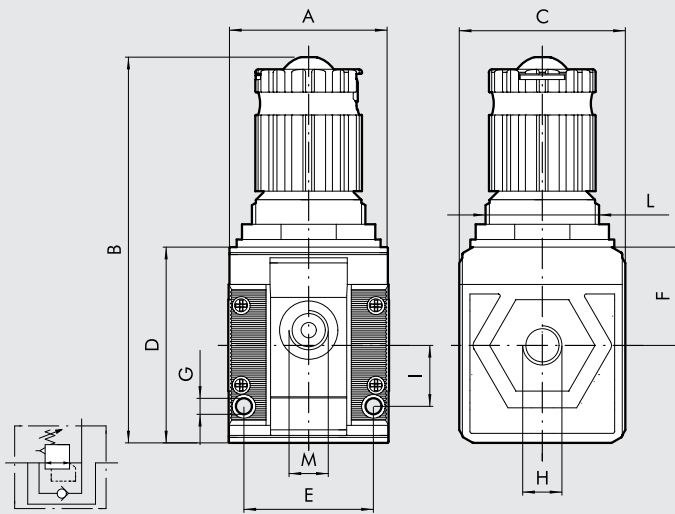
FLOW CHARTS

REG BATTERY Syntesi® 1/4"-1/8"-3/8"



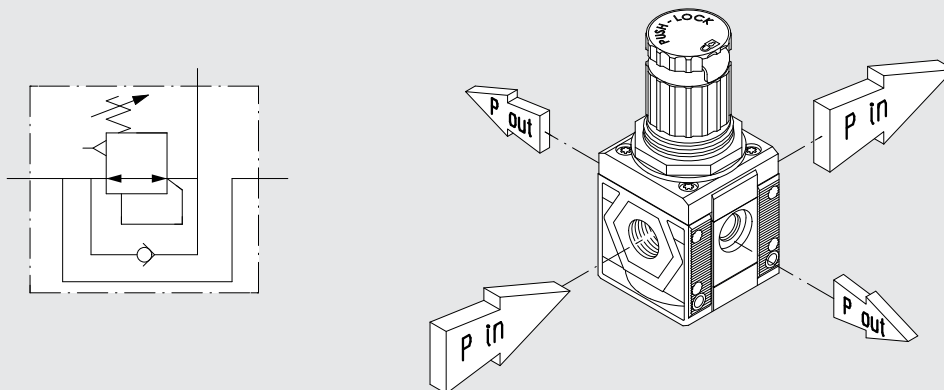
A = P In 7 bar - P Out 2.5 bar
 B = P In 7 bar - P Out 4 bar
 C = P In 7 bar - P Out 6.3 bar
 A1 = P In 10 bar - P Out 2.5 bar
 B1 = P In 10 bar - P Out 4 bar
 C1 = P In 10 bar - P Out 6.3 bar

DIMENSIONS



H (threaded port)	1/8"	1/4"	3/8"
A	42	42	44
B		102	
C		44	
D		51.5	
E		33.5	
F		25.8	
G		Hole for M4 screws	
I		16	
L		M30x1.5	
M (use)		1/8"	

FUNCTION DIAGRAM



This device combines in a single unit the functions of filtration, condensate separation and pressure regulation.

It is made up of the same elements forming the filter and the regulator, so the performance and advantages are the same:

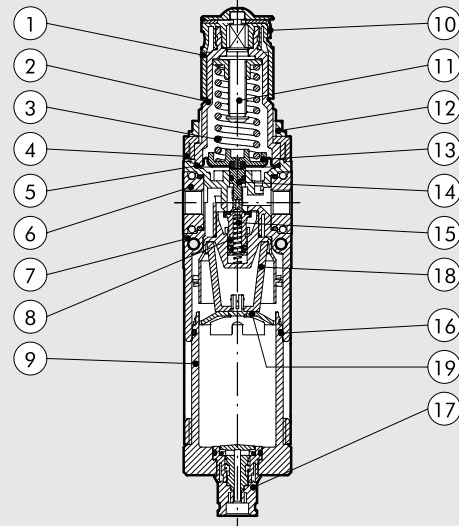
- Separation of condensate and larger liquid and solid particles by centrifugation.
- Two condensate drain options (RMSA and RA).
- 360° visually inspection of the condensate level, via transport spy-holes.
- Rolling diaphragm regulator, allowing maximum precision and flow rate, and minimal friction.
- Compensation for upstream pressure changes.
- Pressure relief valve.
- Quick downstream pressure relief.
- Padlockable push-lock knob.
- Front and rear ports for pressure gauges, pressure switches or, considering the high flow rate, for use as additional filtered and regulated air take-off.



TECHNICAL DATA		1/8"	1/4"	3/8"
Threaded port				
Degree of filtration	µm	5 (yellow) - output air purity class ISO8573-1: 3.7.4 20 (black) - output air purity class ISO8573-1: 4.7.4 50 (blue) - output air purity class ISO8573-1: 5.7.4		
Max. inlet pressure	bar	15		
	MPa	1.5		
	psi	217		
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.5 MPa; 7 psi)	Nl/min	500	800	2200
(inlet pressure 10 bar)	scfm	18	28	78
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	1300	2000	3000
(inlet pressure 10 bar)	scfm	46	71	106
Relief valve flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	70		
	scfm	2.5		
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	From 20 to +50		
Full outflow with zero inlet pressure		Included		
Padlockable knob		Included		
Upstream pressure compensation		Included, via balanced valve		
Weight	g	244	239	230
Fluid		Compressed air or other inert gases		
Mounting position		Vertical		
Additional air take-off, for pressure gauges or fittings		1/8", front and rear		
Additional air take-off flow rate at 6.3 bar	Nl/min	500		
(0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	scfm	18		
Cup capacity	cm³	15		
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure RA: automatic drain with condensate discharge, independent of pressure and flow rate Note: the maximum input pressure for the RA version must not exceed 10 bar		
Wall fixing screws		No. 2 M4 screws		
Notes on use		The pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value. On request version without overpressure exhaust		

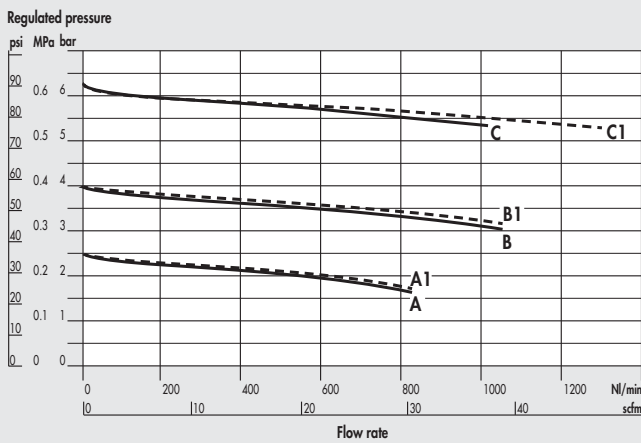
COMPONENTS

- ① Technopolymer adjusting knob
- ② Technopolymer bell
- ③ Steel adjusting spring
- ④ Technopolymer flange
- ⑤ Rolling diaphragm
- ⑥ OT58 brass IN/OUT bushing
- ⑦ Technopolymer body
- ⑧ OT58 brass valve, with NBR vulcanized valve
- ⑨ Clear technopolymer cup
- ⑩ Plate for knob locking
- ⑪ OT58 brass adjusting screw
- ⑫ Technopolymer ring nut
- ⑬ Technopolymer plate
- ⑭ Technopolymer rod
- ⑮ Stainless steel valve spring
- ⑯ O-ring NBR gaskets
- ⑰ Drain (RMSA)
- ⑱ Sintered HDPE filter cartridge
- ⑲ Technopolymer screen

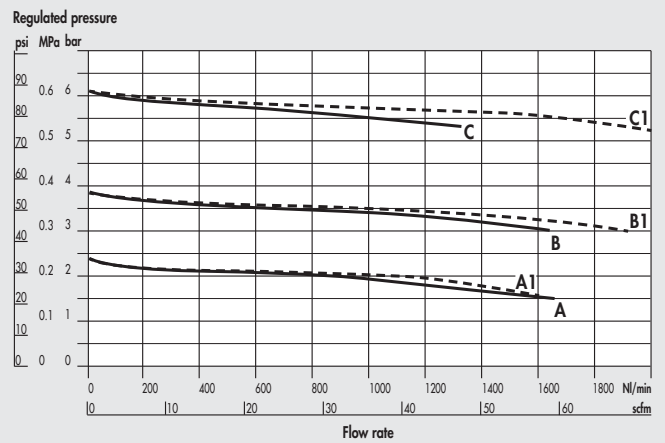


FLOW CHARTS

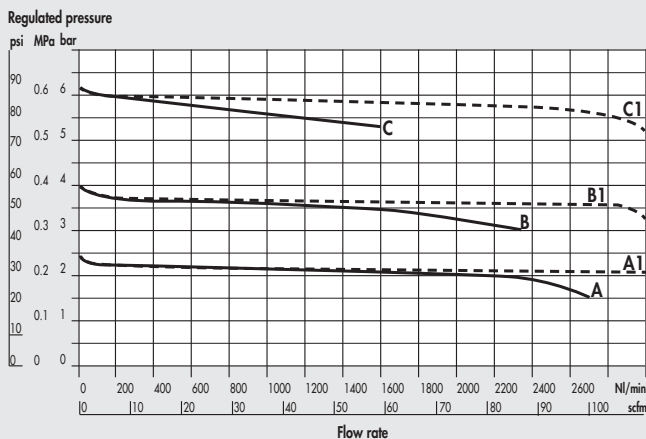
FR Syntesi® 1/8"



FR Syntesi® 1/4"

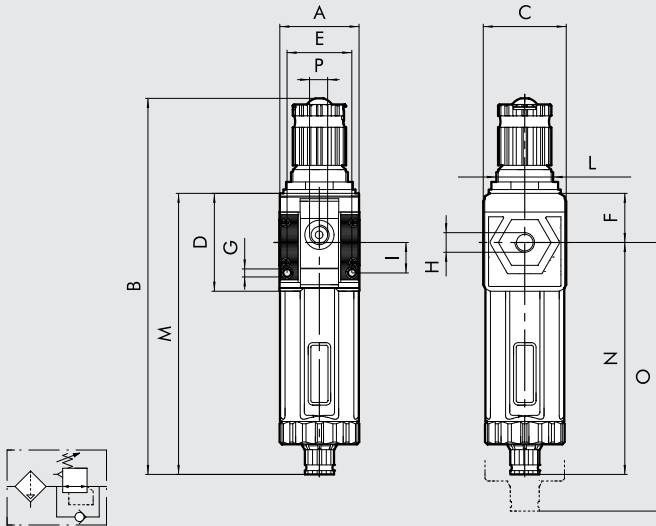


FR Syntesi® 3/8"



- A = P In 7 bar - P Out 2.5 bar
- B = P In 7 bar - P Out 4 bar
- C = P In 7 bar - P Out 6.3 bar
- A1 = P In 10 bar - P Out 2.5 bar
- B1 = P In 10 bar - P Out 4 bar
- C1 = P In 10 bar - P Out 6.3 bar

DIMENSIONS



H (threaded port)		1/8"	1/4"	3/8"
A		42	42	44
B	RMSA		198	
	RA		202	
C			44	
D			51.5	
E			33.5	
F			25.8	
G		Hole for M4 screws		
I		16		
L		M30x1.5		
M	RMSA	148		
	RA	152		
N	RMSA	122.2		
	RA	126.2		
O	RMSA	202		
	RA	206		
P (pressure gauge port or additional air takes-off)		1/8"		

KEY TO CODES

56	1	1	B	24	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	DEGREE OF FILTRATION, TYPE OF CONDENSATE DRAIN AND SETTING RANGE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port	B Filter-regulator	10 5 µm, RMSA, 0 to 2 bar 20 20 µm, RMSA, 0 to 2 bar 30 50 µm, RMSA, 0 to 2 bar 40 5 µm, RA, 0 to 2 bar 50 20 µm, RA, 0 to 2 bar 60 50 µm, RA, 0 to 2 bar 12 5 µm, RMSA, 0 to 4 bar 22 20 µm, RMSA, 0 to 4 bar 32 50 µm, RMSA, 0 to 4 bar 42 5 µm, RA, 0 to 4 bar 52 20 µm, RA, 0 to 4 bar 62 50 µm, RA, 0 to 4 bar 14 5 µm, RMSA, 0 to 8 bar 24 20 µm, RMSA, 0 to 8 bar 34 50 µm, RMSA, 0 to 8 bar 44 5 µm, RA, 0 to 8 bar 54 20 µm, RA, 0 to 8 bar 64 50 µm, RA, 0 to 8 bar 16 5 µm, RMSA, 0 to 12 bar 26 20 µm, RMSA, 0 to 12 bar 36 50 µm, RMSA, 0 to 12 bar 46 5 µm, RA, 0 to 12 bar 56 20 µm, RA, 0 to 12 bar 66 50 µm, RA, 0 to 12 bar	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.
RA: automatic drain with condensate discharge, independent of pressure and flow rate.

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description	Code	Description
5610B140	FR SY 5 08 RMSA without bushings	5612B142	FR SY 1/4 5 08 RMSA
5610B240	FR SY 20 08 RMSA without bushings	5612B242	FR SY 1/4 20 08 RMSA
5610B440	FR SY 5 08 RA without bushings	5612B442	FR SY 1/4 5 08 RA
5610B540	FR SY 20 08 RA without bushings	5612B542	FR SY 1/4 20 08 RA
5610B160	FR SY 5 012 RMSA without bushings	5612B162	FR SY 1/4 5 012 RMSA
5610B260	FR SY 20 012 RMSA without bushings	5612B262	FR SY 1/4 20 012 RMSA
5610B460	FR SY 5 012 RA without bushings	5612B462	FR SY 1/4 5 012 RA
5610B560	FR SY 20 012 RA without bushings	5612B562	FR SY 1/4 20 012 RA
5611B141	FR SY 1/8 5 08 RMSA	5613B143	FR SY 3/8 5 08 RMSA
5611B241	FR SY 1/8 20 08 RMSA	5613B243	FR SY 3/8 20 08 RMSA
5611B441	FR SY 1/8 5 08 RA	5613B443	FR SY 3/8 5 08 RA
5611B541	FR SY 1/8 20 08 RA	5613B543	FR SY 3/8 20 08 RA
5611B161	FR SY 1/8 5 012 RMSA	5613B163	FR SY 3/8 5 012 RMSA
5611B261	FR SY 1/8 20 012 RMSA	5613B263	FR SY 3/8 20 012 RMSA
5611B461	FR SY 1/8 5 012 RA	5613B463	FR SY 3/8 5 012 RA
5611B561	FR SY 1/8 20 012 RA	5613B563	FR SY 3/8 20 012 RA

NOTES

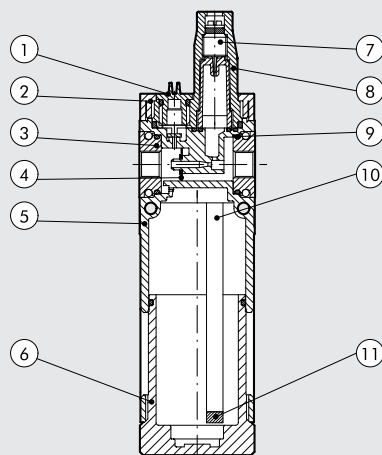
The pneumatic lubricator is the simplest way of efficiently lubricating the actuators linked to a circuit. As compressed air flows towards the lubricator, it encounters a flexible diaphragm which partially blocks the way, creating a small pressure difference between the inlet and outlet air. Being at the higher pressure, the oil in the cup is pumped through a tube with a filter towards the regulation pin. The quantity of oil can be metered accurately since the drops can be viewed through the transparent dome. Filling with oil must take place in the absence of pressure, unscrewing the plug next to the dome.



TECHNICAL DATA		1/8"	1/4"	3/8"
Threaded port		1/8"	1/4"	3/8"
Type of lubrication		Oil mist		
Version		Manual filling from the top		
Max. input pressure	bar	15		
	MPa	1.5		
	psi	217		
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)	Nl/min	1300	1700	2200
	scfm	46	60	78
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	1600	3000	3650
	scfm	57	106	129
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	From -20 to +50		
Weight	g	185	180	171
Fluid		Compressed air or other inert gases		
Quantity of filled oil	cm ³	60		
Mounting position		Vertical		
Port for additional air take-off		1/8", front and rear, lubricated air		
Additional air take-off flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	450		
	scfm	16		
Wall fixing screws		No. 2 M4 screws		
Recommended oils		ISO and UNI FD22 (Energol HPL; Spinesso; Mobil DTE; Tellus oil)		
Notes on use		Install the lubricator as close as possible to the point of use. Fill the lubricator bowl with oil before pressurizing the system. Do not use cleaning oils, brake fluid oils or solvents in general. For the best lubrication results, set the drip rate to one drop for 300-600 Nl		

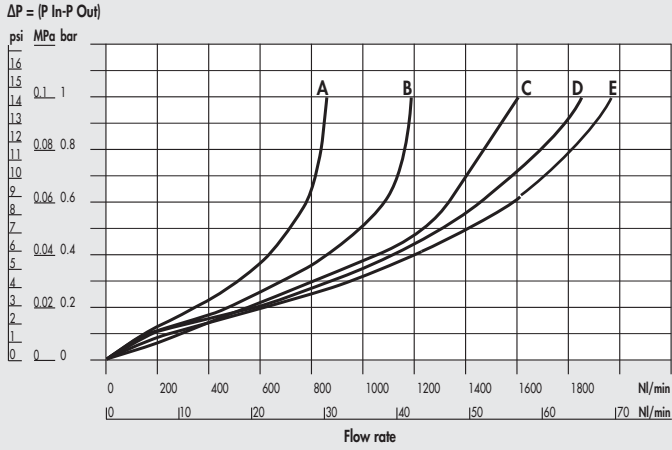
COMPONENTS

- ① Technopolymer oil filling plug
- ② Technopolymer flange
- ③ OT58 brass IN/OUT bushing
- ④ Venturi NBR diaphragm
- ⑤ Technopolymer body
- ⑥ Clear technopolymer cup
- ⑦ OT 58 brass oil flow regulation needle
- ⑧ Clear technopolymer cover
- ⑨ NBR o-ring gasket
- ⑩ Rilsan[®] oil suction pipe
- ⑪ Oil filter

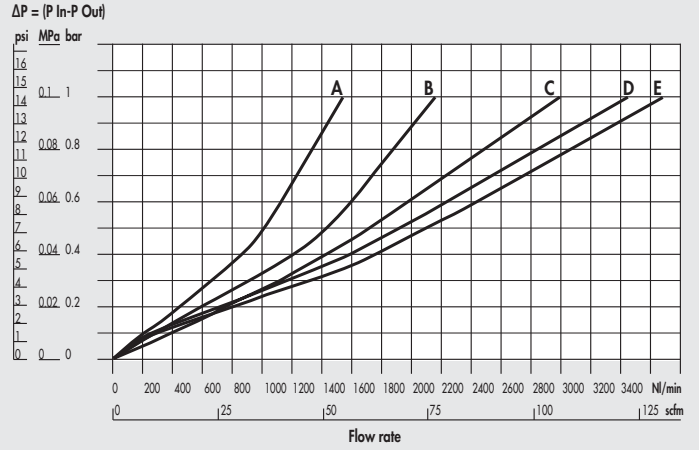


FLOW CHARTS

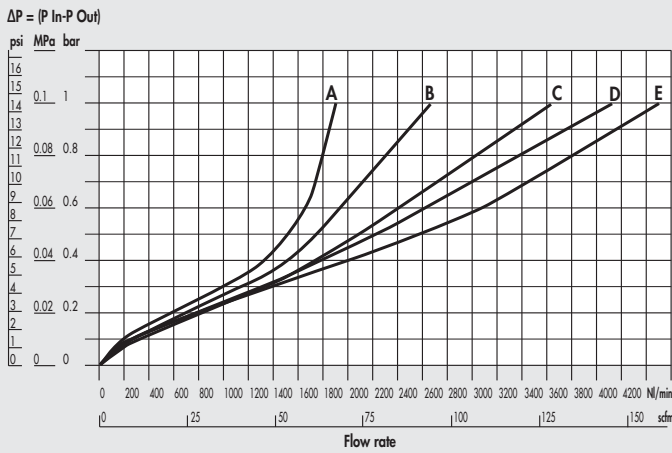
LUB Syntesi® 1/8"



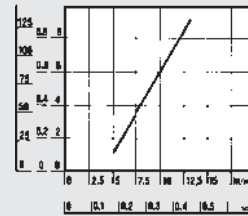
LUB Syntesi® 1/4"



LUB Syntesi® 3/8"

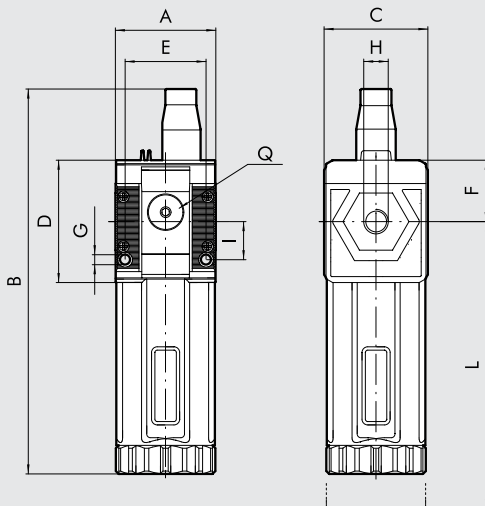


Minimum operating flow chart



- A = 2.5 bar - 0.25 MPa - 36 psi
- B = 4 bar - 0.4 MPa - 58 psi
- C = 6.3 bar - 0.63 MPa - 91 psi
- D = 8 bar - 0.8 MPa - 116 psi
- E = 10 bar - 1 MPa - 145 psi

DIMENSIONS



H (threaded port)	1/8"	1/4"	3/8"
A	42	42	44
B		162	
C		44	
D		51.5	
E		33.5	
F		25.8	
G		Hole for M4 screws	
I		16	
L		158	
Q (no. 2 additional air takes-off)		1/8"	

KEY TO CODES

56 SYNTESI	1 SIZE	1 THREADED INPUT CONNECTION	L ELEMENT	10 OIL FILLING	1 THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port	L Lubricator	10 Manual filling from the top	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description			
5610L100	LUB SY without bushings			
5611L101	LUB SY 1/8			
5612L102	LUB SY 1/4			
5613L103	LUB SY 3/8			

NOTES

UNITS

Syntesi® LUBRICATOR

SYNTESI® SHUT-OFF VALVE

This device separates the compressed air circuit from the main air supply. It is a three-way valve that relieves the downstream system in the closed position. This makes it useful for maintenance operations or when the air supply to a machine or piece of equipment needs to be shut off.

Manual, pneumatic, electro-pneumatic and assisted electro-pneumatic control versions are available. The last version must be used if the inlet pressure is outside the electro-pneumatic valve operating range, so for particularly low or high pressures.

The manual version can be locked when the valve is in the closed position, using one or two padlocks.

There are two 1/8" ports, one on the front and one on the back, for use with pressure gauges or pressure switches or, considering the high flow rate, as additional air take-off.



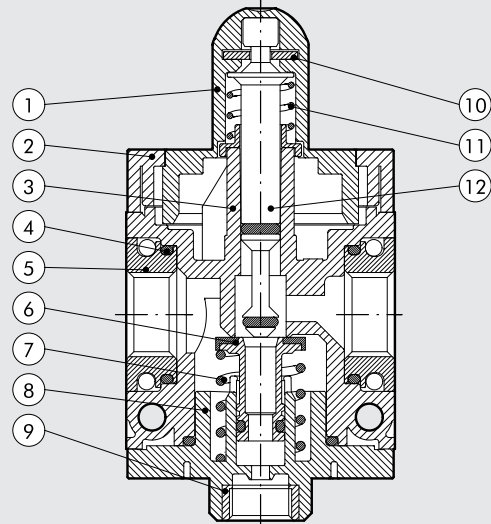
UNITS

Syntesi® SHUT-OFF VALVE

TECHNICAL DATA				
Threaded port		1/8"	1/4"	3/8"
Threaded discharge port			1/8"	
Type of control		Manual - pneumatic - solenoid - solenoid pilot - assisted		
Max inlet pressure for pneumatic and solenoid pilot-assisted versions	bar		15	
	MPa		1.5	
	psi		217	
Inlet pressure for solenoid version	bar		3-10	
	MPa		0.3-1	
	psi		43-145	
Pilot pressure for pneumatic and solenoid pilot-assisted versions	bar		3-10	
	MPa		0.3-1	
	psi		43-145	
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)	l/min	800	1000	1100
	scfm	28	35	39
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	l/min	1100	1500	1600
	scfm	39	53	57
Drain flow rate at 6.3 bar (0.63 MPa; 91 psi)	l/min		500	
	scfm		18	
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C		From -20 to +50	
Padlockable knob			Included	
Weight	g	197	192	183
Fluid			Compressed air or other inert gases	
Mounting position			In any position	
Additional air take-off, for pressure gauges or fittings			1/8", front and rear	
Additional air take-off flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	l/min		500	
	scfm		18	
Wall fixing screws			No. 2 M4 screws	
Bobbin capacity for electro-pneumatic version	W	12 VDC and 24 VDC: 2W; 24 VAC, 110 VAC and 220 VAC: 3.5 VA		
Manual control of electro-pneumatic versions		Bistable, with screwdriver slot (horizontal = OFF, vertical = ON)		

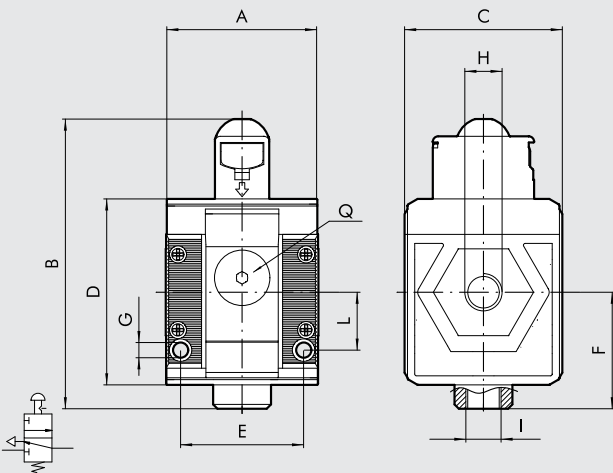
COMPONENTS

- ① Technopolymer knob
- ② Technopolymer hinge
- ③ Technopolymer body
- ④ NBR o-ring gasket
- ⑤ OT58 brass IN/OUT bushing
- ⑥ OT58 brass valve with NBR vulcanized gasket
- ⑦ Stainless steel valve spring
- ⑧ Technopolymer plug
- ⑨ OT58 brass threaded insert
- ⑩ Plate for knob locking
- ⑪ Stainless steel spring stem recovery
- ⑫ OT58 brass stem

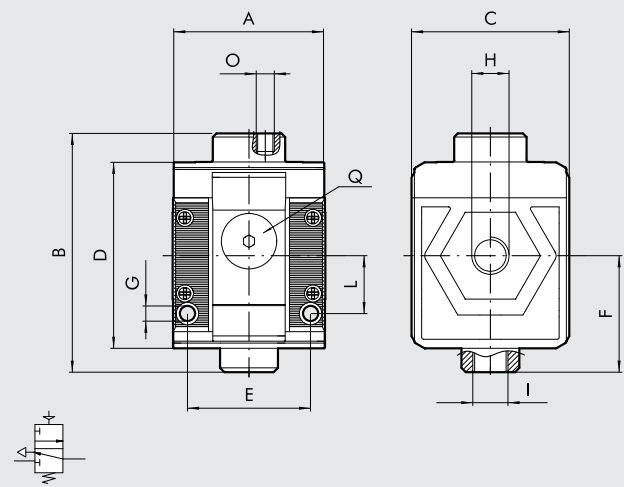


DIMENSIONS

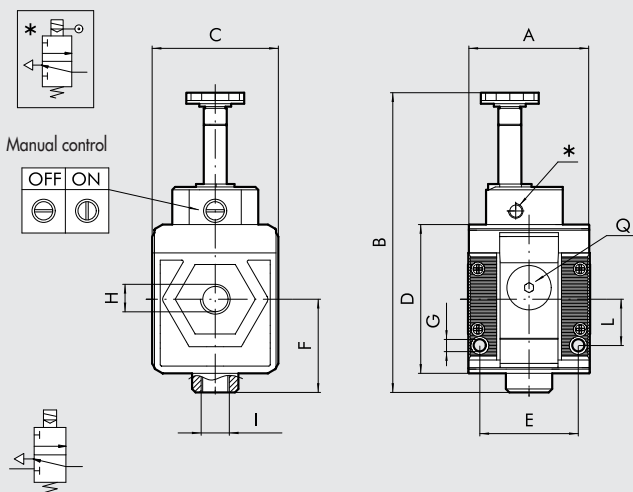
MANUAL



PNEUMATIC



SOLENOID/SOLENOID PILOT-ASSISTED*



	MANUAL			PNEUMATIC			SOLENOID/SOLENOID PILOT-ASSISTED		
	1/8"	1/4"	3/8"	1/8"	1/4"	3/8"	1/8"	1/4"	3/8"
H (threaded port)	42	42	44	42	42	44	42	42	44
A		80			66			104	
B									
C		44			44			44	
D		51.5			51.5			51.5	
E		33.5			33.5			33.5	
F		32.2			32.2			32.2	
G		Hole for M4 screws			Hole for M4 screws			Hole for M4 screws	
I (exhaust)		1/8"			1/8"			1/8"	
L		16			16			16	
O (pilot)		-			M5			-	
Q (no. 2 additional air takes-off)		1/8"			1/8"			1/8"	
* Pilot		-			-			M5	

KEY TO CODES

56	1	1	V	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	TYPE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port	V Shut-off valve	10 Manual 20 Pneumatic 30 Solenoid pilot-assisted 70 Solenoid	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description	Code	Description
5610V100	V3V SY manuale without bushings	5610V700	V3V SY solenoid without bushings
5611V101	V3V SY 1/8 manual	5611V701	V3V SY 1/8 solenoid
5612V102	V3V SY 1/4 manual	5612V702	V3V SY 1/4 solenoid
5613V103	V3V SY 3/8 manual	5613V703	V3V SY 3/8 solenoid
5610V200	V3V SY pneumatic without bushings		
5611V201	V3V SY 1/8 pneumatic		
5612V202	V3V SY 1/4 pneumatic		
5613V203	V3V SY 3/8 pneumatic		
5610V300	V3V SY solenoid pilot-assisted without bushings		
5611V301	V3V SY 1/8 solenoid pilot-assisted		
5612V302	V3V SY 1/4 solenoid pilot-assisted		
5613V303	V3V SY 3/8 solenoid pilot-assisted		

NOTES

UNITS

Syntesi® SHUT-OFF VALVE

The progressive starter is a pneumatic component that allows air enter the circuit gradually, thereby avoiding excessive pressure bursts. A sophisticated system of internal valves allows two separate stages of operation. During the first stage, a quantity of air that can be regulated via a pin flows from the APR. The second stage starts when the downstream pressure reached 40to60% of the upstream pressure, during which full-port flow is achieved. When the mechanism is deactivated, the air flow is cut off and the downstream circuit is relieved.

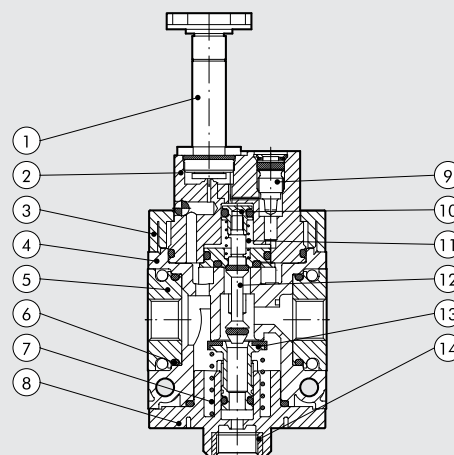
The progressive starter is particularly useful on machinery where it is important to prevent actuators from moving rapidly and out of control, or where, for safety reasons, the air in-feed needs to be gentle and gradual. It, however, there is a major leak in the downstream system, it may never be possible to achieve the pressure required to open the valve completely.



TECHNICAL DATA		1/8"	1/4"	3/8"
Threaded port		1/8"	1/4"	3/8"
Threaded discharge port			1/8"	
Type of control			Solenoid	
Inlet pressure	bar		3-10	
	MPa		0.3-1	
	psi		43-145	
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)	Nl/min	900	1000	1100
	scfm	32	39	39
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	1250	1500	1600
	scfm	44	53	57
Drain flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min		500	
	scfm		18	
Maximum flow rate start-up, at 6.3 bar (0.63 MPa; 91 psi) with regulation pin completely unscrewed	Nl/min		170	
	scfm		6	
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C		-20 to +50	
Weight	g	203	198	189
Fluid		Compressed air or other inert gases		
Mounting position		In any position		
Additional air take-off, for pressure gauges or fittings		1/8", front and rear		
Additional air take-off flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	500		
	scfm	18		
Wall fixing screws		No. 2 M4 screws		
Bobbin capacity for electro-pneumatic version	W	12 VDC and 24 VDC: 2W; 24 VAC, 110 VAC and 220 VAC: 3.5 VA		
Manual control		Bistable, with screwdriver slot (horizontal = OFF, vertical = ON)		

COMPONENTS

- ① Sleeve ø8
- ② Anodized aluminium upper block
- ③ Technopolymer flange
- ④ Technopolymer body
- ⑤ OT58 brass IN/OUT bushing
- ⑥ O-ring NBR gasket
- ⑦ Stainless steel valve spring
- ⑧ Technopolymer bottom plug
- ⑨ OT58 brass progressive start regulation pin
- ⑩ OT58 brass internal valve
- ⑪ Stainless steel spring stem recoveryng
- ⑫ OT58 brass stem
- ⑬ OT58 brass main valve with vulcanized gasket
- ⑭ OT58 brass threaded insert



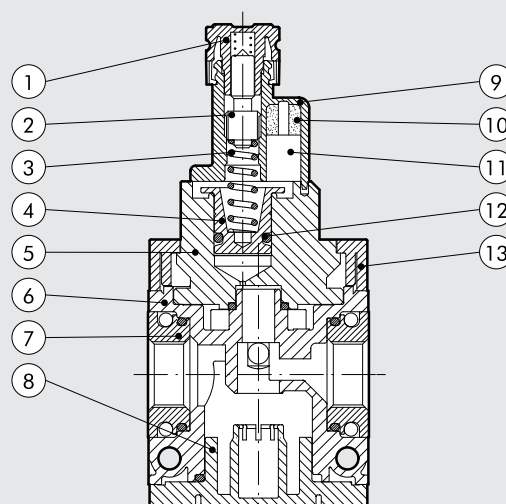
Syntesi® pressure switches feature a high degree of miniaturisation and a modern attractive design. As they are extremely modular, the Syntesi® series can be installed facing up or down. They come ready assembled with a 2-metre cable or an M8 connector with a 300-mm cable. The contact is the switching type, which means it can be normally open or normally closed. It can be regulated via a knurled push-lock handle.



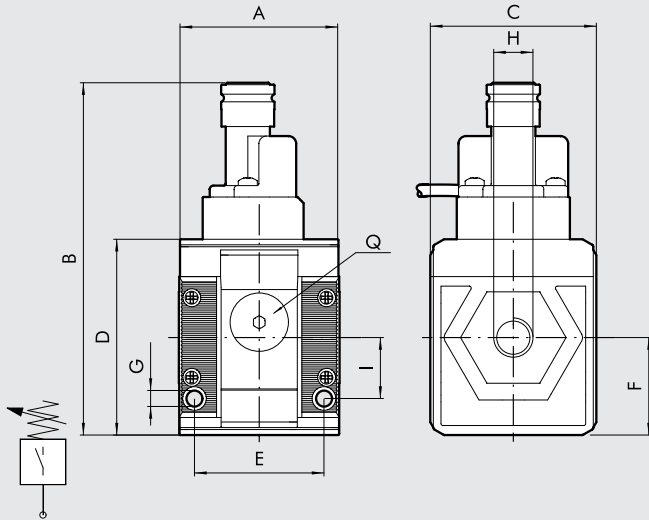
TECHNICAL DATA		1/8"	1/4"	3/8"
Threaded port		1/8"	1/4"	3/8"
Adjustable pressure interval	bar		0.5 to 10	
Hysteresis (not adjustable)	bar		From 0.4 to 0.8 (See diagram)	
Maximum pressure	bar		15	
	MPa		1.5	
	psi		217	
Operating temperature range at: 1 MPa; 10 bar; 145 psi	°C		50	
	°F		122	
Maximum current	A		2	
Maximum voltage	V		250	
Outside diameter of cable	mm		4.9	
Number of wires and cross section			3 x 0.5 mm ²	
Contacts			Normally-Open (NO) and Normally-Closed (NC)	
Protection			IP65	
Number of switchings			5 x 10 ⁶	
Fluid			Filtered lubricated or unlubricated compressed air. Lubrication, if used, must be continuous	
Mounting position			In any position	
Weight	g	255	250	241

COMPONENTS

- ① Technopolymer adjusting "push lock" handle
- ② OT58 brass adjusting screw
- ③ Steel piston spring
- ④ OT58 brass piston
- ⑤ Aluminium top plug
- ⑥ Technopolymer body
- ⑦ OT58 brass IN/OUT bushing
- ⑧ Technopolymer bottom plug
- ⑨ Technopolymer pressure switch body
- ⑩ Resin finish for IP65
- ⑪ Electrical contact
- ⑫ O-ring NBR gasket
- ⑬ Technopolymer flange



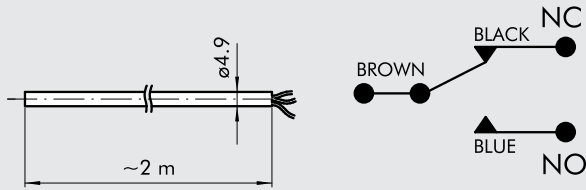
DIMENSIONS



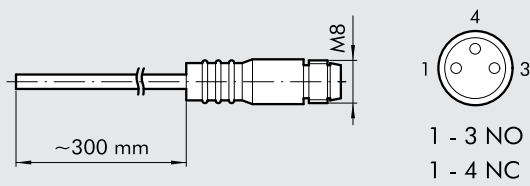
H (threaded port)	1/8"	1/4"	3/8"
A	42	42	44
B		93	
C		44	
D		51.5	
E		33.5	
F		25.6	
G		Hole for M4 screws	
I		16	
Q (no. 2 additional air takes-off)		1/8"	

WIRING DIAGRAM

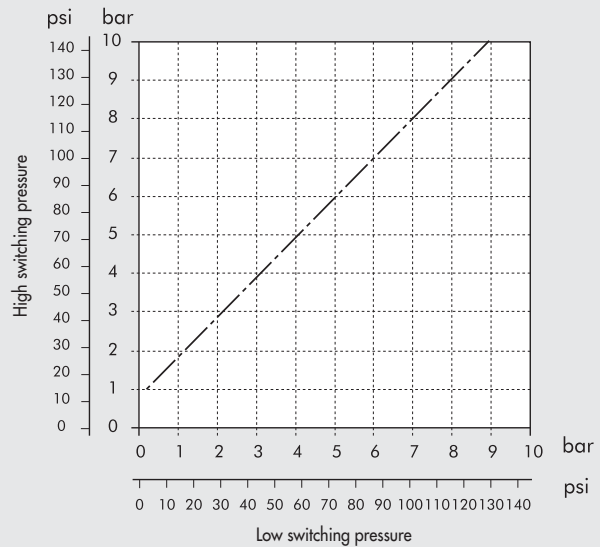
VERSION WITH CABLE



VERSION WITH M8 CONNECTOR



HYSTERESIS GRAPH

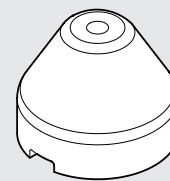


ORDERING CODES

Code	Description
5610S100	Pressure switch 2 m cable SY without bushings
5611S101	Pressure switch 2 m cable SY 1/8
5612S102	Pressure switch 2 m cable SY 1/4
5613S103	Pressure switch 2 m cable SY 3/8
5610S200	Pressure switch M8 connector SY without bushings
5611S201	Pressure switch M8 connector SY 1/8
5612S202	Pressure switch M8 connector SY 1/4
5613S203	Pressure switch M8 connector SY 3/8

SPARES

SECURITY KNOB



Code	Description
9200703	Security knob

NOTE: Pull outwards to remove the knob from the pressure switch on the unit. Insert the security knob and regulate the pressure switch. Then press the handle firmly to lock it in position. If the pressure switch needs to be reset, remove the security knob by forcing it laterally with a screwdriver.

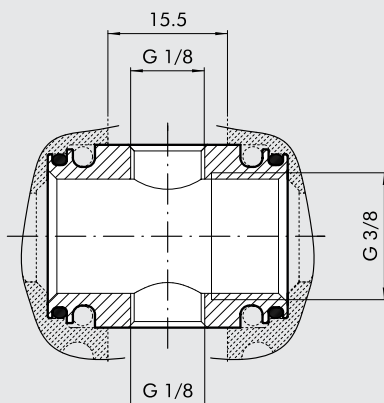
The air take-off is a connecting element that is mounted between two Syntesi® modules. It has two threaded ports, one in the top and one underneath, giving two additional air outlets for use as required. All Syntesi® modules come with two threaded ports, one on the front and one on the back, for use as air take-off.



TECHNICAL DATA

Threaded port	No. 2 1/8" threads
Flow rate of the air take-off at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi) NI/min	1550
	55 scfm
Mounting position	Between any of two Syntesi® modules
Usage temperature and pressure	Given by the Syntesi® modules it's connected to
Weight	62 g
Fluid	Compressed air or other inert gases

DIMENSIONS



ORDERING CODES

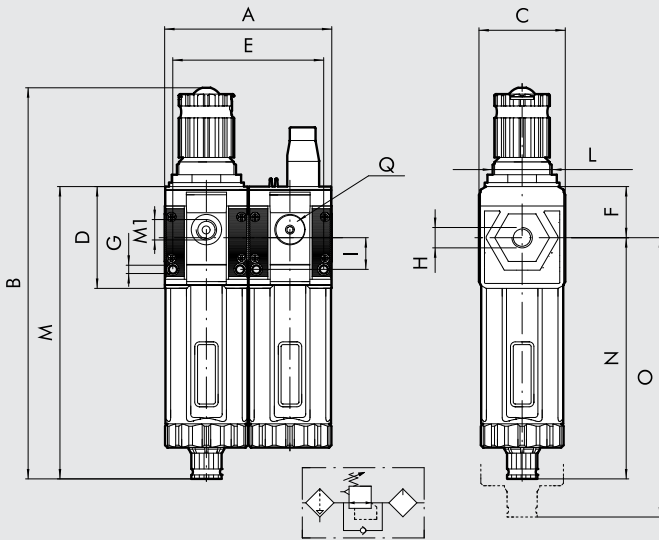
Code	Description
5610P100	PA SY

For full details and list of components refer to the sections about filter-regulator and the lubricator.



TECHNICAL DATA		1/8"	1/4"	3/8"
Threaded port				
Degree of filtration	μm	5 (yellow) - output air purity class ISO8573-1: 3.7.- 20 (white) - output air purity class ISO8573-1: 4.7.- 50 (blue) - output air purity class ISO8573-1: 5.7.-		
Max. inlet pressure	bar	15		
	MPa	1.5		
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi) (P In=10 bar)	psi	217		
	Nl/min	350		
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi) (P In=10 bar)	scfm	12		
	Nl/min	1400		
Relief valve flow rate at 6.3 bar (0.63 MPa; 91 psi)	scfm	50		
	Nl/min	70		
Min/max temperature at 10 bar; 1 MPa; 145 psi	scfm	2.5		
	°C	From -20 to +50		
Padlockable knob		Included		
Upstream pressure compensation		Included, via balanced valve		
Weight	g	414	409	400
Fluid		Compressed air or other inert gases		
Mounting position		Vertical		
Additional air take-off, for pressure gauges or fittings		1/8", front and rear		
Additional air take-off flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	500 - 450		
	scfm	18 - 16		
Filter cup capacity (condensate)	cm ³	30		
Quantity of filled oil	cm ³	60		
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure RA: automatic drain with condensate discharge, independent of pressure and flow rate Note: the maximum input pressure for the RA version must not exceed 10 bar ISO and UNI FD22 (Energol HPL; Spinesso; Mobil DTE; Tellus oil)		
Recommended oils		No. 2 M4 screws		
Wall fixing screws				

DIMENSIONS



H (threaded port)		1/8"	1/4"	3/8"
A		84	84	86
B	RMSA		198	
	RA		202	
C			44	
D			51.5	
E			75.3	
F			25.8	
G		Hole for M4 screws		
I			16	
L			M30x1.5	
M	RMSA		148	
	RA		152	
M1 (pressure gauge port or additional air take-off)			1/8"	
N	RMSA		122.2	
	RA		126.2	
O	RMSA		202	
	RA		206	
Q (no. 2 additional air takes-off)			1/8"	

KEY TO CODES

56	1	1	B	24	L	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	DEGREE OF FILTRATION, TYPE OF CONDENSATE DRAIN AND SETTING RANGE	ELEMENT	OIL FILLING	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	1 1/8" port 2 1/4" port 3 3/8" port	B Filter-regulator	10 5 µm, RMSA, 0 to 2 bar 20 20 µm, RMSA, 0 to 2 bar 30 50 µm, RMSA, 0 to 2 bar 40 5 µm, RA, 0 to 2 bar 50 20 µm, RA, 0 to 2 bar 60 50 µm, RA, 0 to 2 bar 12 5 µm, RMSA, 0 to 4 bar 22 20 µm, RMSA, 0 to 4 bar 32 50 µm, RMSA, 0 to 4 bar 42 5 µm, RA, 0 to 4 bar 52 20 µm, RA, 0 to 4 bar 62 50 µm, RA, 0 to 4 bar 14 5 µm, RMSA, 0 to 8 bar 24 20 µm, RMSA, 0 to 8 bar 34 50 µm, RMSA, 0 to 8 bar 44 5 µm, RA, 0 to 8 bar 54 20 µm, RA, 0 to 8 bar 64 50 µm, RA, 0 to 8 bar 16 5 µm, RMSA, 0 to 12 bar 26 20 µm, RMSA, 0 to 12 bar 36 50 µm, RMSA, 0 to 12 bar 46 5 µm, RA, 0 to 12 bar 56 20 µm, RA, 0 to 12 bar 66 50 µm, RA, 0 to 12 bar	L Lubricator	10 Manual filling from the top	1 1/8" port 2 1/4" port 3 3/8" port

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure
 RA: automatic drain with condensate discharge, independent of pressure and flow rate

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description	Code	Description	Code	Description
5611B24L101	FR+LUB SY 1/8 20 08 RMSA	5612B24L102	FR+LUB SY 1/4 20 08 RMSA	5613B24L103	FR+LUB SY 3/8 20 08 RMSA
5611B54L101	FR+LUB SY 1/8 20 08 RA	5612B54L102	FR+LUB SY 1/4 20 08 RA	5613B54L103	FR+LUB SY 3/8 20 08 RA

V3V + FR + LUB SYNTESI®

For full details and list of components refer to the sections about shut-off valve, filter-regulator and lubricator.

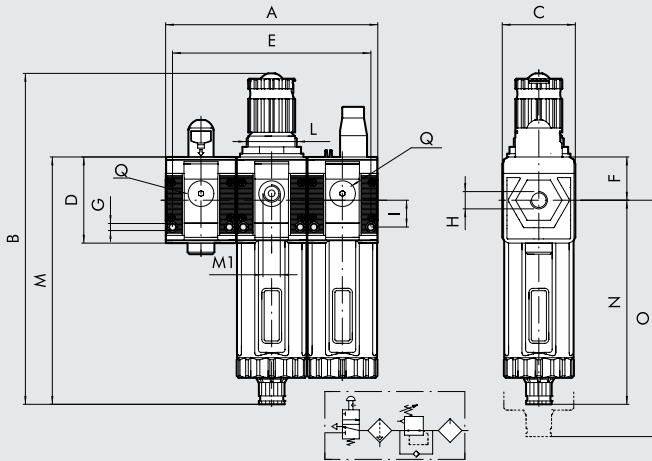


UNITS

V3V + FR + LUB Syntesi®

TECHNICAL DATA				
		1/8"	1/4"	3/8"
Threaded port				
Degree of filtration	µm	5 (yellow) - output air purity class ISO8573-1: 3.7.- 20 (white) - output air purity class ISO8573-1: 4.7.- 50 (blue) - output air purity class ISO8573-1: 5.7.-		
Max. inlet pressure	bar	15		
	MPa	1.5		
	psi	217		
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi) (P In=10 bar)	Nl/min	250		
	scfm	9		
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi) (P In=10 bar)	Nl/min	1050		
	scfm	37		
Relief valve flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	70		
	scfm	2.5		
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	From -20 to +50		
Full outflow with zero inlet pressure		Included		
Drain flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	500		
	scfm	18		
Padlockable knob		Included with both V3V and regulator		
Upstream pressure compensation		Included, via balanced valve		
Weight	g	598	593	584
Fluid		Compressed air or other inert gases		
Mounting position		Vertical		
Additional air take-off, for pressure gauges or fittings		1/8", front and rear		
Additional air take-off flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	500 - 450		
	scfm	18 - 16		
Filter cup capacity	cm ³	30		
Quantity of filled oil	cm ³	60		
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure RA: automatic drain with condensate discharge, independent of pressure and flow rate Note: the maximum input pressure for the RA version must not exceed 10 bar		
Recommended oils		ISO and UNI FD22 (Energol HPL; Spinesso; Mobil DTE; Tellus oil)		
Wall fixing screws		No. 2 M4 screws		

OVERALL DIMENSIONS



H (threaded port)	1/8"	1/4"	3/8"
A	126	126	128
B	RMSA	198	
	RA	202	
C		44	
D		51.5	
E		117.1	
F		25.8	
G		Hole for M4 screws	
I		16	
L		M30x1.5	
M	RMSA	148	
	RA	152	
M1 (pressure gauge port or additional air takes-off)		1/8"	
N	RMSA	122.2	
	RA	126.2	
O	RMSA	202	
	RA	206	
Q (no. 2 additional air takes-off)		1/8"	

KEY TO CODES

56	1	1	V	10	B	24	L	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	TYPE	ELEMENT	DEGREE OF FILTRATION, TYPE OF CONDENSATE DRAIN AND SETTING RANGE	ELEMENT	OIL FILLING	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	1 1/8" port 2 1/4" port 3 3/8" port	V V3V	10 Manual	B Filter- regulator	10 5 µm, RMSA, 0 to 2 bar 20 20 µm, RMSA, 0 to 2 bar 30 50 µm, RMSA, 0 to 2 bar 40 5 µm, RA, 0 to 2 bar 50 20 µm, RA, 0 to 2 bar 60 50 µm, RA, 0 to 2 bar 12 5 µm, RMSA, 0 to 4 bar 22 20 µm, RMSA, 0 to 4 bar 32 50 µm, RMSA, 0 to 4 bar 42 5 µm, RA, 0 to 4 bar 52 20 µm, RA, 0 to 4 bar 62 50 µm, RA, 0 to 4 bar 14 5 µm, RMSA, 0 to 8 bar 24 20 µm, RMSA, 0 to 8 bar 34 50 µm, RMSA, 0 to 8 bar 44 5 µm, RA, 0 to 8 bar 54 20 µm, RA, 0 to 8 bar 64 50 µm, RA, 0 to 8 bar 16 5 µm, RMSA, 0 to 12 bar 26 20 µm, RMSA, 0 to 12 bar 36 50 µm, RMSA, 0 to 12 bar 46 5 µm, RA, 0 to 12 bar 56 20 µm, RA, 0 to 12 bar 66 50 µm, RA, 0 to 12 bar	L Lubricator	10 Manual filling from the top	1 1/8" port 2 1/4" port 3 3/8" port

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.
RA: automatic drain with condensate discharge, independent of pressure and flow rate.

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

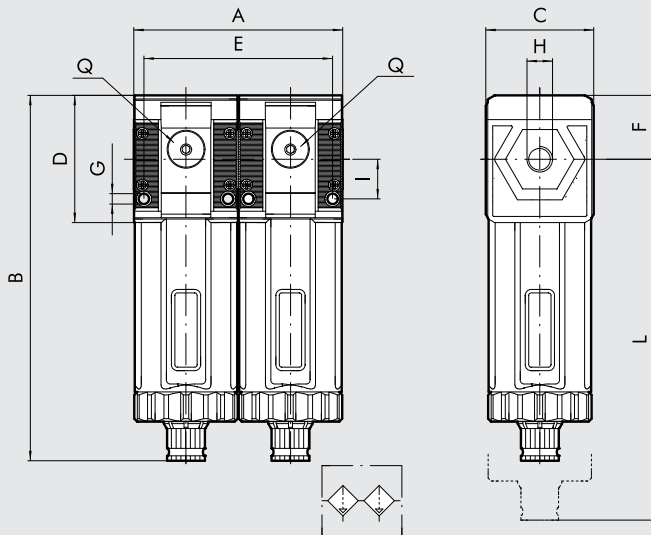
Code	Description	Code	Description
5611V10B24L101	V3V+FR+LUB SY 1/8 20 08 RMSA	5613V10B24L103	V3V+FR+LUB SY 3/8 20 08 RMSA
5611V10B54L101	V3V+FR+LUB SY 1/8 20 08 RA	5613V10B54L103	V3V+FR+LUB SY 3/8 20 08 RA
5612V10B24L102	V3V+FR+LUB SY 1/4 20 08 RMSA		
5612V10B54L102	V3V+FR+LUB SY 1/4 20 08 RA		

For full details and list of components refer to the sections about filter and depurator.



TECHNICAL DATA		1/8"	1/4"	3/8"
Threaded port		1/8"	1/4"	3/8"
Purifier degree of filtration	µm	0.01 - output air purity class ISO8573-1: 1.7.2		
Filter degree of filtration	µm	5		
Max. inlet pressure	bar	15		
	MPa	1.5		
	psi	217		
Suggested flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	550		
	scfm	9		
Maximum suggested flow rate		Look at the chart on the depurator page 3-12 NB: flow rates higher than the recommended value reduces purification efficiency		
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	From -20 to +50		
Weight	Kg	358	353	344
Purifier condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure		
Filter condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure RA: automatic drain with condensate discharge, independent of pressure and flow rate Note: the maximum input pressure for the RA version must not exceed 10 bar		
Fluid		Compressed air or other inert gases		
Cup capacity filter/depurator	cm ³	30/15		
Mounting position		Vertical		
Port for additional air take-off		1/8", front and rear		
Additional air take-off flow rate (not purified air)	Nl/min	500		
at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	scfm	18		
Wall fixing screws		No. 2 M4 screws		

DIMENSIONS



H (threaded port)	1/8"	1/4"	3/8"
A	84	84	86
B	RMSA	148	
	RA	152	
C		44	
D		51.5	
E		75.3	
F		25.8	
G		Hole for M4 screws	
I		16	
L	RMSA	202	
	RA	206	
Q (no. 2 additional air takes-off)		1/8"	

KEY TO CODES

56	1	1	F	10	D	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	DEGREE OF FILTRATION AND TYPE OF CONDENSATE DRAIN	ELEMENT	TYPE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	1 1/8" port 2 1/4" port 3 3/8" port	F Filter	10 5 μm, RMSA 40 5 μm, RA	D Depurator	10 RMSA	1 1/8" port 2 1/4" port 3 3/8" port

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.
 RA: automatic drain with condensate discharge, independent of pressure and flow rate.

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

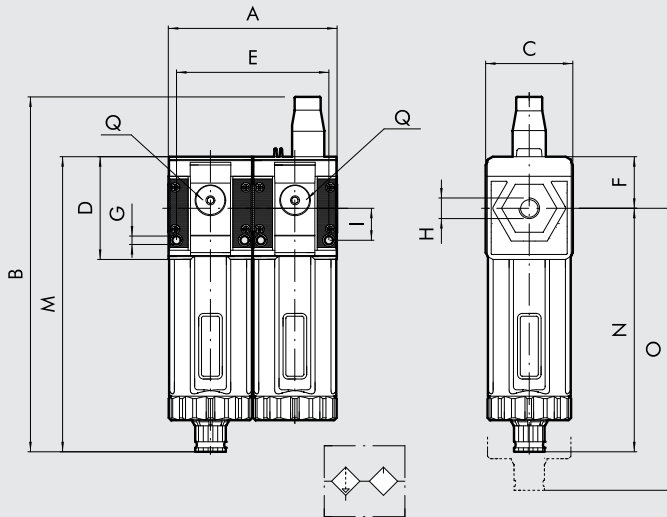
Code	Description
5611F10D101	FIL+DEP SY 1/8 05 RMSA
5611F40D101	FIL+DEP SY 1/8 05 RA
5612F10D102	FIL+DEP SY 1/4 05 RMSA
5612F40D102	FIL+DEP SY 1/4 05 RA
5613F10D103	FIL+DEP SY 3/8 05 RMSA
5613F40D103	FIL+DEP SY 3/8 05 RA

For full details and list of components refer to the sections about filter and lubricator.



TECHNICAL DATA		1/8"	1/4"	3/8"
Threaded port		1/8"	1/4"	3/8"
Degree of filtration	µm	5 (yellow) - output air purity class ISO8573-1: 3.7.- 20 (white) - output air purity class ISO8573-1: 4.7.- 50 (blue) - output air purity class ISO8573-1: 5.7.-		
Max. inlet pressure	bar	15		
	MPa	1.5		
	psi	217		
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)	Nl/min	860		
	scfm	30		
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	1450		
	scfm	51		
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	From -20 to +50		
Weight	g	349	344	355
Fluid		Compressed air or other inert gases		
Mounting position		Vertical		
Additional air take-off, for pressure gauges or fittings		1/8", front and rear		
Additional air take-off flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	500 - 450		
	scfm	18 - 16		
Filter cup capacity (condensate)	cm ³	30		
Quantity of filled oil	cm ³	60		
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure RA: automatic drain with condensate discharge, independent of pressure and flow rate Note: the maximum input pressure for the RA version must not exceed 10 bar ISO and UNI FD22 (Energol HPL; Spinesso; Mobil DTE; Tellus oil)		
Recommended oils		No. 2 M4 screws		
Wall fixing screws				

DIMENSIONS



H (threaded port)	1/8"	1/4"	3/8"
A	84	84	86
B		117.5	
C		44	
D		51.5	
E		75.3	
F		25.8	
G		Hole for M4 screws	
I		16	
M	RMSA	148	
	RA	152	
N	RMSA	122.2	
	RA	126.2	
O	RMSA	202	
	RA	206	
Q (no. 2 additional air takes-off)		1/8"	

KEY TO CODES

56	1	1	F	10	L	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	DEGREE OF FILTRATION AND TYPE OF CONDENSATE DRAIN	ELEMENT	OIL FILLING	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	1 1/8" port 2 1/4" port 3 3/8" port	F Filter	10 5 µm, RMSA 20 20 µm, RMSA 30 50 µm, RMSA 40 5 µm, RA 50 20 µm, RA 60 50 µm, RA	L Lubricator	10 Manual filling from the top	1 1/8" port 2 1/4" port 3 3/8" port

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.
 RA: automatic drain with condensate discharge, independent of pressure and flow rate.

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

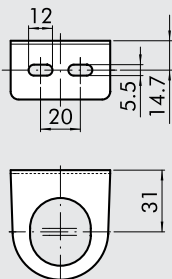
N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description
5611F20L101	FIL+LUB SY 1/8 20 RMSA
5611F50L101	FIL+LUB SY 1/8 20 RA
5612F20L102	FIL+LUB SY 1/4 20 RMSA
5612F50L102	FIL+LUB SY 1/4 20 RA
5613F20L103	FIL+LUB SY 3/8 20 RMSA
5613F50L103	FIL+LUB SY 3/8 20 RA

SYNTESI[®]

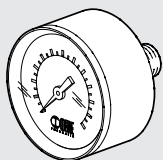
ACCESSORIES

MOUNTING BRACKET FOR REG. AND FR



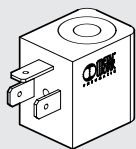
Code	Description
9200701	SF100- BIT-ND 1/4 - SY 1

PRESSURE GAUGES



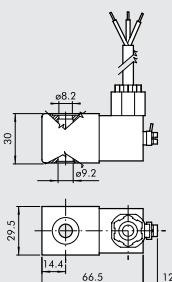
Code	Description
9700101	M 40 1/8 12
9700102	M 40 1/8 04
9800101	M 50 1/8 12
9800102	M 50 1/8 04

COIL FOR APR AND V3V SOLENOID



Code	Description
W0215000101	Coil 22 Ø 8 BA 2W-24VDC
W0215000111	Coil 22 Ø 8 BA 3.5VA-24VAC
W0215000121	Coil 22 Ø 8 BA 3.5VA-110VAC
W0215000131	Coil 22 Ø 8 BA 3.5VA-220VAC

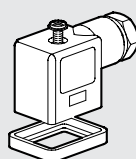
KIT FOR COIL EEXM



Code	Description
0227606913	Kit for coil 30 24 VDC EEXMT5 cable 3m
0227606915	Kit for coil 30 24 VDC EEXMT5 cable 5m
0227608013	Kit for coil 30 24 VAC EEXMT5 cable 3m
0227608015	Kit for coil 30 24 VAC EEXMT5 cable 5m
0227608023	Kit for coil 30 110 VAC EEXMT5 cable 3m
0227608025	Kit for coil 30 110 VAC EEXMT5 cable 5m
0227608033	Kit for coil 30 230 VAC EEXMT5 cable 3m
0227608035	Kit for coil 30 230 VAC EEXMT5 cable 5m

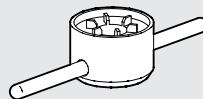
According to Atex 94/9 CE rule, group II, category 2 GD

ELECTRIC CONNECTOR FOR V3V-APR ELPN



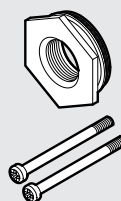
Code	Description
W0970510011	Connector standard
W0970510012	Connector 22 LED 24V
W0970510013	Connector 22 LED 110V
W0970510014	Connector 22 LED 220V
W0970510015	Connector 22 LED VDR 24V
W0970510016	Connector 22 LED VDR 110V
W0970510017	Connector 22 LED VDR 220V
W0970510070	Connector 22 standard ATEX

BOWL DISASSEMBLY SPANNER



Code	Description
9170601	CS TF - TL BIT/SY 1

THREADED PORT

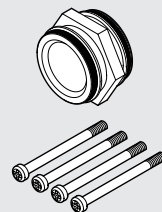


Code	Description
9210001	Kit IN OUT 1/8 SY 1
9210002	Kit IN OUT 1/4 SY 1
9210003	Kit IN OUT 3/8 SY 1

Note: no. 20 each box

Max torque 0.4 Nm

CONNECTING NIPPLE KIT



Code	Description
9210000	Connecting nipple kit SY 1

Note: no. 20 each box

Max torque 0.4 Nm

WALL-FIXING SCREW

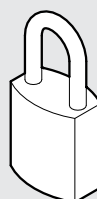


Code	Description
9210030	M4 x 55 fixing screw SY 1

Note: no. 20 screws each box

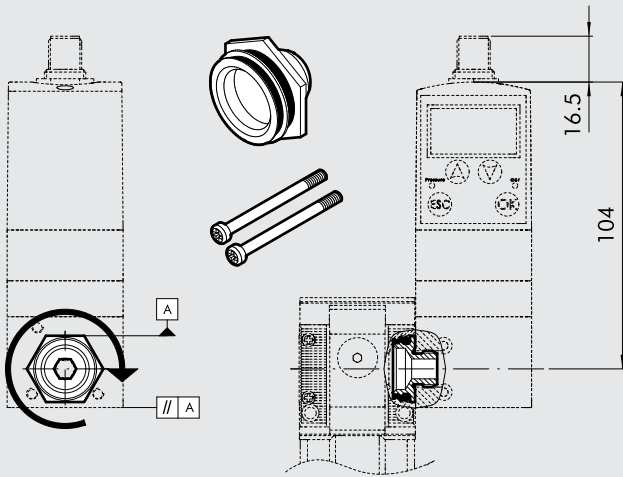
Max torque 0.8 Nm

PADLOCK



Code	Description
9062401	Padlock

**KIT CONNECTING REGTRONIC 1/4 (PAGE 3-210)
AND GS REGULATOR (PAGE 3-206)**



Code	Description
9210004	Adaptor for REGTRONIC 1/4 SY 1

Max torque for screw, 0.4 Nm

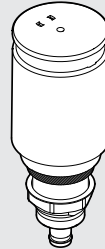
Instructions:

- 1) Screw the connecting bushing onto the REGTRONIC 1/4 as far as it will go.
Use sealant on the G1/4 thread to provide a further seal.
- 2) Unscrew the bushing slightly until two surfaces of the hexagon are parallel to the body of REGTRONIC 1/4 (see diagram).
- 3) Insert the bushing into the Syntesi[®] unit.
- 4) Tighten the two self-tapping screws in the Syntesi[®] unit to a torque of 0.4 Nm max.

NOTES

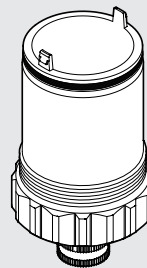
AUTOMATIC DRAIN COCK (RA)

Code	Description
9000802	RA automatic drain spare part



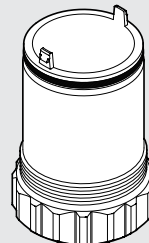
CUP RMSA/RA

Code	Description
9210100	Cup FIL FR DEP RMSA SY 1
9210101	Cup FIL FR RA SY 1



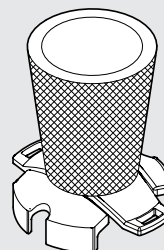
LUBRICATOR CUP

Code	Description
9210110	Cup LUB SY 1



FILTERING ELEMENT

Code	Description
9210150	Filtering element 5 (yellow) μm SY 1
9210151	Filtering element 20 (white) μm SY 1
9210152	Filtering element 50 (blue) μm SY 1

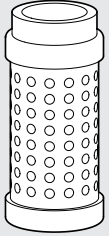


PURIFIER FILTERING ELEMENT

Code	Description
9210160	Cartridge DEP SY 1

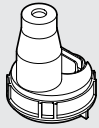


AC FILTERING ELEMENT



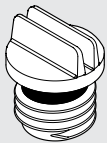
Code	Description
9210161	Cartridge AC SY 1

TRANSPARENT LUBRICATOR COVER



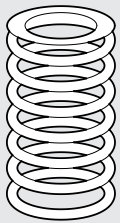
Code	Description
9210180	Transparent cover LUB SY 1

LUBRICATOR OIL-FILLING CAP



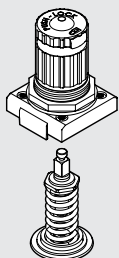
Code	Description
9210181	Oil-filling cap LUB SY 1

SPRINGS FOR REGULATORS AND FR



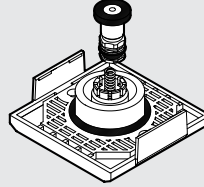
Code	Description
9210190	Spares MO 02 SY 1
9210191	Spares MO 04 SY 1
9210192	Spares MO 08 SY 1
9210193	Spares MO 012 SY 1

BELL FOR REG AND FR



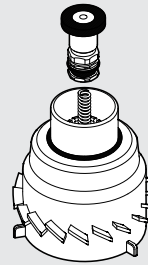
Code	Description
9210200	Bell 02 SY 1
9210201	Bell 04 SY 1
9210202	Bell 08 SY 1
9210203	Bell 012 SY 1

POPPET FOR REG














Code	Description
9210210	Poppet REG SY 1

POPPET FOR FR



Code	Description
9210211	Poppet FR 5 µm SY 1
9210212	Poppet FR 20 µm SY 1
9210213	Poppet FR 50 µm SY 1

NOTES

	● GENERAL TECHNICAL DATA bit	PAGE 3-50
	● bit FILTER	PAGE 3-52
	● bit DEPURATOR	PAGE 3-54
	● bit MICRO-REGULATOR	PAGE 3-56
	● bit PADLOCKABLE MICROREGULATOR	PAGE 3-58
	● bit FILTER REGULATOR	PAGE 3-59
	● bit LUBRICATOR	PAGE 3-61
	● bit TAKE-OFF	PAGE 3-64
	● FIL+REG+LUB bit	PAGE 3-65
	● FR+LUB bit	PAGE 3-67
	● FIL+DEP bit	PAGE 3-69
	● FIL+LUB bit	PAGE 3-70
	● bit ACCESSORIES	PAGE 3-71
	● bit SPARE PARTS	PAGE 3-72

GENERAL TECHNICAL DATA **bit**

The units in the BIT range feature:

- reduced dimensions
- negligible load loss
- long life
- excellent quality-to-price ratio

Thanks to its technical features the BIT air treatment range is particularly suitable for de-centralized use near the final actuators.



UNITS

GENERAL TECHNICAL DATA bit

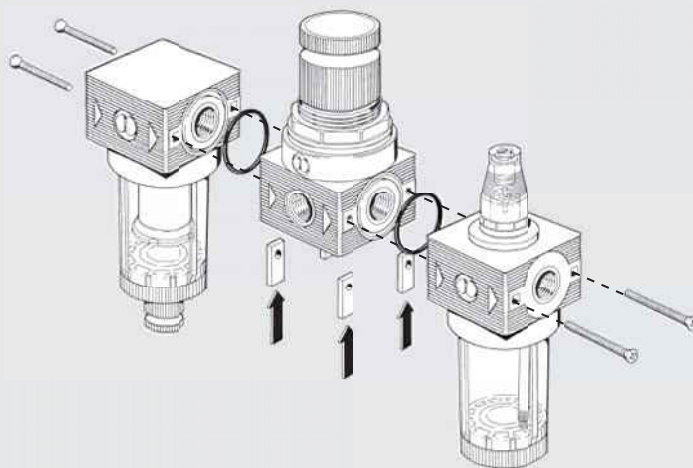
TECHNICAL DATA	BIT 1/8"		BIT 1/4"	
	1/8"		1/4"	
Threaded port	1/8"		1/4"	
Degree of filtration	μm		5 (yellow) 20 (white) 50 (blue)	
Degree of purification			99.97% α 0.01 μm	
Setting range	bar		0 to 2 - 0 to 4 - 0 to 8 - 0 to 12	
Max. inlet pressure	MPa		1.3	
	bar		13	
	psi		188	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min		350	
	scfm		12	
Max temperature at 1 MPa; 10 bar; 145 psi	°C		- 10° to + 50°	
	°F		14° to 122°	
Elements	Filter - Regulator - Lubricator - Filter-regulator - Depurator Units: FRL, FR+L, F+L, F+D			
Mounting	By means of the bracket provided			
Fluid	Compressed air			
Compatibility with oils	Please refer to page 6-7 of the technical documentation			

ASSEMBLY

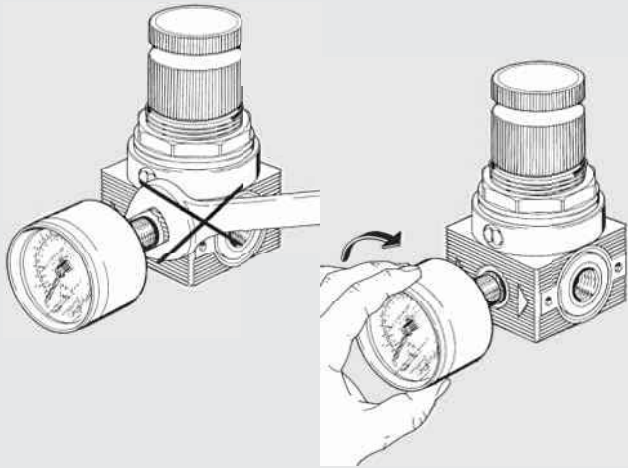
Use ASSEMBLY PLATES (code 9170201) to assemble the Bit elements correctly.

Assembly procedure:

- Fit the plates right into the slots under the body of the Bit element
- Check that there O-rings round the threaded outlet
- Assemble the elements, making sure that the flow run in the direction of the arrows marked on the body.

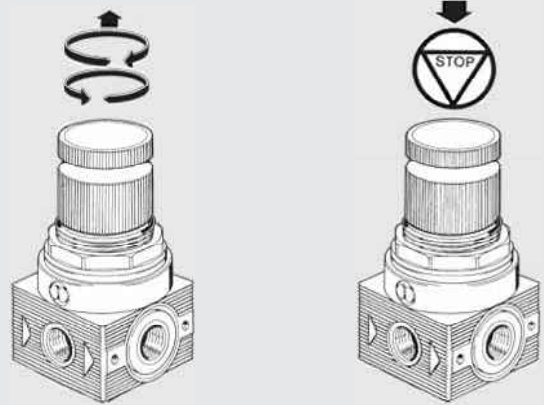


GENERAL RULES - USE AND MAINTENANCE



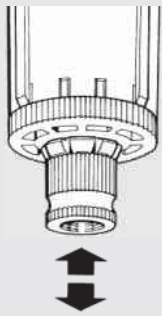
MOUNTING THE GAUGE

The gauge must be mounted by hand without using a spanner. Use fluid sealants to provide a good seal. N.B. Do not use Teflon.



SETTING THE PRESSURE

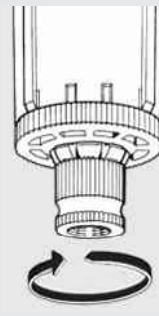
The air pressure must always be set upwards. The knob can be locked so that the set pressure cannot be altered.



With the knob in the centre position, the drain is semi-automatic. The drain operates when the bowl is not pressurized and closes when it is.



Press the button to drain condensate when the bowl is pressurized.



Turn the knob anticlockwise to close the valve with bowl pressurized or not pressurized.



To clean or replace the filter element unscrew the screen of the centrifuge assembly. Use a no. 3 compass spanner to unscrew the bowl.

bit FILTER

The units in the BIT range feature:

- reduced dimensions
- negligible load loss
- long life
- excellent quality-to-price ratio

Thanks to its technical features the BIT air treatment range is particularly suitable for de-centralized use near the final actuators.



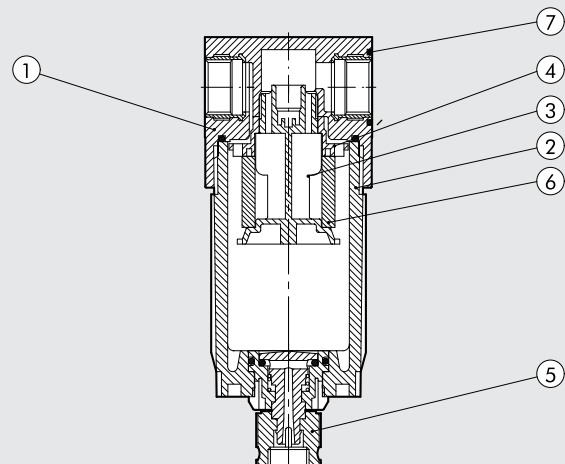
UNITS

bit FILTER

TECHNICAL DATA	BIT 1/8"		BIT 1/4"	
	1/8"		1/4"	
Threaded port	1/8"		1/4"	
Degree of filtration	μm	5 (yellow) 20 (white) 50 (blue)		
Max. inlet pressure	MPa	1.3		
	bar	13		
	psi	188		
Flow rate at 6.3 bar (0.6 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	NI/min	860		
	scfm	30.5		
Flow rate at 6.3 bar (0.6 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	NI/min	1200		
	scfm	42.5		
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50		
	°F	122		
Weight	gr	40		
Wall fixing screws		M 4		
Bowl capacity	cm ³	16		
Mounting position		Vertical		
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure SAC: automatic drain with condensate discharge . Operates by depression – requires variable air take-offs.		
Fluid		Compressed air		

COMPONENTS

- ① Technopolymer body with OT58 threaded element
- ② Clear technopolymer bowl
- ③ Technopolymer baffle plug
- ④ Technopolymer centrifuge
- ⑤ Condensate drain (RMSA)
- ⑥ HDPE sintered filter cartridge
- ⑦ NBR gaskets



FLOW CHARTS

FIL

$\Delta P = (P_m - P_v)$
psi KPa bar

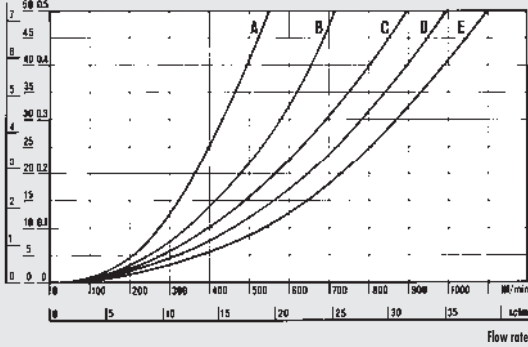
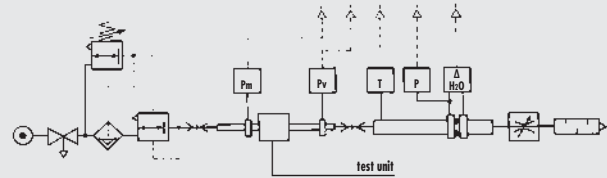


Chart referring to a filter with 1/4 ports



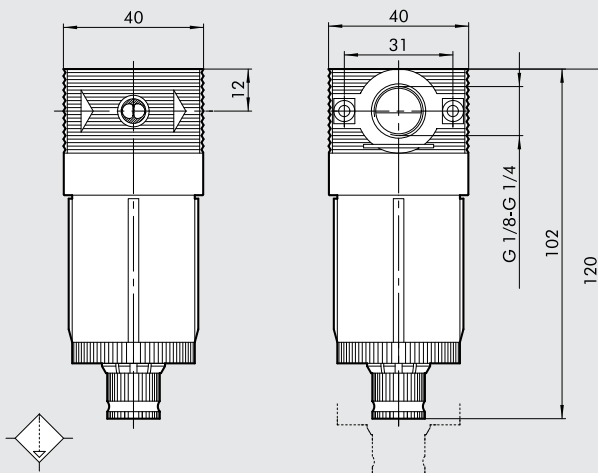
Department
of Mechanics
Turin Polytechnic



• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

(A) = 2 bar - 0.2 MPa - 29 psi (D) = 8 bar - 0.8 MPa - 116 psi
(B) = 4 bar - 0.4 MPa - 58 psi (E) = 10 bar - 1 MPa - 145 psi
(C) = 6 bar - 0.6 MPa - 87 psi

DIMENSIONS



ORDERING CODES

Code	Description
5101001	FIL BIT 1/8 5 RMSA
5101004	FIL BIT 1/8 5 SAC
5101002	FIL BIT 1/8 20 RMSA
5101005	FIL BIT 1/8 20 SAC
5101003	FIL BIT 1/8 50 RMSA
5101006	FIL BIT 1/8 50 SAC
5201001	FIL BIT 1/4 5 RMSA
5201004	FIL BIT 1/4 5 SAC
5201002	FIL BIT 1/4 20 RMSA
5201005	FIL BIT 1/4 20 SAC
5201003	FIL BIT 1/4 50 RMSA
5201006	FIL BIT 1/4 50 SACC

KEY TO CODES

FIL ELEMENT	BIT SIZE	1/8 THREADED PORT	5 DEGREE OF FILTRATION	RMSA CONDENSATE DRAIN
FIL	BIT	1/8 1/4	5 = 5 μm 20 = 20 μm 50 = 50 μm	RMSA SAC

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.
SAC: automatic drain with condensate discharge.
Operates by depression - requires variable air take-offs.

bit DEPURATOR

Coalescing mini-depurator

- Space saving
- Minimum load loss as the flow rate varies
- All-round condensate level viewing



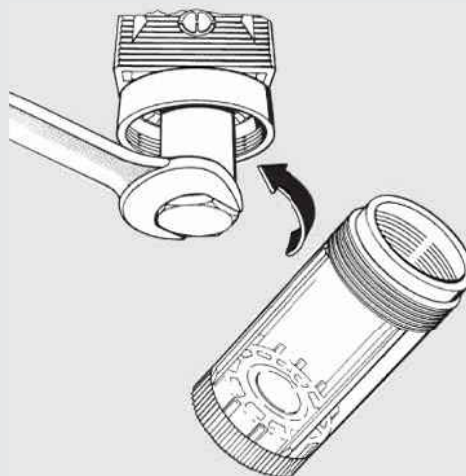
UNITS

bit DEPURATOR

TECHNICAL DATA		DEP BIT 1/8"	DEP BIT 1/4"
Threaded port		1/8"	1/4"
Degree of purification		99.97% 0.01 μm	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Suggested flow at 6 bar	Nl/min	200	
	scfm	7	
Maximum suggested flow rate		Please look at the flow rate curves at page 3-55	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	gr	65	
Wall fixing screws		M4	
Bowl capacity	cm ³	16	
Mounting position		Vertical	
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.	
Fluid		Filtered 5 μm compressed air	
Notes		A It is advisable to mount a 5 m filter upstream the depurator acting as a rough filter.	

USE AND MAINTENANCE

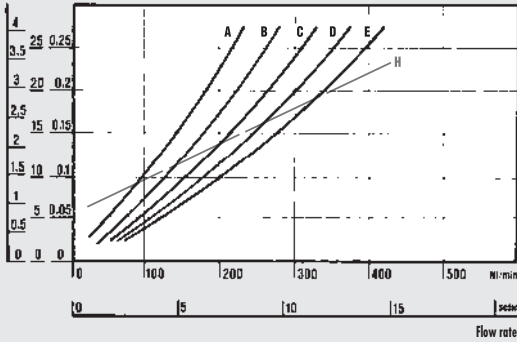
When replacing the coalescing cartridge, unscrew the bowl and then unscrew the screen of the cartridge assembly. Then replace the cartridge. Use a no. 3 compass spanner to unscrew the bowl.



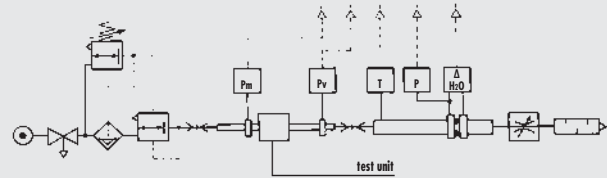
FLOW CHARTS

DEP

$\Delta P = (P_m - P_v)$
psi KPa bar



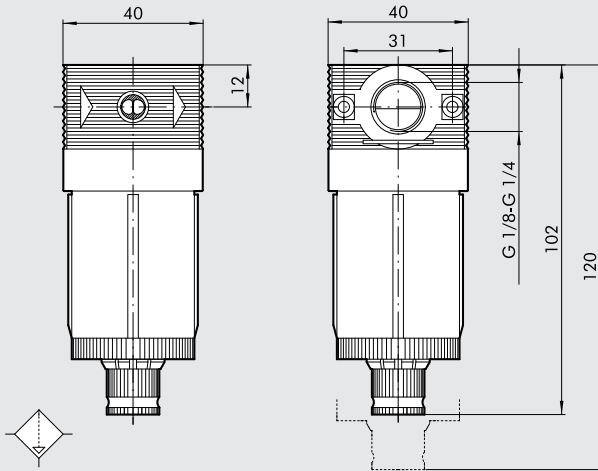
**Department
of Mechanics**
Turin Polytechnic



• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

- (A) = 2 bar - 0.2 MPa - 29 psi (E) = 10 bar - 1 MPa - 145 psi
 (B) = 4 bar - 0.4 MPa - 58 psi (H) = maximum flow rate
 (C) = 6 bar - 0.6 MPa - 87 psi recommended for optimal
 (D) = 8 bar - 0.8 MPa - 116 psi operation

DIMENSIONS



ORDERING CODES

Code	Description
5112001	DEP BIT 1/8 RMSA
5212001	DEP BIT 1/4 RMSA

KEY TO CODES

DEP ELEMENT	BIT SIZE	1/8 THREADED PORT	RMSA CONDENSATE DRAIN
DEP	BIT	1/8 1/4	RMSA

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

bit MICRO-REGULATOR

Micro-regulator with rolling diaphragm.

- Preset pressure stability as the upstream pressure varies.
- High flow rates with reduced pressure drops
- Quick overpressure exhaust

Versions available

Bit FC: controlled relief to allow greater accuracy in regulation by means of slight continuous air relief.

Bit for water: used to regulate the pressure in water circuits; without blowoff valve

Bit SR: for use when the downstream circuit needs to be relieved quickly as the upstream pressure drops. Mount the SR regulator between the power supply valve and the point of use.



UNITS

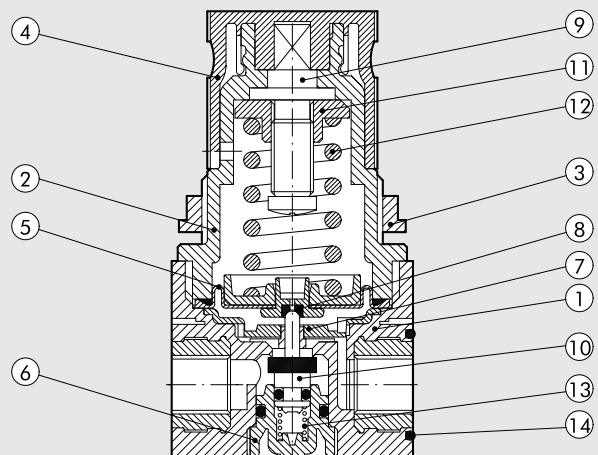
bit MICRO-REGULATOR

TECHNICAL DATA

		MR BIT 1/8"	MR BIT 1/4"
Threaded port		1/8"	1/4"
Setting range		0 to 2 - 0 to 4 - 0 to 8 - 0 to 12	
Max. inlet pressure	MPa		1.3
	bar		13
	psi		188
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min		340
	scfm		12
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min		600
	scfm		21
Max temperature at 1 MPa; 10 bar; 145 psi	°C		50
	°F		122
Weight	gr		80
Wall fixing screws			M 4
Gauge port			G 1/8"
Mounting position			In any position
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.	
Notes		The regulator pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value.	

COMPONENTS

- ① Technopolymer body with OT58 threaded element
- ② Technopolymer bell
- ③ Technopolymer fixing ring nut
- ④ Technopolymer knob
- ⑤ Rolling diaphragm
- ⑥ Technopolymer plug
- ⑦ Technopolymer anti-vibration screen
- ⑧ NBR relieving gasket
- ⑨ OT58 brass adjusting screws
- ⑩ OT58 valve with NBR vulcanized gasket
- ⑪ OT58 brass nut
- ⑫ Steel adjusting spring
- ⑬ Stainless steel valve compression spring
- ⑭ NBR gaskets



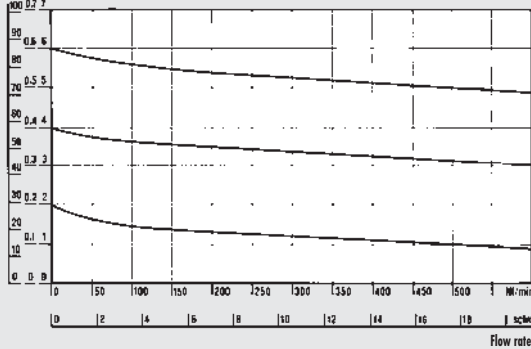
FLOW CHARTS

MR

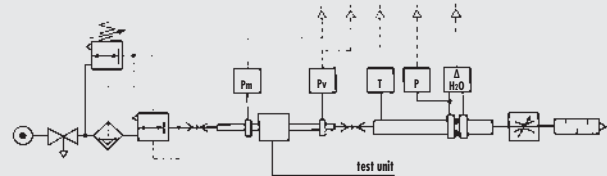
$P_{in} = 0,7 \text{ MPa}; 7 \text{ bar}; 102 \text{ psi}$

Inlet pressure

psi KPa bar

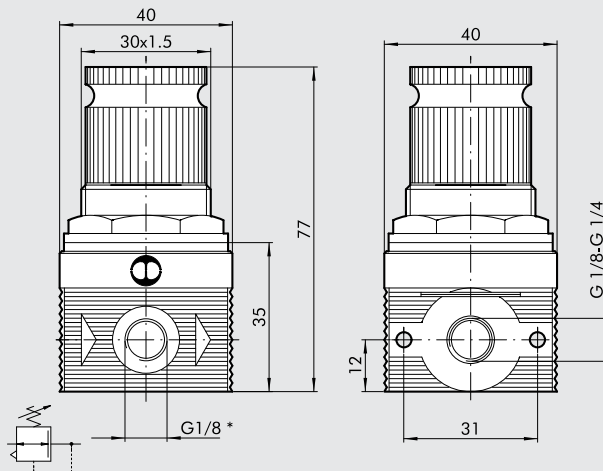


**Department
of Mechanics**
Turin Polytechnic



- Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

DIMENSIONS



* Pressure gauge port

KEY TO CODES

MR	BIT	FC	1/8	02
ELEMENT	SIZE	VERSION	THREADED PORT	CONDENSATE DRAIN
MR	BIT	FC	1/8	02 = 0 to 2 bar
	BIT	SR	1/4	04 = 0 to 4 bar
	BIT			08 = 0 to 8 bar
MRA	BIT	(for WATER)		012 = 0 to 12 bar

FC: Controlled relief
SR: Quickly relieved
MRA: Without relief (for water)

ORDERING CODES

Code	Description
MICROREGULATOR (MR)	
5107004	MR BIT 1/8 012
5107001	MR BIT 1/8 02
5107002	MR BIT 1/8 04
5107003	MR BIT 1/8 08
5207004	MR BIT 1/4 012
5207001	MR BIT 1/4 02
5207002	MR BIT 1/4 04
5207003	MR BIT 1/4 08
MICROREGULATOR WITH CONTROLLED RELIEF	
5111001	MR BIT FC 1/8 02
5111002	MR BIT FC 1/8 04
5211001	MR BIT FC 1/4 02
5211002	MR BIT FC 1/4 04
MICROREGULATOR WITH QUICK RELIEF	
5102001	MR BIT SR 1/8 02
5102002	MR BIT SR 1/8 04
5102003	MR BIT SR 1/8 08
5102004	MR BIT SR 1/8 012
5202001	MR BIT SR 1/4 02
5202002	MR BIT SR 1/4 04
5202003	MR BIT SR 1/4 08
5202004	MR BIT SR 1/4 012
WATER MICROREGULATOR	
5108001	MRA BIT 1/8 02
5108002	MRA BIT 1/8 04
5108003	MRA BIT 1/8 08
5108004	MRA BIT 1/8 012
5208001	MRA BIT 1/4 02
5208002	MRA BIT 1/4 04
5208003	MRA BIT 1/4 08
5208004	MRA BIT 1/4 012

bit PADLOCKABLE MICROREGULATOR

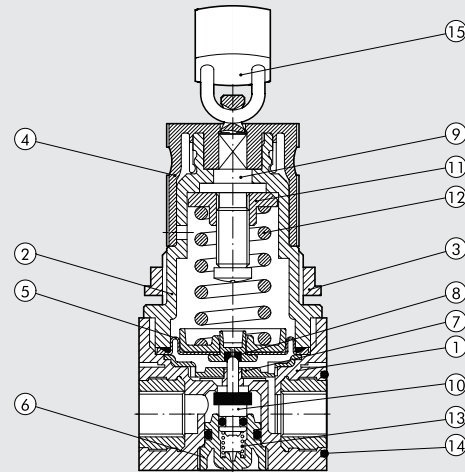
The padlockable microregulator has a pin with a hole in it that projects from the top of the knob. When the knob is in the push-lock position, the padlock can be inserted in the hole, preventing the knob from being operated. A padlock and two keys are supplied with the regulator.

Refer to the bit microregulator for technical data and flow curves.

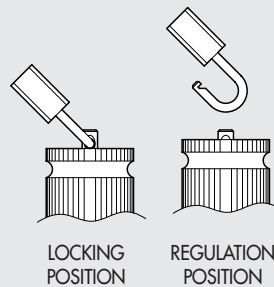
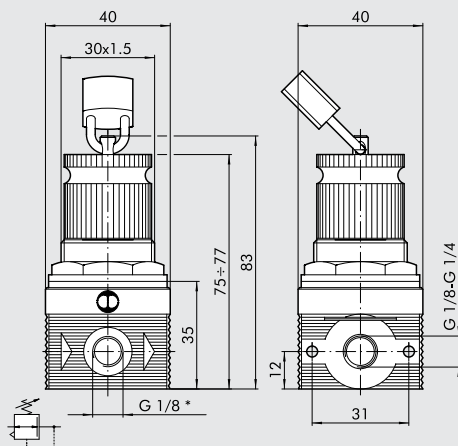


COMPONENTS

- ① Technopolymer body with OT58 threaded element
- ② Technopolymer bell
- ③ Technopolymer fixing ring nut
- ④ Technopolymer knob
- ⑤ Rolling diaphragm
- ⑥ Technopolymer plug
- ⑦ Technopolymer anti-vibration screen
- ⑧ NBR relieving gasket
- ⑨ Nickel-plated brass OT58 adjusting screws
- ⑩ OT58 valve with NBR vulcanized gasket
- ⑪ OT58 brass nut
- ⑫ Steel adjusting spring
- ⑬ Stainless steel valve compression spring
- ⑭ NBR gaskets
- ⑮ Padlock



DIMENSIONS



* Pressure gauge port

ORDERING CODES

Code	Description
5110001	MR BIT KEY 1/8 02
5110002	MR BIT KEY 1/8 04
5110003	MR BIT KEY 1/8 08
5110004	MR BIT KEY 1/8 012
5210001	MR BIT KEY 1/4 02
5210002	MR BIT KEY 1/4 04
5210003	MR BIT KEY 1/4 08
5210004	MR BIT KEY 1/4 012

KEY TO CODES

MR ELEMENT	BIT SIZE	KEY TYPE	1/8 THREADED PORT	02 SETTING RANGE
MR	BIT	Padlockable	1/8 1/4	02 = 0 to 2 bar 04 = 0 to 4 bar 08 = 0 to 8 bar 012 = 0 to 12 bar

bit FILTER REGULATOR

Filter regulator with rolling diaphragm.

- High flow rate with reduced pressure drop
- Excellent degree of condensate separation
- Semi-automatic or automatic drain
- All-round condensate level viewing

The degree of filtration is shown by the colour of the cartridge:

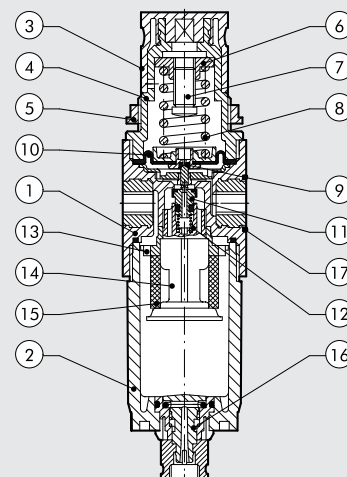
yellow = 5 μm , white = 20 μm , blue = 50 μm .



TECHNICAL DATA	FR BIT 1/8"		FR BIT 1/4"	
	1/8"		1/4"	
Threaded port	1/8"		1/4"	
Setting range	0 to 2 - 0 to 4 - 0 to 8 - 0 to 12			
Degree of filtration	5 (yellow) - 20 (white) - 50 (blue)			
Max. inlet pressure	MPa		1.3	
	bar		13	
	psi		188	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min		290	
	scfm		10	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min		600	
	scfm		21	
Max temperature at 1 MPa; 10 bar; 145 psi	°C		50	
	°F		122	
Weight	gr		110	
Wall fixing screws			M 4	
Bowl capacity	cm ³		16	
Mounting position	Vertical			
Gauge port	G 1/8"			
Condensate drain	RMSA: drain with manual condensate discharge and automatic discharge at zero pressure SAC: automatic drain with condensate discharge . Operates by depression – requires variable air take-offs. Compressed air			
Fluid	The regulator pressure must always be set upwards.			
Notes	For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value.			

COMPONENTS

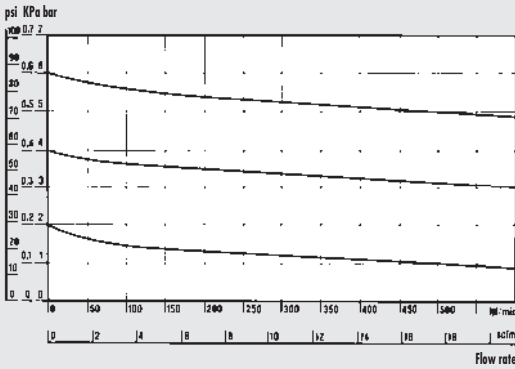
- ① Technopolymer body with OT58 threaded element
- ② Clear technopolymer bowl
- ③ Technopolymer knob
- ④ Technopolymer bell
- ⑤ Technopolymer fixing ring nut
- ⑥ OT58 brass nut
- ⑦ OT58 brass adjusting screw
- ⑧ Steel adjusting spring
- ⑨ NBR relieving gasket
- ⑩ Rolling diaphragm
- ⑪ OT58 valve with NBR vulcanized gasket
- ⑫ Stainless steel valve compression spring
- ⑬ Technopolymer centrifuge
- ⑭ Technopolymer baffle plug
- ⑮ HDPE sintered filter cartridge
- ⑯ Condensate drain (RMSA)
- ⑰ NBR gaskets



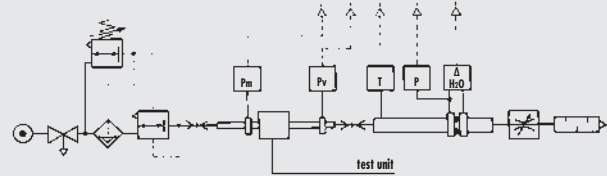
FLOW CHARTS

FR

$P_m = 0,7 \text{ MPa}; 7 \text{ bar}; 102 \text{ psi}$
Inlet pressure

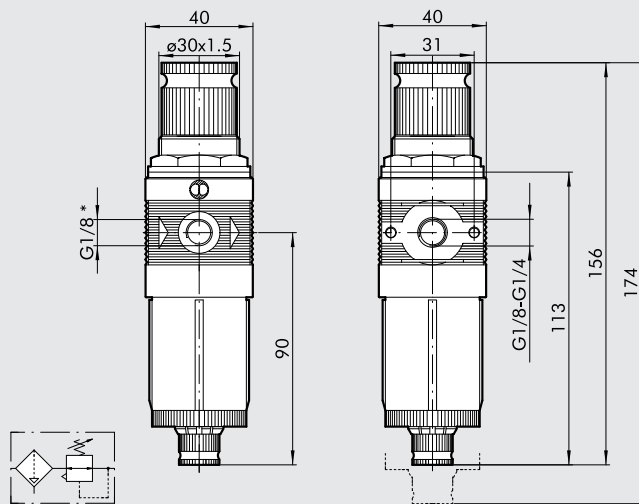


**Department
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Turin Polytechnic



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DIMENSIONS



* Pressure gauge port

KEY TO CODES

FR	BIT	1/8	5	02	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	CONDENSATE DRAIN
FR	BIT	1/8 1/4	5 μm 20 μm 50 μm	02 = 0 to 2 bar 04 = 0 to 4 bar 08 = 0 to 8 bar 012 = 0 to 12 bar	RMSA SAC

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure

SAC: automatic drain with condensate discharge .

Operates by depression - requires variable air take-offs.

ORDERING CODES

Code	Description
5105001	FR BIT 1/8 5 02 RMSA
5105013	FR BIT 1/8 5 02 SAC
5105002	FR BIT 1/8 20 02 RMSA
5105014	FR BIT 1/8 20 02 SAC
5105003	FR BIT 1/8 50 02 RMSA
5105015	FR BIT 1/8 50 02 SAC
5105004	FR BIT 1/8 5 04 RMSA
5105016	FR BIT 1/8 5 04 SAC
5105005	FR BIT 1/8 20 04 RMSA
5105017	FR BIT 1/8 20 04 SAC
5105006	FR BIT 1/8 50 04 RMSA
5105018	FR BIT 1/8 50 04 SAC
5105007	FR BIT 1/8 5 08 RMSA
5105019	FR BIT 1/8 5 08 SAC
5105008	FR BIT 1/8 20 08 RMSA
5105020	FR BIT 1/8 20 08 SAC
5105009	FR BIT 1/8 50 08 RMSA
5105021	FR BIT 1/8 50 08 SAC
5105010	FR BIT 1/8 5 012 RMSA
5105022	FR BIT 1/8 5 012 SAC
5105011	FR BIT 1/8 20 012 RMSA
5105023	FR BIT 1/8 20 012 SAC
5105012	FR BIT 1/8 50 012 RMSA
5105024	FR BIT 1/8 50 012 SAC
5205001	FR BIT 1/4 5 02 RMSA
5205013	FR BIT 1/4 5 02 SAC
5205002	FR BIT 1/4 20 02 RMSA
5205014	FR BIT 1/4 20 02 SAC
5205003	FR BIT 1/4 50 02 RMSA
5205015	FR BIT 1/4 50 02 SAC
5205004	FR BIT 1/4 5 04 RMSA
5205016	FR BIT 1/4 5 04 SAC
5205005	FR BIT 1/4 20 04 RMSA
5205017	FR BIT 1/4 20 04 SAC
5205006	FR BIT 1/4 50 04 RMSA
5205018	FR BIT 1/4 50 04 SAC
5205007	FR BIT 1/4 5 08 RMSA
5205019	FR BIT 1/4 5 08 SAC
5205008	FR BIT 1/4 20 08 RMSA
5205020	FR BIT 1/4 20 08 SAC
5205009	FR BIT 1/4 50 08 RMSA
5205021	FR BIT 1/4 50 08 SAC
5205010	FR BIT 1/4 5 012 RMSA
5205022	FR BIT 1/4 5 012 SAC
5205011	FR BIT 1/4 20 012 RMSA
5205023	FR BIT 1/4 20 012 SAC
5205012	FR BIT 1/4 50 012 RMSA
5205024	FR BIT 1/4 50 012 SAC

Mini-lubricator with high lubrication stability.

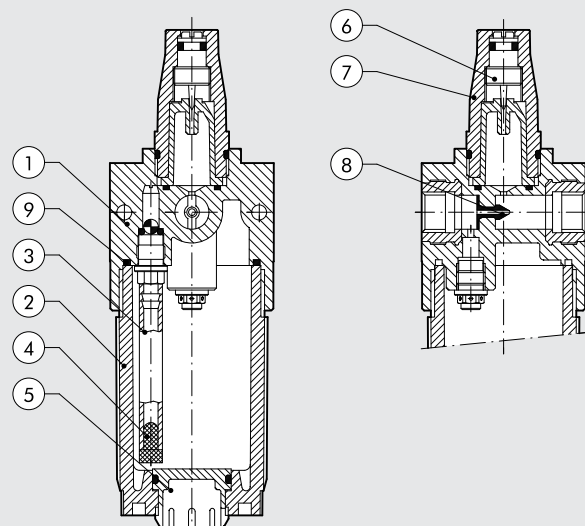
- Quantity of lubricant proportioned to air flow
- Activates at low flow rates
- Micrometric regulation of lubricant flow
- All-round oil level viewing



TECHNICAL DATA	LUB BIT 1/8"		LUB BIT 1/4"	
	1/8"		1/4"	
Threaded port			Oil mist	
Type of lubrication			26.5	
Bowl capacity	cm ³		Manual filling with the bowl disassembled	
Lubricator version			1.3	
Max. inlet pressure	MPa		bar	13
			psi	188
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	400	scfm	14
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	710	scfm	25
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	°F	122
Weight	gr	40		M 4
Wall fixing screws				Vertical
Mounting position				Filtered compressed air
Fluid				

COMPONENTS

- ① Technopolymer body with OT58 threaded elements
- ② Clear technopolymer bowl
- ③ Rilsan oil suction pipe
- ④ Filter
- ⑤ Technopolymer plug
- ⑥ Oil flow adjustment regulation needle made of OT58 brass
- ⑦ Clear technopolymer cover
- ⑧ NBR Venturi diaphragm
- ⑨ NBR gaskets

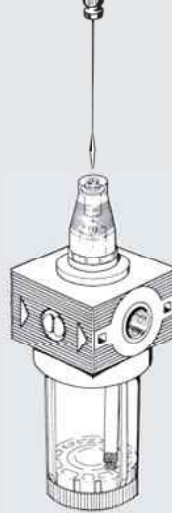


GENERAL RULES - USE AND MAINTENANCE

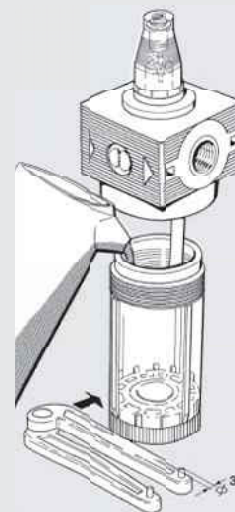
Use a no. 3 compass spanner to unscrew the bowl.

- Fit the lubricator as close as possible to the point of use
- Fill the bowl with oil before pressurizing the system
- Do not use cleaning oil, brake fluid or solvents in general
- For correct lubrication, set the drip rate to approximately 1 drop every 300-600 NI via the adjusting screw.
- Recommended lubricants:
ISO and UNI FD22
E.g. Energol HLP 22 (BP) – Spinesso 22 (Esso)
- Mobil DTE 22 (Mobil) – Tellus Oil 22 (Shell).

REGULATING LUBRICATION



FILLING THE BOWL WITH OIL

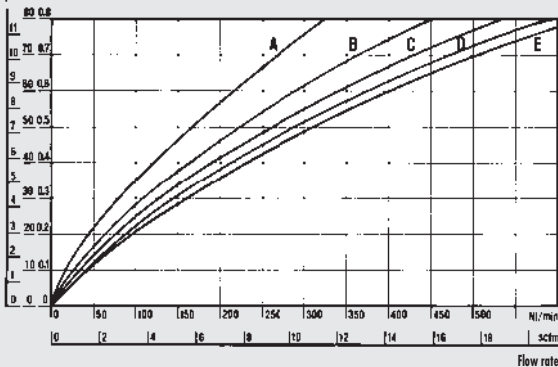


FLOW CHARTS

LUB

$$\Delta P = (P_m - P_v)$$

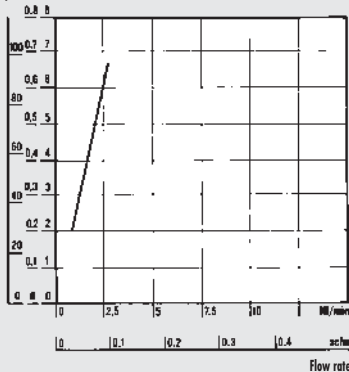
psi MPa bar



LUB 1/8-1/4

Pm

psi MPa bar



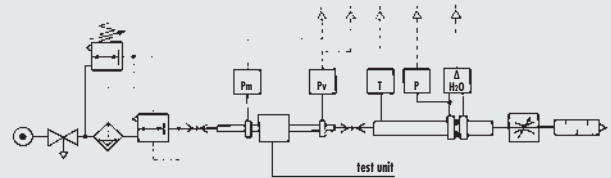
MINIMUM OPERATION FLOW CHARTS

Minimum flow tests were performed in compliance with ISO/DP 6301/2.



**Department
of Mechanics**

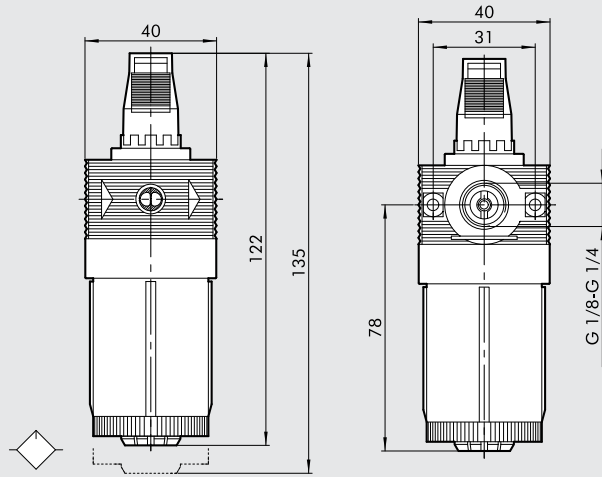
Turin Polytechnic



- Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

- (A) = 2 bar - 0.2 MPa - 29 psi
- (B) = 4 bar - 0.4 MPa - 58 psi
- (C) = 6 bar - 0.6 MPa - 87 psi
- (D) = 8 bar - 0.8 MPa - 116 psi
- (E) = 10 bar - 1 MPa - 145 psi

DIMENSIONS



ORDERING CODES

Code	Description
5103001	LUB BIT 1/8
5203001	LUB BIT 1/4

NOTES

bit TAKE-OFF

- The air take-off takes air from the FRL unit irrespective of the assembly position.
- It is necessary when air needs to be taken from the FRL unit at any stage of the treatment (normal, filtered, regulated, lubricated, etc.).



TECHNICAL DATA

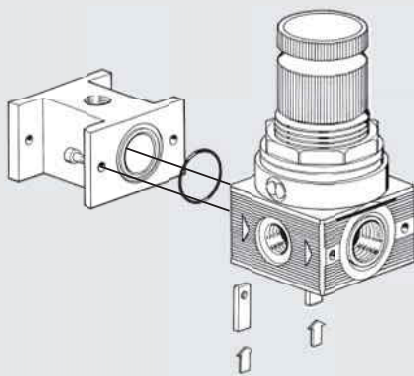
		PA
Maximum operating pressure	MPa	1.3
	bar	13
	psi	188
Maximum working temperature at 1 MPa; 10 bar; 145 psi	°C	50
	°F	

UNITS

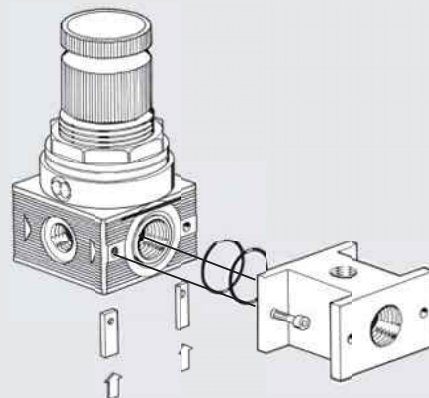
bit TAKE-OFF

CONNECTION DIAGRAMS AND APPLICATION

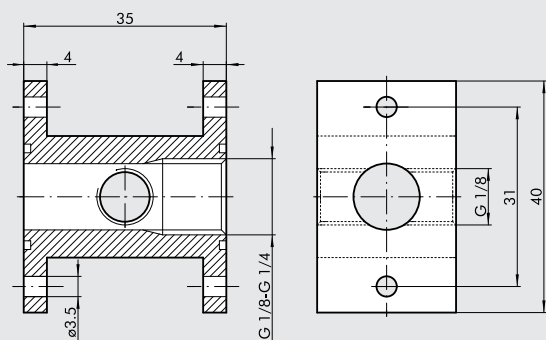
Mounting the air take-off at the inlet: only use two screws and the O-rings supplied in the PA kit.



Mounting the air take-off at the outlet: only use two screws and the O-rings supplied in the PA kit. Seal is provided by the contact between O-rings.



DIMENSIONS



ORDERING CODES

Code	Description
9100401	PAB 1/8 - 1/4 BIT

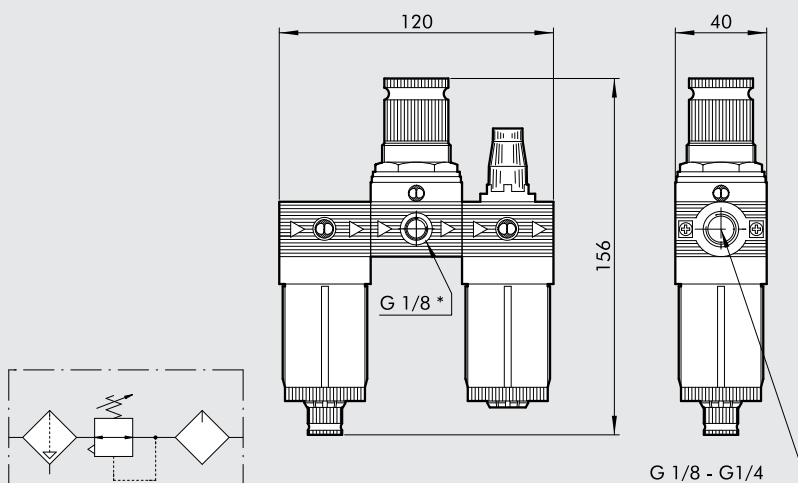
Complete mini-FRL unit with rolling diaphragm.

- High flow rates with reduced pressure drop
- Excellent degree of condensate separation
- Quantity of lubricant proportioned to air flow
- Activates at low flow rates



TECHNICAL DATA		F+R+L BIT 1/8"	F+R+L BIT 1/4"
Threaded port		1/8"	1/4"
Setting range		0 to 2 - 0 to 4 - 0 to 8 - 0 to 12	
Degree of filtration	μm	5 (yellow) 20 (white) 50 (blue)	
Type of lubrication		Oil mist	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	150	
	scfm	5.3	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	280	
	scfm	10	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	gr	160	
Wall fixing screws		G1/8"	
Gauge port		M 4	
Mounting position		Vertical	
Fluid		Compressed air	
Notes		See chapters regarding individual elements	

DIMENSIONS



* Pressure gauge port

KEY TO CODES

FRL ELEMENT	BIT SIZE	1/8 THREADED PORT	5 DEGREE OF FILTRATION	02 SETTING RANGE	RMSA CONDENSATE DRAIN
FRL	BIT	1/8 1/4	5 = 5 µm 20 = 20 µm 50 = 50 µm	02 = 0 to 2 bar 04 = 0 to 4 bar 08 = 0 to 8 bar 012 = 0 to 12 bar	RMSA SAC*

ORDERING CODES

Code	Description
5104008	FRL BIT 1/8 20 08 RMSA
5104011	FRL BIT 1/8 20 012 RMSA
5204008	FRL BIT 1/4 20 08 RMSA
5204011	FRL BIT 1/4 20 012 RMSA

The following versions are available on request:

- with 5 µm or 50 µm degree of filtration
- with 0-2 bar or 0-4 bar setting range
- with SAC condensate discharge

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure
 SAC: automatic drain with condensate discharge.
 Operates by depression – requires variable air take-offs.

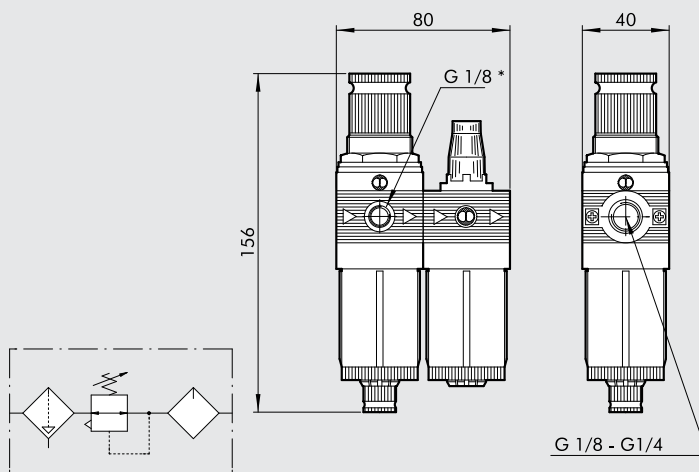
NOTES

- Compact FR+L unit with rolling diaphragm.
- High flow rates with reduced pressure drop
 - Excellent degree of condensate separation
 - Quantity of lubricant proportioned to air flow
 - Activates at low flow rates



TECHNICAL DATA		FR+L BIT 1/8"	FR+L BIT 1/4"
Threaded port		1/8"	1/4"
Setting range		0 to 2 - 0 to 4 - 0 to 8 - 0 to 12	
Degree of filtration	µm	5 (yellow) 20 (white) 50 (blue)	
Type of lubrication		Oil mist	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	140	
	scfm	5	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	260	
	scfm	9.2	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	gr	170	
Wall fixing screws		G1/8"	
Gauge port		M 4	
Mounting position		Vertical	
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure SAC: automatic drain with condensate discharge.	
Fluid		Operates by depression – requires variable air take-offs. Compressed air	
Notes		See chapters regarding individual elements	

DIMENSIONS



* Pressure gauge port

KEY TO CODES

FR+L ELEMENT	BIT SIZE	1/8 THREADED PORT	5 DEGREE OF FILTRATION	02 SETTING RANGE	RMSA CONDENSATE DRAIN
FR+L	BIT	1/8 1/4	5 = 5 µm 20 = 20 µm 50 = 50 µm	02 = 0 to 2 bar 04 = 0 to 4 bar 08 = 0 to 8 bar 012 = 0 to 12 bar	RMSA SAC

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure
 SAC: automatic drain with condensate discharge.
 Operates by depression – requires variable air take-offs.

ORDERING CODES

Code	Description
5106008	FR+L BIT 1/8 20 08 RMSA
5106011	FR+L BIT 1/8 20 012 RMSA
5206008	FR+L BIT 1/4 20 08 RMSA
5206011	FR+L BIT 1/4 20 012 RMSA

The following versions are available on request:

- with 5 µm or 50 µm degree of filtration
- with 0-2 bar or 0-4 bar setting range
- with SAC condensate discharge

NOTES

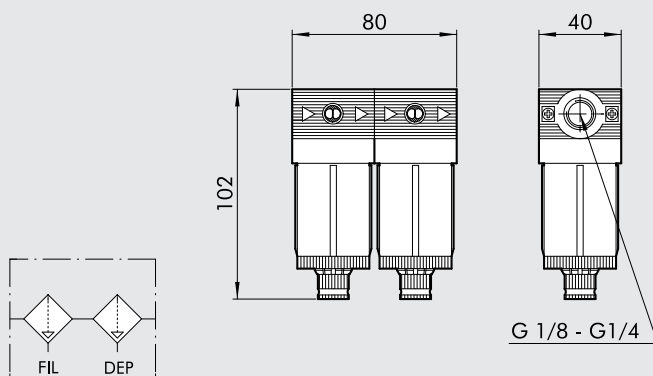
Compact filter + depurator unit for fine filtering followed by purification by coalescence.

- All-round condensate level viewing
- Condensate drainage - manual/semi-auto (RMSA) or automatic (SAC) on the filter
- 5 µm filter element.



TECHNICAL DATA		F+D BIT 1/8"	F+D BIT 1/4"
Threaded port		1/8"	1/4"
Degree of purification		5 µm filter – 99.97% depurator at 0.01 µm	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Maximum suggested flow rate		Please look at the flow rate curves at page 3-55	
Fluid		Compressed air	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	gr	110	
Mounting position		Vertical	
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure SAC: automatic drain with condensate discharge.	
Notes		Operates by depression – requires variable air take-offs. See chapters regarding individual elements	

DIMENSIONS



KEY TO CODES

F+D ELEMENT	BIT SIZE	1/4 THREADED PORT	5 DEGREE OF FILTRATION	RMSA CONDENSATE DRAIN
F+D	BIT	1/8 1/4	5 µm	RMSA SAC

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure
SAC: automatic drain with condensate discharge.
Operates by depression – requires variable air take-offs.

ORDERING CODES

Code	Description
5114001	F+D BIT 1/8 5 RMSA - RMSA
5114002	F+D BIT 1/8 5 SAC - RMSA
5214001	F+D BIT 1/4 5 RMSA - RMSA
5214002	F+D BIT 1/4 5 SAC - RMSA

FIL+LUB bit

Compact filter + lubricator unit with different degrees of filtration and high lubrication stability.

- Excellent degree of condensate separation
- Semi-automatic and automatic condensate drainage
- Lubrication activates at low flow rates
- All-round oil and condensate level viewing



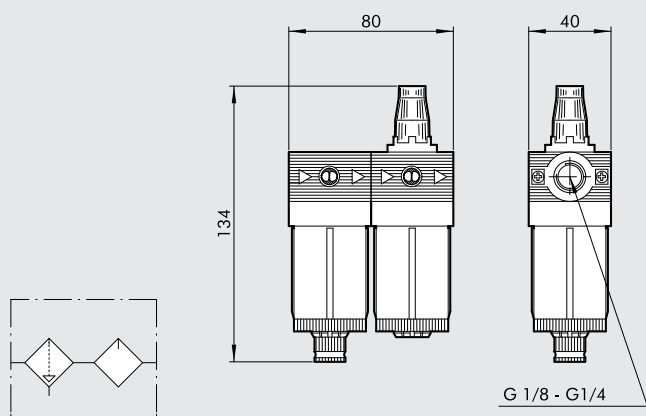
UNITS

FIL+LUB bit

TECHNICAL DATA

		F+L BIT 1/8"	F+L BIT 1/4"
Threaded port		1/8"	1/4"
Degree of filtration	µm	5 (yellow) - 20 (white) - 50 (blue)	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6 bar (0.6 MPa to 87 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	l/min	300	
	scfm	10.6	
Flow rate at 6 bar (0.6 MPa to 87 psi) ΔP 1 bar (0.1 MPa to 1.4 psi)	l/min	600	
	scfm	21.2	
Fluid		Compressed air	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	gr	90	
Wall fixing screws		M 4	
Mounting position		Vertical	
Condensed drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure SAC: automatic drain with condensate discharge. Operates by depression – requires variable air take-offs. See chapters regarding individual elements	
Notes			

DIMENSIONS



KEY TO CODES

F+L ELEMENT	BIT SIZE	1/4 THREADED PORT	5 DEGREE OF FILTRATION	RMSA CONDENSATE DRAIN
F+L	BIT	1/8 1/4	5 = 5 µm 20 = 20 µm 50 = 50 µm	RMSA SAC

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure

SAC: automatic drain with condensate discharge.
Operates by depression – requires variable air take-offs.

ORDERING CODES

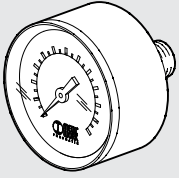
Code	Description
5113002	F+L BIT 1/8 20 RMSA
5213002	F+L BIT 1/4 20 RMSA

The following versions are available on request:

- with 5 µm or 50 µm degree of filtration
- with SAC condensate discharge

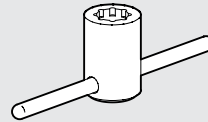
bit ACCESSORIES

PRESSURE GAUGE



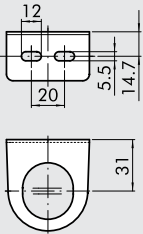
Code	Description
9700102	M 40 1/8 04
9700101	M 40 1/8 12

DOME DISASSEMBLY SPANNER



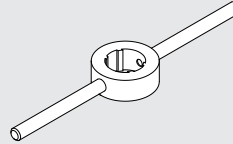
Code	Description
9220701	Cover LUB spanner

R/FR FIXING BRACKET



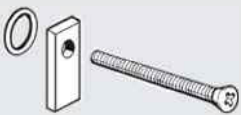
Code	Description
9200701	SF100 - BIT - ND 1/4 - SY1

COVER DISASSEMBLY SPANNER



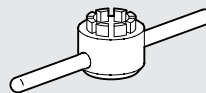
Code	Description
9170401	CS CS BIT

ASSEMBLY PLATE (PAIR)



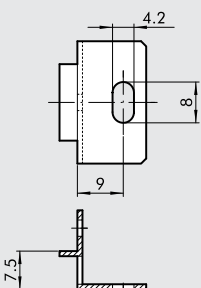
Code	Description
9170201	PAB 1/8 - 1/4 BIT

REDUCER PLUG DISASSEMBLY SPANNER



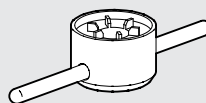
Code	Description
9170501	CS OTR BIT

WALL MOUNTING BRACKET (PAIR)



Code	Description
9170301	SFB 1/8 - 1/4 BIT

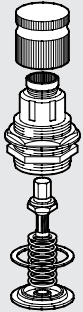
BOWL DISASSEMBLY SPANNER



Code	Description
9170601	CS TF - TL BIT - SY1

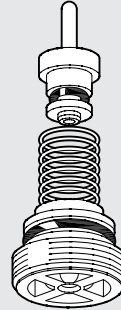
bit SPARE PARTS

UPPER COVER FOR MR



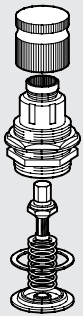
Code	Description
9250805	Spares CS 1/8 1/4 BIT 02
9250806	Spares CS 1/8 1/4 BIT 04
9250807	Spares CS 1/8 1/4 BIT 08
9250808	Spares CS 1/8 1/4 BIT 012

COMPLETE POPPET FOR MR AND MRA



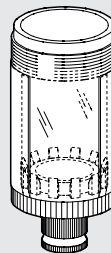
Code	Description
9250705	Spares poppet for MR
9250706	Spares poppet for MR-SR (rapid drain)
9250708	Spares poppet for MRA

UPPER COVER FOR MR FC



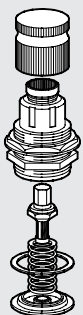
Code	Description
9250817	Spares CS FC 1/8 1/4 BIT 02
9250818	Spares CS FC 1/8 1/4 BIT 04

FILTER AND FILTER-REGULATOR BOWL



Code	Description
9255001	Spares TF 1/8 1/4 BIT RMSA
9255101	Spares TF 1/8 1/4 BIT SAC

UPPER COVER FOR MRA



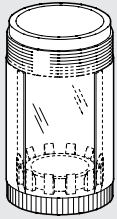
Code	Description
9250809	CSA 1/8 - 1/4 BIT 02
9250814	CSA 1/8 - 1/4 BIT 04
9250815	CSA 1/8 - 1/4 BIT 08
9250816	CSA 1/8 - 1/4 BIT 012

AUTOMATIC DRAIN



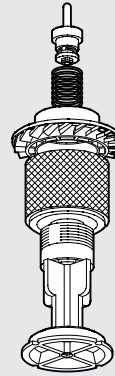
Code	Description
9000803	Spares SAC BIT

LUBRICATOR BOWL



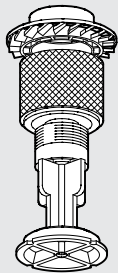
Code	Description
9251402	Spares TL 1/8 1/4 BIT

COMPLETE POPPET FOR FR



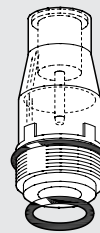
Code	Description
9250905	Spares OTFR 1/8 1/4 BIT 5
9250906	Spares OTFR 1/8 1/4 BIT 20
9250907	Spares OTFR 1/8 1/4 BIT 50

FILTER ELEMENT



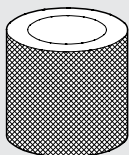
Code	Description
9251708	Spares FP 1/8-1/4 BIT 5 (yellow)
9251709	Spares FP 1/8-1/4 BIT 20 (white)
9251710	Spares FP 1/8-1/4 BIT 50 (blue)

TRANSPARENT LUBRICATOR COVER



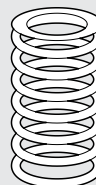
Code	Description
9251302	Spares CVL 100-200-300-400 BIT

DEPURATOR FILTER ELEMENT



Code	Description
9251712	Spares FP DEP. 1/8 1/4 BIT

SPRING FOR MR AND FR



Code	Description
9250610	Spares MO 02 BIT
9250611	Spares MO 04 BIT
9250612	Spares MO 08 BIT
9250613	Spares MO 012 BIT

SUMMARY Skillair®

● **GENERAL TECHNICAL DATA Skillair®** PAGE 3-76



● **Skillair® FILTER** PAGE 3-79



● **Skillair® DEPURATOR** PAGE 3-83



● **Skillair® ACTIVE CARBON FILTER** PAGE 3-86



● **DIAPHRAGM DRIER SERIES DRY 100 Skillair®** PAGE 3-89



● **Skillair® REGULATORS** PAGE 3-92



● **Skillair® 100 IN-SERIES REGULATOR** PAGE 3-96



● **Skillair® PADLOCKABLE REGULATOR** PAGE 3-97



● **Skillair® PILOT REGULATOR** PAGE 3-99



● **Skillair® PILOT PADLOCKABLE REGULATOR** PAGE 3-101



● **Skillair® 300 PILOT OPERATED REGULATOR** PAGE 3-102



● **Skillair® FILTER REGULATOR** PAGE 3-103



● **Skillair® LUBRICATOR** PAGE 3-106

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	● Skillair® PROGRESSIVE START VALVE	PAGE 3-115
	● Skillair® PROGRESSIVE STARTER	PAGE 3-117
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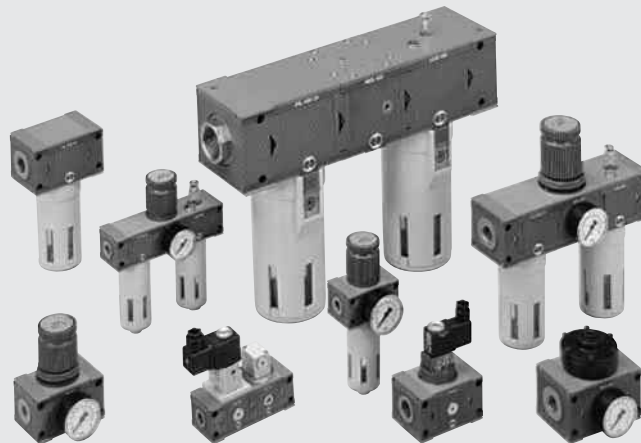
GENERAL TECHNICAL DATA Skillair®

The superior technology of Skillair® FRL units is the expression of Metal Work innovation. The FRL system is the brainchild of a joint study by Metal Work engineers and researchers from the Department of Mechanics in Turin. The integration of metal alloys and super-resistant techno-polymers is the result of co-operation between CESAP (European Centre for the Development of Plastic Applications) and leading international companies such as Du Pont, EMS Chemie and Hoechst. The installation of advanced processing and quality control systems guarantees the reliability of Skillair® FRLs.

Technical features

The Skillair® units incorporate very interesting technological features:

- Compactness: with the same flow capacity our unit is one of the smallest on the market.
- Modularity: various elements such as filters, reducers, lubricators, 3-way valves, progressive actuators and air take-offs can be combined at will. With the modular system the FRL units can be removed without disturbing the pipes.
- Easy maintenance: Any of the elements or the entire unit can be removed without disturbing the remaining part or pipes.



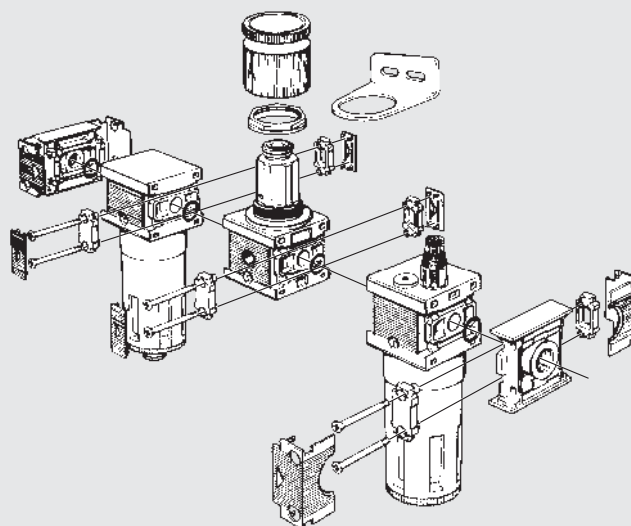
TECHNICAL DATA	SK 100		SK 200			SK 300			SK 400			
	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Threaded port												
Degree of filtration	µm											
Degree of purification	µm											
Setting range	bar											
Max. input pressure	MPa		1.3			1.3			1.3			
	bar		15			13			13			
	psi		217			188			188			
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	NL/min		From 1100 to 20000									
ΔP 0.5 bar (0.05 MPa to 7 psi)												
Fluid	Lubricated or unlubricated compressed air											
Temperature range at 1 MPa; 10 bar; 145 psi	°C											
	°F											
Elements comprising the range	Filter, Depurator, Regulator, Pilot operated regulator, In-series Regulator, Filter-regulator, Lubricator with various lubricant filling systems, Circuit Shut-off Valve, Progressive Actuator.											
Compatibility with oils	Please refer to page 6-7 of the technical documentation											

Skillair® MODULARITY

The FRL units can be removed from the system without disturbing the pipes.

This can be done with a single element or with the entire system.

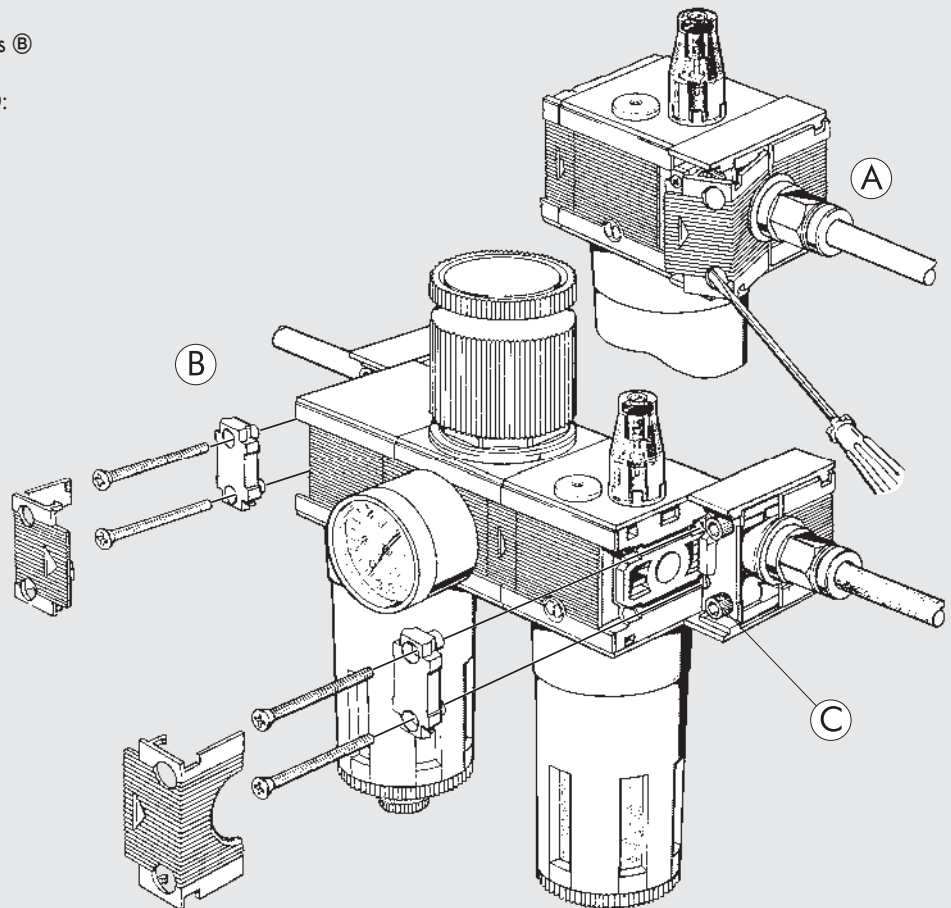
Assemble the unit so that the air flows in the direction marked by the arrows.



DISASSEMBLING THE UNIT – WALL FIXING

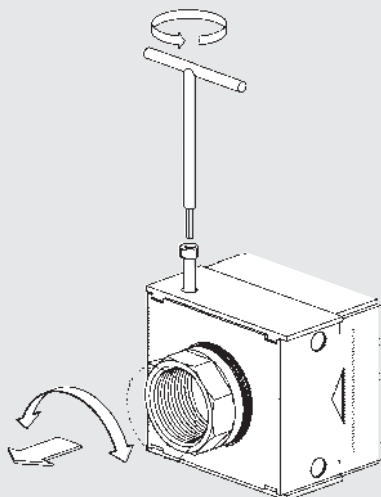
How to disassemble Skillair® end plates:

- Remove the plate **A**.
- Unscrew the screws and remove the cams **B** to disassemble the unit.
- Screws to fix the end plates to the wall **C**:
 Series 100: M4x50
 Series 200: M5x60
 Series 300: M5x70
 Series 400: M6x110



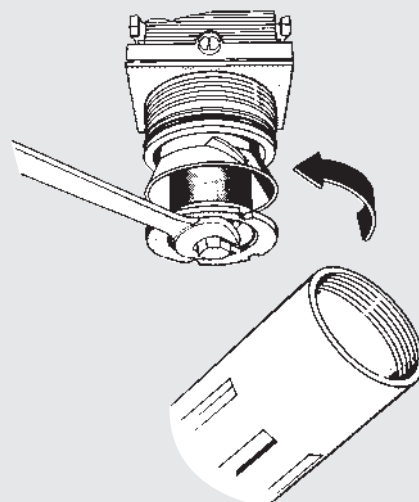
Skillair® 400 - ROTARY SLIDING JOINT

The series 400 comes with a patented system with a rotary sliding end joint to allow the unit to be adapted to the pipe cutting distance. For correct assembly and disassembly, loosen the screw in the end plate before screwing in or unscrewing the bush.



CLEANING AND/OR REPLACING THE FILTER ELEMENTS

Before unscrewing the bowl to replace the filter elements, check that the line is no longer pressurized.
 Replace as shown in the diagram.

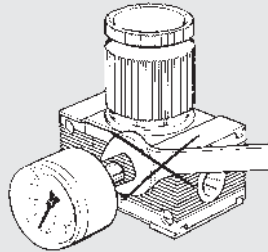


GENERAL RULES FOR USE AND MAINTENANCE

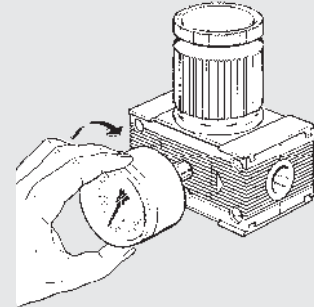
MOUNTING THE PRESSURE GAUGE

- ① Do not use a spanner.
- ② The gauge must be mounted by hand. Use liquid sealants only. Do not use Teflon.

①



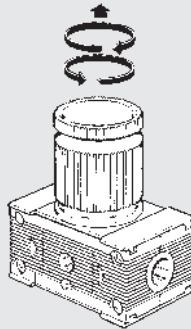
②



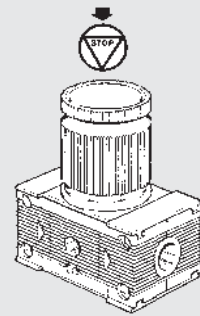
SETTING THE PRESSURE

- ③ **N.B.: the pressure in standard regulators must always be set upwards.** Before setting the pressure, check that the knob is raised.
- ④ When the required pressure has been reached, press the knob downwards.

③



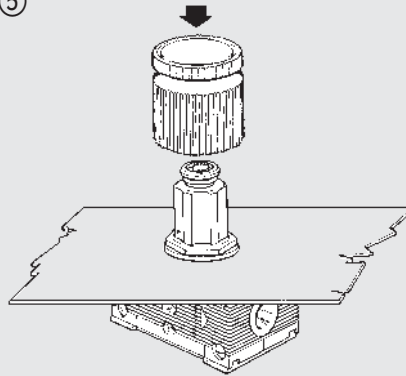
④



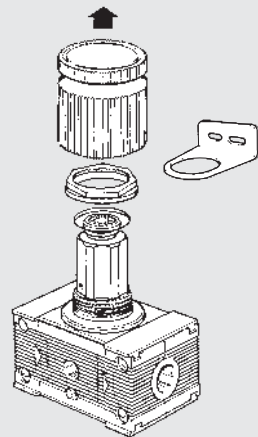
MOUNTING THE REGULATOR AND FILTER-REGULATOR

- ⑤ Panel mounting: remove the knob and lock the regulator with the ring nut.
- ⑥ Wall mounting: use a suitable bracket (see Skillair® accessories).

⑤



⑥



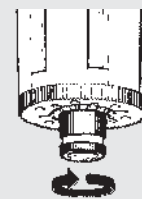
SEMI-AUTO CONDENSATE DRAIN FOR FILTER, FILTER-REGULATOR AND DEPURATOR



The semi-auto condensate drain is the normally open type. When there is pressure in the bowl, the drain closes. When there is no pressure in the bowl, it opens and the condensate drains out.



If necessary, it is possible to drain the condensate whilst the bowl is pressurised. The simple manual operation of "pushing up the valve" will allow the condensate to drain.



When rotating the button clockwise, the valve becomes in locked position, and can only work when the button is returned to the central position.

The Job of the filter is to remove any solid or liquid impurities from the air generated by the compressor.
 Incoming air is rotated by the centrifuge unit. The heaviest liquid and solid particles are projected against the walls of the container and forced to adhere to it. As they accumulate they form drops that deposit on the bottom by gravity. The remaining solid particles are held back by the porous element depending on the filtering threshold.
 The condensate accumulation area is kept still to prevent previously deposited impurities from being re-circulated.
 The accumulated condensate is drained out through the drain - automatically when there is no pressure in the filter, or by hand pressing the button.
 An automatic drain is available. It automatically eliminates condensate from the container whenever necessary, whatever the pressure.



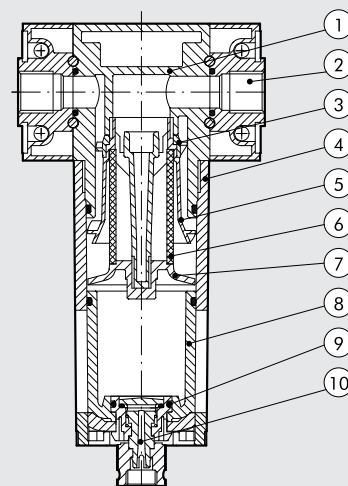
TECHNICAL DATA	FIL 100		FIL 200			FIL 300			FIL 400				
	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"	
Threaded port													
Degree of filtration	μm 5 - 20 - 50		5 - 20 - 50			5 - 20 - 50			5 - 20 - 50				
Max. input pressure	MPa 1.5		1.3			1.3			1.3		1.3		1.3
	bar 15		13			13			13		13		13
	psi 217		188			188			188		188		188
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	NL/min 1400		2400			3800			16500		20000		
ΔP 0.5 bar (0.05 MPa to 7 psi)	scfm 50		85			135			590		710		
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	NL/min 2000		3100			5300			-		-		
ΔP 1 bar (0.1 MPa to 14 psi)	scfm 71		110			188			-		-		
Max temperature at 1 MPa; 10 bar; 145 psi	°C 50		50			50			50		50		
	°F 122		122			122			122		122		
Weight	Kg 0.4		0.7			1.4			5.2		6		
Wall fixing screws	M4 x 50		M5 x 60			M5 x 70			M6 x 110		M6 x 110		
Bowl capacity	cm³ 22		45			75			270		270		
Mounting position	Vertical		Vertical			Vertical			Vertical		Vertical		
Drain	RMSA - SAC		RMSA - SAC - RA			RMSA - RA			RMSA - RA		RMSA - RA		
Fluid	RMSA: drain with manual condensate discharge and automatic discharge at zero pressure RA: automatic drain with condensate discharge, independent of pressure and flow rate SAC: automatic drain with condensate discharge .Operates by depression – requires variable air take-offs. Compressed air.												
Notes on use	The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.												

UNITS

Skillair® FILTER

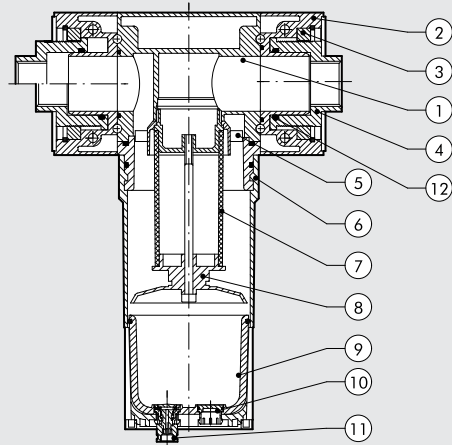
COMPONENTS FIL 100 - 200 - 300

- ① Technopolymer body
- ② Zamak end plate
- ③ Technopolymer centrifuge
- ④ Bowl: technopolymer for FIL 100 and FIL 200, metal for FIL 300
- ⑤ Technopolymer baffle
- ⑥ Sintered HDPE filter cartridge
- ⑦ Technopolymer screen
- ⑧ Clear technopolymer glass
- ⑨ NBR gaskets
- ⑩ Drain (RMSA)



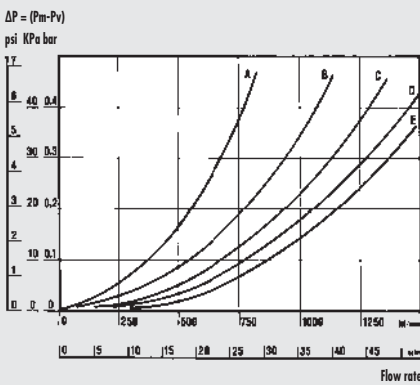
COMPONENTS FIL 400

- ① Aluminium body
- ② Aluminium end plate
- ③ OT58 brass retaining ring
- ④ OT58 threaded bush, axial adjustment
- ⑤ Technopolymer centrifuge
- ⑥ Aluminium bowl
- ⑦ Sintered bronze filter cartridge
- ⑧ Aluminium screen
- ⑨ Clear technopolymer glass
- ⑩ Technopolymer plug
- ⑪ Drain (RMSA)
- ⑫ NBR gaskets

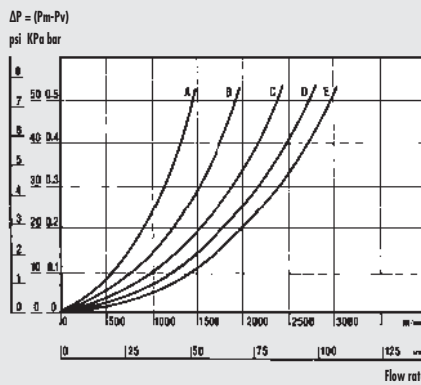


FLOW CHARTS

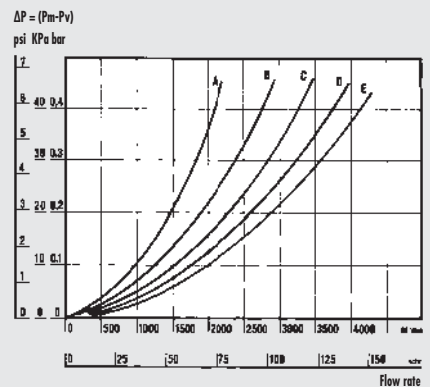
FIL 100 1/4 - 3/8



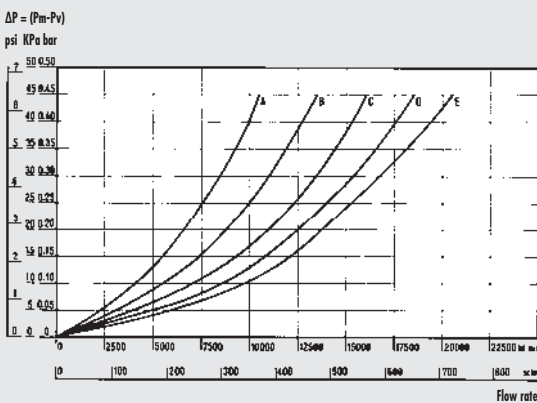
FIL 200 1/4 - 3/8 - 1/2



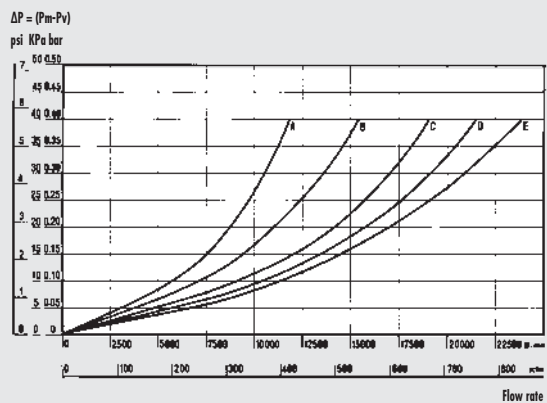
FIL 300 1/2 - 3/4 - 1



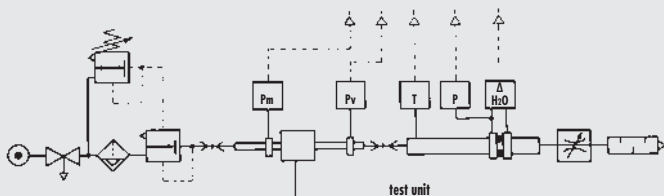
FIL 400 1"



FIL 400 2"



• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

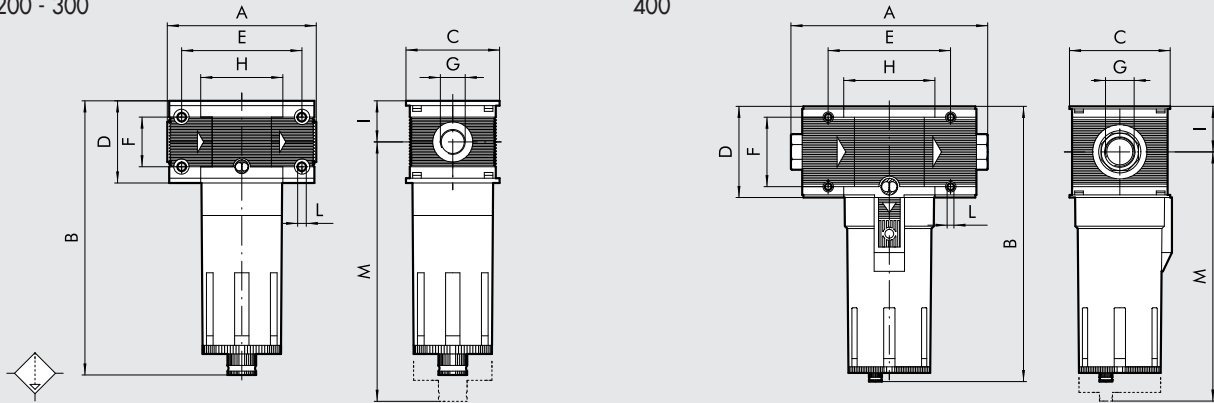


- | | |
|--------------------------------|---------------------------------|
| (A) = 2 bar - 0.2 MPa - 29 psi | (D) = 8 bar - 0.8 MPa - 116 psi |
| (B) = 4 bar - 0.4 MPa - 58 psi | (E) = 10 bar - 1 MPa - 145 psi |
| (C) = 6 bar - 0.6 MPa - 87 psi | |

DIMENSIONS

100 - 200 - 300

400



	FIL 100		FIL 200			FIL 300			FIL 400			
	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Threaded port G												
A	78			93.5		110		112		225 to 255		283 to 313
B	RMSA 144			175			195			320		
	RA -			179			199			324		
	SAC 148			179			-			-		
C	50			63			72			116		
D	43			55			65			105		
E	63			78.5			92			141.4		
F	26			36			42			80		
H	43			55.5			65			105.4		
I	21.5			27.5			32.5			52.5		
L	M4 hole			M5 hole			M5 hole			M6 hole		
M	RMSA 137			196			215			378		
	RA -			200			219			382		
	SAC 141			200			-			-		

NOTES

KEY TO CODES

FIL ELEMENT	100 SIZE	1/4 THREADED PORT	20 DEGREE OF FILTRATION	RMSA TYPE OF DRAIN	
FIL.	100	1/4	5 = 5 µm 20 = 20 µm 50 = 50 µm	RMSA	
		3/8		SAC	
		1/4		RMSA	
	200	300	3/8		SAC
			1/2		RA*
			1/2		RMSA
	300	400	3/4		RA
			1		
			1		
	400		1 1/4		
			1 1/2		
			2		

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure

RA: automatic drain with condensate discharge, independent of pressure and flow rate. (for size 300 and 400)

SAC: automatic drain with condensate discharge.

Operates by depression – requires variable air take-offs. (for size 100 and 200)

* For Skillair® 200 with RA, please contact our sales assistance department.

ORDERING CODES

Code	Description	Code	Description	Code	Description
Skillair® 100 FILTER		Skillair® 300 FILTER		Skillair® 400 FILTER	
3280001A	FIL 100 5 RMSA without end plates	4480001A	FIL 300 5 RMSA without end plates	6180001A	FIL 400 5 RMSA without end plates
3280007A	FIL 100 5 SAC without end plates	4480002A	FIL 300 20 RMSA without end plates	6180002A	FIL 400 20 RMSA without end plates
3280002A	FIL 100 20 RMSA without end plates	4480003A	FIL 300 50 RMSA without end plates	6180003A	FIL 400 50 RMSA without end plates
3280008A	FIL 100 20 SAC without end plates	4480004A	FIL 300 5 RA without end plates	6180004A	FIL 400 5 RA without end plates
3280003A	FIL 100 50 RMSA without end plates	4480005A	FIL 300 20 RA without end plates	6180005A	FIL 400 20 RA without end plates
3280009A	FIL 100 50 SAC without end plates	4480006A	FIL 300 50 RA without end plates	6180006A	FIL 400 50 RA without end plates
3280001	FIL 100 1/4 5 RMSA	4480001	FIL 300 1/2 5 RMSA	6180001	FIL 400 1 5 RMSA
3280007	FIL 100 1/4 5 SAC	4480002	FIL 300 1/2 20 RMSA	6180002	FIL 400 1 20 RMSA
3280002	FIL 100 1/4 20 RMSA	4480003	FIL 300 1/2 50 RMSA	6180003	FIL 400 1 50 RMSA
3280008	FIL 100 1/4 20 SAC	4480004	FIL 300 1/2 5 RA	6180004	FIL 400 1 5 RA
3280003	FIL 100 1/4 50 RMSA	4480005	FIL 300 1/2 20 RA	6180005	FIL 400 1 20 RA
3280009	FIL 100 1/4 50 SAC	4480006	FIL 300 1/2 50 RA	6180006	FIL 400 1 50 RA
3380001	FIL 100 3/8 5 RMSA	4580001	FIL 300 3/4 5 RMSA	6280001	FIL 400 1 1/4 5 RMSA
3380007	FIL 100 3/8 5 SAC	4580002	FIL 300 3/4 20 RMSA	6280002	FIL 400 1 1/4 20 RMSA
3380002	FIL 100 3/8 20 RMSA	4580003	FIL 300 3/4 50 RMSA	6280003	FIL 400 1 1/4 50 RMSA
3380008	FIL 100 3/8 20 SAC	4580004	FIL 300 3/4 5 RA	6280004	FIL 400 1 1/4 5 RA
3380003	FIL 100 3/8 50 RMSA	4580005	FIL 300 3/4 20 RA	6280005	FIL 400 1 1/4 20 RA
3380009	FIL 100 3/8 50 SAC	4580006	FIL 300 3/4 50 RA	6280006	FIL 400 1 1/4 50 RA
Skillair® 200 FILTER		4680001	FIL 300 1 5 RMSA	6380001	FIL 400 1 1/2 5 RMSA
3480001A	FIL 200 5 RMSA without end plates	4680002	FIL 300 1 20 RMSA	6380002	FIL 400 1 1/2 20 RMSA
3480007A	FIL 200 5 SAC without end plates	4680003	FIL 300 1 50 RMSA	6380003	FIL 400 1 1/2 50 RMSA
3480002A	FIL 200 20 RMSA without end plates	4680004	FIL 300 1 5 RA	6380004	FIL 400 1 1/2 5 RA
3480008A	FIL 200 20 SAC without end plates	4680005	FIL 300 1 20 RMSA	6380005	FIL 400 1 1/2 20 RA
3480003A	FIL 200 50 RMSA without end plates	4680006	FIL 300 1 50 RA	6380006	FIL 400 1 1/2 50 RA
3480009A	FIL 200 50 SAC without end plates			6480001	FIL 400 2 5 RMSA
3480001	FIL 200 1/4 5 RMSA			6480002	FIL 400 2 20 RMSA
3480007	FIL 200 1/4 5 SAC			6480003	FIL 400 2 50 RMSA
3480002	FIL 200 1/4 20 RMSA			6480004	FIL 400 2 5 RA
3480008	FIL 200 1/4 20 SAC			6480005	FIL 400 2 20 RA
3480003	FIL 200 1/4 50 RMSA			6480006	FIL 400 2 50 RA
3480009	FIL 200 1/4 50 SAC				
3580001	FIL 200 3/8 5 RMSA				
3580007	FIL 200 3/8 5 SAC				
3580002	FIL 200 3/8 20 RMSA				
3580008	FIL 200 3/8 20 SAC				
3580003	FIL 200 3/8 50 RMSA				
3580009	FIL 200 3/8 50 SAC				
3680001	FIL 200 1/2 5 RMSA				
3680007	FIL 200 1/2 5 SAC				
3680002	FIL 200 1/2 20 RMSA				
3680008	FIL 200 1/2 20 SAC				
3680003	FIL 200 1/2 50 RMSA				
3680009	FIL 200 1/2 50 SAC				

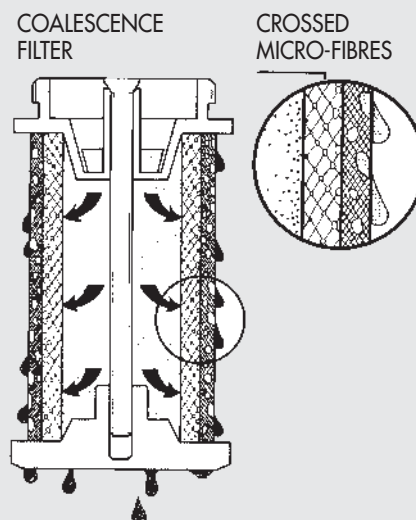
The role of the depurator is to separate the liquid and solid particles contained in the compressed air with a high degree of efficiency. This separation is carried out using a special filtering element called a "coalescence cartridge".



TECHNICAL DATA	DEP 100		DEP 200			DEP 300			DEP 400			
	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Threaded port	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Degree of purification	99.97% at 0.01 μm		99.97% at 0.01 μm			99.97% at 0.01 μm			99.97% at 0.01 μm			
Max. inlet pressure	MPa	1.5	1.3			1.3			1.3		1.3	
	bar	15	13			13			13		13	
	psi	217	188			188			188		188	
Suggested flow at 6 bar	Nl/min	230	360			500			2300			
Maximum suggested flow rate	Please look at the flow rate curves at page 3-84											
Max temperature at: 1 MPa; 10 bar; 145 psi	°C	50	50			50			50		50	
	°F	122	122			122			122		122	
Weight	Kg	0.4	0.9			1.4			4.2		5	
Wall fixing screws		M4 x 50	M5 x 60			M5 x 70			M6 x 110		M6 x 110	
Bowl capacity	cm³	22	45			75			270		270	
Mounting position		Vertical	Vertical			Vertical			Vertical		Vertical	
Drain		RMSA - SAC	RMSA - SAC			RMSA - RA			RMSA - RA		RMSA - RA	
		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure										
		RA: automatic drain with condensate discharge, independent of pressure and flow rate										
		SAC: automatic drain with condensate discharge. Operates by depression - requires variable air take-offs.										
Fluid		5 μm filtered air										
Notes on use		It is advisable to mount a 5 μm pre-filter in order to separate the solid particles first.										
		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.										

HOW THE COALESCENCE CARTRIDGE WORKS

Air from the mains – full of impurities – flows into the coalescence cartridge and then passes through the crossed micro-fibres that make up the cartridge. During this movement the liquid particles come into contact with the crossed micro-fibres and adhere to them. Due to the air pressure and gravity they join up with other micro-drops at each cross-over point and gradually increase in volume, leading to the physical phenomenon called coalescence. When they stop moving, the drops deposit on the outside of the cartridge, from which they detach and drop to the bottom. Since the volume of liquid leaving the cartridge is exactly the same as the drops arriving, the coalescence cartridge ought to work indefinitely. Solid particles are caught with the same efficiency but, unlike drops, they are not drained out and clog the cartridge. To get round this problem, it is necessary to mount a 5 μm pre-filter before the fine oil filter to separate the solid particles first.

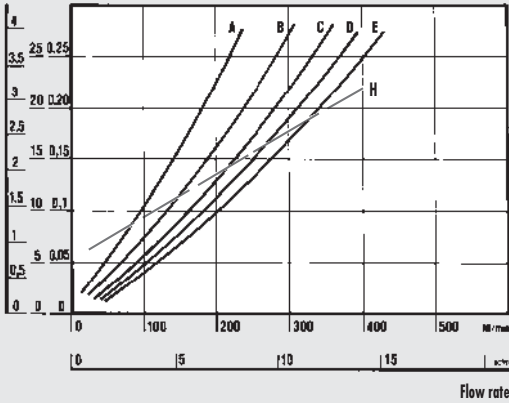


FLOW CHARTS

DEP 100 1/4 - 3/8

$$\Delta P = (P_m - P_v)$$

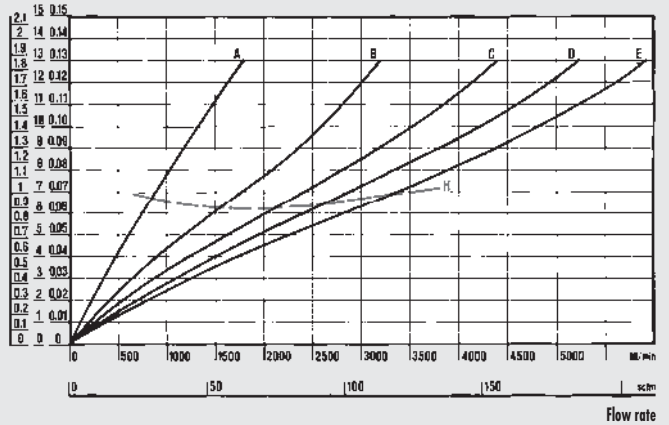
psi Kpa bar



DEP 400 1"

$$\Delta P = (P_m - P_v)$$

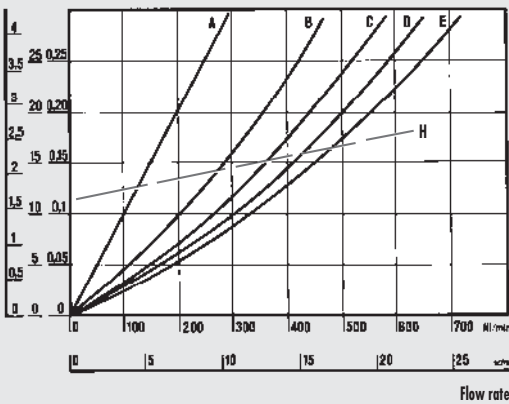
psi Kpa bar



DEP 200 1/4 - 3/8 - 1/2

$$\Delta P = (P_m - P_v)$$

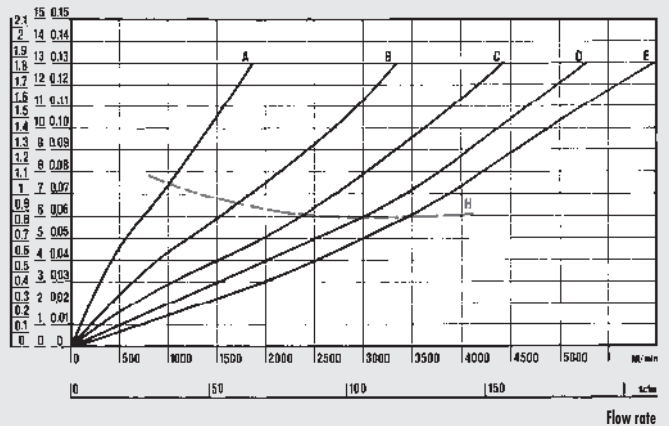
psi Kpa bar



DEP 400 2"

$$\Delta P = (P_m - P_v)$$

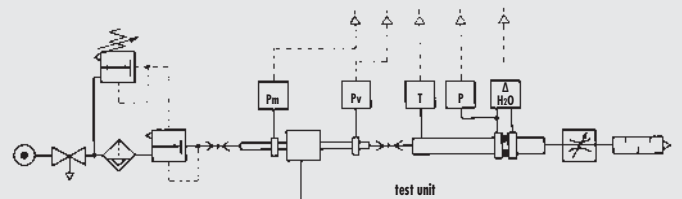
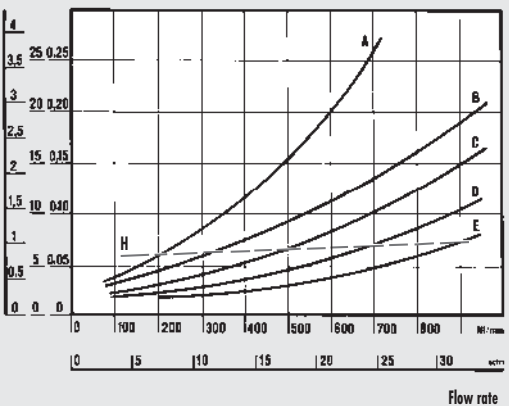
psi Kpa bar



DEP 300 1/2 - 3/4 - 1

$$\Delta P = (P_m - P_v)$$

psi Kpa bar



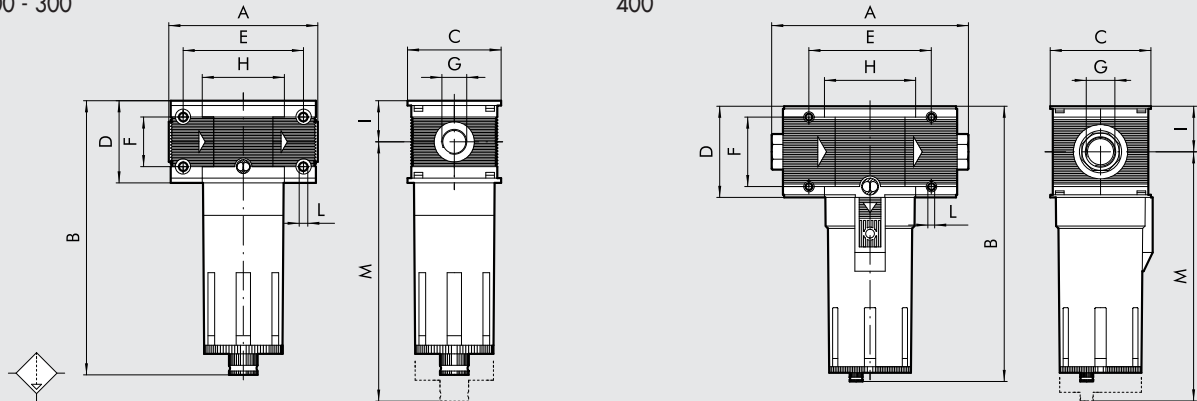
• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

- (A) = 2 bar - 0.2 MPa - 29 psi
- (B) = 4 bar - 0.4 MPa - 58 psi
- (C) = 6 bar - 0.6 MPa - 87 psi
- (D) = 8 bar - 0.8 MPa - 116 psi
- (E) = 10 bar - 1 MPa - 145 psi
- (H) = maximum flow rate recommended for optimal operation

DIMENSIONS

100 - 200 - 300

400



	DEP 100		DEP 200			DEP 300			DEP 400			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	78			93.5		110		112	225 to 255			283 to 313
B	RMSA RA	144 -		175 -			195 199		320 324			
C		50		63			72		116			
D		43		55			65		105			
E		63		78.5			92		141.4			
F		26		36			42		80			
H		43		55.5			65		105.4			
I		21.5		27.5			32.5		52.5			
L		M4 hole		M5 hole			M5 hole		M6 hole			
M	RMSA RA	137 -		196 -			215 219		378 382			

KEY TO CODES

DEP	100	1/4	RMSA	
ELEMENT	SIZE	THREADED PORT	TYPE OF DRAIN	
DEP	100	1/4	RMSA	RMSA: drain with manual condensate discharge and automatic discharge at zero pressure
	200	3/8		
	300	1/4		RA: automatic drain with condensate discharge, independent of pressure and flow rate. (for size 300 and 400)
	400	3/8		
		1/2	RMSA	
		3/4	RA	
		1		
		1		
		1 1/4		
		1 1/2		
		2		

ORDERING CODES

Code	Description	Code	Description	Code	Description
Skillair® 100 DEPURATOR		Skillair® 300 DEPURATOR		Skillair® 400 DEPURATOR	
3288001A	D 100 RMSA without end plates	4488001A	D 300 RMSA without end plates	6188001A	D 400 RMSA without end plates
3288001	D 100 1/4 RMSA	4488002A	D 300 RA without end plates	6188002A	D 400 RA without end plates
3388001	D 100 3/8 RMSA	4488001	D 300 1/2 RMSA	6188001	D 400 1 RMSA
		4488002	D 300 1/2 RA	6188002	D 400 1 RA
		4588001	D 300 3/4 RMSA	6288001	D 400 1 1/4 RMSA
		4588002	D 300 3/4 RA	6288002	D 400 1 1/4 RA
		4688001	D 300 1 RMSA	6388001	D 400 1 1/2 RMSA
		4688002	D 300 1 RA	6388002	D 400 1 1/2 RA
				6488001	D 400 2 RMSA
				6488002	D 400 2 RA

Skillair® ACTIVE CARBON FILTER

Active carbon filtering systems are the most efficient in the industry as they eliminate all traces of oils, solvents and hydrocarbons, and remove unpleasant odours from the air.

The operating principle is based on active carbon's ability to absorb the majority of the polluting particles in the air thanks to the presence of tiny passages inside the carbon granules.

The incoming air must be filtered (5 µm) and purified (0.01 µm) to increase the duration and efficiency of the cartridge.

The cartridge must be replaced at set intervals since there is no difference in load loss between an efficient cartridge and a saturated one.

N.B. To maintain the same performance and duration specified on the data sheet, the load loss (ΔP) must not exceed 75 mbar.



UNITS

Skillair® ACTIVE CARBON FILTER

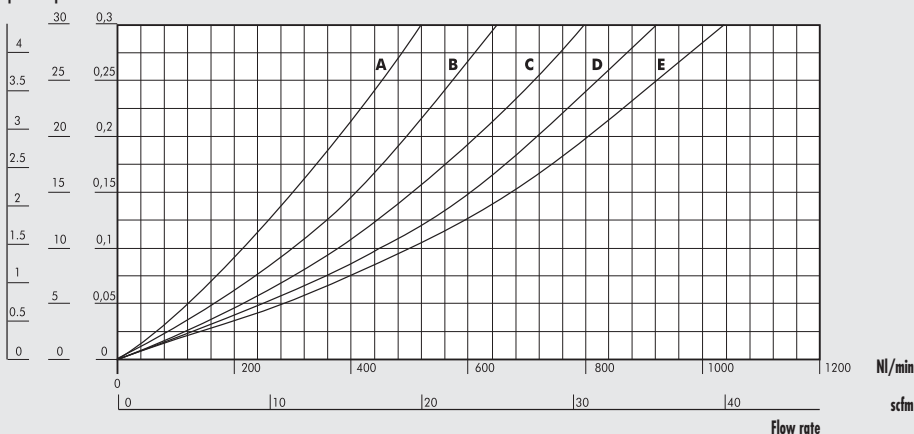
TECHNICAL DATA		AC 100		AC 200			AC 300			AC 400			
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Residual oil at 20°C *	mg/m ³	0.003		0.003			0.003			0.003			
Duration of cartridge *	hours	4000		4000			4000			1000			
Max. inlet pressure	MPa	1.5		1.3			1.3			1.3			
	bar	15		13			13			13			
Max temperature at: 1 MPa; 10 bar; 145 psi	psi	217		188			188			188			
	°C	50		50			50			50			
Weight	°F	122		122			122			122			
	Kg	0.4		0.9			1.4			4.2		5	
Wall fixing screws		M4 x 50		M5 x 60			M5 x 70			M6 x 110			
Mounting position		In any position.											
Fluid		0.01 µm filtered and deperated air.											
Notes on use		Upstream it's necessary to mount a coalescence filter deperator of 0.01 µm.											
* if the load loss of 75 mbar is not exceeded													

FLOW CHARTS

AC 100 1/4 - 3/8

ΔP = (Pm-Pv)

psi Kpa bar



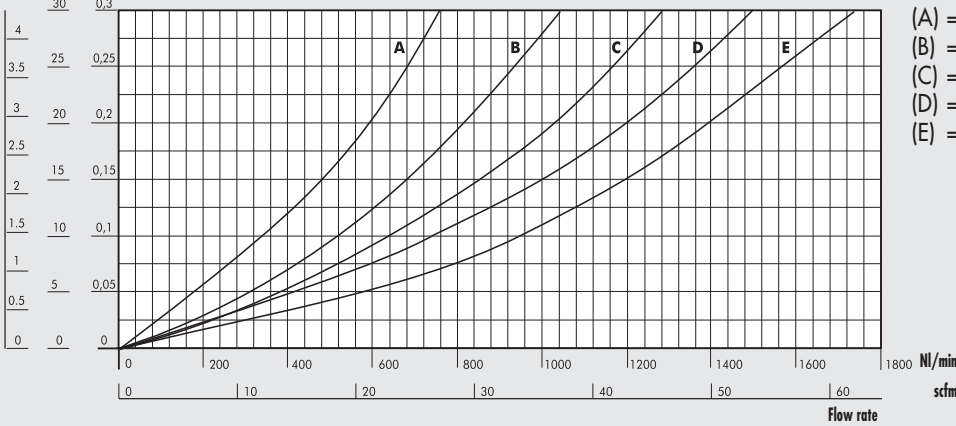
- (A) = 2 bar - 0.2 MPa - 29 psi
- (B) = 4 bar - 0.4 MPa - 58 psi
- (C) = 6 bar - 0.6 MPa - 87 psi
- (D) = 8 bar - 0.8 MPa - 116 psi
- (E) = 10 bar - 1 MPa - 145 psi

FLOW CHARTS

AC 200 1/4 - 3/8 - 1/2

$\Delta P = (P_m - P_v)$

psi Kpa bar

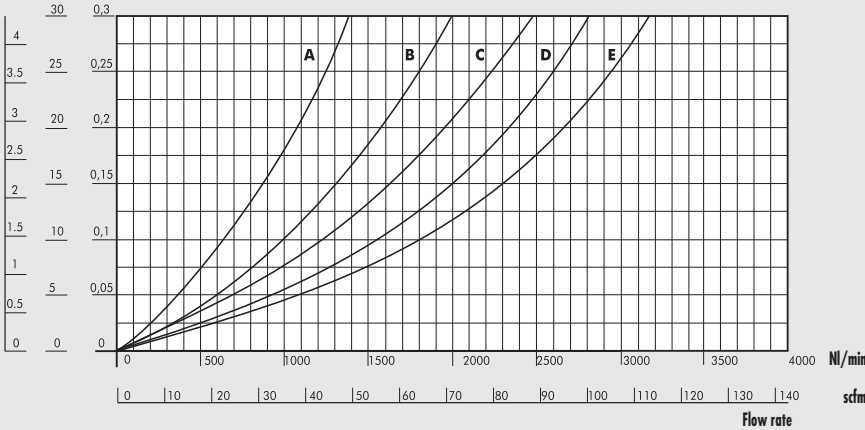


- (A) = 2 bar - 0.2 MPa - 29 psi
- (B) = 4 bar - 0.4 MPa - 58 psi
- (C) = 6 bar - 0.6 MPa - 87 psi
- (D) = 8 bar - 0.8 MPa - 116 psi
- (E) = 10 bar - 1 MPa - 145 psi

AC 300 1/2 - 3/4 - 1

$\Delta P = (P_m - P_v)$

psi Kpa bar

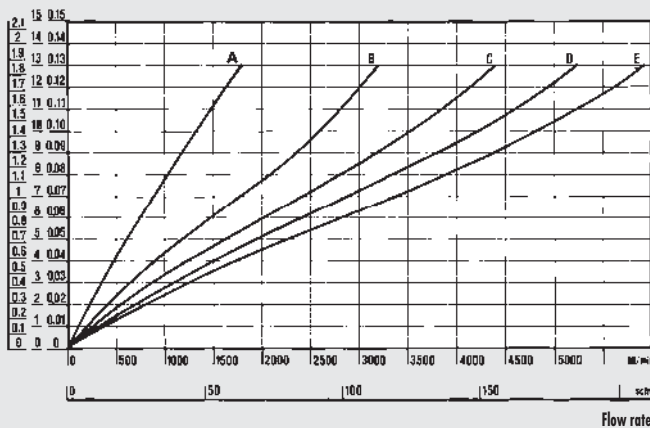


- (A) = 2 bar - 0.2 MPa - 29 psi
- (B) = 4 bar - 0.4 MPa - 58 psi
- (C) = 6 bar - 0.6 MPa - 87 psi
- (D) = 8 bar - 0.8 MPa - 116 psi
- (E) = 10 bar - 1 MPa - 145 psi

AC 400 1

$\Delta P = (P_m - P_v)$

psi Kpa bar

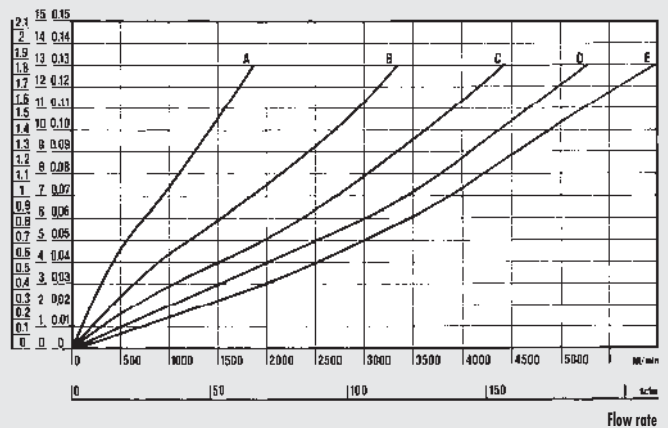


- (A) = 2 bar - 0.2 MPa - 29 psi
- (B) = 4 bar - 0.4 MPa - 58 psi
- (C) = 6 bar - 0.6 MPa - 87 psi
- (D) = 8 bar - 0.8 MPa - 116 psi
- (E) = 10 bar - 1 MPa - 145 psi

AC 400 2

$\Delta P = (P_m - P_v)$

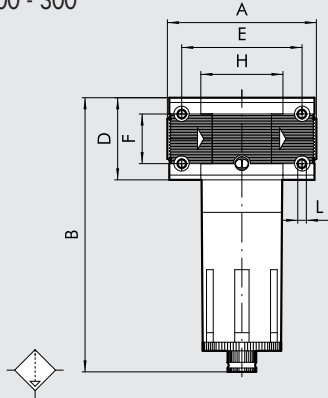
psi Kpa bar



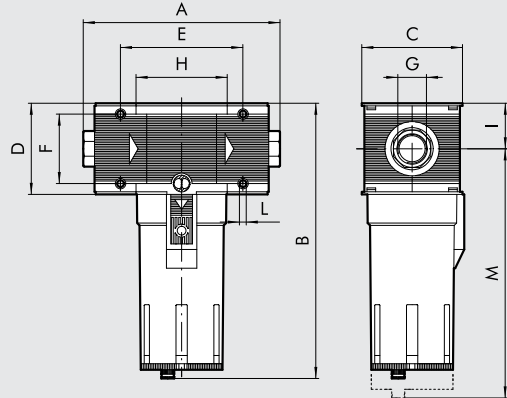
- (A) = 2 bar - 0.2 MPa - 29 psi
- (B) = 4 bar - 0.4 MPa - 58 psi
- (C) = 6 bar - 0.6 MPa - 87 psi
- (D) = 8 bar - 0.8 MPa - 116 psi
- (E) = 10 bar - 1 MPa - 145 psi

DIMENSIONS

100 - 200 - 300



400



	AC 100		AC 200			AC 300			AC 400			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	78		93.5			110		112	225 to 255			
B	144		175			195		320				
C	50		63			72		116				
D	43		55			65		105				
E	63		78.5			92		141.4				
F	26		36			42		80				
H	43		55.5			65		105.4				
I	21.5		27.5			32.5		52.5				
L	M4 hole		M5 hole			M5 hole		M6 hole				
M	137		196			215		378				

KEY TO CODES

AC	100	1/4	RMSA	
ELEMENT	SIZE	THREADED PORT	TYPE	
AC = Active carbon	100	1/4	RMSA	RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.
	200	3/8		
	300	1/4		
	400	3/8		
		1/2		
		3/4		
		1		
		1		
		1 1/4		
		1 1/2		
		2		

ORDERING CODES

Code	Description	Code	Description	Code	Description
Skillair® 100 ACTIVE CARBON FILTER		Skillair® 300 ACTIVE CARBON FILTER		Skillair® 400 ACTIVE CARBON FILTER	
3288003A	FIL AC 100 RMSA without end plates	4488003A	FIL AC 300 RMSA without end plates	6188003A	FIL AC 400 RMSA without end plates
3288003	FIL AC 100 1/4 RMSA	4488003	FIL AC 300 1/2 RMSA	6188003	FIL AC 400 1 RMSA
3388003	FIL AC 100 3/8 RMSA	4588003	FIL AC 300 3/4 RMSA	6288003	FIL AC 400 1 1/4 RMSA
		4688003	FIL AC 300 1 RMSA	6388003	FIL AC 400 1 1/2 RMSA
Skillair® 200 ACTIVE CARBON FILTER				6488003	FIL AC 400 2 RMSA
3488003A	FIL AC 200 RMSA without end plates				
3488003	FIL AC 200 1/4 RMSA				
3588003	FIL AC 200 3/8 RMSA				
3688003	FIL AC 200 1/2 RMSA				

DIAPHRAGM DRIER SERIES DRY 100 Skillair®



Skillair® diaphragm driers are used to reduce the air's moisture content by lowering the dew point, i.e. the temperature at which condensate starts to form. They use diaphragms with a new cross-fibre system that guarantees a lower consumption of regenerated air and hence power.

This is an all-in-one unit complete with a filter, purifier, air intake and drier. The air intake uses air that has been filtered and purified, but not dried, and sends it to utilities not requiring dry air. This is a much more efficient system as only the required quantity of compressed air is dried.

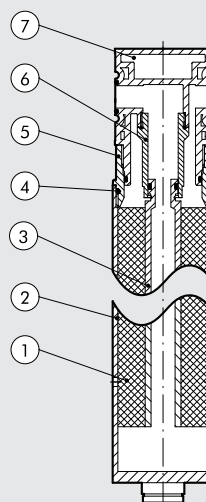
An alternative proposal is the drier by itself. As the Skillair® system is modular, it can be inserted in any type of assembly. It is important, however, to remember that only properly filtered and purified air must be supplied to the drier. It's advisable that the drier should be used at the highest pressure as possible.



TECHNICAL DATA		DRY 100	FIL + DEP + PA + DRY 100
Threaded port		1/4" - 3/8"	
Max. inlet pressure		1.3 MPa / 13 bar / 188 psi	
Suggested flow rate at 6.3 bar (0.63 MPa, 91 psi)	Nl/min	230	
	scfm	8	
Consumption of compressed air for regeneration at 6.3 bar	Nl/min	20	
	scfm	0.7	
Minimum temperature		2°C / 35°F	
Maximum temperature at 1MPa; 10 bar; 145 psi		50°C / 122°F	
Noise level	dB(A)	< 45	
Weight	Kg	0.84	1.24
Wall fixing screws		M4 x 50	
Mounting position		In any position	Vertical
Drain		-	RMSA: drain with manual condensate discharge and automatic discharge at zero pressure
		-	SAC: automatic drain with condensate discharge. Operates by depression – requires variable air take-offs.
Filter bowl and purification bowl capacity	cm³	-	22
Fluid		Compressed air without condensate max solid particle size: 1 µm max oil residue: 0.01 mg/m³	Compressed air
Important note		The drier must always be preceded by a 5 µm filter and a purifier	

COMPONENTS

- ① Body: painted anodized aluminium
- ② Diaphragm: poliester sulfone resin
- ③ Inner tube: salt-water resistant aluminium
- ④ O-Ring seals: NBR
- ⑤ Adapter: anodized aluminium
- ⑥ Flanges: brass
- ⑦ Skillair® body: technopolymer



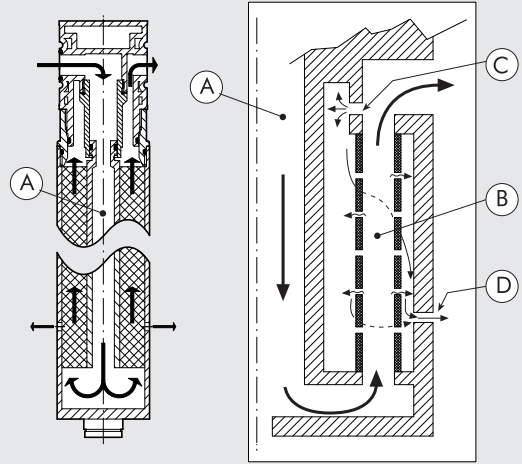
OPERATING PRINCIPLE

The drying element is comprised of cross-fibre diaphragms arranged around an inner tube. The compressed air passes through the tube (A) and flows back through the hollow diaphragms (B). At the same time, the regeneration air required for drying is tapped from the outlet port, expands as it passes through a nozzle (C), which reduces the relative humidity, and flows back along the outer side of the fibres. This allows moist compressed air to flow through the diaphragms and the dry regeneration air outside.

The difference in moisture content causes the water to pass from the compressed air to the regeneration air, which is drained through holes (D) at the bottom of the drier.

ADVANTAGES

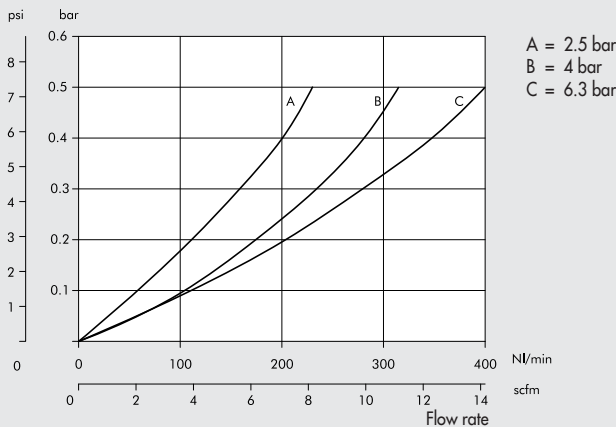
- Drying is guaranteed as all the moisture is removed
- Minimum consumption of regeneration air
- Reduce drier maintenance as none of the components are subject to wear
- Environmentally friendly drying process.



FLOW CHARTS

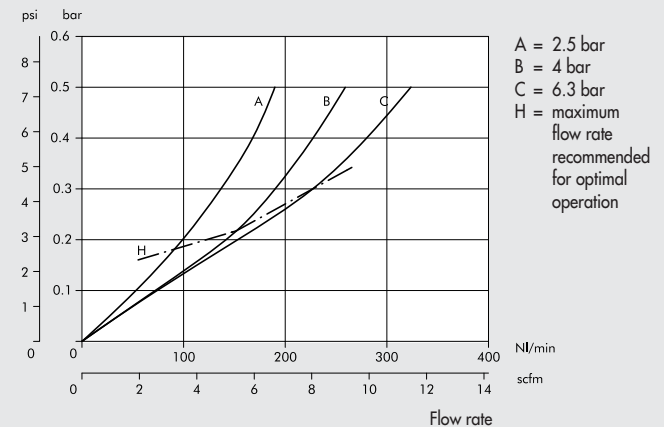
DRY 100

$$\Delta P = (P_m - P_v)$$



FIL (5 μm) + DEP + PA + DRY 100

$$\Delta P = (P_m - P_v)$$

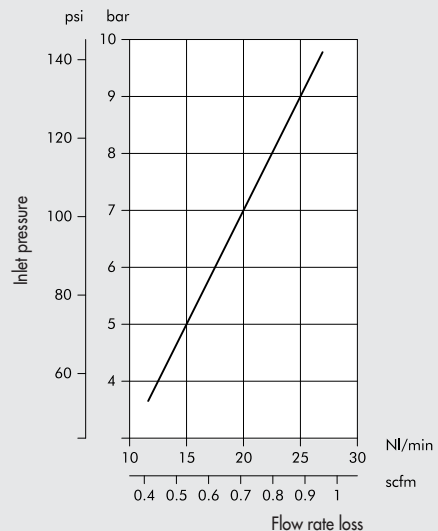


REGENERATION AIR

Thanks to the cross-fiber system, the flow rate loss is much lesser than in traditional linear-fibre systems.

In the diagram on the right is indicated the drop-in air flow according to the operating pressure.

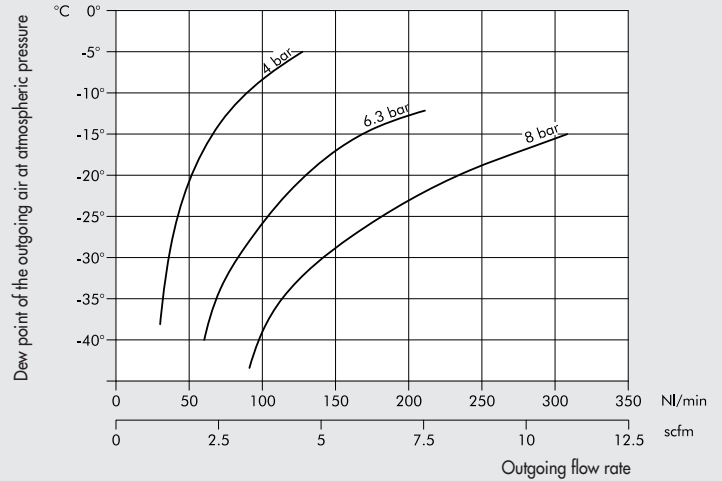
NB: for the best drying efficiency the highest pressure possible is required, though this implies an increase of the regeneration air.



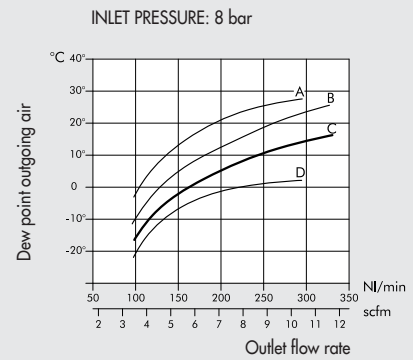
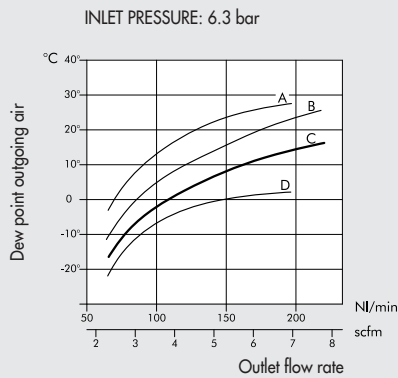
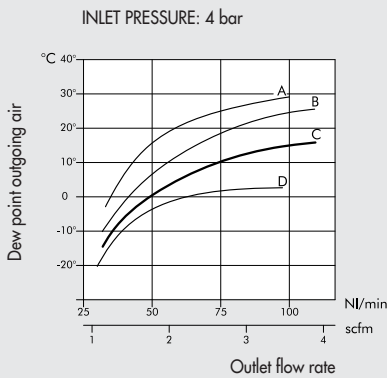
DRYING

Dew point of the outgoing air in nominal reference conditions:

- Dew point referred to atmospheric pressure
- Incoming air with dew point at 25°C (i.e. saturated at 25°C)



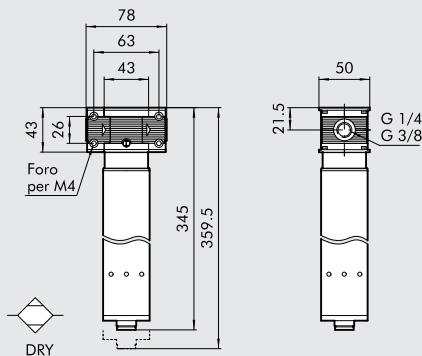
In the diagram below is indicated the dew point of the outgoing compressed air for various input air dew points, depending on the rate of flow of compressed air.



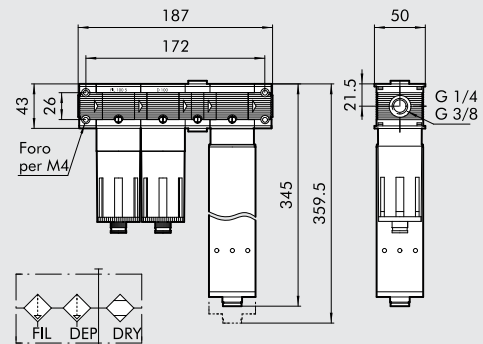
A: Incoming air with dew point at 45°C
B: Incoming air with dew point at 35°C

C: Incoming air with dew point at 25°C
D: Incoming air with dew point at 15°C

DRY 100 DIMENSIONS



FIL+DEP+PA+DRY 100 DIMENSIONS



Code	Description
3290001A	DRY 100 without end plates
3290001	DRY 100 1/4"
3390001	DRY 100 3/8"

Code	Description
3291001	F + D + PA + DRY 100 1/4" RMSA-RMSA
3291005	F + D + PA + DRY 100 1/4" SAC-RMSA
3291006	F + D + PA + DRY 100 1/4" SAC-SAC
3391001	F + D + PA + DRY 100 3/8" RMSA-RMSA
3391005	F + D + PA + DRY 100 3/8" SAC-RMSA
3391006	F + D + PA + DRY 100 3/8" SAC-SAC

Skillair® REGULATORS

Each system served by the air supply mains (e.g. actuators and general appliances) requires its own constant operating pressure. It is necessary to use a regulator to regulate the pressure within a set range by means of regulating springs, with the pressure never exceeding the mains pressure.

The new Skillair® regulator uses a rolling diaphragm which gives a much better performance than the flat version.

Advantages of this system:

- Increased stroke, increased valve opening and hence higher flow rate.
- Decreased dynamic and inrush friction; prompt, more sensitive operation.
- Reduced working stress and hence longer life allowing the use of thinner diaphragms (0.45 mm versus 1.5 mm for a flat one) which increases regulator sensitivity and prompt action.
- Increased accuracy in maintaining the set pressure with both variable flow rates and different feed pressures.
- Downstream overpressures relieved quickly.



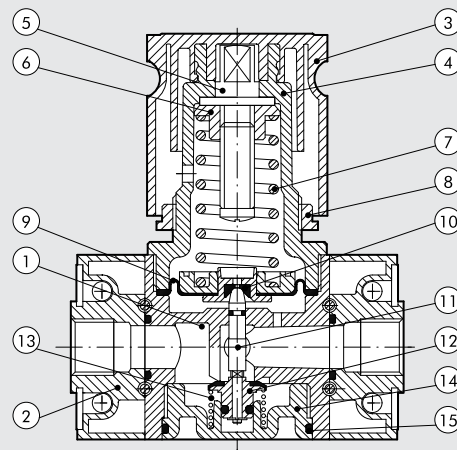
UNITS

Skillair® REGULATORS

TECHNICAL DATA	REG 100		REG 200			REG 300			REG 400 PILOT OPERATOR*				
	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"	
Threaded port	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"	
Setting range	bar		0 to 2 - 0 to 4 - 0 to 8 - 0 to 12									Depending on the pilot operated regulator	
Max. input pressure	MPa		1.5		1.3			1.3		1.3		1.3	
	bar		15		13			13		13		13	
	psi		217		188			188		188		188	
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	NL/min		1100		3500			3500		18000		20000	
ΔP 0.5 bar (0.05 MPa to 7 psi)	scfm		39		88			124		363		707	
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	NL/min		1600		3500			7000		-		-	
ΔP 1 bar (0.1 MPa to 14 psi)	scfm		57		124			247		-		-	
Max temperature at 1 MPa; 10 bar; 145 psi	°C		50		80			80		50		50	
	°F		122		122			122		122		122	
Weight	Kg		0.4		0.7			1.4		4.8		5.6	
Wall fixing screws	M4 x 50		M5 x 60			M5 x 70			M6 x 110		M6 x 110		
Pressure gauge port	1/8"		1/8"			1/8"			1/4"		1/4"		
Mounting position	In any position												
Fluid	Filtered lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.												
Notes on use	The regulator pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value. Do not take air from pressure gauge ports. *Supplied without a pilot regulator.												

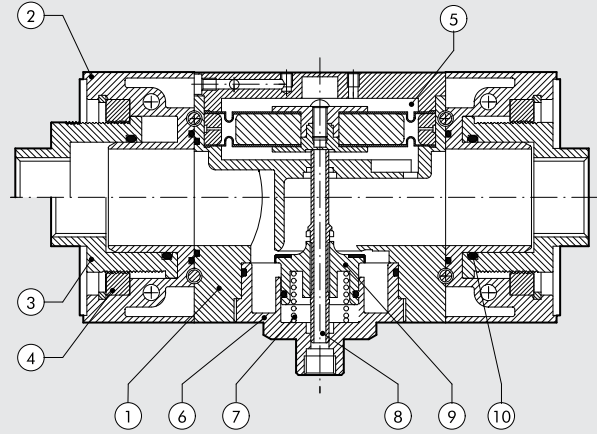
COMPONENTS REG 100 - 200 - 300

- ① Technopolymer body
- ② Zamak end plate
- ③ Technopolymer knob
- ④ Technopolymer bell
- ⑤ OT58 brass adjusting screw
- ⑥ OT58 brass scroll
- ⑦ Steel adjusting spring
- ⑧ Technopolymer ring nut
- ⑨ Rolling diaphragm
- ⑩ NBR relieving gaskets
- ⑪ OT58 brass stem
- ⑫ Valve with NBR vulcanized gasket
- ⑬ Stainless steel valve spring
- ⑭ Technopolymer plug
- ⑮ NBR gaskets



COMPONENTS REG 400 PILOT OPERATED

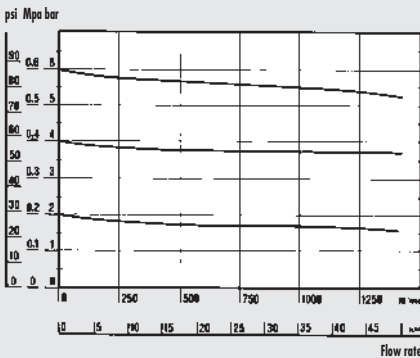
- ① Aluminium body
- ② Aluminium end plate
- ③ OT58 brass threaded bush, axial adjustment
- ④ OT58 brass retaining ring
- ⑤ Rolling diaphragm
- ⑥ OT58 brass plug
- ⑦ Stainless steel valve spring
- ⑧ OT58 brass stem with air relief hole
- ⑨ Valve with NBR vulcanized gasket
- ⑩ NBR gaskets



FLOW CHARTS

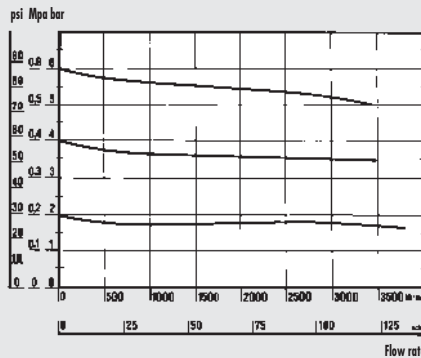
REG 100 1/4 - 3/8

Preset pressure
Pm = 7 bar - 0.7 MPa - 100 psi



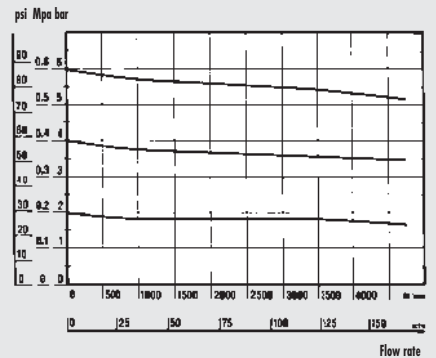
REG 200 1/4 - 3/8 - 1/2

Preset pressure
Pm = 7 bar - 0.7 MPa - 100 psi



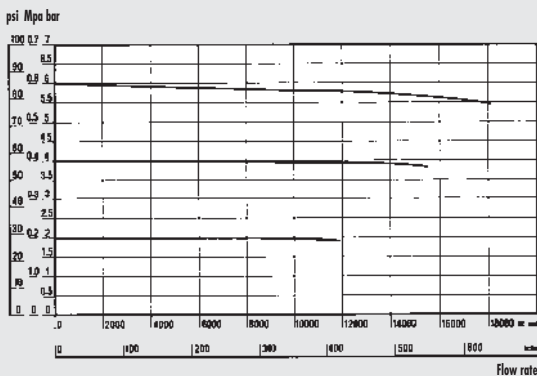
REG 300 1/2 - 3/4 - 1

Preset pressure
Pm = 7 bar - 0.7 MPa - 100 psi



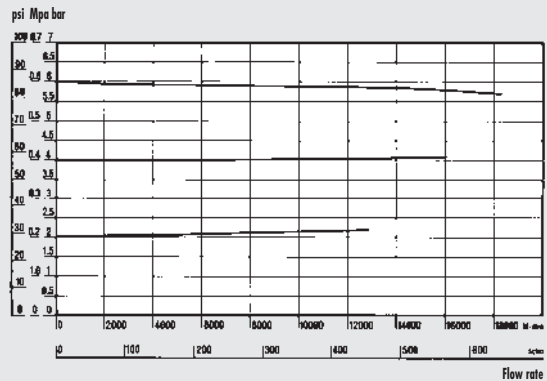
REG 400 1"

Preset pressure
Pm = 7 bar - 0.7 MPa - 100 psi

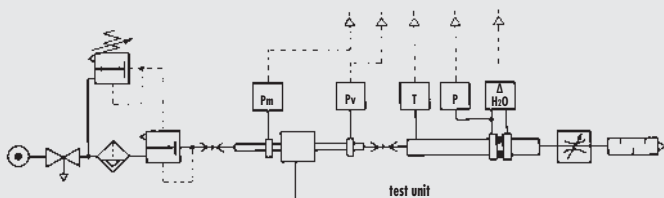


REG 400 2"

Preset pressure
Pm = 7 bar - 0.7 MPa - 100 psi



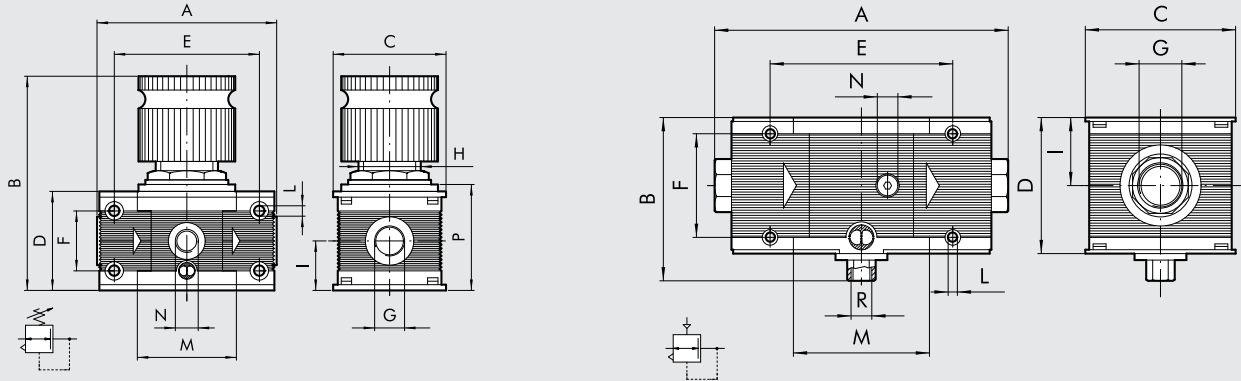
• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.



DIMENSIONS

100 - 200 - 300

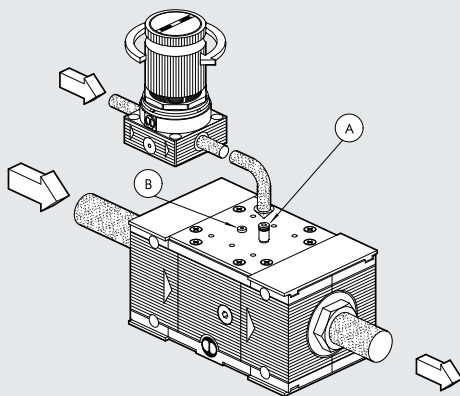
400



	REG 100		REG 200			REG 300			REG 400			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	78		93.5			110		112	225 to 255			283 to 313
B	98		125				148		127			
C	50		63				72		116			
D	43		55				65		105			
E	63		78.5				92		141.4			
F	26		36				42		80			
H	30 x 1.5		40 x 1.5				48 x 1.5		-			
I	21.5		27.5				32.5		52.5			
L	M4 hole		M5 hole				M5 hole		M6 hole			
M	43		55.5				65		105.4			
N (pressure gauge port)	1/8"		1/8"				1/8"		1/4"			
P	46		58				69		-			
R (relief)	-		-				-		1/4"			

INSTRUCTIONS FOR USE REG 400

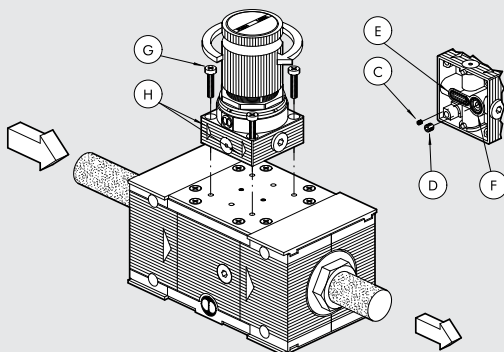
①



REMOTE PILOT

- Fit the A7 M5 plug into the threaded hole ② (close to the entrance).
- Fit the M5 fitting into the threaded hole ① as close to the entrance as possible.
- Connect the downstream circuit of the selected pilot operated regulator to the input ① (R1 fitting).
- Set the required pressure on the pilot operated regulator.

②

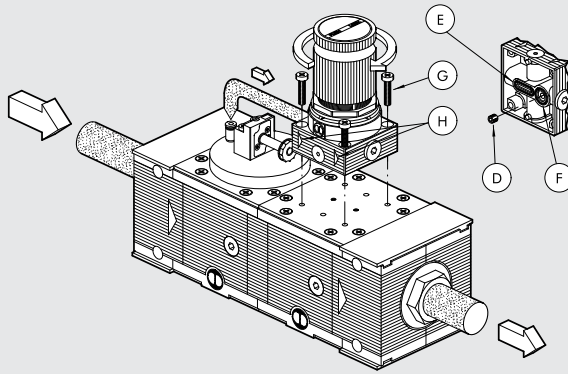


DIRECT PILOT WITH Skillair® PILOT OPERATED REGULATOR

- Remove the pins ③ and ④ under the pilot operated regulator.
- Check that the two gaskets ⑤ and ⑥ under the pilot are in place.
- Fix the pilot operated regulator to the base of the regulator using the self-threading screws ⑦. Make sure the arrows ⑧ point in the same direction as the arrows in relief under the base of the regulator.

INSTRUCTIONS FOR USE REG 400

③



PILOT REGULATOR FOLLOW-UP LINK

This is used when the regulator is mounted downstream of a V3V valve or an APR.

The air can be bled from the V3V or APR valves instead of from the regulator relieving system.

- Remove only the stud pin marked with a letter Ⓣ under the pilot regulator.
- Check the two gaskets under the pilot marked Ⓧ and Ⓨ.
- Secure the pilot regulator to the regulator base with the self-tapping screws marked with a letter Ⓢ. Making sure the arrows marked Ⓢ point in the same direction as the arrows in relief under the regulator base.
- Remove the A7 M5 plug from the V3V or APR plate and remount the fitting.
- Connect the pilot regulator supply to the fitting.

KEY TO CODES

REG	100	1/4	02
ELEMENT	SIZE	THREADED PORT	SETTING RANGE
REG	100	1/4	02 = 0 to 2 bar
	200	3/8	04 = 0 to 4 bar
		1/4	08 = 0 to 8 bar
		3/8	012 = 0 to 12 bar
	300	1/2	
		1/2	
		3/4	
		1	
	400	1	Depending on the pilot used
		1 1/4	
		1 1/2	
		2	

The pilot operated regulator is necessary for size 400. See pag. 3-99

ORDERING CODES

Code	Description	Code	Description	Code	Description
Skillair® 100 REGULATOR		Skillair® 200 REGULATOR		Skillair® 300 REGULATOR	
3202001A	REG 100 02 without end plates	3402001A	REG 200 02 without end plates	4402000A	REG 300 02 without end plates
3202002A	REG 100 04 without end plates	3402002A	REG 200 04 without end plates	4402001A	REG 300 04 without end plates
3202003A	REG 100 08 without end plates	3402003A	REG 200 08 without end plates	4402002A	REG 300 08 without end plates
3202004A	REG 100 012 without end plates	3402004A	REG 200 012 without end plates	4402003A	REG 300 012 without end plates
3202001	REG 100 1/4 02	3402001	REG 200 1/4 02	4402000	REG 300 1/2 02
3202002	REG 100 1/4 04	3402002	REG 200 1/4 04	4402001	REG 300 1/2 04
3202003	REG 100 1/4 08	3402003	REG 200 1/4 08	4402002	REG 300 1/2 08
3202004	REG 100 1/4 012	3402004	REG 200 1/4 012	4402003	REG 300 1/2 012
3302001	REG 100 3/8 02	3502001	REG 200 3/8 02	4502000	REG 300 3/4 02
3302002	REG 100 3/8 04	3502002	REG 200 3/8 04	4502001	REG 300 3/4 04
3302003	REG 100 3/8 08	3502003	REG 200 3/8 08	4502002	REG 300 3/4 08
3302004	REG 100 3/8 012	3502004	REG 200 3/8 012	4502003	REG 300 3/4 012
		3602001	REG 200 1/2 02	4602000	REG 300 1 02
		3602002	REG 200 1/2 04	4602001	REG 300 1 04
		3602003	REG 200 1/2 08	4602002	REG 300 1 08
		3602004	REG 200 1/2 012	4602003	REG 300 1 012
				Skillair® 400 REGULATOR	
				6102001A	REG 400 without end plates
				6102001	REG 400 1
				6202001	REG 400 1 1/4
				6302001	REG 400 1 1/2
				6402001	REG 400 2

Skillair® 100 IN-SERIES REGULATOR

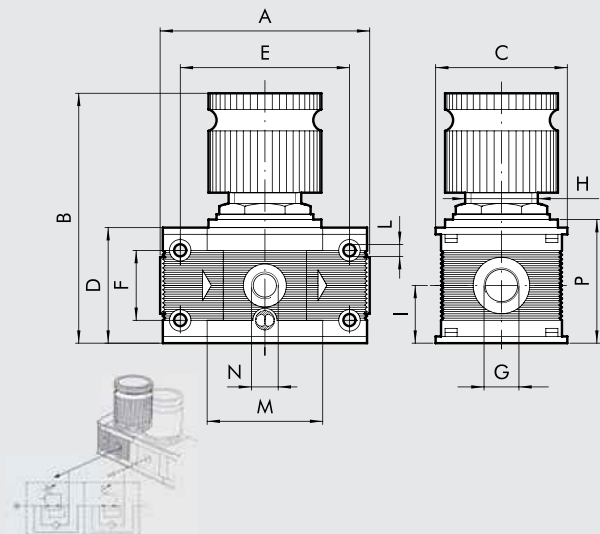
TECHNICAL DATA

Threaded inlet port		1/4"
Threaded user port		G 1/8"
Degree of purification	bar	0 to 2 - 0 to 4 - 0 to 8 - 0 to 12
Max. input pressure		1.5 MPa - 15 bar - 217 psi
Flow rate at 6.3 bar (0.63 MPa to 91 psi)		500 NI/min
ΔP 0.5 bar (0.05 MPa to 7 psi)		18 scfm
Flow rate at 6.3 bar (0.63 MPa to 91 psi)		950 NI/min
ΔP 1 bar (0.1 MPa to 14 psi)		34 scfm
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous
Max temperature	°C	50
at 1 MPa; 10 bar; 145 psi	°F	122
Weight	Kg	0.4
Wall fixing screws		M4x50
Mounting position		In any position
Pressure gauge port		G 1/8"
Notes on use		The regulator pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value.



DIMENSIONS

	REG 100	REG 100
Threaded port	1/4"	3/8"
A		78
B		98
C		50
D		43
E		63
F		26
G	1/4"	3/8"
H		30 x 1.5
I		21.5
L		M4 hole
M		43
N (use)		1/8"
P		46

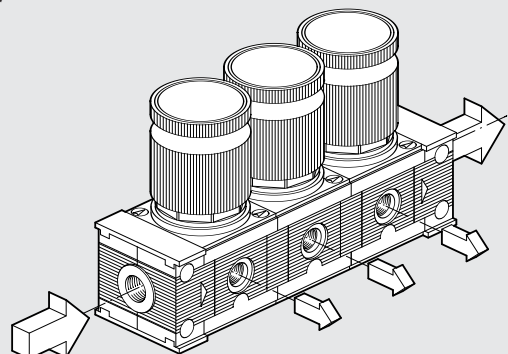


ORDERING CODES

Code	Description
100 IN-SERIES REGULATOR	
3202101A	100 IN-SERIES REG. 0-2 without end plates
3202102A	100 IN-SERIES REG. 0-4 without end plates
3202103A	100 IN-SERIES REG. 0-8 without end plates
3202104A	100 IN-SERIES REG. 0-12 without end plates
3202101	100 IN-SERIES REG. 1/4 0-2
3202102	100 IN-SERIES REG. 1/4 0-4
3202103	100 IN-SERIES REG. 1/4 0-8
3202104	100 IN-SERIES REG. 1/4 0-12
3302101	100 IN-SERIES REG. 3/8 0-2
3302102	100 IN-SERIES REG. 3/8 0-4
3302103	100 IN-SERIES REG. 3/8 0-8
3302104	100 IN-SERIES REG. 3/8 0-12

Several of these Skillair® regulators can be mounted in series, all fed by the same pressure. They can give different set pressures, each independent of the previous regulator.

Operating compressed air can be taken from the pressure gauge ports (G 1/8").



Skillair® PADLOCKABLE REGULATOR



The padlockable regulator has a pin with a hole in it that projects from the top of the knob. When the knob is in the push-lock position, the padlock can be inserted in the hole, preventing the knob from being operated. A padlock and two keys are supplied with the regulator.

The new Skillair® regulator uses a rolling diaphragm which gives a much better performance than the flat version.

Advantages of this system:

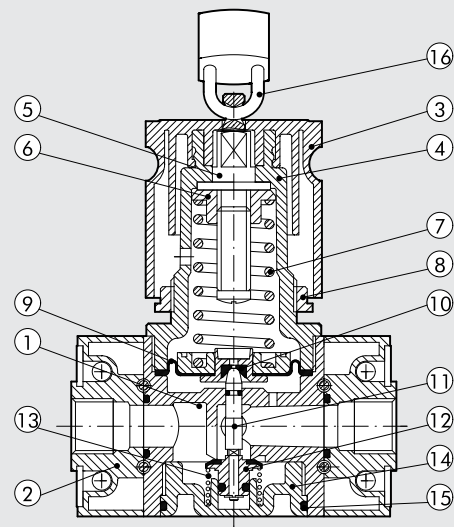
- Increased stroke, increased valve opening and hence higher flow rate.
- Decreased dynamic and inrush friction; prompt, more sensitive operation.
- Reduced working stress and hence longer life allowing the use of thinner diaphragms (0.45 mm versus 1.5 mm for a flat one) which increases regulator sensitivity and prompt action.
- Increased accuracy in maintaining the set pressure with both variable flow rates and different feed pressures.
- Downstream overpressures relieved quickly.

Refer to the regulator for technical data and flow curves.



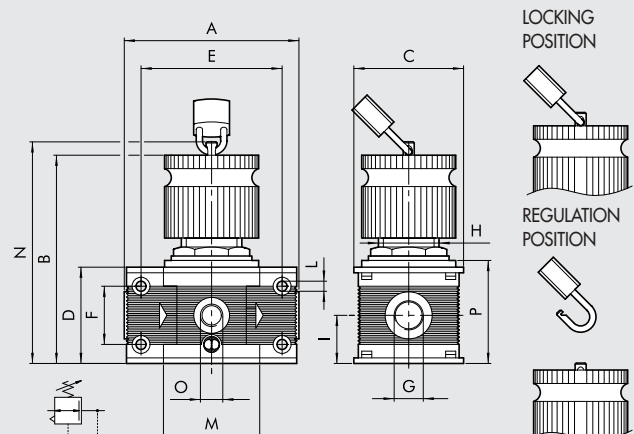
COMPONENTS

- ① Technopolymer body
- ② Zamak end plate
- ③ Technopolymer knob
- ④ Technopolymer bell
- ⑤ Nickel-plated OT58 brass adjusting screw
- ⑥ OT58 brass scroll
- ⑦ Steel adjusting spring
- ⑧ Technopolymer ring nut
- ⑨ Rolling diaphragm
- ⑩ NBR relieving gaskets
- ⑪ OT58 brass stem
- ⑫ Valve with NBR vulcanized gasket
- ⑬ Stainless steel valve spring
- ⑭ Technopolymer plug
- ⑮ NBR gaskets
- ⑯ Padlock



DIMENSIONS

	REG 100 KEY		REG 200 KEY			REG 300 KEY		
Threaded port	1/4" | 3/8"	1/4" | 3/8" | 1/2"	1/2" | 3/4" | 1"					
A	78	93.5	110	112				
B	95 to 98	123 to 125	145 to 148					
C	50	63	72					
D	43	55	65					
E	63	78.5	92					
F	26	36	42					
G	1/4" | 3/8"	1/4" | 3/8" | 1/2"	1/2" | 3/4" | 1"					
H	30 x 1.5	40 x 1.5	48 x 1.5					
I	21.5	27.5	32.5					
L	M4 hole	M5 hole	M5 hole					
M	43	55.5	65					
N	101	127	151					
O (pressure gauge port)	1/8"	1/8"	1/8"					
P	46	58	69					



KEY TO CODES

REG ELEMENT	100 SIZE	KEY TYPE	1/4 THREADED PORT	02 SETTING RANGE
REG = Regulator	100	KEY = Padlockable	1/4	02 = 0 to 2 bar
	200		3/8	04 = 0 to 4 bar
	300		1/4	08 = 0 to 8 bar
			3/8	012 = 0 to 12 bar
			1/2	
			1/2	
			3/4	
			1	

ORDERING CODES

Code	Description	Code	Description	Code	Description
Skillair® 100 PADLOCKABLE REGULATOR		Skillair® 200 PADLOCKABLE REGULATOR		Skillair® 300 PADLOCKABLE REGULATOR	
3210001A	REG 100 KEY 02 without end plates	3410001A	REG 200 KEY 02 without end plates	4410000A	REG 300 KEY 02 without end plates
3210002A	REG 100 KEY 04 without end plates	3410002A	REG 200 KEY 04 without end plates	4410001A	REG 300 KEY 04 without end plates
3210003A	REG 100 KEY 08 without end plates	3410003A	REG 200 KEY 08 without end plates	4410002A	REG 300 KEY 08 without end plates
3210004A	REG 100 KEY 012 without end plates	3410004A	REG 200 KEY 012 without end plates	4410003A	REG 300 KEY 012 without end plates
3210001	REG 100 KEY 1/4 02	3410001	REG 200 KEY 1/4 02	4410000	REG 300 KEY 1/2 02
3210002	REG 100 KEY 1/4 04	3410002	REG 200 KEY 1/4 04	4410001	REG 300 KEY 1/2 04
3210003	REG 100 KEY 1/4 08	3410003	REG 200 KEY 1/4 08	4410002	REG 300 KEY 1/2 08
3210004	REG 100 KEY 1/4 012	3410004	REG 200 KEY 1/4 012	4410003	REG 300 KEY 1/2 012
3310001	REG 100 KEY 3/8 02	3510001	REG 200 KEY 3/8 02	4510000	REG 300 KEY 3/4 02
3310002	REG 100 KEY 3/8 04	3510002	REG 200 KEY 3/8 04	4510001	REG 300 KEY 3/4 04
3310003	REG 100 KEY 3/8 08	3510003	REG 200 KEY 3/8 08	4510002	REG 300 KEY 3/4 08
3310004	REG 100 KEY 3/8 012	3510004	REG 200 KEY 3/8 012	4510003	REG 300 KEY 3/4 012
		3610001	REG 200 KEY 1/2 02	4610000	REG 300 KEY 1 02
		3610002	REG 200 KEY 1/2 04	4610001	REG 300 KEY 1 04
		3610003	REG 200 KEY 1/2 08	4610002	REG 300 KEY 1 08
		3610004	REG 200 KEY 1/2 012	4610003	REG 300 KEY 1 012

Skillair® PILOT REGULATOR



The pilot regulator is used when great accuracy is required in maintaining the set pressure under changing operating conditions.

It is ideal for use as:

- a precision regulator for flow rates < 100 NI/min.
- a pilot in general - typically for large size regulators (see REG 400).

The system's high operating accuracy and low hysteresis are determined by the virtually total lack of friction.

The presence of a slight air leak is necessary for the regulator to operate properly - it is not a malfunction. It is advisable to use filtered air.



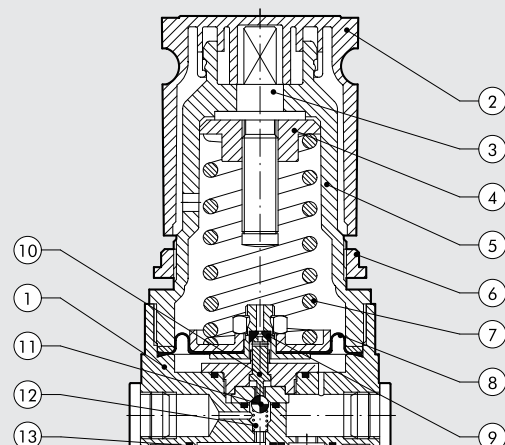
TECHNICAL DATA		PILOT REGULATOR	
Threaded port			1/4"
Setting range	bar		0 to 2 - 0 to 4 - 0 to 8 - 0 to 12
Max. input pressure	MPa		1.3
	bar		13
	psi		188
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)			120 NI/min - 4.3 scfm
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)			140 NI/min - 5 scfm
Fluid			Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.
Max temperature at 1 MPa; 10 bar; 145 psi	°C		50
	°F		122
Weight	Kg		0.6
Mounting position			In any position
Pressure gauge port			G 1/8"
Notes on use			The regulator pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value. Do not take air from the pressure gauge ports. Mount directly on REG 400.

UNITS

Skillair® PILOT REGULATOR

COMPONENTS

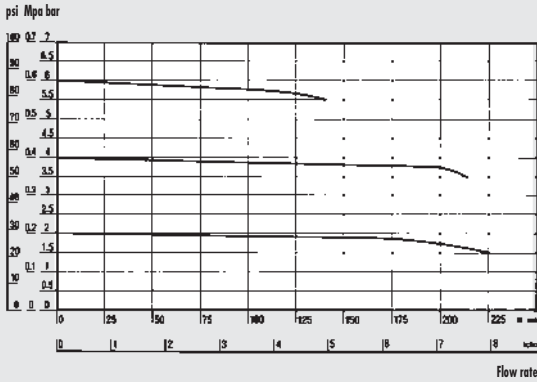
- ① Aluminium body
- ② Technopolymer knob
- ③ OT58 brass adjusting screw
- ④ OT58 brass scroll
- ⑤ Technopolymer bell
- ⑥ Technopolymer ring nut
- ⑦ Steel adjusting spring
- ⑧ Rolling diaphragm
- ⑨ NBR relieving gaskets
- ⑩ OT58 brass stem
- ⑪ Stainless steel ball valve
- ⑫ Stainless steel valve spring
- ⑬ NBR gaskets



FLOW CHARTS

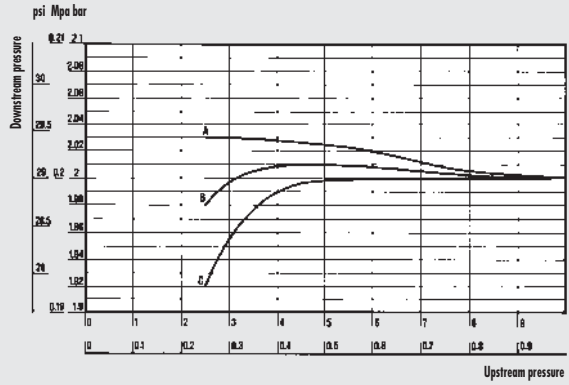
FLOW FEATURES REG. P 1/4"

Preset pressure
Pm = 7 bar - 0.7 MPa - 100 psi



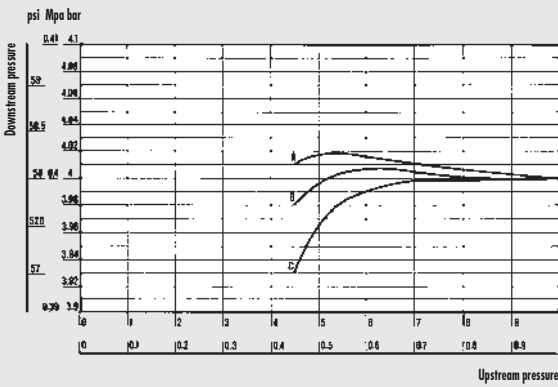
REGULATION FEATURES REG. P 1/4" *

Flow rate: A = 0 NI/min = 0 scfm - B = 25 NI/min = 0.88 scfm - C = 50 NI/min = 1.76 scfm



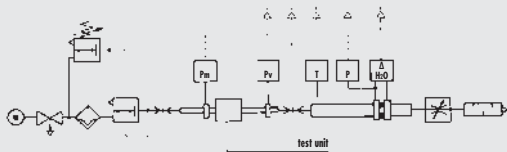
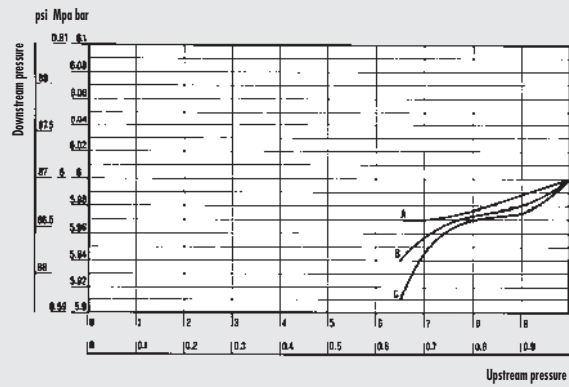
REGULATION FEATURES REG. P 1/4" *

Flow rate: A = 0 NI/min = 0 scfm - B = 25 NI/min = 0.88 scfm - C = 50 NI/min = 1.76 scfm



REGULATION FEATURES REG. P 1/4" *

Flow rate: A = 0 NI/min = 0 scfm - B = 25 NI/min = 0.88 scfm - C = 50 NI/min = 1.76 scfm

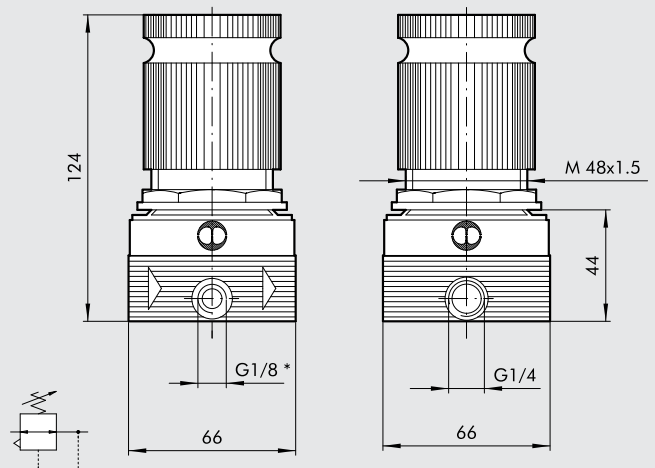


• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

* Pressure stability adjusted according to changes in upstream pressure.

DIMENSIONS

Code	Description
3206001	REG. P 1/4" 02
3206002	REG. P 1/4" 04
3206003	REG. P 1/4" 08
3206004	REG. P 1/4" 012



*Pressure gauge port

Skillair® PILOT PADLOCKABLE REGULATOR



The pilot regulator is used when great accuracy is required in maintaining the set pressure under changing operating conditions.

It is ideal for use as:

- a precision regulator for flow rates < 100 NI/min.
- a pilot in general - typically for large size regulators (see REG 400).

The system's high operating accuracy and low hysteresis are determined by the virtually total lack of friction. The presence of a slight air leak is necessary for the regulator to operate properly - it is not a malfunction.

It is advisable to use filtered air.

The pilot padlockable regulator has a pin with a hole in it that projects from the top of the knob. When the knob is in the push-lock position, the padlock can be inserted in the hole, preventing the knob from being operated.

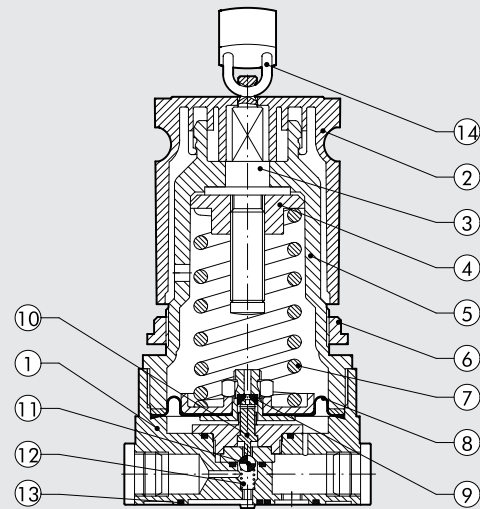
A padlock and two keys are supplied with the regulator.

Refer to the pilot regulator for technical data and flow curves.



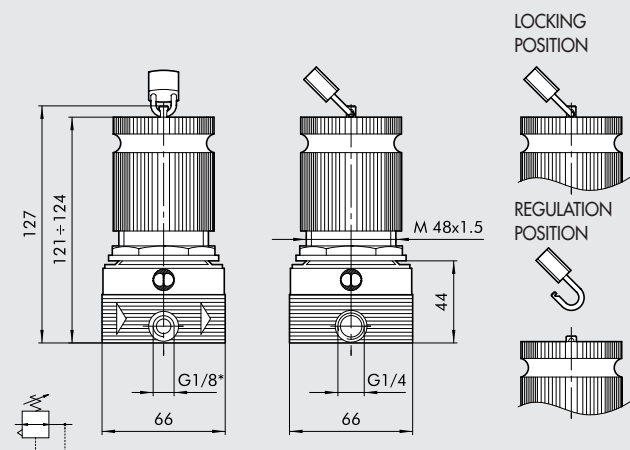
COMPONENTS

- ① Aluminium body
- ② Technopolymer knob
- ③ Nickel-plated brass OT58 adjusting screw
- ④ OT58 brass scroll
- ⑤ Technopolymer bell
- ⑥ Technopolymer ring nut
- ⑦ Steel adjusting spring
- ⑧ Rolling diaphragm
- ⑨ NBR relieving gaskets
- ⑩ OT58 brass stem
- ⑪ Stainless steel ball valve
- ⑫ Stainless steel valve spring
- ⑬ NBR gaskets
- ⑭ Padlock



DIMENSIONS

Code	Description
3208001	REG. P KEY 1/4" 02
3208002	REG. P KEY 1/4" 04
3208003	REG. P KEY 1/4" 08
3208004	REG. P KEY 1/4" 012



*Pressure gauge port

Skillair® 300 PILOT OPERATED REGULATOR

- Pilot-operated or servo-piloted regulator.
- Twin rolling diaphragm to ensure improved opening and hence greater flow rate.
- Low load losses
- Excellent precision in pressure setting.
- Excellent sensitivity during relieving.



TECHNICAL DATA

Threaded port	
Setting range	
Max. input pressure	MPa
	bar
	psi
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min
	scfm
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min
	scfm
Fluid	
Max temperature at 1 MPa; 10 bar; 145 psi	°C
	°F
Weight	gr
Wall fixing screws	
Mounting position	
Pressure gauge port	
Notes on use	

300 PILOT OPERATED REG

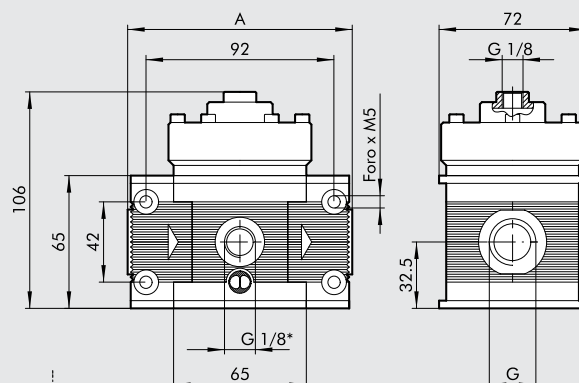
1/2"	3/4"	1"
Depending on the pilot regulator		
	1.3	
	13	
	188	
	4500	
	160	
	7000	
	247	
Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.		
	50	
	122	
	1.3	
	M5 x 70	
	In any position	
	1/8"	
The regulator pressure must always be set upwards. Do not take air from the pressure gauge ports.		

DIMENSIONS

Threaded port G	REG 300		
	1/2"	3/4"	1"
A	110	110	112

ORDERING CODES

Code	Description
4403003A	300 PILOT OPERATED REG without end plates
4403003	300 1/2" PILOT OPERATED REG
4503003	300 3/4" PILOT OPERATED REG
4603003	300 1" PILOT OPERATED REG



*Pressure gauge port

Skillair® FILTER REGULATOR



This device combines a filter and a pressure regulator in a single unit. It has the dual function of filtering and regulating air from the compressor. As the filter regulator is made up of the same elements as the regulator and the filter, the performance is the same.

- High flow rates with low load loss.
- Special rolling diaphragm - higher flow rate, greater stability, improved sensitivity.
- Rapid relief of downstream overpressures.
- Stability of the regulated pressure as the mains pressure fluctuates.
- Maximum degree of condensate separation.
- 360° condensate level display.
- Condensate drain with manual/semi-automatic or automatic function.



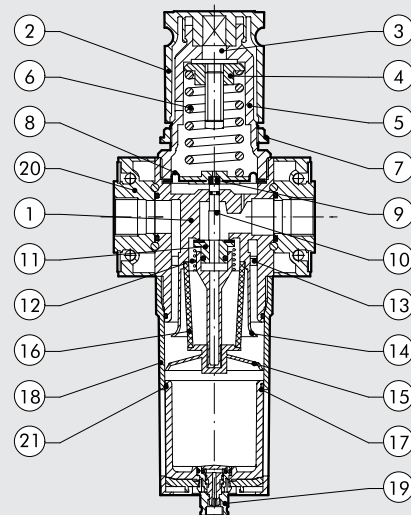
TECHNICAL DATA	FR 100		FR 200			FR 300		
	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"
Threaded port	1/4" | 3/8"		1/4" | 3/8" | 1/2"			1/2" | 3/4" | 1"		
Setting range	bar 0 to 2 - 0 to 4 - 0 to 8 - 0 to 12		0 to 2 - 0 to 4 - 0 to 8 - 0 to 12			0 to 2 - 0 to 4 - 0 to 8 - 0 to 12		
Degree of filtration	µm 5 - 20 - 50		5 - 20 - 50			5 - 20 - 50		
Max. input pressure	1.5 MPa - 15 bar - 217 psi		1.3 MPa - 13 bar - 188 psi			1.3 MPa - 13 bar - 188 psi		
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	Nl/min	1100	1600			3500		
ΔP 0.5 bar (0.05 MPa to 7psi)	scfm	39	57			125		
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	Nl/min	1600	3000			5600		
ΔP 1 bar (0.1 MPa to 14 psi)	scfm	57	71			200		
Max temperature	°C	50	50			50		
at: 1 MPa; 10 bar; 145 psi	°F	122	122			122		
Weight	Kg	0.5	1			1.8		
Wall fixing screws		M4 x 50	M5 x 60			M5 x 70		
Mounting position		Vertical	Vertical			Vertical		
Pressure gauge port		1/8"	1/8"			1/8"		
Bowl capacity	cm ³	22	45			75		
Drain		RMSA - SAC	RMSA - SAC - RA			RMSA - RA		
			RMSA: drain with manual condensate discharge and automatic discharge at zero pressure					
			RA: automatic drain with condensate discharge, independent of pressure and flow rate					
			SAC: automatic drain with condensate discharge. Operates by depression - requires variable air take-offs.					
			Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.					
Fluid			The regulator pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value. Do not take air from pressure gauge ports.					
Notes on use			The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.					

UNITS

Skillair® FILTER REGULATOR

COMPONENTS

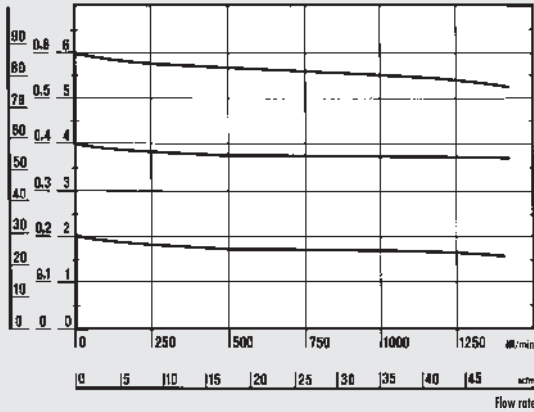
- ① Technopolymer body
- ② Technopolymer knob
- ③ OT58 brass adjusting screw
- ④ OT58 brass scroll
- ⑤ Technopolymer bell
- ⑥ Steel adjusting spring
- ⑦ Technopolymer ring nut
- ⑧ Rolling diaphragm
- ⑨ NBR relieving gaskets
- ⑩ OT58 brass stem
- ⑪ Valve with NBR vulcanized gasket
- ⑫ Stainless steel valve spring
- ⑬ Technopolymer centrifuge
- ⑭ Technopolymer baffle plug
- ⑮ Technopolymer screen
- ⑯ Sintered HDPE filter cartridge
- ⑰ Clear technopolymer glass
- ⑱ Bowl: technopolymer for FR100 and FR200, metal for FR 300
- ⑲ Drain (RMSA)
- ⑳ Zamak end plate
- ㉑ NBR gaskets



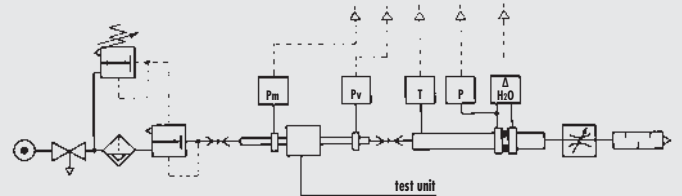
FLOW CHARTS

FR 100 1/4 - 3/8

Preset pressure
 $P_m = 7 \text{ bar} - 0.7 \text{ MPa} - 100 \text{ psi}$
 psi Mpa bar



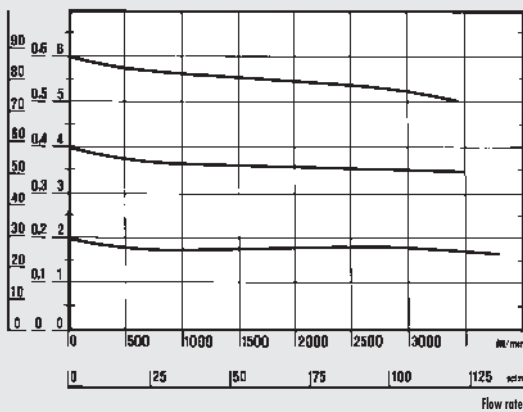
**Department
 of Mechanics**
 Turin Polytechnic



• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

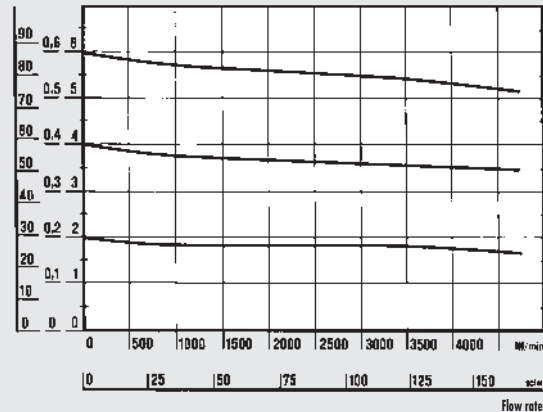
FR 200 1/4 - 3/8 - 1/2

Preset pressure
 $P_m = 7 \text{ bar} - 0.7 \text{ MPa} - 100 \text{ psi}$
 psi Mpa bar



FR 300 1/2 - 3/4 - 1

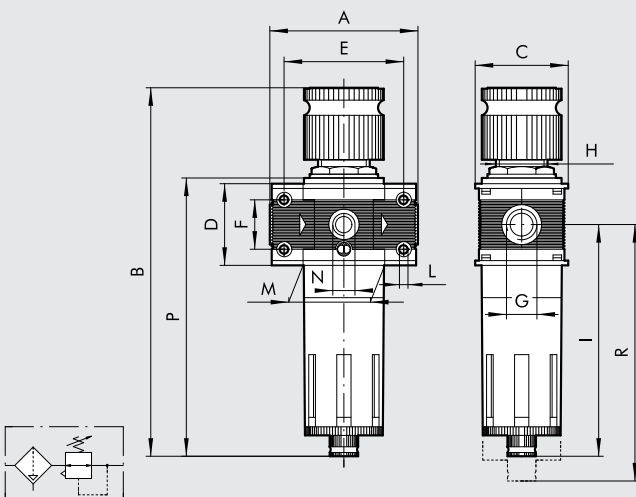
Preset pressure
 $P_m = 7 \text{ bar} - 0.7 \text{ MPa} - 100 \text{ psi}$
 psi Mpa bar



UNITS

Skillair® FILTER REGULATOR

DIMENSIONS



	FR 100		FR 200			FR 300		
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"
A	78		93.5			110		112
B	199		245			278		
C	50		63			72		
D	43		55			65		
E	63		78.5			92		
F	26		36			42		
H	30 x 1.5		40 x 1.5			48 x 1.5		
I	122.5		147.5			162.5		
L	M4 hole		M5 hole			M5 hole		
M	43		55.5			65		
N (pressure gauge port)	1/8"		1/8"			1/8"		
P	RMSA	147	178			200		
	RA	-	182			204		
	SAC	151	182			204		
R	RMSA	137	196			215		
	RA	-	200			219		
	SAC	141	200			219		

KEY TO CODES

FR ELEMENT	100 SIZE	1/4 THREADED PORT	5 DEGREE OF FILTRATION	02 SETTING RANGE	RMSA TYPE OF DRAIN
FR	100	1/4	5 = 5 µm	02 = 0 to 2 bar	RMSA
	200	3/8	20 = 20 µm	04 = 0 to 4 bar	SAC
		1/4	50 = 50 µm	08 = 0 to 8 bar	RMSA
		3/8		012 = 0 to 12 bar	SAC
	300	1/2			RA*
		1/2			RMSA
		3/4			RA
		1			

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

RA: automatic drain with condensate discharge, independent of pressure and flow rate. (for size 300 and 400)

SAC: automatic drain with condensate discharge.
Operates by depression – requires variable air take-offs.
(for size 100 and 200)

* For Skillair® 200 with RA, please contact our sales assistance department.

ORDERING CODES

Code	Description	Code	Description	Code	Description
Skillair® 100 FILTER REGULATOR		Skillair® 200 FILTER REGULATOR		Skillair® 300 FILTER REGULATOR	
3283007A	FR 100 5 08 RMSA without end plates	3483007A	FR 200 5 08 RMSA without end plates	4483004A	FR 300 5 08 RMSA without end plates
3283008A	FR 100 20 08 RMSA without end plates	3483008A	FR 200 20 08 RMSA without end plates	4483005A	FR 300 20 08 RMSA without end plates
3283009A	FR 100 50 08 RMSA without end plates	3483009A	FR 200 50 08 RMSA without end plates	4483006A	FR 300 50 08 RMSA without end plates
3283010A	FR 100 5 012 RMSA without end plates	3483010A	FR 200 5 012 RMSA without end plates	4483007A	FR 300 5 012 RMSA without end plates
3283011A	FR 100 20 012 RMSA without end plates	3483011A	FR 200 20 012 RMSA without end plates	4483008A	FR 300 20 012 RMSA without end plates
3283012A	FR 100 50 012 RMSA without end plates	3483012A	FR 200 50 012 RMSA without end plates	4483009A	FR 300 50 012 RMSA without end plates
3283031A	FR 100 5 08 SAC without end plates	3483031A	FR 200 5 08 SAC without end plates	4483013A	FR 300 5 08 RA without end plates
3283032A	FR 100 20 08 SAC without end plates	3483032A	FR 200 20 08 SAC without end plates	4483014A	FR 300 20 08 RA without end plates
3283033A	FR 100 50 08 SAC without end plates	3483033A	FR 200 50 08 SAC without end plates	4483015A	FR 300 50 08 RA without end plates
3283034A	FR 100 5 012 SAC without end plates	3483034A	FR 200 5 012 SAC without end plates	4483016A	FR 300 5 012 RA without end plates
3283035A	FR 100 20 012 SAC without end plates	3483035A	FR 200 20 012 SAC without end plates	4483017A	FR 300 20 012 RA without end plates
3283036A	FR 100 50 012 SAC without end plates	3483036A	FR 200 50 012 SAC without end plates	4483018A	FR 300 50 012 RA without end plates
3283007	FR 100 1/4 5 08 RMSA	3483007	FR 200 1/4 5 08 RMSA	4483004	FR 300 1/2 5 08 RMSA
3283008	FR 100 1/4 20 08 RMSA	3483008	FR 200 1/4 20 08 RMSA	4483005	FR 300 1/2 20 08 RMSA
3283009	FR 100 1/4 50 08 RMSA	3483009	FR 200 1/4 50 08 RMSA	4483006	FR 300 1/2 50 08 RMSA
3283010	FR 100 1/4 5 012 RMSA	3483010	FR 200 1/4 5 012 RMSA	4483007	FR 300 1/2 5 012 RMSA
3283011	FR 100 1/4 20 012 RMSA	3483011	FR 200 1/4 20 012 RMSA	4483008	FR 300 1/2 20 012 RMSA
3283012	FR 100 1/4 50 012 RMSA	3483012	FR 200 1/4 50 012 RMSA	4483009	FR 300 1/2 50 012 RMSA
3283031	FR 100 1/4 5 08 SAC	3483031	FR 200 1/4 5 08 SAC	4483013	FR 300 1/2 5 08 RA
3283032	FR 100 1/4 20 08 SAC	3483032	FR 200 1/4 20 08 SAC	4483014	FR 300 1/2 20 08 RA
3283033	FR 100 1/4 50 08 SAC	3483033	FR 200 1/4 50 08 SAC	4483015	FR 300 1/2 50 08 RA
3283034	FR 100 1/4 5 012 SAC	3483034	FR 200 1/4 5 012 SAC	4483016	FR 300 1/2 5 012 RA
3283035	FR 100 1/4 20 012 SAC	3483035	FR 200 1/4 20 012 SAC	4483017	FR 300 1/2 20 012 RA
3283036	FR 100 1/4 50 012 SAC	3483036	FR 200 1/4 50 012 SAC	4483018	FR 300 1/2 50 012 RA
3383007	FR 100 3/8 5 08 RMSA	3583007	FR 200 3/8 5 08 RMSA	4583004	FR 300 3/4 5 08 RMSA
3383008	FR 100 3/8 20 08 RMSA	3583008	FR 200 3/8 20 08 RMSA	4583005	FR 300 3/4 20 08 RMSA
3383009	FR 100 3/8 50 08 RMSA	3583009	FR 200 3/8 50 08 RMSA	4583006	FR 300 3/4 50 08 RMSA
3383010	FR 100 3/8 5 012 RMSA	3583010	FR 200 3/8 5 012 RMSA	4583007	FR 300 3/4 5 012 RMSA
3383011	FR 100 3/8 20 012 RMSA	3583011	FR 200 3/8 20 012 RMSA	4583008	FR 300 3/4 20 012 RMSA
3383012	FR 100 3/8 50 012 RMSA	3583012	FR 200 3/8 50 012 RMSA	4583009	FR 300 3/4 50 012 RMSA
3383031	FR 100 3/8 5 08 SAC	3583031	FR 200 3/8 5 08 SAC	4583013	FR 300 3/4 5 08 RA
3383032	FR 100 3/8 20 08 SAC	3583032	FR 200 3/8 20 08 SAC	4583014	FR 300 3/4 20 08 RA
3383033	FR 100 3/8 50 08 SAC	3583033	FR 200 3/8 50 08 SAC	4583015	FR 300 3/4 50 08 RA
3383034	FR 100 3/8 5 012 SAC	3583034	FR 200 3/8 5 012 SAC	4583016	FR 300 3/4 5 012 RA
3383035	FR 100 3/8 20 012 SAC	3583035	FR 200 3/8 20 012 SAC	4583017	FR 300 3/4 20 012 RA
3383036	FR 100 3/8 50 012 SAC	3583036	FR 200 3/8 50 012 SAC	4583018	FR 300 3/4 50 012 RA
		3683007	FR 200 1/2 5 08 RMSA	4683004	FR 300 1 5 08 RMSA
		3683008	FR 200 1/2 20 08 RMSA	4683005	FR 300 1 20 08 RMSA
		3683009	FR 200 1/2 50 08 RMSA	4683006	FR 300 1 50 08 RMSA
		3683010	FR 200 1/2 5 012 RMSA	4683007	FR 300 1 5 012 RMSA
		3683011	FR 200 1/2 20 012 RMSA	4683008	FR 300 1 20 012 RMSA
		3683012	FR 200 1/2 50 012 RMSA	4683009	FR 300 1 50 012 RMSA
		3683031	FR 200 1/2 5 08 SAC	4683013	FR 300 1 5 08 RA
		3683032	FR 200 1/2 20 08 SAC	4683014	FR 300 1 20 08 RA
		3683033	FR 200 1/2 50 08 SAC	4683015	FR 300 1 50 08 RA
		3683034	FR 200 1/2 5 012 SAC	4683016	FR 300 1 5 012 RA
		3683035	FR 200 1/2 20 012 SAC	4683017	FR 300 1 20 012 RA
		3683036	FR 200 1/2 50 012 SAC	4683018	FR 300 1 50 012 RA

Skillair® LUBRICATOR

The pneumatic lubricator is the simplest way of properly lubricating actuators connected to a circuit.

As air flows from the mains through the lubricator, it encounters the diaphragm which obstructs the flow and the air is forced through the Venturi tube.

The inside of the Venturi tube is connected to the inspection dome, which connects with the bowl via a tube with a regulating needle in between.

The drop in pressure caused by the Venturi tube sucks up air through the dome, the tube and lastly into the bowl containing oil.

The quantity of oil controlled by the regulating needle then flows back from the bowl to the circuit.



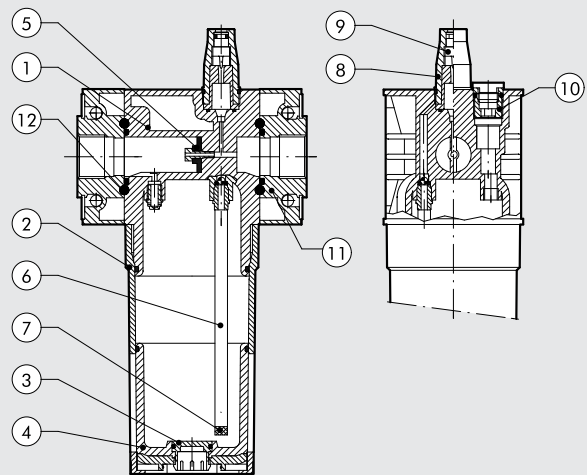
UNITS

Skillair® LUBRICATOR

TECHNICAL DATA	LUB 100		LUB 200			LUB 300			LUB 400			
	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Threaded port	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Type of lubrication	Mist		Mist			Mist			Mist			
Bowl capacity	50		95			160			800			
Versions	Standard - CD		Standard - CD			Standard - CD - ML CD			Standard - CD - ML CD			
Max. inlet pressure	Mpa	1.5	1.3			1.3			1.3		1.3	
	bar	15	13			13			13		13	
	psi	217	188			188			188		188	
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	Nl/min	1100	2200			3500			18000		21000	
ΔP 0.5 bar (0.05 MPa to 7 psi)	scfm	39	71			125			640		750	
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	Nl/min	1500	3700			5500			-		-	
ΔP 1 bar (0.1 MPa to 14 psi)	scfm	53	131			196			-		-	
Max temperature at: 1 MPa; 10 bar; 145 psi	°C	50	50			50			50		50	
	°F	122	122			122			122		122	
Weight	Kg	0.4	0.7			1.4			4.9		5.7	
Wall fixing screws		M4 x 50		M5 x 60			M5 x 70			M6 x 110		M6 x 110
Mounting position		Vertical										
Fluid		Filtered compressed air										
Recommended oils		ISO and UNI FD22 (Energol HPL to Spinesso to Mobil DTE to Tellus Oil).										
Notes on use		Install the lubricator as close as possible to the point of use. Fill the lubricator bowl with oil before pressurizing the system. Do not use cleaning oils, brake fluid oils or solvents in general. For the best lubrication results, set the drip rate to one drop per 300-600 Nl.										

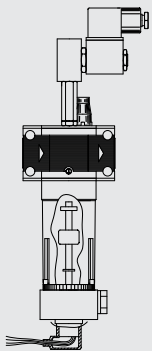
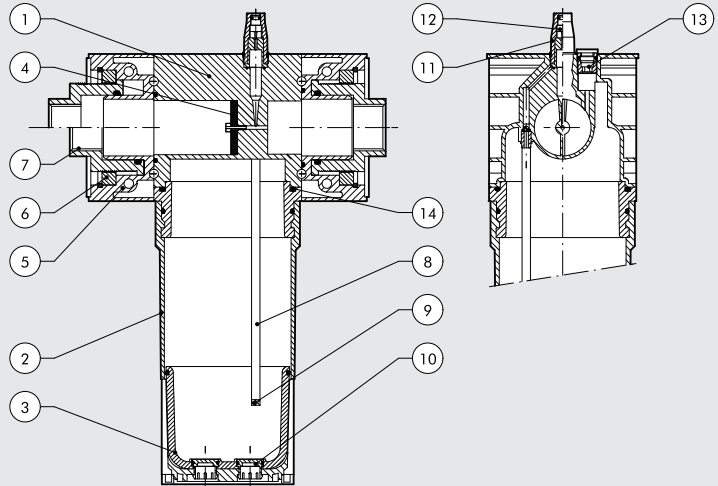
COMPONENTS LUB 100 - LUB 200 - LUB 300

- ① Technopolymer body
- ② Bowl: technopolymer for LUB 100 and 200, metal for LUB 300
- ③ Technopolymer plug
- ④ Clear technopolymer glass
- ⑤ NBR Venturi tube diaphragm
- ⑥ Rilsan® oil suction tube
- ⑦ Filter
- ⑧ Clear technopolymer inspection dome
- ⑨ OT58 brass oil flow regulating needle
- ⑩ OT58 brass oil filling plug
- ⑪ Zamak end plate
- ⑫ NBR gaskets



COMPONENTS LUB 400

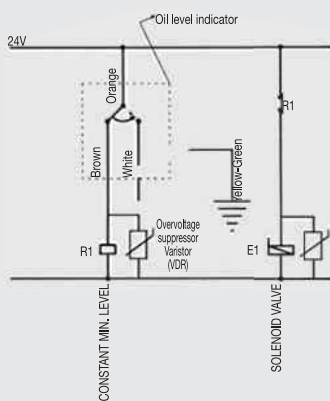
- ① Aluminium body
- ② Aluminium bowl
- ③ Clear technopolymer glass
- ④ NBR Venturi tube diaphragm
- ⑤ Aluminium end plate
- ⑥ OT58 brass retaining ring
- ⑦ OT48 brass threaded bush with axial adjustment
- ⑧ Rilsan® oil suction pipe
- ⑨ Filter
- ⑩ Technopolymer plug
- ⑪ Clear technopolymer inspection dome
- ⑫ OT58 brass oil flow regulating needle
- ⑬ OT58 brass oil filling plug
- ⑭ NBR gaskets



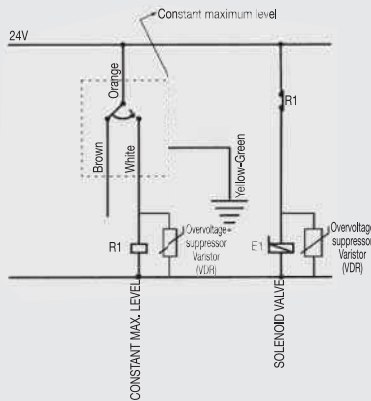
DEPRESSION FILLING WITH MINIMUM LEVEL (ML CD AUTOMATIC)

Available in sizes 300 and 400, this lubricator is controlled by a solenoid valve (2/2 NC minimum bore 3) situated on the lubricator body. It reduces pressure inside the bowl allow it to be filled with oil taken from a tank at ambient pressure, which can be located in a lower position than the lubricator (max. difference in height 2 m). The electric indicator inside the bowl sends an electric signal used to activate the valve. When the oil reaches the maximum level, another signal disactivates the valve. In this case, the lubricator system operates with the oil level between minimum and maximum. If it is necessary to keep the oil level in the bowl constant, only one of the two signals can be used. Pressure range 3-10 bar. Connect the oil tank to the G1/4 fitting on the bowl.

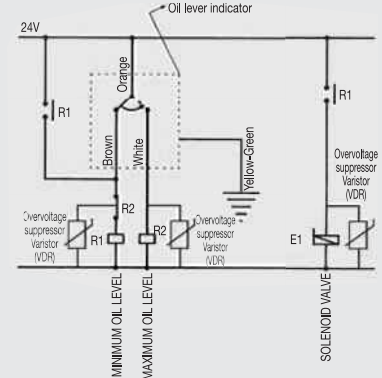
Constant minimum level



Constant maximum level

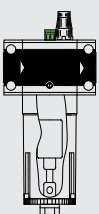


Oil level between maximum and minimum



FILLING BY DEPRESSION (CD MANUAL)

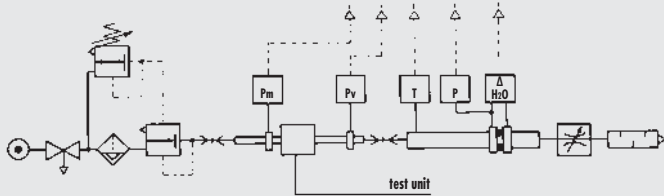
Available in all sizes. It is operated by means of a button on the lubricator body. The pressure inside the bowl drops to allow it to be filled with oil taken from a tank at ambient pressure, which can be located in a lower position than the lubricator (max. difference in height 2 m). Oil filling stops when the level of oil raises the float and shuts off a specific valve. Important - The SK4 lubricator is filled with oil by hand. Filling must stop when the oil level is visible through the spy-hole in the bowl release lever. Pressure range 3-10 bar. Lubrication is discontinued during filling. Connect the oil tank to the G1/4 fitting below the bowl.



FLOW CHARTS



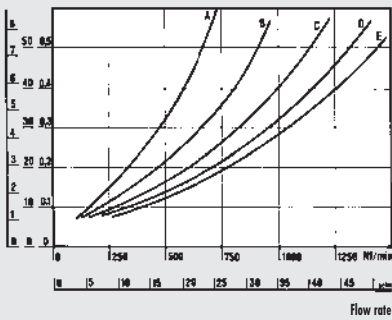
• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.



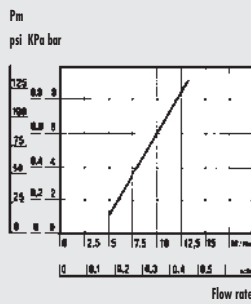
- (A) = 2 bar - 0.2 MPa - 29 psi
- (B) = 4 bar - 0.4 MPa - 58 psi
- (C) = 6 bar - 0.6 MPa - 87 psi
- (D) = 8 bar - 0.8 MPa - 116 psi
- (E) = 10 bar - 1 MPa - 145 psi

LUB 100 1/4 - 3/8

$\Delta P = (P_m - P_v)$
psi KPa bar

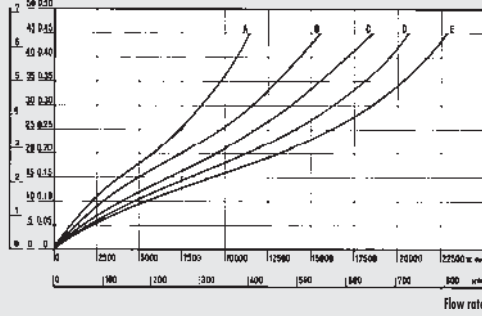


MINIMUM OPERATING FLOW CHART



LUB 400 1"

$\Delta P = (P_m - P_v)$
psi KPa bar

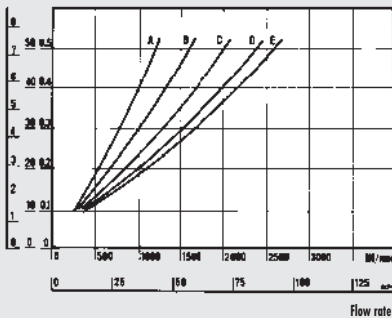


UNITS

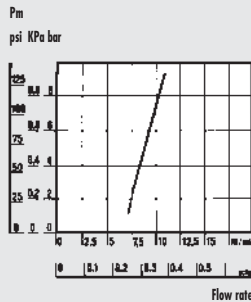
Skilair® LUBRICATOR

LUB 200 1/4 - 3/8 - 1/2

$\Delta P = (P_m - P_v)$
psi KPa bar

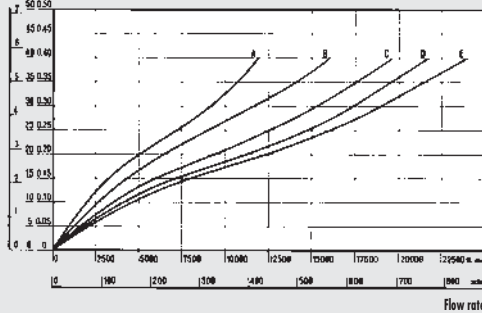


MINIMUM OPERATING FLOW CHART



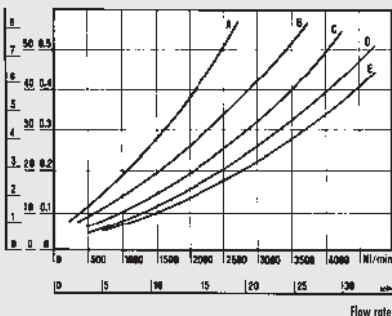
LUB 400 2"

$\Delta P = (P_m - P_v)$
psi KPa bar

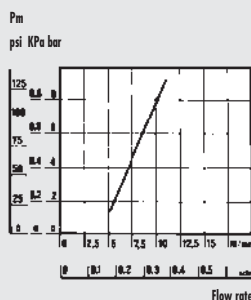


LUB 300 1/2 - 3/4 - 1

$\Delta P = (P_m - P_v)$
psi KPa bar

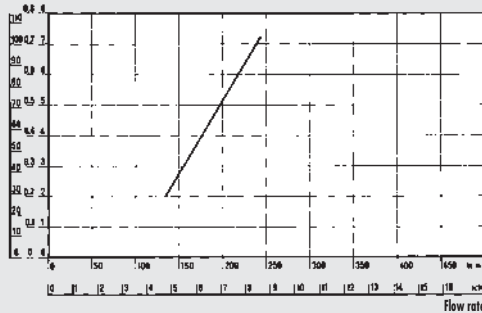


MINIMUM OPERATING FLOW CHART



MINIMUM OPERATING FLOW CHART LUB 400 1" AND 2"

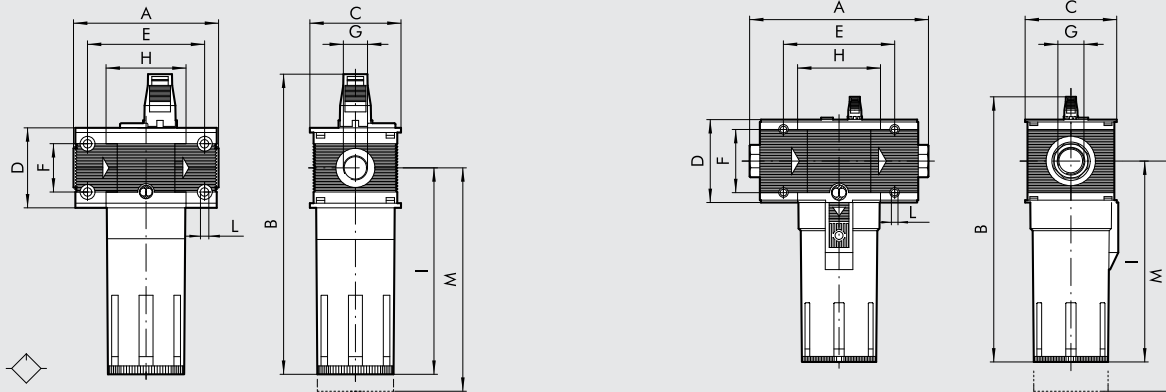
PRESSURE
psi KPa bar



DIMENSIONS

100 - 200 - 300

400



	LUB 100		LUB 200			LUB 300			LUB 400			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	78			93.5		110		112		225 to 255		283 to 313
B	162			193		214				338		
C	50			63		72				116		
D	43			55		65				105		
E	63			78.5		92				141.4		
F	26			36		42				80		
H	43			55.5		65				105.4		
I	112			137.5		153				256		
L	M4 hole			M5 hole		M5 hole				M6 hole		
M	130			150		160				285		

KEY TO CODES

LUB ELEMENT	100 SIZE	1/4 THREADED PORT	- TYPE OF OIL FILLING
LUB	100	1/4	- = STD
	200	3/8	ML-CD = AUTOMATIC
		1/4	CD = MANUAL
	300	3/8	
		1/2	
	400	1/2	
		3/4	
		1	
		1	
		1 1/4	
		1 1/2	
		2	

STD: Standard version filled with oil by removing the bowl or through the top cap. Requires circuit relieving.
 ML CD: Depression filling with minimum level and valve
 CD MANUAL: Filling by depression.

ORDERING CODES

Code	Description	Code	Description	Code	Description
Skillair® 100 LUBRICATOR		Skillair® 300 LUBRICATOR		Skillair® 400 LUBRICATOR	
3281001A	LUB 100 without end plates	4481001A	LUB 300 without end plates	6181001A	LUB 400 without end plates
3281005A	LUB 100 CD manual without end plates	4481005A	LUB 300 CD manual without end plates	6181004A	LUB 400 CD manual without end plates
3281001	LUB 100 1/4	4481006A	LUB 300 ML-CD automatic without end plates	6181006A	LUB 400 ML-CD automatic without end plates
3281005	LUB 100 1/4 CD manual	4481001	LUB 300 1/2	6181001	LUB 400 1
3381001	LUB 100 3/8	4481005	LUB 300 1/2 CD manual	6181004	LUB 400 1 CD manual
3381005	LUB 100 3/8 CD manual	4481006	LUB 300 1/2 ML-CD automatic	6181006	LUB 400 1 ML-CD automatic
Skillair® 200 LUBRICATOR		4581001	LUB 300 3/4	6281001	LUB 400 1 1/4
3481001A	LUB 200 without end plates	4581005	LUB 300 3/4 CD manual	6281004	LUB 400 1 1/4 CD manual
3481005A	LUB 200 CD manual without end plates	4581006	LUB 300 3/4 ML-CD automatic	6281006	LUB 400 1 1/4 ML-CD automatic
3481001	LUB 200 1/4	4681001	LUB 300 1	6381001	LUB 400 1 1/2
3481005	LUB 200 1/4 CD manual	4681005	LUB 300 1 CD manual	6381004	LUB 400 1 1/2 CD manual
3581001	LUB 200 3/8	4681006	LUB 300 1 ML-CD automatic	6381006	LUB 400 1 1/2 ML-CD automatic
3581005	LUB 200 3/8 CD manual			6481001	LUB 400 2
3681001	LUB 200 1/2			6481004	LUB 400 2 CD manual
3681005	LUB 200 1/2 CD manual			6481006	LUB 400 2 ML-CD automatic

Skillair® SHUT-OFF VALVE

The job of this valve is to make the circuit independent from the air supply. It is basically a three-way valve. In the closed position, it cuts off the air supply and discharges the downstream circuit at the same time, which means it is particularly useful during servicing operations. The hand-operated version can be padlocked to lock the knob in a closed position so that it can only be opened by someone with the right key. An interlocked version is available for low pressure operation.

N.B.: With size 400, when the V3V is mounted upstream of the regulator, the pilot regulator must be piloted at a pressure taken upstream of the V3V, otherwise when the system is relieved, most of the air downstream will be relieved by the regulator and not the V3V relief port. For connecting instruction see page 3-95



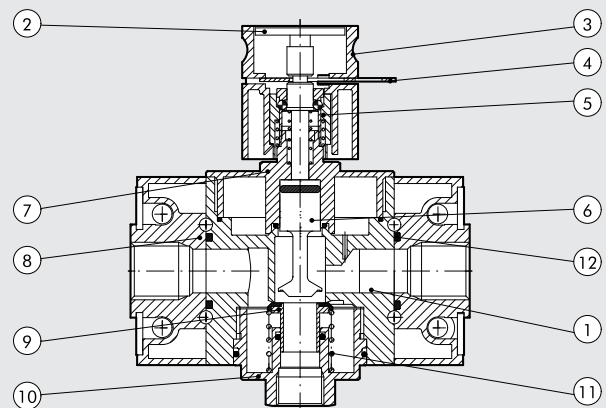
UNITS

Skillair® SHUT-OFF VALVE

TECHNICAL DATA		V3V 100		V3V 200			V3V 300			V3V 400			
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Min. inlet pressure for solenoid version **	MPa	0.3		0.3				0.2			0.3		0.3
	bar	3		3				2			3		3
	psi	43.5		43.5				29			43.5		43.5
Max. input pressure*	MPa	1.5		1.3				1.3			1.3		1.3
	bar	15		13				13			13		13
	psi	217		188				188			188		188
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	Nl/min	1300		2400				3200			13000		14000
ΔP 0.5 bar (0.05 MPa to 7 psi)	scfm	46		85				113			460		494
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	Nl/min	1650		3000				4700			-		-
ΔP 1 bar (0.1 MPa to 14 psi)	scfm	58		106				166			-		-
Max temperature	°C	50		50				50			50		50
	°F	122		122				122			122		122
Weight	Kg	~ 0.5		~ 0.8				~ 1.2			4.8		5.6
Wall fixing screws		M4 x 50		M5 x 60				M5 x 70			M6 x 110		M6 x 110
Type of control		Manual - Pneumatic - Solenoid						Manual - Pneumatic - Solenoid					
		Solenoid pilot-assisted						Solenoid pilot-assisted - Key-operated					
Mounting position		In any position.											
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.											
Note		The end plates in the 400 series have a patented system with a rotary and sliding end joint to adapt the unit perfectly to the pipe cutting distance.											
		* 1 MPa - 10 bar - 145 psi for solenoid version											
		** 0.01 MPa - 0.1 bar - 1.45 psi for manual, pneumatic and pilot-assisted versions with controls min. 0.3 MPa 3 bar 43.5 psi.											

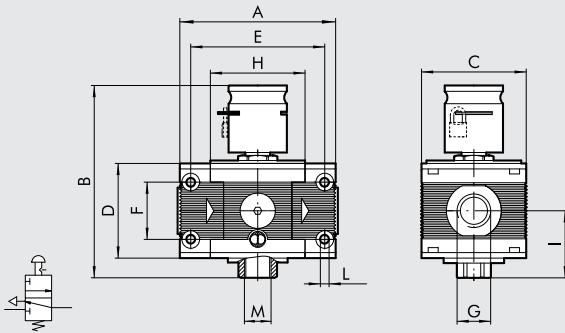
COMPONENTS

- ① Technopolymer body
- ② Operating button
- ③ Technopolymer knob
- ④ Stainless steel safety lamination
- ⑤ Locking unit
- ⑥ OT58 brass piston rod
- ⑦ OT58 brass top plug
- ⑧ Zamak end plate
- ⑨ Valve with vulcanized NBR gasket
- ⑩ OT58 brass bottom plug
- ⑪ Stainless steel valve spring
- ⑫ NBR gaskets

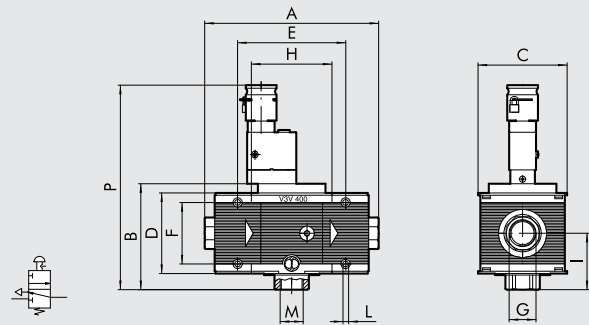


DIMENSIONS OF V3V MANUAL VERSION

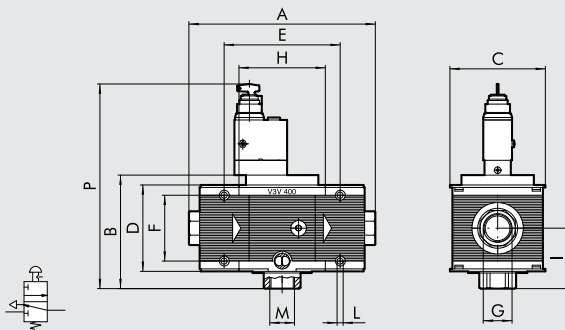
100 - 200 - 300 LOCKABLE



400 LOCKABLE



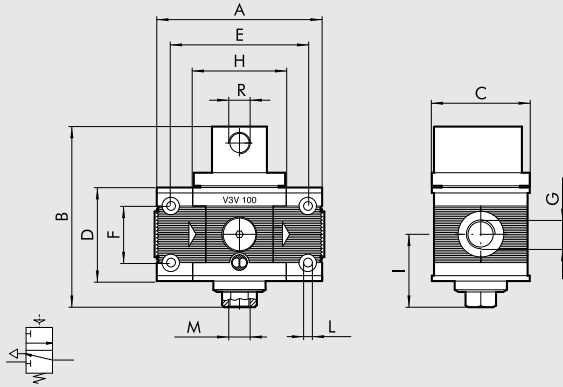
400 KEY-OPERATED



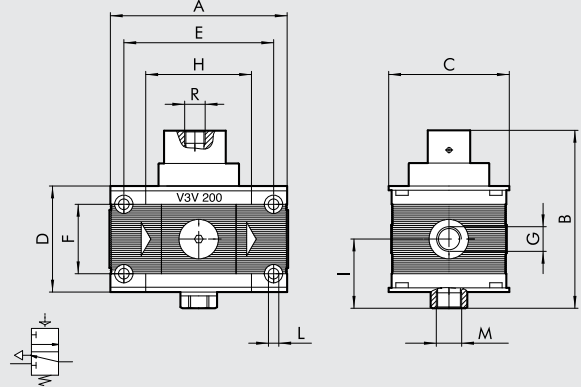
	V3V 100		V3V 200			V3V 300			V3V 400			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	78		93.5			110		112	225 to 255			283 to 313
B	106		119				132		137			
C	50		63				72		116			
D	43		55				65		105			
E	63		78.5				92		141.4			
F	26		36				42		80			
H	43		55.5				65		105.4			
I	33.5		40				46.5		72.5			
L	M4 hole		M5 hole			M5 hole			M6 hole			
M (relief)	1/8"		1/4"			3/8"			1"			
P manual	-		-			-			266			
key-operated	-		-			-			249			

DIMENSIONS OF V3V PNEUMATIC VERSION

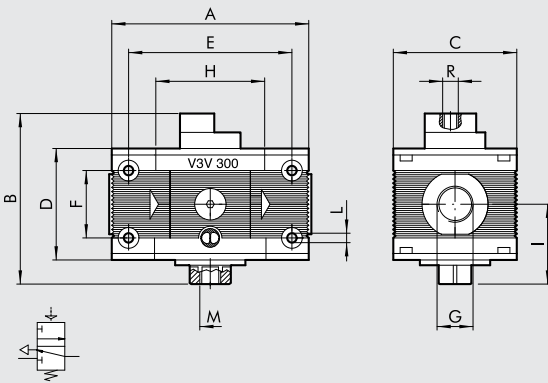
100



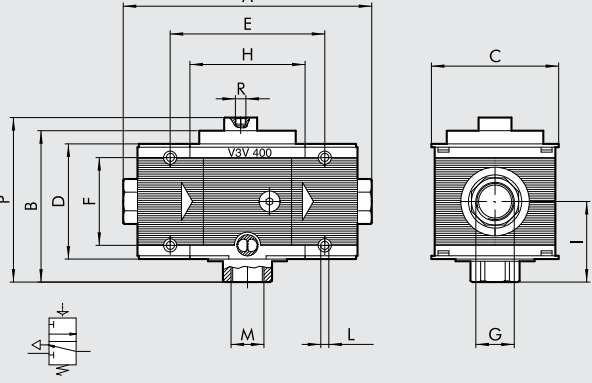
200



300



400



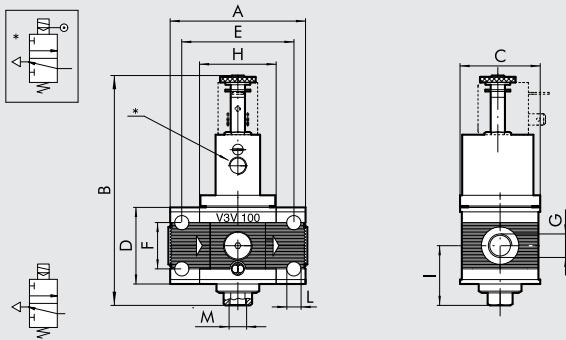
UNITS

Skilair® SHUT-OFF VALVE

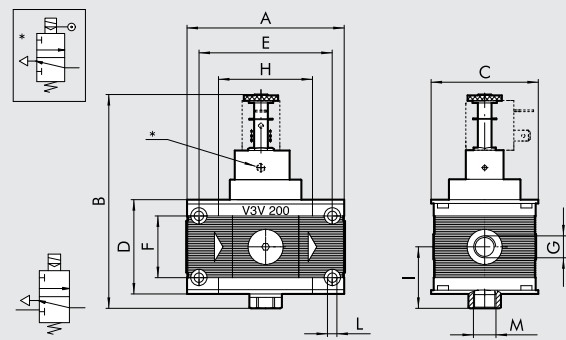
	V3V 100		V3V 200			V3V 300			V3V 400			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	78		93.5			110		112	225 to 255			283 to 313
B	83		96				106		137			
C	50		63				72		116			
D	43		55				65		105			
E	63		78.5				92		141.4			
F	26		36				42		80			
H	43		55.5				65		105.4			
I	33.5		40				46.5		72.5			
L	M4 hole		M5 hole			M5 hole			M6 hole			
M (relief)	1/8"		1/4"			3/8"			1"			
R (pilot)	1/8"		1/8"			1/8"			1/8"			
P	-		-			-			150			

DIMENSIONS OF V3V SOLENOID/SOLENOID PILOT-ASSISTED VALVE

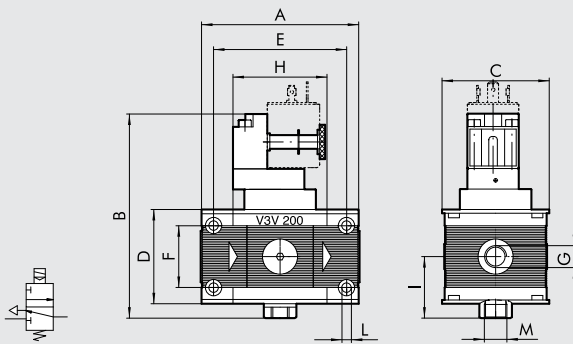
100 SOLENOID/SOLENOID PILOT-ASSISTED VALVE



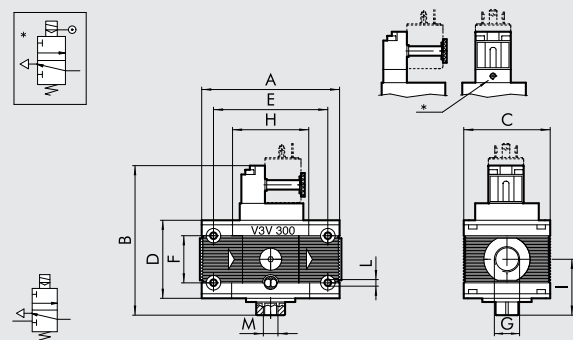
200 SOLENOID/SOLENOID PILOT-ASSISTED VALVE



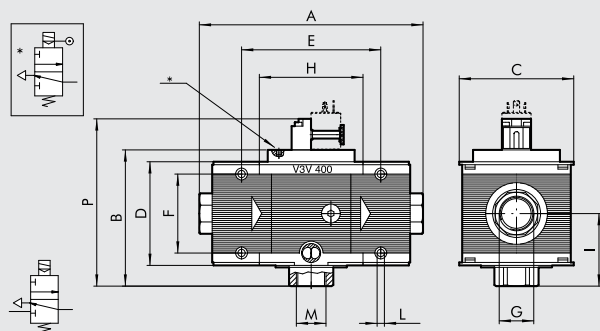
200 CNOMO



300 CNOMO SOLENOID/CNOMO SOLENOID PILOT-ASSISTED VALVE



400 CNOMO SOLENOID/CNOMO SOLENOID PILOT-ASSISTED VALVE



	V3V 100		V3V 200			V3V 300			V3V 400			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	78		93.5			110		112	225 to 255			283 to 313
B Solenoid	128		129				152			137		
B Solenoid pilot-ass.	129		129				-			116		
CNOMO control	-		123				125			105		
CNOMO pilot-ass.	-		-				138			141.4		
C	50		63				72			80		
D	43		55				65			-		
E	63		78.5				92			-		
F	26		36				42			-		
H	43		55.5				65			105.4		
I	33.5		40				46.5			72.5		
L	M4 hole		M5 hole				M5 hole			M6 hole		
M (relief)	1/8"		1/4"				3/8"			1"		
* (pilot)	1/8"		M5				M5			M5		
P	-		-				-			169		

KEY TO CODES

V3V ELEMENT	100 SIZE	1/4 THREADED PORT	MANUAL TYPE OF COMMAND
V3V	100	1/4	Manual (lockable)
		3/8	
	200	1/4	Pneumatic
		3/8	
		1/2	
	300	1/2	Solenoid pilot assisted
		3/4	
		1	
	400	1	Solenoid
		1 1/4	
		1 1/2	
		1 1/2	
		2	

ORDERING CODES

Code	Description	Code	Description	Code	Description
Skillair® 100 3-WAY VALVE		Skillair® 300 3-WAY VALVE		Skillair® 400 3-WAY VALVE	
3270001A	V3V 100 lockable without end plates	4470001A	V3V 300 lockable without end plates	6169010A	V3V 400 key-operated without end plates
3269000A	V3V 100 pneumatic without end plates	4469000A	V3V 300 pneumatic without end plates	6169000A	V3V 400 pneumatic without end plates
3269001A	V3V 100 solenoid without end plates	4469004A	V3V 300 solenoid cnomo without end plates	6169004A	V3V 400 solenoid cnomo without end plates
3269002A	V3V 100 solenoid pilot assisted without end plates	4469005A	V3V 300 solenoid cnomo pilot-assisted w/end plates	6169005A	V3V 400 solenoid cnomo pilot-assisted w/end plates
3270001	V3V 100 1/4 lockable	4470001	V3V 300 1/2 lockable	6170002A	V3V 400 lockable without end plates
3269000	V3V 100 1/4 pneumatic	4469000	V3V 300 1/2 pneumatic	6169010	V3V 400 1 key-operated
3269001	V3V 100 1/4 solenoid	4469004	V3V 300 1/2 solenoid cnomo	6169000	V3V 400 1 pneumatic
3269002	V3V 100 1/4 solenoid pilot assisted	4469005	V3V 300 1/2 solenoid cnomo assisted	6169004	V3V 400 1 solenoid cnomo
3370001	V3V 100 3/8 lockable	4570001	V3V 300 3/4 lockable	6169005	V3V 400 1 solenoid cnomo assisted
3369000	V3V 100 3/8 pneumatic	4569000	V3V 300 3/4 pneumatic	6269010	V3V 400 1 1/4 key-operated
3369001	V3V 100 3/8 solenoid	4569004	V3V 300 3/4 solenoid cnomo	6269000	V3V 400 1 1/4 pneumatic
3369002	V3V 100 3/8 solenoid pilot assisted	4569005	V3V 300 3/4 solenoid cnomo assisted	6269004	V3V 400 1 1/4 solenoid cnomo
Skillair® 200 3-WAY VALVE		4669000	V3V 300 1 pneumatic	6269005	V3V 400 1 1/4 solenoid cnomo assisted
3470001A	V3V 200 lockable without end plates	4669004	V3V 300 1 solenoid cnomo	6369010	V3V 400 1 1/2 key-operated
3469000A	V3V 200 pneumatic without end plates	4669005	V3V 300 1 solenoid cnomo assisted	6369000	V3V 400 1 1/2 pneumatic
3469001A	V3V 200 solenoid without end plates	4670001	V3V 300 1 lockable	6369004	V3V 400 1 1/2 solenoid cnomo
3469002A	V3V 200 solenoid pilot assisted without end plates			6369005	V3V 400 1 1/2 solenoid cnomo assisted
3469004A	V3V 200 solenoid cnomo comm. w/end plate			6469010	V3V 400 2 key-operated
3469005A	V3V 200 solenoid cnomo ass. comm. w/end plate			6469000	V3V 400 2 pneumatic
3470001	V3V 200 1/4 lockable			6469004	V3V 400 2 solenoid cnomo
3469000	V3V 200 1/4 pneumatic			6469005	V3V 400 2 solenoid cnomo assisted
3469001	V3V 200 1/4 solenoid			6170002	V3V 400 1 lockable
3469002	V3V 200 1/4 solenoid pilot assisted			6270002	V3V 400 1 1/4 lockable
3469004	V3V 200 1/4 solenoid cnomo comm.			6370002	V3V 400 1 1/2 lockable
3469005	V3V 200 1/4 solenoid cnomo pilot-assisted			6470002	V3V 400 2 lockable
3570001	V3V 200 3/8 lockable				
3569000	V3V 200 3/8 pneumatic				
3569001	V3V 200 3/8 solenoid				
3569002	V3V 200 3/8 solenoid pilot assisted				
3569004	V3V 200 3/8 solenoid cnomo comm.				
3569005	V3V 200 3/8 solenoid cnomo pilot-assisted				
3670001	V3V 200 1/2 lockable				
3669000	V3V 200 1/2 pneumatic				
3669001	V3V 200 1/2 solenoid				
3669002	V3V 200 1/2 solenoid pilot assisted				
3669004	V3V 200 1/2 solenoid cnomo comm.				
3669005	V3V 200 1/2 solenoid cnomo pilot-assisted				

Skillair® PROGRESSIVE START VALVE



The 2/2 progressive valve comes in two versions, with solenoid or pneumatic actuation.

STD progressive start valve: a differential balanced valve automatically opens the air port fully when the downstream pressure is about 50% of the upstream pressure.

Progressive start valve with pneumatic or solenoid actuation: without a pilot, the upstream air flows downstream through the regulation needle.

When an external or pneumatic solenoid signal is generated, the valve opens the main port to create full flow. It does not relieve the downstream circuit.

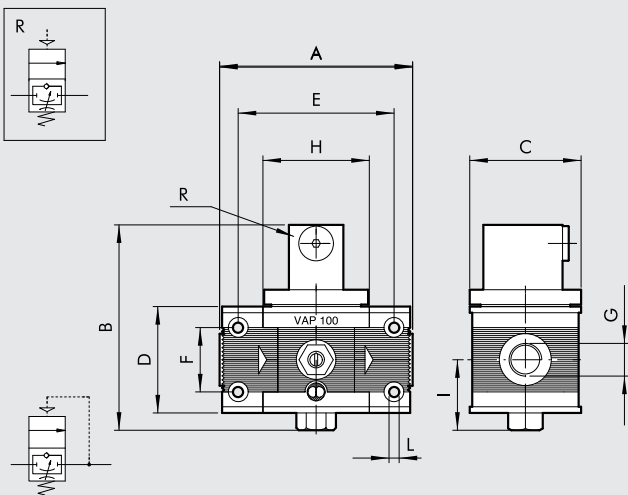


TECHNICAL DATA		VAP 100	
		1/4"	3/8"
Threaded port			
Min. inlet pressure **	MPa	0.3	
	bar	3	
	psi	43.5	
Max. inlet pressure*	MPa	1.5	
	bar	15	
	psi	217	
Flow rate at 6 bar (0.6 MPa to 87 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	1300	
	scfm	46	
Flow rate at 6 bar (0.6 MPa to 87 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	2000	
	scfm	71	
Max temperature	°C	50	
	°F	122	
Weight	Kg	0.5 ~	
Wall fixing screws		M4 x 50	
Mounting position		In any position	
Type of control		Automatic - Pneumatic - Solenoid - Solenoid pilot-assisted	
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous	
** 0.01 MPa - 0.1 bar - 1.45 psi for pneumatic and pilot-assisted versions with controls at min. 0.3 MPa 3 bar 43.5 psi.			
* 1 MPa - 10 bar - 1.45 psi			

UNITS

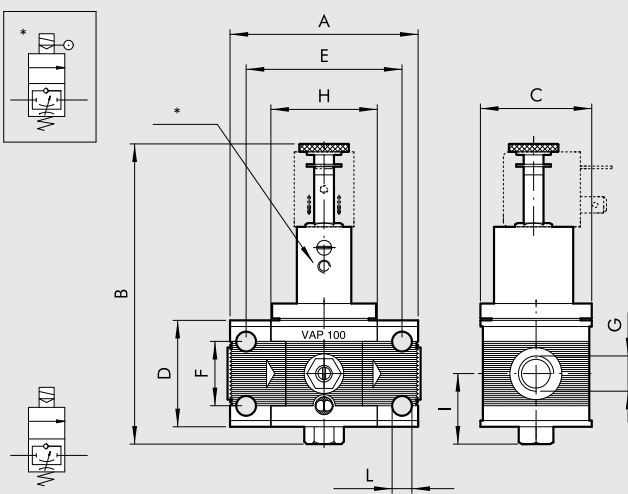
Skillair® PROGRESSIVE START VALVE

DIMENSIONS OF VAP 100 STD/PNEUMATIC VALVE



	VAP 100	
Threaded port G	1/4"	3/8"
A		78
B		83.5
C		50
D		43
E		63
F		26
H		43
I		29
L		M4 hole
R (pilot - pneumatic version)		1/8"

DIMENSIONS OF VAP 100 SOLENOID/SOLENOID PILOT-ASSISTED VALVE



	VAP 100	
Threaded port G	1/4"	3/8"
A		78
B		122.5
C		50
D		43
E		63
F		26
H		43
I		29
L		M4 hole
O		89
* (pilot assisted)		M5

ORDERING CODES

Code	Description
3271000A	VAP 100 without end plates
3271500A	VAP 100 pneumatic without end plates
3271600A	VAP 100 solenoid without end plates
3271700A	VAP 100 solenoid pilot-assisted without end plates
3271000	VAP 100 1/4
3271500	VAP 100 1/4 pneumatic
3271600	VAP 100 1/4 solenoid
3271700	VAP 100 1/4 solenoid pilot-assisted
3371000	VAP 100 3/8
3371500	VAP 100 3/8 pneumatic
3371600	VAP 100 3/8 solenoid
3371700	VAP 100 3/8 solenoid pilot-assisted

NOTES

The job of the progressive starter is to feed air into the circuit gradually with controlled flow. It comes in two versions with solenoid or pneumatic actuation. Both control signals cause the valve to open, which allows the air controlled by the flow regulator to flow slowly towards the downstream circuit. In the APR, when the pressure in the downstream circuit reaches 50%-60% of the upstream pressure, the valve opens the main inlet duct connecting. The time elapsing between starting and opening the valve can be adjusted via the built-in flow regulator. If it is necessary to relieve the downstream circuit quickly, merely operate the control valve which cuts off air flow in the pipe. This closes the valve and starts relieving the downstream circuit. The progressive starter acts both as an actuator positioner, which eliminates the risk of sudden kickback, and as a valve.

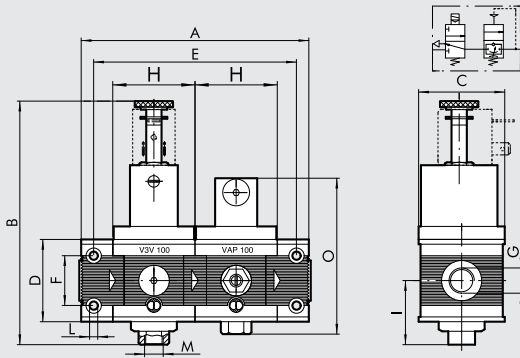
N.B. With size 400, when the APR is mounted upstream of the regulator, the pilot regulator must be piloted at a pressure taken upstream of the APR, otherwise when the system is relieved, most of the air downstream will be relieved by the regulator and not the APR relief port. For connecting instruction see page 3-95



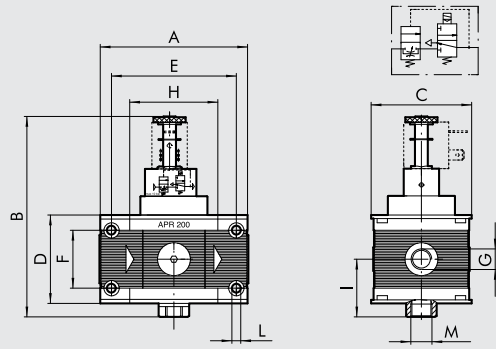
TECHNICAL DATA		APR 100		APR 200			APR 300			APR 400			
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Min. inlet pressure	MPa	0.3		0.3			0.4			0.3			
	bar	3		3			4			3			
	psi	43.5		43.5			58			43.5			
Max. inlet pressure*	MPa	1.5		1.3			1.3			1.3			
	bar	15		13			13			13			
	psi	217		188.5			188.5			188.5			
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	Nl/min	1300		2000			2400			13000			
ΔP 0.5 bar (0.05 MPa to 7 psi)	scfm	46		71			85			460			
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	Nl/min	2000		3200			3600			-			
ΔP 1 bar (0.1 MPa to 14 psi)	scfm	71		113			127			-			
Max temperature	°C	50		50			50			50			
	°F	122		122			122			122			
Weight	Kg	~ 0.8		~ 0.9			~ 1.5			5.6			
Wall fixing screws		M4 x 50		M5 x 60			M5 x 70			M6 x 110			
Type of control	Pneumatic												
	Solenoid			CNOMO Solenoid			Microsol Solenoid CNOMO Solenoid			Solenoid			
Mounting position		In any position											
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.											
Notes on use		For the pneumatic version 200 the pilot pressure must range between the inlet P and the inlet P + 2 bar.											
		For pneumatic version 300, the pilot pressure must be greater or equal to the input pressure. * 1 MPa - 10 bar - 145 psi for solenoid version											

DIMENSIONS APR SOLENOID

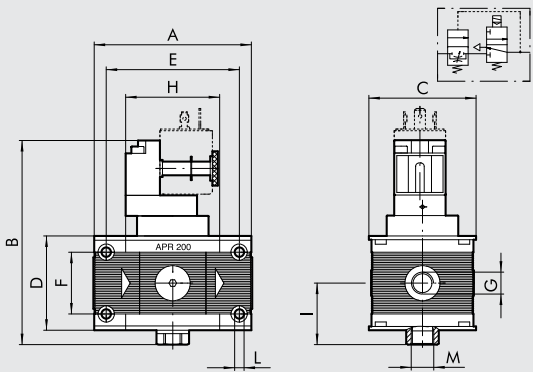
APR 100 SOLENOID



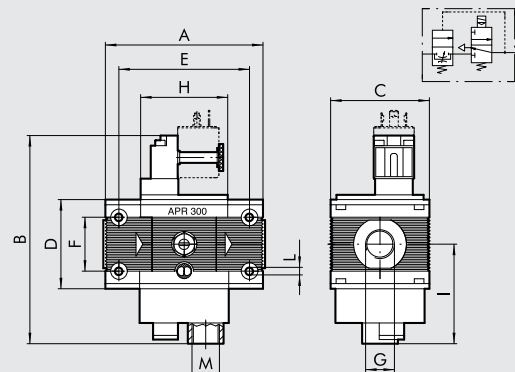
APR 200 SOLENOID



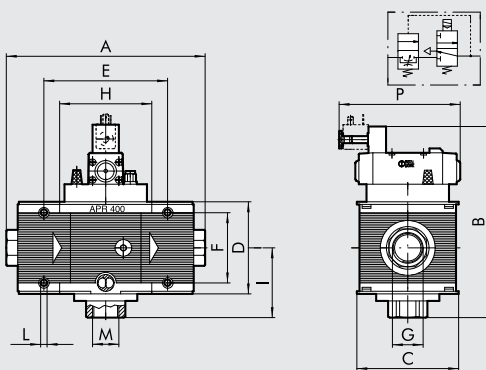
APR 200 CNOMO SOLENOID



APR 300 CNOMO SOLENOID



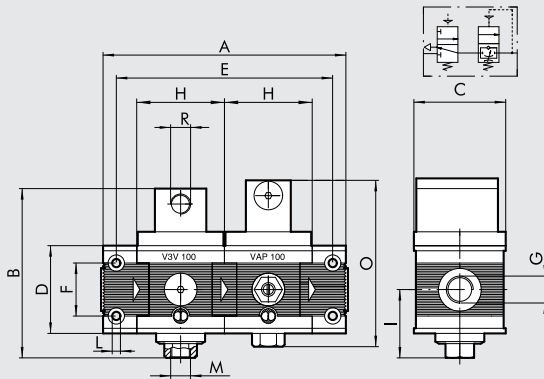
APR 400 SOLENOID



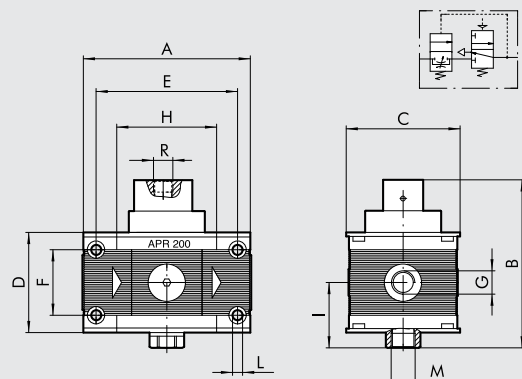
	APR 100 ELPN		APR 200 ELPN			APR 200 ELPN CNOMO			APR 300 ELPN			APR 300 ELPN CNOMO			APR 400 ELPN			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	121		93.5			93.5			110	112		110	112		225 to 255	283 to 313		
B	128		125			120			142			152			218			
C	50		63			63			72			72			106			
D	43		55			55			65			65			105			
E	106		78.5			78.5			92			92			141.4			
F	26		36			36			42			42			80			
H	43		55.5			55.5			65			65			105.4			
I	34.5		36			36			74			74			80			
L	M4 hole		M5 hole			M5 hole			M5 hole			M5 hole			M6 hole			
M (relief)	1/8"		1/4"			1/4"			1/2"			1/2"			1"			
O	83.5		-			-			-			-			-			
P	-		-			-			-			-			138			

DIMENSIONS APR PNEUMATIC

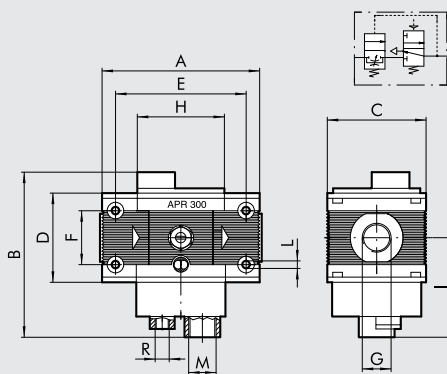
APR 100 PNEUMATIC



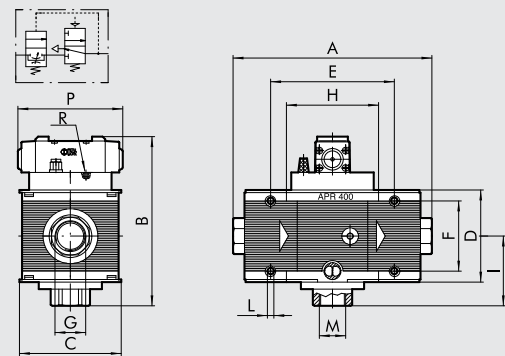
APR 200 PNEUMATIC



APR 300 PNEUMATIC



APR 400 PNEUMATIC



Threaded port G	APR 100 PN		APR 200 PN			APR 300 PN			APR 400 PN			
	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	121			93.5		110		112		225 to 255		283 to 313
B	83			92			122			193		
C	50			63			72			116		
D	43			55			65			105		
E	106			78.5			92			141.4		
F	26			36			42			80		
H	43			55.5			65			105.4		
I	34.5			36			74			80		
L	M4 hole			M5 hole			M5 hole			M6 hole		
M (relief)	1/8"			1/4"			1/2"			1"		
R (pilot)	1/8"			1/8"			1/4"			M5		
P	-			-			-			119		

KEY TO CODES

APR ELEMENT	100 SIZE	1/4 THREADED PORT	PNEUMATIC TYPE OF CONTROL
APR	100	1/4	Pneumatic Solenoid
		3/8	
	200	1/4	
		3/8	
		1/2	
	300	1/2	
		3/4	
		1	
	400	1	
		1 1/4	
		1 1/2	
		2	

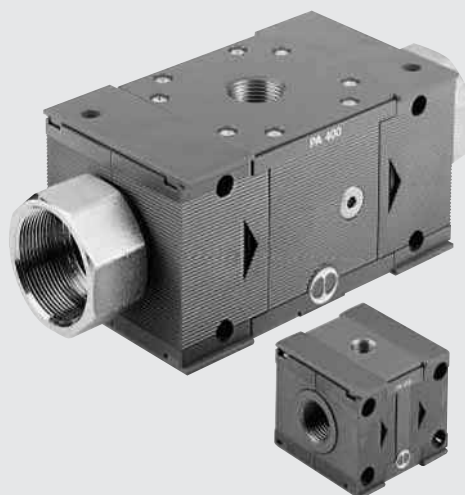
ORDERING CODES

Code	Description	Code	Description
Skillair® 100 PROGRESSIVE STARTER		Skillair® 300 PROGRESSIVE STARTER	
3267001A	APR 100 pneumatic without end plates	4471900A	APR 300 pneumatic without end plates
3267051A	APR 100 solenoid without end plates	4471901A	APR 300 solenoid cno mo without end plates
3267001	APR 100 1/4 pneumatic	4471900	APR 300 1/2 pneumatic
3267051	APR 100 1/4 solenoid	4471901	APR 300 1/2 solenoid cno mo control
3367001	APR 100 3/8 pneumatic	4571900	APR 300 3/4 pneumatic
3367051	APR 100 3/8 solenoid	4571901	APR 300 3/4 solenoid cno mo control
Skillair® 200 PROGRESSIVE STARTER		Skillair® 400 PROGRESSIVE STARTER	
3471000A	APR 200 pneumatic without end plates	4671900	APR 300 1 pneumatic
3471001A	APR 200 solenoid without end plates	4671901	APR 300 1 solenoid cno mo control
3471004A	APR 200 solenoid cno mo without end plates	6171002A	APR 400 pneumatic without end plates
3471000	APR 200 1/4 pneumatic	6171003A	APR 400 solenoid without end plates
3471001	APR 200 1/4 solenoid	6171002	APR 400 1 pneumatic
3471004	APR 200 1/4 solenoid cno mo control	6171003	APR 400 1 solenoid
3571000	APR 200 3/8 pneumatic	6271002	APR 400 1 1/4 pneumatic
3571001	APR 200 3/8 solenoid	6271003	APR 400 1 1/4 solenoid
3571004	APR 200 3/8 solenoid cno mo control	6371002	APR 400 1 1/2 pneumatic
3671000	APR 200 1/2 pneumatic	6371003	APR 400 1 1/2 solenoid
3671001	APR 200 1/2 solenoid	6471002	APR 400 2 pneumatic
3671004	APR 200 1/2 solenoid cno mo control	6471003	APR 400 2 solenoid

UNITS

AVVIATORE PROGRESSIVO Skillair®

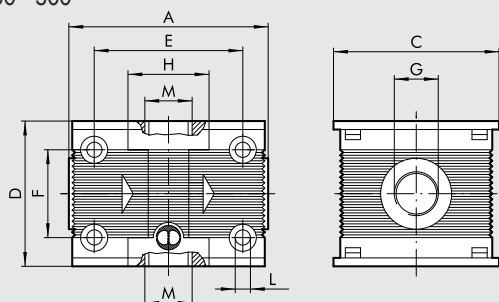
The air take-off takes air from the Skillair® FRL unit irrespective of the assembly position. It is necessary when air needs to be taken from the FRL unit at any stage of the treatment (normal, filtered and regulated, lubricated, etc.). If used separately from the FRL unit, which is infinitely modular, it acts as a distributor allowing air take-off through the threaded ports.



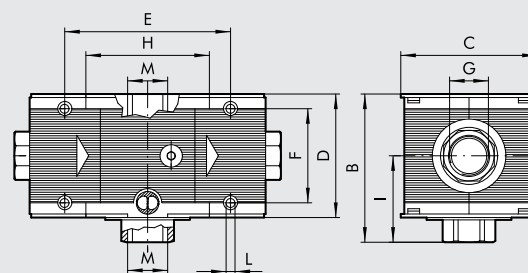
TECHNICAL DATA		PA 100		PA 200			PA 300			PA 400			
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Max. working temperature	°C	50		50			50			50			
	°F	122		122			122			122			
Max. operating pressure	MPa	1.5		1.3			1.3			1.3			
	bar	15		13			13			13			
	psi	217		188			188			188			
Wall fixing screws		M4 x 50		M5 x 60			M5 x 70			M6 x 110			
Threaded port		G 1/4		G 1/4			G 3/8			G 1			
Weight	Kg	0.3		0.5			0.8			4.3		5.1	

DIMENSIONS AND ORDERING CODES

100 - 200 - 300



400



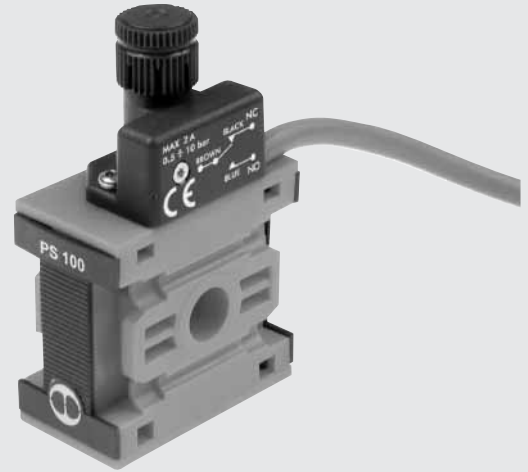
	PA 100		PA 200			PA 300			PA 400				Code	Description
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"		
A	59		63			177		179	225 to 255		283 to 313		9200402A	PA 100 without end plates
B	-		-			-		-	120				9200402	PA 100 1/4
C	50		63			72		72	116				9300401	PA 100 3/8
D	43		55			65		65	105				9300402A	PA 200 without end plates
E	44		48			59		59	141.4				9300404	PA 200 1/2
F	26		36			42		42	80				9300402	PA 200 1/4
H	24		25			32		32	105.4				9300403	PA 200 3/8
I	-		-			-		-	67.5				9400402A	PA 300 without end plates
L	M4 hole		M5 hole			M5 hole		M5 hole	M6 hole				9500402	PA 300 1
M	1/4"		1/4"			3/8"		3/8"	1"				9400402	PA 300 1/2
													9500401	PA 300 3/4
													9700401A	PA 400 without end plates
													9700401	PA 400 1
													9700403	PA 400 1 1/2
													9700402	PA 400 1 1/4
													9700404	PA 400 2

Skillair® PRESSURE SWITCHES

Skillair® pressure switches feature a high degree of miniaturisation and a modern attractive design. As they are extremely modular, the Skillair® series can be installed facing up or down.

They come ready assembled with a 2-metre cable or an M8 connector with a 300-mm cable.

The contact is the switching type, which means it can be normally open or normally closed. It can be regulated via a knurled push-lock handle. On the side opposite the regulation handle is a threaded air inlet port that can be used by removing the threaded plug.



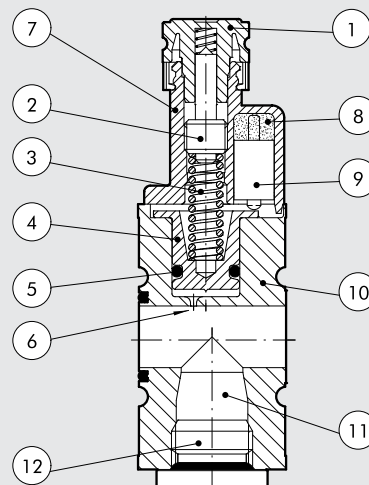
UNITS

Skillair® PRESSURE SWITCHES

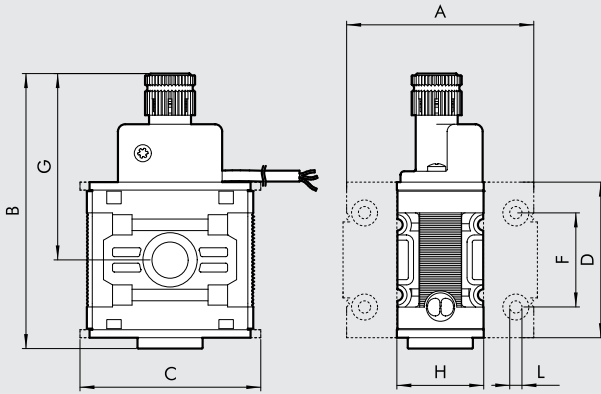
TECHNICAL DATA		PS 100	PS 200	PS 300
Adjustable pressure interval	bar		0.5 to 10	
Hysteresis (not adjustable)	bar		from 0.4 to 0.8 (See diagram)	
Maximum pressure	bar	15	13	13
	MPa	1.5	1.3	1.3
Operating temperature range at: 1 MPa; 10 bar; 145 psi	psi	217	188	188
	°C		50	
	°F		122	
Lower threaded port		1/4"	1/4"	3/8"
Maximum current	A		2	
Maximum voltage	V		250	
Outside diameter of cable	mm		4.9	
Number of wires and cross section			3 x 0.5 mm ²	
Contacts			Normally-Open (NO) and Normally-Closed (NC)	
Protection			IP65	
Number of switchings			5 x 10 ⁶	
Fluid			Filtered lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.	
Mounting position			In any position.	
Weight	Kg	0.160	0.185	0.250

COMPONENTS

- ① Technopolymer adjusting push-lock handle
- ② Brass adjusting screw
- ③ Steel piston spring
- ④ Brass piston
- ⑤ NBR gasket
- ⑥ Choke to reduce peaks in pressure
- ⑦ Technopolymer pressure switch body
- ⑧ Resin finish for IP65
- ⑨ Electrical contact
- ⑩ Technopolymer body
- ⑪ Supplementary air inlet port
- ⑫ A7 plug



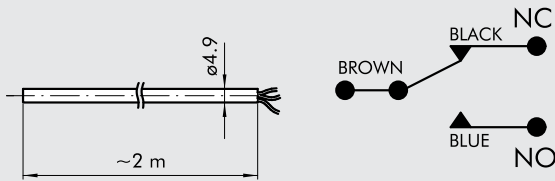
DIMENSIONS



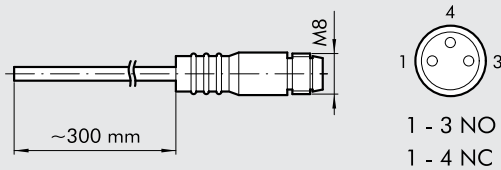
	PS 100	PS 200	PS 300
A	59	63	177
B	76	85	99
C	50	63	72
D	43	55	65
E	44	48	59
F	26	36	42
G	52	58	63
H	24	25	32
L	M4 hole	M5 hole	M5 hole

WIRING DIAGRAM

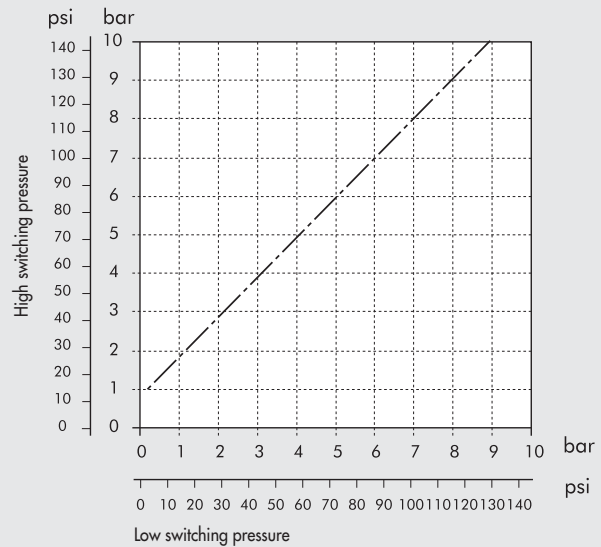
VERSION WITH CABLE



VERSION WITH M8 CONNECTOR



HYSTERESIS GRAPH



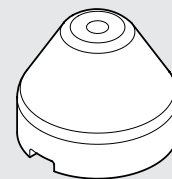
ORDERING CODES

Code	Description
Skillair® 100 PRESSURE SWITCHES	
3240000A	PS 100 2A NO/NC 2 m cable without end plates
3240001A	PS 100 2A NO/NC M8 connector without end plates

Code	Description
Skillair® 200 PRESSURE SWITCHES	
3440000A	PS 200 2A NO/NC 2 m cable without end plates
3440001A	PS 200 2A NO/NC M8 connector without end plates

Code	Description
Skillair® 300 PRESSURE SWITCHES	
4440000A	PS 300 2A NO/NC 2 m cable without end plates
4440001A	PS 300 2A NO/NC M8 connector without end plates

SECURITY KNOB



Code	Description
9200703	Acc. security knob

NOTE: Pull outwards to remove the knob from the pressure switch on the unit. Insert the security knob and regulate the pressure switch. Then press the handle firmly to lock it in position. If the pressure switch needs to be reset, remove the security knob by forcing it laterally with a screwdriver.

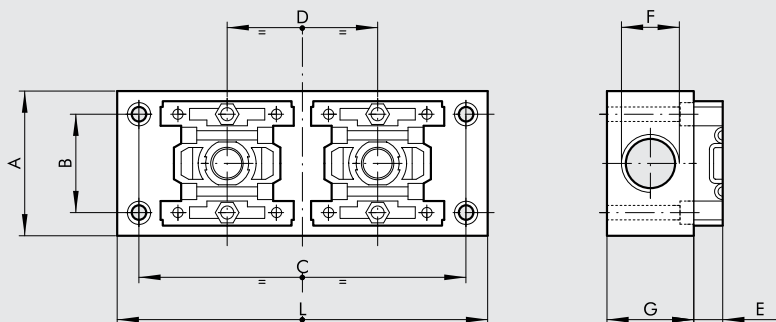
Skillair® SUB-BASE AND ADAPTER BASE

The adapter base is used to adapt the Skillair® FRL system to various assemblies without affecting modularity or servicing. If you use the universal adapter base plus the intermediate plate, you can assemble several elements of different sizes.

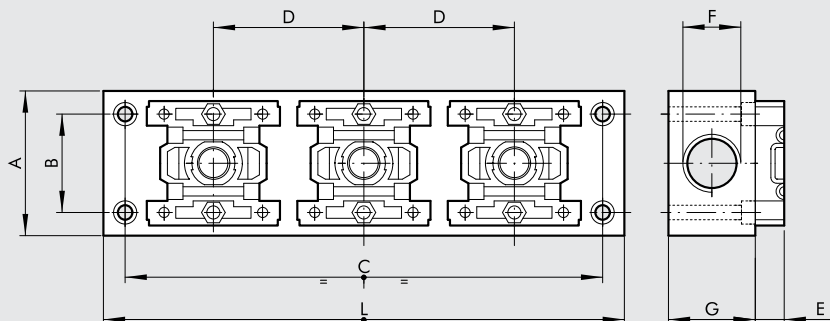


DIMENSIONS

2-POSITION SUB-BASE

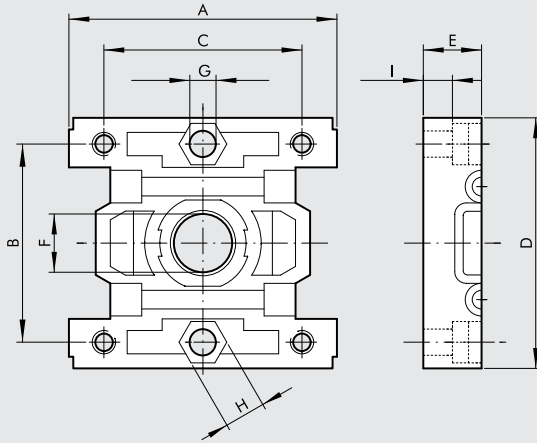


3-POSITION SUB-BASE



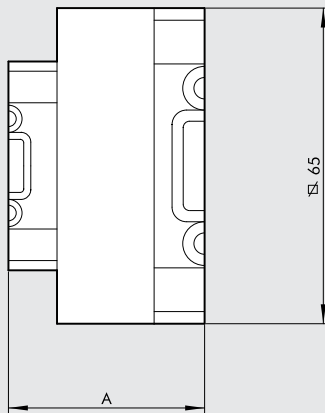
	100 - 2 POS.	100 - 3 POS.	200 - 2 POS.	200 - 3 POS.	300 - 2 POS.	300 - 3 POS.
A	50	50	55	55	60	60
B	34	34	44	44	49	49
C	113	165	135	200	155	230
D	52	52	65	65	75	75
E	10	10	8.5	8.5	10.5	10.5
F	1/2"	1/2"	3/4"	3/4"	3/4"	3/4"
G	30	30	40	40	40	40
L	128	180	150	215	170	245

DIMENSIONS OF ADAPTER BASE



	BA 100	BA 200	BA 300
A	46	59	69
B	34	44	49
C	34	44	49
D	43	55	65
E	10	8.5	10.5
F	10	15	18
G	M4 hole	M4 hole	M5 hole
H	Es. 7	Es. 7	Es. 7
I	5	2	5

DIMENSIONS OF SIZE ADAPTERS



	BA 100 - 200	BA 100 - 300	BA 200 - 300
A	38.5	40.5	39

ORDERING CODES

Code	Description
MULTIPLE SUB-BASES FOR REGULATORS	
9200202	SB 2 100
9300202	SB 2 200
9400202	SB 2 300
9200302	SB 3 100
9300302	SB 3 200
9400302	SB 3 300
ADAPTER BASE	
9201801	BA 100
9321801	BA 200
9401801	BA 300
SIZE ADAPTER	
9301801	BA 100 - 200
9301802	BA 100 - 300
9301803	BA 200 - 300

NOTES

FIL+REG+LUB Skillair®

Refer to the sections on the single modules for a further description, components and other technical data.



UNITS

FIL+REG+LUB Skillair®

TECHNICAL DATA		FRL 100		FRL 200			FRL 300			FRL 400			
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Setting range		0 to 8 - 0 to 12		0 to 8 - 0 to 12			0 to 8 - 0 to 12			Depending on pilot regulator			
Degree of filtration	μm	5 - 20		5 - 20			5 - 20			5 - 20 - 50			
Max. inlet pressure	MPa	1.5		1.3			1.3			1.3			
	bar	15		13			13			13			
Flow rate at 6.3 bar ΔP 0.5 bar	psi	217		188			188			188			
	Nl/min	300		1300			2500			9000			
	scfm	11		46			89			320			
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	800		3000			4500			-			
	scfm	28		106			160			-			
	°C	50		50			50			50			
Max temperature at 10 bar	°F	122		122			122			122			
	Kg	0.75		1.5			2.9			~ 10			
Weight													
Wall fixing screws		M4 x 50		M5 x 60			M5 x 70			M6 x 110			
Fluid		Compressed air											
Notes on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.											

KEY TO CODES

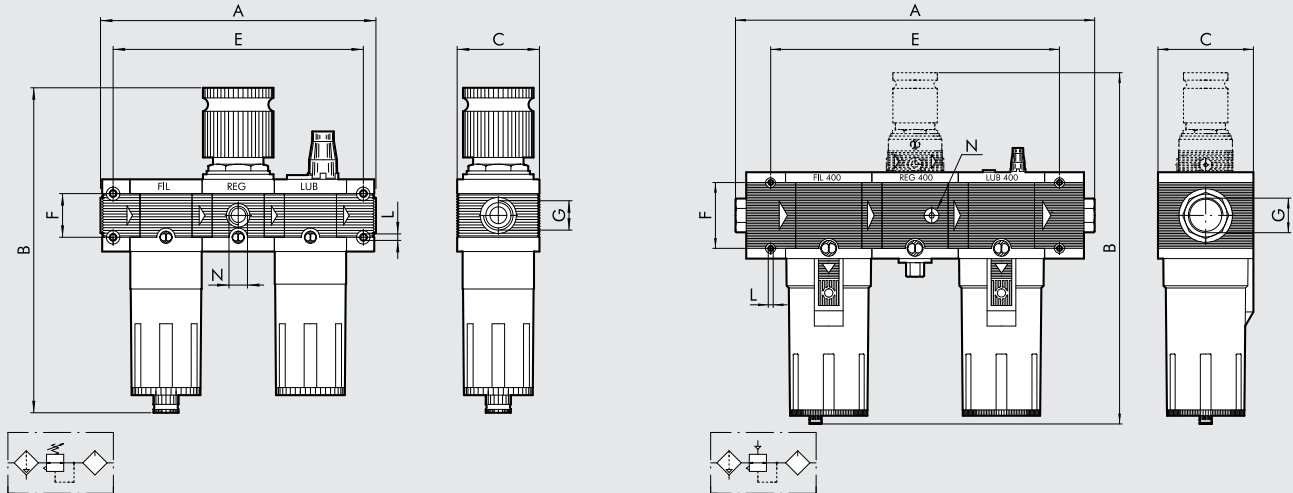
FRL ELEMENT	100 SIZE	1/4 THREADED PORT	20 DEGREE OF FILTRATION	08 SETTING RANGE	RMSA TYPE OF CONDENSATION DRAIN
FRL	100	1/4	5 = 5 μm	08 = 0 to 8 bar	RMSA
	200	3/8	20 = 20 μm	012 = 0 to 12 bar	SAC
		1/4	50 = 50 μm		RMSA
		3/8			SAC
	300	1/2			RA
		1/2			RMSA
		3/4			RA
	400	1			
		1			
		1 1/4			
		1 1/2			
		2			

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure
 RA: automatic drain with condensate discharge, independent of pressure and flow rate.
 (for size 200, 300 and 400)
 SAC: automatic drain with condensate discharge.
 Operates by depression – requires variable air take-offs.
 (for size 100 and 200)

DIMENSIONS FIL+REG+LUB

100 - 200 - 300

400



	FIL+REG+LUB 100		FIL+REG+LUB 200			FIL+REG+LUB 300			FIL+REG+LUB 400			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	164		204.5			240			436 to 466			
B	RMSA	199	245			278			444			
	RA	-	249			282			448			
	SAC	203	249			282			448			
C	50		63			72			116			
E	149		189.5			222			352			
F	26		36			42			80			
L	M4 hole		M5 hole			M5 hole			M6 hole			
N (pressure gauge port)	1/8"		1/8"			1/8"			1/4"			

ORDERING CODES

Code Description

FIL+REG+LUB Skillair® 100

3282008	FRL 100 1/4 20 08 RMSA
3282011	FRL 100 1/4 20 012 RMSA
3382008	FRL 100 3/8 20 08 RMSA
3382011	FRL 100 3/8 20 012 RMSA

FIL+REG+LUB Skillair® 200

3482008	FRL 200 1/4 20 08 RMSA
3482011	FRL 200 1/4 20 012 RMSA
3582008	FRL 200 3/8 20 08 RMSA
3582011	FRL 200 3/8 20 012 RMSA
3682008	FRL 200 1/2 20 08 RMSA
3682011	FRL 200 1/2 20 012 RMSA

FIL+REG+LUB Skillair® 300

4482005	FRL 300 1/2 20 08 RMSA
4482008	FRL 300 1/2 20 012 RMSA
4582005	FRL 300 3/4 20 08 RMSA
4582008	FRL 300 3/4 20 012 RMSA
4682005	FRL 300 1 20 08 RMSA
4682008	FRL 300 1 20 012 RMSA

FIL+REG+LUB Skillair® 400

6182002	FRL 400 1 20 RMSA
6182005	FRL 400 1 20 RA
6282002	FRL 400 1 1/4 20 RMSA
6382002	FRL 400 1 1/2 20 RMSA
6482002	FRL 400 2 20 RMSA

The following versions are available on request:

- with 5 mm or 50 mm degree of filtration
- with SAC or RA condensate discharge

FR+LUB Skillair®

Refer to the sections on the single modules for a further description, components and other technical data.



UNITS

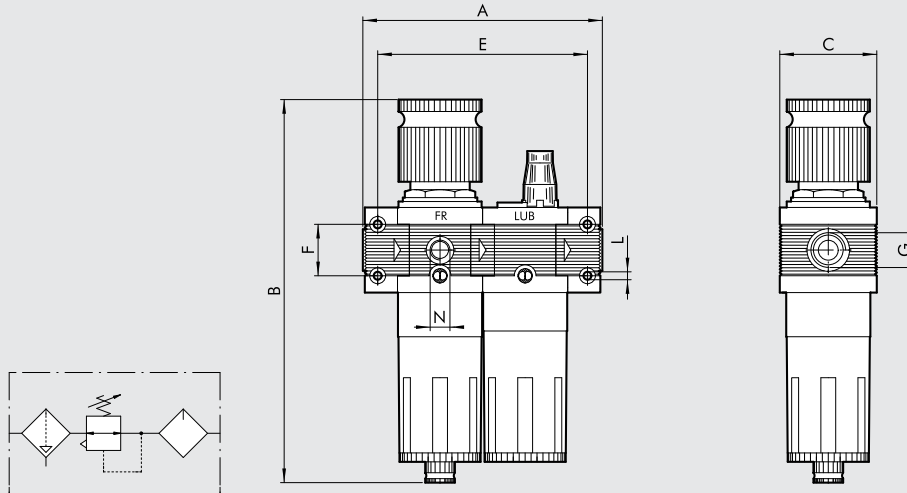
FR+LUB Skillair®

TECHNICAL DATA	FR+LUB 100		FR+LUB 200			FR+LUB 300		
	Threaded port	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"
Setting range	0 to 8 - 0 to 12		0 to 8 - 0 to 12			0 to 8 - 0 to 12		
Degree of filtration	μm	5 - 20 - 50	5 - 20 - 50			5 - 20 - 50		
Max. inlet pressure	MPa	1.5	1.3			1.3		
	bar	15	13			13		
	psi	217	188			188		
Flow rate at 6.3 bar ΔP 0.5 bar	NI/min	300	1200			2300		
	scfm	11	43			82		
Flow rate at 6.3 bar ΔP 1 bar	NI/min	800	2400			4000		
	scfm	28	85			142		
Max temperature at 10 bar	°C	50	50			50		
	°F	122	122			122		
Weight	Kg	0.7	1.35			2.7		
Wall fixing screws		M4 x 50	M4 x 60			M5 x 70		
Fluid		Compressed air						
Notes on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.						

KEY TO CODES

FR+L	100	1/4	20	08	RMSA	
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	TYPE OF CONDENSATION RANGE	
FR+L	100	1/4	5 = 5 μm	08 = 0 to 8 bar	RMSA	RMSA: drain with manual condensate discharge and automatic discharge at zero pressure
	200	3/8	20 = 20 μm	012 = 0 to 12 bar	SAC	
	300	1/4	50 = 50 μm		RMSA	RA: automatic drain with condensate discharge, independent of pressure and flow rate. (for size 200, 300)
		3/8			SAC	
		1/2				RA
		1/2			RMSA	SAC: automatic drain with condensate discharge. Operates by depression – requires variable air take-offs. (for size 100 and 200)
		3/4			RA	
		1				

DIMENSIONS FR+L



	FR+LUB 100		FR+LUB 200			FR+LUB 300		
	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"
Threaded port G						1/2"	3/4"	1"
A		121		149		175		177
B	RMSA	199		245			278	
	RA	-		249			282	
	SAC	203		249			282	
C		50		63			72	
E		106		134			157	
F		26		36			42	
L		M4 hole		M5 hole			M5 hole	
N (pressure gauge port)		1/8"		1/8"			1/8"	

ORDERING CODES

Codie Description

FR+L Skillair® 100

3284008	FR+L 100 1/4 20 08 RMSA
3284011	FR+L 100 1/4 20 012 RMSA
3384008	FR+L 100 3/8 20 08 RMSA
3384011	FR+L 100 3/8 20 012 RMSA

FR+L Skillair® 200

3484008	FR+L 200 1/4 20 08 RMSA
3484011	FR+L 200 1/4 20 012 RMSA
3584008	FR+L 200 3/8 20 08 RMSA
3584011	FR+L 200 3/8 20 012 RMSA
3684008	FR+L 200 1/2 20 08 RMSA
3684011	FR+L 200 1/2 20 012 RMSA

FR+L Skillair® 300

4484005	FR+L 300 1/2 20 08 RMSA
4484008	FR+L 300 1/2 20 012 RMSA
4584005	FR+L 300 3/4 20 08 RMSA
4584008	FR+L 300 3/4 20 012 RMSA
4684005	FR+L 300 1 20 08 RMSA
4684008	FR+L 300 1 20 012 RMSA

The following versions are available on request:

- with 5 mm or 50 mm degree of filtration
- with SAC or RA condensate discharge

V3V+FR+LUB Skillair®

Refer to the sections on the single modules for a further description, components and other technical data.



UNITS

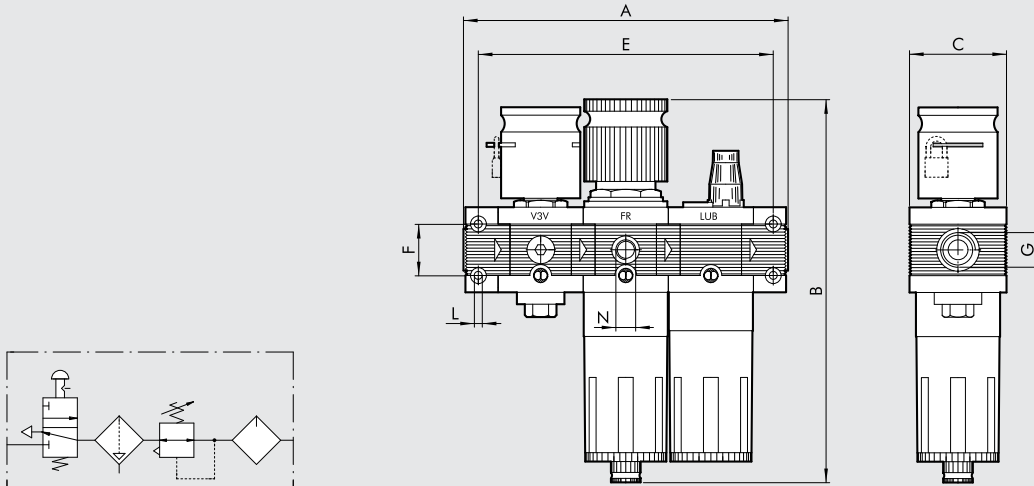
V3V+FR+LUB Skillair®

TECHNICAL DATA	V+FR+L 100		V+FR+L 200			V+FR+L 300		
	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"
Threaded port	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"
Setting range	0 to 8 - 0 to 12		0 to 8 - 0 to 12			0 to 8 - 0 to 12		
Degree of filtration	μm		μm			μm		
Max. inlet pressure	MPa		MPa			MPa		
	bar		bar			bar		
	psi		psi			psi		
Flow rate at 6.3 bar ΔP 0.5 bar	NI/min		NI/min			NI/min		
	scfm		scfm			scfm		
Flow rate at 6.3 bar ΔP 1 bar	NI/min		NI/min			NI/min		
	scfm		scfm			scfm		
Max temperature at 10 bar	°C		°C			°C		
	°F		°F			°F		
Weight	Kg		Kg			Kg		
Wall fixing screws	M4 x 50		M5 x 60			M5 x 70		
Fluid	Compressed air.							
Notes on use	The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.							

KEY TO CODES

VFR+L	100	1/4	20	08	RMSA	
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	TYPE OF CONDENSATE DRAIN	
VFR+L	100	1/4 3/8	5 = 5 μm 20 = 20 μm 50 = 50 μm	08 = 0 to 8 bar 012 = 0 to 12 bar	RMSA SAC RMSA SAC RA RMSA RA	RMSA: drain with manual condensate discharge and automatic discharge at zero pressure RA: automatic drain with condensate discharge, independent of pressure and flow rate. (for size 200, 300) SAC: automatic drain with condensate discharge. Operates by depression – requires variable air take-offs. (for size 100 and 200)
	200	1/4 3/8 1/2				
	300	1/2 3/4 1				

DIMENSIONS V3V+FR+L



	V3V+FR+LUB 100		V3V+FR+LUB 200			V3V+FR+LUB 300		
	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"
Threaded port G								
A		164		204.5		240		242
B	RMSA	199		245			278	
	RA	-		249			282	
	SAC	203		249			282	
C		50		63			72	
E		149		189.5			222	
F		26		36			42	
L		M4 hole		M5 hole			M5 hole	
N (pressure gauge port)		1/8"		1/8"			1/8"	

ORDERING CODES

Code Description

VFR+L Skillair® 100

3272008	VFR+L 100 1/4 20 08 RMSA
3272011	VFR+L 100 1/4 20 012 RMSA
3372008	VFR+L 100 3/8 20 08 RMSA
3372011	VFR+L 100 3/8 20 012 RMSA

VFR+L Skillair® 200

3472008	VFR+L 200 1/4 20 08 RMSA
3472011	VFR+L 200 1/4 20 012 RMSA
3572008	VFR+L 200 3/8 20 08 RMSA
3572011	VFR+L 200 3/8 20 012 RMSA
3672008	VFR+L 200 1/2 20 08 RMSA
3672011	VFR+L 200 1/2 20 012 RMSA

VFR+L Skillair® 300

4472005	VFR+L 300 1/2 20 08 RMSA
4472008	VFR+L 300 1/2 20 012 RMSA
4572005	VFR+L 300 3/4 20 08 RMSA
4572008	VFR+L 300 3/4 20 012 RMSA
4672005	VFR+L 300 1 20 08 RMSA
4672008	VFR+L 300 1 20 012 RMSA

The following versions are available on request:

- with 5 mm or 50 mm degree of filtration
- with SAC or RA condensate discharge

Refer to the sections on the single modules for a further description, components and other technical data.



TECHNICAL DATA	F+L 100		F+L 200			F+L 300			F+L 400			
Threaded port	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Degree of filtration	μm 5 - 20 - 50		5 - 20 - 50			5 - 20 - 50			5 - 20 - 50			
Max. inlet pressure	MPa		1.5		1.3		1.3		1.3			
	bar		15		13		13		13			
Flow rate at 6.3 bar ΔP 0.5 bar	psi		217		188		188		188			
	NL/min		600		1800		3200		9000		14000	
Flow rate at 6.3 bar ΔP 1 bar	scfm		21		64		113		320		500	
	NL/min		1200		3200		4500		-		-	
Max temperature at 10 bar	scfm		42		113		160		-		-	
	°C		50		50		50		50			
Weight	°F		122		122		122		122			
	Kg		0.5		1.1		2.2		~ 8			
Wall fixing screws	M4 x 50		M5 x 60			M5 x 70			M6 x 110			
Fluid	Compressed air.											
Notes on use	The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.											

KEY TO CODES

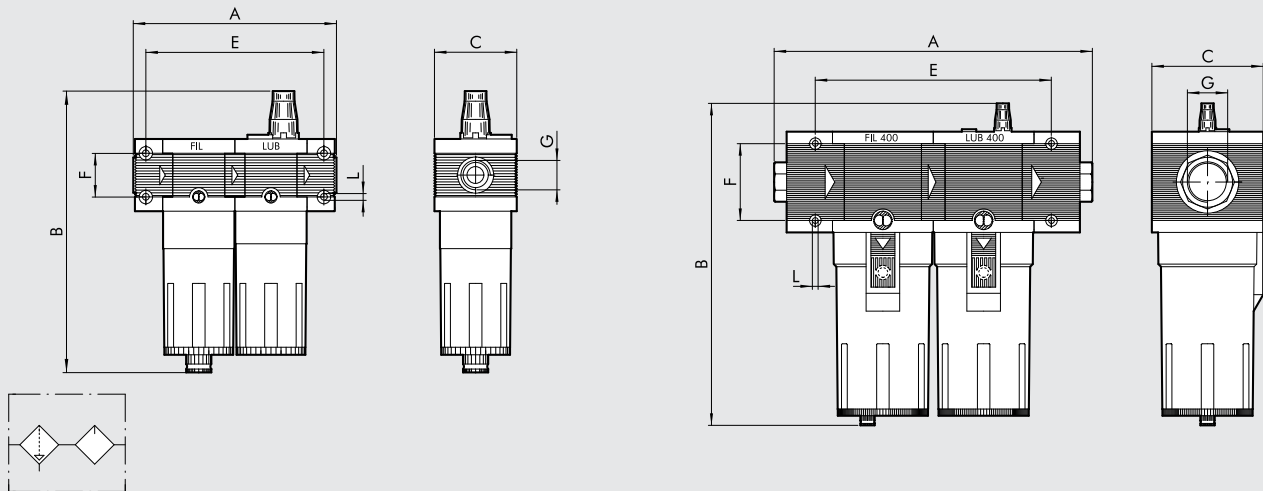
F+L ELEMENT	100 SIZE	1/4 THREADED PORT	20 DEGREE OF FILTRATION	RMSA TYPE OF CONDENSATE DRAIN
F+L	100	1/4	5 = 5 μm	RMSA
	200	3/8	20 = 20 μm	SAC
	300	1/4	50 = 50 μm	RMSA
	400	3/8		RA
		1/2		
		1/2		
		3/4		
		1		
		1		
		1 1/4		
		1 1/2		
		2		

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure
 RA: automatic drain with condensate discharge, independent of pressure and flow rate.
 (for size 200, 300 and 400)
 SAC: automatic drain with condensate discharge.
 Operates by depression – requires variable air take-offs.
 (for size 100 and 200)

DIMENSIONS FIL+LUB

100 - 200 - 300

400



	FIL+LUB 100		FIL+LUB 200			FIL+LUB 300			FIL+LUB 400			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	121		149			175		177	330 to 360			388 to 418
B	RMSA	172.5	203.5				223.5		349.5			
	RA	-	207.5				227.5		353.5			
	SAC	176.5	207.5				227.5		353.5			
C		50	63				72		116			
E		106	134				157		247			
F		26	36				42		80			
L		M4 hole	M5 hole				M5 hole		M6 hole			

ORDERING CODES

Code Description

F+L Skillair® 100

3285002 F+L 100 1/4 20 RMSA

3385002 F+L 100 3/8 20 RMSA

F+L Skillair® 200

3485002 F+L 200 1/4 20 RMSA

3585002 F+L 200 3/8 20 RMSA

3685002 F+L 200 1/2 20 RMSA

F+L Skillair® 300

4485002 F+L 300 1/2 20 RMSA

4585002 F+L 300 3/4 20 RMSA

4585005 F+L 300 3/4 20 RA

4685002 F+L 300 1 20 RMSA

F+L Skillair® 400

6185002 F+L 400 1 20 RMSA

6185005 F+L 400 1 20 RA

6285002 F+L 400 1 1/4 20 RMSA

6385002 F+L 400 1 1/2 20 RMSA

6485002 F+L 400 2 20 RMSA

The following versions are available on request:

- with 5 mm or 50 mm degree of filtration
- with SAC or RA condensate discharge

Refer to the sections on the single modules for a further description, components and other technical data.



TECHNICAL DATA			F+D 100		F+D 200			F+D 300			F+D 400			
Threaded port			1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Degree of filtration	Filter	µm	5		5			5			5			
	Depurator	µm	0.01		0.01			0.01			0.01			
Max. inlet pressure		MPa	1.5		1.3			1.3			1.3			
		bar	15		13			13			13			
		psi	217		188			188			188			
Max temperature at 10 bar		°C	50		50			50			50			
		°F	122		122			122			122			
Weight		Kg	0.6		1.3			2.2			~ 7			
Wall fixing screws			M4 x 50		M5 x 60			M5 x 70			M6 x 110			
Maximun suggested flow rate			Please look at the flow rate curves at page 3-84											
Fluid			Compressed air.											
Notes on use			The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.											

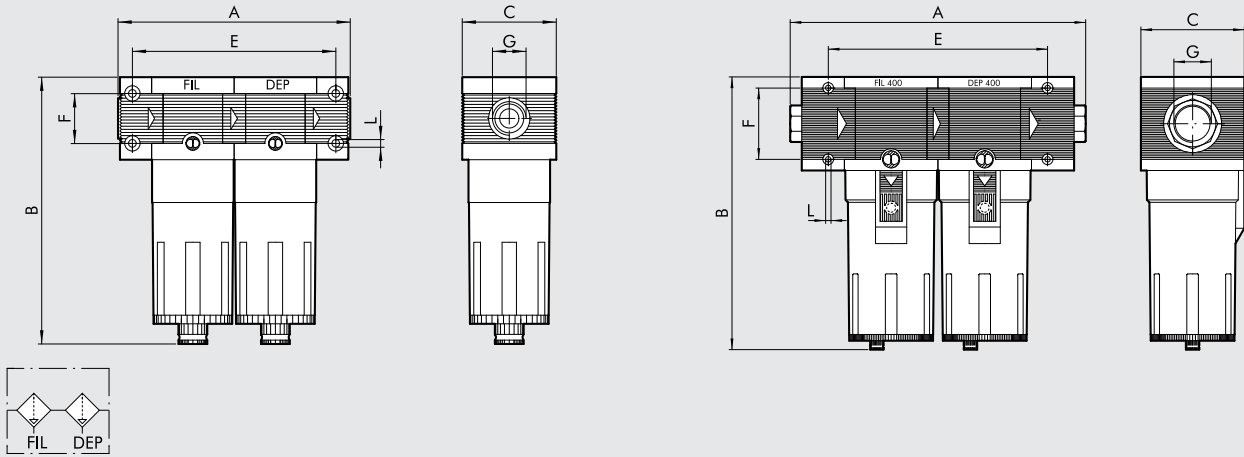
KEY TO CODES

F+D	100	1/4	5	RMSA	
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	TYPE OF CONDENSATE DRAIN	
F+D	100	1/4	5 = 5 µm	RMSA	RMSA: drain with manual condensate discharge and automatic discharge at zero pressure
	200	3/8		SAC		RA: automatic drain with condensate discharge, independent of pressure and flow rate. (for size 300 and 400)
	300	1/4		RMSA	SAC: automatic drain with condensate discharge. Operates by depression – requires variable air take-offs. (for size 100 and 200)
		3/8		RA	
	400	1/2			
		1/2			
		3/4			
		1			
		1			
		1 1/4			
		1 1/2			
		2			

DIMENSIONS FIL+DEP

100 - 200 - 300

400



	FIL+DEP 100		FIL+DEP 200			FIL+DEP 300			FIL+DEP 400			
		1/4" | 3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1" 1/4"	1" 1/2"	2"
Threaded port G												
A		121		149		175	177		330 to 360			388 to 418
B	RMSA	144		175			195		320			
	RA	-		179			199		324			
	SAC	148		179			199		324			
C		50		63			72		116			
E		106		134			157		247			
F		26		36			42		80			
L		M4 hole		M5 hole			M5 hole		M6 hole			

ORDERING CODES

F+D Skillair® 100

Code	Description
3289001	F+D 100 1/4 5 RMSA-RMSA
3289005	F+D 100 1/4 5 SAC-RMSA
3289006	F+D 100 1/4 5 SAC-SAC
3389001	F+D 100 3/8 5 RMSA-RMSA
3389005	F+D 100 3/8 5 SAC-RMSA
3389006	F+D 100 3/8 5 SAC-SAC

F+D Skillair® 200

Code	Description
3489001	F+D 200 1/4 5 RMSA-RMSA
3489005	F+D 200 1/4 5 SAC-RMSA
3489006	F+D 200 1/4 5 SAC-SAC
3589001	F+D 200 3/8 5 RMSA-RMSA
3589005	F+D 200 3/8 5 SAC-RMSA
3589006	F+D 200 3/8 5 SAC-SAC
3689001	F+D 200 1/2 5 RMSA-RMSA
3689005	F+D 200 1/2 5 SAC-RMSA
3689006	F+D 200 1/2 5 SAC-SAC

F+D Skillair® 300

Code	Description
4489001	F+D 300 1/2 5 RMSA-RMSA
4489002	F+D 300 1/2 5 RA-RA
4589001	F+D 300 3/4 5 RMSA-RMSA
4589002	F+D 300 3/4 5 RA-RA
4689001	F+D 300 1 5 RMSA-RMSA
4689002	F+D 300 1 5 RA-RA

F+D Skillair® 400

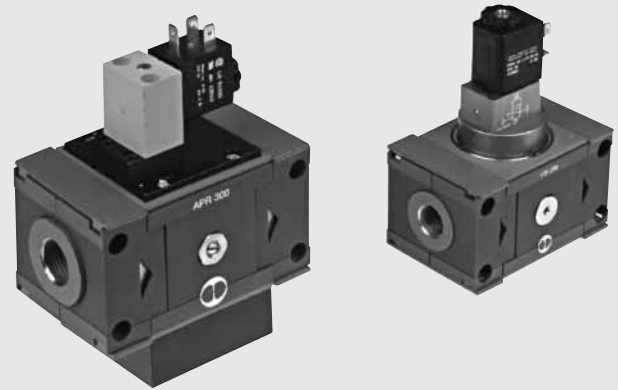
Code	Description
6189001	F+D 400 1 5 RMSA-RMSA
6189002	F+D 400 1 5 RA-RA
6289001	F+D 400 1 1/4 5 RMSA-RMSA
6289002	F+D 400 1 1/4 5 RA-RA
6389001	F+D 400 1 1/2 5 RMSA-RMSA
6389002	F+D 400 1 1/2 5 RA-RA
6489001	F+D 400 2 5 RMSA-RMSA
6489002	F+D 400 2 5 RA-RA

UNITS FOR "UL" AND "CSA" APPROVED COILS

The following units come in a version for use with UL- and CSA-approved coils.

- Skillair® VAP, APR and V3V

UL certification refers to the coil system and pilot; CSA certification refers to the coil only.



NOTES

UL is an independent organisation involved in the safety certification of products for the North American market. Coils and solenoid pilots are certified under UL 429 - Electrically operated valves.

The UR mark concerns UL-recognised components and is used for ones that are part of a larger product or system. This is why UR can be read on the coil. The certification of these components is only valid if they are used in the manufacturer's stated conditions (in our case voltage ± 10% etc.).

The company that manufactures the certified components is included in a UL-listing of certified manufacturers. The list does not include the name Metal Work, but rather the name Nass Magnet (UL file: MH13513), with which we have an agreement for the supply and customisation of coils and solenoid valves.

The use of approved coils and pilots does not automatically certify the whole unit, nor application of a specific machine or plant. Such approval will therefore be up to the manufacturer of the machine or plant.

CSA (Canadian Standard Association) safety standards are applicable in Canada. The coil complies with CSA 22.2.

Units on which these coils can be mounted have the same code and description as those of the corresponding standard valves, followed by the suffix "L".

Example:

	Standard version	Approved version
Code	3669001	3669001L
Description	V3V 200 ELPN 1/2	V3V 200 ELPN 1/2 L

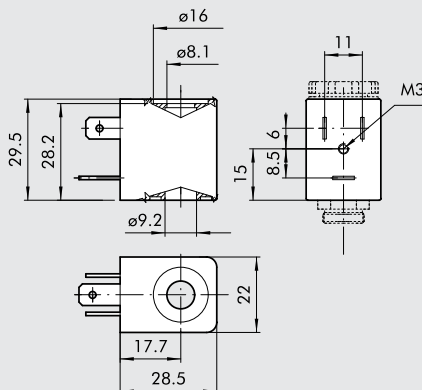
All units of this type have a painted or anodized aluminium control and can only mount Metal Work coils having a code that begins with **W0217** (approved coil).

For the technical data, a diagram of the components and the code key, please refer to the section in the catalogue of the corresponding family of standard units.

UL AND CSA COILS

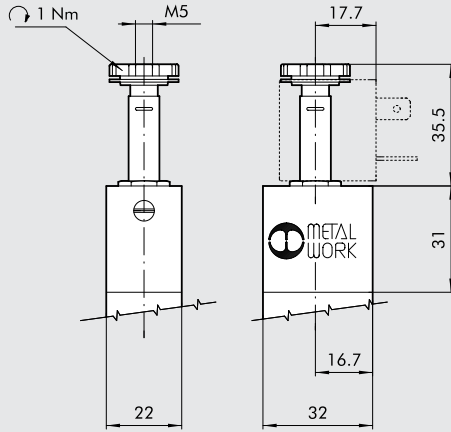
UR-marked coils are therefore components that can form part of a larger product of system. **Approval of the component is valid in the above operating conditions only. The coils must be mounted on suitable units, ones for which the Metal Work code ends with L.**

- Voltage tolerance: ±10%
- Insulation class: F155
- Degree of protection: IP65 EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents
- Temperature range:
 - + 20°C to + 50°C (DC version)
 - + 20°C to + 40°C (AC version)
- Max coil temperature at ED 100%:
 - + 58°C to + 20°C (DC version)
 - + 81°C to + 20°C (AC version)



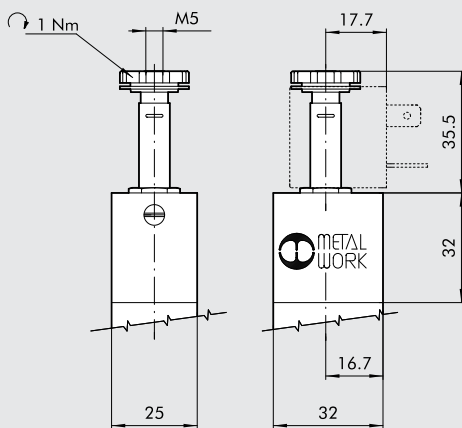
Code	Abbrev.	Nominal voltage	Absorption
W0217000151	Coil 22 Ø9 2.9W 12VDC UR	12Vcc	2.9 W
W0217000101	Coil 22 Ø9 2.6W 24VDC UR	24Vcc	2.6 W
W0217000111	Coil 22 Ø9 6/4.9 VA 24V 50/60Hz UR	24V 50 Hz 24V 60 Hz	6VA 4.9VA
W0217000121	Coil 22 Ø9 6/4.9 VA 110V 50/60Hz UR	110V 50 Hz 110V 60 Hz 48 Vcc	6 VA 4.9 VA 2.7 VA
W0217000131	Coil 22 Ø9 6/4.9 VA 230V 50/60Hz UR	230V 50 Hz 230V 60 Hz	6 VA 4.9 VA

ELECTROPNEUMATIC CONTROL FOR: VAP Skillair® 100



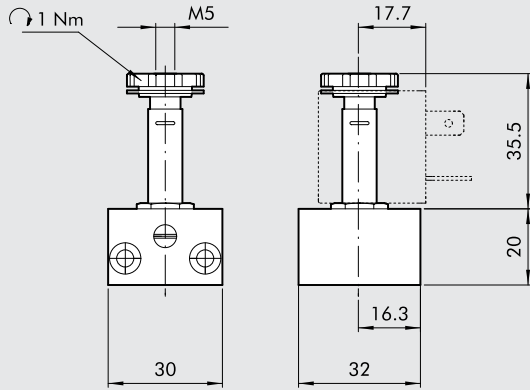
Code	Description
VAP Skillair® 100	
3271600AL	VAP 100 ELPN without end plates L
3271600L	VAP 100 1/4 ELPN L
3371600L	VAP 100 3/8 ELPN L

ELECTROPNEUMATIC CONTROL FOR: APR and V3V Skillair® 100



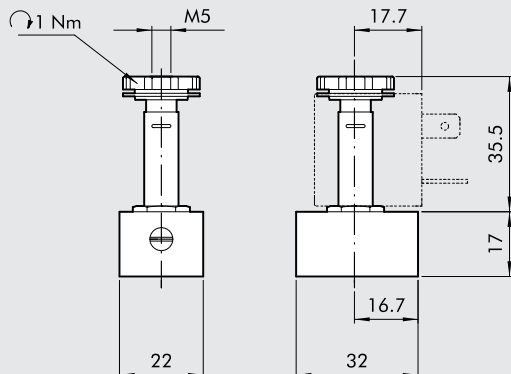
Code	Description
APR Skillair® 100	
3267051AL	APR 100 ELPN without end plates L
3267051L	APR 100 1/4 ELPN L
3367051L	APR 100 3/8 ELPN L
V3V Skillair® 100	
3269001AL	V3V 100 ELPN without end plates L
3269001L	V3V 100 1/4 ELPN L
3369001L	V3V 100 3/8 ELPN L

ELECTROPNEUMATIC CONTROL FOR: V3V and APR Skillair® 200 CNOMO, V3V and APR Skillair® 300, V3V Skillair® 400 CNOMO, APR Skillair® 400



Code	Description
CNOMO SOLENOID VALVE	
9453922L	CNOMO 3/2 with bistable manual actuation
Skillair® 200 V3V CNOMO	
3469004AL	V3V 200 ELPN CNOMO without end plates L
3469004L	V3V 200 ELPN CNOMO 1/4 L
3569004L	V3V 200 ELPN CNOMO 3/8 L
3669004L	V3V 200 ELPN CNOMO 1/2 L
Skillair® 200 APR CNOMO	
3471004AL	APR 200 ELPN CNOMO without end plates L
3471004L	APR 200 ELPN CNOMO 1/4 L
3571004L	APR 200 ELPN CNOMO 3/8 L
3671004L	APR 200 ELPN CNOMO 1/2 L
Skillair® 300 V3V CNOMO	
4469004AL	V3V 300 ELPN CNOMO without end plates L
4469004L	V3V 300 ELPN CNOMO 1/2 L
4569004L	V3V 300 ELPN CNOMO 3/4 L
4669004L	V3V 300 ELPN CNOMO 1 L
Skillair® 300 APR CNOMO	
4471901AL	APR 300 ELPN CNOMO without end plates L
4471901L	APR 300 ELPN CNOMO 1/2 L
4571901L	APR 300 ELPN CNOMO 3/4 L
4671901L	APR 300 ELPN CNOMO 1 L
Skillair® 400 APR	
6171003AL	APR 400 ELPN without end plates L
6171003L	APR 400 ELPN 1 L
6271003L	APR 400 ELPN 1 1/4 L
6371003L	APR 400 ELPN 1 1/2 L
6471003L	APR 400 ELPN 2 L
Skillair® 400 V3V CNOMO	
6169004AL	V3V 400 ELPN CNOMO without end plates L
6169004L	V3V 400 ELPN CNOMO 1 L
6269004L	V3V 400 ELPN CNOMO 1 1/4 L
6369004L	V3V 400 ELPN CNOMO 1 1/2 L
6469004L	V3V 400 ELPN CNOMO 2 L

ELECTROPNEUMATIC CONTROL FOR: Skillair® 200 APR AND V3V

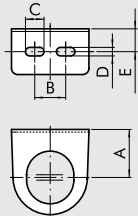


Code	Description
Skillair® 200 APR	
3471001AL	APR 200 ELPN without end plates L
3471001L	APR 200 ELPN 1/4 L
3571001L	APR 200 ELPN 3/8 L
3671001L	APR 200 ELPN 1/2 L
Skillair® 200 V3V	
3469001AL	V3V 200 ELPN without end plates L
3469001L	V3V 200 ELPN 1/4 L
3569001L	V3V 200 ELPN 3/8 L
3669001L	V3V 200 ELPN 1/2 L

Skillair® ACCESSORIES



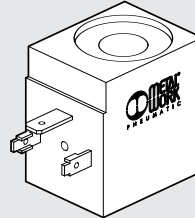
MOUNTING BRACKET FOR REG.



Code	Description
9200701	SF100- BIT-ND1/4
9400701	SF200-ND-3/8 1/2
9400702	SF300

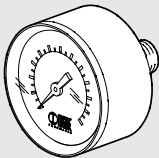
CodE	A	B	C	D	E
9200701	32	20	12	5.5	14.2
9400701	42	40	12	5.5	15
9400702	48	49	12	5.5	17

COIL FOR CDV CDML LUBRICATOR



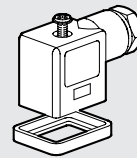
Code	Description
W0216001001	Coil 24 V CC
W0216001011	Coil 24V 50/60HZ
W0216001021	Coil 110V 50/60HZ
W0216001031	Coil 220V 50/60HZ

PRESSURE GAUGES



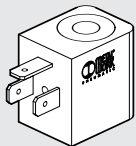
Code	Description
9700101	M 40 1/8 12
9700102	M 40 1/8 04
9800101	M 50 1/8 12
9800102	M 50 1/8 04
9900101	M 63 1/4 12

ELECTRIC CONNECTOR FOR V3V-APR ELPN



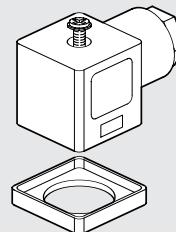
Code	Description
W0970510011	Connector standard
W0970510012	Connector 22 LED 24V
W0970510013	Connector 22 LED 110V
W0970510014	Connector 22 LED 220V
W0970510015	Connector 22 LED VDR 24V
W0970510016	Connector 22 LED VDR 110V
W0970510017	Connector 22 LED VDR 220V
W0970510070	Connector 22 ATEX

COIL FOR APR AND V3V SOLENOID



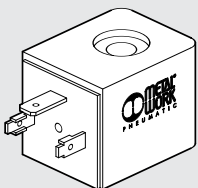
Code	Description
W0215000101	Coil 22 Ø 8 BA 2W-24VDC
W0215000111	Coil 22 Ø 8 BA 3.5VA-24VAC
W0215000121	Coil 22 Ø 8 BA 3.5VA-110VAC
W0215000131	Coil 22 Ø 8 BA 3.5VA-220VAC

ELECTRIC CONNECTOR FOR V3V APR WITH CNOMO



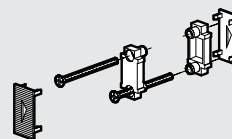
Code	Description
W0970520033	Connector 30 STD
W0970520034	Connector 30 LED 24V
W0970520035	Connector 30 LED 110V
W0970520036	Connector 30 LED 220V
W0970520037	Connector 30 LED VDR 24V
W0970520038	Connector 30 LED VDR 110V
W0970520039	Connector 30 LED VDR 220V

COIL FOR V3V APR WITH CNOMO



Code	Description
W0210010100	Coil 30 D8 4W-24VDC
W0210011100	Coil 30 D8 4VA-24VAC 50/60 HZ
W0210012100	Coil 30 D8 4VA-110VAC 50/60 HZ
W0210013100	Coil 30 D8 4VA-220VAC 50/60 HZ

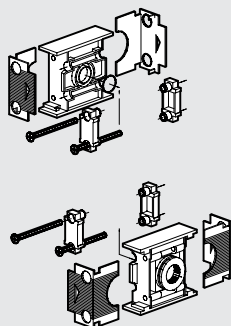
CONNECTOR KIT FOR SKILLAIR CODE A



Code	Description
9230301	Connector kit 100
9330301	Connector kit 200
9430301	Connector kit 300
9630301	Connector kit 400

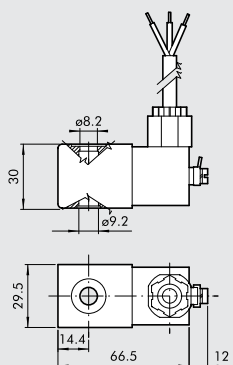
SPARES PARTS

INPUT/OUTPUT END PLATE KIT



Code	Description
9230401	IN/OUT end plate kit 100 1/4
9330501	IN/OUT end plate kit 100 3/8
9330601	IN/OUT end plate kit 200 1/4
9330701	IN/OUT end plate kit 200 3/8
9330801	IN/OUT end plate kit 200 1/2
9430701	IN/OUT end plate kit 300 1/2
9530901	IN/OUT end plate kit 300 3/4
9531001	IN/OUT end plate kit 300 1
9631001	IN/OUT end plate kit 400 1
9631101	IN/OUT end plate kit 400 1 1/4
9631201	IN/OUT end plate kit 400 1 1/2
9631301	IN/OUT end plate kit 400 2

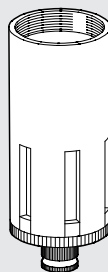
KIT FOR COIL EEXM (FOR V3V-APR-LUB)



Code	Description
0227606913	Kit for coil 30 24 VDC EEXMT5 cable 3 m
0227606915	Kit for coil 30 24 VDC EEXMT5 cable 5 m
0227608013	Kit for coil 30 24 VAC EEXMT5 cable 3 m
0227608015	Kit for coil 30 24 VAC EEXMT5 cable 5 m
0227608023	Kit for coil 30 110 VAC EEXMT5 cable 3 m
0227608025	Kit for coil 30 110 VAC EEXMT5 cable 5 m
0227608033	Kit for coil 30 230 VAC EEXMT5 cable 3 m
0227608035	Kit for coil 30 230 VAC EEXMT5 cable 5 m

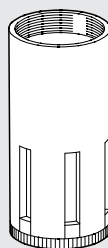
According to Atex 94/9 CE rule, group 2, category 2 GD

FILTER BOWL



Code	Description
9253301	Spares TF 100 RMSA
9255301	Spares TF 100 SAC
9353301	Spares TF 200 RMSA
9355301	Spares TF 200 SAC
9453401	Spares TF 300 RMSA
9453301	Spares TF 300 RA
9653401	Spares TF 400 RMSA
9653301	Spares TF 400 RA

LUBRICATOR BOWL



Code	Description
9253501	Spares TL 100
9202503	Spares TL 100 CA
9202502	Spares TL 100 CD
9202501	Spares TL 100 ML
9353501	Spares TL 200
9302501	Spares TL 200 CA
9302503	Spares TL 200 CD
9302502	Spares TL 200 ML
9453501	Spares TL 300
9202403	Spares TL 300 CA
9202401	Spares TL 300 CD
9202402	Spares TL 300 ML
9653501	Spares TL 400
9653502	Spares TL 400 CA
9653504	Spares TL 400 CD
9653503	Spares TL 400 ML

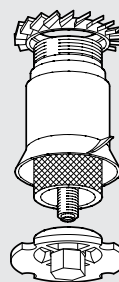
KIT COIL SIDE 22 IP65 (FOR V3V-APR-LUB)



Code	Description
0222100100	Kit for coils 22 - IP65

Improved IP65 protection, even after prolonged exposure to atmospheric agents. Applicable to valves with a technopolymer control.

FILTERING ELEMENTS



Code	Description
9251705	Spares FP 100 5
9251706	Spares FP 100 20
9251707	Spares FP 100 50
9351705	Spares FP 200 5
9351706	Spares FP 200 20
9351707	Spares FP 200 50
9451705	Spares FP 300 5
9451706	Spares FP 300 20
9451707	Spares FP 300 50
9651706	Spares FP 400 5
9651707	Spares FP 400 20
9651705	Spares FP 400 50

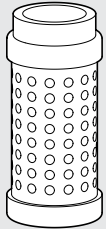
NOTES

FILTERING/PURIFICATION ELEMENTS



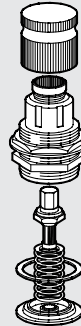
Code	Description
9251711	Spares FP DEP. 100
9351711	Spares FP DEP. 200
9451711	Spares FP DEP. 300
9651711	Spares FP DEP. 400

CARTRIDGE AC



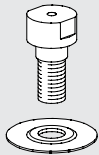
Code	Description
9251713	Spares CARTRIDGE 100 AC
9351713	Spares CARTRIDGE 200 AC
9451713	Spares CARTRIDGE 300 AC
9651712	Spares CARTRIDGE 400 AC

UPPER COVER FOR REGULATOR AND FR



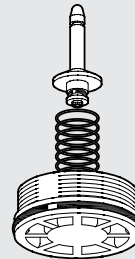
Code	Description
9250800	RIC.CS 100 02
9250810	RIC.CS 100 04
9250811	RIC.CS 100 08
9250812	RIC.CS 100 012
9350800	RIC.CS 200 02
9350810	RIC.CS 200 04
9350811	RIC.CS 200 08
9350812	RIC.CS 200 012
9450805	RIC.CS 300 04
9450806	RIC.CS 300 08
9450807	RIC.CS 300 012
9450808	RIC.CS 300 02

VENTURI LUBRICATOR DIAPHRAGM



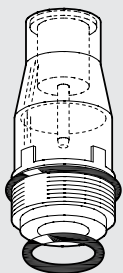
Code	Description
9252001	Spares MB 100 ND 1/4
9352001	Spares MB 200 N/D 3/8-1/2
9452001	Spares MB 300 1/2 3/4
9652601	Spares MB 400

COMPLETE POPPET FOR REGULATORS



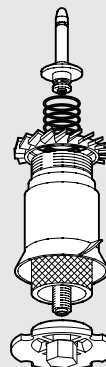
Code	Description
9250704	Spares OTR 100
9350704	Spares OTR 200
9450704	Spares OTR 300
9650704	Spares OTR 400

TRANSPARENT LUBRICATOR COVER



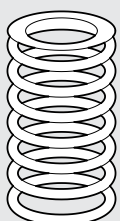
Code	Description
9251302	Spares CVL 100-200-300-400 BIT

COMPLETE POPPET FOR FR



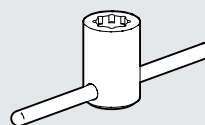
Code	Description
9250902	Spares OTFR 100 5
9250903	Spares OTFR 100 20
9250904	Spares OTFR 100 50
9350902	Spares OTFR 200 5
9350903	Spares OTFR 200 20
9350904	Spares OTFR 200 50
9450902	Spares OTFR 300 5
9450903	Spares OTFR 300 20
9450904	Spares OTFR 300 50

SPRINGS FOR REDUCERS AND FRs



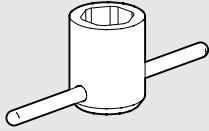
Code	Description
9250605	RIC.MO 100 02
9250606	RIC.MO 100 04
9250607	RIC.MO 100 08
9250608	RIC.MO 100 012
9350605	RIC.MO 200 02
9350606	RIC.MO 200 04
9350607	RIC.MO 200 08
9350608	RIC.MO 200 012
9450605	RIC.MO 300 04
9450606	RIC.MO 300 08
9450607	RIC.MO 300 012
9450608	RIC.MO 300 02

UPPER COVER DISASSEMBLY SPANNER



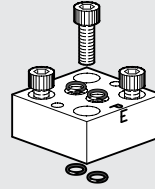
Code	Description
9220701	Spares cover spanner

REG AND FR VISUAL DOME DISASSEMBLY SPANNER



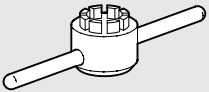
Code	Description
9220401	Spares dome dis. spanner 100
9323401	Spares dome dis. spanner 200
9420401	Spares dome dis. spanner 300

PROVISION FOR SOLENOID CONTROL TO CNOMO FOR APR-300



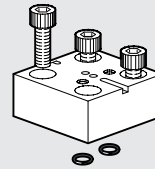
Code	Description
9454001	Spares PCE to CNOMO

POPPET DISASSEMBLY SPANNER (FOR REG.)



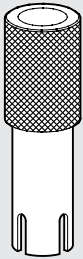
Code	Description
9220501	Spares R cap disass. WR. 100
9323501	Spares R cap disass. WR. 200
9420501	Spares R cap disass. WR. 300

PROVISION FOR MICRO SOLENOID CONTROL FOR APR-300



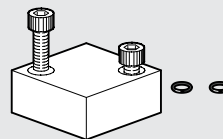
Code	Description
9453601	Spares PCE MICRO

POPPET DISASSEMBLY SPANNER (FOR FR)



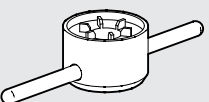
Code	Description
9220801	Spares FR cap disass. WR. 100
9320801	Spares FR cap disass. WR. 200
9420801	Spares FR cap disass. WR. 300

PROVISION FOR PNEUMATIC CONTROL FOR APR-300



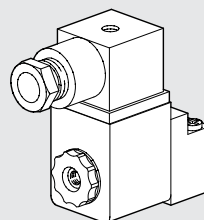
Code	Description
9453701	Spares PCP pneumatic

CAP DISASSEMBLY SPANNER



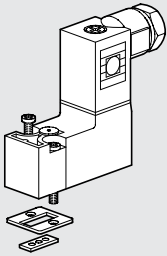
Code	Description
9220601	Spares cap disass. 100
9323601	Spares cap disass. 200
9420601	Spares cap disass. 300

CNOMO SOLENOID CONTROL FOR APR-300 and V3V 300



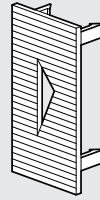
Code	Description
9453901	Spares CEC CNOMO 24CC
9453902	Spares CEC CNOMO 24V
9453903	Spares CEC CNOMO 110V
9453904	Spares CEC CNOMO 220V

MICRO SOLENOID CONTROL FOR APR-300 and V3V 300 (NO MORE IN THE CATALOGUE)



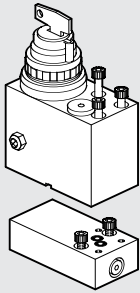
Code	Description
9453801	Spares CEM MICRO 24CC
9453802	Spares CEM MICRO 24V
9453803	Spares CEM MICRO 110V
9453804	Spares CEM MICRO 220V

INTERMEDIATE COVER PLATE



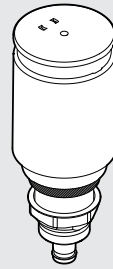
Code	Description
9152107	Spares intermediate cover plate 100
9152114	Spares intermediate cover plate 200
9152108	Spares intermediate cover plate 300
9152117	Spares intermediate cover plate 400

KEY-OPERATED V3V 400



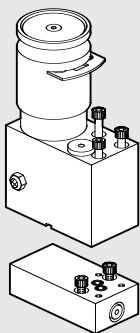
Code	Description
9455401	Spares kit C.C. 400

AUTODRAIN (RA)



Code	Description
9000802	RIC. RA

MANUAL LOCKABLE V3V 400



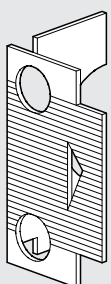
Code	Description
9455601	Spares kit lockable 400

AUTODRAIN TAP (SAC)



Code	Description
9000803	Ric. SAC 100-200

INPUT/OUTPUT COVER PLATE



Code	Description
9152103	Spares OUTPUT cover plate 100
9152105	Spares INPUT cover plate 100
9152115	Spares OUTPUT cover plate 200
9152116	Spares INPUT cover plate 200
9152104	Spares OUTPUT cover plate 300
9152106	Spares INPUT cover plate 300
9152118	Spares OUTPUT cover plate 400
9152119	Spares INPUT cover plate 400

NOTES

SUMMARY Newdeal

● GENERAL TECHNICAL DATA New deal

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● New deal FILTER

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● New deal DEPURATOR

PAGE 3-151



● New deal REGULATOR

PAGE 3-153



● New deal PADLOCKABLE REGULATOR

PAGE 3-156



● New deal PILOT-ASSISTED REGULATOR

PAGE 3-158



● New deal REGULATOR-REGULATOR WITH V3V 3/4"-1"

PAGE 3-159



● New deal FILTER REGULATOR

PAGE 3-162



● New deal LUBRICATOR

PAGE 3-165












● New deal SHUT-OFF VALVE

PAGE 3-168



● New deal V3V - 3/4"-1" CIRCUIT SHUT-OFF VALVE

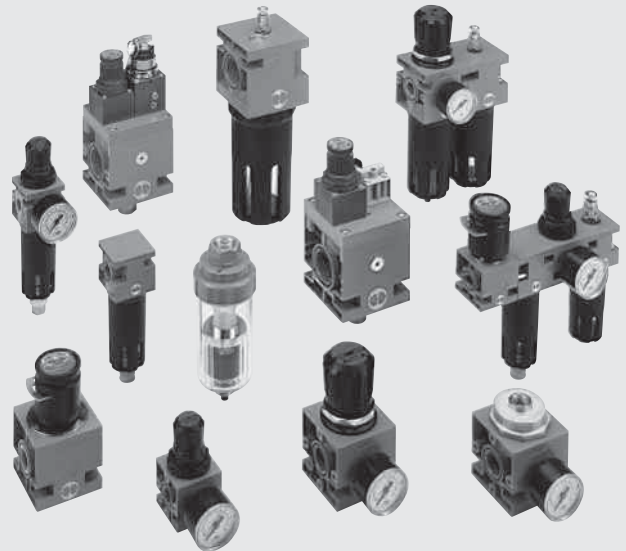
PAGE 3-170

	● New deal AIR TAKE-OFF	PAGE 3-172
	● New deal SUB-BASE	PAGE 3-173
	● New deal AUTOMATIC CONDENSATE DRAIN	PAGE 3-174
	● FIL+REG+LUB New deal	PAGE 3-175
	● FRPL 3/4"-1" New deal	PAGE 3-177
	● FR+LUB New deal	PAGE 3-179
	● V3V+FR+LUB New deal	PAGE 3-181
	● FIL+DEP New deal	PAGE 3-183
	● FIL+LUB New deal	PAGE 3-185
	● New deal ACCESSORIES	PAGE 3-187
	● New deal SPARE PARTS	PAGE 3-189

GENERAL TECHNICAL DATA **Newdeal**

Newdeal is the forerunner of all air treatment units by Metal Work. The entire range is top quality, heavy-duty and reliable. These units are designed for use at high pressures* and in applications where the temperature and quality of the ambient area are critical.

*For further details, refer to the Specification for the item in question.

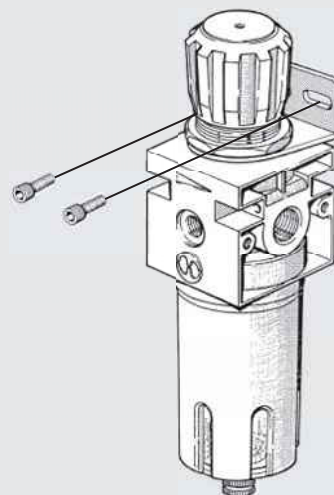
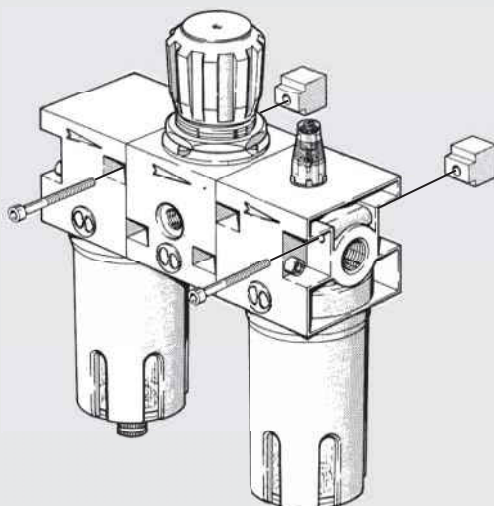


UNITS

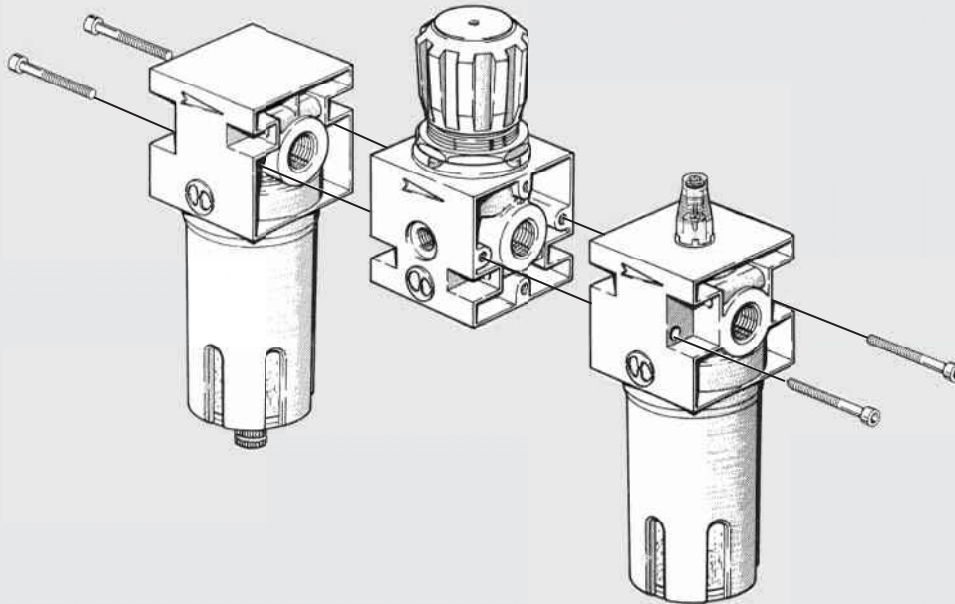
GENERAL TECHNICAL DATA New deal

TECHNICAL DATA	FIL ND 1/4"	FIL ND 3/8"	FIL ND 1/2"	FIL ND 3/4"	FIL ND 1"
Threaded port	1/4"	3/8"	1/2"	3/4"	1"
Degree of filtration	μm 4 - 20 - 50				
Degree of purification	μm 99.97% at 0.01				
Setting range	bar 0 to 2 - 0 to 4 - 0 to 8 - 0 to 12				
Max. input pressure	MPa 1.8				
	bar 18				
	psi 261				
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	NI/min from 200 at 12000				
Fluid	Lubricated or unlubricated compressed air				
Temperature range at 1 MPa; 10 bar; 145 psi	°C -10 to +50				
	°F 62 to 122				
Elements comprising the range	Filter, Depurator, Regulator, Pilot operated Regulator, In-series Regulator, Filter-regulator, Lubricator, Circuit Shut-off Valve				
Compatibility with oils	Please refer to page 6-7 of the technical documentation				




WALL MOUNTING



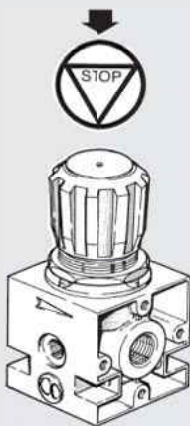
ASSEMBLY DIAGRAM



ASSEMBLY TIE RODS

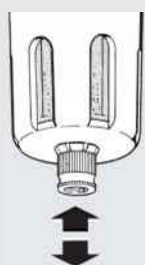
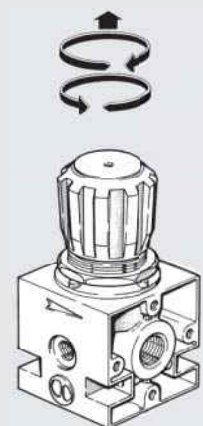
	Elements that can be assembled	1/4			3/8 - 1/2			3/4 - 1		
		Type	Code	Ref.	Type	Code	Ref.	Type	Code	Ref.
A		A	9250001	CVA 1/4 4x40	A	9450001	CVA 1/2 5x55	A	9650001	CVA 1 6x70
B		A	9250001	CVA 1/4 4x40	A	9450002	CVA 1/2 5x60	-	-	-
C		A	9250002	CVA 1/4 4x82	A	9450003	CVA 1/2 5x120	-	-	-
		B	9200901	F+LT 1/4	B	9400901	F+LT 3/8-1/2	B	9600901	F+LT 3/4-1

GENERAL RULES - USE AND MAINTENANCE

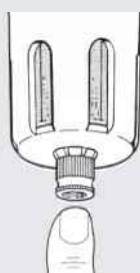


The knob can be locked so that the set pressure cannot be altered.

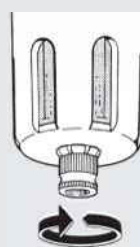
The air pressure must always be set upwards.



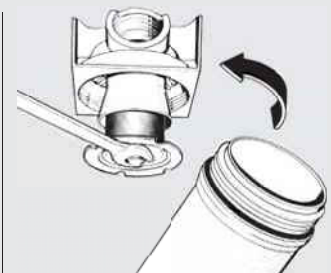
With the knob in the centre position, the drain is semi-automatic. The drain operates when the bowl is not pressurized and closes when it is.



Press the button to drain condensate when the bowl is pressurized.



Turn the knob anticlockwise to close the valve with bowl pressurized or not pressurized.



To clean or replace the filter element unscrew the screen of the centrifuge assembly. Use a no. 3 compass spanner to unscrew the bowl.

Newdeal FILTER

Filter with different impurity filtration degrees.

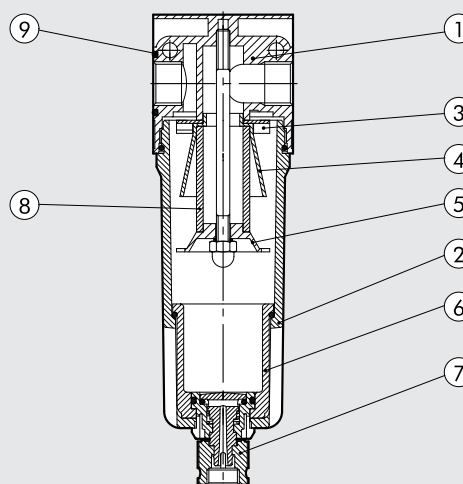
- Metal bowl with external viewing
- Semi-automatic and condensate drainage



TECHNICAL DATA		FIL ND 1/4"	FIL ND 3/8"	FIL ND 1/2"	FIL ND 3/4"	FIL ND 1"
Threaded port		1/4"	3/8"	1/2"	3/4"	1"
Degree of filtration	μm	4 - 20 - 50	4 - 20 - 50	4 - 20 - 50	4 - 20 - 50	4 - 20 - 50
Max. inlet pressure	MPa	1.8	1.8	1.8	1.8	1.8
	bar	18	18	18	18	18
	psi	261	261	261	261	261
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	1300	3100	9100	324	11000
	scfm	46	110	324	61	146
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	1720	4100	11000	391	170
	scfm	61	146	391	122°	122°
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50°	50°	50°	50°	50°
	°F	122°	122°	122°	122°	122°
Weight	Kg	0.4	0.9	1.2		
Wall fixing screws		M4 x 40	M4 x 55	M6 x 75		
Bowl capacity	cm ³	10	45	170		
Mounting position		Vertical	Vertical	Vertical		
Drain		RMSA - SAC	RMSA - SAC - RA	RMSA - RA		
RMSA: drain with manual condensate discharge and automatic discharge at zero pressure. RA: automatic drain with condensate discharge, independent of pressure and flow rate. SAC: automatic drain with condensate discharge. Operates by depression – requires variable air take-offs. Compressed air						
Fluid		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.				
Note on use						

COMPONENTS

- ① Zamak body
- ② Aluminium bowl
- ③ Technopolymer centrifuge
- ④ Technopolymer baffle plug
- ⑤ Technopolymer screen
- ⑥ Clear technopolymer bowl
- ⑦ Drain (RMSA)
- ⑧ HDPE bronze filter cartridge (1/4 - 3/8 - 1/2), sintered bronze (1")
- ⑨ NBR gaskets

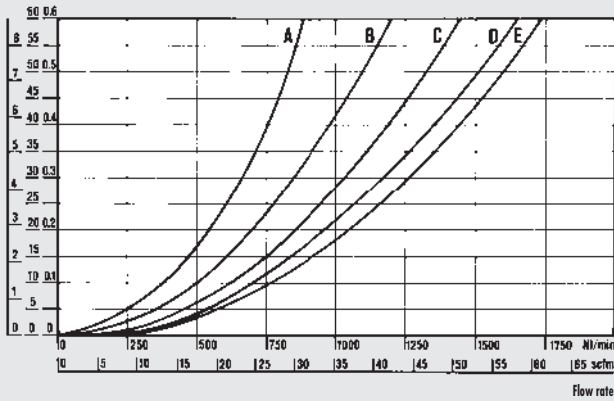


FLOW CHARTS

FIL 1/4

$\Delta P = (P_m - P_v)$

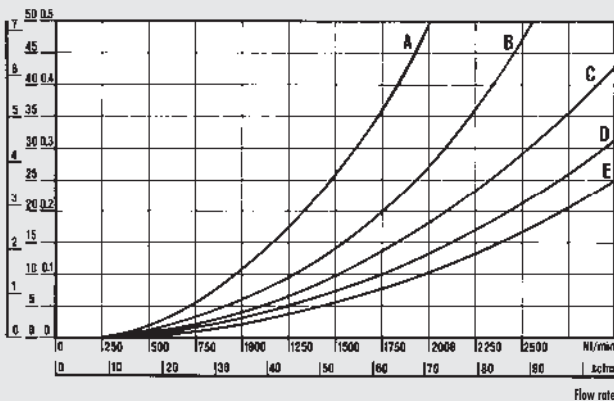
psi KPa bar



FIL 3/8 - 1/2

$\Delta P = (P_m - P_v)$

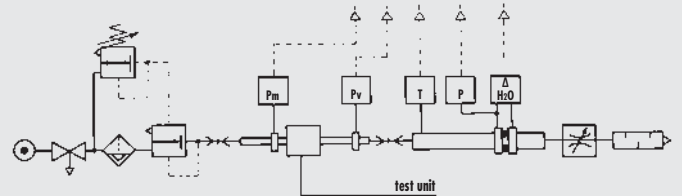
psi KPa bar



Department of Mechanics



Turin Polytechnic



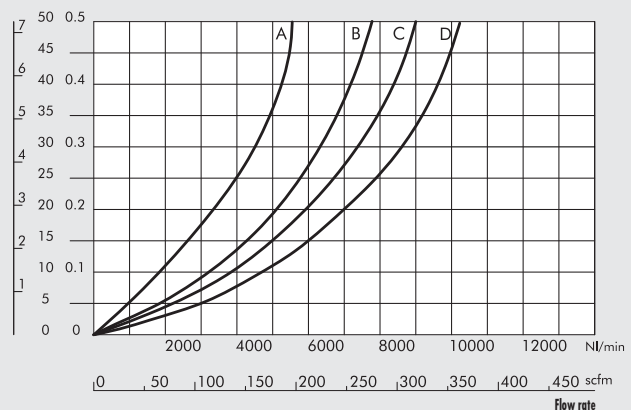
• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

(A) = 2 bar - 0.2 MPa - 29 psi (D) = 8 bar - 0.8 MPa - 116 psi
 (B) = 4 bar - 0.4 MPa - 58 psi (E) = 10 bar - 1 MPa - 145 psi
 (C) = 6 bar - 0.6 MPa - 87 psi

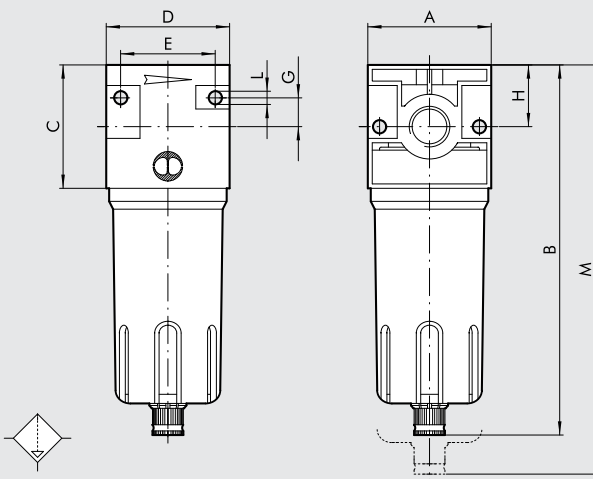
FIL 3/4 - 1"

$\Delta P = (P_m - P_v)$

psi KPa bar



DIMENSIONS



	FIL ND 1/4"	FIL ND 3/8"	FIL ND 1/2"	FIL ND 3/4"	FIL ND 1"
Threaded port	1/4"	3/8"	1/2"	3/4"	1"
A	42	60		80	
B	RMSA 142	180		235	
	RA -	184		239	
	SAC 146	184		239	
C	42	60		80	
D	42	60		80	
E	32	46		66	
G	10	14		22	
H	21	30		40	
L	M4 hole	M4 hole		M6 hole	
M	RMSA 185	230		325	
	RA -	234		329	
	SAC 189	234		329	

Newdeal DEPURATOR



Oil-proof depurator with coalescing cartridge

- Metal bowl with external viewing
- Manual/semi-auto or automatic condensate drain



TECHNICAL DATA	DEP ND 3/8"		DEP ND 1/2"	
	3/8"		1/2"	
Threaded port	3/8"		1/2"	
Degree of depuration	99.97% @ 0.01 μm			
Max. inlet pressure	MPa		1.8	
	bar		18	
	psi		261	
Maximum suggested flow rate	please look at the flow rate curves			
Suggested flow rate at 6 bar	NI/min		230	
	scfm		8	
Fluid	Filtered air 4 μm			
Max temperature at 1 MPa; 10 bar; 145 psi	$^{\circ}\text{C}$		50	
	$^{\circ}\text{F}$		122	
Weight	Kg		0.9	
Wall fixing screws	M4 x 55			
Bowl capacity	cm ³		45	
Mounting position	Vertical			
Drain	RMSA - SAC - RA			
	RMSA: drain with manual condensate discharge and automatic discharge at zero pressure. RA: automatic drain with condensate discharge, independent of pressure and flow rate. SAC: automatic drain with condensate discharge. Operates by depression - requires variable air take-offs. It is advisable to mount a 4 μm filter upstream the depurator acting as a rough filter. The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.			
Note on use				

UNITS

New deal DEPURATOR

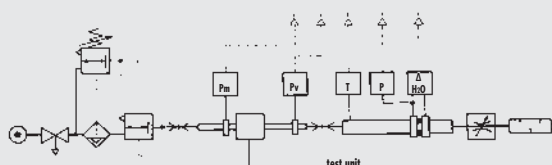
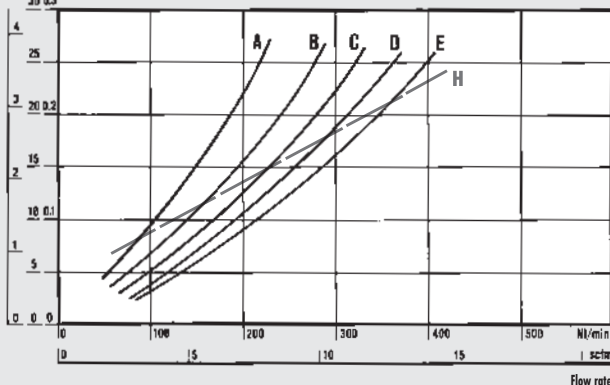
FLOW CHARTS

D 3/8 - 1/2

$\Delta P = (P_m - P_v)$

psi KPa bar

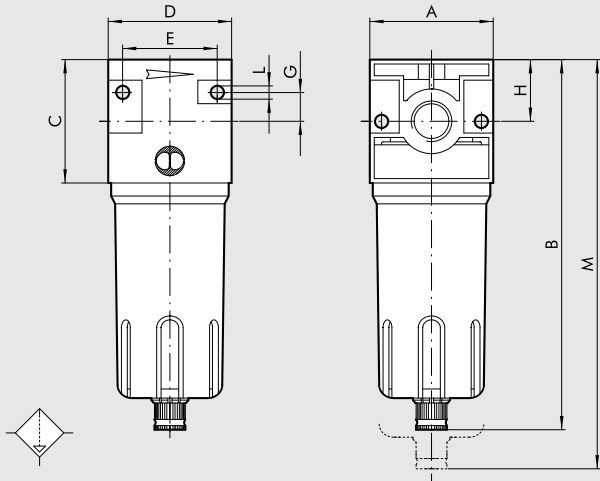
30 0.3



• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

- (A) = 2 bar - 0.2 MPa - 29 psi
- (B) = 4 bar - 0.4 MPa - 58 psi
- (C) = 6 bar - 0.6 MPa - 87 psi
- (D) = 8 bar - 0.8 MPa - 116 psi
- (E) = 10 bar - 1 MPa - 145 psi
- (H) = maximum flow rate recommended for optimal operation

DIMENSIONS



		DEP ND 3/8"	DEP ND 1/2"
Threaded port		3/8"	1/2"
A			60
B	RMSA		180
	RA		184
	SAC		184
C			60
D			60
E			46
G			14
H			30
L			M4 hole
M	RMSA		230
	RA		234
	SAC		234

KEY TO CODES

DEP ELEMENT	3/8 THREADED PORT	RMSA CONDENSATE DRAIN
DEP	3/8 1/2	RMSA RA SAC

RMSA: Manual/semi-auto drain

RA: Automatic drain. Float-type operation irrespective of the pressure and flow rate.

SAC: Automatic drain. Operates by depression - requires variable air take-offs.

ORDERING CODES

Code	Description
DEPURATOR 3/8"	
1322002	DEP 3/8 RMSA
1322003	DEP 3/8 RA
1322004	DEP 3/8 SAC
DEPURATOR 1/2"	
1422002	DEP 1/2 RMSA
1422003	DEP 1/2 RA
1422004	DEP 1/2 SAC

NOTES

Newdeal REGULATOR



Highly reliable, heavy-duty piston-operated regulator.

- Stability of the set pressure as the upstream pressure varies
- Standard overpressure blowoff valve
- Can be fixed to the wall using the holes in the sides of the body.



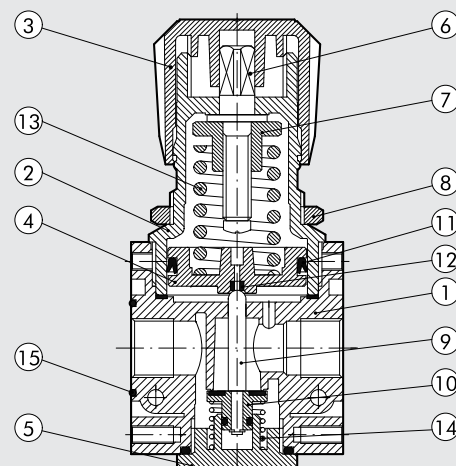
TECHNICAL DATA		REG ND 1/4"	REG ND 3/8"	REG ND 1/2"	REG ND 3/4"	REG ND 1"
Threaded port		1/4"	3/8"	1/2"	3/4"	1"
Setting range	bar	0 to 4 - 0 to 8 - 0 to 12		0 to 4 - 0 to 8 - 0 to 12		
Max. inlet pressure	MPa	1.8	1.8	1.8	1.8	1.8
	bar	18	18	18	18	18
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	200	1100	2500	4500	2500
	scfm	7	39	89	160	89
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	650	2500	4500	2500	1100
	scfm	23	89	160	89	39
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	50	50	50	50
	°F	122	122	122	122	122
Weight	Kg	0.3	0.8	1.5	1.5	1.5
Wall fixing screws		M4 x 40	M4 x 55	M6 x 75	M6 x 75	M6 x 75
Gauge port		1/8"	1/8"	1/4"	1/4"	1/4"
Mounting position		In any position				
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.				
Note on use		The regulator pressure must always be set upwards.				
		For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value.				
		Do not take off air from gauge ports.				

UNITS

New deal REGULATOR

COMPONENTS

- ① Zamak body
- ② Technopolymer bell
- ③ Technopolymer knob
- ④ Technopolymer piston rod
- ⑤ Technopolymer plug
- ⑥ OT58 brass adjusting screw
- ⑦ OT58 brass nut
- ⑧ Ring nut : technopolymer (ND 1/4-3/8-1/2) brass (ND 3/4-1)
- ⑨ OT brass rod
- ⑩ Valve with NBR vulcanized gasket
- ⑪ NBR lip seal
- ⑫ NBR relieving seal
- ⑬ Steel adjusting spring
- ⑭ Steel valve compression spring
- ⑮ NBR gaskets

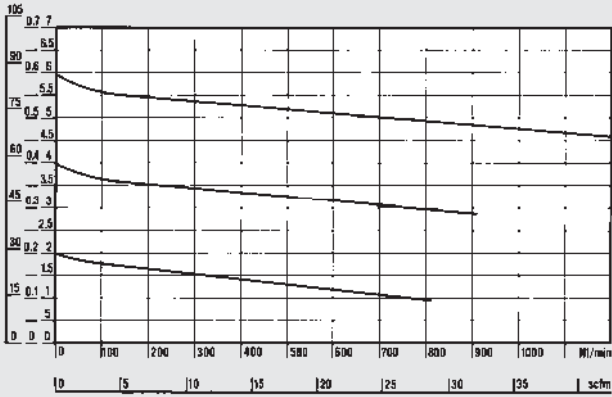


FLOW CHARTS

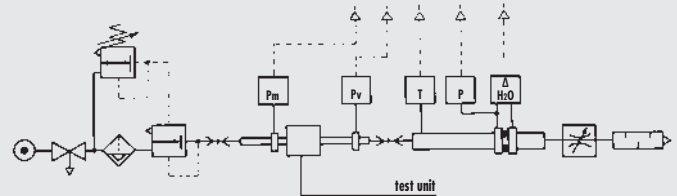
REG 1/4

$P_m = 0.7 \text{ MPa} - 7 \text{ bar} - 100 \text{ psi}$
Inlet pressure

psi Mpa bar



**Department
of Mechanics**
Turin Polytechnic

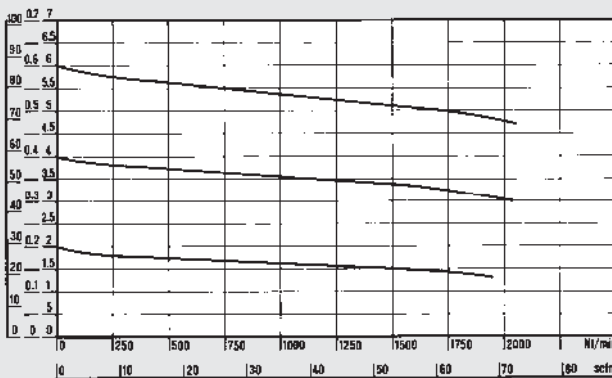


- Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

REG 3/8 - 1/2

$P_m = 0.7 \text{ MPa} - 7 \text{ bar} - 100 \text{ psi}$
Inlet pressure

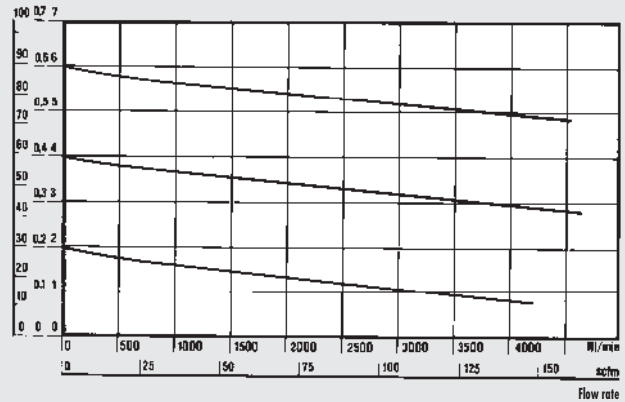
psi Mpa bar



REG 3/4 - 1"

$P_m = 0.7 \text{ MPa} - 7 \text{ bar} - 100 \text{ psi}$
Inlet pressure

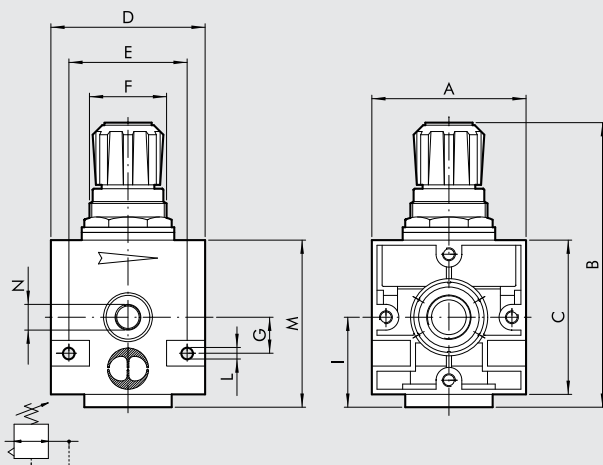
psi Mpa bar



UNITS

New deal REGULATOR

DIMENSIONS



	REG ND 1/4"	REG ND 3/8"	REG ND 1/2"	REG ND 3/4"	REG ND 1"
Threaded port	1/4"	3/8"	1/2"	3/4"	1"
A	42	60		80	
B	94	130		184	
C	42	60		80	
D	42	60		80	
E	32	46		66	
F	30 x 1.5	38 x 2		55 x 2	
G	10	14		22	
I	25	35		47	
L	M4 hole	M4 hole		M6 hole	
M	49	70		94	
N (pressure gauge port)	1/8"	1/8"		1/4"	

KEY TO CODES

REG ELEMENT	1/4 THREADED PORT	04 SETTING RANGE
REG	1/4 3/8 1/2 3/4 1	04 = 0 to 4 bar 08 = 0 to 8 bar 012 = 0 to 12 bar

ORDERING CODES

Code	Description
NEW DEAL REGULATOR 1/4"	
1202001	REG 1/4 04
1202002	REG 1/4 08
1202003	REG 1/4 012
1202004	REG 1/4 02
NEW DEAL REGULATOR 3/8"	
1302001	REG 3/8 04
1302002	REG 3/8 08
1302003	REG 3/8 012
NEW DEAL REGULATOR 1/2"	
1402001	REG 1/2 04
1402002	REG 1/2 08
1402003	REG 1/2 012
NEW DEAL REGULATOR 3/4"	
1502001	REG 3/4 04
1502002	REG 3/4 08
1502003	REG 3/4 012
NEW DEAL REGULATOR 1"	
1602001	REG 1 04
1602002	REG 1 08
1602003	REG 1 012

NOTES

Newdeal PADLOCKABLE REGULATOR

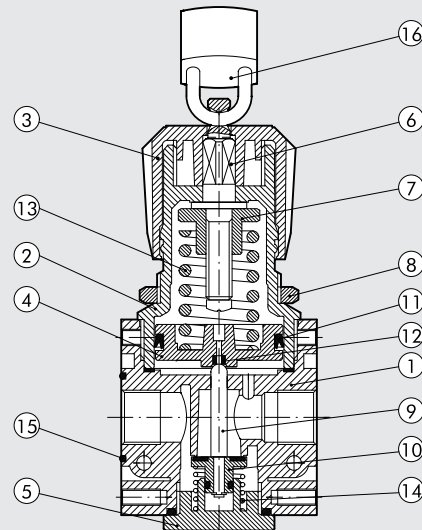
The New Deal padlockable regulator has a pin with a hole in it that projects from the top of the knob. When the knob is in the push-lock position, the padlock can be inserted in the hole, preventing the knob from being operated. A padlock and two keys are supplied with the regulator.

Refer to the regulator for technical data and flow curves.

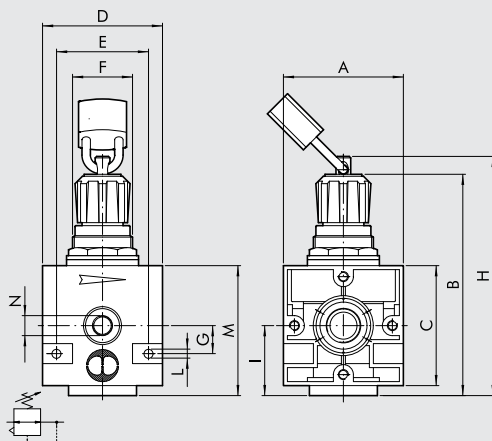


COMPONENTS

- ① Zamak body
- ② Technopolymer bell
- ③ Technopolymer knob
- ④ Technopolymer piston rod
- ⑤ Technopolymer plug
- ⑥ Nickel-plated brass OT58 adjusting screw
- ⑦ OT58 brass nut
- ⑧ Technopolymer ring nut
- ⑨ OT brass rod
- ⑩ Valve with NBR vulcanized gasket
- ⑪ NBR lip seal
- ⑫ NBR relieving seal
- ⑬ Steel adjusting spring
- ⑭ Steel valve compression spring
- ⑮ NBR gaskets
- ⑯ Padlock



DIMENSIONS



	REG KEY ND 1/4"	REG KEY ND 3/8"	REG KEY ND 1/2"
Threaded port	1/4"	3/8"	1/2"
A	42		60
B	90 to 94		126 to 130
C	42		60
D	42		60
E	32		46
F	30 x 1.5		38 x 2
G	10		14
H	96		131
I	25		35
L	M4 hole		M4 hole
M	49		70
N (pressure gauge port)	1/8"		1/8"

KEY TO CODES

REG KEY ELEMENT	1/4 THREADED PORT	02 SETTING RANGE
REG KEY = padlockable regulator	1/4	02 = 0 to 2 bar 04 = 0 to 4 bar 08 = 0 to 8 bar 012 = 0 to 12 bar
	3/8 1/2	04 = 0 to 4 bar 08 = 0 to 8 bar 012 = 0 to 12 bar

ORDERING CODES

Code	Description
NEW DEAL PADLOCKABLE REGULATOR 1/4"	
1210011	REG KEY 1/4 02
1210012	REG KEY 1/4 04
1210013	REG KEY 1/4 08
1210014	REG KEY 1/4 012
NEW DEAL PADLOCKABLE REGULATOR 3/8"	
1310012	REG KEY 3/8 04
1310013	REG KEY 3/8 08
1310014	REG KEY 3/8 012
NEW DEAL PADLOCKABLE REGULATOR 1/2"	
1410012	REG KEY 1/2 04
1410013	REG KEY 1/2 08
1410014	REG KEY 1/2 012

NOTES

Blank area for notes with horizontal lines.

UNITS

New deal PADLOCKABLE REGULATOR

Newdeal PILOT-ASSISTED REGULATOR

- Remote pilot-assisted piston regulator for heavy-duty use.
- Stability of the set pressure as the upstream pressure varies;
 - Can be fixed to the wall using the holes in the sides of the body.



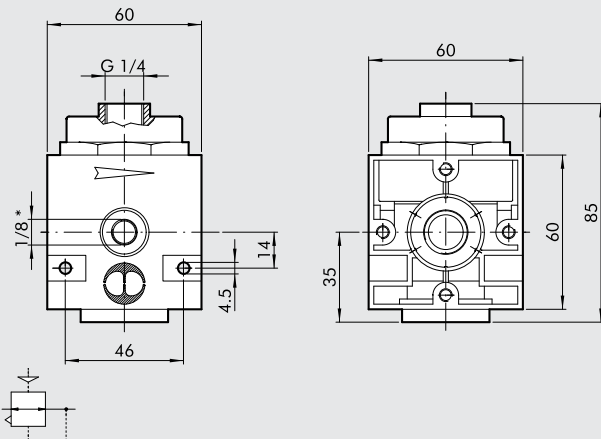
UNITS

New deal PILOT-ASSISTED REGULATOR

TECHNICAL DATA

		REG PIL 3/8"	REG PIL 1/2"
Threaded port		3/8"	1/2"
Setting range	bar	Depending on pilot	
Max. inlet pressure	MPa	1.8	
	bar	18	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	psi	261	
	Nl/min	3500	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	scfm	124	
	Nl/min	4500	
Max temperature at 1 MPa; 10 bar; 145 psi	scfm	160	
	°C	50	
Weight	°F	122	
	Kg	0.8	
Wall fixing screws		M4 x 55 1/8"	
Mounting position		In any position	
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.	
Note on use		The regulator pressure must always be set upwards. Overpressure relieving from the pilot.	

DIMENSIONS



*Pressure gauge port

ORDERING CODES

Code	Description
1302004	RP 3/8 pilot-assisted regulator
1402004	RP 1/2 pilot-assisted regulator

Newdeal REGULATOR-REGULATOR WITH V3V 3/4" AND 1"



Piloted regulator with integrated function, manual, electropneumatic or pneumatic stop valve as required.

It performs two functions in the space usually occupied by a single module, which ensures a high flow rate at all ΔP values including low ones. Extremely quick responses in both discharge and feed.

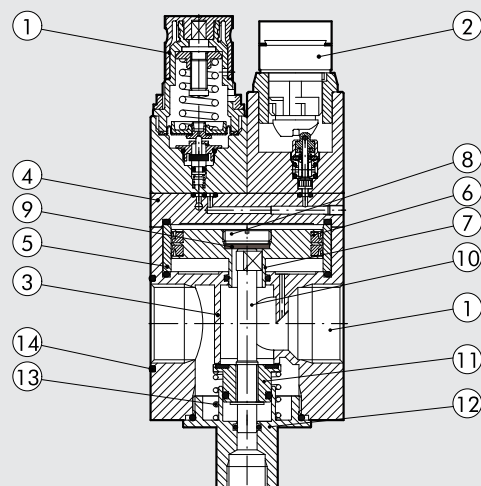
The integrated pilot regulator is available with controlled leak.



TECHNICAL DATA		3/4"	1"
Threaded port	G		
Setting range	bar	0 to 2 - 0 to 4 - 0 to 8 - 0 to 12	
*Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	12000	
	scfm	423	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	13000	
	scfm	460	
Fluid		Lubricated or unlubricated filtered air. If lubrication is used, it must be continuous.	
Drain flow rate at 6 bar (0.6 MPa to 87 psi)	Nl/min	1800	
	scfm	64	
Max temperature at 10 bar (1 Mpa to 145 psi)	°C	50	
	°F	122	
Weight	Kg	1.7	
Wall fixing screws		M6 x 75	
Mounting position		In any position	
* Version Reg + V3V Cnomo (1 Mpa - 10 bar - 145 psi)			
* Version Reg with solenoid (0.8 Mpa - 8 bar - 116 psi)			

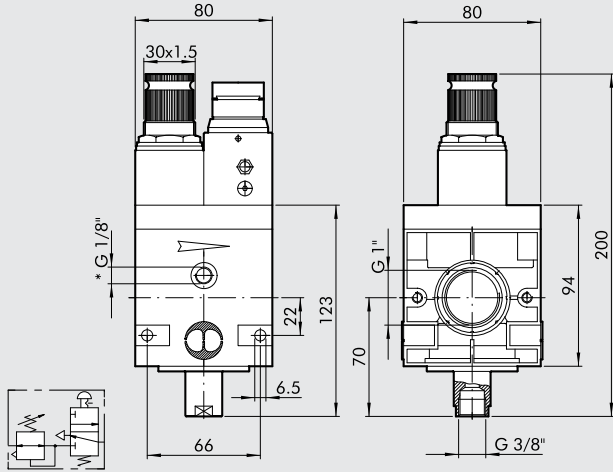
COMPONENTS

- ① Pilot Reg. sub-assembly
- ② Manual V3V control sub-assembly
- ③ Aluminium regulator body
- ④ Aluminium upper plate
- ⑤ Aluminium spacer
- ⑥ NBR lip seal
- ⑦ Aluminium \varnothing 63 piston rod
- ⑧ Cap for OT 58 brass plain gasket
- ⑨ NBR plain gasket
- ⑩ OT 58 brass rod
- ⑪ OT 58 brass valve
- ⑫ Aluminium lower cap
- ⑬ Steel valve compression spring
- ⑭ NBR gaskets



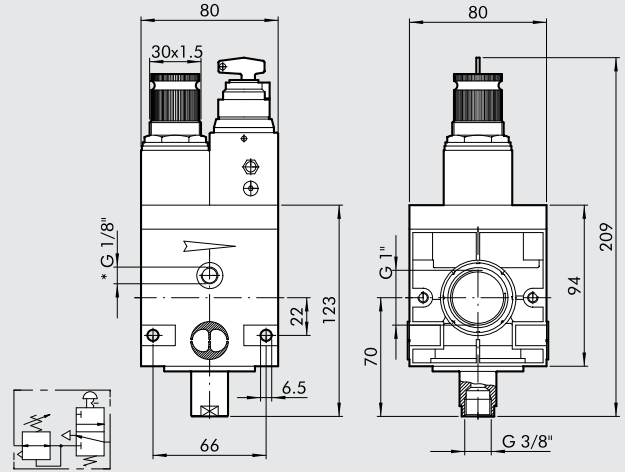
DIMENSIONS

REG P + V3V MANUAL



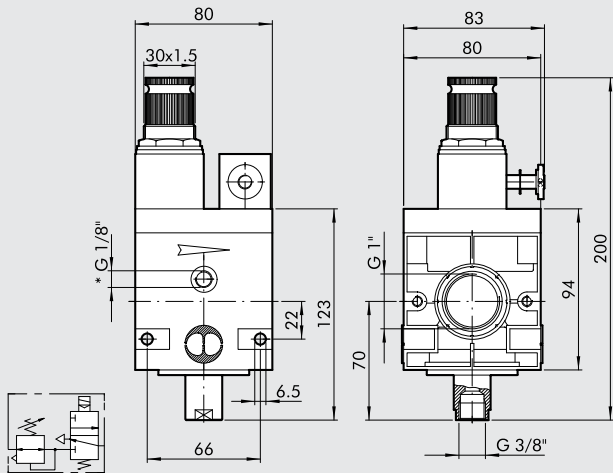
*Pressure gauge port

REG P + V3V KEY



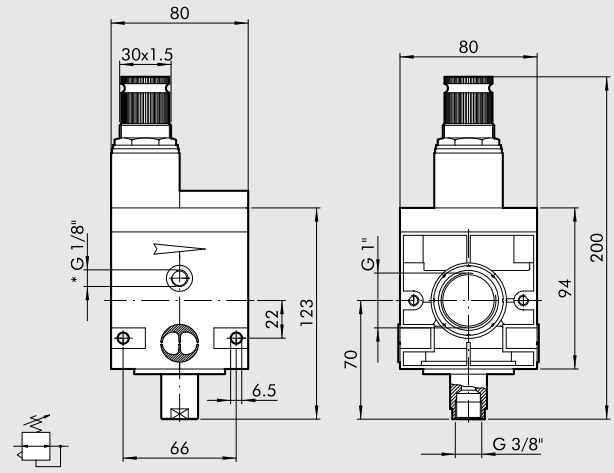
*Pressure gauge port

REG P + V3V ELPN CNOMO



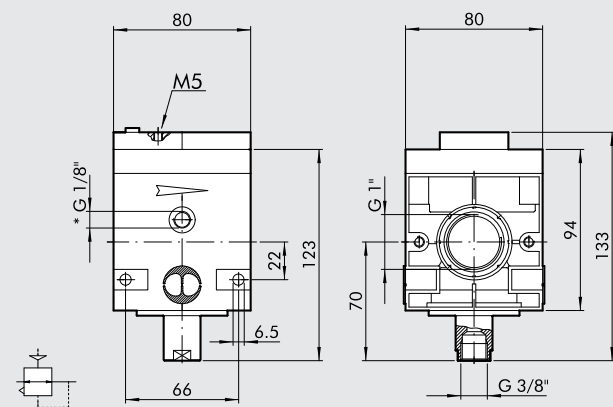
*Pressure gauge port

REG P



*Pressure gauge port

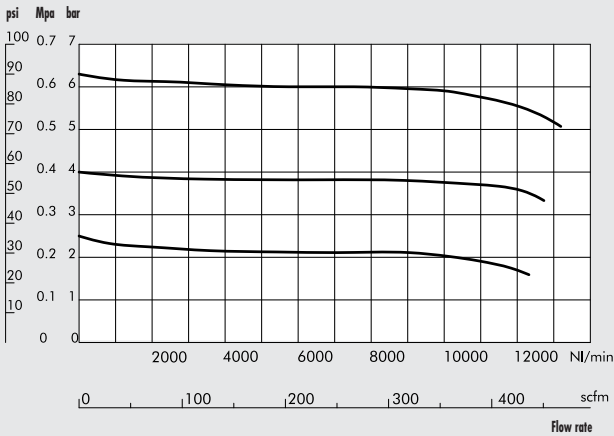
REG P 00



*Pressure gauge port

FLOW CHARTS

$P_{in} = 0.7 \text{ MPa} - 7 \text{ bar} - 100 \text{ psi}$
Inlet pressure



KEY TO CODES

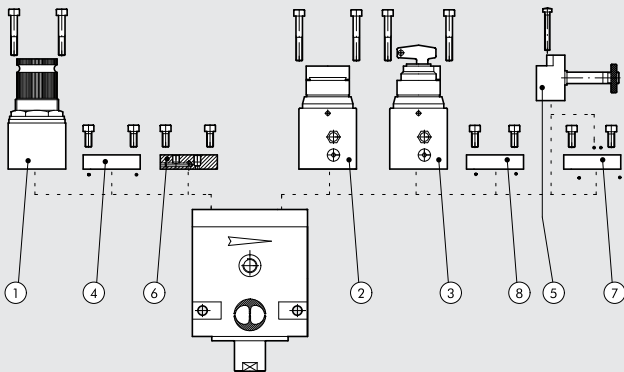
RV3V ELEMENT	1 THREADED PORT	02 SETTING RANGE	ELPN ELPN V3V CONTROL
RV3V	1"	00 = without pilot	ELPN
REGP	3/4"	02 = 0 to 2 bar	KEY
		04 = 0 to 4 bar	MANUAL
		08 = 0 to 8 bar	
		012 = 0 to 12 bar	

RV3V: Regulator with built-in shut-off valve.

ELPN: CNOMO solenoid

REGP: Piloted regulator

ASSEMBLY OPTIONS



This modular system makes it possible to make the following combinations:

- Regulator with pilot regulator ① or remote control ⑥, the end plate is mounted on the right-hand side ⑧.
- V3V with manual lever-operated control ② or key control ③ or solenoid CNOMO ⑤, the end plate is mounted on the left-hand side ④.
- Regulator + V3V is the result of the free combination of the versions specified above.

	Code	Description
①	9640501-02-03-04	Pilot regulator kit
②	9640401	V3V manual lever-operated control kit
③	9640301	V3V manual key-operated control kit
④	9640101	End plate kit for V3V
⑤	9453922	V3V ELPN CNOMO bistable control kit
⑤	9453920	V3V ELPN CNOMO monostable control kit
⑥	9640001	Remote control plate kit
⑦	9640201	Plate kit to mount Cnomo rotated by 180°
⑧	9640101	End plate kit for piloted regulator

ORDERING CODES

Code	Description
PILOTED REGULATOR NEW DEAL P 3/4"	
1519001	REGP 3/4 00
1518001	REGP 3/4 02
1518002	REGP 3/4 04
1518003	REGP 3/4 08
1518004	REGP 3/4 012
REGULATOR WITH BUILT-IN SHUT-OFF VALVE NEW DEAL 3/4"	
1517001	RV3V 3/4 02 ELPN
1517002	RV3V 3/4 04 ELPN
1517003	RV3V 3/4 08 ELPN
1516101	RV3V 3/4 02 key
1516102	RV3V 3/4 04 key
1516103	RV3V 3/4 08 key
1516104	RV3V 3/4 012 key
1516001	RV3V 3/4 02 manual
1516002	RV3V 3/4 04 manual
1516003	RV3V 3/4 08 manual
1516004	RV3V 3/4 012 manual
PILOTED REGULATOR NEW DEAL 1"	
1619001	REGP 1 00
1618001	REGP 1 02
1618002	REGP 1 04
1618003	REGP 1 08
1618004	REGP 1 012
REGULATOR WITH BUILT-IN SHUT-OFF VALVE NEW DEAL 1"	
1617001	RV3V 1 02 ELPN
1617002	RV3V 1 04 ELPN
1617003	RV3V 1 08 ELPN
1616101	RV3V 1 02 key
1616102	RV3V 1 04 key
1616103	RV3V 1 08 key
1616104	RV3V 1 012 key
1616001	RV3V 1 02 manual
1616002	RV3V 1 04 manual
1616003	RV3V 1 08 manual
1616004	RV3V 1 012 manual

Newdeal FILTER REGULATOR

Highly reliable piston-operated filter regulator.

- Stability of the set pressure as the upstream pressure varies
- Standard overpressure blow-off valve
- Can be fixed to the wall using the holes in the sides of the body
- Metal bowl with external viewing
- Manual/semi-auto or automatic condensate drainage



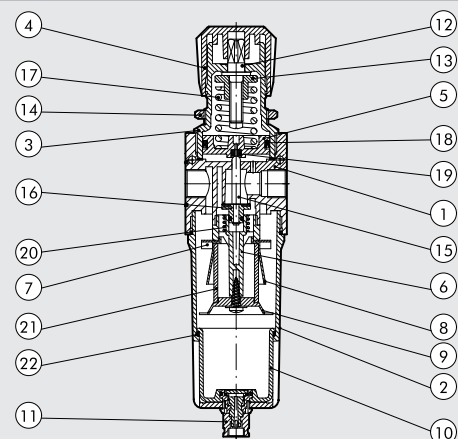
UNITS

New deal FILTER REGULATOR

TECHNICAL DATA		FR ND 1/4"	FR ND 3/8"	FR ND 1/2"
Threaded port		1/4"	3/8"	1/2"
Setting range	bar	0 to 8 - 0 to 12		0 to 8 - 0 to 12
Degree of filtration	µm	4 - 20 - 50		4 - 20 - 50
Max. inlet pressure	MPa	1.8		1.8
	bar	18		18
	psi	261		261
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	260		1000
	scfm	9.2		35.5
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	700		2500
	scfm	25		88.5
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50		50
	°F	122		122
Weight	Kg	0.5		1
Wall fixing screws		M4 x 40		M4 x 55
Gauge port		1/8"		1/8"
Bowl capacity	cm ³	10		45
Mounting position		Vertical		Vertical
Drain		RMSA		SAC - RA
		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure RA: automatic drain with condensate discharge, independent of pressure and flow rate SAC: automatic drain with condensate discharge. Operates by depression – requires variable air take-offs. Compressed air The regulator pressure must always be set upwards. The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.		
Fluid				
Note on use				

COMPONENTS

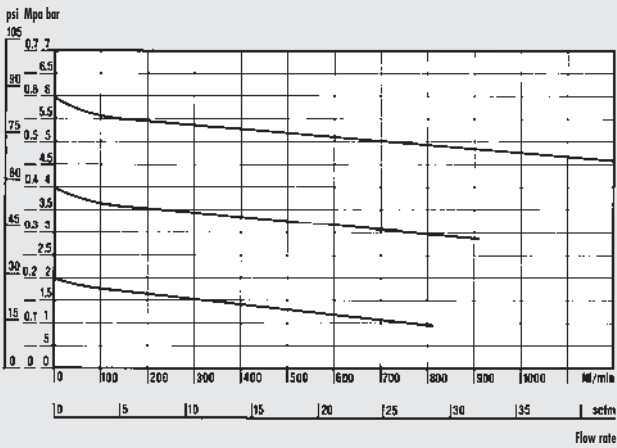
- | | |
|------------------------------|------------------------------------|
| ① Zamak body | ⑯ Valve with NBR vulcanized gasket |
| ② Aluminium bowl | ⑰ Steel adjusting spring |
| ③ Technopolymer bell | ⑱ NBR lip seal |
| ④ Technopolymer knob | ⑲ NBR relieving seal |
| ⑤ Technopolymer piston rod | ⑳ Steel valve compression spring |
| ⑥ Technopolymer plug | ㉑ Sintered HDPE filter cartridge |
| ⑦ Technopolymer centrifuge | ㉒ NBR gaskets |
| ⑧ Technopolymer baffle plug | |
| ⑨ Technopolymer screen | |
| ⑩ Technopolymer bowl | |
| ⑪ Drain (RMSA) | |
| ⑫ OT58 brass adjusting screw | |
| ⑬ OT58 brass nut | |
| ⑭ Technopolymer ring nut | |
| ⑮ OT58 brass rod | |



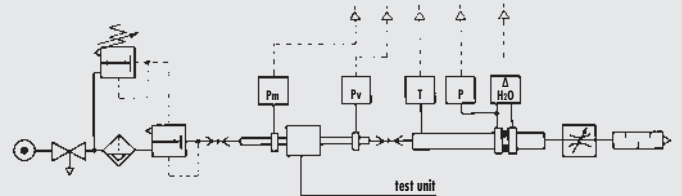
FLOW CHARTS

FR 1/4

$P_{in} = 0.7 \text{ MPa} - 7 \text{ bar} - 100 \text{ psi}$
Inlet pressure



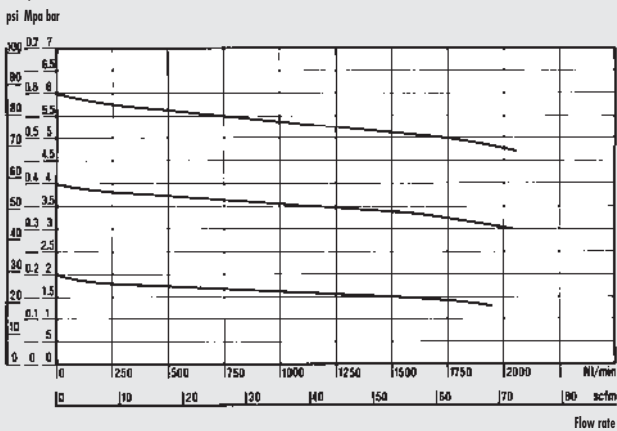
Department of Mechanics
Turin Polytechnic



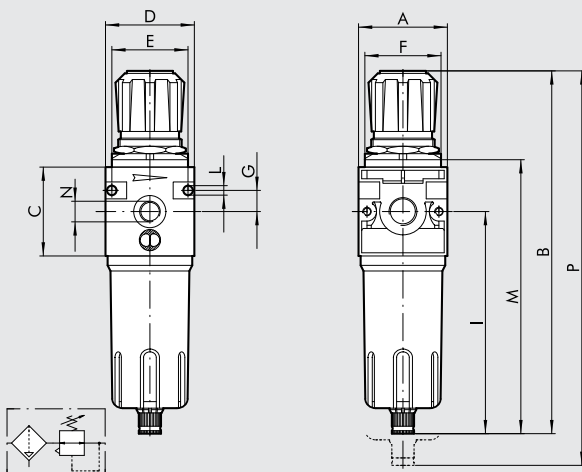
- Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

FR 3/8 - 1/2

$P_{in} = 0.7 \text{ MPa} - 7 \text{ bar} - 100 \text{ psi}$
Inlet pressure



DIMENSIONS



		FR ND 1/4"	FR ND 3/8"	FR ND 1/2"
Threaded port		1/4"	3/8"	1/2"
A		42		60
B	RMSA	190		245
	RA	-		249
	SAC	194		249
C		42		60
D		42		60
E		36		52
F		30 x 1.5		38 x 2
G		10		14
I		121		150
L		M4 hole		M4 hole
M	RMSA	145		185
	RA	-		189
	SAC	149		189
N (Pressure gauge port)		1/8"		1/8"
P	RMSA	233		295
	RA	-		299
	SAC	237		299

KEY TO CODES

FR ELEMENT	1/4 THREADED PORT	4 DEGREE OF FILTRATION	08 SETTING RANGE	RMSA CONDENSATE DRAIN
FR	1/4 3/8 1/2	4 = 4 µm 20 = 20 µm 50 = 50 µm	08 = 0 to 8 bar 012 = 0 to 12 bar	RMSA SAC RA*

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

RA: automatic drain with condensate discharge, independent of pressure and flow rate.

SAC: automatic drain with condensate discharge.
Operates by depression – requires variable air take-offs.

* For ND 3/8 and 1/2 with RA, please contact our sales assistance department

ORDERING CODES

Code	Description
NEW DEAL FILTER REGULATOR 1/4"	
1225029	FR 1/4 4 08 RMSA
1225053	FR 1/4 4 012 RMSA
1225509	FR 1/4 4 08 SAC
1225513	FR 1/4 4 012 SAC
1225030	FR 1/4 20 08 RMSA
1225510	FR 1/4 20 08 SAC
1225054	FR 1/4 20 012 RMSA
1225514	FR 1/4 20 012 SAC
1225032	FR 1/4 50 08 RMSA
1225511	FR 1/4 50 08 SAC
1225056	FR 1/4 50 012 RMSA
1225516	FR 1/4 50 012 SAC
NEW DEAL FILTER REGULATOR 3/8"	
1325029	FR 3/8 4 08 RMSA
1325509	FR 3/8 4 08 SAC
1325053	FR 3/8 4 012 RMSA
1325513	FR 3/8 4 012 SAC
1325030	FR 3/8 20 08 RMSA
1325510	FR 3/8 20 08 SAC
1325054	FR 3/8 20 012 RMSA
1325514	FR 3/8 20 012 SAC
1325032	FR 3/8 50 08 RMSA
1325512	FR 3/8 50 08 SAC
1325056	FR 3/8 50 012 RMSA
1325516	FR 3/8 50 012 SAC
NEW DEAL FILTER REGULATOR 1/2"	
1425029	FR 1/2 4 08 RMSA
1425509	FR 1/2 4 08 SAC
1425053	FR 1/2 4 012 RMSA
1425513	FR 1/2 4 012 SAC
1425030	FR 1/2 20 08 RMSA
1425510	FR 1/2 20 08 SAC
1425054	FR 1/2 20 012 RMSA
1425514	FR 1/2 20 012 SAC
1425032	FR 1/2 50 08 RMSA
1425512	FR 1/2 50 08 SAC
1425056	FR 1/2 50 012 RMSA
1425516	FR 1/2 50 012 SAC

NOTES

Newdeal LUBRICATOR



Lubricator with high lubrication stability.

- Quantity of lubricant proportioned to air flow
- Micrometric regulation of lubricant flow
- Activates at low flow rates
- All-round oil level viewing



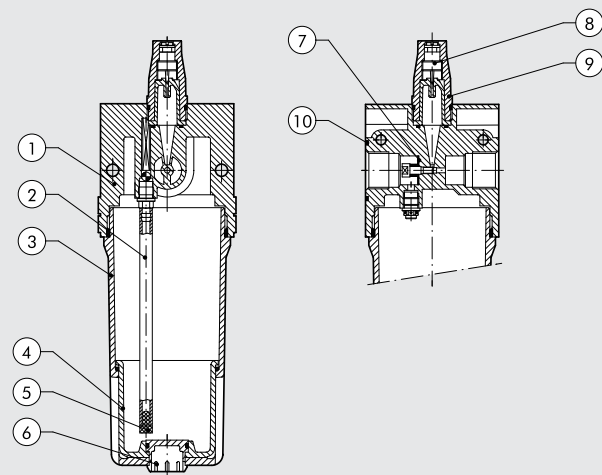
TECHNICAL DATA	LUB ND 1/4"	LUB ND 3/8"	LUB ND 1/2"	LUB ND 3/4"	LUB ND 1"
Threaded port	1/4"	3/8"	1/2"	3/4"	1"
Type of lubrication	Mist		Mist		Mist
Bowl capacity	cm ³ 50		150		380
Max. inlet pressure	MPa 1.8		1.8		1.8
	bar 18		18		18
	psi 261		261		261
Flow rate at 6 bar (0.6 MPa to 87 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min 700		3000		12800
	scfm 25		107		452
Flow rate at 6 bar (0.6 MPa to 87 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min 1100		4300		16000
	scfm 39		153		565
Max temperature at 1 MPa; 10 bar; 145 psi	°C 50		50		50
	°F 122		122		122
Weight	Kg 0.4		0.9		1.3
Wall fixing screws	M4 x 40		M4 x 55		M6 x 75
Mounting position	Vertical				
Fluid	Filtered compressed air				
Note on use:	<ul style="list-style-type: none"> • Use the screw provided to set the drip rate to drop every 300-600 Nl. <ul style="list-style-type: none"> • Fit the lubricator as close as possible to the point of use • Fill the bowl with oil before pressurizing the system • Do not use cleaning oil, brake fluid or solvents in general • Recommended lubricants: ISO and UNI FD22 - E.g. Energol HLP 22 (BP) - Spinesso 22 (Esso) - Mobil DTE 22 (Mobil) - Tellus Oil 22 (Shell) • Automatic filling lubricator and minimum level lubricator. 				
On request:					

UNITS

New deal LUBRICATOR

COMPONENTS

- ① Zamak body
- ② Rilsan® oil suction pipe
- ③ Aluminium bowl
- ④ Clear technopolymer bowl
- ⑤ Filter
- ⑥ Technopolymer plug
- ⑦ Venturi NBR diaphragm
- ⑧ OT 58 brass oil flow regulation needle
- ⑨ Clear technopolymer cover
- ⑩ NBR gaskets

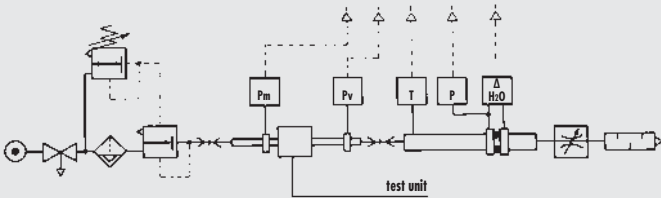


FLOW CHARTS



• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

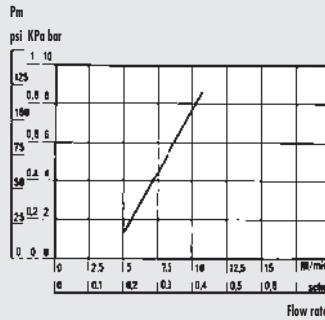
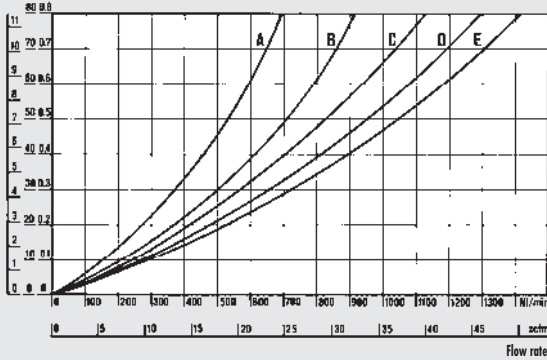
- (A) = 2 bar - 0.2 MPa - 29 psi
- (B) = 4 bar - 0.4 MPa - 58 psi
- (C) = 6 bar - 0.6 MPa - 87 psi
- (D) = 8 bar - 0.8 MPa - 116 psi
- (E) = 10 bar - 1 MPa - 145 psi



LUB 1/4

$\Delta P = (P_m - P_v)$

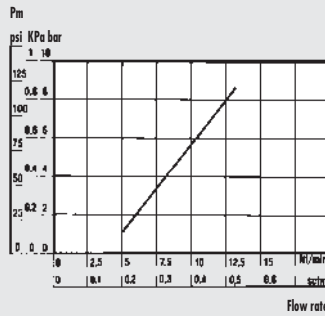
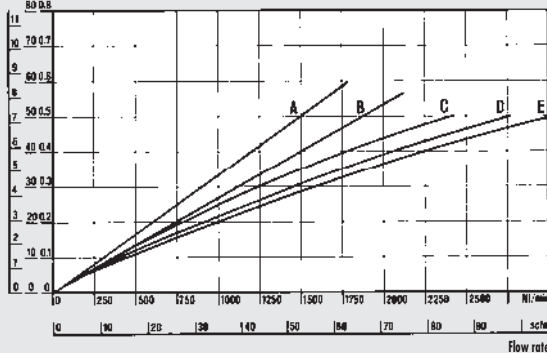
psi KPa bar



MINIMUM ACTIVATION FLOW CHARTS

The minimum activation flow charts were carried out in compliance with ISO/DP 6301/2

LUB 3/8 - 1/2



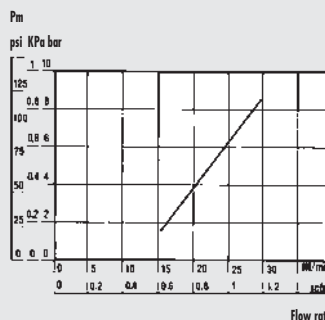
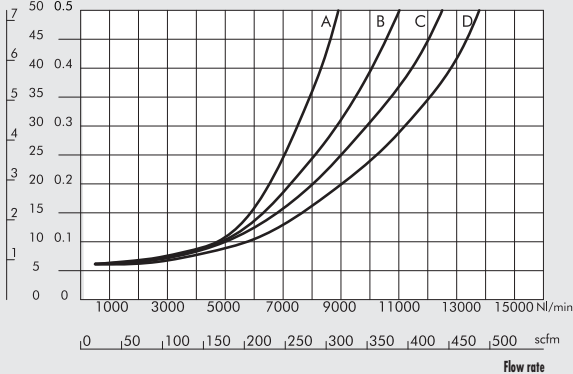
MINIMUM ACTIVATION FLOW CHARTS

The minimum activation flow charts were carried out in compliance with ISO/DP 6301/2

LUB 3/4 - 1"

$\Delta P = (P_m - P_v)$

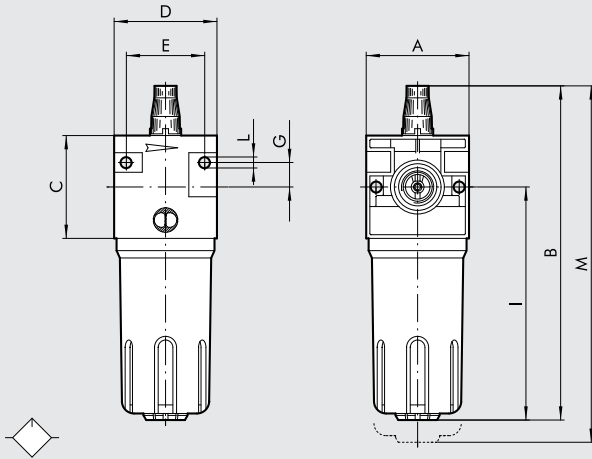
psi KPa bar



MINIMUM ACTIVATION FLOW CHARTS

The minimum activation flow charts were carried out in compliance with ISO/DP 6301/2

DIMENSIONS



	LUB ND 1/4"	LUB ND 3/8"	LUB ND 1/2"	LUB ND 3/4"	LUB ND 1"
Threaded port	1/4"	3/8"	1/2"	3/4"	1"
A	42	60	80	80	80
B	156	195	260	260	260
C	42	60	80	80	80
D	42	60	80	80	80
E	32	46	66	66	66
G	10	14	22	22	22
I	107	136	182	182	182
L	M4 hole	M4 hole	M6 hole	M6 hole	M6 hole
M	176	220	290	290	290

ORDERING CODES

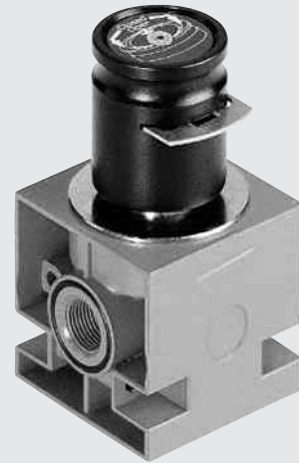
Code	Description
1223001	LUB 1/4
1323001	LUB 3/8
1423001	LUB 1/2
1523001	LUB 3/4
1623001	LUB 1

NOTES

Newdeal SHUT-OFF VALVE

Manually-operated circuit shut-off valve.

- Poppet seat system to ensure high flow rate
- Quick-actuation knob
- Possible triple locking
- The valve is actuated by pressing the actuation disk until it clicks. Press the knob downwards to relieve pressure. In this position you can extract the shim and fit a lock to avoid accidental operation.



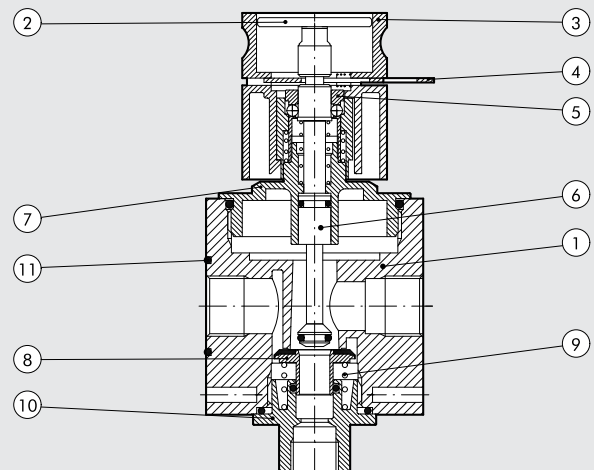
UNITS

New deal SHUT-OFF VALVE

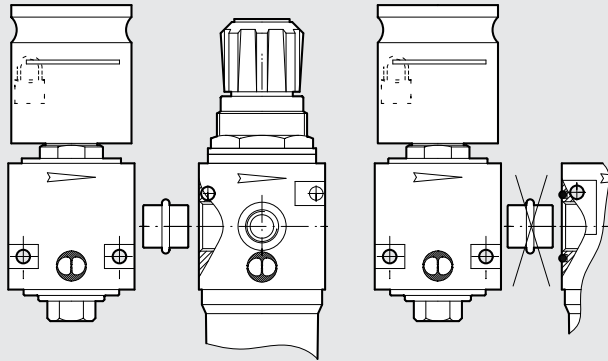
TECHNICAL DATA		V3V ND 1/4"	V3V ND 3/8"	V3V ND 1/2"
Threaded port		1/4"	3/8"	1/2"
Max. inlet pressure	MPa	1.8		1.8
	bar	18		18
	psi	261		261
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	1100		2200
	scfm	38.8		78
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	1500		2900
	scfm	53		103
Flow rate on relieving at 6 bar (0.6 Mpa to 87 psi) with direct relieving into the atmosphere	Nl/min	1600		2900
	scfm	56.5		103
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50		50
	°F	122		122
Weight	Kg	0.35		0.8
Wall fixing screws		M4 x 40		M4 x 55
Mounting position		In any position		
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.		
Type of control		Manual		

COMPONENTS

- ① Zamak body
- ② Actuation disk
- ③ Technopolymer knob
- ④ Stainless steel safety shim
- ⑤ Clutching unit
- ⑥ OT 58 brass rod
- ⑦ Upper OT 58 brass plug
- ⑧ V3V valve with NBR vulcanized gasket
- ⑨ Stainless steel valve compression spring
- ⑩ Lower OT58 brass plug
- ⑪ NBR gaskets



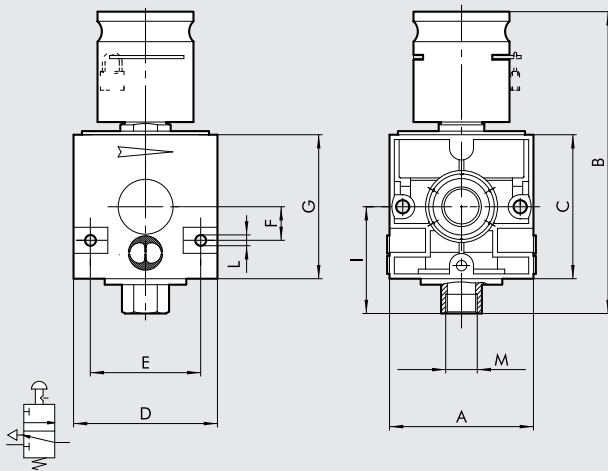
ASSEMBLY DIAGRAM



To assemble the V3V to the regulator filter 1/4", or depurator 3/8-1/2, use the adaptor provided (see the assembly diagram at the left).

- Adaptor V3V + FR 1/4" - code 9201001
- Adaptor V3V + D 3/8" - code 9401001
- Adaptor V3V + D 1/2" - code 9401002

DIMENSIONS



	V3V ND 1/4"	V3V ND 3/8"	V3V ND 1/2"
Threaded port	1/4"	3/8"	1/2"
A	42		60
B	105		126
C	42		60
D	42		60
E	32		46
F	10		14
G	42		60
I	32		43
L	M4 hole		M4 hole
M	1/8"		1/4"

ORDERING CODES

Code	Description
1270001	V3V ND 1/4
1370001	V3V ND 3/8
1470001	V3V ND 1/2

NOTES

Newdeal 3/4" AND 1" SHUT-OFF VALVE

Circuit cut-off valve with three different controls:

- CNOMO electropneumatic
- Manual key-operated
- Manual lever-operated



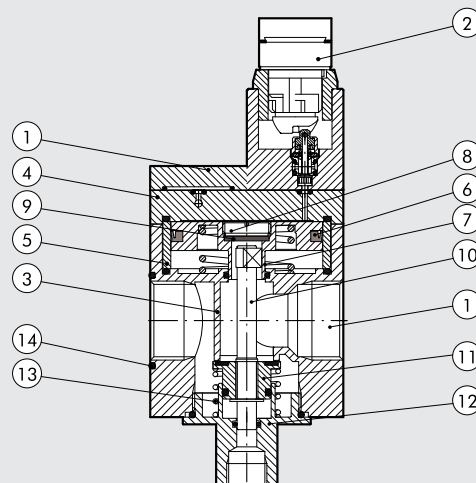
UNITS

New deal 3/4" AND 1" SHUT-OFF VALVE

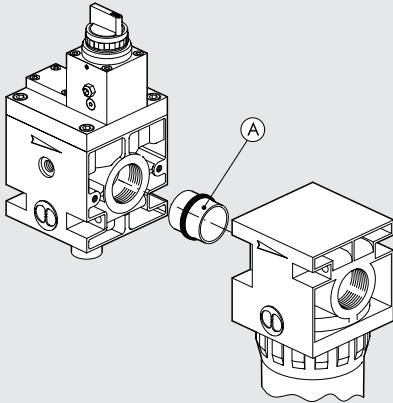
TECHNICAL DATA		V3V ND 3/4"	V3V ND 1"
Threaded port		3/4"	1"
Max. inlet pressure*	MPa		1.3
	bar		13
	psi		188
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min		7600
	scfm		268
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min		10200
	scfm		360
Flow rate on relief at 6 bar (0.6 MPa; 87 psi)	Nl/min		1800
	scfm		64
Weight	Kg		2.2
Wall fixing screws		M6 x 75	
Mounting position		In any position	
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.	
*V3V CNOMO -10 bar - 1 MPa - 145 Psi			

COMPONENTS

- ① V3V plate
- ② V3V manual sub-assembly control
- ③ V3V aluminium body
- ④ Aluminium top plate
- ⑤ Aluminium spacer
- ⑥ NBR lip seal
- ⑦ Aluminium piston rod
- ⑧ Cap for OT 58 brass plain gasket
- ⑨ NBR plain gasket
- ⑩ OT 58 brass rod
- ⑪ OT 58 brass valve
- ⑫ Aluminium bottom cap
- ⑬ Steel valve spring
- ⑭ NBR gaskets



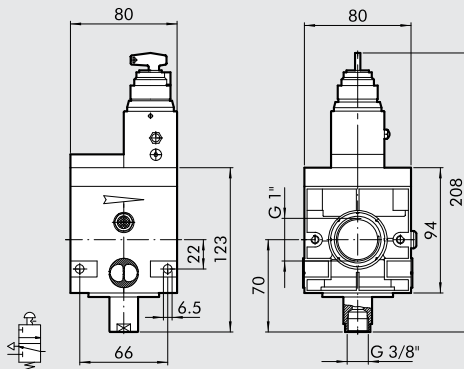
ASSEMBLY DIAGRAM V3V+F



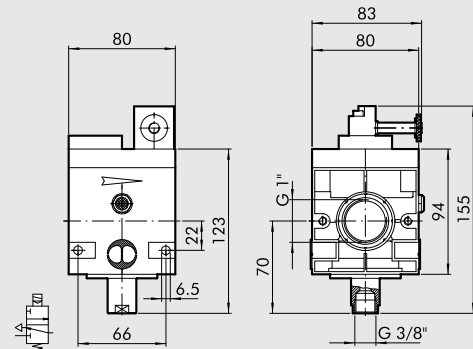
A= V3V ADAPTER + FIL 1" – code 9601001
to be used with filters not having o-ring seat

DIMENSIONS

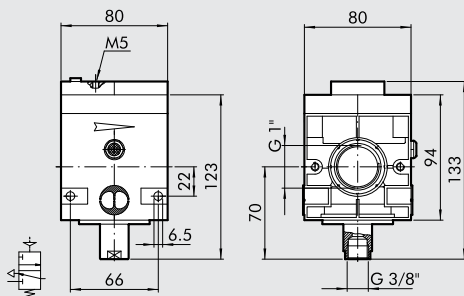
V3V 3/4"-1" KEY-OPERATED CONTROL



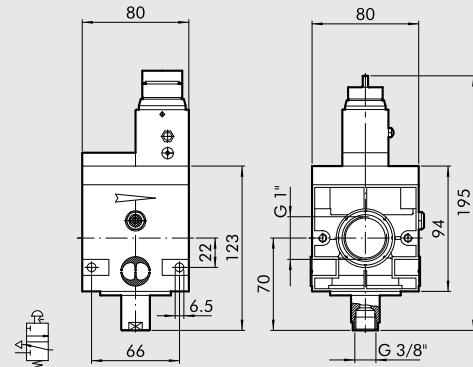
V3V 3/4"-1" ELPN CNOMO



V3V 3/4"-1" PNEUMATIC



V3V 3/4"-1" MANUAL CONTROL



KEY TO CODES

RV3V ELEMENT	3/4 THREADED PORT	ELPN CONTROL V3V
V3V	3/4" 1"	ELPN Key Manual Pneumatic

ORDERING CODES

Code	Description
SHUT-OFF VALVE NEW DEAL 3/4"	
1575001	V3V 3/4 ELPN Cnomo
1574101	V3V 3/4 key
1574001	V3V 3/4 manual
1576001	V3V 3/4 pneumatic
SHUT-OFF VALVE NEW DEAL 1"	
1675001	V3V 1 ELPN Cnomo
1674101	V3V 1 key
1674001	V3V 1 manual
1676001	V3V 1 pneumatic

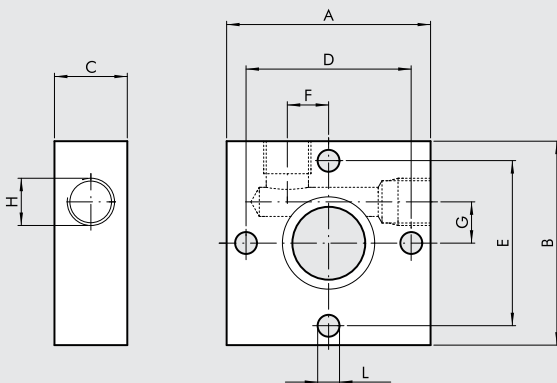
Newdeal AIR TAKE-OFF

The air take-off has the job to take off the air from the Newdeal FRL unit irrespective of the position where it is assembled. It is required whenever you need to take off air from the FRL unit at different stages of the treatment (normal, filtered, filtered regulated, lubricated, etc.)



TECHNICAL DATA		PA ND 1/4"	PA ND 3/8"	PA ND 1/2"	PA ND 3/4"	PA ND 1"
Threaded port		1/8"		1/4"		1/2"
Maximum working temperature at: 1 MPa; 10 bar; 145 psi	°C	50		50		50
	°F	122		122		122
	MPa	1.8		1.8		1.8
Maximum admissible pressure	bar	18		18		18
	psi	261		261		261
	kg	0.06		0.18		0.41
Weight						

DIMENSIONS



	PA ND 1/4"	PA ND 3/8"	PA ND 1/2"	PA ND 3/4"	PA ND 1"
Threaded port	1/8"		1/4"		1/2"
A	42		60		80
B	42		60		80
C	15		20		30
D	34		49		64
E	34		49		64
F	8.5		14		16
G	8.5		14		16
H (n° 2 pos.)	1/8"		1/4"		1/2"
L	M4 hole		M5 hole		M6 hole

ORDERING CODES

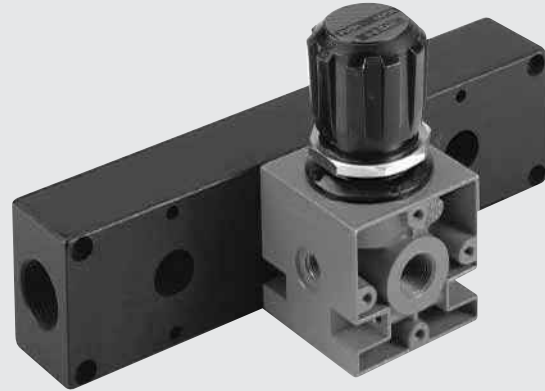
Code	Description
9200401	PA 1/4 take-off
9400401	PA 1/2 take-off
9600401	PA 3/4 take-off

Comes with 2 screws for F/L and R/FR fixing.

Newdeal SUB-BASE

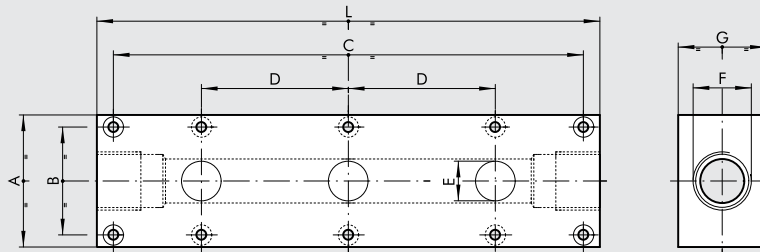


With the New deal sub-base, more than one regulators can be mounted in parallel using a single pressure supply source.

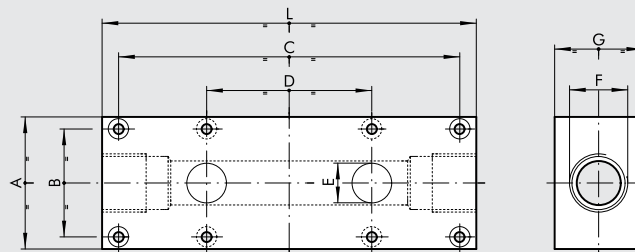


DIMENSIONS

3 POSITION



2 POSITION



	ND 1/4"		ND 3/8" - 1/2"		ND 3/4" - 1"	
	2 positions	3 positions	2 positions	3 positions	2 positions	3 positions
A	50	50	60	60	80	80
B	34	34	49	49	64	64
C	113	165	155	230	190	280
D	52	52	75	75	90	90
E	1/4"	1/4"	18	18	31	31
F	1/2"	1/2"	3/4"	3/4"	1 1/4"	1 1/4"
G	30	30	40	40	50	50
L	128	180	170	245	210	300
Weight [Kg]	0.45	0.62	0.94	1.4	1.5	1.7

ORDERING CODES

Code	Description
9200201	SB 1/4 sub-base 2 pos.
9400201	SB 1/2 sub-base 2 pos.
9600201	SB 3/4 sub-base 2 pos.
9200301	SB 1/4 sub-base 3 pos.
9400301	SB 1/2 sub-base 3 pos.
9600301	SB 3/4 sub-base 3 pos.

Newdeal AUTOMATIC CONDENSATE DRAIN

System supply condensate drain:

- All-round condensate level viewing
- Automatic drain from inside the bowl
- Axial coupling



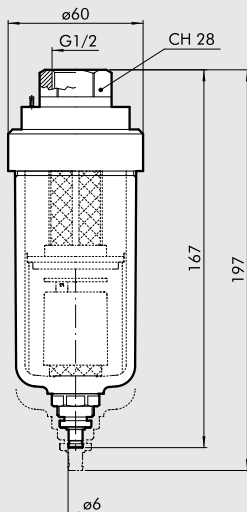
TECHNICAL DATA

Threaded port	
Maximum working temperature at: 1 MPa; 10 bar; 145 psi	°C
	°F
Maximum admissible pressure	MPa
	bar
	psi
Weight	kg

SCAL ND 1/2"

1/2"
50
122
1.3
13
188
0.5

DIMENSIONS



ORDERING CODES

Code	Description
4589003	Autom. cond. drain 1/2 in line

Highly reliable heavy-duty piston-operated FRL unit.

- Stability of the set pressure as the upstream pressure varies
- Metal bowl with external sight glass
- Semi-automatic and automatic condensate drain
- Lubrication proportional to flow rate
- Micrometric lubrication regulation
- Activation guaranteed with low flow rates

Refer to the sections on the single modules for a further description, components and other technical data.

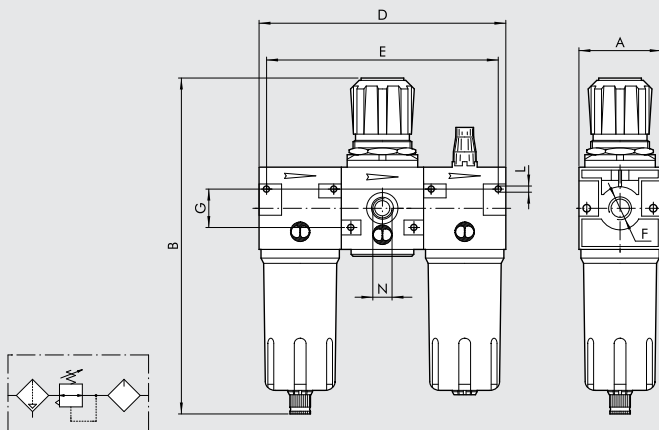


TECHNICAL DATA		FRL ND 1/4"	FRL ND 3/8"	FRL ND 1/2"	FRL ND 3/4"	FRL ND 1"
Threaded port		1/4"	3/8"	1/2"	3/4"	1"
Setting range	bar	0 to 8 - 0 to 12		0 to 8 - 0 to 12		
Degree of filtration	µm	4 - 20 - 50		4 - 20 - 50		
Max. inlet pressure	MPa	1.8		1.8		
	bar	18		18		
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	psi	261		261		
	NI/min	140	1300		1900	2000
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	scfm	5	46		68	71
	NI/min	400	2000		3600	3700
Max temperature at 1 MPa; 10 bar; 145 psi	scfm	14.2	71		128	132
	°C	50	50		50	
Weight	°F	122	122		122	
	Kg	1	2.5		4	
Wall fixing screws		M4 x 40		M4 x 55		M6 x 75
Fluid		Compressed air				
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.				

UNITS

FIL+REG+LUB New deal

DIMENSIONS



	FRL ND 1/4"	FRL ND 3/8"	FRL ND 1/2"	FRL ND 3/4"	FRL ND 1"
Threaded port F	1/4"	3/8"	1/2"	3/4"	1"
A	42	60	80		
B	190	245	332		
RMSA		249	336		
RA		249	336		
SAC		249	336		
D	126	180	240		
E	116	166	226		
G	20	28	44		
L	M4 hole	M4 hole	M6 hole		
N (pressure gauge port)	1/8"	1/8"	1/4"		

KEY TO CODES

FRL ELEMENT	1/4 THREADED PORT	4 μm DEGREE OF FILTRATION	08 SETTING RANGE	RMSA CONDENSATE DRAIN
FRL	1/4 3/8 1/2 3/4 1	4 = 4 μm 20 = 20 μm 50 = 50 μm	08 = 0 to 8 bar 012 = 0 to 12 bar	RMSA SAC RMSA SAC RA RMSA RA

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

RA: automatic drain with condensate discharge, independent of pressure and flow rate.

SAC: automatic drain with condensate discharge.
Operates by depression – requires variable air take-offs.

ORDERING CODES

Code	Description	Code	Description	Code	Description
FRL 1/4"		FRL 3/8"		FRL 3/4"	
1224029	FRL 1/4 4 08 RMSA	1324029	FRL 3/8 4 08 RMSA	1524017	FRL 3/4 4 08 RMSA
1224409	FRL 1/4 4 08 SAC	1324033	FRL 3/8 4 08 RA	1524021	FRL 3/4 4 08 RA
1224030	FRL 1/4 20 08 RMSA	1324409	FRL 3/8 4 08 SAC	1524018	FRL 3/4 20 08 RMSA
1224410	FRL 1/4 20 08 SAC	1324030	FRL 3/8 20 08 RMSA	1524022	FRL 3/4 20 08 RA
1224032	FRL 1/4 50 08 RMSA	1324034	FRL 3/8 20 08 RA	1524020	FRL 3/4 50 08 RMSA
1224412	FRL 1/4 50 08 SAC	1324410	FRL 3/8 20 08 SAC	1524024	FRL 3/4 50 08 RA
1224053	FRL 1/4 4 012 RMSA	1324032	FRL 3/8 50 08 RMSA	1524029	FRL 3/4 4 012 RMSA
1224413	FRL 1/4 4 012 SAC	1324036	FRL 3/8 50 08 RA	1524033	FRL 3/4 4 012 RA
1224054	FRL 1/4 20 012 RMSA	1324412	FRL 3/8 50 08 SAC	1524030	FRL 3/4 20 012 RMSA
1224414	FRL 1/4 20 012 SAC	1324053	FRL 3/8 4 012 RMSA	1524034	FRL 3/4 20 012 RA
1224056	FRL 1/4 50 012 RMSA	1324057	FRL 3/8 4 012 RA	1524032	FRL 3/4 50 012 RMSA
1224416	FRL 1/4 50 012 SAC	1324413	FRL 3/8 4 012 SAC	1524036	FRL 3/4 50 012 RA
		1324054	FRL 3/8 20 012 RMSA	FRL 1"	
		1324058	FRL 3/8 20 012 RA	1624017	FRL 1 4 08 RMSA
		1324414	FRL 3/8 20 012 SAC	1624021	FRL 1 4 08 RA
		1324056	FRL 3/8 50 012 RMSA	1624018	FRL 1 20 08 RMSA
		1324060	FRL 3/8 50 012 RA	1624022	FRL 1 20 08 RA
		1324416	FRL 3/8 50 012 SAC	1624020	FRL 1 50 08 RMSA
				1624024	FRL 1 50 08 RA
		FRL 1/2"		1624029	FRL 1 4 012 RMSA
		1424029	FRL 1/2 4 08 RMSA	1624033	FRL 1 4 012 RA
		1424033	FRL 1/2 4 08 RA	1624030	FRL 1 20 012 RMSA
		1424409	FRL 1/2 4 08 SAC	1624034	FRL 1 20 012 RA
		1424030	FRL 1/2 20 08 RMSA	1624032	FRL 1 50 012 RMSA
		1424034	FRL 1/2 20 08 RA	1624036	FRL 1 50 012 RA
		1424410	FRL 1/2 20 08 SAC		
		1424032	FRL 1/2 50 08 RMSA		
		1424036	FRL 1/2 50 08 RA		
		1424412	FRL 1/2 50 08 SAC		
		1424053	FRL 1/2 4 012 RMSA		
		1424057	FRL 1/2 4 012 RA		
		1424413	FRL 1/2 4 012 SAC		
		1424054	FRL 1/2 20 012 RMSA		
		1424058	FRL 1/2 20 012 RA		
		1424414	FRL 1/2 20 012 SAC		
		1424056	FRL 1/2 50 012 RMSA		
		1424060	FRL 1/2 50 012 RA		
		1424416	FRL 1/2 50 012 SAC		

FRPL 3/4"-1" Newdeal



Refer to the sections on the single modules for a further description, components and other technical data.

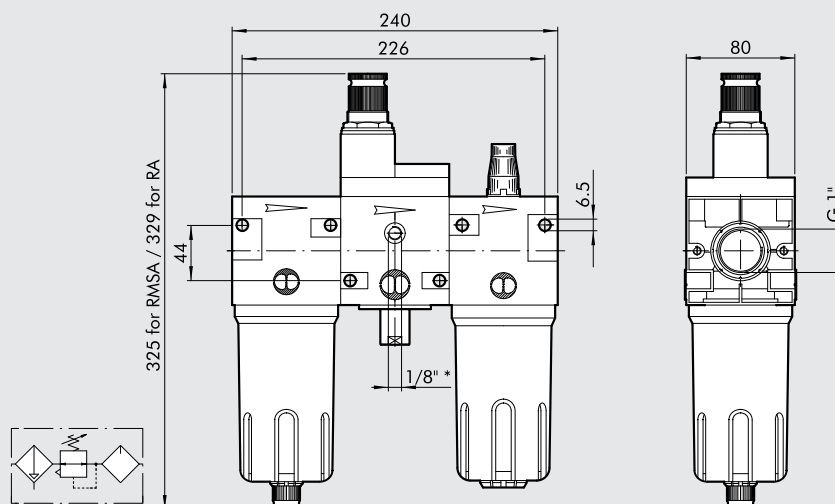


TECHNICAL DATA		FRPL ND 3/4"	FRPL ND 1"
Threaded port		3/4"	1"
Setting range		0 to 8 - 0 to 12	
Max. temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Degree of filtration	µm	4 - 20 - 50	
	MPa	1.3	
	bar	13	
Max. inlet pressure	psi	188	
	NI/min	7500	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	scfm	235	
	NI/min	8500	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	scfm	266	
	Kg	3.6	
Weight		M6 x 75	
Wall fixing screws		RMSA - RA	
Drain		RMSA: manual - semi-auto; RA: automatic. Compressed air	
Fluid		170	
Bowl capacity	cm ³		
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.	

UNITS

FRPL 3/4"-1" New deal

DIMENSIONS



*Pressure gauge port

KEY TO CODES

FRPL ELEMENT	1/4 THREADED PORT	4 μm DEGREE OF FILTRATION	08 SETTING RANGE	RMSA TYPE OF DRAIN
FRPL	1" 3/4"	4 = 4 μm 20 = 20 μm 50 = 50 μm	08 = 0 to 8 bar 012 = 0 to 12 bar	RMSA RA

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.
 RA: automatic drain with condensate discharge, independent of pressure and flow rate. (for size 300 and 400).
 FRPL: Filter + pilotable regulator + lubricator.

ORDERING CODES

Code	Description
FRPL 3/4"	
1528007	FRPL 3/4 4 08 RMSA
1528019	FRPL 3/4 4 08 RA
1528010	FRPL 3/4 4 012 RMSA
1528022	FRPL 3/4 4 012 RA
1528008	FRPL 3/4 20 08 RMSA
1528020	FRPL 3/4 20 08 RA
1528011	FRPL 3/4 20 012 RMSA
1528023	FRPL 3/4 20 012 RA
1528009	FRPL 3/4 50 08 RMSA
1528021	FRPL 3/4 50 08 RA
1528012	FRPL 3/4 50 012 RMSA
1528024	FRPL 3/4 50 012 RA
FRPL 1"	
1628007	FRPL 1 4 08 RMSA
1628019	FRPL 1 4 08 RA
1628010	FRPL 1 4 012 RMSA
1628022	FRPL 1 4 012 RA
1628008	FRPL 1 20 08 RMSA
1628020	FRPL 1 20 08 RA
1628011	FRPL 1 20 012 RMSA
1628023	FRPL 1 20 012 RA
1628009	FRPL 1 50 08 RMSA
1628021	FRPL 1 50 08 RA
1628012	FRPL 1 50 012 RMSA
1628024	FRPL 1 50 012 RA

UNITS

FRPL 3/4" - 1" New deal

FR+LUB Newdeal



Heavy duty and reliable piston-operated FR+L unit.

- Stability of the set pressure as the upstream pressure varies
- Metal bowl with external sight glass
- Semi-automatic and automatic condensate drain
- Quantity of lubricant proportioned to air flow
- Micrometric lubrication regulation
- Activation guaranteed with low flow rates

Refer to the sections on the single modules for a further description, components and other technical data.

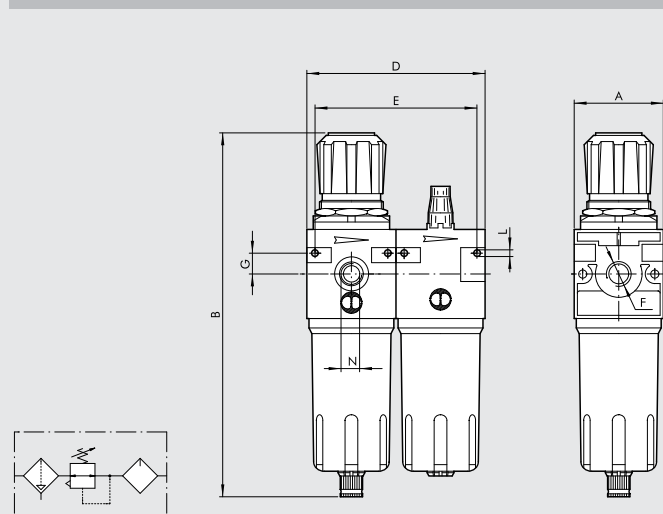


TECHNICAL DATA		FR+L ND 1/4"	FR+L ND 3/8"	FR+L ND 1/2"
Threaded port		1/4"	3/8"	1/2"
Setting range	bar	0 to 8 - 0 to 12		0 to 8 - 0 to 12
Degree of filtration	µm	4 - 20 - 50		4 - 20 - 50
Max. inlet pressure	MPa	1.8		1.8
	bar	18		18
	psi	261		261
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	l/min	150		1300
	scfm	5.3		46
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	l/min	500		2200
	scfm	18		78
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50		50
	°F	122		122
Weight	Kg	0.9		2
Wall fixing screws		M4 x 40		M4 x 55
Fluid		Compressed air		
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.		

UNITS

FR+LUB New deal

DIMENSIONS



	FR+L ND 1/4"	FR+L ND 3/8"	FR+L ND 1/2"
Threaded port F	1/4"	3/8"	1/2"
A	42		60
B	RMSA 190		245
	RA -		249
	SAC 194		249
D	84		120
E	76		109
G	10		14
L	M4 hole		M4 hole
N (pressure gauge port)	1/8"		1/8"

KEY TO CODES

FR+L ELEMENT	1/4 THREADED PORT	4 DEGREE OF FILTERING	08 SETTING RANGE	RMSA CONDENSATE DRAIN
FR+L	1/4 3/8 1/2	4 = 4 µm 20 = 20 µm 50 = 50 µm	08 = 0 to 8 bar 012 = 0 to 12 bar	RMSA SAC RMSA SAC RA*

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

RA: automatic drain with condensate discharge, independent of pressure and flow rate.

SAC: automatic drain with condensate discharge.

Operates by depression – requires variable air take-offs.

* For ND 3/8 and 1/2 with RA, please contact our sales assistance department.

ORDERING CODES

Code	Description	Code	Description
FR+L 1/4"		FR+L 3/8"	
1226029	FR+L 1/4 4 08 RMSA	1326029	FR+L 3/8 4 08 RMSA
1226409	FR+L 1/4 4 08 SAC	1326409	FR+L 3/8 4 08 SAC
1226053	FR+L 1/4 4 012 RMSA	1326053	FR+L 3/8 4 012 RMSA
1226413	FR+L 1/4 4 012 SAC	1326413	FR+L 3/8 4 012 SAC
1226030	FR+L 1/4 20 08 RMSA	1326030	FR+L 3/8 20 08 RMSA
1226410	FR+L 1/4 20 08 SAC	1326034	FR+L 3/8 20 08 RA
1226054	FR+L 1/4 20 012 RMSA	1326410	FR+L 3/8 20 08 SAC
1226414	FR+L 1/4 20 012 SAC	1326054	FR+L 3/8 20 012 RMSA
1226032	FR+L 1/4 50 08 RMSA	1326058	FR+L 3/8 20 012 RA
1226412	FR+L 1/4 50 08 SAC	1326414	FR+L 3/8 20 012 SAC
1226056	FR+L 1/4 50 012 RMSA	1326032	FR+L 3/8 50 08 RMSA
1226416	FR+L 1/4 50 012 SAC	1326412	FR+L 3/8 50 08 SAC
		1326056	FR+L 3/8 50 012 RMSA
		1326416	FR+L 3/8 50 012 SAC
		FR+L 1/2"	
		1426029	FR+L 1/2 4 08 RMSA
		1426409	FR+L 1/2 4 08 SAC
		1426053	FR+L 1/2 4 012 RMSA
		1426413	FR+L 1/2 4 012 SAC
		1426030	FR+L 1/2 20 08 RMSA
		1426034	FR+L 1/2 20 08 RA
		1426410	FR+L 1/2 20 08 SAC
		1426054	FR+L 1/2 20 012 RMSA
		1426058	FR+L 1/2 20 012 RA
		1426414	FR+L 1/2 20 012 SAC
		1426032	FR+L 1/2 50 08 RMSA
		1426412	FR+L 1/2 50 08 SAC
		1426056	FR+L 1/2 50 012 RMSA
		1426416	FR+L 1/2 50 012 SAC

V3V+FR+LUB Newdeal



Highly reliable heavy-duty piston-operated FRFL unit.

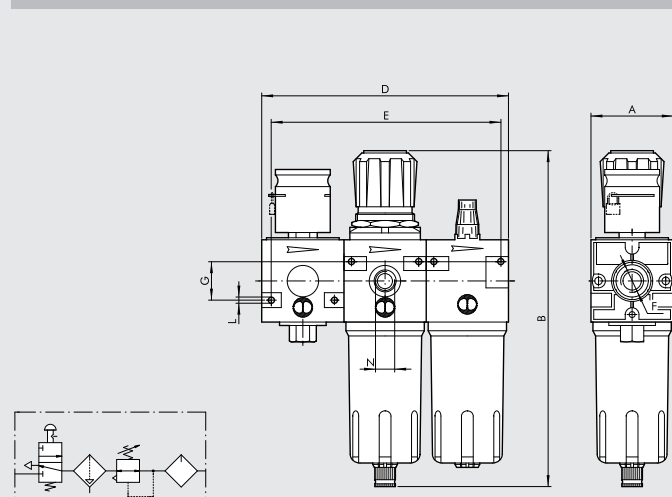
- Stability of the set pressure as the upstream pressure varies
- Metal bowl with external sight glass
- Semi-automatic and automatic condensate drain
- Quantity of lubricant proportionate to the air flow
- Micrometric lubrication regulation
- Activation guaranteed at low air flows
- Quick filling and drainage of the downstream circuit with the V3V element

Refer to the sections on the single modules for a further description, components and other technical data.



TECHNICAL DATA		VFR+L ND 1/4"	VFR+L ND 3/8"	VFR+L ND 1/2"
Threaded port		1/4"	3/8"	1/2"
Setting range	bar	0 to 8 - 0 to 12		0 to 8 - 0 to 12
Degree of filtration	µm	4 - 20 - 50		4 - 20 - 50
Max. inlet pressure	MPa	1.8		1.8
	bar	18		18
	psi	261		261
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	l/min	140		1000
	scfm	5		35.5
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	l/min	480		1900
	scfm	17		67.5
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50		50
	°F	122		122
Weight	Kg	1.1		1.8
Wall fixing screws		M4 x 40		M4 x 55
Fluid		Compressed air		
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.		

DIMENSIONS



	VFR+L ND 1/4"	VFR+L ND 3/8"	VFR+L ND 1/2"
Threaded port F	1/4"	3/8"	1/2"
A	42		60
B	RMSA 190		245
	RA -		249
	SAC 194		249
D	126		180
E	116		166
G	20		28
L	M4 hole		M4 hole
N (pressure gauge port)	1/8"		1/8"

KEY TO CODES

VFR+L ELEMENT	1/4 THREADED PORT	20 DEGREE OF FILTERING	08 SETTING RANGE	RMSA CONDENSATE DRAIN
VFR+L	1/4 3/8 1/2	4 = 4 µm 20 = 20 µm 50 = 50 µm	08 = 0 to 8 bar 012 = 0 to 12 bar	RMSA SAC RMSA SAC RA

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.
 RA: automatic drain with condensate discharge, independent of pressure and flow rate.
 SAC: automatic drain with condensate discharge.
 Operates by depression – requires variable air take-offs.

ORDERING CODES

Code	Description
1272030	VFR+L 1/4 20 RMSA 08 N
1272054	VFR+L 1/4 20 RMSA 012 N
1372030	VFR+L 3/8 20 RMSA 08 N
1372054	VFR+L 3/8 20 RMSA 012 N
1472030	VFR+L 1/2 20 RMSA 08 N
1472054	VFR+L 1/2 20 RMSA 012 N
1472032	VFR+L 1/2 50 RMSA 08 N
1472056	VFR+L 1/2 50 RMSA 012 N

The following versions are available on request:
 - with 4 mm or 50 mm degree of filtration
 - with SAC or RA condensate discharge

FIL+DEP Newdeal



Filter + depurator unit for fine filtering followed by purification by coalescence

- Metal bowl with external sight glass
- Semi-automatic condensate drain

Refer to the sections on the single modules for a further description, components and other technical data.

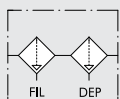
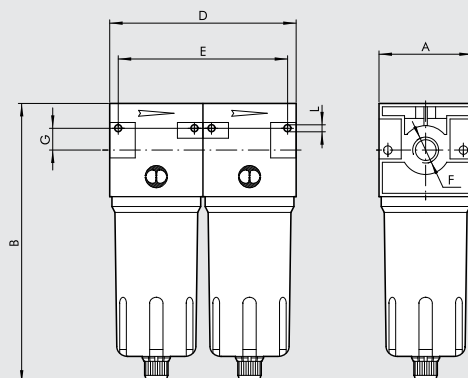


TECHNICAL DATA		F+D ND 3/8"	F+D ND -1/2"
Threaded port		3/8"	1/2"
Degree of filtration	μm	4	
Degree of depuration	μm	99.97% 0.01	
Max. inlet pressure	MPa	1.8	
	bar	18	
	psi	261	
Maximum suggested flow rate		Please look at the flow rate curves at page 3-151	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	Kg	1.8	
Wall fixing screws		M4 x 55	
Fluid		Compressed air	
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.	

UNITS

FIL+DEP New deal

DIMENSIONS



		F+D ND 3/8"	F+D ND -1/2"
Threaded port F		3/8"	1/2"
A		60	
B	RMSA	180	
	RA	184	
D		120	
E		106	
G		14	
L		M4 hole	

KEY TO CODES

F+D ELEMENT	3/8 THREADED PORT	4 DEGREE OF FILTERING	RMSA CONDENSATE DRAIN	RMSA CONDENSATE DRAIN
F+D	3/8 1/2	4 = 4 μm	RMSA SAC RA	RMSA RA

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

RA: automatic drain with condensate discharge, independent of pressure and flow rate.

SAC: automatic drain with condensate discharge.
Operates by depression – requires variable air take-offs.

ORDERING CODES

Code	Description
1327004	F+D 3/8 4 RMSA-RMSA
1327007	F+D 3/8 4 RA-RA
1327104	F+D 3/8 4 SAC-RMSA
1427004	F+D 1/2 4 RMSA-RMSA
1427007	F+D 1/2 4 RA-RA
1427104	F+D 1/2 4 SAC-RMSA

Filter + lubricator unit offering various degrees of filtration and high lubrication stability.

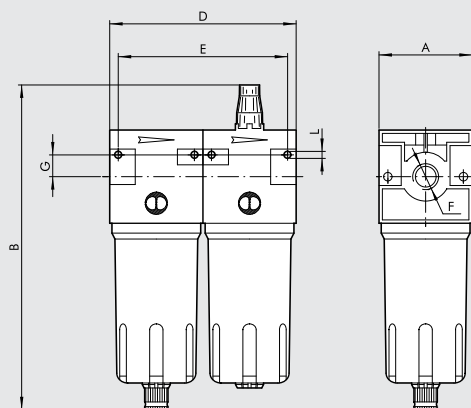
- Metal bowl with external sight glass
- Semi-automatic and automatic condensate drain
- Micrometric lubrication regulation
- Activation guaranteed at low air flows

Refer to the sections on the single modules for a further description, components and other technical data.



TECHNICAL DATA		F+L ND 1/4"	F+L ND 3/8"	F+L ND 1/2"	F+L ND 3/4"	F+L ND 1"
Threaded port		1/4"	3/8"	1/2"	3/4"	1"
Lubrication		mist	mist		mist	
Degree of filtration	µm	4 - 20 - 50	4 - 20 - 50		4 - 20 - 50	
Max. inlet pressure	MPa	1.8	1.8		1.8	
	bar	18	18		18	
	psi	261	261		261	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	NI/min	600	2500		8000	
	scfm	21	89		282	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	NI/min	1000	3500		9500	
	scfm	35.5	124		335	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	50		50	
	°F	122	122		122	
Weight	Kg	0.8	1.8		2.5	
Wall fixing screws		M4 x 40	M4 x 55		M6 x 75	
Fluid		Compressed air				
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.				

DIMENSIONS



	F+L ND 1/4"	F+L ND 3/8"	F+L ND 1/2"	F+L ND 3/4"	F+L ND 1"
Threaded port F	1/4"	3/8"	1/2"	3/4"	1"
A	42	60		80	
B	RMSA 170	209		273	
	RA -	213		277	
	SAC 174	213		277	
D	84	120		160	
E	74	106		146	
G	10	14		22	
L	M4 hole	M4 hole		M6 hole	

KEY TO CODES

F+L ELEMENT	1/4 THREADED PORT	4 DEGREE OF FILTERING	RMSA CONDENSATE DRAIN
F+L	1/4	4 = 4 μm	RMSA
	3/8	20 = 20 μm	SAC
	1/2	50 = 50 μm	RMSA
	3/4		SAC
	1		RA
			RMSA
			RA

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.
 RA: automatic drain with condensate discharge, independent of pressure and flow rate.
 SAC: automatic drain with condensate discharge.
 Operates by depression – requires variable air take-offs.

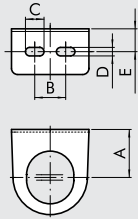
ORDERING CODES

Code	Description
1233006	F+L 1/4 20 RMSA
1333006	F+L 3/8 20 RMSA
1433006	F+L 1/2 20 RMSA
1533006	F+L 3/4 20 RMSA
1633006	F+L 1 20 RMSA

The following versions are available on request:
 - with 4 mm or 50 mm degree of filtration
 - with SAC or RA condensate discharge

Newdeal ACCESSORIES

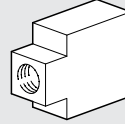
MOUNTING BRACKET FOR REG.



Code	Description
9200701	SF 1/4
9400701	SF 1/2

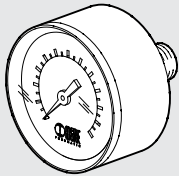
Code	A	B	C	D	E
9200701	32	20	12	5.5	14.2
9400701	42	40	12	5.5	15

SPACERS FOR FRL WALL MOUNTING



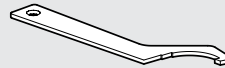
Code	Description
9200601	DF 1/4 spacer
9400601	DF 1/2 spacer
9600601	DF 3/4 spacer

PRESSURE GAUGE



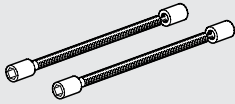
Code	Description
9700102	M 40 1/8 04
9700101	M 40 1/8 12
9800102	M 50 1/8 04
9800101	M 50 1/8 12
9900101	M 63 1/4 12

DISASSEMBLY TOOL FOR BOWL

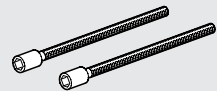


Code	Description
9601501	Disassembly key

TIE RODS



Code	Description
9200901	T 1/4 F+L tie rods
9400901	T 1/2 F+L tie rods
9600901	T 3/4 F+L tie rods



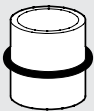
9604402	V3V+F+R 3/4-1 tie rods
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ASSEMBLY SCREWS (2 PIECES)



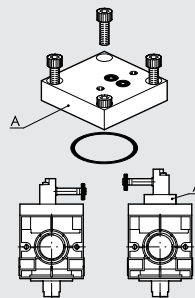
Code	Description
9250001	CVA 1/4 screw M4x40
9250002	CVA 1/4 screw M4x82 V3V+F+R
9450001	CVA 1/2 screw M5x55
9450002	CVA 3/8 1/2 screw M5x60 V3V+R
9450003	CVA 3/8 1/2 screw M5x120 V3V+F+R
9650001	CVA 3/4 screw M6x70

ADAPTER FOR V3V



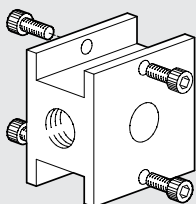
Code	Description
9201001	Adapt. X V3V+FR/D 1/4
9401001	Adapt. X V3V+D 3/8
9401002	Adapt. X V3V+D 1/2
9601001	Adapt. X V3V+F 1

REVERSE PLATE CNOMO CONTROL FOR V3V 3/4"-1"



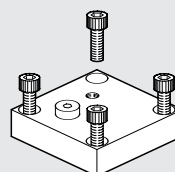
Code	Description	Weight [g]
9640201	Reverse plate kit V3V cnomo control	86

REGULATOR CONNECTION BLOCK



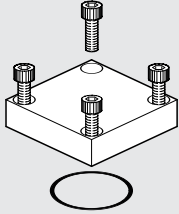
Code	Description	Weight [g]
9200501	BC 1/4 block	90
9400501	BC 1/2 block	244
9600501	BC 3/4 block	428

PLATE FOR REMOTE CONTROL FOR V3V 3/4"-1"



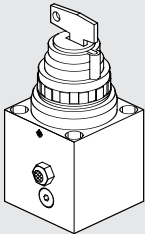
Code	Description	Weight [g]
9640001	Remote control plate kit	84

REG OR V3V END PLATE



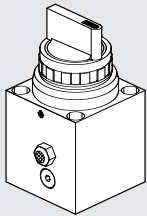
Code	Description	Weight [g]
9640101	End plate kit for regulator or V3V	82

KEY CONTROL FOR V3V 3/4"-1"



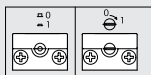
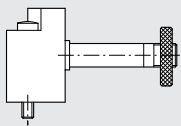
Code	Description	Weight [g]
9640301	Key control kit for V3V	364

MANUAL CONTROL FOR V3V 3/4"-1"



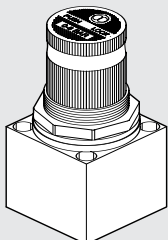
Code	Description	Weight [g]
9640401	Manual control kit for V3V	340

CNOMO CONTROL FOR V3V 3/4"-1"



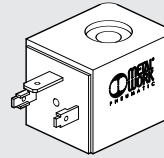
Code	Description
9453920	Elpn cnomo control kit, manual monostable
9453922	Elpn cnomo control kit, manual bistable

PILOT REGULATOR FOR ND 3/4"-1"



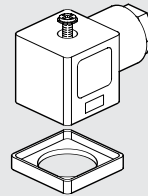
Code	Description	Weight [g]
9640501	02 pilot regulator kit	220
9640502	04 pilot regulator kit	220
9640503	08 pilot regulator kit	220
9640504	012 pilot regulator kit	220

REEL FOR CNOMO CONTROL V3V



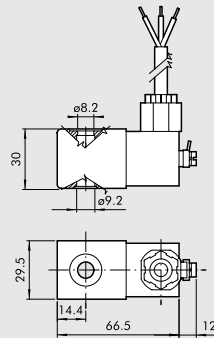
Code	Description
W0210010100	Reel 30 4W 24VDC
W0210011100	Reel 30 4VA 24VAC 50/60HZ
W0210012100	Reel 30 4VA 110VAC 50/60HZ
W0210013100	Reel 30 4VA 220VAC 50/60HZ

ELECTRIC CONNECTOR FOR CNOMO CONTROL V3V



Code	Description
W0970520033	Connector standard
W0970520034	Connector 30 LED 24V
W0970520035	Connector 30 LED 110V
W0970520036	Connector 30 LED 220V
W0970520037	Connector 30 VDR 24V
W0970520038	Connector 30 VDR 110V
W0970520039	Connector 30 VDR 220V

KIT COIL EEXM



According to Atex 94/9 CE rule, group 2, category 2 GD

Code	Description
0227606913	Kit for coil 30 24 VDC EEXMT5 cable 3 m
0227606915	Kit for coil 30 24 VDC EEXMT5 cable 5 m
0227608013	Kit for coil 30 24 VAC EEXMT5 cable 3 m
0227608015	Kit for coil 30 24 VAC EEXMT5 cable 5 m
0227608023	Kit for coil 30 110 VAC EEXMT5 cable 3 m
0227608025	Kit for coil 30 110 VAC EEXMT5 cable 5 m
0227608033	Kit for coil 30 230 VAC EEXMT5 cable 3 m
0227608035	Kit for coil 30 230 VAC EEXMT5 cable 5 m

KIT FOR COIL SIDE 22 IP65

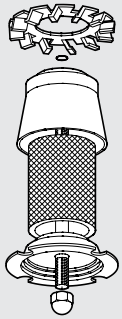


Code	Description
0222100100	Kit for coil 22 - IP65

Improved IP65 protection, even after prolonged exposure to atmospheric agents. Applicable to valves with a technopolymer control.

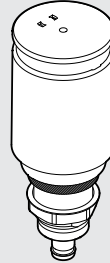
Newdeal SPARE PARTS

FILTER AND FILTER REGULATOR FILTERING ELEMENT



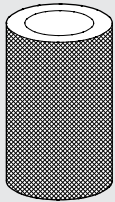
Code	Description
9450102	Spares FP 1/2 20
9450103	Spares FP 1/2 4
9450101	Spares FP 1/2 50
9250102	Spares FP 1/4 20
9250103	Spares FP 1/4 4
9250101	Spares FP 1/4 50
9650103	Spares FP 3/4 4
9650102	Spares FP 3/4 20
9650101	Spares FP 3/4 50

RA AUTOMATIC DRAIN



Code	Description
9000801	Spares RA automatic drain

FILTERING ELEMENT FOR DEPURATOR



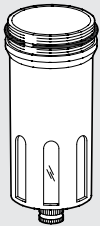
Code	Description
9450105	Spares kit FP DEP. 3/8 1/2

SAC AUTOMATIC DRAIN



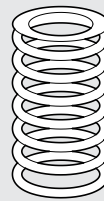
Code	Description
9000803	SAC 1/4" 3/8" 1/2"

METAL FILTER BOWL



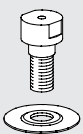
Code	Description
9450301	Spares TMVF 1/2 RMSA
945201	Spares TMVF 1/2 SAC
9250301	Spares TMVF 1/4 RMSA
925201	Spares TMVF 1/4 SAC
9650301	Spares TMVF 3/4 1 RMSA

SPRINGS FOR REGULATORS AND FILTER REGULATOR



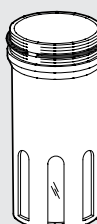
Code	Description
9250601	Spares MO 02 1/4
9250602	Spares MO 04 1/4
9250603	Spares MO 08 1/4
9250604	Spares MO 12 1/4
9450601	Spares MO 04 1/2
9450602	Spares MO 08 1/2
9450603	Spares MO 12 1/2
9650601	Spares MO 04 3/4
9650602	Spares MO 08 3/4
9650603	Spares MO 12 3/4

VENTURI LUBRICATOR DIAPHRAGM



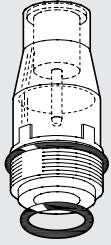
Code	Description
9252001	Spares MB 100 1/4
9352001	Spares MB 200 1/4 3/8 1/2
9652002	Spares MB 3/4-1

METAL LUBRICATOR BOWL



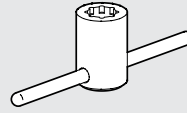
Code	Description
9251201	Spares TMVL 1/4
9451201	Spares TMVL 1/2
9651201	Spares TMVL 3/4

TRANSPARENT LUBRICATOR COVER



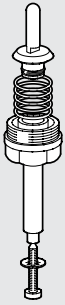
Code	Description
9251302	Spares CVL 100-200-300-400 BIT

DOME DISASSEMBLY SPANNER



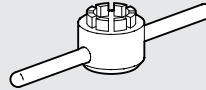
Code	Description
9220701	Acc cover LUB spanner

COMPLETE POPPET FOR FILTER REGULATOR



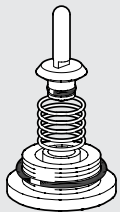
Code	Description
9250901	Spares OTR 1/4
9450901	Spares OTR 1/2

POPPET DISASSEMBLY SPANNER (FOR REG)



Code	Description
9220501	R cap disass. wr. 100

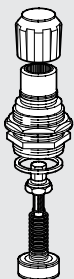
COMPLETE POPPER FOR REGULATOR



Code	Description
9250701	Spares OTR 1/4
9450701	Spares OTR 1/2
9650701	Spares OTR 3/4

NOTES

UPPER COVER FOR REGULATOR AND FILTER REGULATOR



Code	Description
9250801	Spares CS 1/4 02
9250802	Spares CS 1/4 04
9250803	Spares CS 1/4 08
9250804	Spares CS 1/4 012
9450801	Spares CS 1/2 04
9450802	Spares CS 1/2 08
9450803	Spares CS 1/2 12
9650801	Spares CS 3/4 04
9650802	Spares CS 3/4 08
9650803	Spares CS 3/4 12

● **LEARNING ABOUT ONE**

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● **SPECIFICATIONS**

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● **HOW TO ORDER ONE**

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● **ACCESSORIES**

PAGE 3-202

● **SPARE PARTS**

PAGE 3-203

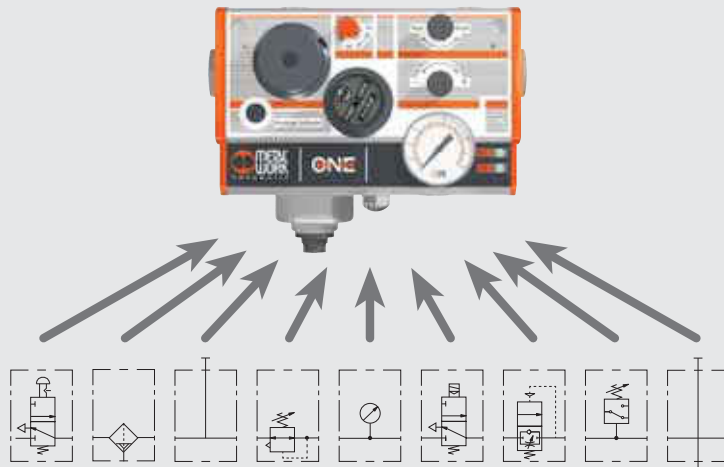
LEARNING ABOUT

In the world of pneumatics, which is considered mature, it is rare to encounter completely new and different products. ONE a compressed air treatment unit with a high degree of integration, that encompassed numerous pneumatic functions. In fact, it contains so many innovations that a single patent is not enough to safeguard it against imitation – three separate patent applications have been registered with a total of 39 claims. This unit is so innovative that it won the international novelty award at Fluidtrans Compomac. ONE has a single high-performance valve on the main flow that handles all the functions from regulation to relief. It is controlled by a high-precision pilot regulator with controlled relief, in series with the manual on-off valve, the electric valve and the progressive actuator. Unification of the valve has led to a significant reduction in overall dimensions, enhanced capacity, precision and response speed.



INTEGRATION

One single unit houses the threaded ports, filter, condensate drain, pressure regulator, shut-off valve, soft start valve, pressure switch and three supplementary air intakes.



MINIATURISATION



Extremely reduced dimensions, considering the extra-high performance and flow rate reachable.



No clearance is required above and below it to make adjustments or change the filter or other components. The actual space occupied is thus further reduced.



It weighs slightly more than one kilo instead of the 4 to 8 kilos of conventional units.

EASY ADJUSTMENTS AND LITTLE MAINTENANCE

The entire user interface is at the front, which means that everything is visible and easy to reach. All the adjustments are made using the push-lock knobs (no need for wrenches or screwdrivers), thus preventing accidental operations or manoeuvres.

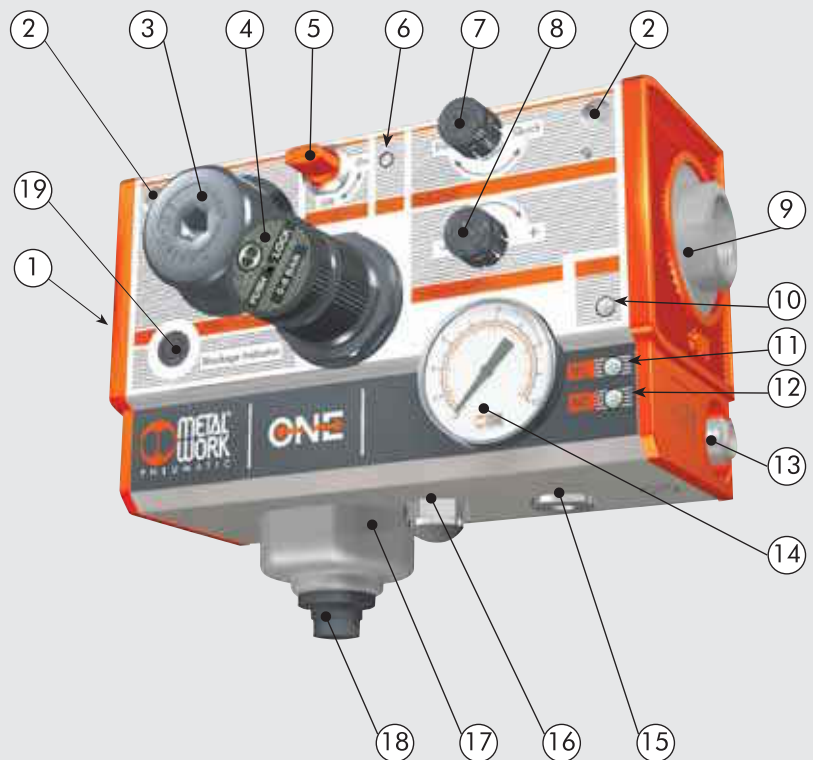


CONFIGURABILITY

Considering that ONE is reduced in size but highly performing, and it can integrate tenths of functions, a single unit can cover the entire range of applications, with cut-clear advantages in terms of standardisation and reduction of the number of codes handled and goods in stock. With a single size there are thousands of different configurations. For example, there is choice between 1/4", 3/8", 1/2", 3/4" or 1" threaded ports, manual and/or electric on-off or progressive valves, etc. The customer decides the configuration he wants and creates the code, using the key-to-coding table shown below in this catalogue. He will receive the unit he wants marked with its code and the correct pneumatic diagram.

WHAT YOU CAN SEE FROM THE OUTSIDE

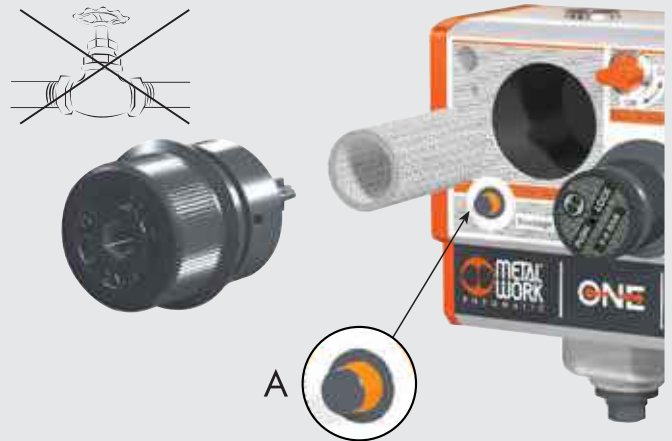
- ① Air intake, with swivel threaded port
- ② Fixing hole
- ③ Access to filter cartridge
- ④ Pressure regulation
- ⑥ Manual override (shut-off valve electrical)
- ⑦ Soft start valve regulation
- ⑧ Switching pressure regulation
- ⑨ Air outlet, with swivel threaded port
- ⑩ LED signalling unit ON
- ⑪ LED signalling pressure below the value set on pressure switch
- ⑫ LED signalling pressure over the value set on pressure switch
- ⑬ 5-pin M12x1 electrical connector
- ⑭ Pressure gauge
- ⑮ 1/4" air intake. Another regulated air intake and a filtered non-regulated air intake are situated on the top
- ⑯ Air exhaust with a G1/4" silencer
- ⑰ Condensate tank
- ⑱ Condensate drain
- ⑲ Clogged filter signal



THREADED PORTS

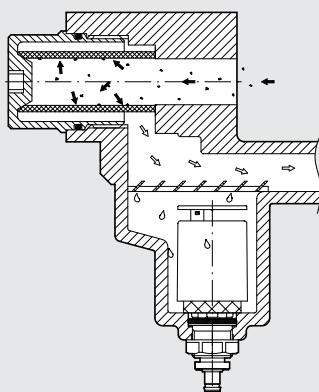


- The threaded ports at the air intake and outlet are the swivel type to facilitate coupling with the supply and delivery pipes. In this way, the unit can be mounted or removed without dismantling the pipes.
- A range of 5 different threads, 1/4", 3/8", 1/2", 3/4" and 1" is also available.
- The thread for the supply pipe may differ from that of the delivery one.



- If the filter gets so clogged up that it causes an excessive drop in pressure as the air passes through, the optical filter blockage indicator will project (see detail A) to indicate that the filter cartridge must be replaced.
- The cartridge can be replaced by unscrewing a plug at the front. This system is functional and, unlike conventional filters, does not require manoeuvring space below the unit.
- An automatic stop on-off valve is incorporated in the unit: when the filter plug is unscrewed, the valve closes automatically. This means there is not need to a tap upstream and there is no risk of the plug being ejected violently.

CONDENSATE DRAIN



- The condensate drain is located downstream of the filter and thus uses cleaner air. This prevents the known problem of air leaks due to the deposit of dirt on the condensate discharge valve.
- You can request ONE with two types of condensate drain:
 - semi-automatic, type RMSA
 - automatic, of the floating type RA

SINGLE AIR EXHAUST



The air in the circuit is relieved via one outlet situated below the unit and fitted with silencer. If you want to convey air relief to prevent the emission of polluted air into the atmosphere, you can replace the silencer and install a fitting. (a pipe with a diameter of at least 6 mm is recommended)
 Next to the air outlet there is the condensate drain, which in the RA version can be connected to the thread with a 1/8" fitting.

SUPPLEMENTARY PORTS



In addition to the main outlet, there are three supplementary air ports with a 1/4" thread.

- one for filtered non-regulated air (A) for use, for example, with a compressed air gun.
- two for filtered regulated air (B).

The unit comes complete with supplementary plugged ports for use with A7 fittings.

PANEL MOUNTING



ONE can be mounted inside the guard of the machine leaving only the front visible. This is a considerable advantage in terms of functionality and aesthetics as the user interface is entirely at the front. Among the accessories to be ordered separately, there is the kit of brackets for panel mounting.

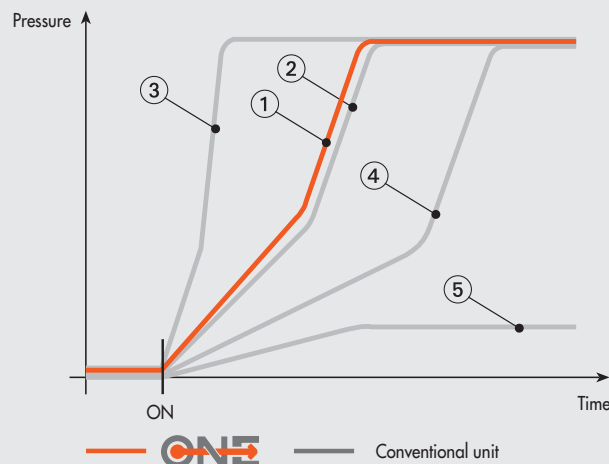
ELECTRICAL CONNECTION



A standard five-pin M12x1 connector, with IP67 protection is used for the opening solenoid valve and the pressure switch.

One cable only is required, thus improving reliability and reducing wiring times.

SOFT START VALVE



The soft start valve is an absolutely innovative feature among the functions provided by ONE. Soft start valve available from the trade are generally based on the principle of leaving the passage of a small amount of air until the downstream pressure reaches a set value, and then opening the passage fully. In this way, the rate at which the pressure increases depends on the flow rate of the utilities, which often feature a continuous flow rate, for example a blow, and thus the starter can hardly activate. The solution offered by One is such that the pressure increases gradually and it is independent of the flow rate of the utilities. Pressure increase can be regulated precisely via the knob at the front. Another piece of news, among the several possible configurations you can have the soft start valve operated by the manual V3V

SPECIFICATIONS

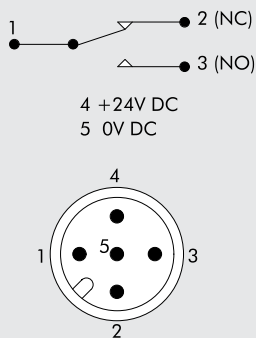
UNITS

ONE: SPECIFICATIONS

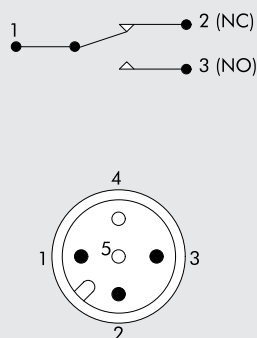
TECHNICAL DATA		1/4"	3/8"	1/2"	3/4"	1"
Flow rate at 6.3 bar (0.6 Mpa; 91 psi) ΔP 0.5 bar (0.05 Mpa; 7 psi)	Nl/min	2200	2900		3600	
	scfm	78	102		127	
Flow rate at 6.3 bar (0.6 Mpa; 91 psi) ΔP 1 bar (0.1 Mpa; 14 psi)	Nl/min	2400	3300		4000	
	scfm	85	116		141	
Flow rate on discharge at 6 bar (0.1 Mpa; 14 psi)	Nl/min			1600		
	scfm			56		
1/4" port flow rate of non-regulated filtered air at 6.3 bar (0.6 Mpa; 91 psi) Δp 1 bar	Nl/min			1800		
	scfm			64		
* Flow rate of each supplementary 1/4" filtered and regulated air port at 6.3 bar (0.6 Mpa; 91 psi) ΔP 1 bar	Nl/min			2400		
	scfm			85		
Fluid				Compressed air		
Setting range	bar			0.5 to 2 - 0.5 to 4 + 0.5 to 8		
Degree of filtration	μm			5 (yellow) or 20 (white)		
Operating temperature range	bar			10		
	Mpa			1		
	psi			145		
Operating temperature range	$^{\circ}C$			-10 to 50		
	$^{\circ}F$			-14 to 122		
Class of protection				IP 65 with connector		
Insulation class of the solenoid valve				F155		
Switching time				100% ED		
Electrical connector				M12 x 1.5-pin to CEI IEC 60947-5-2		
Solenoid valve power	W			3/0.3		
Solenoid valve voltage	V			24 VDC \pm 10%		
Pressure interval settable on the pressure switch	bar			0.5 to 10		
Pressure switch hysteresis (not adjustable)	bar			bar 0.4 to 0.8 (see diagram)		
Maximum pressure switch current	A			0.5		
Maximum pressure switch voltage	V			3 to 30 AC/DC		
Pressure switch contacts				Normally open (NO) and normally closed (NC)		
Number of switching				5 x 10 ⁶		
Weight	kg			From 1.15 to 1.25 according to configurations		
Wall fixing (max. panel thickness 10 mm):				Front, with M5 x 75 screws or back, with M6 x 70 screws The screws are included in the supply		
Mounting position				Vertical		
Direction of flow				From left to right		
* Total flow rate from two supplementary outlets and the main one cannot exceed 4000 Nl/min at 6.3 bar with $\Delta P=1$						
Compatibility with oils				Please refer to page 6-7 of the technical documentation		

WIRING DIAGRAM

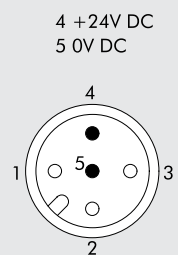
Version with solenoid valve and pressure switch



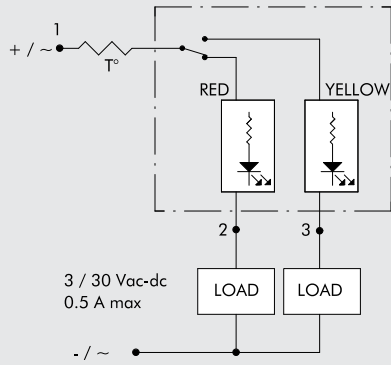
Version with pressure switch



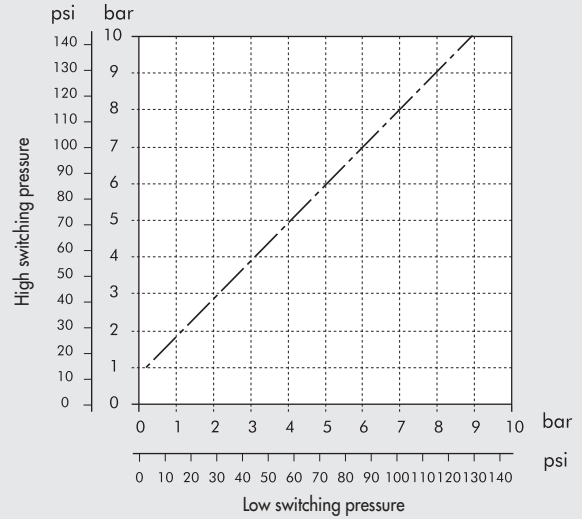
Version with solenoid valve



PRESSURE SWITCH WIRING DIAGRAM



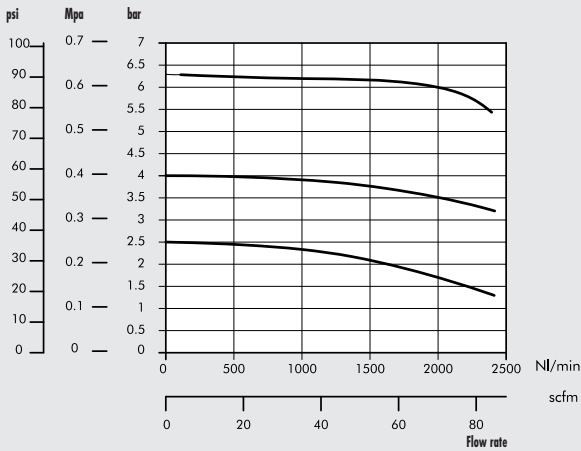
PRESSURE SWITCH HYSTERESIS CHART



FLOW CHARTS

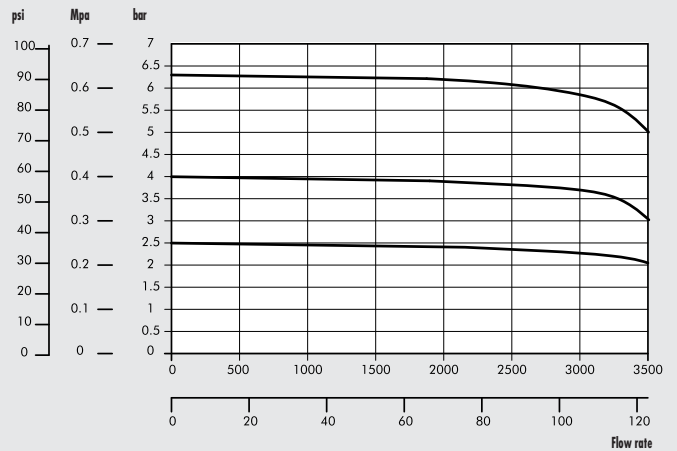
1/4"

Pm = 8 bar - 0.8 MPa - 116 psi
Preset pressure



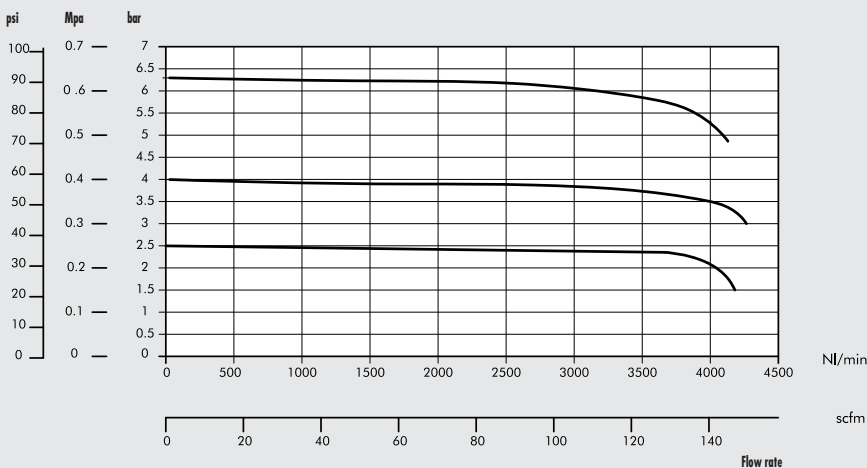
3/8"

Pm = 8 bar - 0.8 MPa - 116 psi
Preset pressure



1/2" - 3/4" - 1"

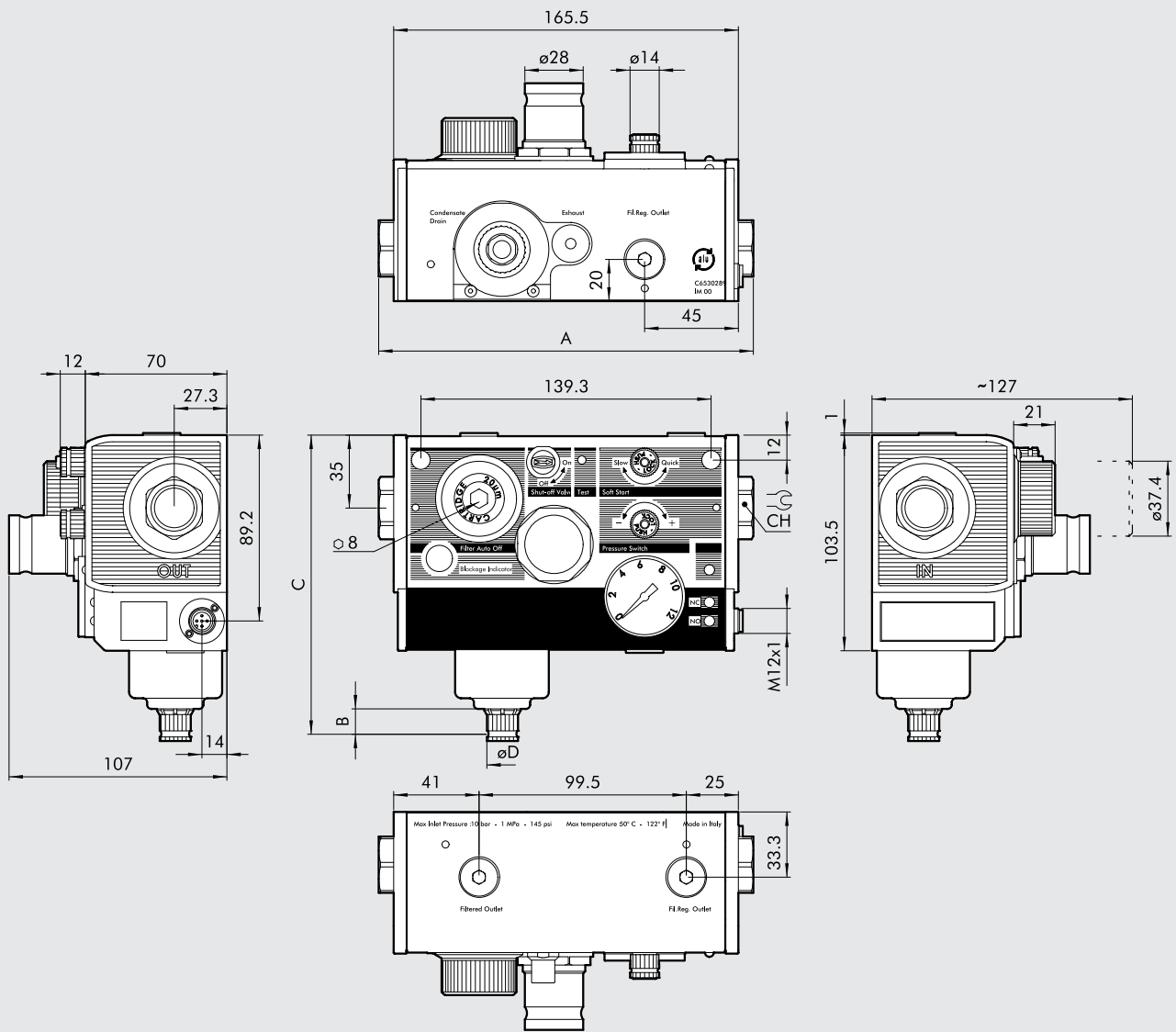
Pm = 8 bar - 0.8 MPa - 116 psi
Preset pressure



DIMENSIONS

UNITS

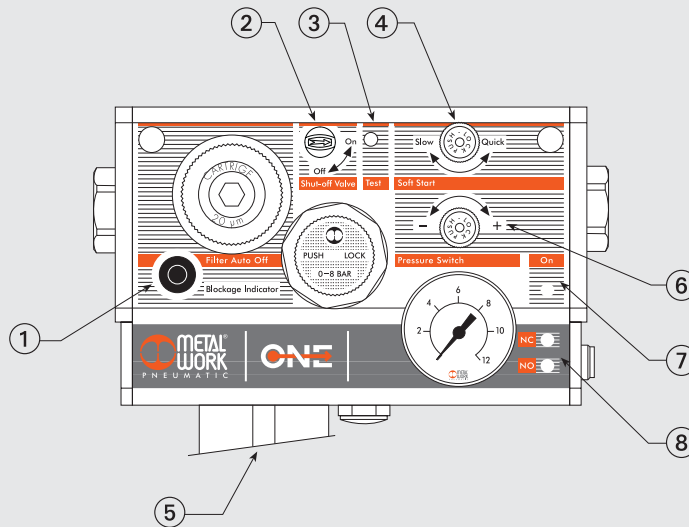
ONE: SPECIFICATIONS



	1/4"	3/8"	1/2"	3/4"	1"		RA	RMSA	
A		180		195		B	20.4	16.4	
CH	19	22	27	32	36	C	152	148	
						Ø D	For pipe internal diameter 6 mm		15

EXTERNAL DESIGN

You can get thousands of different configurations. The external design differs according on the versions chosen.



<p>CLOGGED FILTER SIGNAL ①</p> <p>PRESENT</p> <p>in course of signalling</p> <p>NOT PRESENT</p> <p>plug</p>	<p>V3V MANUAL ②</p> <p>STANDARD</p> <p>LOCKABLE</p> <p>NOT PRESENT</p> <p>plug</p>	<p>V3V ELECTRICAL</p> <p>PRESENT</p> <p>③ ⑦</p> <p>NOT PRESENT</p> <p>in some versions holes are present</p> <p>③ ⑦</p> <p>holes</p> <p>in other configurations the cover has no holes</p> <p>③ ⑦</p>	<p>SOFT START VALVE ④</p> <p>PRESENT</p> <p>NOT PRESENT</p>
<p>CONDENSATE DRAIN ⑤</p> <p>AUTOMATIC (RA)</p> <p>20.4 ø6 ø19</p> <p>RMSA</p> <p>16.4 ø15</p>	<p>PRESSURE SWITCH</p> <p>PRESENT</p> <p>⑥ ⑧</p> <p>NC NO</p> <p>NOT PRESENT</p> <p>in some versions holes are present</p> <p>⑥ ⑧</p> <p>plug holes</p> <p>NC NO</p> <p>in other configurations the cover has no holes</p> <p>⑥ ⑧</p>	<p>ONE NON-ELECTRICAL</p> <p>plug</p>	

HOW TO ORDER

ORDERING CODES

You can choose among numerous variants and options. The product code so personalised is made up by compiling the diagram below. The code so compiled must be specified on the order. A label showing the code and its pneumatic diagram is affixed onto the product.

	A	B	C	D	E	F	G	H	I	L	
	ONE electrical or ONE non-electrical	Air intake	Degree of filtration	Clogged filter signal	Condensate drain	Pressure regulation	Valves	Pressure switch	Air outlet	Miscellaneous, special version	
EXAMPLE	54	3	2	1	1	2	7	1	3	0	0
53	ONE non-electric	1 1/4"	2 20µm	0 NO	0 RMSA	2 0,5 to 2 bar	0 None	0 NO	1 1/4"	00	Standard
54	ONE electric*	2 3/8"	5 5µm	1 YES	1 auto-matic (RA)	4 0,5 to 4 bar	1 V3V manual	1 YES	2 3/8"		
		3 1/2"				8 0,5 to 8 bar	2 V3V manual with padlock		3 1/2"		
		4 3/4"					3 V3V manual and soft start valve		4 3/4"		
		5 1"					4 V3V manual with padlock and soft start valve		5 1"		
							5 V3V manual and V3V electric				
							6 V3V manual with padlock and V3V electric				
							7 V3V manual and APR electric				
							8 V3V manual with padlock and APR electric				
							9 only V3V electric				
							A only APR electric				

* a pressure switch version and/or electric V3V and/or electric progressive actuator.

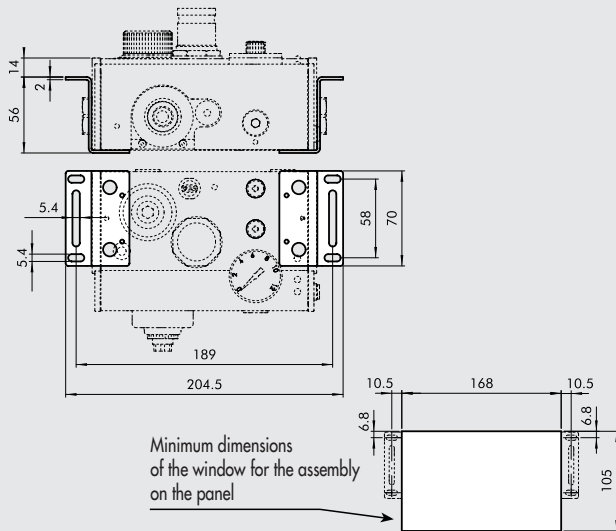
● NB: versions valid only for the electric ONE (code 54...)

UNITS

ONE: HOW TO ORDER

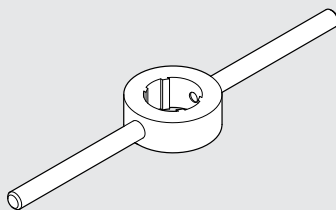
- A ONE electric or non-electric**
ONE non-electric: there is no component actuated electrically: select code 53. In this case, the unit comes without any M12x1 connector, LED, pressure switch, or electric V3V.
ONE electric: there is at least one component actuated electrically, and thus the pressure switch and/or electric V3V (and/or the electrical soft start valve) select code 54. In this case, the unit comes with the M12x1 connector and 3 LEDs. Only the LEDs associated with the functions installed will be active.
- B Air intake**
 There are 5 different gas cylindrical threads: 1/4", 3/8", 1/2", 3/4" and 1".
- C Degree of filtration**
 A cartridge with a degree of filtering of 5 µm (yellow) or 20 µm (white) is available. This value is marked on the plug.
- D Clogged filter signal**
 If the filter gets so clogged up that it causes an excessive drop in pressure as the air passes through, the orange indicator will project from the body by a few millimetres.
- E Condensate drain**
RMSA: the condensate is drained out automatically only by relieving the air pull the knurled knob for having the same result.
Automatic (RA): a floating system that automatically drains the condensate out whenever the level of water in the bowl reaches the set value.
- F Pressure regulation**
 There are three possible regulation fields.
 The value is marked on the regulation knob..
- G Valves**
 There are 11 different combinations. The electric valves are clearly selectable only if the initial code is 54, i.e. ONE electric.
- 0 - No valves present
 - 1 - V3V manual: is a 3/2 valve that in a set position allows the air to flow and in the other it closes the passage and discharges the pressure downstream.
 - 2 - V3V manual with padlock: like the previous one, with the possibility of inserting a padlock (included in the supply with 2 keys) in the valve closed position.
 - 3 - V3V manual and soft start valve: when the manual V3V valve is operated, the pressure starts to increase slowly, with a fine adjustable ramp, and when it reaches about 30-40% of the set value, the valve opens completely and the pressure rises to the set value.
 - 4 - V3V manual with padlock and soft start valve: like the previous, with the padlock device on the manual V3V in "OFF" position.
 - 5 - V3V manual and V3V electric: two V3V in series are present, one is manual the other electrical. By operating both the valve the air flow is allowed. If one or two are switched OFF, the air downstream is relieved. The electrical one can also be operated manually by reefing pushed the "TEST" button
 - 6 - V3V manual with padlock and V3V electric: like the previous, with the padlock device in "OFF" position.
 - 7 - V3V manual and APR electric: One manual V3V and one soft start valve are present. When both are operated, the pressure starts to increase slowly, with a fine adjustable ramp, and when it reaches about 30-40% of the set value, the valve opens completely and the pressure rises to the set value.
 - 8 - V3V manual with padlock and APR electric: like the previous, with the padlock device on the manual V3V in "OFF" position.
 - 9 - V3V electric: It's present only the electrical V3V. The valve will open if it is powered on. When the power supply is switched off, the valve closes and air downstream is relieved. The valve can also be operated manually by keeping pushed the test button.
 - A - APR electric: It's present only the electric soft start valve. When it is powered ON, the pressure starts to increase slowly, with a fine adjustable ramp, and when it reaches about 30-40% of the set value, the valve opens completely and the pressure rises to the set value.
- H Pressure switch**
 The pressure switch has a switching contact, which means you can have a normally-open signal or a normally-close signal. It is also connected to the NC and NO LEDs which come on if the actual pressure is less or greater than the set pressure, respectively. The LEDs only come on if an electric charge is connected to them.
- I Air outlet**
 Five different gas cylindrical threads are available: 1/4", 3/8", 1/2", 3/4" and 1". It is possible to choose a thread other than the one on the inlet port.
- L Free positions for special executions.**

PANEL MOUNTING BRACKETS



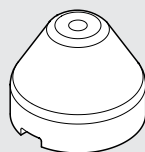
Code	Description
9200702	Kit – panel mounting brackets NB: fixing screws included

COVER DISASSEMBLY WRENCH



Code	Description
9170401	Cover disassembly wrench

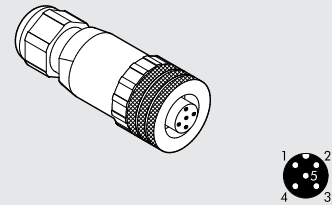
SECURITY KNOB



Code	Description
9200703	Security knob apr/pressure switch

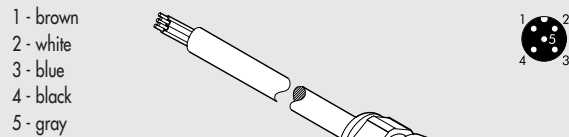
NOTE: Pull outwards to remove the knob from the APR/pressure switch on the unit.
Insert the security knob and regulate the APR/ pressure switch. Then press the handle firmly to lock it in position. If the APR/pressure switch needs to be reset, remove the security knob by forcing it laterally with a screwdriver.

STRAIGHT CONNECTOR



Code	Description
W0970513001	5-PIN M12X1 straight connector

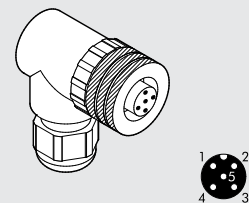
STRAIGHT CONNECTOR WITH WIRE



- 1 - brown
- 2 - white
- 3 - blue
- 4 - black
- 5 - gray

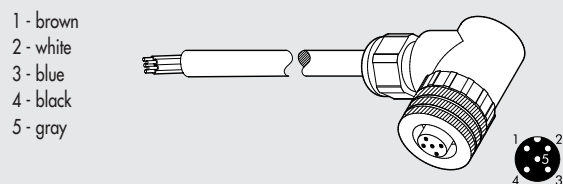
Code	Description
W0970513002	5-PIN M12X1 straight connector with wire L = 5 m

90° CONNECTOR



Code	Description
W0970513003	M12X1 5-PIN 90° connector

90° CONNECTOR WITH WIRE

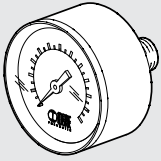


- 1 - brown
- 2 - white
- 3 - blue
- 4 - black
- 5 - gray

Code	Description
W0970513004	M12X1 5-PIN 90° connector with wire L = 5 m

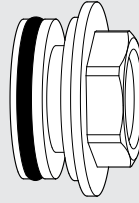
SPARE PARTS ONE

PRESSURE GAUGE



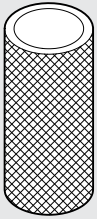
Code	Description
9700106	M 39 1/8 0-4
9700107	M 39 1/8 0-12

THREADED PORT



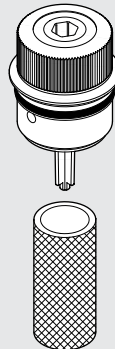
Code	Description
9232001	1/4" spare thr. port for ONE
9232002	3/8" spare thr. port for ONE
9232003	1/2" spare thr. port for ONE
9232004	3/4" spare thr. port for ONE
9232005	1" spare thr. port for ONE

FILTER ELEMENT



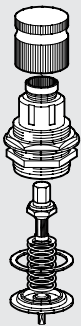
Code	Description
9251720	Spare filter element 5 µm for ONE
9251721	Spare filter element 20 µm for ONE

FILTER PLUG WITH FILTER ELEMENT



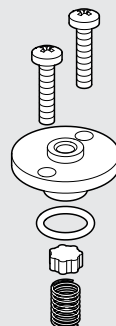
Code	Description
9251723	Spare plug + filter element 5 µm ONE
9251724	Spare plug + filter element 20 µm ONE

PILOT REGULATOR



Code	Description
9250820	Spare pilot reg. 0.5 to 2 bar for ONE
9250821	Spare pilot reg. 0.5 to 4 bar for ONE
9250822	Spare pilot reg. 0.5 to 8 bar for ONE

POPPET



Code	Description
9250707	Spare poppet for ONE

SOLENOID VALVE

OLD



Code	Description
W4005001150	Spare sol. valv. for ONE

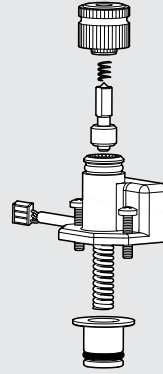
NEW



722123840101	PLT-10 7221233840101
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To order the correct spare part of the solenoid valve, we beg you to compare the pictures appearing above with the one you have and then order the related code.

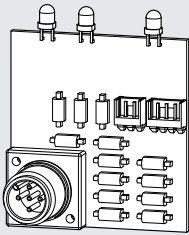
PRESSURE SWITCH



Code	Description
9000500	Spare press. switch for ONE

Note: with this kit we suggest you should order also the gauge, as it could get damaged during the disassembly.

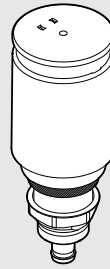
ELECTRIC BOARD



Code	Description
9232010	Spare electric board for ONE

Note: with this kit we suggest you should order also the gauge, as it could get damaged during the disassembly.

AUTOMATIC CONDENSATE DRAIN



Code	Description
9000802	Spare RA automatic drain

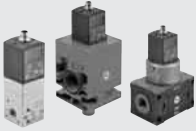
NOTES

SUMMARY PRECISION REGULATORS, PROPORTIONAL VALVES, PRESSURE SWITCHES



- **PRECISION PRESSURE REGULATOR WITH HIGH EXHAUST FLOW, SERIE GS**

PAGE 3-206



- **PROPORTIONAL PRECISION PRESSURE REGULATOR REGTRONIC SERIES**

PAGE 3-210



- **PRESSURE SWITCHES**

PAGE 3-219



- **DIGITAL PRESSURE SWITCH**

PAGE 3-221

PRECISION PRESSURE REGULATOR WITH HIGH EXHAUST FLOW, SERIE GS

GS is a series of precision regulators, designed for rapid relief of overpressure and a high flow rate. They feature identical and opposing regulation valves on the inlet and outlet sides. This enables the regulator to behave symmetrically – precise regulation with a high rate of flow both in and out. The pressure setting is virtually insensitive to changes in the upstream pressure (see diagram below), which guarantees accuracy even when the mains pressure fluctuates considerably. A slight escape of air is required for correct operation of the regulator – it must not be considered a defect. The regulator can be fixed using the through holes in the body or a bracket accessory. The body has a 1/8" pressure gauge fitting. GS regulators are suitable for applications requiring good accuracy in maintaining the pressure and a certain sensitivity in relieving pressure peaks, e.g. to supply low-friction cylinders, reel tensioners and coil winders. Two sizes of compressed air fitting are available: 1/8" and 1/4". Three different setting ranges are available: 0 to 2 bar, 0 to 4 bar and 0 to 8 bar.



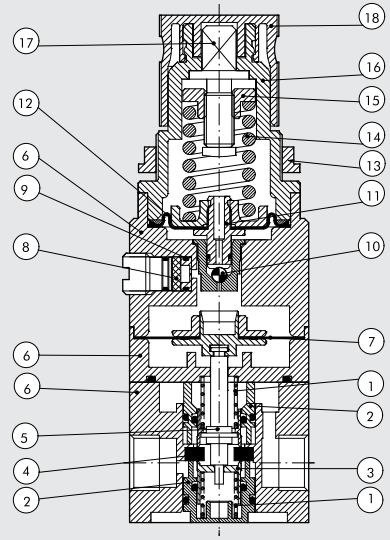
UNITS

PRECISION PRESSURE REGULATOR WITH HIGH EXHAUST FLOW, SERIE GS

TECHNICAL DATA	1/8"		1/4"	
	1/8"	1/4"	1/8"	1/4"
Threaded port	1/8"	1/4"	1/8"	1/4"
Setting range	0 to 2 - 0 to 4 - 0 to 8 bar			
Max. input pressure	10 bar			
Flow rate at 6.3 bar ΔP 0.5 bar	900		1170	
Flow rate at 6.3 bar ΔP 1 bar	1200		1380	
Fluid	Unlubricated filtered air The air must be at least 10 μm pre-filtered			
Max temperature	50 °C			
Mounting position	In any position			
Pressure gauge port	G 1/8"			
Weight	600 gr			
Exhaust flow rate at 4 bar (regulated pressure)				
ΔP 0.1 bar	450		810	
ΔP 0.5 bar	900		1190	
Variation in regulated pressure (2 bar) with changes in upstream pressure (4-10 bar)	± 20 mbar			
Relieving sensitivity	30 mbar			
Air consumption – continuous escape	< 0.1			
Notes	The regulator pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value. Do not take air from pressure gauge ports.			

COMPONENTS

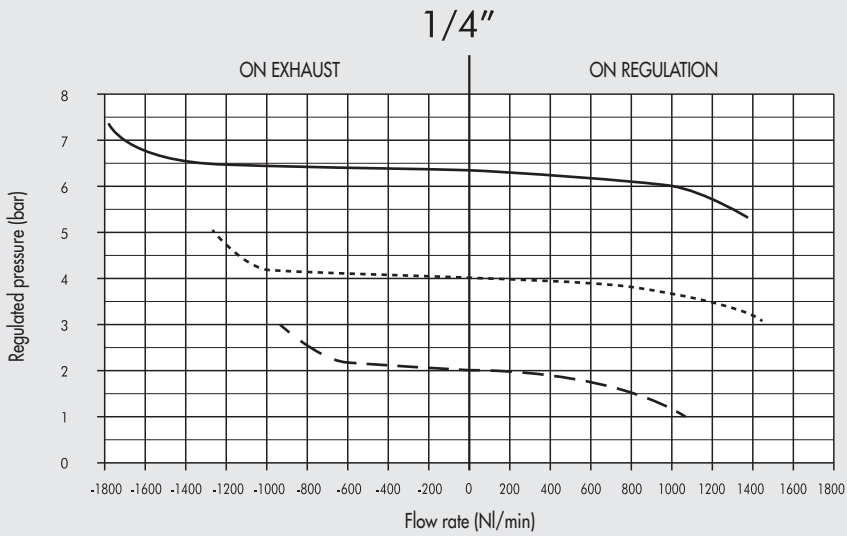
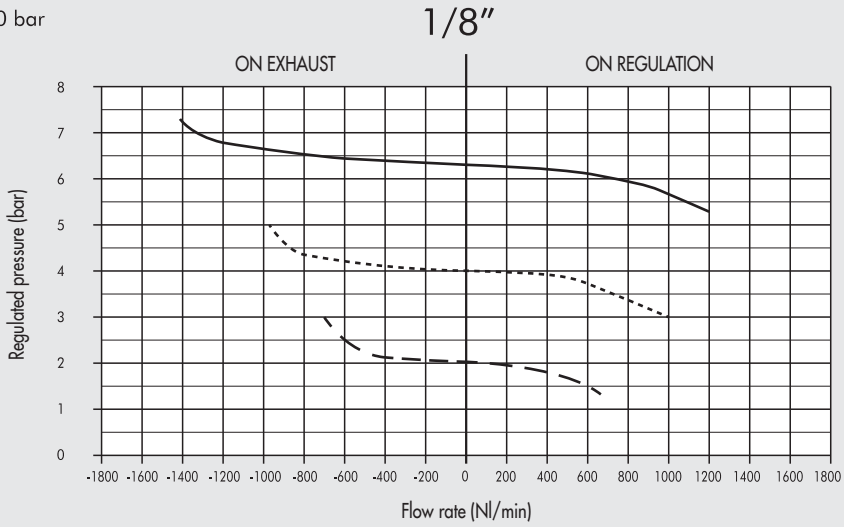
- ① Spring: stainless steel
- ② Cartridges: nickel-plated brass
- ③ Poppet: nickel-plated brass
- ④ Ring: vulcanized NBR
- ⑤ Control lever: brass
- ⑥ Bodies: painted aluminium
- ⑦ Control diaphragm: oil-proof rubber
- ⑧ Filter: sintered bronze
- ⑨ Throttle cartridge: brass
- ⑩ Ball: stainless steel
- ⑪ Ball valve: brass
- ⑫ Regulation diaphragm: NBR
- ⑬ Ring nut: technopolymer
- ⑭ Adjusting spring: steel
- ⑮ Scroll: brass
- ⑯ Bell: technopolymer
- ⑰ Adjusting screw: brass
- ⑱ Knob: technopolymer



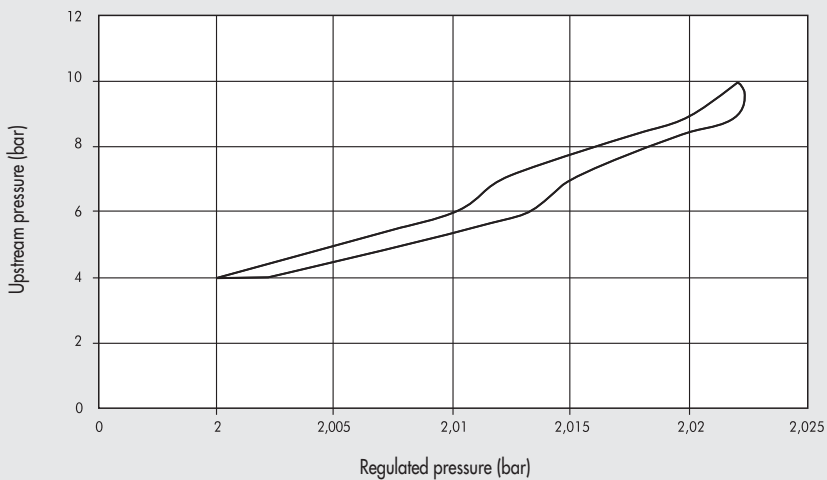
FLOW RATE

Upstream pressure = 10 bar

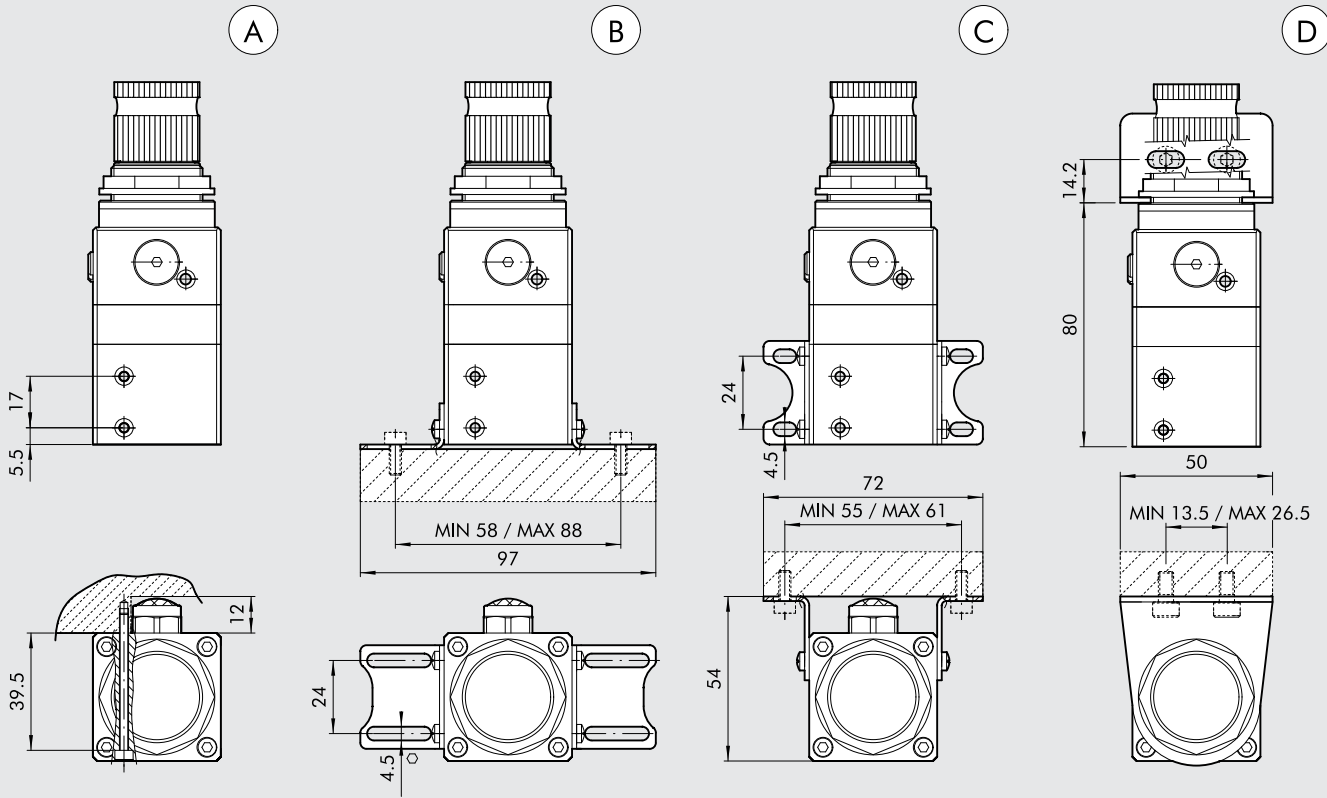
- P_{reg} = 2 bar
- - - P_{reg} = 4 bar
- P_{reg} = 6.3 bar



UPSTREAM PRESSURE SENSITIVITY

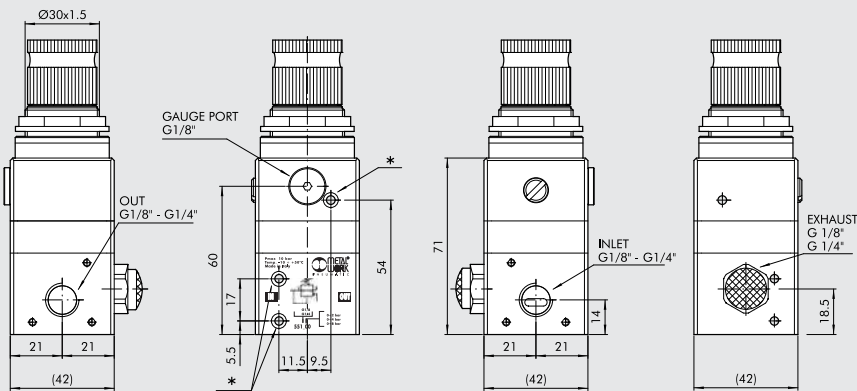


INSTALLATION



- Ⓐ On the wall with 2 M3 hex screws
- Ⓑ On the base with legs code 9200710
- Ⓒ On the wall with legs code 9200710
- Ⓓ On the wall with bracket code 9200701

DIMENSIONS



Code	Description
5511200	REG. GS 1/8 02
5511300	REG. GS 1/8 04
5511400	REG. GS 1/8 08
5512200	REG. GS 1/4 02
5512300	REG. GS 1/4 04
5512400	REG. GS 1/4 08

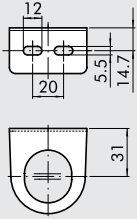
* M3 hole

ACCESSORIES

SPARES PARTS

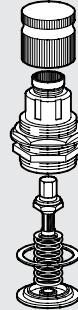
P N E U M A T I C

R/FR FIXING BRACKET



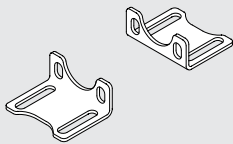
Code	Description
9200701	SF100 - BIT - ND 1/4 - SY1

UPPER COVER FOR REG GS



Code	Description
9250835	SPARES CS REG GS 02
9250836	SPARES CS REG GS 04
9250837	SPARES CS REG GS 04

FIXING BRACKET KIT

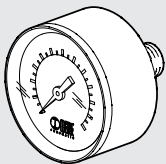


Code	Description
9200710	Fixing bracket kit

N.B. supplied complete with four M4X6 screws

NOTES

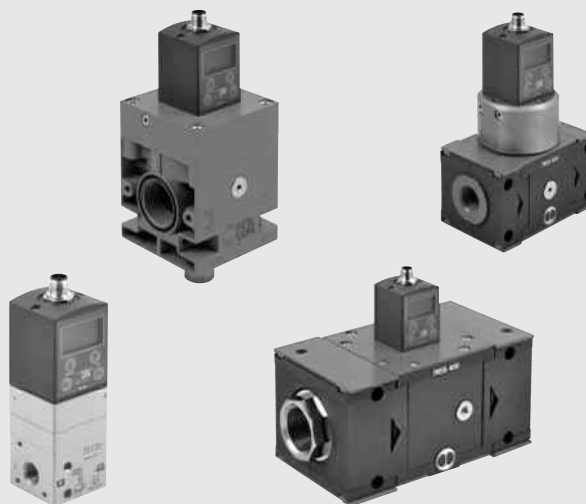
PRESSURE GAUGE



Code	Description
9700102	M 40 1/8 04
9700101	M 40 1/8 12

PROPORTIONAL PRECISION PRESSURE REGULATOR "REGTRONIC" SERIES

Proportional pressure regulators series REGTRONIC have the job of precisely regulating the pressure in a system, the variables depending on the input command. The pressure value and a series of information and diagnostics are visible at all times on the graphic display. The user-display interface, LEDs and buttons are all on one side. The programming and reading software is comprehensive, simple and intuitive. Pressure control takes place in a "closed-loop" with an electronic precision pressure sensor that measures the downstream pressure, a control system that compares it with the desired pressure, and two mini solenoid valves that adjust the pressure to reach the target value.



UNITS

PROPORTIONAL PRECISION PRESSURE REGULATOR "REGTRONIC" SERIES

TECHNICAL DATA	REGTRONIC		REGTRONIC NEW DEAL		REGTRONIC 300			REGTRONIC 400				
	1/8"	1/4"	3/4"	1"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"	
Threaded ports	1/8"	1/4"	3/4"	1"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"	
Fluid	Filtered, unlubricated air. The air must be filtered at least 10 µm											
MIN inlet pressure	bar Regulation pressure +1 bar											
MAX inlet pressure	bar 11											
Temperature range	°C 0 to 50											
Pressure regulation range	bar 0.05 to 10 (settable full scale and minimum pressure)											
Flow rate at 6.3 bar ΔP 0.5	l/min		10000		4500			18.000		20.000		
Flow rate at 6.3 bar ΔP 0.1	l/min		13000		7000			-		-		
Exhaust flow rate at 6.3 bar with 0.1 bar overpressure	l/min		1800		250			400		400		
Exhaust flow rate at 6.3 bar with 0.5 bar overpressure	l/min		2000		500			850		850		
Weight	Kg		1.3		1.5			5		5.8		
Class of protection	IP 65											
Power supply	24 Vcc +10% -5% I max 110 mA											
Input signal (input impedance)	Voltage 0 to 5 Vcc, 0 to 10 Vcc (approx. 168 KΩ)											
	Current 4 to 20 mA (approx. 100 KΩ)											
Serial ports	RS 232											
	Keypad											
Output signal	Analog 0 to 10 Vcc (1 V=1 bar) - 1 mA max											
	Digital PNP open collector output: max 24V 60 mA NPN open collector output: max 24V 60 mA											
Linearity	≤ ± 0.5% (Full scale)											
Hysteresis	≤ ± 0.2% (Full scale)											
Repeatability	≤ ± 0.2% (Full scale)											
Sensitivity/Dead-band	setting range 10 to 100 mbar											
Output pressure display	Accuracy ≤ ± 0,3% (Full scale)											
	Unit of measurement bar, Mpa, psi											
Analog output accuracy	Minimum resolution 0.01 bar - 0.001 MPa - 0.01 psi											
	Temperature characteristics ≤ ± 0,4% (Full scale) max 2 mbar / °C											
Response time with ΔP =1 bar	volume 100 cc		volume 1000 cc		volume 1000 cc			volume 1000 cc				
	s		0.2		0.3		0.45			0.35		
from 6 to 7 bar		s		0.3		0.45			0.7			
from 7 to 6 bar		in any position										
Installation position	Note											
Note	The features shown refer to the static condition only. With air consumption on the output side, the pressure may vary.											

LIQUID CRYSTAL GRAPHIC DISPLAY



As well as the pressure, it displays complete intuitive messages covering several lines.

PROGRAMMABLE AND FLEXIBLE

Setting options:

- LANGUAGE
- UNIT OF MEASUREMENT
- TYPE OF INPUT
- TYPE OF DIGITAL OUTPUT
- DEAD-BAND
- FULL SCALE
- MINIMUM PRESSURE

PRECISION

Linearity $\pm 0,5\%$ (full scale)

Hysteresis $\pm 0,2\%$ (full scale)

Repeatability $\pm 0,2\%$ (full scale)

Sensitivity range **10 to 100** mbar

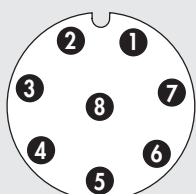
M12 x 1 CONNECTOR



8-pin connector
 - standard
 - available from the trade

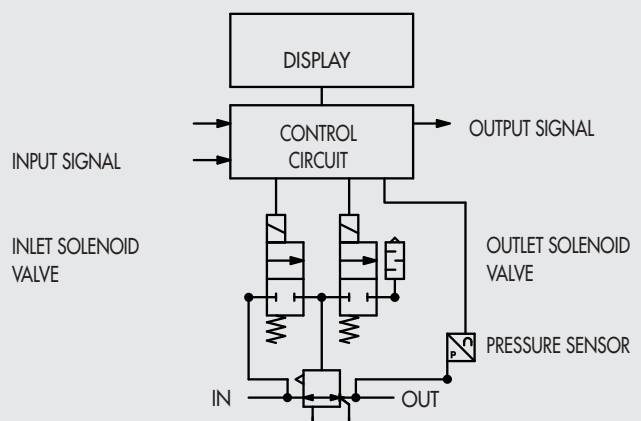
CONFIGURATION OF THE M12X1 8-PIN CONNECTOR

- | | |
|----------------------------------|----------|
| 1 = TX (RS232) | (White) |
| 2 = RX (RS232) | (Brown) |
| 3 = set 0-10 V / 0-5 V / 4-20 mA | (Green) |
| 4 = digital out 0-24 V NPN | (Yellow) |
| 5 = analog out 0-10 V | (Grey) |
| 6 = digital out 0-24 V PNP | (Pink) |
| 7 = 0 V (GND) | (Blue) |
| 8 = power supply +24V | (Red) |



Regulator connector viewed from above

FUNCTION DIAGRAM

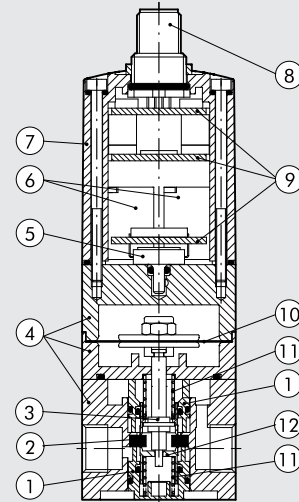


REGTRONIC 1/8"; 1/4"

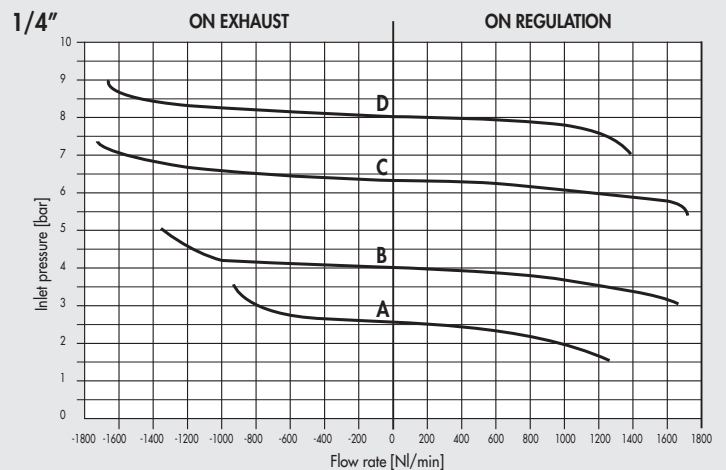
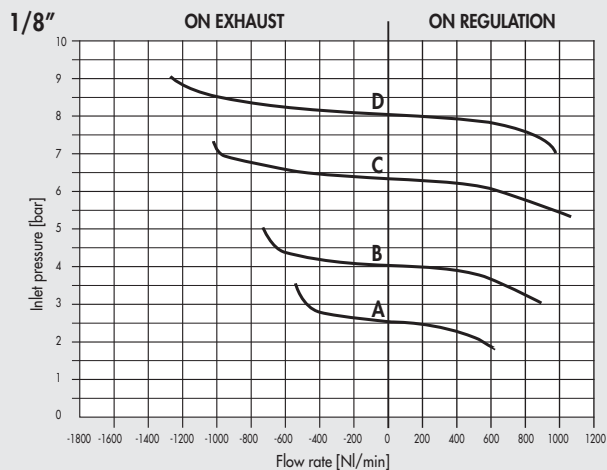


COMPONENTS

- ① CARTRIDGES: nickel-plated brass
- ② RING: vulcanized NBR
- ③ ROD: steel
- ④ BODIES: painted aluminium
- ⑤ PRESSURE SENSOR
- ⑥ SOLENOID VALVE: 10 mm series PLT-10
- ⑦ SHELL: technopolymer
- ⑧ CONNECTOR M12 8 pin
- ⑨ ELECTRONIC BOARDS
- ⑩ CONTROL DIAPHRAGM: anti-oil rubber
- ⑪ SPRING: stainless steel
- ⑫ POPPET: nickel-plated brass

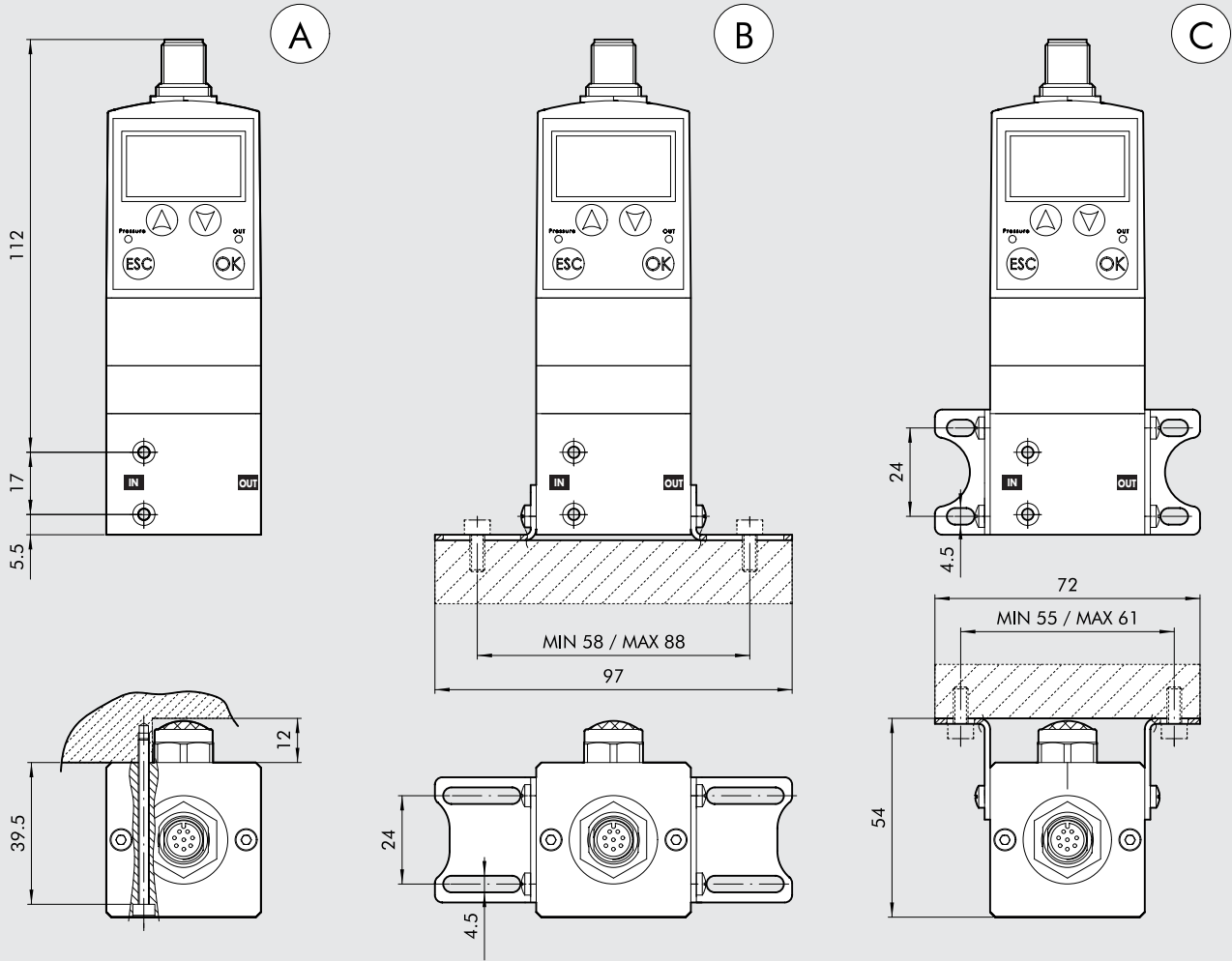


FLOW CHARTS



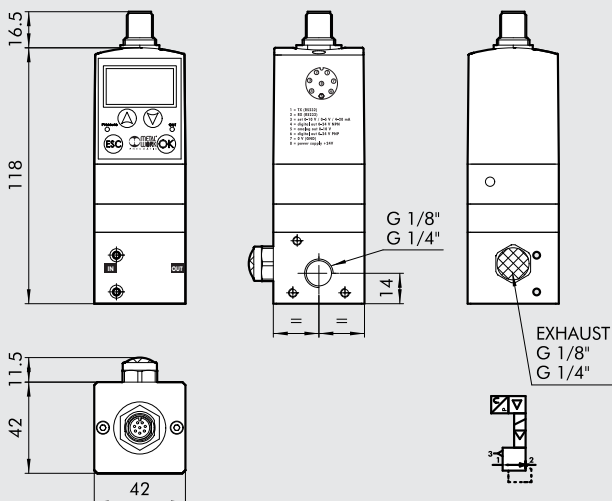
A = 2.5 bar B = 4 bar C = 6.3 bar D = 8 bar

INSTALLATION



- Ⓐ On the wall with 2 M3 hex screws
- Ⓑ On the base with legs code 9200710
- Ⓒ On the wall with legs code 9200710

DIMENSIONS AND ORDERING CODES



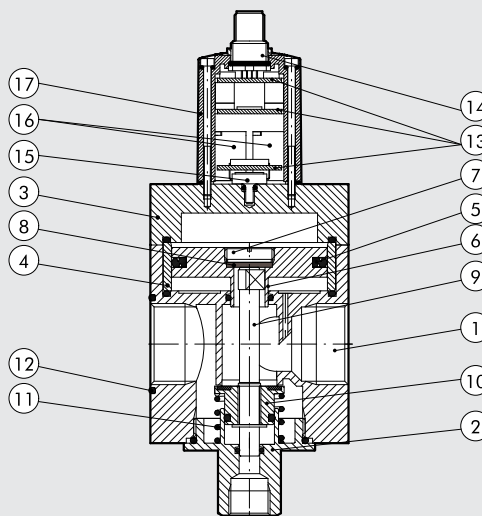
Code	Description
5521500	REGTRONIC 1/8
5522500	REGTRONIC 1/4

REGTRONIC Newdeal

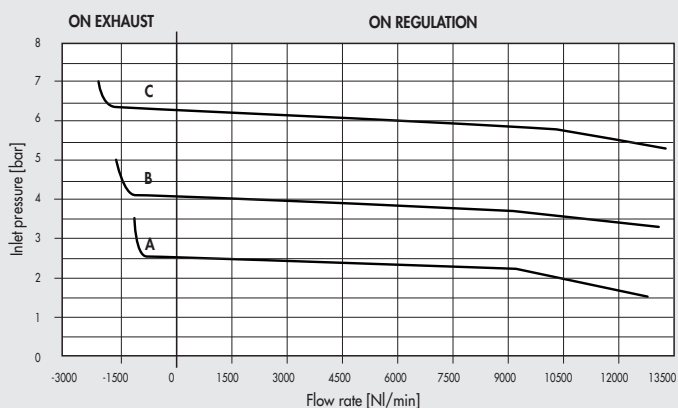


COMPONENTS

- ① REGULATOR BODY: aluminium
- ② LOWER CAP: aluminium
- ③ UPPER PLATE: aluminium
- ④ SPACER: aluminium
- ⑤ GASKET: NBR
- ⑥ PISTON ROD: aluminium
- ⑦ CAP FOR PLAIN GASKET: OT58 brass
- ⑧ PLAIN GASKET: NBR
- ⑨ ROD: OT58 brass
- ⑩ VALVE: OT58 brass
- ⑪ VALVE SPRING: steel
- ⑫ GASKETS: NBR
- ⑬ ELECTRONIC BOARDS
- ⑭ CONNECTOR M12 8 PIN
- ⑮ PRESSURE SENSOR
- ⑯ SOLENOID VALVE: 10 mm series PLT-10
- ⑰ SHELL: tecnopolymer

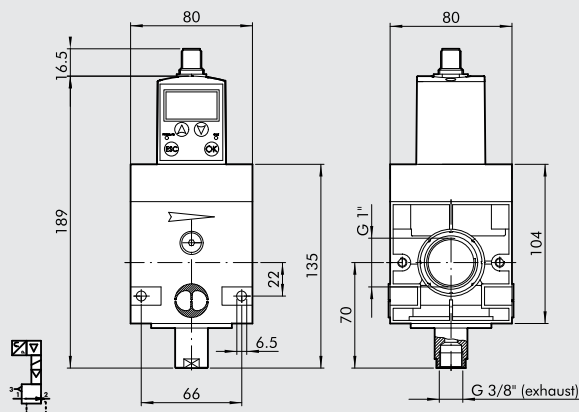


FLOW CHARTS



A = 2.5 bar B = 4 bar C = 6.3 bar Pm = 7 bar

DIMENSIONS AND ORDERING CODES

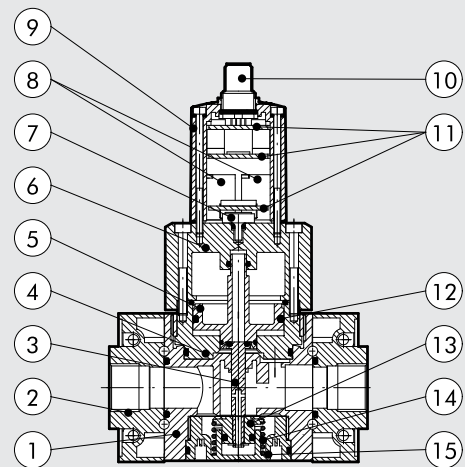


Code	Description
1520003	REGTRONIC 3/4
1620003	REGTRONIC 1

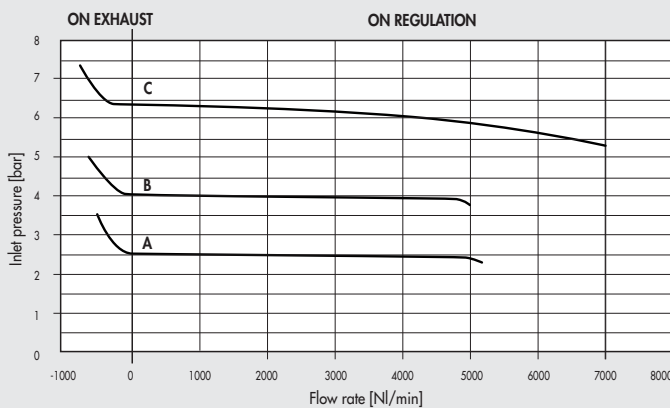


COMPONENTS

- ① BODY: tecnopolymer
- ② END PLATE: zamak
- ③ STEM: OT58 brass
- ④ UPPER CUP: aluminium
- ⑤ PISTON: OT58 brass
- ⑥ CUP: aluminium
- ⑦ PRESSURE SENSOR
- ⑧ SOLENOID VALVE: 10 mm series PLT-10
- ⑨ SHELL: tecnopolymer
- ⑩ CONNECTOR M12 8 PIN
- ⑪ ELECTRONIC BOARDS
- ⑫ GASKET: NBR
- ⑬ VALVE WITH NBR VULCANIZED GASKET
- ⑭ VALVE SPRING: stainless steel
- ⑮ LOWER CUP: tecnopolymer

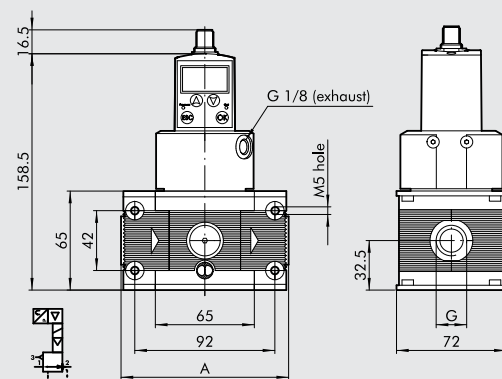


FLOW CHARTS



A = 2.5 bar B = 4 bar C = 6.3 bar Pm = 7 bar

DIMENSIONS AND ORDERING CODES



G	A
1/2"	110
3/4"	110
1"	112

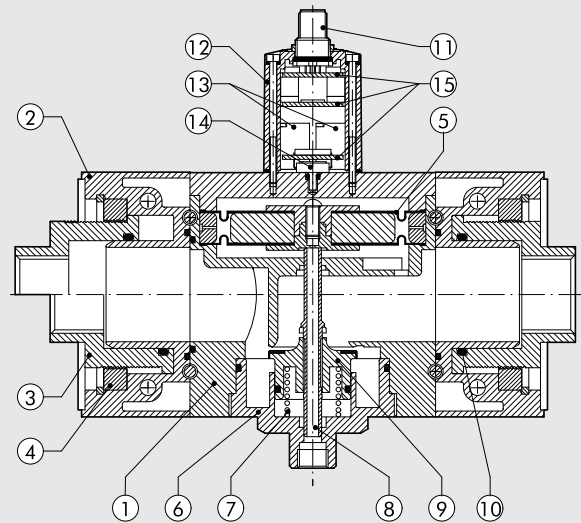
Code	Description
4402012A	REGTRONIC 300 without end plates
4402012	REGTRONIC 300 1/2
4502012	REGTRONIC 300 3/4
4602012	REGTRONIC 300 1

REGTRONIC 400



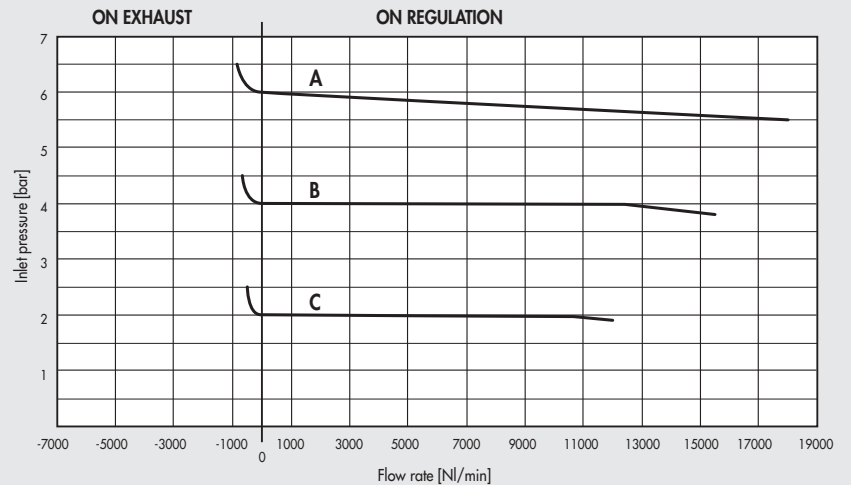
COMPONENTS

- ① BODY: Aluminium
- ② END PLATE: Aluminium
- ③ THREADED BUSH, AXIAL ADJUSTMENT: OT58 brass
- ④ RETAINING RING: OT58 brass
- ⑤ ROLLING DIAPHRAGM
- ⑥ BRASS PLUG: OT58 brass
- ⑦ VALVE SPRING: Stainless steel
- ⑧ STEM: OT58 brass with air relief hole
- ⑨ VALVE WITH NBR VULCANIZED GASKET
- ⑩ GASKETS: NBR
- ⑪ CONNECTOR M12 8 PIN
- ⑫ SHELL: technopolymer
- ⑬ SOLENOID VALVE: 10 mm series PLT-10
- ⑭ PRESSURE SENSOR
- ⑮ ELECTRONIC BOARDS



FLOW CHARTS

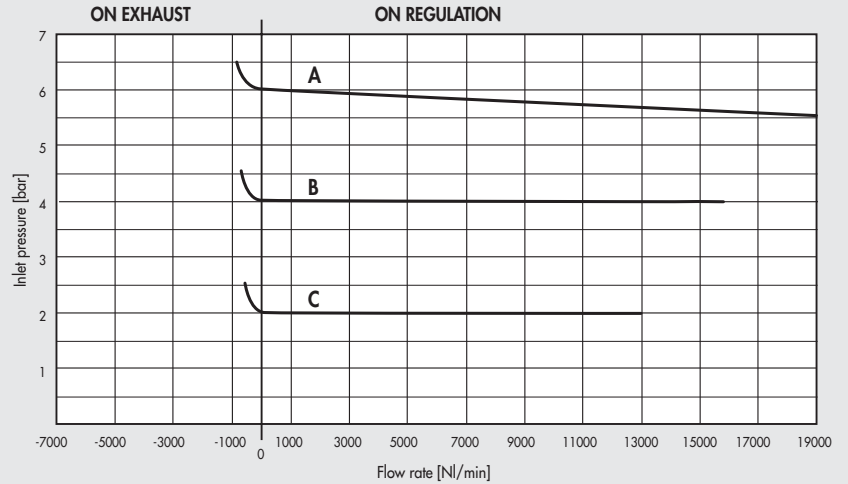
REGTRONIC 400 1" to 1 1/2"



A = 6 bar
B = 4 bar
C = 2 bar

P_m = 7 bar

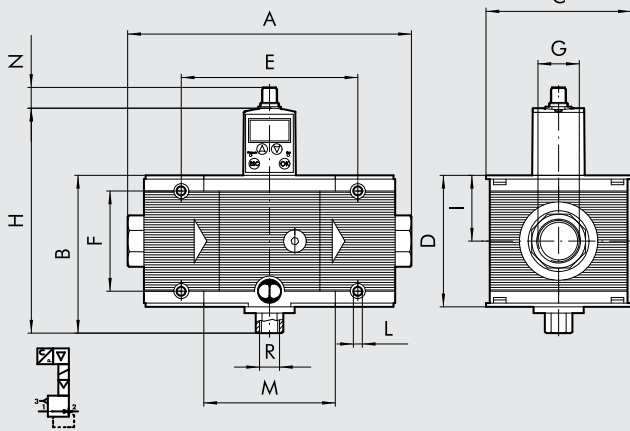
REGTRONIC 400 2"



A = 6 bar
B = 4 bar
C = 2 bar

Pm = 7 bar

DIMENSIONS



Threaded port	REGTRONIC 400			
	1"	1 1/4"	1 1/2"	2"
A	225 to 255			283 to 313
B	127			
C	116			
D	105			
E	141.4			
F	80			
G	1"	1 1/4"	1 1/2"	2"
H	182			
I	52.5			
L	M6 hole			
M	105.4			
N	16.5			
R (exhaust)	1/4"			

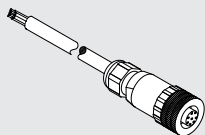
ORDERING CODES

Code	Description
6102012A	REGTRONIC 400 without edn plates
6102012	REGTRONIC 400 1
6202012	REGTRONIC 400 1 1/4
6302012	REGTRONIC 400 1 1/2
6402012	REGTRONIC 400 2

NOTES

ACCESSORIES REGTRONIC

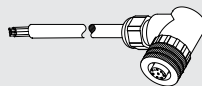
M12x1 PRE-WIRED 8-PIN FEMALE STRAIGHT CONNECTOR



Code	Description
W0970513010	M12X1 pre-wired 8-PIN straight connector, cable L= 5 m

- 1 - White
- 2 - Brown
- 3 - Green
- 4 - Yellow
- 5 - Grey
- 6 - Pink
- 7 - Blue
- 8 - Red

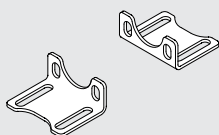
M12x1 PRE-WIRED 8-PIN FEMALE 90° CONNECTOR



Code	Description
W0970513011	M12X1 pre-wired 8-PIN 90° connector, cable L= 5 m

- 1 - White
- 2 - Brown
- 3 - Green
- 4 - Yellow
- 5 - Grey
- 6 - Pink
- 7 - Blue
- 8 - Red

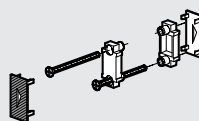
FIXING BRACKET KIT FOR REGTRONIC 1/8" E 1/4"



Code	Description
9200710	Fixing bracket kit

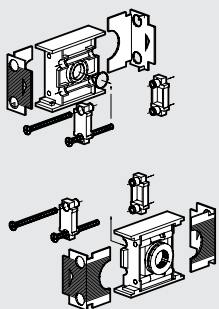
N.B. supplied complete with four M4X6 screws

CONNECTOR KIT FOR SKILLAIR CODE A



Code	Description
9430301	Connector kit 300
9630301	Connector kit 400

INPUT/OUTPUT END PLATE KIT FOR SKILLAIR



Code	Description
9430701	IN/OUT end plate kit 300 1/2
9530901	IN/OUT end plate kit 300 3/4
9531001	IN/OUT end plate kit 300 1
9631001	IN/OUT end plate kit 400 1
9631101	IN/OUT end plate kit 400 1 1/4
9631201	IN/OUT end plate kit 400 1 1/2
9631301	IN/OUT end plate kit 400 2

NOTES

PRESSURE SWITCHES



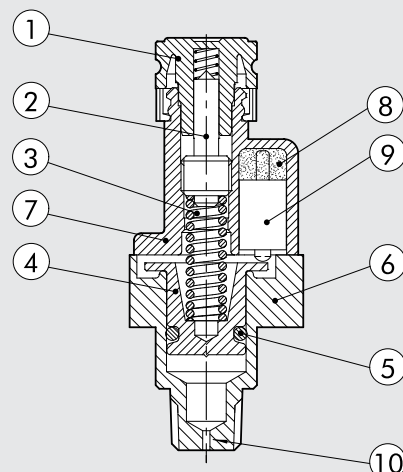
This type of pressure switch features a high degree of miniaturisation and a modern attractive design. It can be installed in any position and also mounted onto a wall by means of two transversal holes. In order to reduce wiring times, it is supplied ready assembled with a 2-metre electric cable or an M8 connector with a 300-mm cable. The contact is the switching type, which means it can be normally open or normally closed. A knurled push-lock handle is provided for regulation.



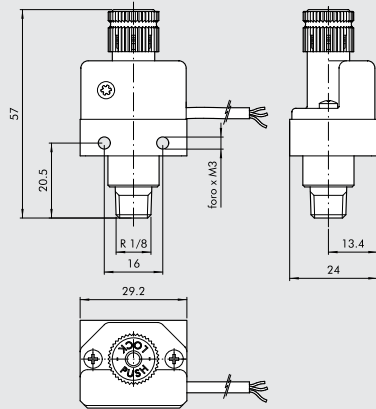
TECHNICAL DATA		
Adjustable pressure interval	bar	0.5 to 10
Hysteresis (not adjustable)	bar	from 0.4 to 0.8 (See diagram)
Maximum pressure	bar	15
	MPa	1.5
Operating temperature range at: 1 MPa; 10 bar; 145 psi	psi	217
	°C	50
	°F	122
Lower threaded port		R 1/8"
Maximum current	A	2
Maximum voltage	V	250
Outside diameter of cable	mm	4.9
Number of wires and cross section		3 x 0.5 mm ²
Contacts		Normally-Open (NO) and Normally-Closed (NC)
Protection		IP65
Number of switchings		5 x 10 ⁶
Fluid		Filtered lubricated or unlubricated compressed air. Lubrication, if used, must be continuous
Mounting position		In any position.
Weight	Kg	0.121

COMPONENTS

- ① Technopolymer adjusting push-lock handle
- ② Brass adjusting screw
- ③ Steel piston spring
- ④ Brass piston
- ⑤ NBR gasket
- ⑥ Body made of anodized aluminium
- ⑦ Technopolymer pressure switch body
- ⑧ Resin finish for IP65
- ⑨ Electrical contact
- ⑩ Choke to reduce peaks in pressure



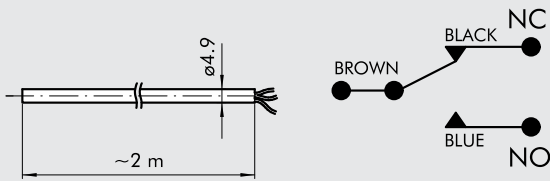
DIMENSIONS AND ORDERING CODES



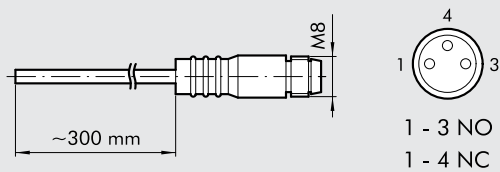
Code	Description
9000401	1/8 2A NO/NC pressure switch, 2-metre cable
9000402	1/8 2A NO/NC pressure switch, M8 connector

WIRING DIAGRAM

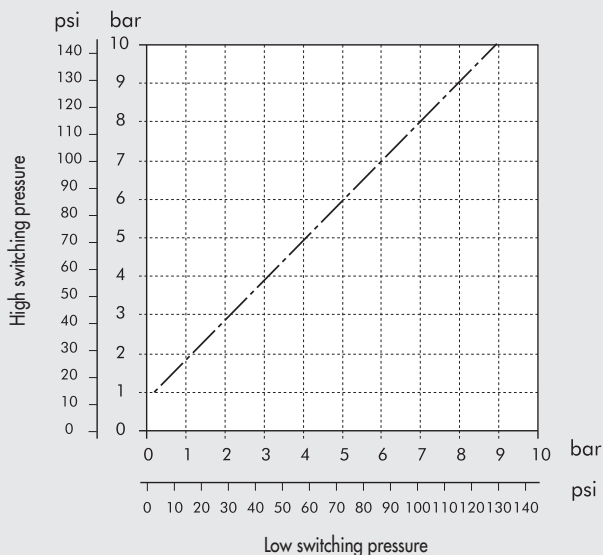
VERSION WITH CABLE



VERSION WITH M8 CONNECTOR

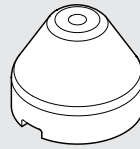


HYSTERESIS GRAPH



ACCESSORIES

SECURITY KNOB



Code	Description
9200703	Acc. security knob

NOTE: Pull outwards to remove the knob from the pressure switch on the unit. Insert the security knob and regulate the pressure switch. Then press the handle firmly to lock it in position. If the pressure switch needs to be reset, remove the security knob by forcing it laterally with a screwdriver.

NOTES

DIGITAL PRESSURE SWITCH



The digital pressure switch can be used to transmit electric pressure signals and also display the pressure instantly.

The signal is transmitted for two settable pressure values and with an analogue voltage signal. The values are clearly displayed on a LED video and different parameters can be entered from the keypad. Hysteresis can be adjusted and the unit of measurement for pressure can be modified.

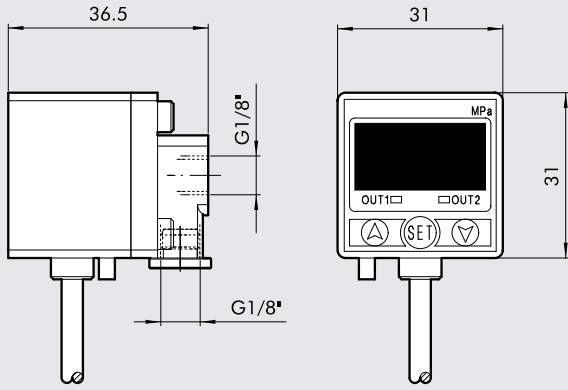
Two compressed air ports are provided, one at the back and one on the bottom. The pressure switch comes with a threaded plug in the bottom port. If you wish to connect to this port, merely unscrew the plug and screw it into the back port.

A kit of accessories is provided for fixing to the top or wall, or to a panel.



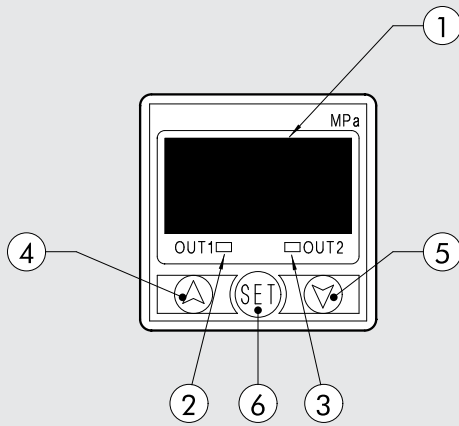
TECHNICAL DATA		
Working pressure range	bar	-1 to 10
	MPa	-0.1 to 1
Maximum admissible pressure	bar	15
	MPa	1.5
Readable resolution:	bar	0.01
	MPa	0.001
	Kg/cm ²	0.01
	Psi	0.1
Power supply	VDC	12 to 24 ± 10%, max ripple 10%
Current consumption	mA	≤ 55
Digital outputs		2 type PNP, with max current 80 mA, max voltage 30 VDC; residual voltage ≤ 1V (at 80 mA)
Digital output repeatability		≤ ±0,2 % full scale ±2 digits
Hysteresis		Adjustable or fixed at 3 digits for operation within a pressure range
Actuation response time	ms	≤ 2.5
Interference suppression selectable at		24 ms, 192 ms, 768 ms
Short-circuit protection at the outputs		Yes
LED 7 segment display		3 1/2 digit display (image update 5 times/ s)
Display accuracy		±2% full scale ±1 digit, ambient temperature 25° ±3°C
Indicators		green LED (output 1), red LED (output 2)
Analogue output		1-5 V ±2.5 % (0 bar - 1V; 10 bar - 5V; it doesn't read the vacuum)
Thermal characteristic		Linearity ≤ 1% full scale
Compressed air ports		≤ ±2% full scale of the calibration pressure (at 25°C), in the temperature range 0 - 50°C
Power cable		Two 1/8"
Weight	g	2 m, with five 0.15 mm ² wires, oil-resistant 135, including 2 m cable
AMBIENT CONDITIONS		
Fluid		Filtered and unlubricated air, inert non-corrosive and non-explosive gas
Degree of protection		IP 40
Temperature range	°C	0 to 50
Storage temperature	°C	-20 to +60, but without condensate or ice
Ambient humidity		35 to 85% relative humidity; no condensate
Insulation voltage		1000 VAC for one minute between casing and cable
Resistance of Insulation		Min. 50 M Ohm minimo (at 500 VDC between casing and cable)
Vibration admitted		1.5 mm amplitude with scanning every minute from 10 to 55 Hz at 10 Hz, for 2 hours in each direction x, y and z
Impact		980 m/s ² (100 g), 3 times in each direction x, y and z

DIMENSIONS AND ORDERING CODES



Code	Description
9000600	Digital pressure switch

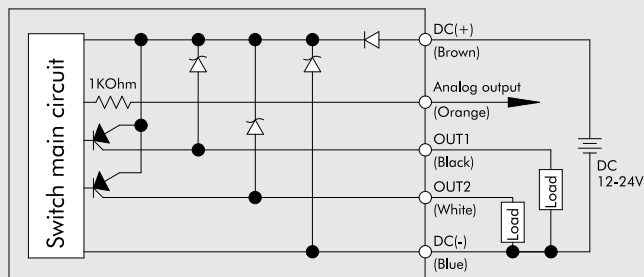
USER INTERFACE



- ① 3 1/2 digit display: showing the pressure reading, all setting information, and the error code
- ② Digital output 1: green LED
- ③ Digital output 2: red LED
- ④ Button: modifies the value of the selected parameter
- ⑤ Button: modifies the value of the selected parameter
- ⑥ Setting button: selects the parameter to modify

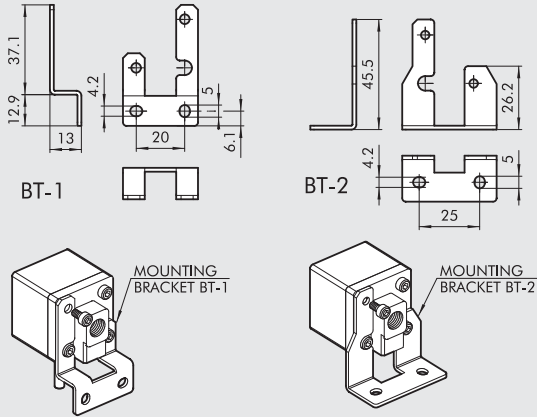
WIRING DIAGRAM

PNP output



ACCESSORIES

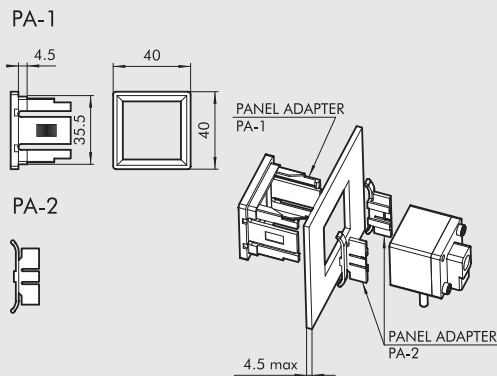
FIXING BRACKET KIT



Code	Description
9000601	Kit of fixing brackets for digital pressure switches

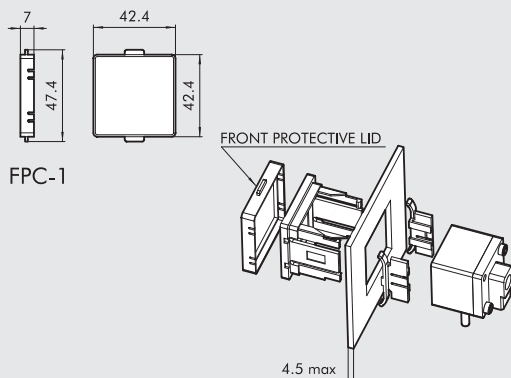
NB: Each kit contains a bracket for fixing on the back and one for fixing at the bottom.

PANEL FIXING KIT



Code	Description
9000602	Kit for panel fixing for the digital pressure switch

PANEL FIXING KIT WITH VIDEO SCREEN



Code	Description
9000603	Kit for panel fixing with screen for the digital pressure switch



FITTINGS

● PUSH-IN FITTINGS	PAGE 4-4
● PUSH-IN FITTINGS FOR USE IN THE FOOD INDUSTRY	PAGE 4-28
● FITTINGS SERIES A - SERIES B - SERIES C - SERIES D	PAGE 4-33
● TAPERED THREAD FITTINGS WITH PTFE	PAGE 4-50

SUMMARY FITTINGS



● **PUSH-IN FITTINGS**

PAGE 4-4



● **SERIES F PUSH-IN FITTINGS FOR USE IN THE FOOD INDUSTRY**

PAGE 4-28



● **STANDARD FITTINGS SERIES A**

PAGE 4-33



● **COMPRESSION FITTINGS SERIES B**

PAGE 4-40



● **QUICK FITTINGS SERIES C**

PAGE 4-43



● **BANJO FITTINGS SERIES D**

PAGE 4-47

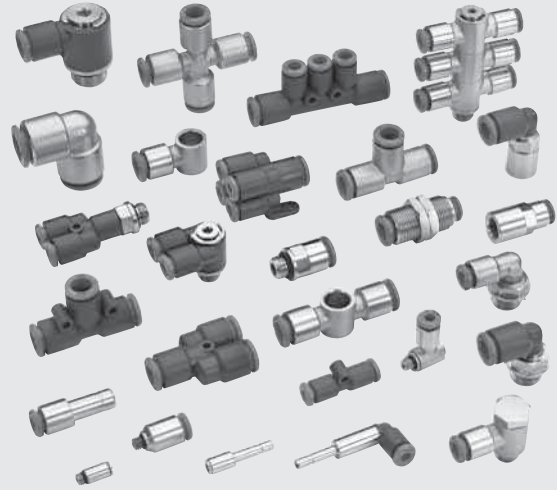


● **TAPERED THREAD FITTINGS WITH PTFE**

PAGE 4-50

PUSH-IN FITTINGS

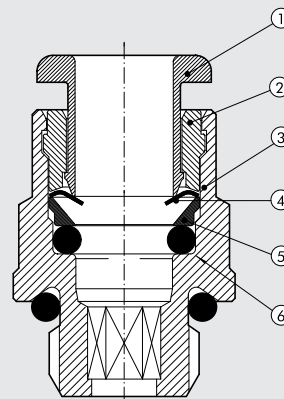
Push-in fittings by Metal Work are the best elements for connecting pipes and actuators. Quick and easy to use, the Metal Work push-in fitting can be re-used thousands of times without affecting the pneumatic and mechanical seal in any way. It comes in various configurations and guarantees a virtually unlimited, highly flexible use. The clamping spring with its special shape grips the pipe without scratching or deforming it, which facilitates release. In the fittings, the release bushing has patented screwdriver slots to facilitate release in applications not accessible to the fingers. Configurations RL19, RL21, RL22, RL23, RL23M, RL24, RL44, and RL49 (except for Ø5), have a ring for fixing to the wall asymmetrically in order to contain the head of a screw within the overall dimensions of the fitting.



TECHNICAL DATA		
Threaded coupling		M3 - M5 - M7 - 1/8" - 1/4" - 3/8" - 1/2"
Diameter	mm	Ø 3 - Ø 3.17 - Ø 4 - Ø 5 - Ø 6 - Ø 8 - Ø 10 - Ø 12 - Ø 14
Temperature range for brass fittings	°C	- 20 to + 80
	°F	- 4 to 176
Temperature range for technopolymer fittings	°C	- 20 to + 60
	°F	- 4 to 140
Pressure range for brass fittings		- 0.99 bar ... 16 bar / - 0.099 MPa ... 1.6 MPa
Pressure range for technopolymer fittings		- 0.99 bar ... 12 bar / - 0.099 MPa ... 1.2 MPa
Recommended pipe		Rilsan PA 11 - Nylon 6 - Polyamide 12 - Polypropylene
Fluid		Vacuum - Compressed air

COMPONENTS

- ① Ring or release bushing: technopolymer
- ② Locking bushing: brass or technopolymer
- ③ Body: brass or technopolymer
- ④ Clamping spring: stainless steel (for pipes Ø 3 and Ø 3.17 and R31 Ø 5 and R32 Ø 5: brass gripper)
- ⑤ Spring supporting ring: technopolymer
- ⑥ Seal: NBR



FITTINGS

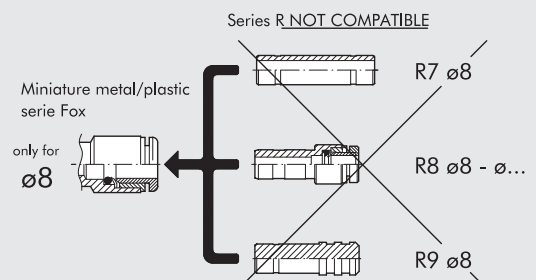
PUSH-IN FITTINGS

O-RING BELOW R FITTINGS

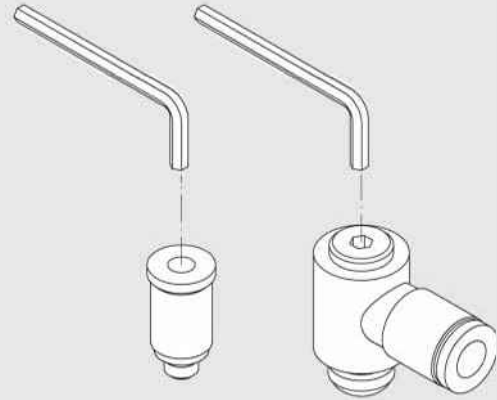
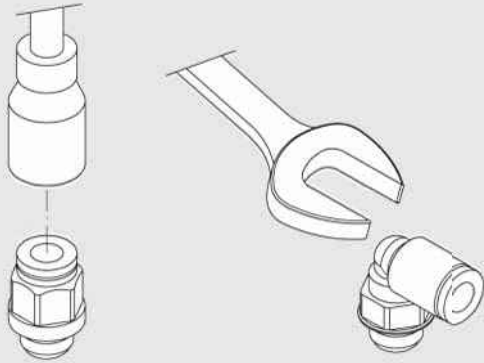
Thread	Initials	Dimensions of O-ring
M3	.....	2.6 x 1
M5 (for Ø 3 - Ø 3.17)	.....	3 x 1.2
M5	.....	3.5 x 1.2
M7	.....	5 x 1.5
M12x1.5	.....	9.75 x 1.78
1/8	2031	7.66 x 1.78
1/4	2043	10.82 x 1.78
3/8	2056	14 x 1.78
1/2	3068	17.13 x 2.62

FOR Ø 8 PUSH-IN FITTINGS ONLY

The new series of Ø 8 miniature push-in fittings, identified in the code by a letter L and visually by the screwdriver slot on the release ring, are not compatible with fittings R7, R8 and R9 Ø 8 in the old series.



SCREWING METHOD



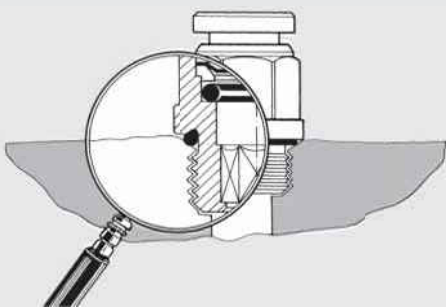
Thread	Max. Torque [Nm]
M3	0.4
M5	1.8
M7	2.5
M12x1.5	8
G 1/8"	6
G 1/4"	8
G 3/8"	10
G 1/2"	15

CH [mm]	Max. Torque [Nm]
1.5	0.4
2	0.7
2.5	1.2
3	2.5
4	5
5	8
Over 5	See the values concerning threads

NB: When using a socket spanner, the torque must not exceed that of the thread (e.g. fitting RL1 6 M7, with a 4 mm thread, has a maximum torque of 2.5 Nm, highest value of the thread)

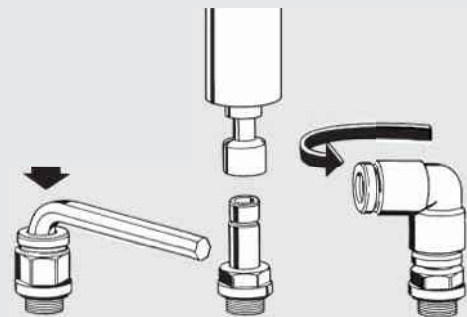
GENERAL FEATURES

All fittings have cylindrical threading and incorporate a O-ring (Metal Work patent). The use of an O-ring considerably improves the seal of angled, rough, and slightly convex surfaces. Teflon® (PTFE) is no longer used.

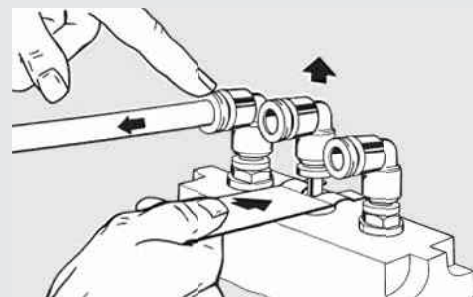
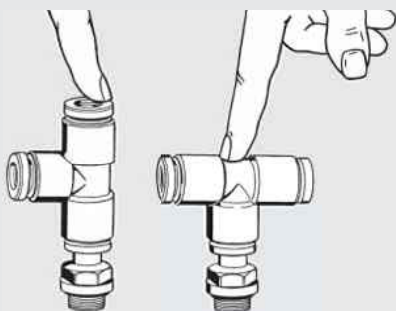


A single tee can give central tees and lateral tees.

Mounting fittings with an Allen wrench or pneumatic tool. All the elbows and tees are rotary. Drastic reduction in assembly times.

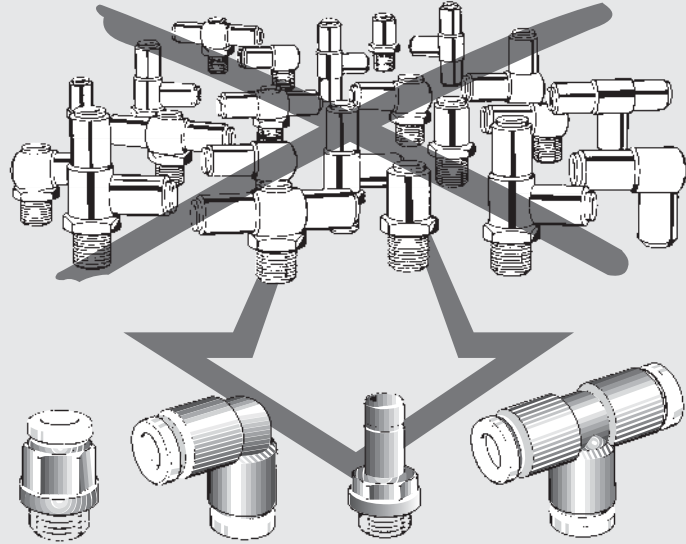


The pipe is easy to assemble by pressing lightly on the pusher ring. To remove the fitting, merely push radially on the key.



FROM AN IDEA, A SYSTEM

- Four basic fittings can be used to make all possible connections in a pneumatic circuit.
- Sharp drop in the number of fittings to be stocked and hence reduced operating costs.

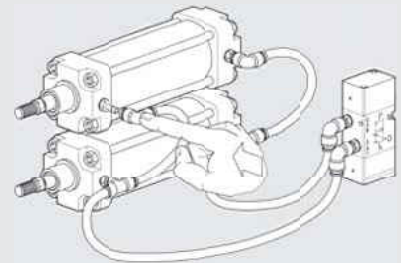
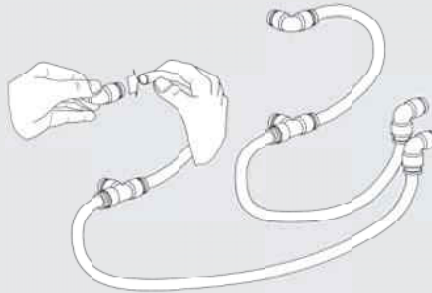
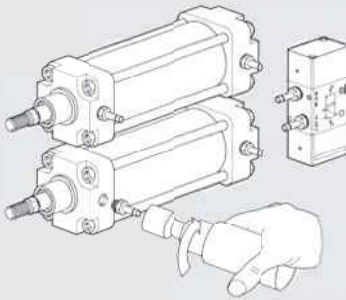


ASSEMBLY DIAGRAM

Pre-assembling fittings on the workbench with pneumatic tool even with very close centre distances.

Pre-assembling fittings and pipe sections on the workbench. Pre-assembled configurations can be stocked for assembly in series.

Quick connection and completion of the pneumatic circuit.

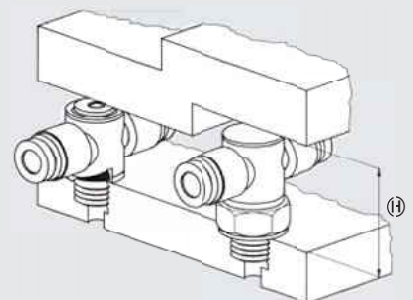
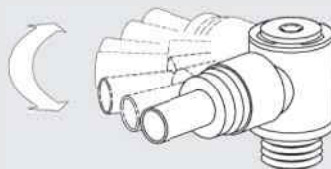
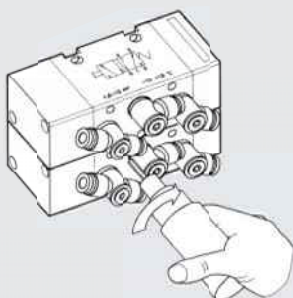


FROM A SYSTEM, INNOVATION

An Allen wrench is used to assemble rotary fittings even with very close centre distances.

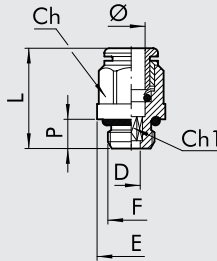
The special configuration with two O-rings allows maximum orientation so as to follow pipe movement in the specific application.

Fittings with a built-in gasket and reduced height (H) with the same threaded coupling and pipe diameter.



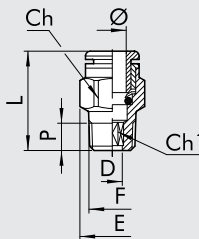
BRASS FITTINGS

STRAIGHT, CYLINDRICAL, MALE (R1)



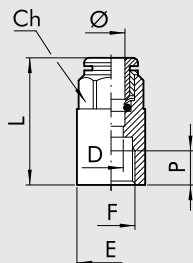
Code	Ref.	Ø	F	Ch	Ch1	P	L	D	E
2001B01	R1	3	M3	Ø 5.8	1.5	3	12.6	1.5	5.8
2001B02	R1	3	M5	Ø 5.8	2	3.5	13	2	5.8
2001A01	R1	3.17	M3	Ø 5.8	1.5	3	12.6	1.5	5.8
2001A02	R1	3.17	M5	Ø 5.8	2	3.5	13	2	5.8
2L01001	RL1	4	M5	Ø 9	2.5	4	20.3	2.6	9
2L01020	RL1	4	M7	Ø 9	3	5	18.9	3.1	9.8
2L01002	RL1	4	1/8	10	3	6	18	3.1	14
2L01003	RL1	4	1/4	10	3	8	19.8	3.1	18
2001004	R1	5	M5	Ø 12	2.5	4	22.5	2.6	12
2001005	R1	5	1/8	13	3	6	22	3.1	15
2001006	R1	5	1/4	12	3	8	24	3.1	18
2L01000	RL1	6	M5	Ø 11	2.5	4	21.9	2.6	11
2L01021	RL1	6	M7	Ø 11	4	5	23	4.1	11
2L01101	RL1	6	M12x1.5	12	4	8	23.2	4.1	17
2L01007	RL1	6	1/8	12	4	6	21.6	4.1	14
2L01008	RL1	6	1/4	12	4	8	20.3	4.1	18
2L01102	RL1	8	M12x1.5	14	6	8	24.5	6.2	17
2L01009	RL1	8	1/8	13	5	6	25.4	5.2	14
2L01010	RL1	8	1/4	14	6	8	24.4	6.2	18
2L01011	RL1	8	3/8	14	6	9	22.8	6.2	22
2L01012	RL1	10	1/4	16	7	8	29.2	7.2	18
2L01013	RL1	10	3/8	16	8	9	26.5	8.2	22
2L01018	RL1	10	1/2	16	8	11	29.8	8.2	26
2001019	RL1	12	1/4	19	7	8	30.5	7.2	21
2001014	RL1	12	3/8	19	10	9	28.1	10.2	22
2001015	RL1	12	1/2	19	10	11	29.3	10.2	26
2001016	RL1	14	3/8	22	10	9	33.8	10.2	24.6
2001017	RL1	14	1/2	22	12	11	31.5	12.2	26

STRAIGHT, CONICAL, MALE (R1C)



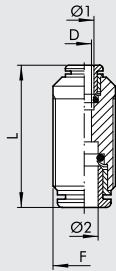
Code	Ref.	Ø	F	Ch	Ch1	D	E	L	P
2L01C02	RL1C	4	1/8	10	3	3.1	11.3	18.5	6.2
2L01C07	RL1C	6	1/8	12	4	4.1	13.5	22.5	6.2
2L01C08	RL1C	6	1/4	12	4	4.1	13.2	22.3	8.5
2001Z07	RL1Z	6	12x1 conical	12	4	4.1	13.2	23.5	9
2001Z08	RL1Z	6	12x1.25 conical	12	4	4.1	13.2	23.5	9
2L01C09	RL1C	8	1/8	13	6	6.2	14.3	26	6.2
2L01C10	RL1C	8	1/4	14	6	6.2	15.8	25.5	8.5
2L01C11	RL1C	8	3/8	14	6	6.2	16.6	24.9	9
2L01C13	RL1C	10	1/4	16	7	7.2	17.7	28.9	8.5
2L01C14	RL1C	10	3/8	16	8	8.2	17.7	26	9
2001C15	RL1C	12	3/8	19	10	10.2	21	28.5	9
2001C16	RL1C	12	1/2	19	10	10.2	21.3	26.6	11

STRAIGHT, FEMALE (R2)



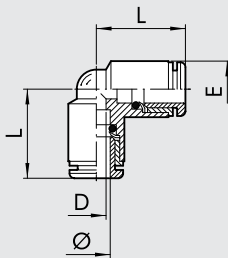
Code	Ref.	Ø	F	Ch	P	L	D	E
2002B02	R2	3	M5	7	4.5	15.7	2.5	7.8
2002A02	R2	3.17	M5	7	4.5	15.7	2.5	7.8
2L02001	RL2	4	1/8	10	7	26.2	3	14
2L02002	RL2	4	1/4	10	8	28.6	3	17
2002003	R2	5	1/8	12	7	27	4	14
2002004	R2	5	1/4	12	8	29.5	4	17
2L02005	RL2	6	1/8	12	7	27.1	5	14
2L02006	RL2	6	1/4	12	8	29.3	5	17
2L02007	RL2	8	1/8	13	7	28.1	7	14
2L02008	RL2	8	1/4	14	8	30	7	17
2L02009	RL2	10	1/4	16	8	31.8	8	17.7
2L02010	RL2	10	3/8	16	10	36.8	8	20.8
2L02011	RL2	12	3/8	19	10	37	10	20.8
2L02012	RL2	12	1/2	19	11	40.5	10	23.8

STRAIGHT, INTERMEDIATE (R3)



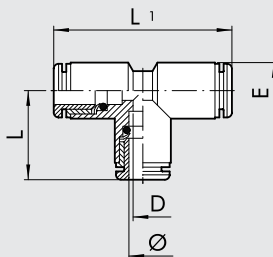
Code	Ref.	Ø 1	Ø 2	F	L	D
2003A02	R3	3	3	M8x0.75	18.4	2
2003A01	R3	3.17	3.17	M8x0.75	18.4	2
2103001	RL3	4	4	M11x1	30.6	2.5
2003002	R3	5	5	M14x1	33.5	4
2103003	RL3	6	6	M13x1	33	4.5
2103004	RL3	8	8	M15x1	35.7	6.5
2103005	RL3	10	10	M17x1	39.2	8
2003006	RL3	12	12	M20x1	40.7	10
2003007	RL3	14	14	M24x1	45.9	12
2103301	RL3	4	6	M13x1	32.7	2.5
2103302	RL3	4	8	M15x1	34.4	2.5
2103303	RL3	6	8	M15x1	35	4.5
2103304	RL3	6	10	M17x1	37.5	4.5
2103306	RL3	6	12	M20x1	39	4.5
2103305	RL3	8	10	M17x1	37.8	6.5
2103307	RL3	8	12	M20x1	40.1	6
2103308	RL3	10	12	M20x1	40.8	8

ELBOW, INTERMEDIATE (R4)



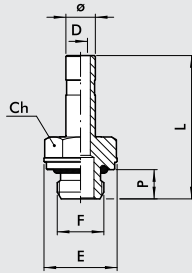
Code	Ref.	Ø	L	D	E
2004A02	4	3	10.4	2	6.3
2004A01	R4	3.17	10.4	2	6.3
2104001	RL4	4	16.7	2.5	9.5
2004002	R4	5	19.2	3	13.5
2104003	RL4	6	19	4.5	11.5
2104004	RL4	8	21.3	6.5	13.5
2104005	RL4	10	23.3	8	16
2004006	RL4	12	26	10	20.5
2004007	RL4	14	29.3	12	22

TEE, INTERMEDIATE (R5)



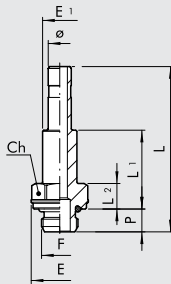
Code	Ref.	Ø	L	L1	D	E
2005A02	R5	3	10.4	20.8	2	6.3
2005A01	R5	3.17	10.4	20.8	2	6.3
2105001	RL5	4	16.7	33.4	2.5	9.5
2005002	R5	5	19.2	38.4	3	13.5
2105003	RL5	6	19	38	4.5	11.5
2105004	RL5	8	21.3	42.6	6.5	13.5
2105005	RL5	10	23.3	46.6	8	16
2005006	RL5	12	26	52	10	20.5
2005007	RL5	14	29.3	58.6	12	22

THREADED ADAPTER (R6)



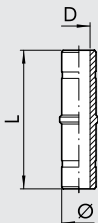
Code	Ref.	Ø	F	Ch	P	L	D	E
2006A02	R6	3	M5	5	3.5	17.1	2	5.8
2006A01	R6	3.17	M5	5	3.5	17.1	2	5.8
2006001	R6	4	M5	8	4	25.2	2.5	9
2006020	R6	4	M7	8	5	26.5	2.5	9.8
2006002	R6	4	1/8	13	6	28.9	2.5	15
2006003	R6	4	1/4	14	8	32.4	2.2	18
2006004	R6	5	M5	8	4	25.2	2.7	9
2006005	R6	5	1/8	13	6	28.9	3	15
2006006	R6	5	1/4	14	8	32.4	3	18
2006000	R6	6	M5	9	4	25.7	2.7	10
2006021	R6	6	M7	8	5	27	4	9.8
2006007	R6	6	1/8	13	6	29.4	4	15
2006008	R6	6	1/4	14	8	32.9	4	18
2006009	R6	8	1/8	13	6	30.6	5.5	15
2006010	R6	8	1/4	14	8	34	6	18
2006011	R6	8	3/8	17	9	35.4	6	22
2006012	R6	10	1/4	14	8	38.2	7.8	18
2006013	R6	10	3/8	17	9	38.7	8	22
2006022	R6	10	1/2	19	11	41	8	26
2006019	R6	12	1/4	14	8	40.7	7.8	18
2006014	R6	12	3/8	17	9	42.2	10	22
2006015	R6	12	1/2	22	11	44.2	10	26
2006016	R6	14	3/8	17	9	46.2	10	22
2006017	R6	14	1/2	22	11	48.2	12	26
2006101	R6	6	M12X1.5	13	8	33	4	17
2006102	R6	8	M12X1.5	13	8	33.7	6	17

EXTENDED THREADED ADAPTER (R18)



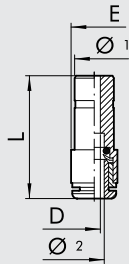
Code	Ref.	Ø	F	Ch	P	L	L1	L2	E	E1
2018002	R18	4	1/8	13	6	40.4	18.2	6.7	15	7
2018007	R18	6	1/8	13	6	43.4	20.7	6.7	15	9
2018008	R18	6	1/4	14	8	46.9	22.2	8.2	18	9
2018009	R18	8	1/8	13	6	46.5	22.7	6.7	15	11
2018010	R18	8	1/4	14	8	50	24.2	8.2	18	11
2018011	R18	8	3/8	17	9	51.4	24.7	8.7	22	13
2018012	R18	10	1/4	14	8	57.2	27.2	8.2	18	12
2018013	R18	10	3/8	17	9	58.7	27.7	8.7	22	12

EXTENSION (R7)



Code	Ref.	Ø	L	D
2007001	R7	4	34	2
2007002	R7	5	34	3
2007003	R7	6	37.5	4
2107004	RL7	8	37.5	6
2007005	R7	10	45	8
2007006	R7	12	48	10
2007007	R7	14	58	12

REDUCER (R8)

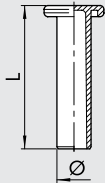


Code	Ref.	Ø 1	Ø 2	L	D	E
2008A01	R8	4	3	26	2	6.3
2008A02	R8	4	3.17	26	2	6.3
2008001	RL8	5	4	32.2	3	9.5
2108002	RL8	6	4	29.9	2.8	9.5
2008003	R8	6	5	36	4	12
2108004	RL8	8	4	28.7	2.8	9.5
2008005	R8	8	5	34.5	4	12
2108006	RL8	8	6	31.9	4.5	11.5
2108007	RL8	10	6	36.2	5	11.5
2108008	RL8	10	8	40.8	7	14
2008009	RL8	12	4	36.7	3	13
2008010	RL8	12	6	42	5	13
2008011	RL8	12	8	40.1	7	14
2008015	RL8	12	10	44.3	8.2	16
2008014	RL8	14	8	44.1	7	15.5
2008017	RL8	14	10	44.3	8.2	16
2008018	RL8	14	12	50	10	19.5

ADDITION

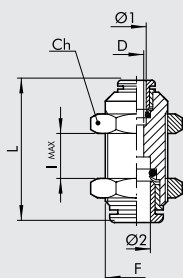
2009001	RL8/M	4	6	34.5	2.5	11.5
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PLUG (R9)



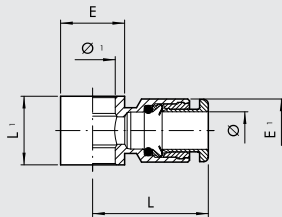
Code	Rif.	Ø	L	MATERIAL
2010A02	R9	3	20	Brass
2110A01	RL9T	3.17	19.6	Technopolymer
2110001	RL9T	4	27	Technopolymer
2010002	R9	5	27	Brass
2110003	RL9T	6	29.8	Technopolymer
2110004	RL9T	8	33.6	Technopolymer
2110005	RL9T	10	36.8	Technopolymer
2110006	RL9T	12	39	Technopolymer
2010007	R9	14	39.5	Brass

STRAIGHT, INTERMEDIATE, BULKMTAD (R10)



Code	Ref.	Ø 1	Ø 2	F	Ch	L	D	I max
2011A02	R10	3	3	M8x0.75	10	18.4	2	5
2011A01	R10	3.17	3.17	M8x0.75	10	18.4	2	5
2111001	RL10	4	4	M11x1	13	30.6	2.5	11
2011002	R10	5	5	M14x1	17	33.5	4	8
2111003	RL10	6	6	M13x1	16	33	4.5	12
2111004	RL10	8	8	M15x1	17	35.7	6.5	13.5
2111005	RL10	10	10	M17x1	20	39.2	8	17
2011006	RL10	12	12	M20x1	24	40.7	10	20.3
2011007	RL10	14	14	M24x1	27	45.9	12	21.9
2111301	RL10	4	6	M13x1	16	32.7	2.5	11
2111302	RL10	4	8	M15x1	17	34.4	2.5	12
2111303	RL10	6	8	M15x1	17	35	4.5	13
2111304	RL10	6	10	M17x1	20	37.5	4.5	14.5
2111306	RL10	6	12	M20x1	24	39	4.5	16
2111305	RL10	8	10	M17x1	20	37.8	6.5	15
2111307	RL10	8	12	M20x1	24	40.1	6	17.5
2111308	RL10	10	12	M20x1	24	40.8	8	19

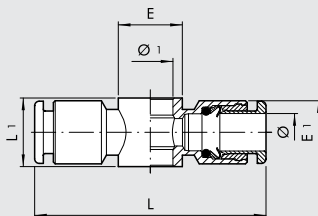
SINGLE RING (R13)



Code	Ref.	Ø	Ø 1	L	L1	E	E1
2012A02	R13	3	M5	12.9	9	9	7
2012A01	R13	3.17	M5	12.9	9	9	7
2012001	RL13	4	M5	20.2	9	9.5	9.5
2012002	RL13	4	1/8	21.3	15	14	9.5
2012003	R13	5	M5	23.8	9	9.5	12
2012004	R13	5	1/8	24.8	15	14	12
2012005	RL13	6	1/8	23	15	14	11.5
2012006	RL13	6	1/4	24.5	17	18	11.5
2012007	RL13	8	1/8	24.8	15	14	13.8
2012008	RL13	8	1/4	26.5	17	18	13.8
2012009	RL13	8	3/8	28.5	20	21	13.8
2012010	RL13	10	1/4	31.4	17	18	16.5
2012011	RL13	10	3/8	32.8	20	21	16
2012013	RL13	12	1/4	33	17	18	19.5
2012012	RL13	12	3/8	35.3	20	21	19.5
2012014	RL13	12	1/2	37	24	26	19.5

For the rods series D, see page 4-48

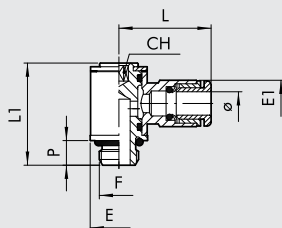
DUAL RING (R14)



Code	Ref.	Ø	Ø 1	L	L1	E	E1
2013001	RL14	4	M5	40.4	9	9.5	9.5
2013002	RL14	4	1/8	42.6	15	14	9.5
2013003	R14	5	M5	48	9	9.5	12
2013004	R14	5	1/8	49.5	15	14	13.5
2013005	RL14	6	1/8	46	15	14	11.5
2013006	RL14	6	1/4	49	17	18	11.5
2013007	RL14	8	1/8	49.6	15	14	13.8
2013008	RL14	8	1/4	53	17	18	13.8
2013009	RL14	8	3/8	57	20	21	13.8
2013010	RL14	10	1/4	62.8	17	18	16.5
2013011	RL14	10	3/8	65.6	20	21	16

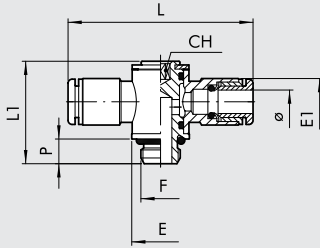
For the rods series D, see page 4-48

ROD, MALE SINGLE ROTARY RING (R15)



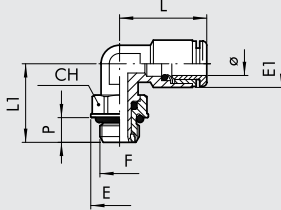
Code	Ref.	Ø	F	CH	P	L	L1	E	E1
2014101	R15	3	M3	1.5	3	12.2	13.2	5.8	5.8
2014102	R15	3.17	M3	1.5	3	12.2	13.2	5.8	5.8
2014103	R15	3	M5	2	3.5	12.7	13.7	5.8	7
2014104	R15	3.17	M5	2	3.5	12.7	13.7	5.8	7
2L14001	RL15	4	M5	2	4	20.2	18.4	9.5	9.5
2L14020	RL15	4	M7	3	5	20.2	18.5	9.8	9.5
2L14002	RL15	4	1/8	3	6	21.3	24.9	14	9.5
2014003	R15	5	M5	2	4	24	19	9.9	12
2014004	R15	5	1/8	3	6	25	27	14	12
2L14106	RL15	6	M5	2	4	23.5	18.4	9.5	11.3
2L14021	RL15	6	M7	3	5	23.5	18.5	9.8	11.3
2L14005	RL15	6	1/8	3	6	23	24.9	14	11.5
2L14007	RL15	6	1/4	4	8	24.5	29.4	18	11.5
2L14006	RL15	8	1/8	3	6	24.8	24.9	14	13.8
2L14008	RL15	8	1/4	4	8	26.5	29.4	18	13.8
2L14013	RL15	8	3/8	5	9	28.5	35.6	22	13.8
2L14009	RL15	10	1/4	4	8	31.4	29.4	18	16.5
2L14014	RL15	10	3/8	5	9	32.8	35.6	22	16
2014010	RL15	12	1/4	4	8	33	29.4	18	19.5
2014011	RL15	12	3/8	5	9	35.3	35.6	22	19.5
2014012	RL15	12	1/2	8	11	37	40.8	26	19.5

ROD, MALE DUAL ROTARY RING (R16)



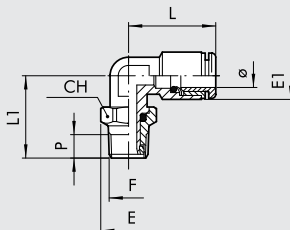
Code	Ref.	Ø	F	CH	P	L	L1	E	E1
2L15001	RL16	4	M5	2	4	40.4	18.4	9.5	9.5
2L15020	RL16	4	M7	3	5	40.4	18.5	9.8	9.5
2L15002	RL16	4	1/8	3	6	42.6	24.9	14	9.5
2015003	R16	5	M5	2	4	47.6	18.8	9.9	12
2015004	R16	5	1/8	3	6	49.5	27	14	13.5
2L15106	RL16	6	M5	2	4	47	18.4	9.5	11.3
2L15021	RL16	6	M7	3	5	47	18.5	9.8	11.3
2L15005	RL16	6	1/8	3	6	46	24.9	14	11.5
2L15007	RL16	6	1/4	4	8	49	29.4	18	11.5
2L15006	RL16	8	1/8	3	6	49.6	24.9	14	13.8
2L15008	RL16	8	1/4	4	8	53	29.4	18	13.8
2L15013	RL16	8	3/8	5	9	57	35.6	18	13.8
2L15009	RL16	10	1/4	4	8	62.8	29.4	22	16.5
2L15014	RL16	10	3/8	5	9	65.6	35.6	22	16
2015010	RL16	12	1/4	4	8	66	29.4	18	19.5
2015011	RL16	12	3/8	5	9	70.6	35.6	22	19.5
2015012	RL16	12	1/2	8	11	74	40.8	26	19.5

ROTARY ELBOW, MALE, CYLINDRICAL (R31)



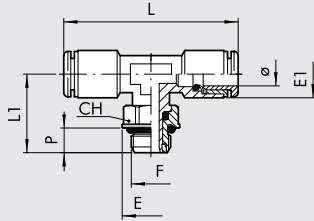
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
2L31001	RL31	4	M5	9	9.9	9.5	18.6	15.3	4
2L31002	RL31	4	1/8	12	14	9.5	18.6	19.1	6
2L31003	RL31	4	1/4	14	18	9.5	18.6	21.1	8
2031004	R31	5	M5	9	9.9	13.5	22.8	17.5	4
2031005	R31	5	1/8	12	14	13.5	22.8	21	6
2031006	R31	5	1/4	14	18	13.5	22.8	24.5	8
2L31007	RL31	6	M5	9	9.9	11.8	21.9	15.3	4
2L31008	RL31	6	1/8	12	14	11.8	21.9	19.1	6
2L31009	RL31	6	1/4	14	18	11.8	21.9	21.1	8
2L31010	RL31	8	1/8	12	14	13.5	25.4	19.1	6
2L31011	RL31	8	1/4	14	18	13.5	25.4	21.1	8
2L31012	RL31	8	3/8	17	22	13.8	23.6	27.1	9
2L31013	RL31	10	1/4	14	18	16	27.2	24.8	8
2L31014	RL31	10	3/8	17	22	16	27.2	27.1	9
2031015	RL31	10	1/2	22	26	16	27.2	30.7	11
2031016	RL31	12	1/4	14	18	20	30	25.6	8
2031017	RL31	12	3/8	17	22	20	30	27.1	9
2031018	RL31	12	1/2	22	26	20	30	30.7	11
2031019	RL31	14	1/2	22	26	21.3	33	32.3	11

ROTARY ELBOW, MALE, CONICAL (R31C)



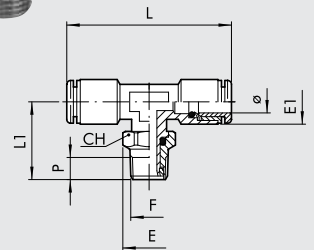
Code	Rif.	Ø	F	CH	E	E1	L	L1	P
2L31C02	RL31/C	4	1/8	12	13.3	9.5	18.6	19.8	6.2
2L31C03	RL31/C	4	1/4	14	15.4	9.5	18.6	22.6	8.5
2L31C08	RL31/C	6	1/8	12	13.3	11.8	21.9	19.8	6.2
2L31C09	RL31/C	6	1/4	14	15.4	11.8	21.9	22.6	8.5
2L31C10	RL31/C	8	1/8	12	13.3	13.5	25.4	19.8	6.2
2L31C11	RL31/C	8	1/4	14	15.4	13.5	25.4	23.6	8.5
2L31C12	RL31/C	8	3/8	17	19.2	13.8	23.6	27.1	9
2L31C13	RL31/C	10	1/4	14	15.4	16	27.2	26.3	8.5
2L31C14	RL31/C	10	3/8	17	19.2	16	27.2	27.1	9
2031C15	RL31/C	12	3/8	17	19.2	20	30	27.1	9
2031C16	RL31/C	12	1/2	22	24.6	20	30	31.9	11

CENTRAL TEE, MALE, CYLINDRICAL, ROTARY (R32)



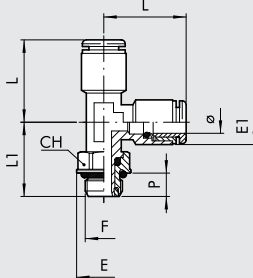
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
2L32001	RL32	4	M5	9	9.9	9.5	37.2	15.3	4
2L32002	RL32	4	1/8	12	14	9.5	37.2	19.1	6
2L32003	RL32	4	1/4	14	18	9.5	37.2	21.1	8
2032005	R32	5	1/8	12	14	13.5	45.6	19.1	6
2L32004	RL32	6	M5	9	9.9	11.8	43.8	15.3	4
2L32008	RL32	6	1/8	12	14	11.8	43.8	19.1	6
2L32009	RL32	6	1/4	14	18	11.8	43.8	21.1	8
2L32010	RL32	8	1/8	12	14	13.5	50.8	19.1	6
2L32011	RL32	8	1/4	14	18	13.5	50.8	21.1	8
2L32012	RL32	8	3/8	17	22	13.8	47.2	27.1	9
2L32013	RL32	10	1/4	14	18	16	44.4	21.8	8
2L32014	RL32	10	3/8	17	22	16	44.4	27.1	9
2032017	RL32	12	3/8	17	22	20	60	27.1	9
2032018	RL32	12	1/2	22	26	20	60	30.7	11
2032019	RL32	14	1/2	22	26	21.3	66	32.3	11

CENTRAL TEE, MALE, CONICAL, ROTARY (RL32C)



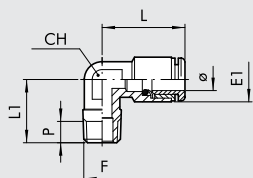
Code	Rif.	Ø	F	CH	E	E1	L	L1	P
2L32C02	RL32/C	4	1/8	12	13.3	9.5	37.2	19.8	6.2
2L32C03	RL32/C	4	1/4	14	15.4	9.5	37.2	22.6	8.5
2L32C08	RL32/C	6	1/8	12	13.3	11.8	43.8	19.8	6.2
2L32C09	RL32/C	6	1/4	14	15.4	11.8	43.8	22.6	8.5
2L32C10	RL32/C	8	1/8	12	13.3	13.5	50.8	19.8	6.2
2L32C11	RL32/C	8	1/4	14	15.4	13.5	50.8	23.6	8.5
2L32C12	RL32/C	8	3/8	17	19.2	13.8	47.2	27.1	9
2L32C13	RL32/C	10	1/4	14	15.4	16	44.4	26.3	8.5
2L32C14	RL32/C	10	3/8	17	19.2	16	44.4	27.1	9

LATERAL TEE, MALE, CYLINDRICAL, ROTARY (R38)



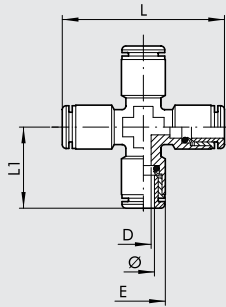
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
2L38002	RL38	4	1/8	12	14	9.5	18.6	19.1	6
2038005	R38	5	1/8	12	14	13.5	22.8	19.1	6
2L38008	RL38	6	1/8	12	14	11.5	21.9	19.1	6
2L38009	RL38	6	1/4	14	18	11.5	21.9	21.1	8
2L38010	RL38	8	1/8	12	14	13.5	25.4	19.1	6
2L38011	RL38	8	1/4	14	18	13.5	25.4	22.1	8
2L38013	RL38	10	1/4	14	18	16	27.2	21.8	8
2L38014	RL38	10	3/8	17	22	16	27.2	27.1	9
2038015	RL38	12	3/8	17	22	20	30	27.1	9
2038016	RL38	12	1/2	22	26	20	30	30.7	11

ELBOW, MALE, CONICAL (R39C)



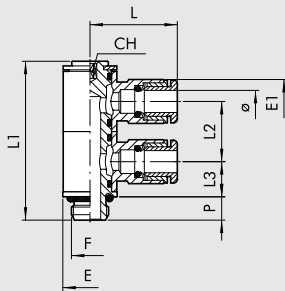
Code	Rif.	Ø	F	CH	E1	L	L1	P	
2L39C02	RL39/C	4	1/8		9.5	18.6	16	6.2	
2L39C08	RL39/C	6	1/8		10	11.8	21.9	16	6.2
2L39C09	RL39/C	6	1/4		10	11.8	21.9	18.5	8.5
2039Z07	RL39/Z	6	12x1 conical		10	11.8	21.9	17.5	7
2039Z08	RL39/Z	6	12x1.25 conical		10	11.8	21.9	17.5	7
2L39C10	RL39/C	8	1/8		10	13.5	25.4	16	6.2
2L39C11	RL39/C	8	1/4		10	13.5	25.4	18.5	8.5
2L39C13	RL39/C	10	1/4		14	16	27.2	22	8.5

CROSS FITTING (RL40)



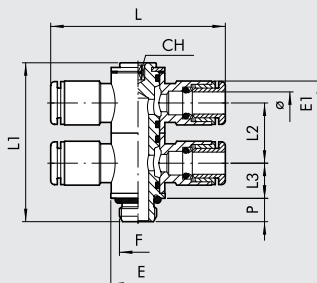
Code	Ref.	Ø	D	E	L	L1
2L40001	RL40	4	3	9.5	37.2	18.6
2L40003	RL40	6	4.5	11.3	43.8	21.9
2L40004	RL40	8	6.5	14	50.8	25.4

DUAL ROD SINGLE ROTARY RINGS (R50)



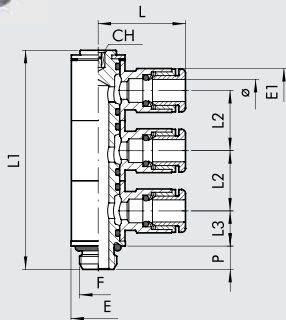
Code	Ref.	Ø	F	CH	E	E1	L	L1	L2	L3	P
2L50001	RL50	4	M5	2	9.5	9.5	20.2	30.3	11.5	6.8	4
2L50002	RL50	4	1/8	3	14	9.5	20.2	40.9	15.5	9.1	6
2033002	R33	5	1/8	5	14	12	25	42	15	10.5	6
2L50007	RL50	6	M5	2	9.5	11.3	23.5	30.3	11.5	6.8	4
2L50008	RL50	6	1/8	3	14	11.3	23.5	40.9	15.5	9.1	6
2L50009	RL50	6	1/4	4	18	11.5	23	47	17.2	10.2	8
2L50010	RL50	8	1/8	3	14	13.8	24.8	40.9	15.5	9.1	6
2L50011	RL50	8	1/4	4	18	13.8	26.5	47	17.2	10.2	8
2L50013	RL50	10	1/4	4	18	16.5	31.4	47	17.2	10.2	8

DUAL ROD DUAL ROTARY RINGS (RL51)



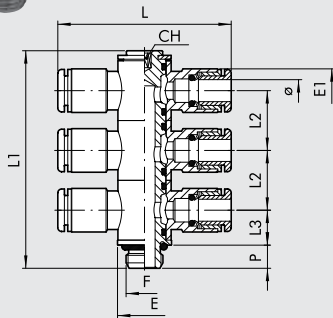
Code	Ref.	Ø	F	CH	E	E1	L	L1	L2	L3	P
2L51001	RL51	4	M5	2	9.5	9.5	40.4	30.3	11.5	6.8	4
2L51002	RL51	4	1/8	3	14	9.5	40.4	40.9	15.5	9.1	6
2L51007	RL51	6	M5	2	9.5	11.3	47	30.3	11.5	6.8	4
2L51008	RL51	6	1/8	3	14	11.3	47	40.9	15.5	9.1	6
2L51009	RL51	6	1/4	4	18	11.5	46	47	17.2	10.2	8
2L51010	RL51	8	1/8	3	14	13.8	49.6	40.9	15.5	9.1	6
2L51011	RL51	8	1/4	4	18	13.8	53	47	17.2	10.2	8
2L51013	RL51	10	1/4	4	18	16.5	62.8	47	17.2	10.2	8

TRIPLE ROD SINGLE ROTARY RINGS (RL52)



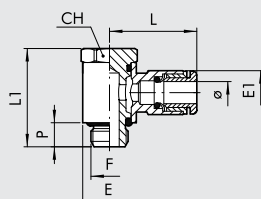
Code	Ref.	Ø	F	CH	E	E1	L	L1	L2	L3	P
2L52002	RL52	4	1/8	3	14	9.5	20.2	56.7	15.5	9.1	6
2L52008	RL52	6	1/8	3	14	11.3	23.5	56.7	15.5	9.1	6
2L52009	RL52	6	1/4	4	18	11.5	23	64.3	17.2	10.2	8
2L52010	RL52	8	1/8	3	14	13.8	24.8	56.7	15.5	9.1	6
2L52011	RL52	8	1/4	4	18	13.8	26.5	64.3	17.2	10.2	8
2L52013	RL52	10	1/4	4	18	16.5	31.4	64.3	17.2	10.2	8

TRIPLE ROD DUAL ROTARY RINGS (RL53)



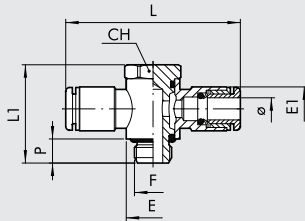
Code	Ref.	Ø	F	CH	E	E1	L	L1	L2	L3	P
2L53002	RL53	4	1/8	3	14	9.5	40.2	56.7	15.5	9.1	6
2L53008	RL53	6	1/8	3	14	11.3	47	56.7	15.5	9.1	6
2L53009	RL53	6	1/4	4	18	11.5	46	64.3	17.2	10.2	8
2L53010	RL53	8	1/8	3	14	13.8	49.6	56.7	15.5	9.1	6
2L53011	RL53	8	1/4	4	18	13.8	53	64.3	17.2	10.2	8
2L53013	RL53	10	1/4	4	18	16.5	62.8	64.3	17.2	10.2	8

MALE ROD, SINGLE SWIVEL RING (RL54)



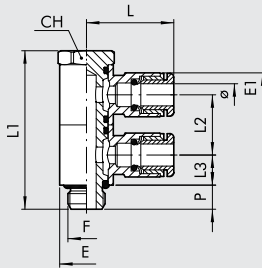
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
2L54001	RL54	4	M5	9	9.5	9.5	20.2	18.7	4.5
2L54002	RL54	4	1/8	13	14	9.5	21.3	25.3	6.2
2L54007	RL54	6	M5	9	9.5	11.3	23.5	18.7	4.5
2L54008	RL54	6	1/8	13	14	11.5	23	25.3	6.2
2L54009	RL54	6	1/4	16	18	11.5	24.5	29.2	8
2L54010	RL54	8	1/8	13	14	13.8	24.8	25.3	6.2
2L54011	RL54	8	1/4	16	18	13.8	26.5	29.2	8
2L54012	RL54	8	3/8	20	21	13.8	28.5	35.4	9
2L54013	RL54	10	1/4	16	18	16.5	31.4	29.2	8
2L54014	RL54	10	3/8	20	21	16	32.8	35.4	9
2L54018	RL54	12	1/4	16	18	19.5	33	29.2	8
2L54016	RL54	12	3/8	20	21	19.5	35.3	35.4	9
2L54017	RL54	12	1/2	25	26	19.5	37	40	11

MALE ROD, DUAL SWIVEL RING (RL55)



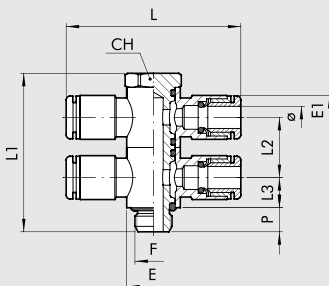
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
2L55001	RL55	4	M5	9	9.5	9.5	40.4	18.7	4.5
2L55002	RL55	4	1/8	13	14	9.5	42.6	25.3	6
2L55007	RL55	6	M5	9	9.5	11.3	47	18.7	4.5
2L55008	RL55	6	1/8	13	14	11.5	46	25.3	6
2L55009	RL55	6	1/4	16	18	11.5	49	29.2	8
2L55010	RL55	8	1/8	13	14	13.8	49.6	25.3	6
2L55011	RL55	8	1/4	16	18	13.8	53	29.2	8
2L55012	RL55	8	3/8	20	21	13.8	57	35.4	9
2L55013	RL55	10	1/4	16	18	16.5	62.8	29.2	8
2L55014	RL55	10	3/8	20	21	16	65.6	35.4	9
2L55018	RL55	12	1/4	16	18	19.5	66	29.2	8
2L55016	RL55	12	3/8	20	21	19.5	70.6	35.4	9
2L55017	RL55	12	1/2	25	26	19.5	74	40	11

DUAL ROD, MALE SINGLE SWIVEL RINGS (RL56)



Code	Ref.	Ø	F	CH	E	E1	L	L1	L2	L3	P
2L56001	RL56	4	M5	9	9.5	9.5	20.2	30.2	11.5	5.8	4.5
2L56002	RL56	4	1/8	13	14	9.5	21.3	41	15.5	7.8	6
2L56007	RL56	6	M5	9	9.5	11.3	23.5	30.2	11.5	5.8	4.5
2L56008	RL56	6	1/8	13	14	11.5	23	41	15.5	7.8	6
2L56009	RL56	6	1/4	16	18	11.5	24.5	46.4	17.2	8.6	8
2L56010	RL56	8	1/8	13	14	13.8	24.8	41	15.5	7.8	6
2L56011	RL56	8	1/4	16	18	13.8	26.5	46.4	17.2	8.6	8
2L56012	RL56	8	3/8	20	21	13.8	28.5	56.8	21.4	10.7	9
2L56013	RL56	10	1/4	16	18	16.5	31.4	46.4	17.2	8.6	8
2L56014	RL56	10	3/8	20	21	16	32.8	56.8	21.4	10.7	9
2L56016	RL56	12	3/8	20	21	19.5	35.3	56.8	21.4	10.7	9
2L56017	RL56	12	1/2	25	26	19.5	37	64	24	12	11

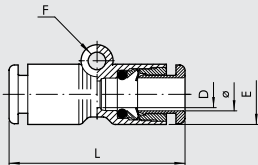
DUAL ROD, MALE DUAL SWIVEL RINGS (RL57)



Code	Ref.	Ø	F	CH	E	E1	L	L1	L2	L3	P
2L57001	RL57	4	M5	9	9.5	9.5	40.4	30.2	11.5	5.8	4.5
2L57002	RL57	4	1/8	13	14	9.5	42.6	41	15.5	7.8	6
2L57007	RL57	6	M5	9	9.5	11.3	47	30.2	11.5	5.8	4.5
2L57008	RL57	6	1/8	13	14	11.5	46	41	15.5	7.8	6
2L57009	RL57	6	1/4	16	18	11.5	49	46.4	17.2	8.6	8
2L57010	RL57	8	1/8	13	14	13.8	49.6	41	15.5	7.8	6
2L57011	RL57	8	1/4	16	18	13.8	53	46.4	17.2	8.6	8
2L57012	RL57	8	3/8	20	21	13.8	57	56.8	21.4	10.7	9
2L57013	RL57	10	1/4	16	18	16.5	62.8	46.4	17.2	8.6	8
2L57014	RL57	10	3/8	20	21	16	65.6	56.8	21.4	10.7	9
2L57016	RL57	12	3/8	20	21	19.5	70.6	56.8	21.4	10.7	9
2L57017	RL57	12	1/2	25	26	19.5	74	64	24	12	11

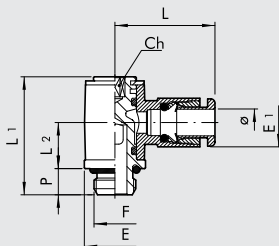
TECHNOPOLYMER FITTINGS

STRAIGHT, INTERMEDIATE, TECHNOPOLYMER (R19)



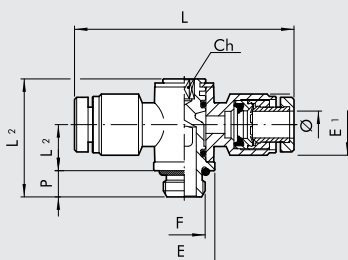
Code	Ref.	Ø	E	L	D	F
2019001	RL19	4	9.2	30.4	3	3.3
2019002	R19	5	14	33.5	4	-
2019003	RL19	6	11.3	33	5	3.3
2019004	RL19	8	13.8	36.2	6.5	3.3
2019005	RL19	10	16	38	8.5	3.3
2019006	RL19	12	19.5	40	10.5	3.3

MALE ROD, SINGLE ROTARY RING, TECHNOPOLYMER (R20)



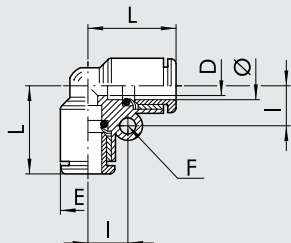
Code	Ref.	Ø	F	CH	P	L	L1	L2	E	E1
2020001	RL20	4	M5	2	4	18.7	18.4	9.1	8	9.2
2020002	RL20	4	1/8	3	6	21	24.9	12.3	14	9.2
2020003	R20	5	M5	2	4	21.5	18.8	8.5	9.9	13.5
2020004	R20	5	1/8	3	6	23	27	10.5	14	13.5
2020016	RL20	6	M5	2	4	20.8	18.4	9.1	8	11.3
2020005	RL20	6	1/8	3	6	22.3	24.9	12.3	14	11.3
2020007	RL20	6	1/4	4	8	24.3	29.4	14.3	18	11.3
2020006	RL20	8	1/8	3	6	25.6	24.9	12.3	14	13.8
2020008	RL20	8	1/4	4	8	27.2	29.4	14.3	18	13.8
2020009	RL20	10	1/4	4	8	28.6	29.4	14.3	18	16
2L20017	RL20	10	3/8	5	9	30.5	35.6	15.3	22	16
2020010	RL20	12	1/4	4	8	31	29.4	14.3	18	19.5
2020011	RL20	12	3/8	5	9	32.4	35.6	17.5	22	19.5
2020012	RL20	12	1/2	8	11	34	40.8	19.2	26	19.5

MALE ROD, DUAL ROTARY RING, TECHNOPOLYMER (R20/A)



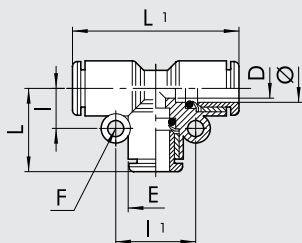
Code	Ref.	Ø	F	CH	P	L	L1	L2	E	E1
2020A01	R20/A	4	M5	2	4	40	16.8	6.5	9.9	10.9
2020A02	R20/A	4	1/8	3	6	45	27	10.5	14	12.5
2020A03	R20/A	5	M5	2	4	43	18.8	8.5	9.9	13.5
2020A04	R20/A	5	1/8	3	6	46	27	10.5	14	13.5
2020A05	R20/A	6	1/8	3	6	45	27	10.5	14	15
2020A07	R20/A	6	1/4	4	8	48	31.5	11.5	18	15
2020A06	R20/A	8	1/8	3	6	51	27	10.5	14	16.3
2020A08	R20/A	8	1/4	4	8	54	31.5	11.5	18	16.3
2020A09	R20/A	10	1/4	4	8	64	31.5	11.5	18	18.5
2020A10	R20/A	12	1/4	4	8	64	31.5	11.5	18	21
2020A11	R20/A	12	3/8	5	9	68	36	13.5	22	21
2020A12	R20/A	12	1/2	8	11	72	42	16.2	26	21

ELBOW, INTERMEDIATE, TECHNOPOLYMER (R21)



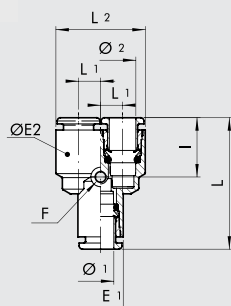
Code	Ref.	Ø	L	D	E	I	F
2L21001	RL21	4	16.7	2.5	9.2	7.2	3.3
2021002	R21	5	20	3.5	13.5	-	-
2L21003	RL21	6	19	4.2	11.3	8.2	3.3
2L21004	RL21	8	21.4	6.2	13.8	9.6	3.3
2021005	RL21	10	24	8.5	16	10.9	3.3
2021006	RL21	12	25.8	10.5	19.5	12.5	3.3

INTERMEDIATE TEE, TECHNOPOLYMER (R22)



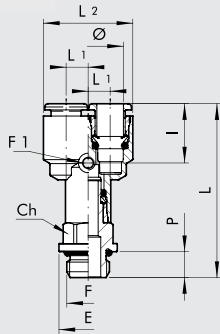
Code	Ref.	Ø	L	L1	D	E	I	I1	F
2L22001	RL22	4	16.7	33.4	2.5	9.2	7.2	14.4	3.3
2022002	R22	5	20	40	3.5	13.5	-	-	-
2L22003	RL22	6	19	38	4.2	11.3	8.2	16.4	3.3
2L22004	RL22	8	21.4	42.8	6.2	13.8	9.6	19.2	3.3
2022005	RL22	10	24	48	8.5	16	10.9	21.8	3.3
2022006	RL22	12	25.8	51.6	10.5	19.5	12.5	25	3.3

WYE (R23)



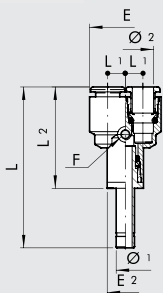
Code	Ref.	Ø1	Ø2	L	L1	E1	ØE2	I	F	L2
2023001	RL23	4	4	32.9	5	9.2	9.2	14.8	3.3	19.2
2023002	R23	5	5	35.5	6.5	13.5	13.5	-	-	26.5
2023003	RL23	6	6	35.5	5.8	11.3	11.3	15	3.3	22.8
2023004	RL23	8	8	39.5	7.2	13.8	13.8	15.8	3.3	28.2
2L23005	RL23	10	10	43.1	8.3	16	16	17.4	3.3	32.6
2L23006	RL23	12	12	48	10	19.5	19.5	18	3.3	39.5
2L23301	RL23	6	4	34.2	5	11.3	9.2	14.8	3.3	19.2
2L23303	RL23	8	6	37.8	5.8	13.8	11.3	15	3.3	22.8
2L23306	RL23	10	8	40.4	7.2	16	13.8	15.8	3.3	28.2
2L23309	RL23	12	10	44.2	8.3	19.5	16	17.4	3.3	32.6

Y TECHNOPOLYMER, THREADED INPUT (RL23/M)



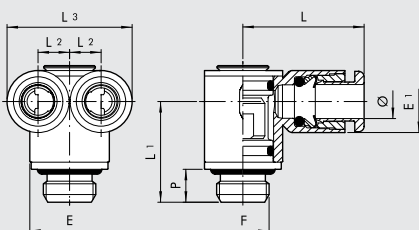
Code	Rif.	Ø	F	L	L1	L2	I	CH	P	E	F1
2L23401	RL23/M	4	M5	38.7	5	19.2	14.8	9	4	9.9	3.3
2L23402	RL23/M	4	1/8	42.6	5	19.2	14.8	12	6	14	3.3
2L23403	RL23/M	4	1/4	46.6	5	19.2	14.8	14	8	18	3.3
2L23406	RL23/M	6	1/8	44.9	5.75	22.8	15	12	6	14	3.3
2L23407	RL23/M	6	1/4	47.9	5.75	22.8	15	14	8	18	3.3
2L23409	RL23/M	8	1/8	48.4	7.2	28.2	15.8	14	6	15	3.3
2L23410	RL23/M	8	1/4	52.8	7.2	28.2	15.8	14	8	18	3.3
2L23412	RL23/M	8	3/8	54.4	7.2	28.2	15.8	17	9	22	3.3
2L23413	RL23/M	10	1/4	53.8	8.3	32.6	17.4	16	8	18	3.3
2L23415	RL23/M	10	3/8	56	8.3	32.6	17.4	17	9	20	3.3
2L23419	RL23/M	12	3/8	62	10	39.5	18	19	9	22	3.3
2L23420	RL23/M	12	1/2	62.3	10	39.5	18	22	11	26	3.3

Y BRANCH WITH ADAPTER, TECHNOPOLYMER (R24)



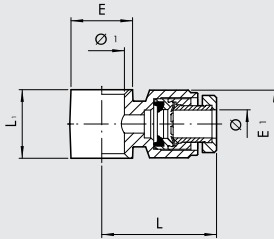
Code	Ref.	Ø1	Ø2	L	L1	L2	E1	E2	I	F
2024001	RL24	4	4	46.9	5	29.7	9.2	9.2	14.8	3.3
2024003	RL24	6	6	49.7	5.75	32	11.3	11.3	15	3.3
2L24004	RL24	8	8	55.1	7.2	35.9	13.8	13.8	15.8	3.3
2L24005	RL24	10	10	63.1	8.3	39.2	16	16	17.4	3.3
2L24006	RL24	12	12	70.5	10	44	19.5	19.5	18	3.3
2L24301	RL24	6	4	48.4	5	30.7	9.2	11.3	14.8	3.3
2L24303	RL24	8	6	53.4	5.75	34.2	11.3	13.8	15	3.3
2L24306	RL24	10	8	60.4	7.2	36.6	13.8	16	15.8	3.3
2L24309	RL24	12	10	66.7	8.3	40.2	16	19.5	17.4	3.3

TECHNOPOLYMER PARALLEL Y, THREADED INPUT (RL25)



Code	Ref.	Ø	F	L	L1	L2	L3	E	E1	CH	P
2L25001	RL25	4	M5	17.7	13.1	5	19.2	8	9.2	2	4
2L25002	RL25	4	M7	17.7	14.6	5	19.2	9.8	9.2	3	5
2L25003	RL25	4	1/8	17.7	16.5	5	19.2	13	9.2	3	6
2L25004	RL25	6	1/8	23	18.3	5.75	22.8	14	11.3	3	6
2L25005	RL25	6	1/4	23	21.2	5.75	22.8	16.4	11.3	4	8
2L25008	RL25	8	1/4	25.8	22.2	7.2	28.2	18	13.8	4	8
2L25009	RL25	8	3/8	25.8	23.8	7.2	28.2	20	13.8	5	9

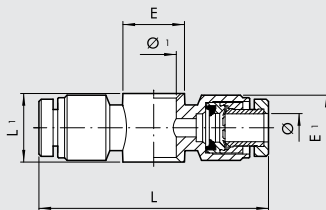
SINGLE RING, TECHNOPOLYMER (R28)



Code	Ref.	Ø	Ø 1	L	L1	E	E1
2012102	R28	4	1/8	22.5	17	15	12.5
2012104	R28	5	1/8	23	17	15	13.5
2012106	R28	6	1/8	22.5	17	15	15
2012107	R28	6	1/4	24	19	18	15
2012108	R28	8	1/8	25.5	17	15	16.5
2012109	R28	8	1/4	27	19	18	16.5
2012110	R28	8	3/8	29	22	21.5	16.5
2012111	R28	10	1/4	32	19	18	18.5
2012112	R28	10	3/8	32	22	21.5	18.5
2012113	R28	12	1/4	32	19	18	21
2012114	R28	12	3/8	34	22	21.5	21
2012115	R28	12	1/2	36	24	26	21

For the rods series D, see page 4-48

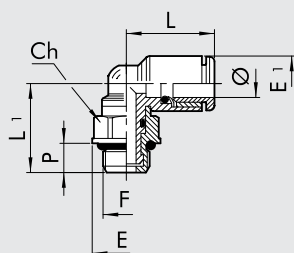
DUAL RING, TECHNOPOLYMER (R29)



Code	Ref.	Ø	Ø 1	L	L1	E	E1
2013102	R29	4	1/8	45	17	15	12.5
2013104	R29	5	1/8	46	17	15	13.5
2013106	R29	6	1/8	45	17	15	15
2013107	R29	6	1/4	48	19	18	15
2013108	R29	8	1/8	51	17	15	16.5
2013109	R29	8	1/4	54	19	18	16.5
2013110	R29	8	3/8	58	22	21.5	16.5
2013111	R29	10	1/4	64	19	18	18.5
2013112	R29	10	3/8	64	22	21.5	18.5
2013113	R29	12	1/4	64	19	18	21
2013114	R29	12	3/8	68	22	21.5	21
2013115	R29	12	1/2	72	24	26	21

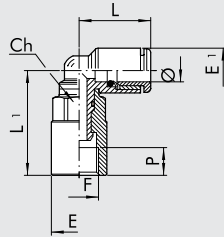
For the rods series D, see page 4-48

ROTARY ELBOW, MALE, TECHNOPOLYMER (RL 34)



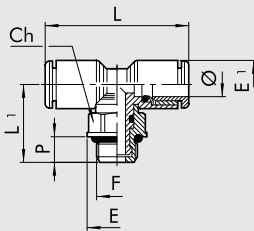
Code	Ref.	Ø	F	CH	P	L	L1	E	E1
2L34001	RL34	4	M5	8	4	16.4	15.2	9	9.2
2L34020	RL34	4	M7	8	5	16.4	16.2	9.8	9.2
2L34002	RL34	4	1/8	12	6	16.4	17.2	14	9.2
2L34003	RL34	4	1/4	14	8	16.4	20.1	18	9.2
2L34006	RL34	6	M5	8	4	18	16.3	9	11.3
2L34021	RL34	6	M7	9	5	19	17.5	9.9	11.3
2L34007	RL34	6	1/8	12	6	19	18.3	14	11.3
2L34008	RL34	6	1/4	14	8	19	21.2	18	11.3
2L34009	RL34	8	1/8	12	6	20.2	19.5	14	13.8
2L34010	RL34	8	1/4	14	8	20.2	22.4	18	13.8
2L34011	RL34	8	3/8	17	9	20.2	24.4	22	13.8
2L34013	RL34	10	1/4	14	8	23.3	23.5	18	16
2L34014	RL34	10	3/8	17	9	23.3	25.6	22	16
2L34016	RL34	12	3/8	17	9	25.2	27.3	22	19.5
2L34017	RL34	12	1/2	19	11	25.2	30.3	26	19.5

ELBOW, FEMALE, ROTARY, TECHNOPOLYMER (RL34/F)



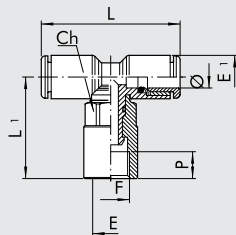
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
2L34F01	RL34/F	4	M5	8	9	9.2	16.4	15.3	4
2L34F05	RL34/F	4	1/8	12	14	9.2	16.4	20.9	7
2L34F06	RL34/F	6	M5	8	9	11.3	18	16.4	4
2L34F07	RL34/F	6	1/8	12	14	11.3	19	26.5	7
2L34F08	RL34/F	6	1/4	14	17	11.3	19	28.2	8
2L34F09	RL34/F	8	1/8	12	14	13.8	20.2	27.7	7
2L34F10	RL34/F	8	1/4	14	17	13.8	20.2	29.4	8
2L34F13	RL34/F	10	1/4	14	17	16	23.3	33	8
2L34F14	RL34/F	10	3/8	17	21	16	23.3	38	10
2L34F16	RL34/F	12	3/8	17	21	19.5	25.2	40.3	10
2L34F17	RL34/F	12	1/2	19	23.8	19.5	25.2	42.8	11

CENTRAL TEE, MALE, TECHNOPOLYMER (RL35)



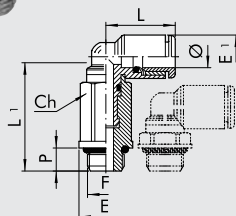
Code	Ref.	Ø	F	CH	P	L	L1	E	E1
2L35001	RL35	4	M5	8	4	31	32.8	9	9.2
2L35020	RL35	4	M7	8	5	31	32.8	9.8	9.2
2L35002	RL35	4	1/8	12	6	31	32.8	14	9.2
2L35003	RL35	4	1/4	14	8	31	32.8	18	9.2
2L35006	RL35	6	M5	8	4	34.2	36	9	11.3
2L35007	RL35	6	1/8	12	6	36.2	38	14	11.3
2L35008	RL35	6	1/4	14	8	36.2	38	18	11.3
2L35009	RL35	8	1/8	12	6	38.6	40.4	14	13.8
2L35010	RL35	8	1/4	14	8	38.6	40.4	18	13.8
2L35011	RL35	8	3/8	17	9	38.6	40.4	22	13.8
2L35013	RL35	10	1/4	14	8	46.6	23.5	18	16
2L35014	RL35	10	3/8	17	9	46.6	25.6	22	16
2L35016	RL35	12	3/8	17	9	50.4	27.3	22	19.5
2L35017	RL35	12	1/2	19	11	50.4	30.3	26	19.5

CENTRAL TEE, FEMALE, ROTARY, TECHNOPOLYMER (RL35/F)



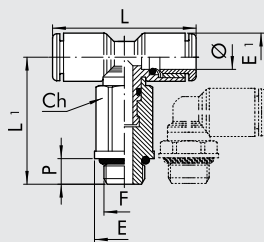
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
2L35F01	RL35/F	4	M5	8	9	9.2	32.8	15.3	4
2L35F06	RL35/F	6	M5	8	9	11.3	36	16.4	4
2L35F07	RL35/F	6	1/8	12	14	11.3	38	26.5	7
2L35F08	RL35/F	6	1/4	14	17	11.3	38	28.2	8
2L35F09	RL35/F	8	1/8	12	14	13.8	40.4	27.7	7
2L35F10	RL35/F	8	1/4	14	17	13.8	40.4	29.4	8
2L35F13	RL35/F	10	1/4	14	17	16	46.6	33	8
2L35F14	RL35/F	10	3/8	17	21	16	46.6	38	10
2L35F16	RL35/F	12	3/8	17	21	19.5	50.4	40.3	10
2L35F17	RL35/F	12	1/2	19	23.8	19.5	50.4	42.8	11

ROTARY ELBOW, MALE, EXTENDED, TECHNOPOLYMER (RL 36)



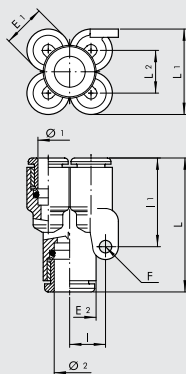
Code	Ref.	Ø	F	CH	P	L	L1	E	E1
2L36001	RL36	4	M5	8	4	16.4	26.7	9	9.2
2L36020	RL36	4	M7	8	5	16.4	27.7	9.8	9.2
2L36002	RL36	4	1/8	12	6	16.4	25.3	14	9.2
2L36006	RL36	6	M5	8	4	18	27.8	9	11.3
2L36021	RL36	6	M7	9	5	18	29.3	9.9	11.3
2L36007	RL36	6	1/8	12	6	19	30.9	14	11.3
2L36008	RL36	6	1/4	14	8	19	33.2	18	11.3
2L36009	RL36	8	1/8	12	6	20.2	32.1	14	13.8
2L36010	RL36	8	1/4	14	8	20.2	34.4	18	13.8
2L36012	RL36	10	1/4	14	8	23.3	38	18	16

CENTRAL TEE, MALE, ROTARY, EXTENDED, TECHNOPOLYMER (RL37)



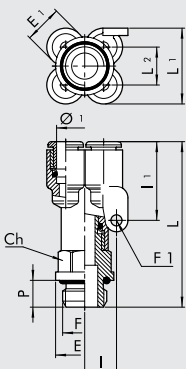
Code	Ref.	Ø	F	CH	P	L	L1	E	E1
2L37001	RL37	4	M5	8	4	32.8	26.7	9	9.2
2L37020	RL37	4	M7	8	5	32.8	27.5	9.8	9.2
2L37002	RL37	4	1/8	12	6	32.8	25.3	14	9.2
2L37006	RL37	6	M5	8	4	36	27.8	9	11.3
2L37007	RL37	6	1/8	12	6	38	30.9	14	11.3
2L37008	RL37	6	1/4	14	8	38	33.2	18	11.3
2L37009	RL37	8	1/8	12	6	40.4	32.1	14	13.8
2L37010	RL37	8	1/4	14	8	40.4	34.4	18	13.8
2L37012	RL37	10	1/4	14	8	46.6	38	18	16

DUAL Y BRANCH TECHNOPOLYMER (RL42)



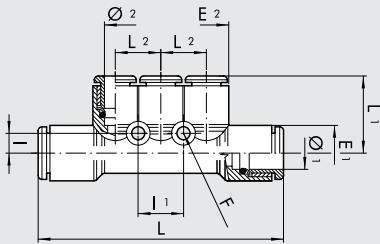
Code	Ref.	Ø1	Ø2	E1	E2	L	L1	L2	I	I1	F
2L42001	RL42	4	4	9.2	9.2	28.8	17.9	8.7	8	21.3	3.3
2L42002	RL42	4	6	9.2	11.3	31.3	17.9	8.7	8	21.3	3.3
2L42004	RL42	6	6	11.3	11.3	33.4	22.6	11.3	9.5	25.6	3.3
2L42005	RL42	6	8	11.3	14	34.8	22.6	11.3	9.5	25.6	3.3

DUAL Y BRANCH TECHNOPOLYMER, THREADED INPUT (RL43)



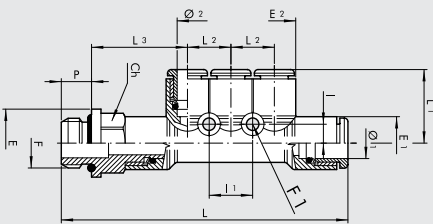
Code	Ref.	Ø1	F	E1	E	CH	P	L	L1	L2	I	I1	F1
2L43001	RL43	4	M5	9.2	8	9	4	35.5	17.9	8.7	8	21.3	3.3
2L43002	RL43	4	1/8	9.2	14	12	6	41.6	17.9	8.7	8	21.3	3.3
2L43003	RL43	4	1/4	9.2	18	14	8	44.6	17.9	8.7	8	21.3	3.3
2L43008	RL43	6	1/8	11.3	14	12	6	43.7	22.6	11.3	9.5	25.6	3.3
2L43009	RL43	6	1/4	11.3	18	14	8	46.7	22.6	11.3	9.5	25.6	3.3

MULTIPLE MANIFOLD, TECHNOPYLIMER (RL44)



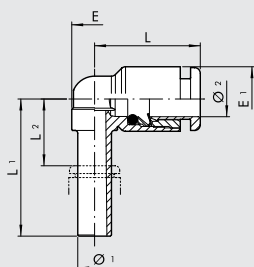
Code	Ref.	Ø1	Ø2	E1	E2	L	L1	L2	I	I1	F
2L44001	RL44	6	4	11.3	9.2	53.2	17.2	9.4	4.3	9.4	3.3
2L44003	RL44	8	6	14	11.3	61.4	19.6	11.5	5	11.5	3.3

MULTIPLE MANIFOLD, INPUT, THREADED, TECHNOPYLIMER (RL45)



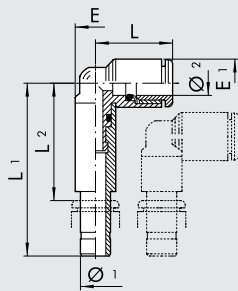
Code	Ref.	F	Ø1	Ø2	E1	E2	E	CH	P	L	L1	L2	L3	I	I1	F1
2L45001	RL45	1/8	6	4	11.3	9.2	14	12	6	63.5	17.2	9.4	21.5	4.3	9.4	3.3
2L45002	RL45	1/4	6	4	11.3	9.2	18	14	8	66.5	17.2	9.4	22.5	4.3	9.4	3.3
2L45007	RL45	1/8	8	6	14	11.3	15	14	6	71.2	19.6	11.5	23	5	11.5	3.3
2L45008	RL45	1/4	8	6	14	11.3	18	14	8	75.6	19.6	11.5	25.4	5	11.5	3.3
2L45009	RL45	3/8	8	6	14	11.3	22	17	9	77.2	19.6	11.5	26	5	11.5	3.3

PLUG-IN ELBOWS (RL46)



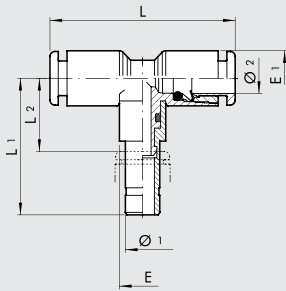
Code	Ref.	Ø1	Ø2	L	L1	L2	E	E1
2L46001	RL46	4	4	16	22.5	8.1	6.8	9.2
2L46002	RL46	6	6	18.5	24	8.4	8	11.3
2L46003	RL46	8	8	21.2	28.5	11.3	10	13.8
2L46004	RL46	10	10	23.3	32	13.3	12.5	16

EXTENDED PLUG-IN ELBOWS (RL47)



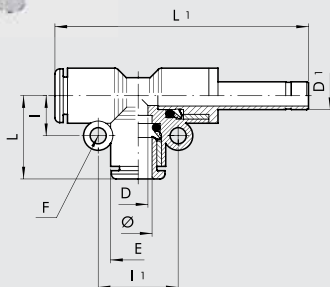
Code	Ref.	Ø1	Ø2	L	L1	L2	E	E1
2L47001	RL47	4	4	15.5	36.9	23.4	7.7	9.2
2L47002	RL47	6	6	18.1	40.6	25.9	9.3	11.3
2L47003	RL47	8	8	19.3	44.9	28.8	9.7	13.8

DOUBLE ELBOW (RL48)



Code	Ref.	Ø1	Ø2	L	L1	L2	E	E1
2L48001	RL48	4	4	32	22.5	8.1	6.8	9.2
2L48002	RL48	6	6	37	37.5	16.4	9.7	11.3
2L48003	RL48	8	8	42.4	28.5	11.3	10	13.8
2L48004	RL48	10	10	46.6	46	27.7	14	16

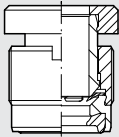
DOUBLE LATERAL ELBOW (RL49)



Code	Ref.	Ø	L	L1	I	I1	E	D	D1	F
2L49001	RL49	4	16.7	47.4	7.2	14.4	9.2	2.5	4	3.3
2L49003	RL49	6	19	52.5	8.2	16.4	11.3	4.2	6	3.3
2L49004	RL49	8	21.4	58.4	9.6	19.2	13.8	6.2	8	3.3
2L49005	RL49	10	24.1	68.2	10.9	21.8	16	8.5	10	3.3
2L49006	RL49	12	25.8	74.1	12.5	25	19.5	10.5	12	3.3

CARTRIDGES AND ACCESSORIES

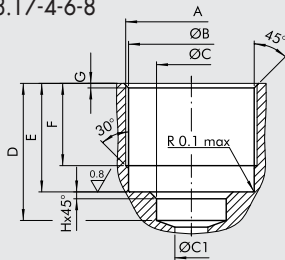
BRASS CARTRIDGE WITH THREAD (R26)



Code	Ref.	Ø	Brace of serration on centers in plastic material [Nm]	Brace of serration on metallic centers [Nm]
SERIES R				
2026A02	R26	3	0.6	0.8
2026A01	R26	3.17	0.6	0.8
2026001	R26	4	0.8	1
2026002	R26	5	0.8	1.5
2026003	R26	6	0.8	1.2
2026004	R26	8	1	1.8
2026005	R26	10	0.8	2
2026006	R26	12	0.8	2

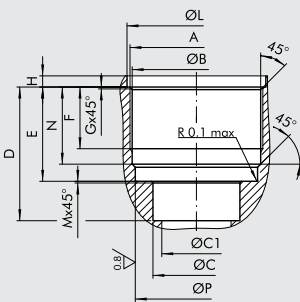
CARTRIDGE SLOT R26

Ø 3-3.17-4-6-8



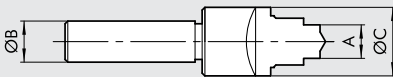
Ø	A	ØB	ØC	ØC1	D	E	F
3-3.17	M7x0.75	6.5 ±0.1	4.5 ^{+0.12} ₋₀	4 max	10.5 ^{+0.3} ₋₀	9.5 ^{+0.1} _{-0.3}	7 ±0.20
4	M9.5x0.75	9 ^{+0.10} ₋₀	4.1 ^{+0.10} ₋₀	3 max	12 ⁺⁰ _{-0.20}	9.5 ^{+0.15} _{-0.05}	7.5 ±0.20
6	M11.5x0.75	11 ^{+0.10} ₋₀	6.1 ^{+0.10} ₋₀	5 max	12 ±0.1	9.5 ±0.1	7.5 ±0.20
8	M13.5x0.75	13 ^{+0.10} ₋₀	8.1 ^{+0.10} ₋₀	7 max	15 ⁺⁰ _{-0.20}	10.5 ^{+0.15} _{-0.05}	8.5 ±0.20
Ø	G	H					
3-3.17	0.5	-					
4	0.4	0.6					
6	0.4	0.6					
8	0.4	0.6					

Ø 5-10-12



Ø	A	ØB	ØC	ØC1	D	E	F
5	M10.5x0.75	10 ^{+0.1} ₋₀	5 ^{+0.15} ₋₀	4 max	11.8 ±0.1	8.9 ^{+0.1} ₋₀	5.8 ^{+0.3} ₋₀
10	M15.5x0.75	15 ^{+0.1} ₋₀	10 ^{+0.15} ₋₀	9 max	15.6 ±0.1	11 ±0.05	7.5 ^{+0.3} ₋₀
12	M18x1	17.5 ^{+0.05} _{-0.1}	12 ^{+0.05} _{-0.15}	11 max	18 ±0.1	12 ±0.05	6.8 ^{+0.3} ₋₀
Ø	G	H	ØL	M	N	ØP	
5	0.3	0.9 ⁺⁰ _{-0.3}	11.2 ^{+0.12} _{+0.02}	0.1	7.8 ±0.05	9.7 ±0.05	
10	0.3	1.3 ⁺⁰ _{-0.3}	16.2 ^{+0.1} _{-0.05}	0.2	9 ±0.05	14.9 ^{+0.10} ₋₀	
12	0.6	1.3 ⁺⁰ _{-0.3}	18.8 ^{+0.1} ₋₀	0.2	9.75 ^{+0.1} _{-0.15}	17 ^{+0.1} ₋₀	

TOOL FOR SLOT R26



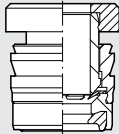
Code	Ref.	A	ØB	ØC
2025010	UT.SE. R26 3-3.17	4.5	10	10
2025011	UT.SE. R26 4	4.1	12	15
2025012	UT.SE. R26 5	5.1	15	19
2025013	UT.SE. R26 6	6.1	16	19
2025014	UT.SE. R26 8	8.1	16	21
2025015	UT.SE. R26 10	10.1	18	25
2025016	UT.SE. R26 12	12.1	15	25

MALE FOR CARTRIDGE SLOT R26



Code	Ref.	Ø	A
2025020	MA R26 3-3.17	3-3.17	M7x0.75
2025021	MA R26 4	4	M9.5x0.75
2025022	MA R26 5	5	M10.5x0.75
2025023	MA R26 6	6	M11.5x0.75
2025024	MA R26 8	8	M13.5x0.75
2025025	MA R26 10	10	M15.5x0.75
2025026	MA R26 12	12	M18x1

BRASS COMPRESSION CARTRIDGE (R27)



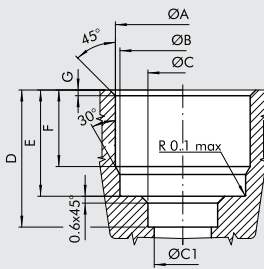
Code Ref. Ø

SERIES R

2027001	R27	4
2027002	R27	5
2027003	R27	6
2027004	R27	8
2027005	R27	10
2027006	R27	12

CARTRIDGE SLOT R27

Ø 4-6-8



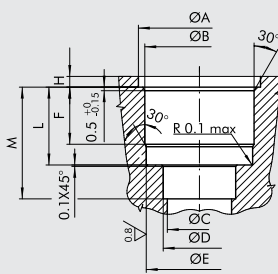
Ø	Ø A	Ø B	Ø C	Ø C1	D	E	F	G
FOR ALUMINIUM								
4	9.2 ^{+0.10} _{-0.10}	9 ^{+0.10} ₋₀	4.1 ^{+0.10} ₋₀	3 MAX	12 ⁺⁰ _{-0.20}	9.3 ⁺⁰ _{-0.10}	6.7 ^{+0.10} ₋₀	0.5
6	11.3 ⁺⁰ _{-0.08}	11 ^{+0.10} ₋₀	6.1 ^{+0.10} ₋₀	5 MAX	12 ⁺⁰ _{-0.20}	9.3 ⁺⁰ _{-0.10}	6.7 ^{+0.10} ₋₀	0.5
8	13.3 ⁺⁰ _{-0.08}	13 ^{+0.10} ₋₀	8.1 ^{+0.10} ₋₀	7 MAX	15 ⁺⁰ _{-0.20}	10.3 ⁺⁰ _{-0.10}	7.7 ^{+0.10} ₋₀	0.5

FOR TECHNOPOLYMER

4	*9.2 ⁺⁰ _{-0.10}	9 ^{+0.10} ₋₀	4.1 ^{+0.10} ₋₀	3 MAX	12 ⁺⁰ _{-0.20}	9.3 ⁺⁰ _{-0.10}	6.7 ^{+0.10} ₋₀	0.5
6	*11.2 ⁺⁰ _{-0.10}	11 ^{+0.10} ₋₀	6.1 ^{+0.10} ₋₀	5 MAX	12 ⁺⁰ _{-0.20}	9.3 ⁺⁰ _{-0.10}	6.7 ^{+0.10} ₋₀	0.5
8	*13.2 ⁺⁰ _{-0.10}	13 ^{+0.10} ₋₀	8.1 ^{+0.10} ₋₀	7 MAX	15 ⁺⁰ _{-0.20}	10.3 ⁺⁰ _{-0.10}	7.7 ^{+0.10} ₋₀	0.5

* N.B.: the diameter in interference is purely an indication and depends on the type of plastic material used and on its thickness. We suggest you should effect practical assembling tests.

Ø 5-10-12



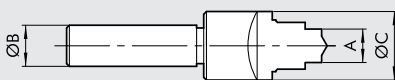
Ø	Ø A	Ø B	Ø C	Ø D	Ø E	F	H	L	M
FOR TECHNOPOLYMER									
5	12.1 ^{+0.15} ₋₀	*10.2 ⁺⁰ _{-0.10}	4 MAX	5.1 ^{+0.15} ₋₀	9.7 ±0.05	6 ^{+0.2} ₋₀	1.2 ⁻⁰ _{-0.2}	8.75 ⁻⁰ _{-0.1}	11.8 ±0.10
10	17.1 ^{+0.15} ₋₀	*15.15 ⁺⁰ _{-0.08}	9 MAX	10.15 ^{+0.1} ₋₀	14.9 ±0.05	8 ^{+0.2} ₋₀	1.5 ^{-0.2} _{-0.2}	10.9 ⁻⁰ _{-0.1}	15.6 ±0.10
12	19.7 ^{+0.15} ₋₀	*17.55 ⁺⁰ _{-0.08}	11 MAX	12.15 ^{+0.1} ₋₀	17.1 ±0.05	9 ^{+0.2} ₋₀	1.5 ^{-0.2} _{-0.2}	11.85 ⁻⁰ _{-0.1}	18 ±0.10

FOR ALUMINIUM

5	12.1 ^{+0.15} ₋₀	10.3 ⁺⁰ _{-0.08}	4 MAX	5.1 ^{+0.15} ₋₀	9.7 ±0.05	6 ^{+0.2} ₋₀	1.2 ⁻⁰ _{-0.2}	8.75 ⁻⁰ _{-0.1}	11.8 ±0.10
10	17.1 ^{+0.15} ₋₀	15.4 ⁺⁰ _{-0.08}	9 MAX	10.15 ^{+0.1} ₋₀	14.9 ±0.05	8 ^{+0.2} ₋₀	1.5 ^{-0.2} _{-0.2}	10.9 ⁻⁰ _{-0.1}	15.6 ±0.10
12	19.7 ^{+0.15} ₋₀	17.8 ⁺⁰ _{-0.08}	11 MAX	12.15 ^{+0.1} ₋₀	17.1 ±0.05	9 ^{+0.2} ₋₀	1.5 ^{-0.2} _{-0.2}	11.85 ⁻⁰ _{-0.1}	18 ±0.10

* N.B.: the diameter in interference is purely an indication and depends on the type of plastic material used and on its thickness. We suggest you should effect practical assembling tests.

TOOL FOR SLOT R27



Code Ref. A Ø B Ø C

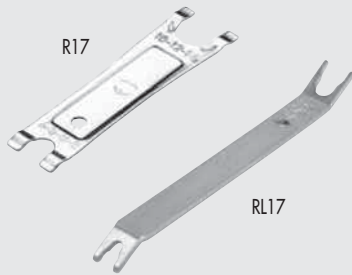
FOR ALUMINIUM

2027021	UT.SE. R27 AL. 4	4.1	10	11.5
2027022	UT.SE. R27 AL. 5	5.1	12	16
2027023	UT.SE. R27 AL. 6	6.1	12	13.5
2027024	UT.SE. R27 AL. 8	8.1	12	15.5
2027025	UT.SE. R27 AL. 10	10.1	16	20
2027026	UT.SE. R27 AL. 12	12.1	16	22

FOR TECHNOPOLYMER

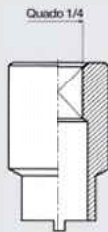
2027011	UT.SE. R27 P. 4	4.1	10	11.5
2027012	UT.SE. R27 P. 5	5.1	12	16
2027013	UT.SE. R27 P. 6	6.1	12	13.5
2027014	UT.SE. R27 P. 8	8.1	12	15.5
2027015	UT.SE. R27 P. 10	10.1	16	20
2027016	UT.SE. R27 P. 12	12.1	16	22

R17 – DISASSEMBLY KEY



Code	Ref.	Lenght (mm)	Ø Tube
2L17001	RL17	140	from 3 to 10
2017001	R17	95.0	from 4 to 14

R41 – CARTRIDGE KEY R26



Code	Ref.	Ø
2041001	R41	4
2041002	R41	5
2041003	R41	6
2041004	R41	8
2041005	R41	10
2041006	R41	12

NOTES

SERIES F PUSH-IN FITTINGS FOR USE IN THE FOOD INDUSTRY

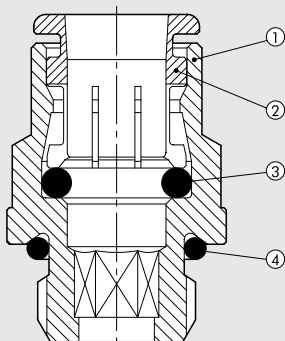
The materials of which these fittings are made can be used in the food industry. The brass parts are chemically treated with phosphorus nickel-plating according to the NSF®/ANSI 51 standard of the food programme. The seals are made of FDA-approved FKM/FPM. There is no technopolymer in the fitting, which solves the problems of incompatibility with detergents and other chemicals. With these materials, the fittings can be used up to 150°C, which make them suitable for high-temperature applications other than the food industry. The threads are cylindrical and under-head O-rings provide a pneumatic seal. This avoids the need for sealants (e.g. Teflon®), which could release solid fragments during screwing and unscrewing that would contaminate the environment or the fluid. Our fittings can be screwed and unscrewed any number of times and still remain clean and pneumatically sealed. This choice of materials and treatments make these fittings suitable for use in the chemical, pharmaceutical, medical and electronics industry. A standard range of fittings is available, but other designs can be developed on specific request.



TECHNICAL FEATURES

Threaded port		M5 - G1/8" - G1/4" - G3/8" - G1/2"
Pipe diameter	mm	Ø 4 - Ø 6 - Ø 8 - Ø 10
Temperature range	°C	- 20 to + 150
	°F	- 4 to 302
Pressure range		- 0.99 bar - 16 bar / - 0.099 MPa - 1.6 MPa
Recommended pipe		Rilsan PA 11 - Nylon 6 - Polyamide 12 - Polypropylene

COMPONENTS



- ① Body: chemically nickel-plated brass to NSF®/ANSI 51 standards
- ② Gripper: chemically nickel-plated brass to NSF®/ANSI 51 standards
- ③ Fitting seal: FKM/FPM
- ④ Port seal: FKM/FPM

ADVANTAGES

Under-head O-ring

Can be screwed and unscrewed any number of times; no fragments of Teflon® or sealant will contaminate the fluid.

Corrosion proof

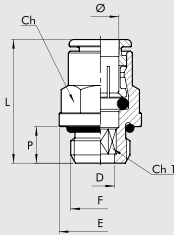
Chemical nickel-plating + FKM/FPM compatible with numerous substances

No plastic parts

No risk of incompatibility

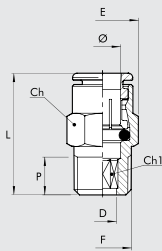


STRAIGHT, CYLINDRICAL, MALE R1 NSF



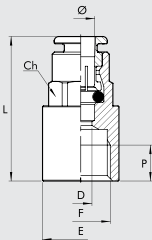
Code	Ref.	Ø	F	CH	CH1	P	L	D	E
2F01001	R1 NSF	4	M5	Ø 9.9	2.5	4	21.5	2.6	9.9
2F01002	R1 NSF	4	1/8	11	3	6	20.5	3.1	15
2F01003	R1 NSF	4	1/4	12	3	8	22.5	3.1	18
2F01000	R1 NSF	6	M5	Ø 12.9	2.5	4	25	2.6	12.9
2F01007	R1 NSF	6	1/8	13	4	6	27.5	4.2	15
2F01008	R1 NSF	6	1/4	13	4	8	26.5	4.2	18
2F01009	R1 NSF	8	1/8	14	5	6	28.5	5.2	15.6
2F01010	R1 NSF	8	1/4	15	6	8	27	6.2	18
2F01011	R1 NSF	8	3/8	15	6	9	28	6.2	21
2F01012	R1 NSF	10	1/4	17	7	8	33.5	7.2	20
2F01013	R1 NSF	10	3/8	17	8	9	30.5	8.2	21
2F01022	R1 NSF	10	1/2	17	10	11	31.5	10.2	26

STRAIGHT, CONICAL, MALE RL1C NSF



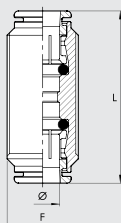
Code	Ref.	Ø	F	CH	CH1	P	L	D	E
2F01C02	R1C NSF	4	1/8	10	2.5	6.2	20.5	3.1	11.5
2F01C07	R1C NSF	6	1/8	12	4	6.2	24	4.2	13.8
2F01C08	R1C NSF	6	1/4	14	4	8.5	25.5	4.2	16
2F01C09	R1C NSF	8	1/8	14	5	6.2	27.5	5.2	16
2F01C10	R1C NSF	8	1/4	14	6	8.5	27.5	6.2	16
2F01C11	R1C NSF	8	3/8	17	6	9	27	6.2	19.6
2F01C13	R1C NSF	10	1/4	17	7	8.5	34.5	7.2	19.6
2F01C14	R1C NSF	10	3/8	17	7	9	30.5	7.2	19.6

STRAIGHT, FEMALE R2 NSF



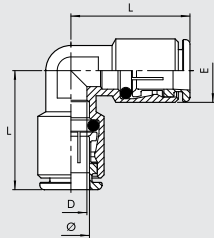
Code	Ref.	Ø	F	CH	P	L	D	E
2F02001	R2 NSF	4	1/8	10	7	27	3	14
2F02005	R2 NSF	6	1/8	13	7	30	5	15
2F02006	R2 NSF	6	1/4	13	8	32	5	17
2F02007	R2 NSF	8	1/8	14	7	30	7	17
2F02008	R2 NSF	8	1/4	14	8	32	7	17
2F02011	R2 NSF	10	1/4	17	8	35	9	20

STRAIGHT, INTERMEDIATE R3 NSF



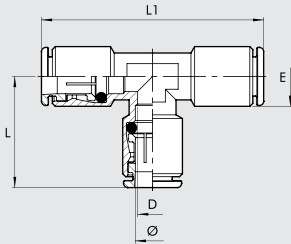
Code	Ref.	Ø	F	L
2F03001	R3 NSF	4	M13X1	33
2F03003	R3 NSF	6	M15X1	40
2F03004	R3 NSF	8	M17X1	41
2F03005	R3 NSF	10	M20X1	47

ELBOW, INTERMEDIATE R4 NSF



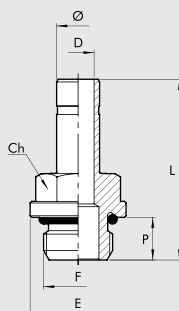
Code	Ref.	Ø	D	E	L
2F04001	R4 NSF	4	2.5	9.5	18
2F04003	R4 NSF	6	4.5	13.5	22
2F04004	R4 NSF	8	7	14	26
2F04005	R4 NSF	10	9	17	30

TEE, INTERMEDIATE R5 NSF



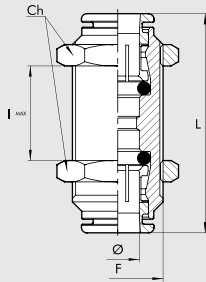
Code	Ref.	Ø	L	L1	D	E
2F05001	R5 NSF	4	21	42	3.5	9.5
2F05003	R5 NSF	6	24	48	5	12.5
2F05004	R5 NSF	8	26	52	7	14
2F05005	R5 NSF	10	30	60	9	17

THREADED ADAPTER R6 NSF



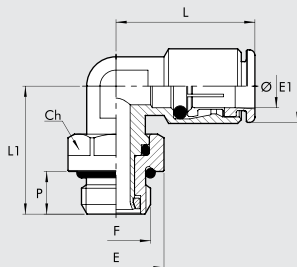
Code	Ref.	Ø	F	CH	P	L	D	E
2F06001	R6 NSF	4	M5	8	4	25.2	2.5	9
2F06002	R6 NSF	4	1/8	13	6	28.9	2.5	15
2F06003	R6 NSF	4	1/4	14	8	32.4	2.2	18
2F06000	R6 NSF	6	M5	9	4	25.7	2.7	10
2F06007	R6 NSF	6	1/8	13	6	29.4	4	15
2F06008	R6 NSF	6	1/4	14	8	32.9	4	18
2F06009	R6 NSF	8	1/8	13	6	30.6	5.5	15
2F06010	R6 NSF	8	1/4	14	8	34	6	18
2F06011	R6 NSF	8	3/8	17	9	35.4	6	22
2F06012	R6 NSF	10	1/4	14	8	35.6	7.8	18
2F06013	R6 NSF	10	3/8	17	9	37.1	8	22

STRAIGHT, INTERMEDIATE, BULKHEAD UNIONS R10 NSF



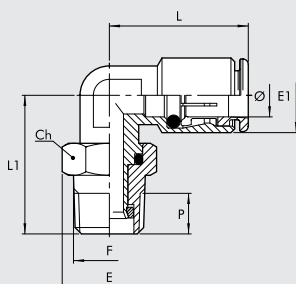
Code	Ref.	Ø	F	CH	L	I MAX
2F11001	R10 NSF	4	M13x1	16	33	11
2F11003	R10 NSF	6	M15x1	17	40	16
2F11004	R10 NSF	8	M17x1	20	41	19
2F11005	R10 NSF	10	M20x1	24	47	21

ROTARY ELBOW, MALE, CYLINDRICAL R31 NSF



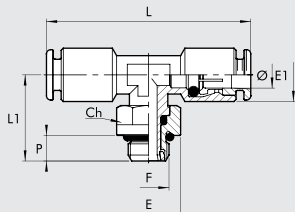
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
2F31001	R31 NSF	4	M5	9	9	10	21	19	4
2F31002	R31 NSF	4	1/8	13	15	10	21	21	6
2F31003	R31 NSF	4	1/4	16	18	10	21	25	8
2F31007	R31 NSF	6	M5	9	8	11.8	24	17.5	4
2F31008	R31 NSF	6	1/8	13	15	12.5	24	21	6
2F31009	R31 NSF	6	1/4	16	18	12.5	25.5	25	8
2F31010	R31 NSF	8	1/8	13	15	14	26	22.5	6
2F31011	R31 NSF	8	1/4	16	18	14	26	25	8
2F31012	R31 NSF	8	3/8	19	22	14	27.5	30.5	9
2F31013	R31 NSF	10	1/4	16	18	16.5	30	27	8
2F31014	R31 NSF	10	3/8	19	22	16.5	30	30.5	9
2F31015	R31 NSF	10	1/2	22	26	16.5	31	32	11

ROTARY ELBOW, MALE, CONICAL R31C NSF



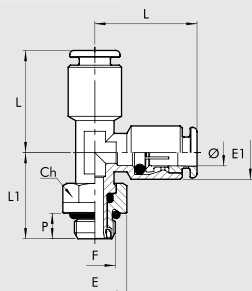
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
2F31C02	R31C NSF	4	1/8	12	13.3	10	21	22	6.2
2F31C03	R31C NSF	4	1/4	16	17.7	10	21	27	8.5
2F31C08	R31C NSF	6	1/8	12	13.3	11.8	24	22	6.2
2F31C09	R31C NSF	6	1/4	16	17.7	12.5	25.5	27	8.5
2F31C10	R31C NSF	8	1/8	12	13.3	14	26	23.5	6.2
2F31C11	R31C NSF	8	1/4	16	17.7	14	26	27	8.5
2F31C12	R31C NSF	8	3/8	19	22	14	27.5	31	9
2F31C13	R31C NSF	10	1/4	16	17.7	16.5	30	29	8.5
2F31C14	R31C NSF	10	3/8	19	22	16.5	30	31	9

CENTRAL TEE, MALE, CYLINDRICAL, ROTARY R32 NSF



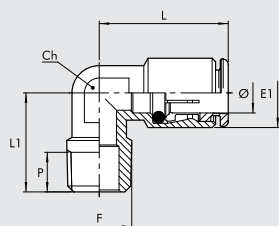
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
2F32002	R32 NSF	4	1/8	13	15	10	41.5	21	6
2F32008	R32 NSF	6	1/8	13	15	12.5	47.5	21	6
2F32009	R32 NSF	6	1/4	16	18	12.5	50.5	25	8
2F32010	R32 NSF	8	1/8	13	15	14	52	22.5	6
2F32011	R32 NSF	8	1/4	16	18	14	52	25	8
2F32012	R32 NSF	8	3/8	19	22	14	56	30.5	9
2F32013	R32 NSF	10	1/4	16	18	16.5	60.5	27	8
2F32014	R32 NSF	10	3/8	19	22	16.5	60.5	30.5	9

LATERAL TEE, MALE, CYLINDRICAL, ROTARY R38 NSF



Code	Ref.	Ø	F	CH	E	E1	L	L1	P
2F38002	R38 NSF	4	1/8	13	15	9.5	22.5	21	6
2F38008	R38 NSF	6	1/8	13	15	12.5	24.5	21	6
2F38009	R38 NSF	6	1/4	16	18	12.5	26	25	8
2F38010	R38 NSF	8	1/8	13	15	14.5	27.5	22.5	6
2F38011	R38 NSF	8	1/4	16	18	14.5	27.5	25	8
2F38013	R38 NSF	10	1/4	16	18	17	31.5	27	8
2F38014	R38 NSF	10	3/8	19	22	17	31.5	30.5	9

ELBOW, MALE, CONICAL R39 NSF



Code	Ref.	Ø	F	CH	E1	L	L1	P
2F39C02	R39 NSF	4	1/8	10	9.5	21	16	6.2
2F39C08	R39 NSF	6	1/8	10	11.8	23.5	16	6.2
2F39C09	R39 NSF	6	1/4	10	11.8	24	18.5	8.5
2F39C10	R39 NSF	8	1/8	12	14	26	17	6.2
2F39C11	R39 NSF	8	1/4	12	14	26	20	8.5
2F39C12	R39 NSF	8	3/8	14	14	27.5	22.5	9
2F39C13	R39 NSF	10	1/4	14	17	30.5	22	8.5

STANDARD FITTING SERIES A

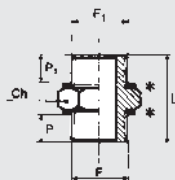
- Body: OT58 brass
- Maximum pressure 870 psi, 6000 KPa 60 bar



NIPPLE, PARALLEL (A1)

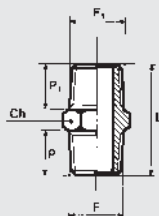


* Washer D11 can be used



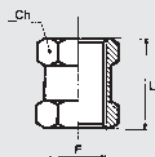
Code	Ref.	F	F1	Ch	P	P1	L
2101A00	A1	M5	M5	8	4.0	4.0	11.5
2101000	A1	M5	1/8	14	4.0	6.0	14.5
2101001	A1	1/8	1/8	14	6.0	6.0	17.0
2101002	A1	1/8	1/4	17	6.0	8.0	19.0
2101003	A1	1/8	3/8	20	6.0	9.0	20.0
2101004	A1	1/4	1/4	17	8.0	8.0	21.0
2101005	A1	1/4	3/8	20	8.0	9.0	22.0
2101006	A1	1/4	1/2	25	8.0	10.0	24.0
2101007	A1	3/8	3/8	20	9.0	9.0	24.0
2101008	A1	3/8	1/2	25	9.0	10.0	25.5
2101009	A1	1/2	1/2	25	10.0	10.0	26.5
2101010	A1	1/2	3/4	30	10.0	11.0	27.0
2101011	A1	3/4	3/4	30	11.0	11.0	28.0

NIPPLE, CONICAL (A2)



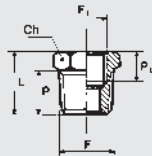
Code	Ref.	F	F1	Ch	P	P1	L
2102001	A2	1/8	1/8	12	8.0	8.0	21.0
2102002	A2	1/8	1/4	14	8.0	11.0	24.0
2102003	A2	1/8	3/8	17	8.0	11.5	25.0
2102004	A2	1/4	1/4	14	11.0	11.0	27.0
2102005	A2	1/4	3/8	17	11.0	11.5	28.0
2102006	A2	1/4	1/2	22	11.0	14.0	32.0
2102007	A2	3/8	3/8	17	11.5	11.5	29.0
2102008	A2	3/8	1/2	22	11.5	14.0	32.5
2102009	A2	1/2	1/2	22	14.0	14.0	35.0
2102010	A2	1/2	3/4	27	14.0	16.5	37.5
2102011	A2	3/4	3/4	27	16.5	16.5	40.0

SLEEVE (A3)



Code	Ref.	F	Ch	L
2103000	A3	M5	8	11.0
2103001	A3	1/8	14	15.0
2103002	A3	1/4	17	22.0
2103003	A3	3/8	22	24.0
2103004	A3	1/2	27	30.0

REDUCER, CONICAL (A4)

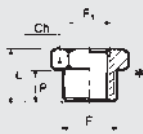


Code	Ref.	F	F1	Ch	P	P1	L
2104001	A4	1/4	1/8	14	11.0	7.0	16.0
2104002	A4	3/8	1/8	17	11.5	7.0	17.0
2104003	A4	3/8	1/4	17	11.5	8.0	17.0
2104004	A4	1/2	1/4	22	14.0	8.0	20.0
2104005	A4	1/2	3/8	22	14.0	10.0	20.0
2104006	A4	3/4	1/2	27	16.5	11.0	23.5

REDUCER, PARALLEL (A4/Z)

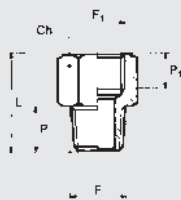


* Washer D11 can be used



Code	Ref.	F	F1	Ch	P	L
2151000	A4/Z	1/8	M5	14	6.0	10.0
2151001	A4/Z	1/4	1/8	17	8.0	13.0
2151002	A4/Z	3/8	1/8	20	9.0	14.0
2151003	A4/Z	3/8	1/4	20	9.0	14.0
2151004	A4/Z	1/2	1/4	25	10.0	15.5
2151005	A4/Z	1/2	3/8	25	10.0	15.5

REDUCER, CONICAL (A5)

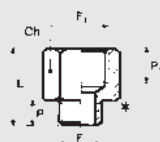


Code	Ref.	F	F1	Ch	P	P1	L
2105001	A5	1/8	1/8	14	8.0	7.0	20.0
2105002	A5	1/8	1/4	17	8.0	8.0	22.5
2105003	A5	1/4	1/4	17	11.0	8.0	25.0
2105004	A5	1/4	3/8	22	11.0	10.0	28.5
2105005	A5	3/8	3/8	22	11.5	10.0	28.5
2105006	A5	3/8	1/2	24	11.5	11.0	32.0
2105007	A5	1/2	1/2	24	14.0	11.0	34.0

REDUCER, PARALLEL (A5/Z)

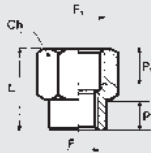


* Washer D11 can be used



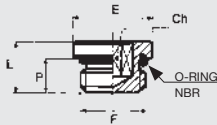
Code	Ref.	F	F1	Ch	P	P1	L
2152001	A5/Z	M5	1/8	12	4.0	7.0	17.0
2152002	A5/Z	1/8	1/8	14	6.0	7.0	18.5
2152003	A5/Z	1/8	1/4	17	6.0	8.0	21.5
2152004	A5/Z	1/4	1/4	17	8.0	8.0	22.5
2152005	A5/Z	1/4	3/8	22	8.0	10.0	26.0
2152006	A5/Z	3/8	3/8	22	9.0	10.0	26.5
2152007	A5/Z	3/8	1/2	24	9.0	11.0	29.5
2152008	A5/Z	1/2	1/2	25	10.0	11.0	29.5

REDUCER A6



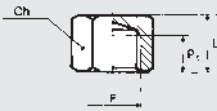
Code	Ref.	F	F1	Ch	P	P1	L
2106001	A6	1/8	1/4	17	8.0	8.0	21.5
2106002	A6	1/8	3/8	22	7.0	10.0	23.5
2106003	A6	1/4	3/8	22	9.0	10.0	25.5
2106004	A6	1/4	1/2	24	9.0	11.0	28.5
2106005	A6	3/8	1/2	24	11.0	11.0	29.5

PLUG WITH EXAGON EMBEDDED (A7)



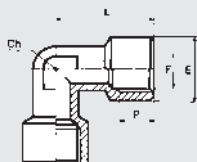
Code	Ref.	F	Ch	P	L	E	O ring
2107000	A7	M5	2.5	4.0	6.5	8	3.5x1.2
2107005	A7	M7	3	5.0	7.4	10	5x1.5
2107001	A7	1/8	3	7.0	9.5	15	2031
2107002	A7	1/4	6	8.0	11.0	18	2043
2107003	A7	3/8	8	9.0	12.5	21	2056
2107004	A7	1/2	10	11.0	14.5	26	3068

NUB (A8)



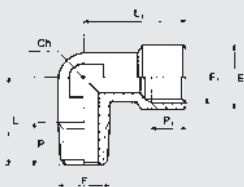
Code	Ref.	F	Ch	P1	L
2108001	A8	1/8	14	7.0	13.0
2108002	A8	1/4	17	8.0	15.0
2108003	A8	3/8	20	10.0	17.5
2108004	A8	1/2	24	11.0	20.0

ELBOW, FEMALE (A9)



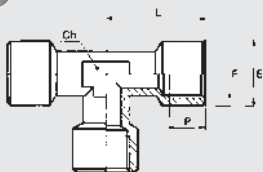
Code	Ref.	F	Ch	P	L	E
2109001	A9	1/8	10	7.0	20.5	13.5
2109002	A9	1/4	13	8.0	26.0	17.0
2109003	A9	3/8	15	10.0	30.0	20.5
2109004	A9	1/2	20	11.0	36.0	25.5

ELBOW, MALE-FEMALE (A10)



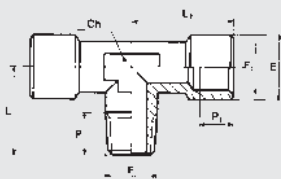
Code	Ref.	F	F1	Ch	P	P1	L	L1	E
2110001	A10	1/8	1/8	10	8.0	7.0	16.5	20.5	13.5
2110002	A10	1/4	1/4	13	10.5	8.0	24.5	26.0	17.0
2110003	A10	3/8	3/8	15	11.0	10.0	26.0	30.0	20.5
2110004	A10	1/2	1/2	20	13.0	11.0	30.0	36.0	25.5

TEE, FEMALE (A11)



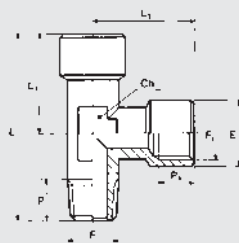
Code	Ref.	F	Ch	P	L	E
2111001	A11	1/8	10	7.0	20.5	13.5
2111002	A11	1/4	13	8.0	26.0	17.0
2111003	A11	3/8	15	10.0	30.0	20.5
2111004	A11	1/2	20	11.0	36.0	25.5

TEE, CENTRAL MALE (A12)



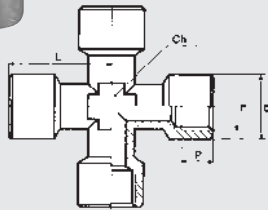
Code	Ref.	F	F1	Ch	P	P1	L	L1	E
2112001	A12	1/8	1/8	10	8.0	7.0	16.5	20.5	13.5
2112002	A12	1/4	1/4	13	10.5	8.0	24.5	26.0	17.0
2112003	A12	3/8	3/8	15	11.0	10.0	26.0	30.0	20.5
2112004	A12	1/2	1/2	20	13.0	11.0	30.0	36.0	25.5

TEE, LATERAL MALE (A13)



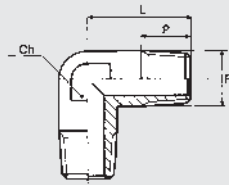
Code	Ref.	F	F1	Ch	P	P1	L	L1	E
2113001	A13	1/8	1/8	10	8.0	7.0	37.0	20.5	13.5
2113002	A13	1/4	1/4	13	10.5	8.0	50.5	26.0	17.0
2113003	A13	3/8	3/8	15	11.0	10.0	56.0	30.0	20.5
2113004	A13	1/2	1/2	20	13.0	11.0	66.0	36.0	25.5

EQUAL FEMALE CROSS (A14)



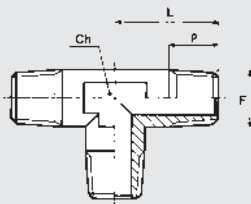
Code	Ref.	F	Ch	P	L	E
2114001	A14	1/8	10	7.0	20.5	13.5
2114002	A14	1/4	13	8.0	26.0	17.0
2114003	A14	3/8	15	10.0	28.0	20.5

ELBOW, MALE (A15)



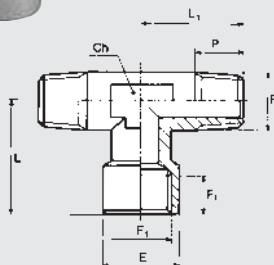
Code	Ref.	F	Ch	P	L
2115001	A15	1/8	10	8.0	16.5
2115002	A15	1/4	13	10.5	24.5
2115003	A15	3/8	15	11.0	26.0
2115004	A15	1/2	20	13.0	30.0

TEE, MALE (A16)



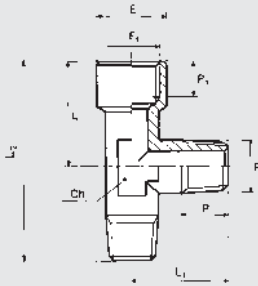
Code	Ref.	F	Ch	P	L
2116001	A16	1/8	10	8.0	16.5
2116002	A16	1/4	13	10.5	24.5
2116003	A16	3/8	15	11.0	26.0
2116004	A16	1/2	20	13.0	30.0

TEE, CENTRAL FEMALE (A17)



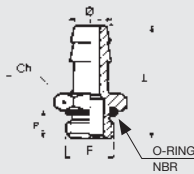
Code	Ref.	F	F1	Ch	P	P1	L	L1	E
2117001	A17	1/4	1/4	13	10.5	8.0	26.0	24.5	17.0
2117002	A17	1/8	1/8	10	8.0	7.0	20.5	16.5	13.5
2117003	A17	3/8	3/8	15	11.0	10.0	30.0	26.0	20.5
2117004	A17	1/2	1/2	20	13.0	11.0	36.0	30.0	25.5

TEE, LATERAL FEMALE (A18)



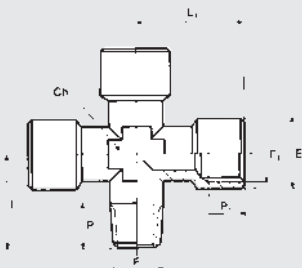
Code	Ref.	F	F1	Ch	P	P1	L	L1	E	L2
2118000	A18	1/8	1/8	10	8.0	7.0	20.5	16.5	13.5	37.0
2118001	A18	1/4	1/4	13	10.5	8.0	26.0	24.5	17.0	50.5
2118002	A18	3/8	3/8	15	11.0	10.0	30.0	26.0	20.5	56.0
2118003	A18	1/2	1/2	20	13.0	11.0	36.0	30.0	25.5	66.0

HOSE ADAPTER, PARALLEL (A19)



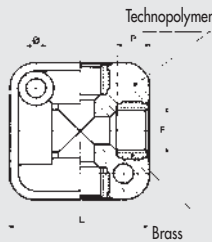
Code	Ref.	Ø	F	Ch	P	L	O ring
2119001	A19	7	1/8	15	6.0	31.0	2031
2119002	A19	7	1/4	18	8.0	33.0	2043
2119003	A19	8	1/8	15	6.0	31.0	2031
2119004	A19	9	1/8	15	6.0	31.0	2031
2119005	A19	9	1/4	18	8.0	33.0	2043
2119006	A19	9	3/8	21	9.0	34.0	2056
2119007	A19	12	1/4	18	8.0	33.0	2043
2119008	A19	12	3/8	21	9.0	34.0	2056
2119009	A19	12	1/2	26	11.0	36.0	3068
2119010	A19	17	3/8	21	9.0	34.0	2056
2119011	A19	17	1/2	26	11.0	36.0	3068

MALE-FEMALE EQUAL CROSS (A20)



Code	Ref.	F	F1	Ch	P	P1	L	L1	E
2120001	A20	1/8	1/8	10	8.0	7.0	16.5	20.5	13.5
2120002	A20	1/4	1/4	13	10.5	8.0	24.5	26.0	17.0

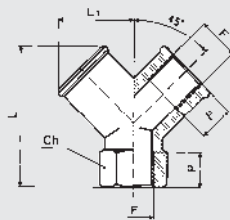
TEE CROSS (A21)



Code	Ref.	F	Ø	P	L	THICKNESS
2121001	A21	1/8	4.5	8.0	31.0	17.5
2121002	A21	1/4	5.5	9.0	40.0	24.0
2121003	A21	3/8	5.5	12.0	50.0	28.0
2121004	A21	1/2	5.5	12.0	50.0	34.0

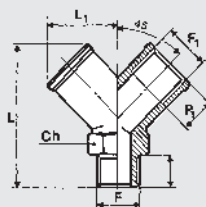
Maximum operating conditions for the A21s are different from other A-series fittings, namely max P13 bar, max T 50°C

Y, FEMALE 90° (A23)



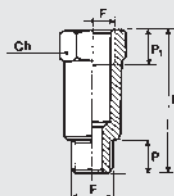
Code	Ref.	F	Ch	P	L	L1
2123001	A23	1/8	13	8	26.5	14.5
2123002	A23	1/4	17	11	32.0	18.0
2123003	A23	3/8	20	11.5	36.5	20.5
2123004	A23	1/2	25	14	44.5	26.5

Y, MALE 90° (A24)



Code	Ref.	F	F1	Ch	P	P1	L	L1
2124001	A24	1/8	1/8	13	8.0	8.0	32.0	14.5
2124002	A24	1/4	1/4	17	11.0	11.0	38.0	18.0
2124003	A24	3/8	3/8	20	11.5	11.5	42.0	20.5
2124004	A24	1/2	1/2	25	14.0	14.0	53.0	26.5

EXTENSION (A25)



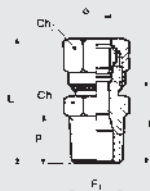
Code	Ref.	F	Ch	P	L	P1
2150003	A25	1/8	14	6.0	22.0	8.0
2150004	A25	1/8	14	6.0	42.0	8.0
2150005	A25	1/8	14	6.0	51.0	8.0
2150006	A25	1/4	17	8.0	35.0	11.0
2150007	A25	1/4	17	8.0	51.0	11.0

COMPRESSION FITTINGS SERIES B

- Body: OT58 brass
- Maximum pressure 870 psi, 6000 kPa 60 bar
- For use with copper tubes

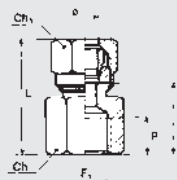


STRAIGHT, MALE CONICAL (B1)



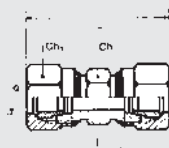
Code	Ref.	Ø	F1	Ch	Ch1	P	L	I
2201001	B1	4/2	1/8	10	10	8.0	27.5	16.0
2201002	B1	6/4	1/8	12	12	8.0	28.0	14.5
2201003	B1	6/4	1/4	14	12	11.0	31.0	17.5
2201004	B1	8/6	1/8	12	14	8.0	30.0	16.5
2201005	B1	8/6	1/4	14	14	11.0	33.0	19.5
2201006	B1	8/6	3/8	17	14	11.5	33.5	20.0
2201007	B1	10/8	1/4	17	19	11.0	38.5	20.0
2201008	B1	10/8	3/8	17	19	11.5	39.0	20.5
2201009	B1	10/8	1/2	22	19	14.0	42.5	24.0
2201010	B1	12/10	3/8	19	22	11.5	38.5	20.5
2201011	B1	12/10	1/2	22	22	14.0	42.0	24.0
2201012	B1	15/12	1/2	22	27	14.0	43.5	25.0

STRAIGHT, FEMALE (B2)



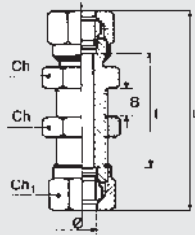
Code	Ref.	Ø	F1	Ch	Ch1	P	L	I
2202001	B2	6/4	1/8	14	12	7	28.5	15.0
2202002	B2	6/4	1/4	17	12	8	31.5	18.0
2202003	B2	8/6	1/8	14	14	7	29.5	16.0
2202004	B2	8/6	1/4	17	14	8	32.0	18.5
2202005	B2	8/6	3/8	22	14	10	36.0	22.5
2202006	B2	10/8	1/4	17	19	8	37.5	19.0
2202007	B2	10/8	3/8	22	19	10	41.0	22.5

STRAIGHT, CONNECTOR (B3)



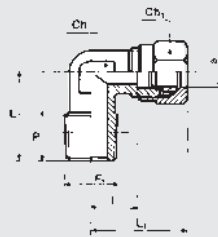
Code	Ref.	Ø	Ch	Ch1	L	I
2203001	B3	4/2	10	10	35	12.0
2203002	B3	6/4	12	12	36	9.0
2203003	B3	8/6	14	14	39	12.0
2203004	B3	10/8	17	19	50	13.0
2203005	B3	12/10	19	22	50	14.0
2203006	B3	15/12	24	27	53	16.0

BULKHEAD CONNECTOR (B4)



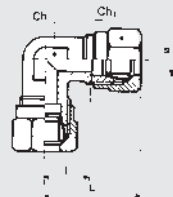
Code	Ref.	Ø	Ch	Ch1	L	I
2204001	B4	6/4	14	12	53.0	26
2204002	B4	8/6	16	14	56.0	29
2204003	B4	10/8	19	19	66.5	29.5
2204004	B4	12/10	22	22	67.0	31
2204005	B4	15/12	25	27	73.5	36.5

ELBOW, MALE (B5)



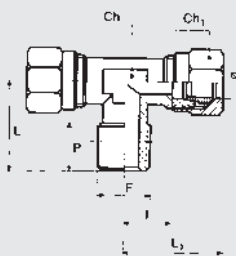
Code	Ref.	Ø	F1	Ch	Ch1	P	L	L1	I
2205001	B5	4/2	1/8	9	10	8.0	16.0	21.5	10.0
2205002	B5	6/4	1/8	9	12	8.0	16.0	22.0	8.5
2205003	B5	6/4	1/4	11	12	11.0	20.0	23.5	10.0
2205004	B5	8/6	1/8	11	14	8.0	17.0	24.0	10.5
2205005	B5	8/6	1/4	11	14	11.0	20.0	24.0	10.5
2205006	B5	8/6	3/8	13	14	12.0	23.5	27.0	13.5
2205007	B5	10/8	1/4	13	19	11.0	22.5	32.0	13.5
2205008	B5	10/8	3/8	13	19	12.0	23.5	32.0	13.5
2205009	B5	10/8	1/2	20	19	13.0	30.0	39.0	20.5
2205010	B5	12/10	3/8	15	22	11.5	24.0	33.5	15.5
2205011	B5	12/10	1/2	20	22	13.0	30.0	38.0	20.0
2205012	B5	15/12	1/2	20	27	13.0	30.0	38.5	20.0

ELBOW, FEMALE (B6)



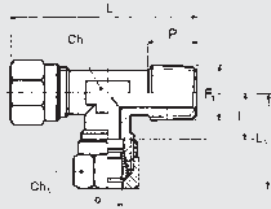
Code	Ref.	Ø	Ch	Ch1	L	I
2206001	B6	4/2	9	10	21.5	10.0
2206002	B6	6/4	9	12	22.0	8.5
2206003	B6	8/6	11	14	24.0	10.5
2206004	B6	10/8	13	19	32.0	13.5
2206005	B6	12/10	15	22	33.5	15.5
2206006	B6	15/12	20	27	38.5	20.0

TEE, CENTRAL MALE (B7)



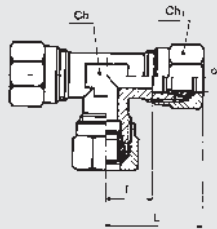
Code	Ref.	Ø	F	Ch	Ch1	P	L	L1	I
2207001	B7	4/2	1/8	9	10	8.0	16.0	21.5	10.0
2207002	B7	6/4	1/8	9	12	8.0	16.0	22.0	8.5
2207003	B7	6/4	1/4	11	12	11.0	20.0	23.5	10.0
2207004	B7	8/6	1/8	11	14	8.0	17.0	24.0	10.5
2207005	B7	8/6	1/4	11	14	11.0	20.0	24.0	10.5
2207006	B7	8/6	3/8	13	14	12.0	23.5	27.0	13.5
2207007	B7	10/8	1/4	13	19	11.0	22.5	32.0	13.5
2207008	B7	10/8	3/8	13	19	12.0	23.5	32.0	13.5
2207010	B7	12/10	3/8	15	22	11.5	24.0	33.5	15.5
2207011	B7	12/10	1/2	20	22	13.0	30.0	38.0	20.0
2207012	B7	15/12	1/2	20	27	13.0	30.0	38.5	20.0

TEE, LATERAL MALE (B8)



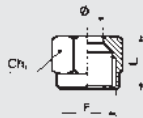
Code	Ref.	Ø	F1	Ch	Ch1	P	L	L1	I
2208000	B8	4/2	1/8	9	10	8.0	37.5	21.5	10.0
2208001	B8	6/4	1/8	9	12	8.0	38.5	22.0	8.5
2208002	B8	6/4	1/4	11	12	11.0	43.5	23.5	10.0
2208003	B8	8/6	1/8	11	14	8.0	41.0	24.0	10.5
2208004	B8	8/6	1/4	11	14	11.0	44.0	24.0	10.5
2208005	B8	8/6	3/8	13	14	12.0	50.5	27.0	13.5
2208006	B8	10/8	1/4	13	19	11.0	54.5	32.0	13.5
2208007	B8	10/8	3/8	13	19	12.0	55.5	32.0	13.5
2208009	B8	12/10	3/8	15	22	11.5	57.5	33.5	15.5
2208010	B8	12/10	1/2	20	22	13.0	68.0	38.0	20.0
2208011	B8	15/12	1/2	20	27	13.0	68.5	38.5	20.0

TEE, MALE (B9)



Code	Ref.	Ø	Ch	Ch1	L	I
2209001	B9	4/2	9	10	21.5	10.0
2209002	B9	6/4	9	12	22.0	8.5
2209003	B9	8/6	11	14	24.0	10.5
2209004	B9	10/8	13	19	32.0	13.5
2209005	B9	12/10	15	22	33.5	15.5
2209006	B9	15/12	20	27	38.5	20.0

NUT (B10)



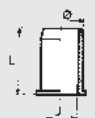
Code	Ref.	Ø	Ch1	L	F
2210001	B10	4/2	10	11.0	M8x1
2210002	B10	6/4	12	11.5	M10x1
2210003	B10	8/6	14	13.0	M12x1
2210004	B10	10/8	19	15.5	M16x1.5
2210005	B10	12/10	22	15.5	M18x1.5
2210006	B10	15/12	27	17.0	M22x1.5

OLIVE (B11)



Code	Ref.	Ø	L
2211001	B11	4/2	6
2211002	B11	6/4	7
2211003	B11	8/6	7
2211004	B11	10/8	10
2211005	B11	12/10	10
2211006	B11	15/12	10

INTERNAL BUSH (B12)



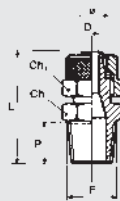
Code	Ref.	Ø	J	L
2212001	B12	6/4	3	12.0
2212002	B12	8/6	5	14.0
2212003	B12	10/8	7	15.0
2212004	B12	12/10	9	16.0
2212005	B12	15/12	11	17.0

QUICK FITTINGS SERIES C

- Body: OT58 brass
- Maximum pressure 261 psi, 1800 kPa 18 bar

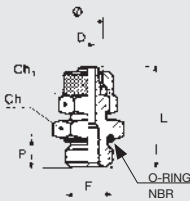


STRAIGHT, MALE CONICAL (C1)



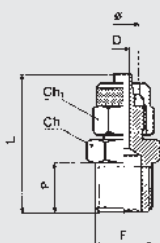
Code	Ref.	Ø	F	Ch	Ch1	P	L	D
2301017	C1	5/3	1/8	12	9	8.0	26.0	2.0
2301001	C1	6/4	1/8	12	12	8.0	26.5	3.0
2301002	C1	6/4	1/4	14	12	11.0	30.0	3.0
2301003	C1	8/6	1/8	12	14	8.0	26.5	5.0
2301004	C1	8/6	1/4	14	14	11.0	30.0	5.0
2301005	C1	8/6	3/8	17	14	11.5	31.0	5.0
2301020	C1	10/8	1/8	14	16	8.0	29.0	5.0
2301006	C1	10/8	1/4	14	16	11.0	32.0	6.8
2301007	C1	10/8	3/8	17	16	11.5	33.0	6.8
2301008	C1	10/8	1/2	22	16	14.0	36.0	6.8
2301009	C1	12/10	3/8	17	19	11.5	35.0	8.5
2301010	C1	12/10	1/2	22	19	14.0	38.0	8.5
2301015	C1	15/12.5	1/2	22	22	14.0	39.5	11.0

STRAIGHT, MALE PARALLEL WITH O-RING (C1/Z)



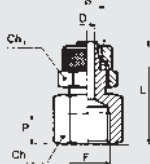
Code	Ref.	Ø	F	Ch	Ch1	P	L	D	O ring
2351001	C1/Z	4/2	M5	9	9	4.0	23.0	1.5	4x1.5
2351002	C1/Z	6/4	M5	9	9	4.0	23.0	2.7	4x1.5
2351003	C1/Z	6/4	1/8	13	12	6.0	25.0	3.0	2031
2351004	C1/Z	6/4	1/4	16	12	8.0	27.0	3.0	2043
2351005	C1/Z	8/6	1/8	14	14	6.0	25.0	5.0	2031
2351006	C1/Z	8/6	1/4	16	14	8.0	27.0	5.0	2043
2351007	C1/Z	8/6	3/8	19	14	9.0	29.0	5.0	2056
2351008	C1/Z	10/8	1/4	16	16	8.0	29.0	6.8	2043
2351009	C1/Z	10/8	3/8	19	16	9.0	31.0	6.8	2056
2351010	C1/Z	10/8	1/2	24	16	11.0	33.0	6.8	3068
2351011	C1/Z	12/10	3/8	19	19	9.0	33.0	8.5	2056
2351012	C1/Z	12/10	1/2	24	19	11.0	35.0	8.5	3068

STRAIGHT, MALE METRIC THREAD (C1/C)



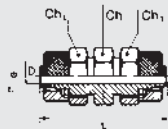
Code	Ref.	Ø	F	Ch	Ch1	P	L	D
2356001	C1/C	5/3	M5	9	9	4	23	2
2356002	C1/C	6/4	M6	9	9	5	24	3
2356003	C1/C	6/4	M12x1.5	17	12	8	27	3
2356004	C1/C	6/4	3/8	19	12	9	27	3
2356005	C1/C	8/6	M12x1.5	17	14	8	27	5

STRAIGHT, FEMALE (C2)



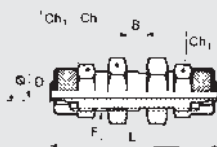
Code	Ref.	Ø	F	Ch	Ch1	P	L	D
2302001	C2	6/4	1/8	14	12	7.0	26.5	3.0
2302002	C2	6/4	1/4	17	12	8.0	29.5	3.0
2302003	C2	8/6	1/8	14	14	7.0	26.5	5.0
2302004	C2	8/6	1/4	17	14	8.0	29.0	5.0
2302005	C2	8/6	3/8	20	14	10.0	33.0	5.0
2302006	C2	10/8	1/4	17	16	8.0	31.0	6.8
2302007	C2	10/8	3/8	20	16	10.0	35.0	6.8
2302008	C2	10/8	1/2	24	16	11.0	38.0	6.8

STRAIGHT, CONNECTOR (C3)



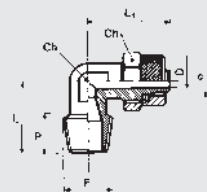
Code	Ref.	Ø	Ch	Ch1	L	D
2303001	C3	6/4	12	12	33.0	3.0
2303002	C3	8/6	12	14	33.0	5.0
2303003	C3	10/8	14	16	37.0	6.8
2303004	C3	12/10	17	19	42.0	8.5

BULKHEAD CONNECTOR (C4)



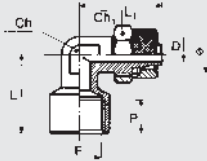
Code	Ref.	Ø	Ch	Ch1	L	D	B	F
2304001	C4	6/4	14	12	47.0	3.0	11.0	M10x1
2304002	C4	8/6	16	14	48.0	5.0	12.0	M12x1
2304003	C4	10/8	17	16	49.0	6.8	9.0	M14x1
2304004	C4	12/10	19	19	53.0	8.5	9.0	M16x1

ELBOW, MALE CONICAL (C5)



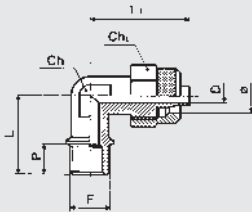
Code	Ref.	Ø	F	Ch	Ch1	P	L	L1	D
2305016	C5	5/3	1/8	8	9	8.0	17.0	22.0	2.0
2305001	C5	6/4	1/8	9	12	8.0	17.0	22.0	3.0
2305002	C5	6/4	1/4	9	12	11.0	20.0	22.0	3.0
2305003	C5	8/6	1/8	12	14	8.0	17.0	22.0	5.0
2305004	C5	8/6	1/4	12	14	11.0	20.0	22.0	5.0
2305005	C5	8/6	3/8	12	14	12.0	22.0	21.5	5.0
2305006	C5	10/8	1/4	12	16	11.0	20.5	25.0	6.8
2305007	C5	10/8	3/8	12	16	12.0	21.5	25.0	6.8
2305008	C5	10/8	1/2	17	16	14.0	26.0	28.5	6.8
2305009	C5	12/10	3/8	17	19	12.0	24.0	31.0	8.5
2305010	C5	12/10	1/2	17	19	14.0	26.0	31.0	8.5
2305017	C5	15/12.5	1/2	17	22	14.0	28.0	32.8	10.7

ELBOW FEMALE (C5/F)



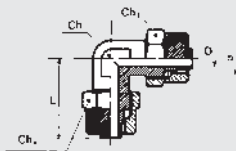
Code	Ref.	Ø	F	Ch	Ch1	L	L1	D	P
2352001	C5/F	6/4	1/8	9	12	21.0	22.0	3.0	7.0
2352002	C5/F	8/6	1/4	12	14	24.0	23.5	5.0	7.0

ELBOW, MALE METRIC THREAD (C5/C)



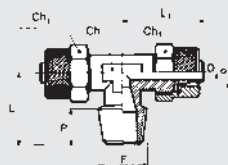
Code	Ref.	Ø	F	Ch	Ch1	P	L	L1	D
2357001	C5/C	6/4	M12x1.5	10	12	9	22	22.5	3
2357002	C5/C	8/6	M12x1.5	10	14	9	22	22.5	5

ELBOW CONNECTOR (C6)



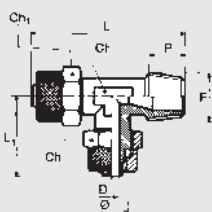
Code	Ref.	Ø	Ch	Ch1	L	D
2306001	C6	6/4	9	12	22.0	3.0
2306002	C6	8/6	12	14	22.0	5.0
2306003	C6	10/8	12	16	25.0	6.8
2306004	C6	12/10	17	19	31.0	8.5
2306006	C6	15/12.5	18	22	32.8	10.7

TEE, CENTRAL MALE (C7)



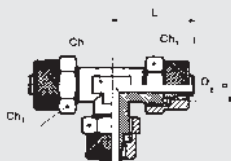
Code	Ref.	Ø	F	Ch	Ch1	P	L	L1	D
2307015	C7	5/3	1/8	9	9	8.0	17.0	22.0	2.0
2307001	C7	6/4	1/8	9	12	8.0	17.0	22.0	3.0
2307002	C7	6/4	1/4	9	12	11.0	20.0	22.0	3.0
2307003	C7	8/6	1/8	12	14	8.0	17.0	22.0	5.0
2307004	C7	8/6	1/4	12	14	11.0	20.0	22.0	5.0
2307005	C7	8/6	3/8	12	14	12.0	22.0	23.0	5.0
2307006	C7	10/8	1/4	12	16	11.0	21.0	25.0	6.8
2307007	C7	10/8	3/8	12	16	12.0	22.0	25.0	6.8
2307008	C7	10/8	1/2	17	16	14.0	26.0	28.5	6.8
2307009	C7	12/10	3/8	17	19	12.0	24.0	31.0	8.5
2307010	C7	12/10	1/2	17	19	14.0	26.0	31.0	8.5
2307016	C7	15/12.5	1/2	18	22	14.0	28.0	32.8	10.7

TEE, LATERAL MALE (C8)



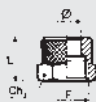
Code	Ref.	Ø	F	Ch	Ch1	P	L	L1	D
2308012	C8	5/3	1/8	9	9	8.0	39.0	22.0	2.0
2308001	C8	6/4	1/8	9	12	8.0	39.0	22.0	3.0
2308002	C8	6/4	1/4	9	12	11.0	42.0	22.0	3.0
2308003	C8	8/6	1/8	12	14	8.0	39.0	22.0	5.0
2308004	C8	8/6	1/4	12	14	11.0	42.0	22.0	5.0
2308005	C8	8/6	3/8	12	14	12.5	45.0	23.0	5.0
2308006	C8	10/8	1/4	12	16	11.5	46.0	25.0	6.8
2308007	C8	10/8	3/8	12	16	12.5	47.0	25.0	6.8
2308008	C8	10/8	1/2	17	16	13.5	54.5	28.5	6.8
2308009	C8	12/10	3/8	17	19	11.5	55.0	31.0	8.5
2308010	C8	12/10	1/2	17	19	13.5	57.0	31.0	8.5

TEE CONNECTOR (C9)



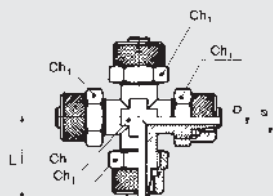
Code	Ref.	Ø	Ch	Ch1	L	D
2309001	C9	6/4	9	12	22.0	3.0
2309002	C9	8/6	12	14	22.0	5.0
2309003	C9	10/8	12	16	25.0	6.8
2309004	C9	12/10	17	19	31.0	8.5
2309007	C9	15/12.5	18	22	32.8	10.7

NUT (C10)



Code	Ref.	Ø	F	Ch1	L
2310001	C10	4/2	M7x0.5	9	9.0
2310009	C10	5/3	M7x0.5	9	9.0
2310002	C10	6/4- M5	M8x0.5	9	9.0
2310003	C10	6/4	M10x1	12	11.0
2310004	C10	8/6	M12x1	14	11.0
2310005	C10	10/8	M14x1	16	12.0
2310006	C10	12/10	M16x1	19	12.0
2310011	C10	15/12.5	M20x1	22	16.0

EQUAL CROSS CONNECTOR (C11)



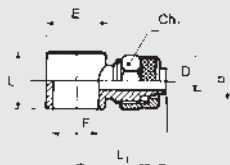
Code	Ref.	Ø	Ch	Ch1	L	D
2311001	C11	6/4	10	12	21.5	3.0
2311002	C11	8/6	10	14	22.0	5.0
2311003	C11	10/8	12	16	24.5	6.8

BANJO FITTINGS SERIES D

- Body: OT58 brass
- Maximum pressure 261 psi, 1800 kPa 18 bar

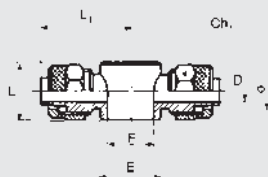


SINGLE BANJO BODY (D5)



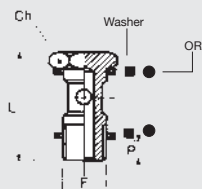
Code	Ref.	Ø	F	Ch1	L	L1	D	E
2405000	D5	4/2	M5	9	9.0	20.5	1.5	9.5
2405013	D5	5/3	1/8	9	15.0	24.3	2.0	14.0
2405018	D5	5/3	M5	9	9.0	20.7	2.0	9.5
2405001	D5	6/4	M5	9	9.0	20.5	3.0	9.5
2405002	D5	6/4	1/8	12	15.0	24.5	3.0	14.0
2405003	D5	6/4	1/4	12	17.0	26.5	3.0	18.0
2405005	D5	8/6	1/8	14	15.0	24.0	5.0	14.0
2405006	D5	8/6	1/4	14	17.0	26.0	5.0	18.0
2405007	D5	8/6	3/8	14	20.0	28.5	5.0	21.0
2405009	D5	10/8	1/4	16	17.0	28.0	6.8	18.0
2405010	D5	10/8	3/8	16	20.0	29.0	6.8	21.0
2405011	D5	10/8	1/2	16	24.0	30.5	6.8	26.0
2405012	D5	12/10	1/2	19	24.0	33.5	8.5	26.0
2405017	D5	12/10	3/8	19	20.0	31.0	8.5	21.0

DOUBLE BANJO BODY (D6)



Code	Ref.	Ø	F	Ch1	L	L1	D	E
2406001	D6	6/4	1/8	12	15.0	24.5	3.0	14.0
2406002	D6	6/4	1/4	12	17.0	26.5	3.0	18.0
2406004	D6	8/6	1/8	14	15.0	24.0	5.0	14.0
2406005	D6	8/6	1/4	14	17.0	26.0	5.0	18.0
2406006	D6	8/6	3/8	14	20.0	28.5	5.0	21.0
2406008	D6	10/8	1/4	16	17.0	28.0	6.8	18.0
2406009	D6	10/8	3/8	16	20.0	29.0	6.8	21.0
2406010	D6	10/8	1/2	16	24.0	30.5	6.8	26.0
2406011	D6	12/10	1/2	19	24.0	33.5	8.5	26.0

BANJO STEM SINGLE (D7)



Code	Ref.	F	Ch	L	P
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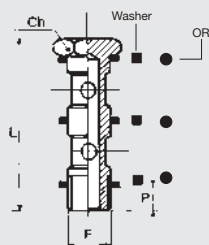
Version with washer D11 for models R13-R14-D12-D17-D5-D6

2407001	D7	M5	8	18.0	3
2407002	D7	1/8	14	28.0	6
2407003	D7	1/4	17	33.0	8
2407004	D7	3/8	20	37.0	9
2407005	D7	1/2	27	42.0	10
2407006	D7	M12x1.5	17	33.0	8

Version with O-ring for models R28-R29

2407102	D7 with OR	1/8	14	28.0	6
2407103	D7 with OR	1/4	17	33.0	8
2407104	D7 with OR	3/8	20	37.0	9

BANJO STEM DOUBLE (D8)



Code	Ref.	F	Ch	L	P
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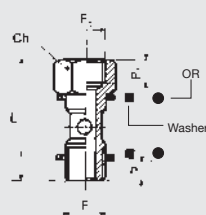
Version with washer D11 for models R13-R14-D5-D6-D12-D17

2408001	D8	1/8	14	44.5	6
2408002	D8	1/4	17	51.5	8
2408003	D8	3/8	20	58.5	9
2408004	D8	1/2	27	67.5	10

Version with O-ring for models R28-R29

2408102	D8 with OR	1/8	14	44.5	6
2408103	D8 with OR	1/4	17	51.5	8
2408104	D8 with OR	3/8	20	58.5	9

BANJO PASSING TROUGH SINGLE (D9)



Code	Ref.	F	F1	Ch	L	P	P1
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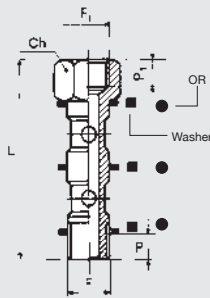
Version with washer D11 for models R13-R14-D5-D6-D12-D17

2409001	D9	1/8	1/8	14	36.5	6	7
2409002	D9	1/4	1/4	17	42.5	8	8
2409003	D9	3/8	3/8	20	49.5	9	10
2409004	D9	1/2	1/2	27	56.5	10	11

Version with O-ring for models R28-R29

2409102	D9	1/8	1/8	14	36.5	6	7
2409103	D9	1/4	1/4	17	42.5	8	8
2409104	D9	3/8	3/8	20	49.5	9	10

BANJO PASSING TROUGHT STEM DOUBLE (D10)



Code	Ref.	F	F1	Ch	L	P	P1
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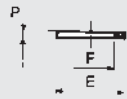
Version with washer D11 for models R13-R14-D5-D6-D12-D17

2410001	D10	1/8	1/8	14	53.0	6	7
2410002	D10	1/4	1/4	17	61.0	8	8
2410003	D10	3/8	3/8	20	71.0	9	10
2410004	D10	1/2	1/2	27	82.0	10	11

Version with O-ring for models R28-R29

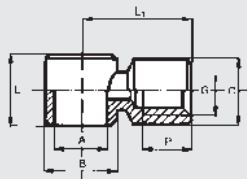
2410102	D10 with OR	1/8	1/8	14	53.0	6	7
2410103	D10 with OR	1/4	1/4	17	61.0	8	8
2410104	D10 with OR	3/8	3/8	20	71.0	9	10

WASHER (D11)



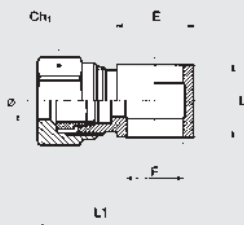
Code	Ref.	F	E	P
2411001	D11	M5	9	1.5 (nylon)
2411002	D11	1/8	13.8	1.5
2411003	D11	1/4	17.8	1.5
2411004	D11	3/8	21.0	1.5
2411005	D11	1/2	26.0	1.5

SINGLE BANJO PASSING TROUGHT BODY (D12)



Code	Ref.	A	G	B	C	L	L1	P
2412001	D12	1/8	1/8	14	13.5	15	21.5	7
2412002	D12	1/4	1/4	18	17.0	17	25.5	8
2412003	D12	3/8	3/8	21	20.5	20	31.0	10

SINGLE BANJO WITH "B" INTERFACE (D17)



Code	Ref.	Ø	F	Ch1	L	L1	E
2417006	D17	4/2	1/8	10	15	24.5	14
2417002	D17	6/4	1/8	12	15	26.0	14
2417003	D17	6/4	1/4	12	17	28.0	18
2417004	D17	8/6	1/8	14	15	26.0	14
2417005	D17	8/6	1/4	14	17	28.0	18

TAPERED THREAD FITTINGS WITH PTFE

Metal Work can supply fittings with a tapered thread coated in polytetrafluorethylene. This system provides the pneumatic seal between the fitting and the female thread. It is therefore not necessary to add other sealing systems during assembly, such as adhesives or Teflon tape. This significantly reduces assembly times. The physical and technical features of the material used ensure that the properties are maintained through time and in a wide range of operating temperatures.

This coating can be used with all Metal Work products that have a 1/8" to 1/2" gas taper thread, particularly the following;

- push-in fittings type R1C, R31C, R32C and R39C
- series A fittings types A2, A4, A5, A10, A12, A13, A15, A16, A17, A18 and A25
- series B bicone fittings, types B1, B5, B7 and B8
- series C push-in fittings, types C1, C5, C7, C8.



TECHNICAL DATA

Threaded coupling covered by PTFE

1/8" - 1/4" - 3/8" - 1/2"

Temperature range for PTFE

°C

- 45 to + 80

°F

- 49 to + 176

Pressure range

Except for limitations established for the fitting on which PTFE is applied.

Fluid

The same as for the fitting on which PTFE is applied.

Vacuum, compressed air.

KEY TO CODES

Fittings with a PTFE thread have the same code as the standard fitting, with the addition of the suffix **T**.

Example













The 1/8" 1/8" A2 fitting has code **2102001**, so the PTFE version has code **2102001T**.

NOTES



ACCESSORIES

● LINE ON LINE	PAGE 5-3
● COUPLINGS	PAGE 5-41
● FLOW REGULATORS	PAGE 5-51
● AUXILIARY VALVES	PAGE 5-69
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	● IN-LINE SOLENOID VALVES SERIES SOV L	PAGE 5-9
	● MINIATURE REDUCER SERIES RML-RMS-RMC	PAGE 5-12
	● IN-LINE PRESSURE GAUGE SERIES MAN L	PAGE 5-16
	● IN-LINE PRESSURE INDICATOR SERIES LAM L	PAGE 5-18
	● IN-LINE SHUTOFF VALVES SERIES V2V L - V3V L	PAGE 5-20
	● IN-LINE FLOW MICRO REGULATOR SERIES RFL L	PAGE 5-23
	● IN-LINE FIXED-REGULATION FLOW REGULATOR SERIE RFF L	PAGE 5-26
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	● IN-LINE QUICK-EXHAUST VALVE WITH REGULATED EXHAUST SERIES VSRR L	PAGE 5-31
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LINE OF PRODUCTS ON LINE

Line on Line is an exclusive range of products for mounting on pneumatic circuits. With these small, highly efficient components it is possible to perform all pneumatic functions at any point of the circuit.

Line on Line is ultra-modular - the components can be connected in parallel, in series or combined parallel/series.

All Line on Line products are available for pipe-pipe connection with two push-in fittings, or for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting.

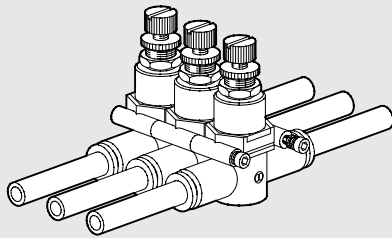
The body is made of technopolymer, giving a product that is extremely lightweight and compact.

One side of the body is marked with an indelible pneumatic symbol to facilitate identification and indicate the direction of flow.

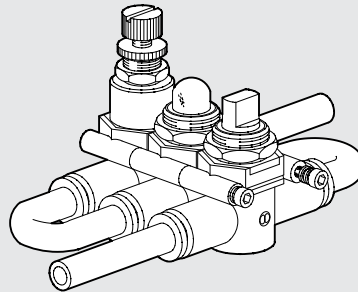


CONNECTION FREE

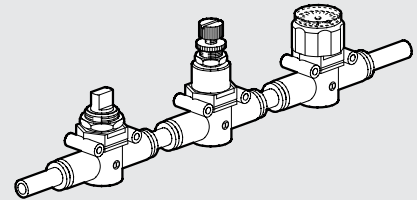
PARALLEL LINES



SERIAL LINE PARALLEL FITTING



SERIAL LINE IN-LINE FITTING



FIXING FREE

WALL FIXING

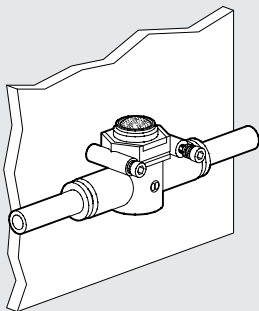
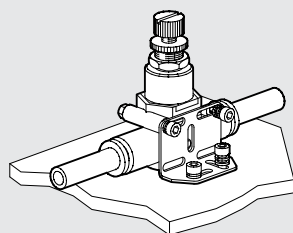
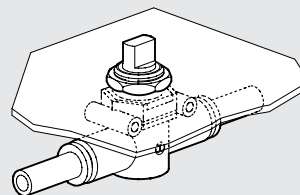


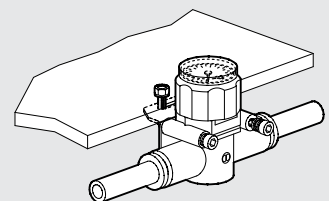
PLATE FIXING



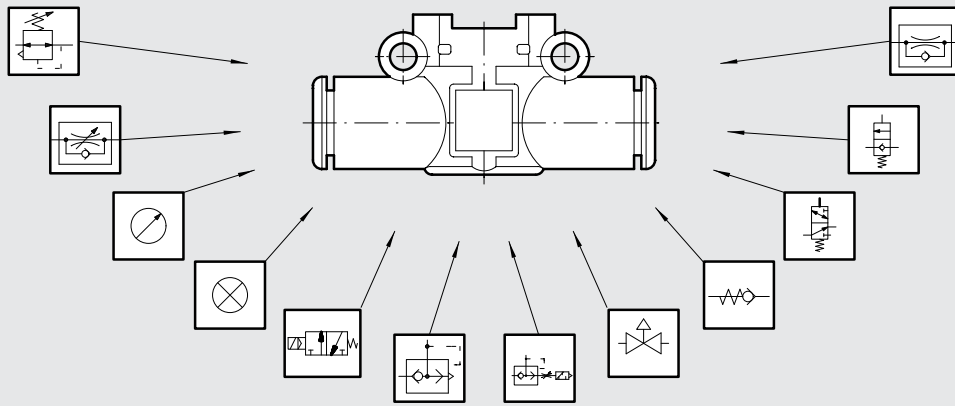
PANEL FIXING



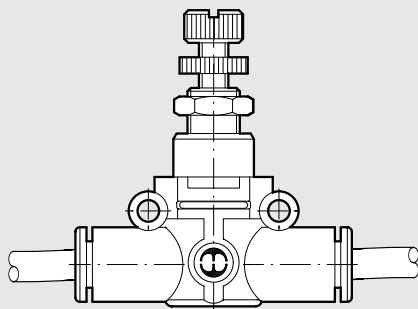
UNDER WALL FIXING



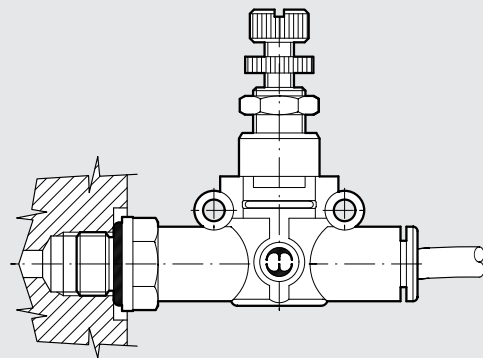
ALL THE PNEUMATIC FUNCTIONS WITH THE SAME EXTERNAL DIMENSIONS



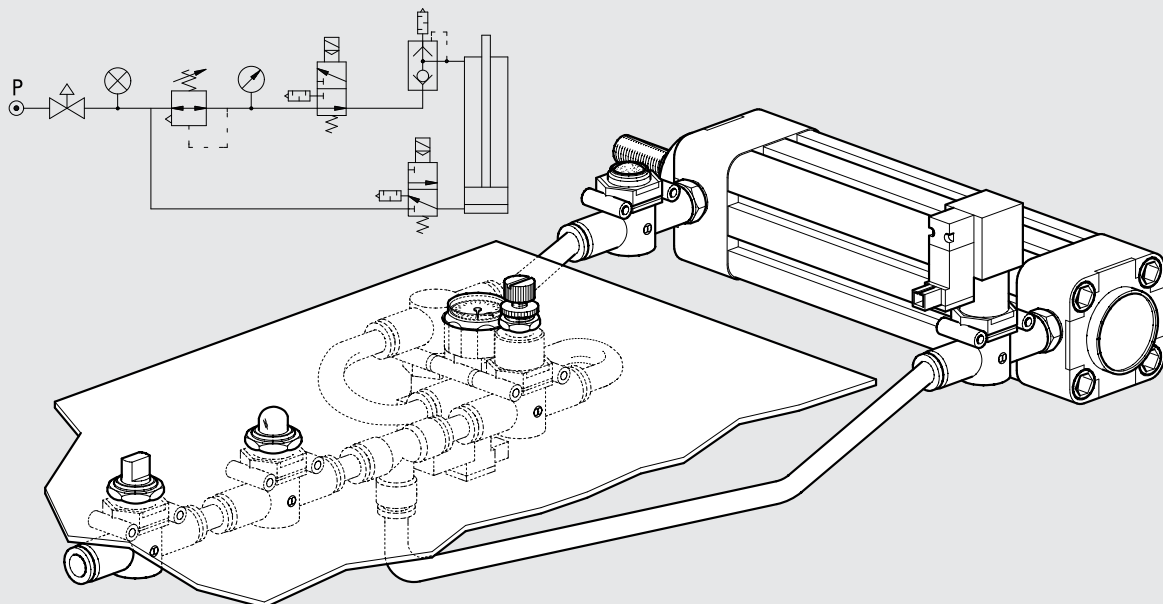
PIPE-PIPE



THREAD-PIPE



APPLICATION EXAMPLE



IN-LINE PNEUMATIC VALVE SERIES PNV L

The PNV L in-line pneumatic valve belongs to the LINE ON LINE® family and can be connected in series or in parallel with the other products in the same family.

It is available in a version for pipe-pipe connection, which includes two push-in fittings, and a version for thread-pipe connection, which includes a nickel-plated brass male thread and a push-in fitting.

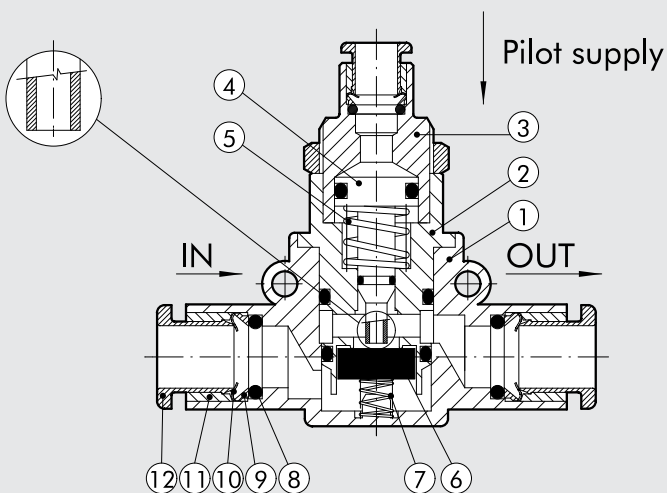
The compressed air port is a push-in fitting for Ø 4 pipe. The valve is the normally-closed 3/2 pipe. It is a unidirectional valve, meaning it only works properly if supplied from port 1.



TECHNICAL DATA		Ø 6	Ø 8
Max. operating pressure	MPa	1	
	bar	10	
	psi	145	
Temperature range	°C	- 20 to + 60	
	°F	- 4 to + 140	
		Rilsan PA 11 - Nylon 6 - Polyamide 12 - Polypropylene	
Recommended pipe		Lubricated or unlubricated filtered air	
Fluid		Please refer to page 6-7 of the technical documentation	
Compatibility with oils			

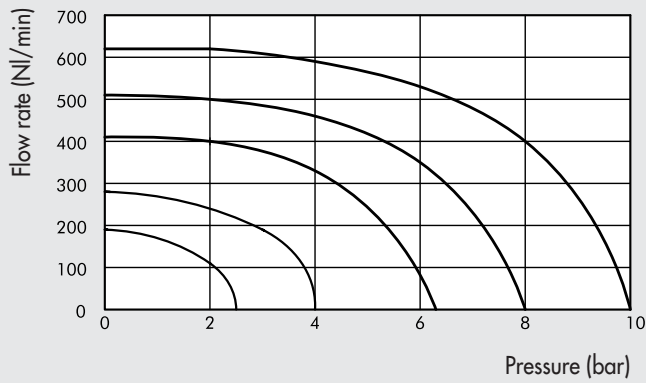
COMPONENTS

- ① Technopolymer body
- ② Nickel-plated brass insert
- ③ Nickel-plated brass pilot insert
- ④ Brass piston rod
- ⑤ Stainless steel clamping spring
- ⑥ NBR seal
- ⑦ Stainless steel poppet spring
- ⑧ NBR seal
- ⑨ Technopolymer spring ring
- ⑩ Stainless steel clamping spring
- ⑪ Technopolymer stop bushing
- ⑫ Technopolymer release bushing

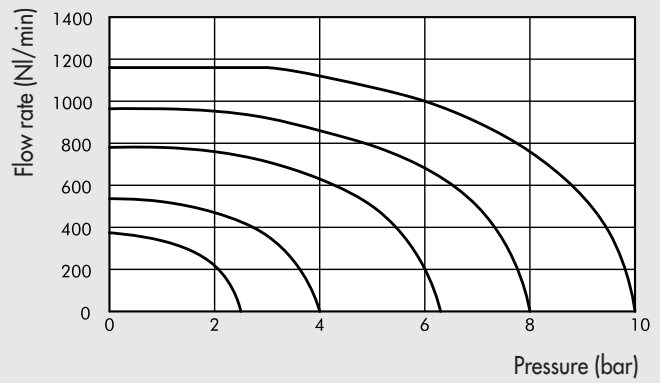


FLOW CHARTS

PNV L Ø 6

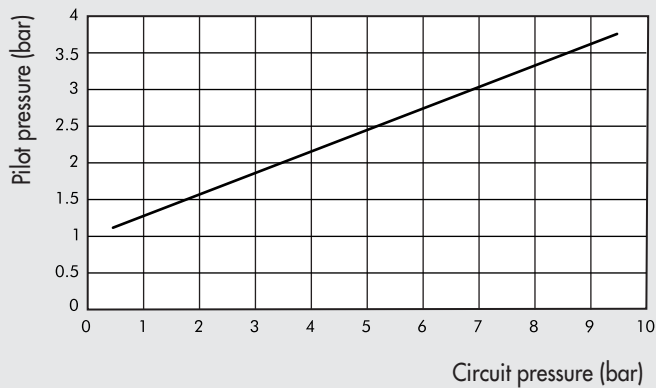


PNV L Ø 8

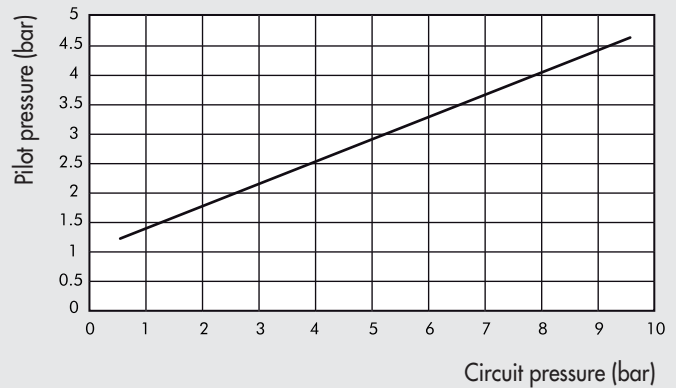


MINIMUM PILOT PRESSURE

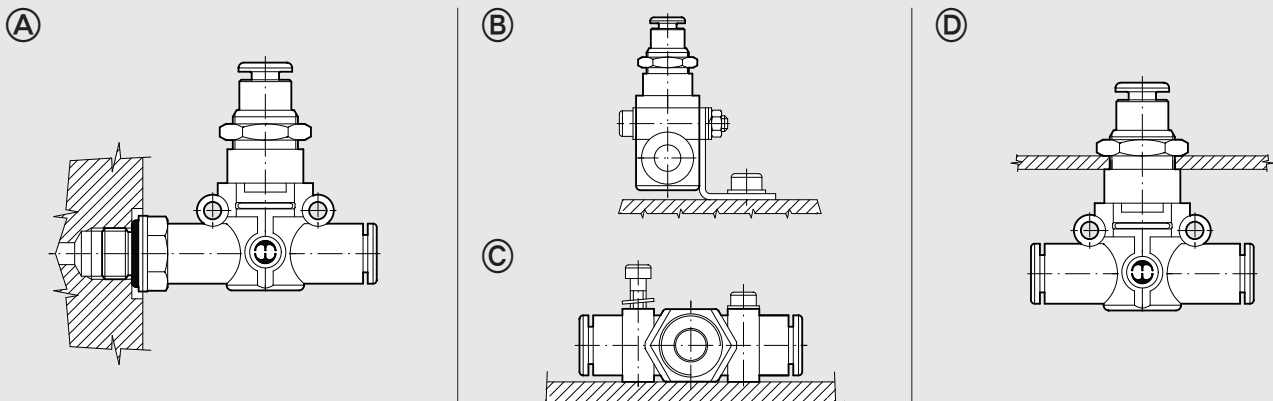
PNV L Ø 6



PNV L Ø 8



ASSEMBLY OPTIONS

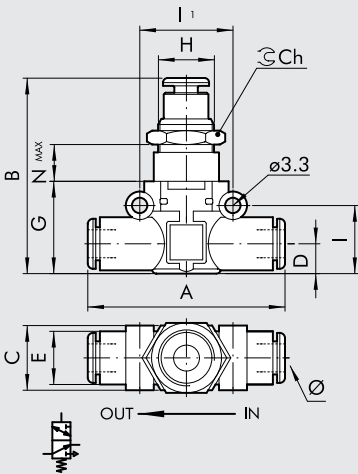


How to mount the PNV L:

- Fig. (A) With the male threaded port it is possible to mount the PNV L straight onto the actuator or the control valve.
- Fig. (B) Fixing to the plate with the special SQU L bracket.
- Fig. (C) There are two robust rings on the plastic body for fixing the PNV L straight onto the wall.
- Fig. (D) The ring nut is screwed onto the threaded metal part of the PNV L body for panel mounting.

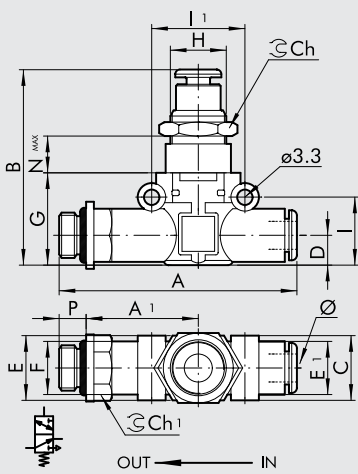
PNV L 3/2 NC PIPE - PIPE

Code	Ref.	Ø	A	B	C	D	E	G	H	I	II	Ch	Nmax
9067616	PNV L 3/2 NC Ø6 - Ø6	6	49.4	43.2	14.7	6.4	11.4	20	M12x0.75	14.6	20	15	4.7
9067624	PNV L 3/2 NC Ø8 - Ø8	8	57.3	49.7	18.7	9.1	13.8	26	M15x1	18.7	24	17	4



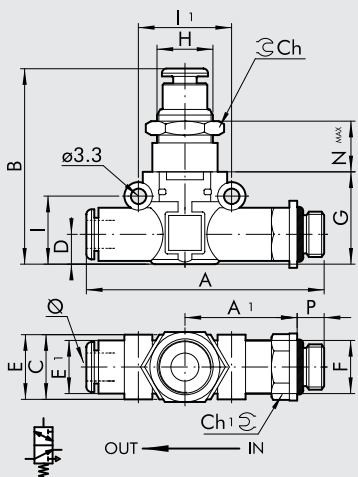
PNV L 3/2 NC PIPE - THREAD

Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Nmax
9067808	PNV L 3/2 NC Ø6 - 1/8	1/8	6	6	58.5	27.8	43.2	14.7	6.4	14	11.4	20	M12x0.75	14.6	20	15	4.7
9067809	PNV L 3/2 NC Ø6 - 1/4	1/4	6	8	61.5	28.8	43.2	14.7	6.4	18	11.4	20	M12x0.75	14.6	20	15	4.7
9067810	PNV L 3/2 NC Ø8 - 1/8	1/8	8	6	66.2	31.8	49.7	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	4
9067811	PNV L 3/2 NC Ø8 - 1/4	1/4	8	8	70.6	34.2	49.7	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	4
9067812	PNV L 3/2 NC Ø8 - 3/8	3/8	8	9	72.2	34.8	49.7	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	4



PNV L 3/2 NC THREAD - PIPE

Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Nmax
9067708	PNV L 3/2 NC 1/8 - Ø6	6	1/8	6	58.5	27.8	43.2	14.7	6.4	14	11.4	20	M12x0.75	14.6	20	15	4.7
9067709	PNV L 3/2 NC 1/4 - Ø6	6	1/4	8	61.5	28.8	43.2	14.7	6.4	18	11.4	20	M12x0.75	14.6	20	15	4.7
9067710	PNV L 3/2 NC 1/8 - Ø8	8	1/8	6	66.2	31.8	49.7	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	4
9067711	PNV L 3/2 NC 1/4 - Ø8	8	1/4	8	70.6	34.2	49.7	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	4
9067712	PNV L 3/2 NC 3/8 - Ø8	8	3/8	9	72.2	34.8	49.7	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	4



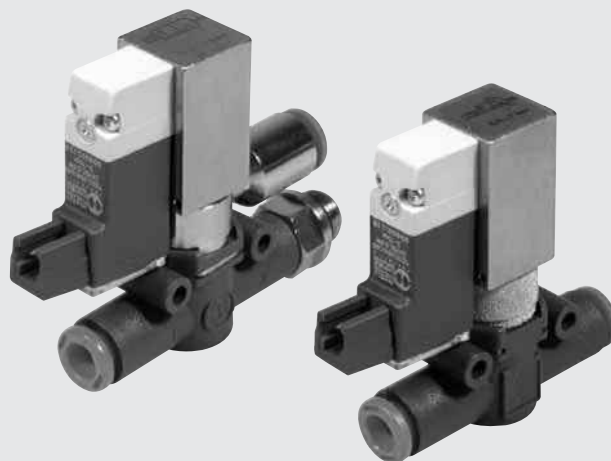
IN-LINE SOLENOID VALVE SERIES SOV L

SOV L solenoid valves belong to the LINE ON LINE® family, which means they can be connected to all the other components in series or in parallel. Available in the version for pipe-pipe connection with two push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting.

Though small in size, SOV L valves are solenoid-piloted and feature very high performance.

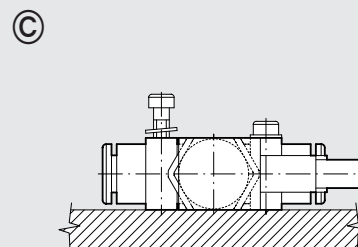
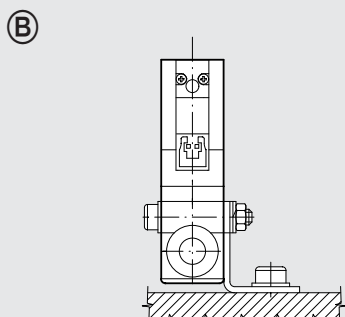
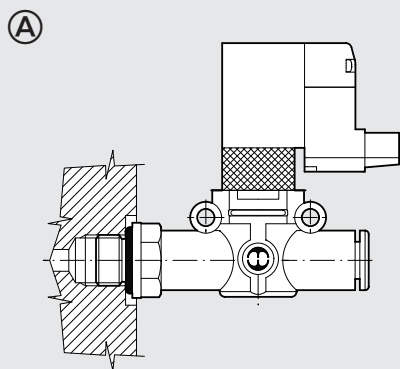
The spool distributor is fitted with special polyurethane gaskets to ensure a very long working life.

Each valve comes complete with a monostable manual control and LED. Exhaust can be damped with an annular silencer or conveyed via a pipe fitting. The fitting for conveyed exhaust can be oriented freely.



TECHNICAL DATA		Ø 6	Ø 8
Operating pressure	MPa	0.25 - 0.7	
	bar	2.5 - 7	
	psi	36 - 101	
Temperature range	°C	-10 to +60	
	°F	+14 to +140	
Flow rate at 6.3 bar ΔP 0.5bar	NI/min	270	500
Flow rate at 6.3 bar ΔP 1 bar	NI/min	380	700
Conductance C	NI/min-bar	95.8	178.1
Coefficient b	bar/bar	0.145	0.129
Voltage	VDC	24	
Power	W	0.9	
Recommended pipe		Rilsan PA11 - Nylon 6 - Polyamide 12 - Polypropylene	
Fluid		Lubricated or unlubricated filtered compressed air	

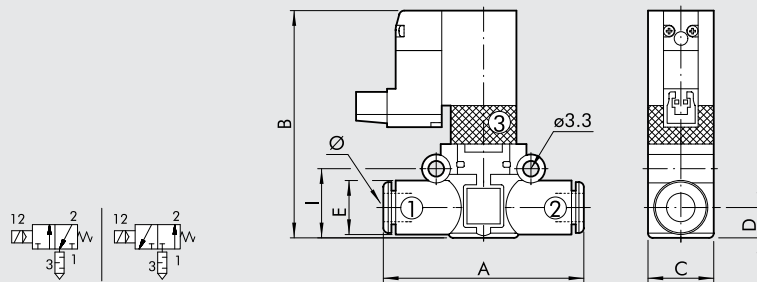
ASSEMBLY OPTIONS



How to mount the SOV L:

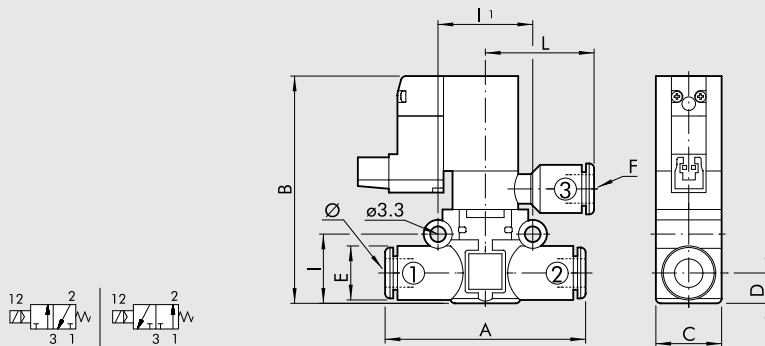
- Fig. A With the male threaded port it is possible to mount the SOV L straight onto the actuator.
- Fig. B Fixing to the plate with the special SQU L bracket.
- Fig. C There are two robust rings on the plastic body for fixing the SOV L straight onto the wall.

SOV L 3/2 NC-NO PIPE-PIPE SILENCED EXHAUST



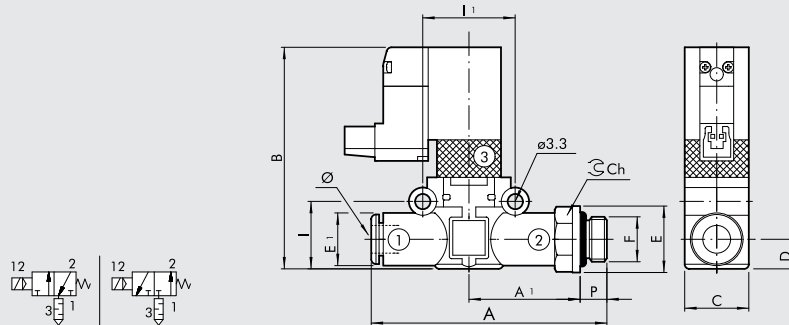
Code	Ref.	Ø	A	B	C	D	E	I	II
9069016	SOV L 3/2 NC 6-6	6	49.4	57.5	14.7	6.4	11.4	14.6	20
9069116	SOV L 3/2 NO 6-6								
9069024	SOV L 3/2 NC 8-8	8	57.3	63.5	18.7	9.1	13.8	18.7	24
9069124	SOV L 3/2 NO 8-8								

SOV L 3/2 NC-NO PIPE-PIPE CONVEYED EXHAUST



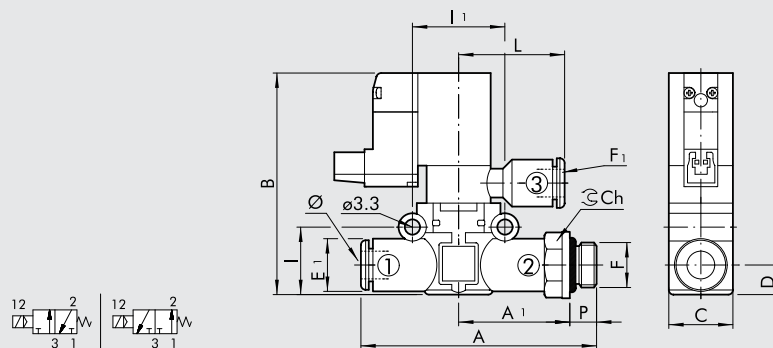
Code	Ref.	Ø	A	B	C	D	E	F	I	II	L
9069216	SOV L 3/2 NC 6-6-6	6	49.4	57.5	14.7	6.4	11.4	Ø 6	14.6	20	28.3
9069316	SOV L 3/2 NO 6-6-6										
9069224	SOV L 3/2 NC 8-8-8	8	57.3	63.5	18.7	9.1	13.8	Ø 8	18.7	24	30
9069324	SOV L 3/2 NO 8-8-8										

SOV L 3/2 NC-NO PIPE-THREAD SILENCED EXHAUST



Code	Ref.	Ø	F	P	A	A1	B	C	D	E	EI	I	II	Ch
9069408	SOV L 3/2 NC 6-1/8	6	1/8	6	58.5	27.8	57.5	14.7	6.4	14	11.4	14.6	20	12
9069508	SOV L 3/2 NO 6-1/8													
9069409	SOV L 3/2 NC 6-1/4	6	1/4	8	61.5	28.8	57.5	14.7	6.4	18	11.4	14.6	20	14
9069509	SOV L 3/2 NO 6-1/4													
9069410	SOV L 3/2 NC 8-1/8	8	1/8	6	66.2	31.3	63.5	18.7	9.1	15	13.8	18.7	24	14
9069510	SOV L 3/2 NO 8-1/8													
9069411	SOV L 3/2 NC 8-1/4	8	1/4	8	70.6	34.2	63.5	18.7	9.1	18	13.8	18.7	24	14
9069511	SOV L 3/2 NO 8-1/4													
9069412	SOV L 3/2 NC 8-3/8	8	3/8	9	72.2	34.8	63.5	18.7	9.1	22	13.8	18.7	24	17
9069512	SOV L 3/2 NO 8-3/8													

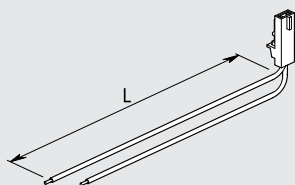
SOV L 3/2 NC-NO PIPE-THREAD CONVEYED EXHAUST



Code	Ref.	Ø	F	P	A	A1	B	C	D	E	EI	FI	I	II	L	Ch
9069608	SOV L 3/2 NC 6-1/8-6	6	1/8	6	58.5	27.8	57.5	14.7	6.4	14	11.4	Ø 6	14.6	20	28.3	12
9069708	SOV L 3/2 NO 6-1/8-6															
9069609	SOV L 3/2 NC 6-1/4-6	6	1/4	8	61.5	28.8	57.5	14.7	6.4	18	11.4	Ø 6	14.6	20	28.3	14
9069709	SOV L 3/2 NO 6-1/4-6															
9069610	SOV L 3/2 NC 8-1/8-8	8	1/8	6	66.2	31.8	63.5	18.7	9.1	15	13.8	Ø 8	18.7	24	30	14
9069710	SOV L 3/2 NO 8-1/8-8															
9069611	SOV L 3/2 NC 8-1/4-8	8	1/4	8	70.6	34.2	63.5	18.7	9.1	18	13.8	Ø 8	18.7	24	30	14
9069711	SOV L 3/2 NO 8-1/4-8															
9069612	SOV L 3/2 NC 8-3/8-8	8	3/8	9	72.2	34.8	63.5	18.7	9.1	22	13.8	Ø 8	18.7	24	30	17
9069712	SOV L 3/2 NO 8-3/8-8															

ACCESSORIES

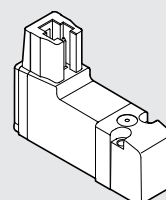
PLUG-IN CONNECTOR



Code	Description
W0970512000	Plug-in connector Mach 11 L = 300

SPARES

PLUG-IN PILOT



Code	Description
722213541100	PLT-10 722213541100

MINIATURE REDUCER/ECONOMIZER, SERIES RML, RMC AND RMS

The RML R miniature pressure regulator belongs to the LINE ON LINE® family and can be connected in series or in parallel with all the other products. The miniature pressure regulator is available in five different types:

- In-line with push-in input and output fitting
- In-line with threaded input port and push-in output fitting
- In-line with push-in input fitting and threaded output port
- At an angle with threaded input port and push-in output fitting
- Cartridge type for direct assembly in suitably worked slot. The miniature pressure regulator is fitted with a relief valve for over-pressure exhaust.
- Particularly suitable for use between the valve and actuator and as a pressure regulator in secondary branches of the pneumatic system.

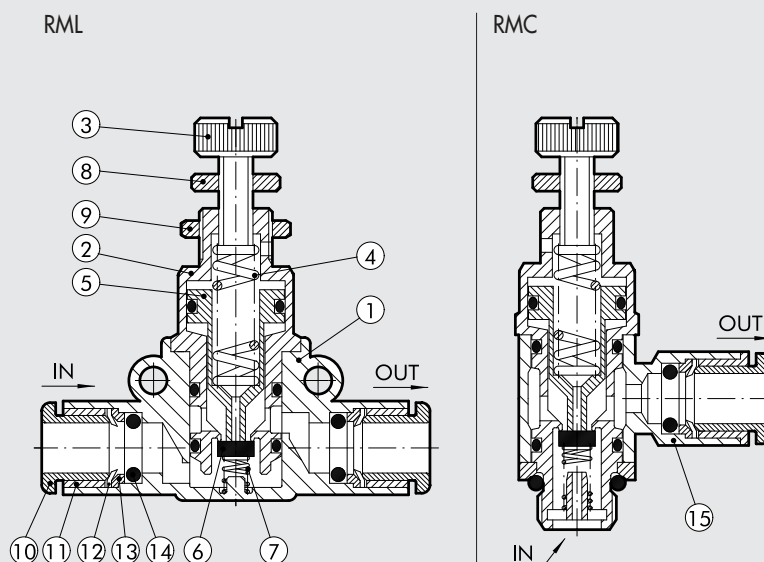
The data in brackets refer to the angle version.



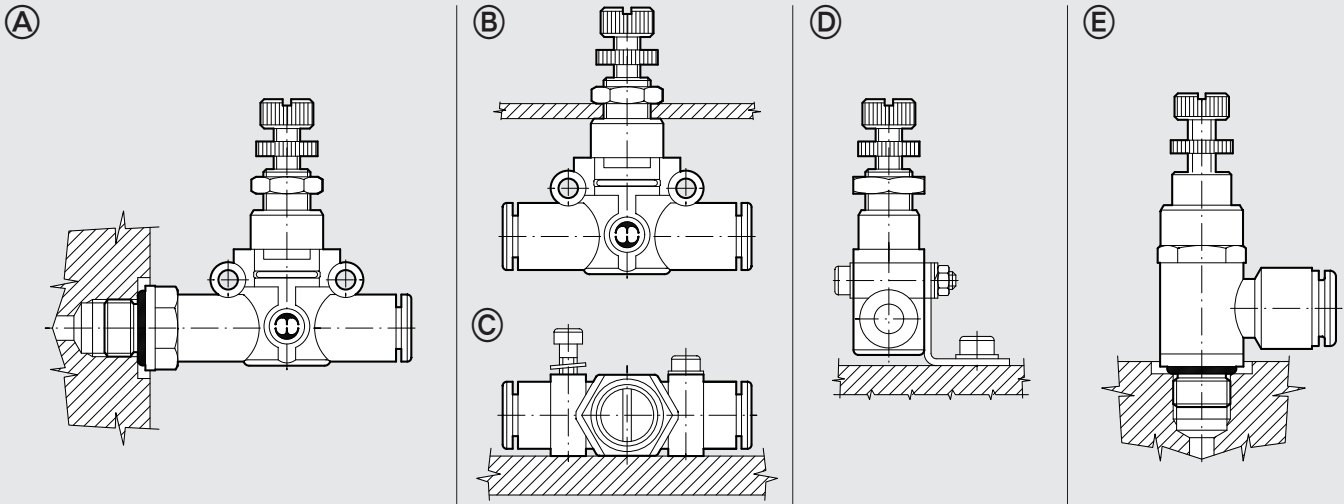
TECHNICAL DATA	RML Ø 6	RMC 1/8	RMS 1/8	RML Ø 8	RMC 1/4	RMS 1/4
Threaded ports	1/8"-1/4"	1/8"	1/8"	1/8"-1/4"-3/8"	1/4"	1/4"
Pipe coupling	Ø 6	Ø 4 - Ø 6 - Ø 8	-	Ø 8	Ø 6 - Ø 8 - Ø 10	-
Regulation range	1 to 8 bar - 0.1 to 0.8 MPa - 14.5 to 116 psi					
Inlet pressure	MPa		0.2 - 1			
	bar		2 - 10			
	psi		29 - 145			
Flow rate at 6.3 bar (0.63 MPa - 91 psi) ΔP 1 bar	NI/min		150		260	
Flow rate on exhaust at 6.3 bar (0.63 MPa - 91 psi)			400		600	
Fluid	Lubricated or unlubricated filtered air					
Max. temperature at 1 MPa; 10 bar; 145 psi	°C		- 20 to + 60			
	°F		- 4 to + 140			
Assembly position	Available					
Notes	In the miniature regulator the pressure must always be set upwards.					

COMPONENTS

- ① Technopolymer body (brass for RMC)
- ② Nickel-plated brass insert
- ③ Nickel-plated brass adjusting screw
- ④ Steel adjusting spring
- ⑤ Brass piston rod
- ⑥ NBR shutter
- ⑦ Stainless steel shutter spring
- ⑧ Adjusting screw ring nut
- ⑨ Nickel-plated brass wall ring nut
- ⑩ Technopolymer release bushing
- ⑪ Technopolymer stop bushing (brass for RMC)
- ⑫ Stainless steel crimping spring
- ⑬ Technopolymer spring ring
- ⑭ NBR gasket
- ⑮ Nickel-plated brass rotating ring



ASSEMBLY OPTIONS

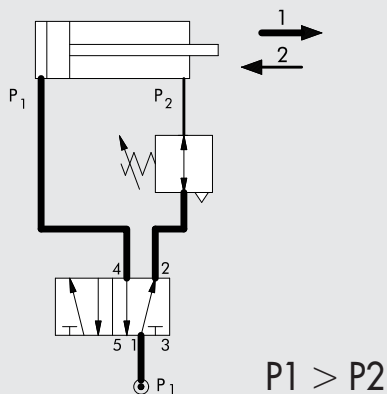


How to assembly RML/RMC:

- Fig. A Thanks to the male threaded part it's possible to assembly directly on the actuator or on the valve.
- Fig. B By using the ring nut screwed on the threaded body it's possible the assembling on panels.
- Fig. C On the plastic body there are two strong ring for the direct wall assembly.
- Fig. D Fixing on plate trough the proper small square SQU L.
- Fig. E For maintaining the tube the most parallel possible to the system , had been designed a specific version (RMC) with inlet and outlet at 90°.

POSSIBLE APPLICATIONS

ECONOMIZER

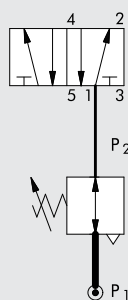


If in a cylinder you require a thrust in one direction only, e.g. piston rod extension, and a lower thrust and pressure is sufficient in the other direction, you can save a lot of energy by mounting an economizer valve.

Example

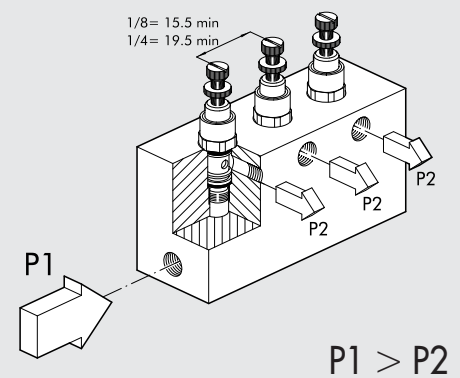
Cylinder Ø 80 mm, stroke 200 mm, 6 bar,
12 cycles/min, 16 hours a day, 230 days a year.
Consumption: 144 Nl/min => 3460 kWh/year =>
880 litres of oil => 2428 kg of CO2 => € 346/year.
If you install an economizer that reduces the pressure
from 6 to 2 bar, you SAVE: € 115/year.

REMOTE REDUCER



$P_1 > P_2$

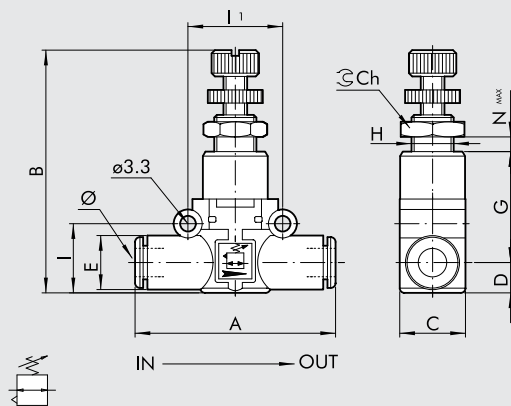
CARTRIDGE REDUCER, SERIE RMS



The cartridge regulator can be used:

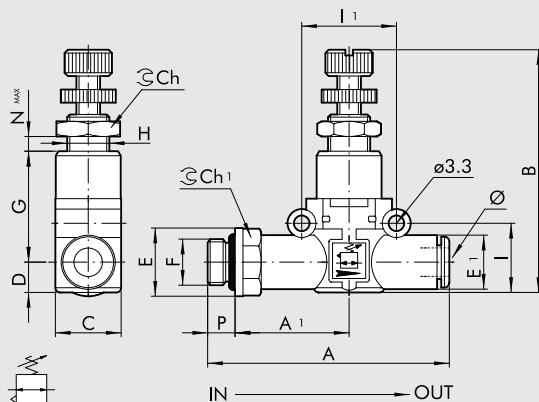
- Fitted directly into the structure or along the air supply ducting.
- Package with common feed and separate regulated outlets.

LINE-MOUNTED MINIATURE REDUCER, SERIES RML



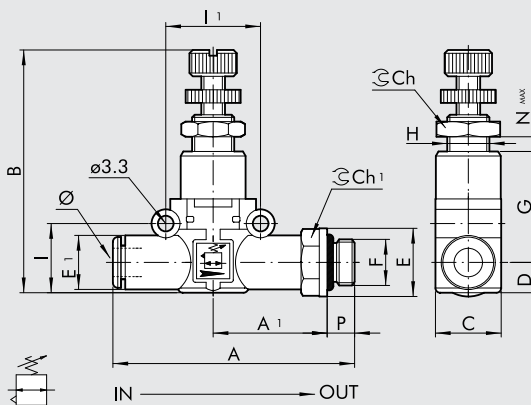
Code	Ref.	Ø	A	B	C	D	E	G	H	I	I1	Ch	I	Nmax
9061316	RML 6-6	6	49.4	46 - 52	14.7	6.4	11.4	24.8	M9x0.75	14.6	20	11	14.6	4.5
9061324	RML 8-8	8	57.3	52 - 58	18.7	9.1	13.8	27.4	M11x1	18.7	24	13	18.7	3.8

LINE-MOUNTED R/F MINIATURE REDUCER SERIES RML



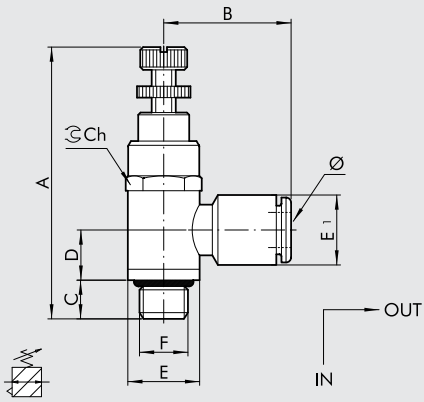
Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	I1	Ch	Ch1	Nmax
9061408	RML 1/8-6	1/8	6	6	58.5	27.8	46-52	14.7	6.4	14	11.4	24.8	M9x0.75	14.6	20	11	12	4.5
9061409	RML 1/4-6	1/4	6	8	61.5	28.8	46-52	14.7	6.4	18	11.4	24.8	M9x0.75	14.6	20	11	14	4.5
9061410	RML 1/8-8	1/8	8	6	66.2	31.8	52-58	18.7	9.1	15	13.8	27.4	M11x1	18.7	24	13	14	3.8
9061411	RML 1/4-8	1/4	8	8	70.6	34.2	52-58	18.7	9.1	18	13.8	27.4	M11x1	18.7	24	13	14	3.8
9061412	RML 3/8-8	3/8	8	9	72.2	34.8	52-58	18.7	9.1	22	13.8	27.4	M11x1	18.7	24	13	17	3.8

LINE-MOUNTED F/R MINIATURE REDUCER, SERIES RML



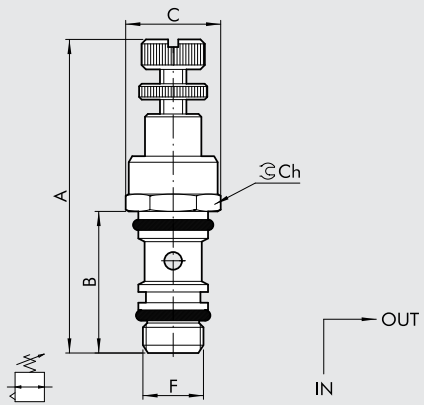
Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	G	H	I	I1	Ch	Ch1	Nmax
9061508	RML 6-1/8	6	1/8	6	58.5	27.8	46-52	14.7	6.4	14	11.4	24.8	M9x0.75	14.6	20	11	12	4.5
9061509	RML 6-1/4	6	1/4	8	61.5	28.8	46-52	14.7	6.4	18	11.4	24.8	M9x0.75	14.6	20	11	14	4.5
9061510	RML 8-1/8	8	1/8	6	66.2	31.8	52-58	18.7	9.1	15	13.8	27.4	M11x1	18.7	24	13	14	3.8
9061511	RML 8-1/4	8	1/4	8	70.6	34.2	52-58	18.7	9.1	18	13.8	27.4	M11x1	18.7	24	13	14	3.8
9061512	RML 8-3/8	8	3/8	9	72.2	34.8	52-58	18.7	9.1	22	13.8	27.4	M11x1	18.7	24	13	17	3.8

MINIATURE REDUCER, SERIES RMC



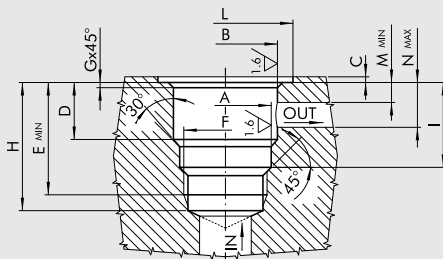
Code	Ref.	Ø	A	B	C	D	E	E1	Ch
9061102	RMC 1/8-4	4	51-57	20.4	6	12.7	14	9.5	14
9061108	RMC 1/8-6	6	51-57	23.7	6	12.7	14	11.3	14
9061110	RMC 1/8-8	8	51-57	25.6	6	12.7	14	13.8	14
9061109	RMC 1/4-6	6	57-63	25.1	8	11	18	11.3	17
9061111	RMC 1/4-8	8	57-63	27	8	11	18	13.8	17
9061112	RMC 1/4-10	10	57-63	32.2	8	11	18	16.5	17

CARTRIDGE REDUCER, SERIES RMS



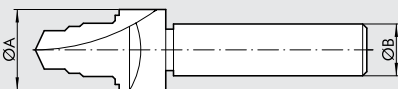
Code	Ref.	F	A	B	C	Ch
9061001	RMS 1/8	1/8	51-57	24.3	15	14
9061002	RMS 1/4	1/4	57-63	27.8	19	17

SEAT OF A MINIATURE CARTRIDGE REDUCER



	F	A	B	C	D	E	G	H	I	L	M	N
SE.RMS 1/8	1/8	9.8 ^{+0.1/-0}	11.2 ^{±0.05}	0.5 ^{±0.5}	15.6 ^{±0.07}	24.6	0.3	27	18.1 ^{±0.2}	15.4	3.5	12
SE.RMS 1/4	1/4	13.5 ^{+0.1/-0}	14.4 ^{±0.05}	0.5 ^{±0.5}	17.5 ^{±0.07}	28	0.4	31.2	20.8 ^{±0.2}	19.4	3.5	13.5

TOOL FOR RMS SEAT



Code	Ref.	ØA	ØB
9062001	UT.SE 1/8	16	12
9062002	UT.SE 1/4	20	15

IN-LINE PRESSURE GAUGE SERIES MAN L

The MAN L pressure gauge belongs to the LINE ON LINE® family, which means it can be connected to all the other components in series or in parallel.

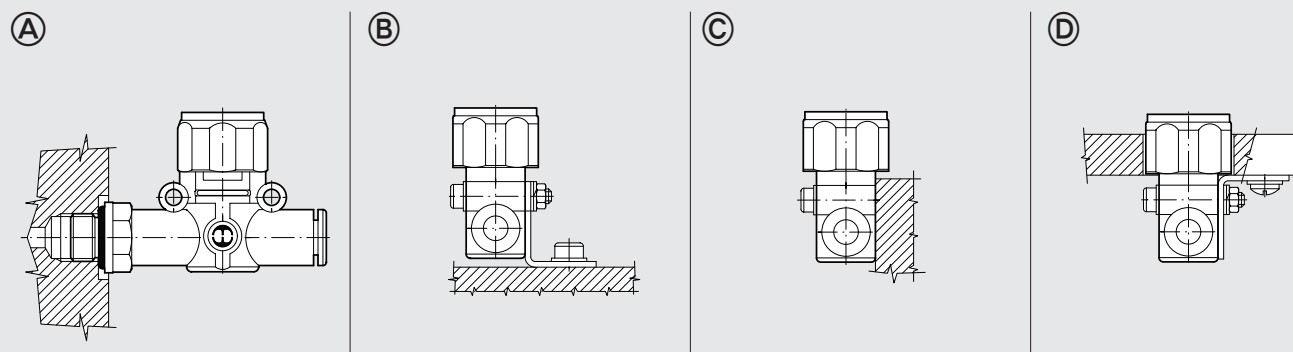
Available in the version for pipe-pipe connection with two push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting.

Though small in size, this pressure gauge, which is supplied in a metal casing, ensures accurate reading. It can be angled in any direction simply by rotating manually.



TECHNICAL DATA		Ø 4	Ø 6	Ø 8
Operating pressure	MPa		1.2	
	bar		12	
	psi		174	
Temperature range	°C		- 20 to + 60	
	°F		- 4 to + 140	
Precision			± 4% full scale	
Recommended pipe		Rilsan PA11 - Nylon 6 - Polyamide 12 - Polypropylene		
Fluid		Lubricated or unlubricated filtered compressed air		

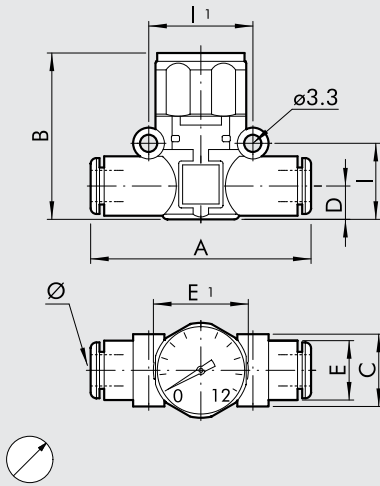
ASSEMBLY OPTIONS



How to mount the MAN L:

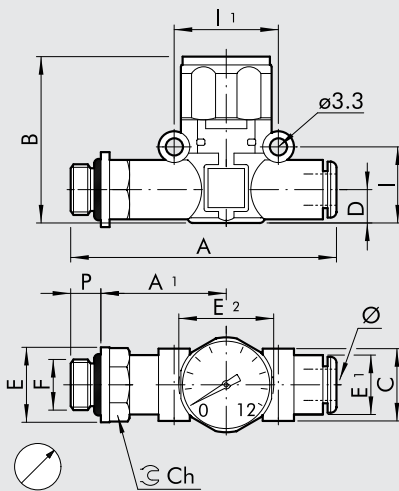
- Fig. (A) With the male threaded port it is possible to mount the MAN L straight onto the female thread.
- Fig. (B) Fixing to the plate with the special SQU L bracket.
- Fig. (C) There are two robust rings on the plastic body for fixing the MAN L straight onto the wall.
- Fig. (D) Use the SQL L bracket for panel mounting the MAN L.

MAN L PIPE-PIPE



Code	Ref.	Ø	A	B	C	D	E	E1	I	I1
9067001	MAN L 4-4	4	41.8	36.1	10.7	5.6	10	23	12.8	16
9067016	MAN L 6-6	6	49.4	35	14.7	6.4	11.4	23	14.6	20
9067024	MAN L 8-8	8	57.3	41	18.7	9.1	13.8	23	18.7	24

MAN L THREAD-PIPE



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	E2	I	I1	Ch
9067101	MAN LM5-4	M5	4	4	47.7	26.7	36.1	10.7	5.6	9.9	10	23	12.8	16	9
9067102	MAN L1/8-4	1/8	4	6	51.5	30.6	36.1	10.7	5.6	14	10	23	12.8	16	12
9067108	MAN L1/8-6	1/8	6	6	58.5	27.8	35	14.7	6.4	14	11.4	23	14.6	20	12
9067109	MAN L1/4-6	1/4	6	8	61.5	28.8	35	14.7	6.4	18	11.4	23	14.6	20	14
9067110	MAN L1/8-8	1/8	8	6	66.2	31.8	41	18.7	9.1	15	13.8	23	18.7	24	14
9067111	MAN L1/4-8	1/4	8	8	70.6	34.2	41	18.7	9.1	18	13.8	23	18.7	24	14
9067112	MAN L3/8-8	3/8	8	9	72.2	34.8	41	18.7	9.1	22	13.8	23	18.7	24	17

NOTES

IN-LINE PRESSURE INDICATOR SERIES LAM L

The LAM L pneumatic light indicator belongs to the LINE ON LINE® family, which means it can be connected to all the other components in series or in parallel.

Available in the version for pipe-pipe connection with two FOX push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting.

When there is no pressure, the clear technopolymer bell looks empty.

When there is pressure, a red signal appears.

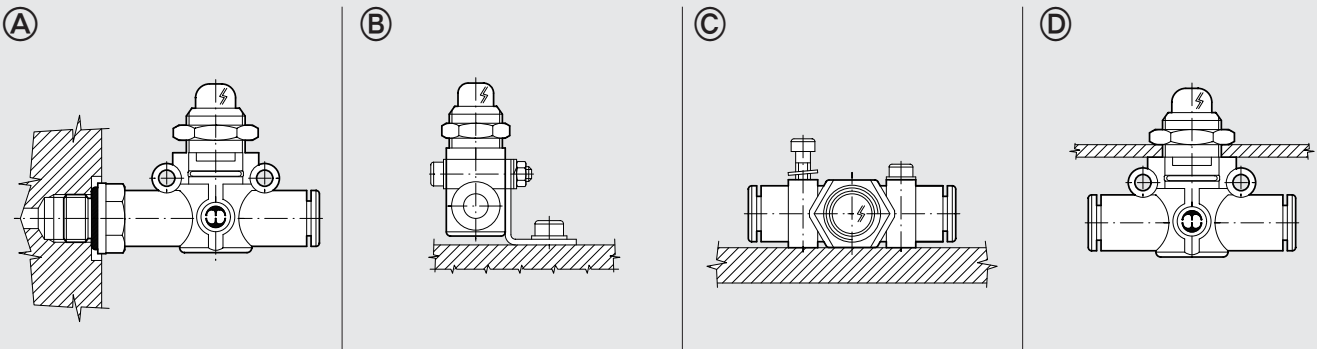
The clear bell can be cleaned using normal detergents or ethyl alcohol, as the technopolymer used is fully compatible.



TECHNICAL DATA

		Ø 6	Ø 8
Operating pressure	MPa	0.2 - 1	
	bar	2 - 10	
	psi	29 - 145	
Temperature range	°C	- 20 to + 60	
	°F	- 4 to + 140	
Flow rate at 6.3 bar ΔP 1 bar	NI/min	420	800
Colour with pressure		Orange - Green	
Recommended pipe		Rilsan PA11 - Nylon 6 - Polyamide 12 - Polypropylene	
Fluid		Lubricated or unlubricated filtered compressed air; if used, must be continuous	

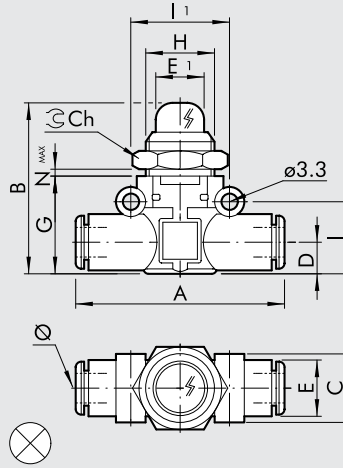
ASSEMBLY OPTIONS



How to mount the LAM L:

- Fig. A With the male threaded port it is possible to mount the LAM L straight onto the female thread.
- Fig. B Fixing to the plate with the special SQU L bracket.
- Fig. C There are two robust rings on the plastic body for fixing the LAM L straight onto the wall.
- Fig. D The ring nut is screwed onto the threaded metal part of the LAM L body for panel mounting.

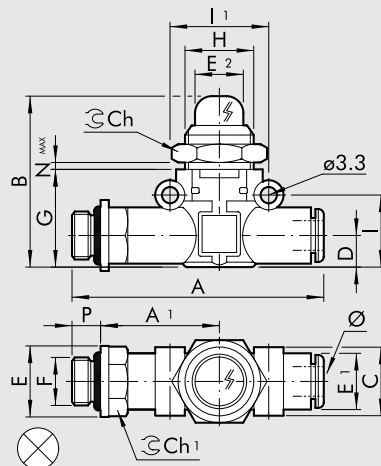
LAM L PIPE-PIPE



Code	Ref.	Ø	A	B	C	D	E	E1	G	H	I	I1	Ch	Nmax
9068016	LAM L 6-6-A	6	49.4	37	14.7	6.4	11.4	10.6	21	M15x1	14.6	20	17	4.5
9068216	LAM L 6-6-V													
9068024	LAM L 8-8-A	8	57.3	41	18.7	9.1	13.8	10.6	26	M15x1	18.7	24	17	4.5
9068224	LAM L 8-8-V													

A = Orange
V = Green

LAM L THREAD-PIPE



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	E2	G	H	I	I1	Ch	Ch1	Nmax
9068108	LAM L 1/8-6-A	1/8	6	6	58.5	27.8	37	14.7	6.4	14	11.4	10.6	21	M15x1	14.6	20	17	12	4.5
9068308	LAM L 1/8-6-V																		
9068109	LAM L 1/4-6-A	1/4	6	8	61.5	28.8	37	14.7	6.4	18	11.4	10.6	21	M15x1	14.6	20	17	14	4.5
9068309	LAM L 1/4-6-V																		
9068110	LAM L 1/8-8-A	1/8	8	6	66.2	31.8	41	18.7	9.1	15	13.8	10.6	26	M15x1	18.7	24	17	14	4.5
9068310	LAM L 1/8-8-V																		
9068111	LAM L 1/4-8-A	1/4	8	8	70.6	34.2	41	18.7	9.1	18	13.8	10.6	26	M15x1	18.7	24	17	14	4.5
9068311	LAM L 1/4-8-V																		
9068112	LAM L 3/8-8-A	3/8	8	9	72.2	34.8	41	18.7	9.1	22	13.8	10.6	26	M15x1	18.7	24	17	17	4.5
9068312	LAM L 3/8-8-V																		

A = Orange
V = Green

IN-LINE SHUTOFF VALVE SERIES V2V L AND V3V L

V2V L and V3V L shutoff valves belong to the LINE ON LINE® family which means they can be connected to all the other components in series or in parallel. Available in the version for pipe-pipe connection with two push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting.

V2V is a two-way unidirectional valve, while V3V is a three-way valve with free discharge in the area around the control knob.

The locked version is probably the smallest available on the market.

A lock is provided to ensure the valve is kept in the closed position during machine maintenance. The valve is supplied complete with a lock and two keys.

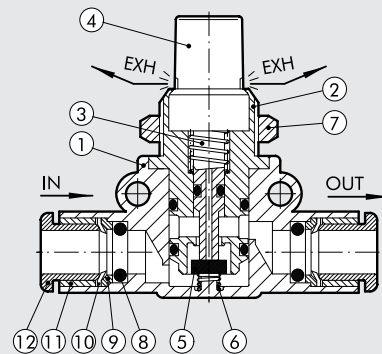


TECHNICAL DATA

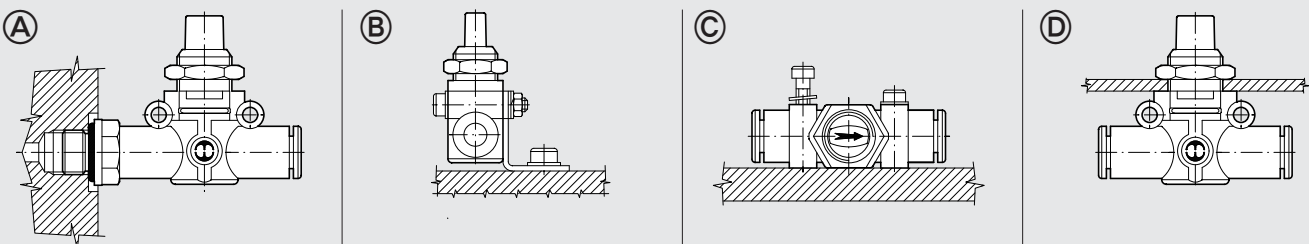
		Ø 6	Ø 8
Operating pressure	MPa	1	
	bar	10	
	psi	145	
Temperature range	°C	- 20 to + 60	
	°F	- 4 to + 140	
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	280	470
Exhaust flow rate at 6.3 bar	Nl/min	110	110
Recommended pipe		Rilsan PA11 - Nylon 6 - Polyamide 12 - Polypropylene	
Fluid		Lubricated or unlubricated filtered compressed air; if used, must be continuous	

COMPONENTS

- ① Technopolymer body
- ② Nickel-plated brass insert
- ③ Brass rod
- ④ Technopolymer knob
- ⑤ NBR valve
- ⑥ Stainless steel valve compression spring
- ⑦ Nickel-plated brass wall-mount ring nut
- ⑧ NBR gasket
- ⑨ Technopolymer spring ring
- ⑩ Stainless steel folding spring
- ⑪ Technopolymer locking bushing
- ⑫ Technopolymer release bushing



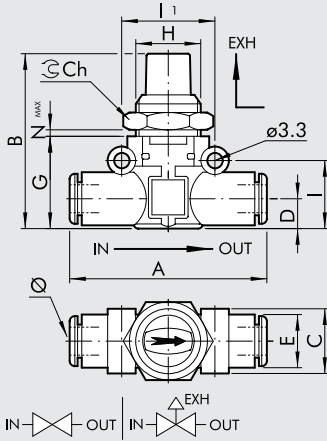
ASSEMBLY OPTIONS



How to mount the V2V/V3V L:

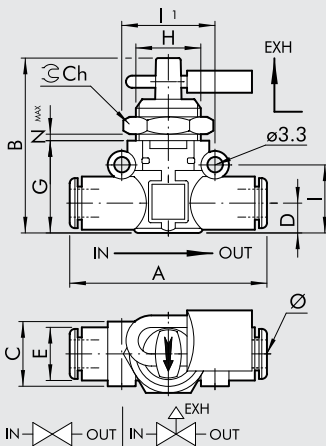
- Fig. A With the male threaded port it is possible to mount the V2V/V3V L straight onto the female thread.
- Fig. B Fixing to the plate with the special SQU L bracket.
- Fig. C There are two robust rings on the plastic body for fixing the V2V/V3V L straight onto the wall.
- Fig. D The rig nut is screwed onto the threaded metal part of the V2V/V3V L body for panel mounting.

V2V/V3V L PIPE-PIPE



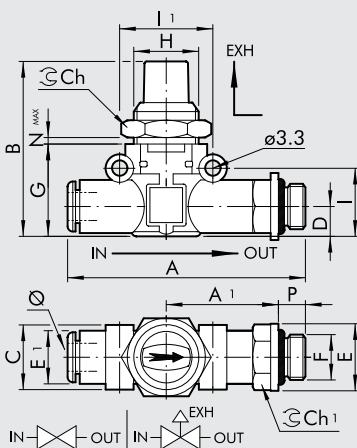
Code	Ref.	Ø	A	B	C	D	E	G	H	I	II	Ch	Nmax
9065016	V2V L 6-6	6	49.4	41	14.7	6.4	11.4	21	M15x1	14.6	20	17	5.5
9066016	V3V L 6-6												
9065024	V2V L 8-8	8	57.3	46	18.7	9.1	13.8	26	M15x1	18.7	24	17	5.5
9066024	V3V L 8-8 KEY												

V2V/V3V L PIPE-PIPE PADLOCKED



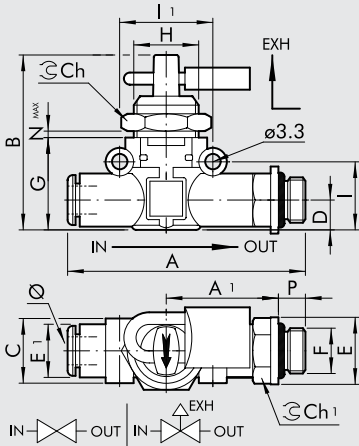
Code	Ref.	Ø	A	B	C	D	E	G	H	I	II	Ch	Nmax
9065116	V2V L 6-6 KEY	6	49.4	41	14.7	6.4	11.4	21	M15x1	14.6	20	17	5.5
9066116	V3V L 6-6 KEY												
9065124	V2V L 8-8 KEY	8	57.3	46	18.7	9.1	13.8	26	M15x1	18.7	24	17	5.5
9066124	V3V L 8-8 KEY												

V2V/V3V L PIPE-THREAD



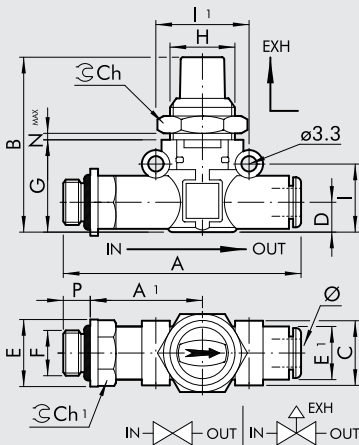
Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Ch1	Nmax
9065208	V2V L 6-1/8	6	1/8	6	58.5	27.8	41	14.7	6.4	14	11.4	21	M15x1	14.6	20	17	12	5.5
9066208	V3V L 6-1/8																	
9065209	V2V L 6-1/4	6	1/4	8	61.5	28.8	41	14.7	6.4	18	11.4	21	M15x1	14.6	20	17	14	5.5
9066209	V3V L 6-1/4																	
9065210	V2V L 8-1/8	8	1/8	6	66.2	31.8	46	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	14	5.5
9066210	V3V L 8-1/8																	
9065211	V2V L 8-1/4	8	1/4	8	70.6	34.2	46	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	14	5.5
9066211	V3V L 8-1/4																	
9065212	V2V L 8-3/8	8	3/8	9	72.2	34.8	46	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	17	5.5
9066212	V3V L 8-3/8																	

V2V/V3V L PIPE-THREAD PADLOCKED



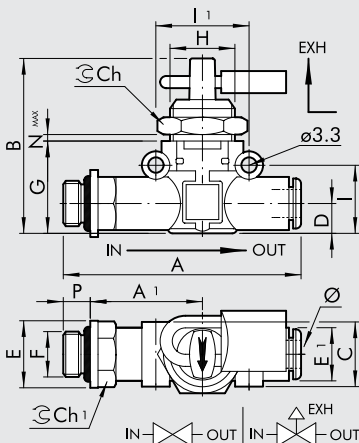
Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Ch1	Nmax	
9065308	V2V L 6-1/8 KEY	6	1/8	6	58.5	27.8	41	14.7	6.4	14	11.4	21	M15x1	14.6	20	17	12	5.5	
9066308	V3V L 6-1/8 KEY																		
9065309	V2V L 6-1/4 KEY	6	1/4	8	61.5	28.8	41	14.7	6.4	18	11.4	21	M15x1	14.6	20	17	14	5.5	
9066309	V3V L 6-1/4 KEY																		
9065310	V2V L 8-1/8 KEY	8	1/8	6	66.2	31.8	46	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	14	5.5	
9066310	V3V L 8-1/8 KEY																		
9065311	V2V L 8-1/4 KEY	8	1/4	8	70.6	34.2	46	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	14	5.5	
9066311	V3V L 8-1/4 KEY																		
9065312	V2V L 8-3/8 KEY	8	3/8	9	72.2	34.8	46	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	17	5.5	
9066312	V3V L 8-3/8 KEY																		

V2V/V3V L THREAD-PIPE



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Ch1	Nmax	
9065408	V2V L 1/8-6	1/8	6	6	58.5	27.8	41	14.7	6.4	14	11.4	21	M15x1	14.6	20	17	12	5.5	
9066408	V3V L 1/8-6																		
9065409	V2V L 1/4-6	1/4	6	8	61.5	28.8	41	14.7	6.4	18	11.4	21	M15x1	14.6	20	17	14	5.5	
9066409	V3V L 1/4-6																		
9065410	V2V L 1/8-8	1/8	8	6	66.2	31.8	46	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	14	5.5	
9066410	V3V L 1/8-8																		
9065411	V2V L 1/4-8	1/4	8	8	70.6	34.2	46	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	14	5.5	
9066411	V3V L 1/4-8																		
9065412	V2V L 3/8-8	3/8	8	9	72.2	34.8	46	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	17	5.5	
9066412	V3V L 3/8-8																		

V2V/V3V L THREAD-PIPE PADLOCKED



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Ch1	Nmax	
9065508	V2V L 1/8-6 KEY	1/8	6	6	58.5	27.8	41	14.7	6.4	14	11.4	21	M15x1	14.6	20	17	12	5.5	
9066508	V3V L 1/8-6 KEY																		
9065509	V2V L 1/4-6 KEY	1/4	6	8	61.5	28.8	41	14.7	6.4	18	11.4	21	M15x1	14.6	20	17	14	5.5	
9066509	V3V L 1/4-6 KEY																		
9065510	V2V L 1/8-8 KEY	1/8	8	6	66.2	31.8	46	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	14	5.5	
9066510	V3V L 1/8-8 KEY																		
9065511	V2V L 1/4-8 KEY	1/4	8	8	70.6	34.2	46	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	14	5.5	
9066511	V3V L 1/4-8 KEY																		
9065512	V2V L 3/8-8 KEY	3/8	8	9	72.2	34.8	46	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	17	5.5	
9066512	V3V L 3/8-8 KEY																		

IN-LINE FLOW MICRO-REGULATOR SERIE RFL L

The RFL R flow micro-regulator belongs to the LINE ON LINE® family and can be connected in series or in parallel with all the other products. The RFL R regulates the air input and thus the speed in pneumatic actuators. Two versions are available:

Type U (unidirectional) regulates the flow only in one of the two directions of air flow. The following types of fitting can be mounted:

- Push-in input and output fitting
- Push-in input fitting and threaded port on the exhaust (cylinder type)
- Input threaded port and push-in fitting on the exhaust (valve type)

Type B (bidirectional) regulates the flow in both directions of air flow.

The following types of fitting can be mounted:

- Push-in input and output fitting
- Threaded port and push-in fitting

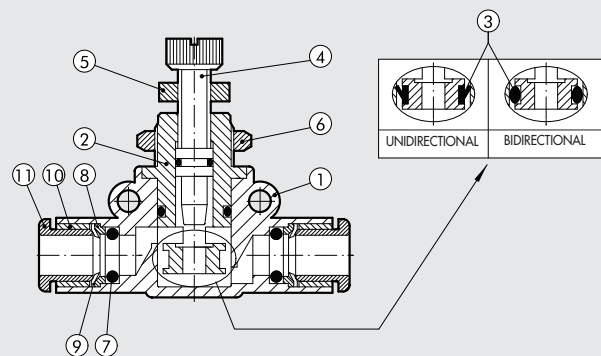
There are four possible types of assembly (see example below).



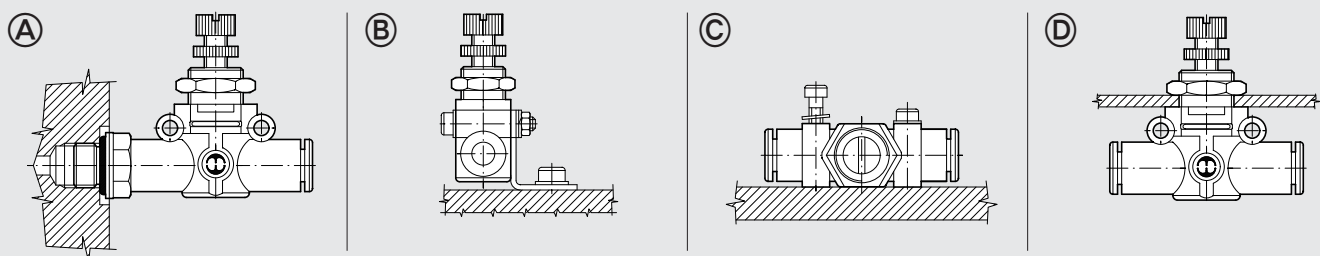
TECHNICAL DATA		Ø 4	Ø 6	Ø 8
Max. operating pressure	MPa		1	
	bar		10	
	psi		145	
Temperature range	°C		- 20 to + 60	
	°F		- 4 to + 140	
Max flow rate on regulation at 6.3 bar	Nl/min	155	450	850
Flow rate on exhaust at 6.3 bar	Nl/min	160	550	950
Adjustment		Manual or using a screwdriver		
Internal system		Tapered needle		
Recommended pipe		Rilsan PA 11 - Nylon 6 - Polyamide 12 - Polypropylene		
Fluid		Lubricated or unlubricated filtered air		
Compatibility with oils		Please refer to page 6-7 of the technical documentation		

COMPONENTS

- ① Technopolymer body
- ② Nickel-plated brass seal support
- ③ NBR gasket
- ④ Brass adjusting needle
- ⑤ Nickel-plated brass needle ring nut
- ⑥ Wall fixing ring nut
- ⑦ NBR seal
- ⑧ Technopolymer spring ring
- ⑨ Stainless steel clip-on spring
- ⑩ Technopolymer stop bushing
- ⑪ Technopolymer release bushing



ASSEMBLY OPTIONS

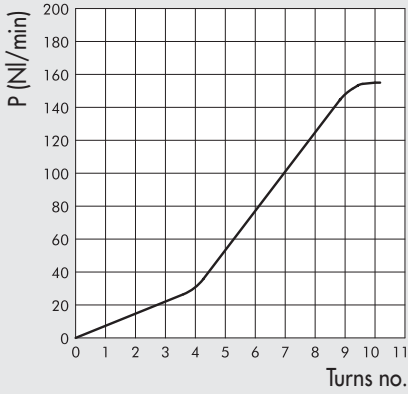


How to mount the RFL L:

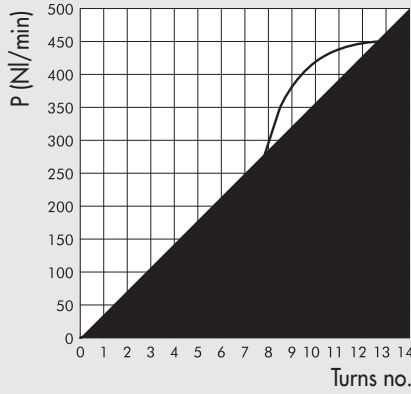
- Fig. A With the male threaded port it is possible to mount the RFL L straight onto the actuator or the control valve.
- Fig. B Fixing to the plate with the special SQU L bracket.
- Fig. C There are two robust rings on the plastic body for fixing the RFL L straight onto the wall.
- Fig. D The ring nut is screwed onto the threaded metal part of the RFL L body for panel mounting.

FLOW RATE CHARTS AT 6.3 bar DEPENDING ON THE TURNS EFFECTED BY THE REGULATION SCREW

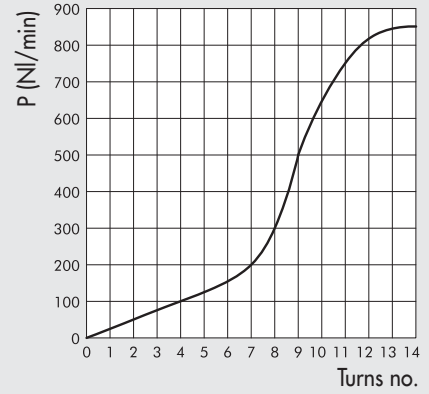
RFL L Ø 4



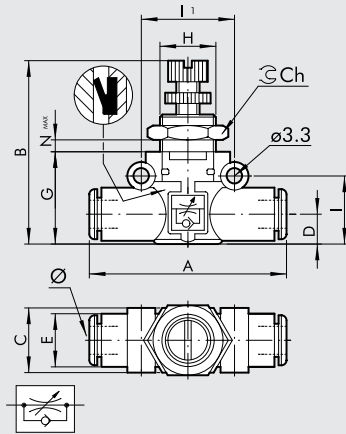
RFL L Ø 6



RFL L Ø 8

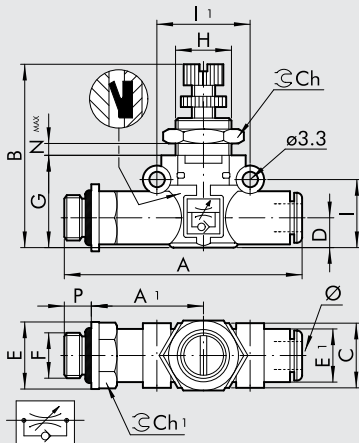


RFL L PIPE-PIPE UNIDIRECTIONAL



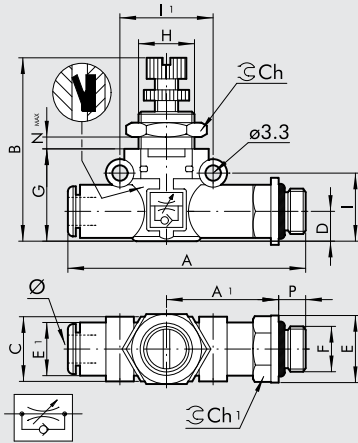
Code	Ref.	Ø	A	B	C	D	E	G	H	I	II	Ch	Nmax
9041301	RFL LU 4-4	4	42	33.5-36.5	10.7	5.6	10	17.5	M9x0.75	12.8	16	11	4
9041316	RFL LU 6-6	6	49.4	36-41	14.7	6.4	11.4	20	M12x0.75	14.6	20	15	4
9041324	RFL LU 8-8	8	57.3	44-49	18.7	9.1	13.8	26	M15x1	18.7	24	20	4.5

RFL L THREAD-PIPE UNIDIRECTIONAL CYLINDER VERSION



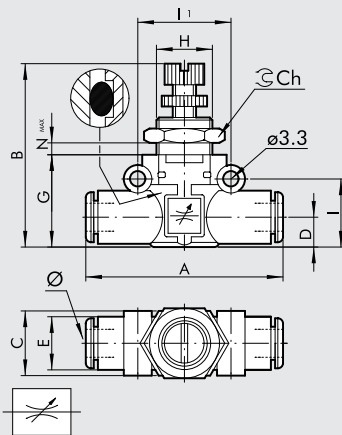
Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Ch1	Nmax
9041401	RFL LU M5-4	M5	4	4	47.7	22.7	33.5-36.5	10.7	5.6	9.9	10	17.5	M9x0.75	12.8	16	11	9	4
9041402	RFL LU 1/8-4	1/8	4	6	51.6	24.6	33.5-36.5	10.7	5.6	14	10	17.5	M9x0.75	12.8	16	11	12	4
9041408	RFL LU 1/8-6	1/8	6	6	58.5	27.8	36-41	14.7	6.4	14	11.4	20	M12x0.75	14.6	20	15	12	4
9041409	RFL LU 1/4-6	1/4	6	8	61.5	28.8	36-41	14.7	6.4	18	11.4	20	M12x0.75	14.6	20	15	14	4
9041410	RFL LU 1/8-8	1/8	8	6	66.2	31.8	44-49	18.7	9.1	15	13.8	26	M15x1	18.7	24	20	14	4.5
9041411	RFL LU 1/4-8	1/4	8	8	70.6	34.2	44-49	18.7	9.1	18	13.8	26	M15x1	18.7	24	20	14	4.5
9041412	RFL LU 3/8-8	3/8	8	9	72.2	34.8	44-49	18.7	9.1	22	13.8	26	M15x1	18.7	24	20	17	4.5

RFL L PIPE-THREAD UNIDIRECTIONAL VALVE VERSION



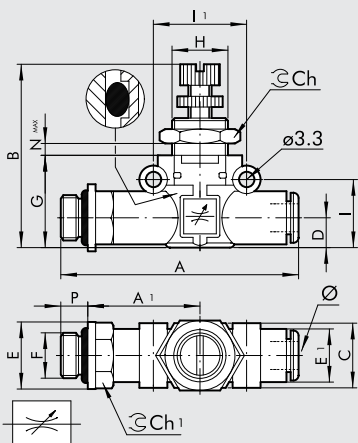
Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	G	H	I	I1	Ch	Ch1	Nmax
9041501	RFL LU 4-M5	4	M5	4	47.7	22.7	33.5-36.5	10.7	5.6	9.9	10	17.5	M9x0.75	12.8	16	11	9	4
9041502	RFL LU 4-1/8	4	1/8	6	51.6	24.6	33.5-36.5	10.7	5.6	14	10	17.5	M9x0.75	12.8	16	11	12	4
9041508	RFL LU 6-1/8	6	1/8	6	58.5	27.8	36-41	14.7	6.4	14	11.4	20	M12x0.75	14.6	20	15	12	4
9041509	RFL LU 6-1/4	6	1/4	8	61.5	28.8	36-41	14.7	6.4	18	11.4	20	M12x0.75	14.6	20	15	14	4
9041510	RFL LU 8-1/8	8	1/8	6	66.2	31.8	44-49	18.7	9.1	15	13.8	26	M15x1	18.7	24	20	14	4.5
9041511	RFL LU 8-1/4	8	1/4	8	70.6	34.2	44-49	18.7	9.1	18	13.8	26	M15x1	18.7	24	20	14	4.5
9041512	RFL LU 8-3/8	8	3/8	9	72.2	34.8	44-49	18.7	9.1	22	13.8	26	M15x1	18.7	24	20	17	4.5

RFL L PIPE-PIPE BIDIRECTIONAL



Code	Ref.	Ø	A	B	C	D	E	G	H	I	I1	Ch	Nmax
9041601	RFL LB 4-4	4	42	33.5-36.5	10.7	5.6	10	17.5	M9x0.75	12.8	16	11	4
9041616	RFL LB 6-6	6	49.4	36-41	14.7	6.4	11.4	20	M12x0.75	14.6	20	15	4
9041624	RFL LB 8-8	8	57.3	44-49	18.7	9.1	13.8	26	M15x1	18.7	24	20	4.5

RFL L THREAD-PIPE BIDIRECTIONAL



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	I1	Ch	Ch1	Nmax
9041701	RFL LB M5-4	M5	4	4	47.7	22.7	33.5-36.5	10.7	5.6	9.9	10	17.5	M9x0.75	12.8	16	11	9	4
9041702	RFL LB 1/8-4	1/8	4	6	51.6	24.6	33.5-36.5	10.7	5.6	14	10	17.5	M9x0.75	12.8	16	11	12	4
9041708	RFL LB 1/8-6	1/8	6	6	58.5	27.8	36-41	14.7	6.4	14	11.4	20	M12x0.75	14.6	20	15	12	4
9041709	RFL LB 1/4-6	1/4	6	8	61.5	28.8	36-41	14.7	6.4	18	11.4	20	M12x0.75	14.6	20	15	14	4
9041710	RFL LB 1/8-8	1/8	8	6	66.2	31.8	44-49	18.7	9.1	15	13.8	26	M15x1	18.7	24	20	14	4.5
9041711	RFL LB 1/4-8	1/4	8	8	70.6	34.2	44-49	18.7	9.1	18	13.8	26	M15x1	18.7	24	20	14	4.5
9041712	RFL LB 3/8-8	3/8	8	9	72.2	34.8	44-49	18.7	9.1	22	13.8	26	M15x1	18.7	24	20	17	4.5

IN-LINE FIXED-REGULATION FLOW REGULATOR SERIE RFF L

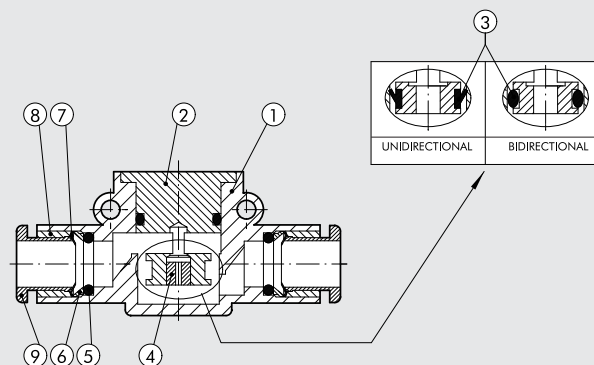
The in-line fixed regulation flow regulator belongs to the LINE ON LINE® family and can be connected in series or in parallel with the other products in the same family. The RFF L regulates the flow of air, and hence the rate of operation of pneumatic actuators. Air flow is regulated by means of a choke with a calibrated diameter. A full range of diameters is available. The advantage of the RFF L over other adjustable versions is that there is no need for regulation during machine installation. Subsequent adjustments are not required either. Two versions are available. Version U (unidirectional) regulates the flow in one direction only. Version B (bidirectional) regulates the air flow in both directions. The flow regulator can be mounted in three different ways (see example below).



TECHNICAL DATA		Ø 4	Ø 6	Ø 8
Max. operating pressure	MPa		1	
	bar		10	
	psi		145	
Temperature range	°C		- 20 to + 60	
	°F		- 4 to + 140	
Choke flow rate	NI/min		See table below	
Recommended pipe Fluid		Rilsan PA 11 - Nylon 6 - Polyamide 12 - Polypropylene Lubricated or unlubricated filtered air		
Compatibility with oils		Please refer to page 6-7 of the technical documentation		

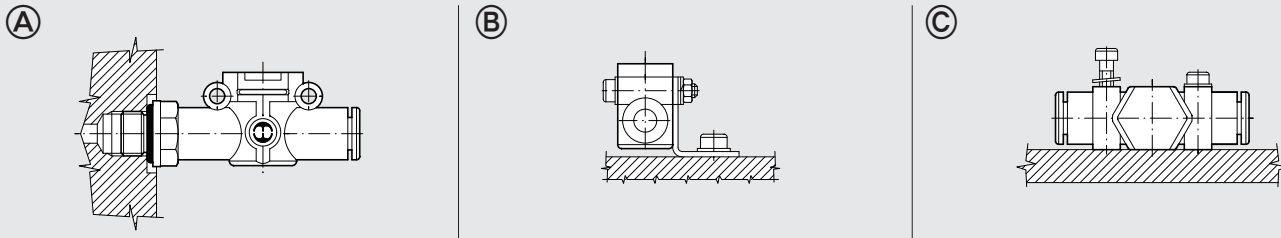
COMPONENTS

- ① Technopolymer body
- ② Nickel-plated brass gasket holding insert
- ③ NBR gasket
- ④ Brass choke cartridge
- ⑤ NBR seal
- ⑥ Technopolymer spring ring
- ⑦ Stainless steel clip-on spring
- ⑧ Technopolymer stop bushing
- ⑨ Technopolymer release bushing



EXHAUST FLOW RATE AT 6.3 bar FOR VERSIONS C-U-V (NI/min)				CHOKE FLOW-RATE AT 6 bar WITH RELIEF VALVE OPEN	
Choke (mm)	Ø 4	Ø 6	Ø 8	Choke (mm)	Flow rate (NI/min)
Ø 0.2	142	552	912	Ø 0.2	2
Ø 0.3	144	554	914	Ø 0.3	4
Ø 0.4	147	557	917	Ø 0.4	7
Ø 0.5	153	563	923	Ø 0.5	13
Ø 0.6	155	565	925	Ø 0.6	15
Ø 0.8	172	582	942	Ø 0.8	32
Ø 1.0	190	600	960	Ø 1.0	50
Ø 1.3	225	635	995	Ø 1.3	85
Ø 1.5	250	660	1020	Ø 1.5	110

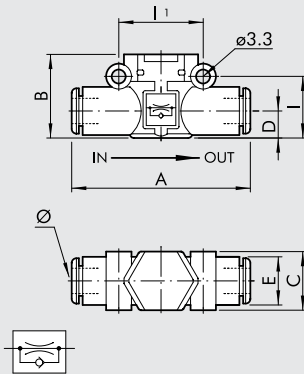
ASSEMBLY OPTIONS



How to mount the RFF L:

- Fig. Ⓐ With the male threaded port it is possible to mount the RFF L straight onto the actuator or the control valve.
- Fig. Ⓑ Fixing to the plate with the special SQU L bracket.
- Fig. Ⓒ There are two robust rings on the plastic body for fixing the RFF L straight onto the wall.

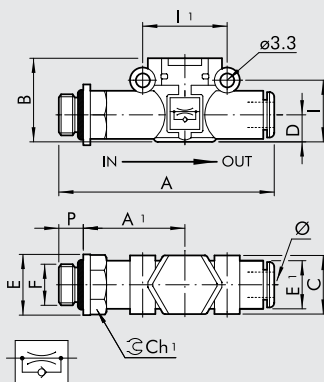
RFF L PIPE - PIPE UNIDIRECTIONAL



Code	Ref.	Ø	A	B	C	D	E	I	II
9070U11_*	RFF-U L 4-4	4	42	17.5	10.7	5.6	10	12.8	16
9070U22_*	RFF-U L 6-6	6	49.4	20	14.7	6.4	11.4	14.6	20
9070U33_*	RFF-U L 8-8	8	57.3	25.5	18.7	9.1	13.8	18.7	24

* The last two digits indicate the narrowing Ø. To complete the code please look at the key to codes.

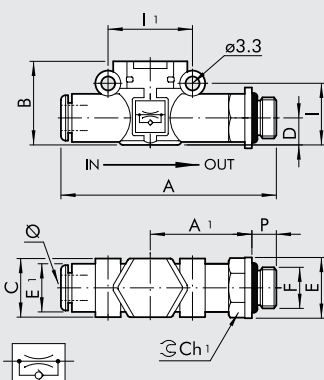
RFF L THREAD - PIPE UNIDIRECTIONAL CYLINDER VERSION



Code	Ref.	F	Ø	P	A	A1	B	C	E	E1	I	II	Ch1
9070C51_*	RFF-C L M5 - Ø4	M5	4	4	47.7	22.7	17.5	10.7	9.9	10	12.8	16	9
9070C61_*	RFF-C L 1/8" - Ø4	1/8	4	6	51.6	24.6	17.5	10.7	14	10	12.8	16	12
9070C62_*	RFF-C L 1/8" - Ø6	1/8	6	6	58.5	27.8	20	14.7	14	11.4	14.6	20	12
9070C72_*	RFF-C L 1/4" - Ø6	1/4	6	8	61.5	28.8	20	14.7	18	11.4	14.6	20	14
9070C63_*	RFF-C L 1/8" - Ø8	1/8	8	6	66.2	31.8	25.5	18.7	15	13.8	18.7	24	14
9070C73_*	RFF-C L 1/4" - Ø8	1/4	8	8	70.6	34.2	25.5	18.7	18	13.8	18.7	24	14
9070C83_*	RFF-C L 3/8" - Ø8	3/8	8	9	72.2	34.8	25.5	18.7	22	13.8	18.7	24	17

* The last two digits indicate the narrowing Ø. To complete the code please look at the key to codes.

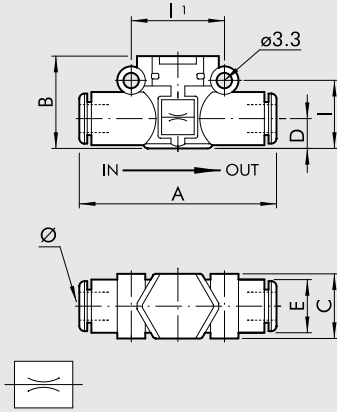
RFF L PIPE - THREAD UNIDIRECTIONAL VALVE VERSION



Code	Ref.	Ø	F	P	A	A1	B	C	E	E1	I	II	Ch1
9070V15_*	RFF-V L Ø4 - M5	4	M5	4	47.7	22.7	17.5	10.7	9.9	10	12.8	16	9
9070V16_*	RFF-V L Ø4 - 1/8"	4	1/8	6	51.6	24.6	17.5	10.7	14	10	12.8	16	12
9070V26_*	RFF-V L Ø6 - 1/8"	6	1/8	6	58.5	27.8	20	14.7	14	11.4	14.6	20	12
9070V27_*	RFF-V L Ø6 - 1/4"	6	1/4	8	61.5	28.8	20	14.7	18	11.4	14.6	20	14
9070V36_*	RFF-V L Ø8 - 1/8"	8	1/8	6	66.2	31.8	25.5	18.7	15	13.8	18.7	24	14
9070V37_*	RFF-V L Ø8 - 1/4"	8	1/4	8	70.6	34.2	25.5	18.7	18	13.8	18.7	24	14
9070V38_*	RFF-V L Ø8 - 3/8"	8	3/8	9	72.2	34.8	25.5	18.7	22	13.8	18.7	24	17

* The last two digits indicate the narrowing Ø. To complete the code please look at the key to codes.

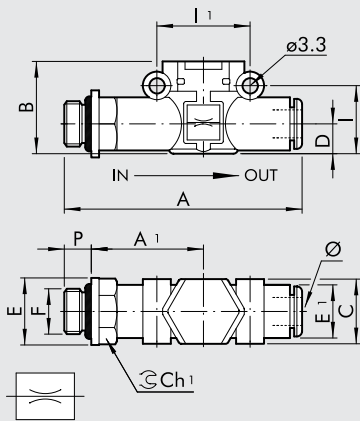
RFF L PIPE - PIPE BIDIRECTIONAL



Code	Ref.	Ø	A	B	C	D	E	I	I1
9070B11_*	RFF-B L 4-4	4	42	17.5	10.7	5.6	10	12.8	16
9070B22_*	RFF-B L 6-6	6	49.4	20	14.7	6.4	11.4	14.6	20
9070B33_*	RFF-B L 8-8	8	57.3	25.5	18.7	9.1	13.8	18.7	24

* The last two digits indicate the narrowing Ø. To complete the code please look at the key to codes.

RFF L THREAD - PIPE BIDIRECTIONAL



Code	Ref.	F	Ø	P	A	A1	B	C	E	E1	I	I1	Ch1
9070B51_*	RFF-B L M5 - Ø 4	M5	4	4	47.7	22.7	17.5	10.7	9.9	10	12.8	16	9
9070B61_*	RFF-B L 1/8" - Ø 4	1/8	4	6	51.6	24.6	17.5	10.7	14	10	12.8	16	12
9070B62_*	RFF-B L 1/8" - Ø 6	1/8	6	6	58.5	27.8	20	14.7	14	11.4	14.6	20	12
9070B72_*	RFF-B L 1/4" - Ø 6	1/4	6	8	61.5	28.8	20	14.7	18	11.4	14.6	20	14
9070B63_*	RFF-B L 1/8" - Ø 8	1/8	8	6	66.2	31.8	25.5	18.7	15	13.8	18.7	24	14
9070B73_*	RFF-B L 1/4" - Ø 8	1/4	8	8	70.6	34.2	25.5	18.7	18	13.8	18.7	24	14
9070B83_*	RFF-B L 3/8" - Ø 8	3/8	8	9	72.2	34.8	25.5	18.7	22	13.8	18.7	24	17

* The last two digits indicate the narrowing Ø. To complete the code please look at the key to codes.

KEY TO CODES

9 0 7 0	B	11	02
TYPE	FUNCTION	Ø IN - Ø OUT	Ø CHOKE
9070 RFF L	<p>B Bidirectional</p> <p>C For cylinder</p> <p>U Unidirectional</p> <p>V For valve</p>	<p>■ 11 = Ø 4 - Ø 4</p> <p>* 15 = Ø 4 - M5</p> <p>* 16 = Ø 4 - 1/8"</p> <p>■ 22 = Ø 6 - Ø 6</p> <p>* 26 = Ø 6 - 1/8"</p> <p>* 27 = Ø 6 - 1/4"</p> <p>■ 33 = Ø 8 - Ø 8</p> <p>* 36 = Ø 8 - 1/8"</p> <p>* 37 = Ø 8 - 1/4"</p> <p>* 38 = Ø 8 - 3/8"</p> <p>● 51 = M5 - Ø 4</p> <p>● 61 = 1/8" - Ø 4</p> <p>● 62 = 1/8" - Ø 6</p> <p>● 63 = 1/8" - Ø 8</p> <p>● 72 = 1/4" - Ø 6</p> <p>● 73 = 1/4" - Ø 8</p> <p>● 83 = 3/8" - Ø 8</p>	<p>02 = Ø 0.2</p> <p>03 = Ø 0.3</p> <p>04 = Ø 0.4</p> <p>05 = Ø 0.5</p> <p>06 = Ø 0.6</p> <p>08 = Ø 0.8</p> <p>10 = Ø 1.0</p> <p>13 = Ø 1.3</p> <p>15 = Ø 1.5</p>

- Only for **B** (bidirectional) and **U** (unidirectional) versions
- * Only for **V** (valve) versions
- Only for **C** (cylinder) and **B** (bidirectional) versions

IN-LINE QUICK-EXHAUST VALVES SERIES VSR L



The VSR L quick-exhaust valve belongs to the LINE ON LINE® family, which means it can be connected to all the other components in series or in parallel.

Available in the version for pipe-pipe connection with two push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting.

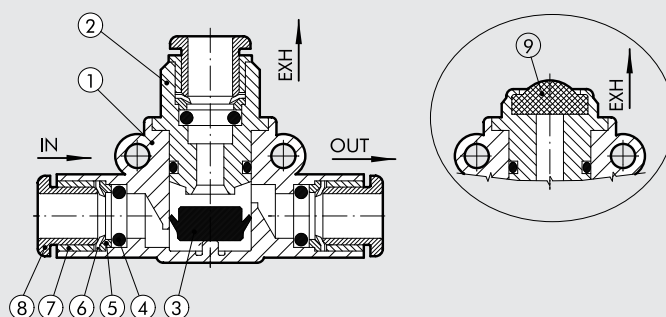
Exhaust can be silenced using a STAINLESS steel wire silencer, or conveyed using a push-in fitting.



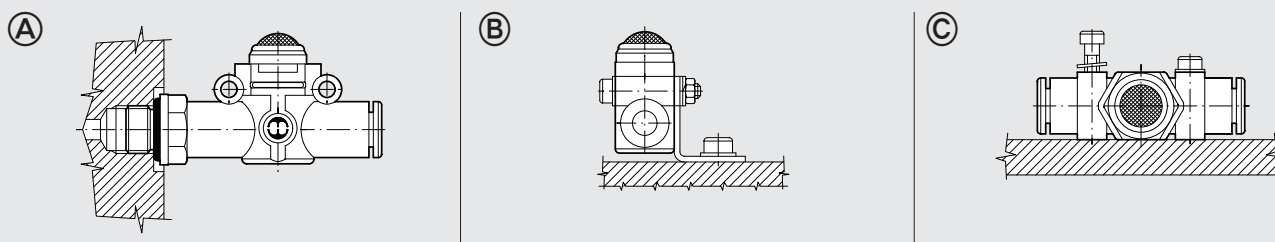
TECHNICAL DATA		Ø 4	Ø 6	Ø 8
Inlet pressure	MPa		0.1 - 1	
	bar		1 - 10	
	psi		14.5 - 145	
Temperature range	°C		-20 to +60	
	°F		-4 to +140	
Inlet flow rate at 6.3 bar ΔP 1 bar	Nl/min	50	270	400
Exhaust flow rate at 6.3 bar	Nl/min	100	700	1000
Recommended pipe		Rilsan PA 11 - Nylon 6 - Polyamide 12 - Polypropylene		
Fluid		Lubricated or unlubricated filtered compressed air; if used, must be continuous		
Compatibility with oils		Please refer to page 6-7 of the technical documentation		

COMPONENTS

- ① Technopolymer body
- ② Nickel-plated brass insert
- ③ NBR valve
- ④ NBR gasket
- ⑤ Technopolymer spring ring
- ⑥ Stainless steel folding spring
- ⑦ Brass or technopolymer locking bushing
- ⑧ Technopolymer release bushing
- ⑨ Stainless steel wire silencer



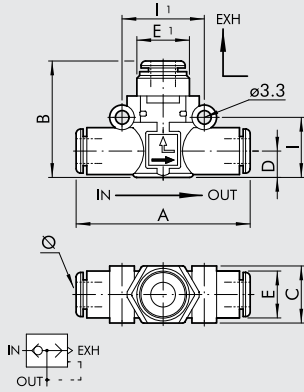
ASSEMBLY OPTIONS



How to mount the VSR L:

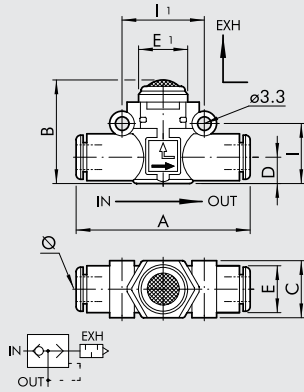
- Fig. A With the male threaded port it is possible to mount the RFL R straight onto the actuator.
- Fig. B Fixing to the plate with the special SQU L bracket.
- Fig. C There are two robust rings on the plastic body for fixing the RFL R straight onto the wall.

VSR L PIPE-PIPE, CONVEYED EXHAUST



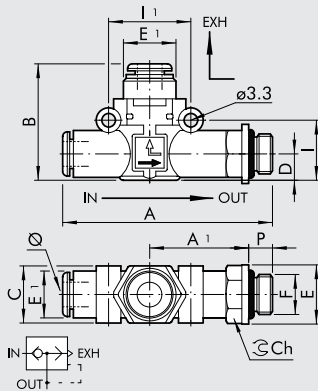
Code	Ref.	Ø	A	B	C	D	E	E1	I	I1
9063001	VSR L 4-4-4	4	41.8	25.8	10.7	5.6	10	9.7	12.8	16
9063016	VSR L 6-6-6	6	49.4	30.2	14.7	6.4	11.4	13	14.6	20
9063024	VSR L 8-8-8	8	57.3	35.9	18.7	9.1	13.8	15	18.7	24

VSR L PIPE-PIPE, SILENCED EXHAUST



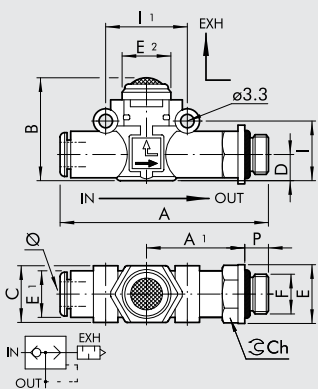
Code	Ref.	Ø	A	B	C	D	E	E1	I	I1
9063101	VSR L 4-4-SIL	4	41.8	19.8	10.7	5.6	10	10	12.8	16
9063116	VSR L 6-6-SIL	6	49.4	25.5	14.7	6.4	11.4	14	14.6	20
9063124	VSR L 8-8-SIL	8	57.3	31.5	18.7	9.1	13.8	18	18.7	24

VSR L PIPE-THREAD, CONVEYED EXHAUST



Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	E2	I	I1	Ch
9063201	VSR L 4-M5-4	4	M5	4	47.7	22.7	25.8	10.7	5.6	9.9	10	9.7	12.8	16	9
9063202	VSR L 4-1/8-4	4	1/8	6	50.6	24.6	25.8	10.7	5.6	14	10	9.7	12.8	16	12
9063208	VSR L 6-1/8-6	6	1/8	6	58.5	27.8	30.2	14.7	6.4	14	11.4	13	14.6	20	12
9063209	VSR L 6-1/4-6	6	1/4	8	61.5	28.8	30.2	14.7	6.4	18	11.4	13	14.6	20	14
9063210	VSR L 8-1/8-8	8	1/8	6	66.2	31.8	35.9	18.7	9.1	15	13.8	15	18.7	24	14
9063211	VSR L 8-1/4-8	8	1/4	8	70.6	34.2	35.9	18.7	9.1	18	13.8	15	18.7	24	14
9063212	VSR L 8-3/8-8	8	3/8	9	72.2	34.8	35.9	18.7	9.1	22	13.8	15	18.7	24	17

VSR L PIPE-THREAD, SILENCED EXHAUST



Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	E2	I	I1	Ch
9063301	VSR L 4-M5-SIL	4	M5	4	46.7	22.7	19.8	10.7	5.6	9.9	10	10	12.8	16	9
9063302	VSR L 4-1/8-SIL	4	1/8	6	50.6	24.6	19.8	10.7	5.6	14	10	10	12.8	16	12
9063308	VSR L 6-1/8-SIL	6	1/8	6	58.5	27.8	25.5	14.7	6.4	14	11.4	14	14.6	20	12
9063309	VSR L 6-1/4-SIL	6	1/4	8	61.5	28.8	25.5	14.7	6.4	18	11.4	14	14.6	20	14
9063310	VSR L 8-1/8-SIL	8	1/8	6	66.2	31.8	31.5	18.7	9.1	15	13.8	18	18.7	24	14
9063311	VSR L 8-1/4-SIL	8	1/4	8	70.6	34.2	31.5	18.7	9.1	18	13.8	18	18.7	24	14
9063312	VSR L 8-3/8-SIL	8	3/8	9	72.2	34.8	31.5	18.7	9.1	22	13.8	18	18.7	24	17

IN-LINE QUICK-EXHAUST VALVE WITH REGULATED EXHAUST SERIES VSRR L



The VSRR L quick-exhaust valve with regulated exhaust belongs to the LINE ON LINE® family of products and can be linked in series or in parallel to all the other products.

It comes in a version for pipe-pipe connection, which includes two push-in fittings, and a version for thread-pipe connection, which includes a nickel-plated brass taper thread and push-in fitting.

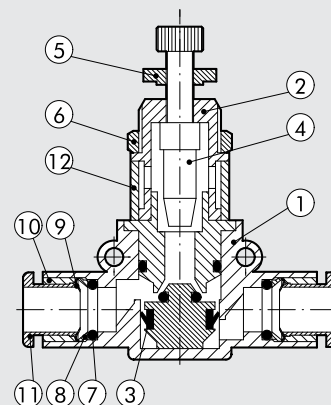
The main feature of these valves is that the discharge flow can be adjusted via a pin regulator. This allows you to control the speed of the actuator connected to the valve, giving a higher speed than with an MRF regulator.



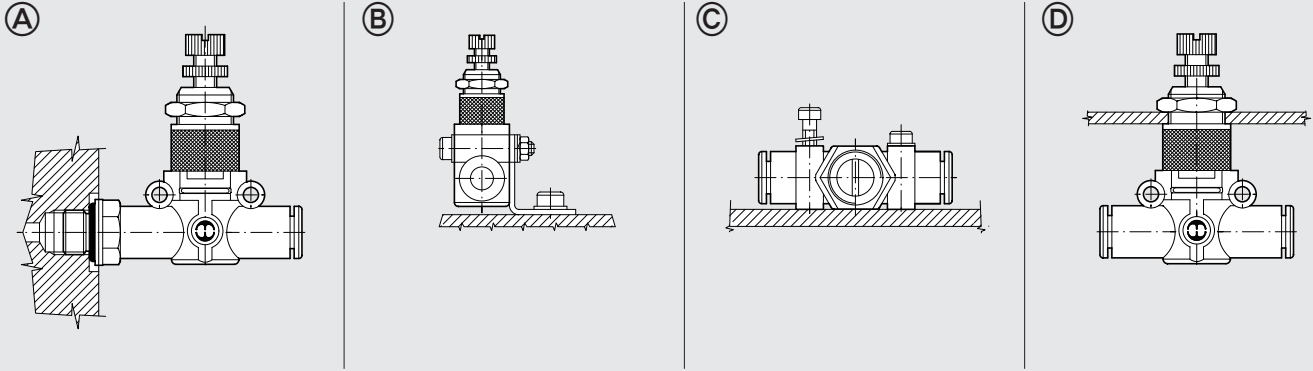
TECHNICAL DATA		Ø 4	Ø 6	Ø 8
Max. operating pressure	MPa		1	
	bar		10	
	psi		145	
Temperature range	°C		-20 to +60	
	°F		-4 to +140	
Max flow rate on regulation at 6.3 bar ΔP 1 bar	NI/min	50	270	400
Flow rate on exhaust at 6.3 bar	NI/min	170	460	960
Adjustment		Manual or using a screwdriver		
Internal system		Tapered needle		
Recommended pipe		Rilsan PA 11 - Nylon 6 - Polyamide 12 - Polypropylene		
Fluid		Lubricated or unlubricated filtered air		
Compatibility with oils		Please refer to page 6-7 of the technical documentation		

COMPONENTS

- ① Technopolymer body
- ② Nickel-plated brass seal support
- ③ NBR gasket
- ④ Brass adjusting needle
- ⑤ Nickel-plated brass needle ring nut
- ⑥ Nickel-plated brass wall fixing ring nut
- ⑦ NBR seal
- ⑧ Technopolymer spring ring
- ⑨ Stainless steel clip-on spring
- ⑩ Technopolymer stop bushing
- ⑪ Technopolymer release bushing
- ⑫ Sintered bronze silencer



ASSEMBLY OPTIONS

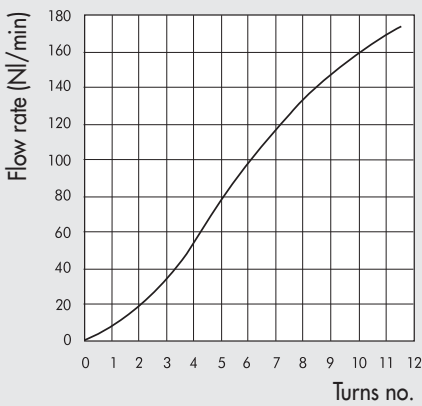


How to mount the VSRR L:

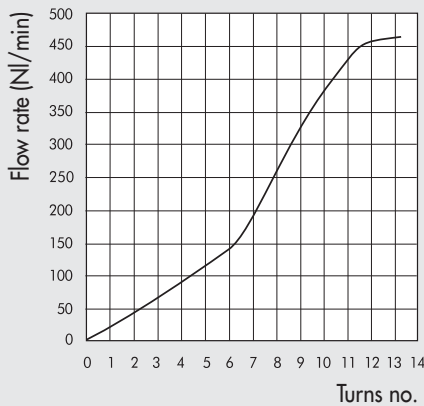
- Fig. A With the male threaded port it is possible to mount the VSRR L straight onto the actuator or the control valve.
- Fig. B Fixing to the plate with the special SQU L bracket.
- Fig. C There are two robust rings on the plastic body for fixing the VSRR L straight onto the wall.
- Fig. D The ring nut is screwed onto the threaded metal part of the VSRR L body for panel mounting.

EXHAUST FLOW CHARTS VSRR L

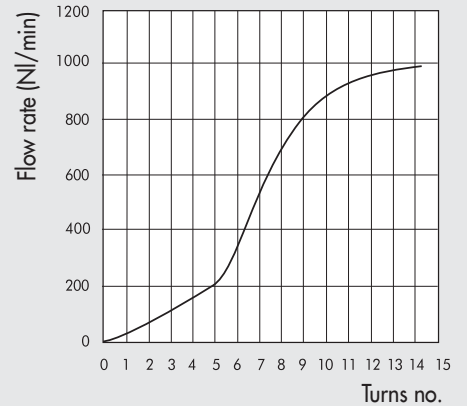
VSRR L Ø 4



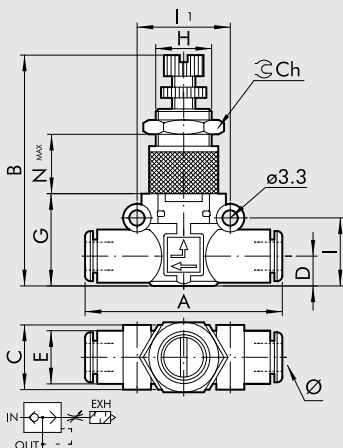
VSRR L Ø 6



VSRR L Ø 8

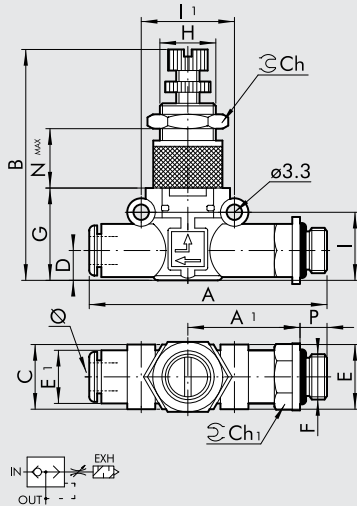


VSRR PIPE-PIPE



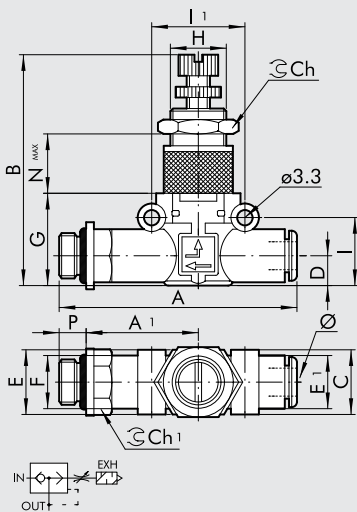
Code	Ref.	Ø	A	B	C	D	E	G	H	I	II	Ch	Nmax
9063501	VSRR L 4-4	4	42	39.5-43.5	10.7	5.6	10	17.5	M9x0.75	12.8	16	11	11.5
9063516	VSRR L 6-6	6	49.4	47-52	14.7	6.4	11.4	20	M12x0.75	14.6	20	15	15.5
9063524	VSRR L 8-8	8	57.3	56-61.2	18.7	9.1	13.8	26	M15x1	18.7	24	17	18.5

VSRR L THREAD-PIPE



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	I1	Ch	Ch1	Nmax
9063601	VSRR LM5-4	M5	4	4	47.7	22.7	39.5-43.5	10.7	5.6	9.9	10	17.5	M9x0.75	12.8	16	11	9	11.5
9063602	VSRR L1/8-4	1/8	4	6	51.6	24.6	39.5-43.5	10.7	5.6	14	10	17.5	M9x0.75	12.8	16	11	12	11.5
9063608	VSRR L1/8-6	1/8	6	6	58.5	27.8	47-52	14.7	6.4	14	11.4	20	M12x0.75	14.6	20	15	12	15.5
9063609	VSRR L1/4-6	1/4	6	8	61.5	28.8	47-52	14.7	6.4	18	11.4	20	M12x0.75	14.6	20	15	14	15.5
9063610	VSRR L1/8-8	1/8	8	6	66.2	31.8	56-61.2	18.7	9.1	15	13.8	26	M15x1	18.7	26	17	14	18.5
9063611	VSRR L1/4-8	1/4	8	8	70.6	34.2	56-61.2	18.7	9.1	18	13.8	26	M15x1	18.7	26	17	14	18.5
9063612	VSRR L3/8-8	3/8	8	9	72.2	34.8	56-61.2	18.7	9.1	22	13.8	26	M15x1	18.7	26	17	17	18.5

VSRR L PIPE-THREAD



Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	G	H	I	I1	Ch	Ch1	Nmax
9063701	VSRR L4-M5	4	M5	4	47.7	22.7	39.5-43.5	10.7	5.6	9.9	10	17.5	M9x0.75	12.8	16	11	9	11.5
9063702	VSRR L4-1/8	4	1/8	6	51.6	24.6	39.5-43.5	10.7	5.6	14	10	17.5	M9x0.75	12.8	16	11	12	11.5
9063708	VSRR L6-1/8	6	1/8	6	58.5	27.8	47-52	14.7	6.4	14	11.4	20	M12x0.75	14.6	20	15	12	15.5
9063709	VSRR L6-1/4	6	1/4	8	61.5	28.8	47-52	14.7	6.4	18	11.4	20	M12x0.75	14.6	20	15	14	15.5
9063710	VSRR L8-1/8	8	1/8	6	66.2	31.8	56-61.2	18.7	9.1	15	13.8	26	M15x1	18.7	26	17	14	18.5
9063711	VSRR L8-1/4	8	1/4	8	70.6	34.2	56-61.2	18.7	9.1	18	13.8	26	M15x1	18.7	26	17	14	18.5
9063712	VSRR L8-3/8	8	3/8	9	72.2	34.8	56-61.2	18.7	9.1	22	13.8	26	M15x1	18.7	26	17	17	18.5

NOTES

IN-LINE STOP VALVE SERIES STP L

The STP L stop valve belongs to the LINE ON LINE® family and can be connected in series or in parallel with the other products in the same family. It is available in a version for pipe-pipe connection, which includes two push-in fittings, and a version for thread-pipe connection, which includes a nickel-plated brass male thread and a push-in fitting. The stop valve is normally mounted on the inlet port of cylinders and allows the flow of air only in the presence of a pneumatic pilot.

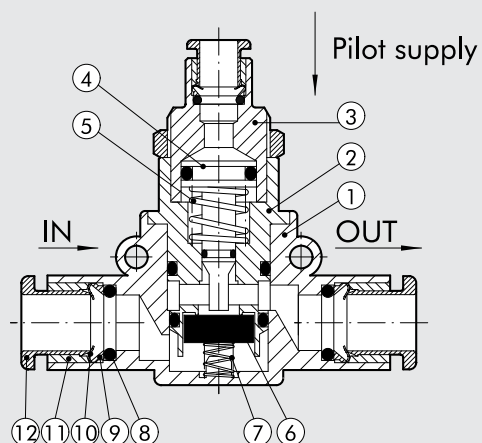
Cylinder movement ceases if there is a drop in pneumatic pilot pressure. The compressed air port is a push-in fitting for Ø 4 pipe. This stop valve is available in a unidirectional version, so the flow can be interrupted in one direction, but remains free in the other direction. This valve can also be used as a unidirectional normally-closed 2/2 pneumatic control valve.



TECHNICAL DATA		Ø 6	Ø 8
Max. operating pressure	MPa	1	
	bar	10	
	psi	145	
Temperature range	°C	-20 to +60	
	°F	-4 to +140	
Recommended pipe		Rilsan PA 11 - Nylon 6 - Polyamide 12 - Polypropylene	
Fluid		Lubricated or unlubricated filtered air	
Compatibility with oils		Please refer to page 6-7 of the technical documentation	

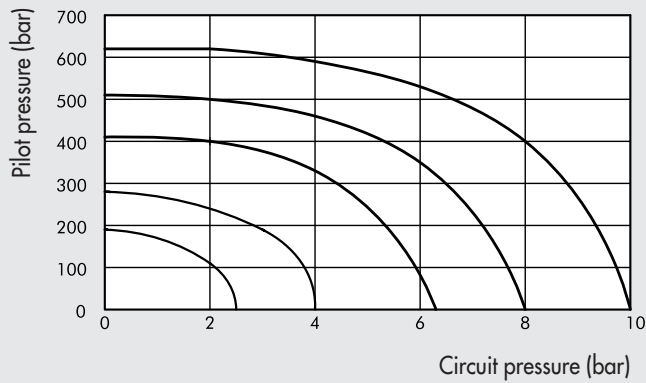
COMPONENTS

- ① Technopolymer body
- ② Nickel-plated brass insert
- ③ Nickel-plated brass pilot insert
- ④ Brass piston rod
- ⑤ Stainless steel clamping spring
- ⑥ NBR seal
- ⑦ Stainless steel poppet spring
- ⑧ NBR seal
- ⑨ Technopolymer spring ring
- ⑩ Stainless steel clip-on spring
- ⑪ Technopolymer stop bushing
- ⑫ Technopolymer release bushing

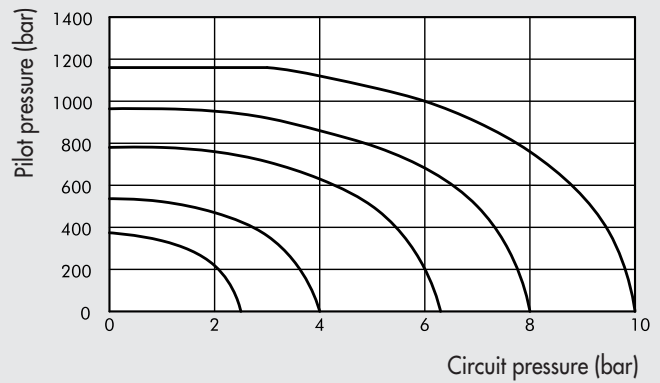


FLOW CHARTS

STP L Ø 6

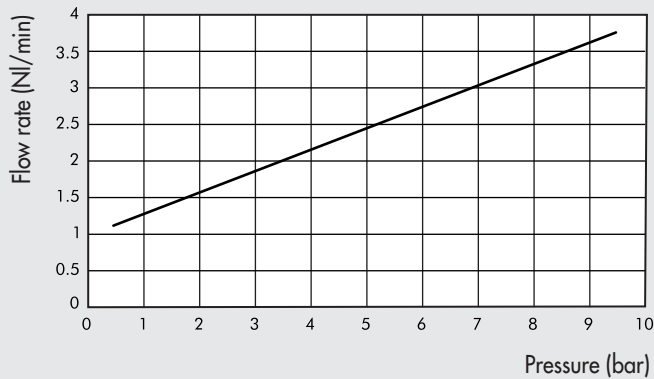


STP L Ø 8

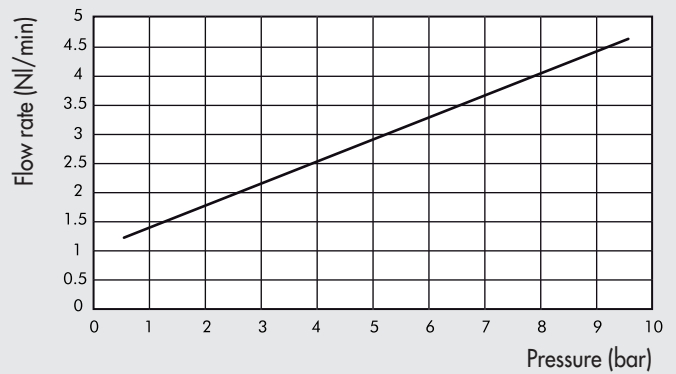


MINIMUM PILOT PRESSURE

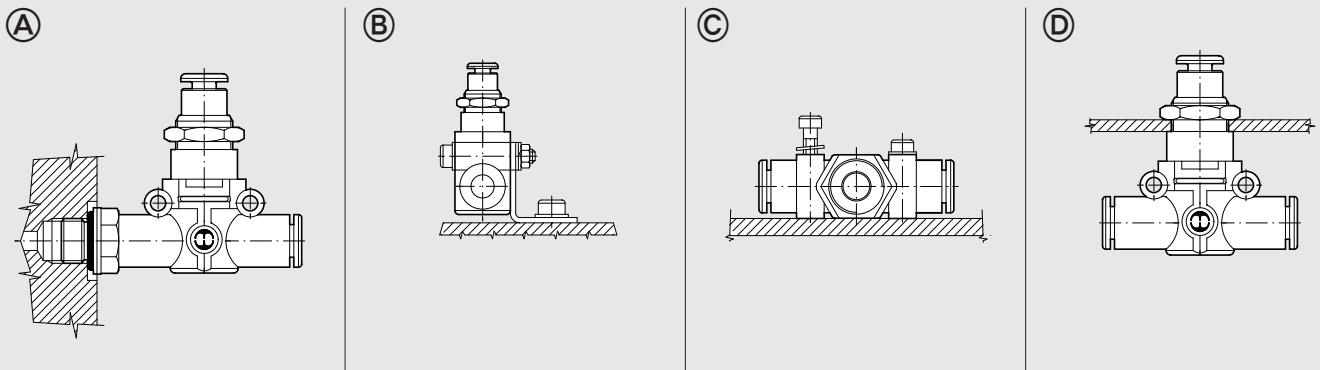
STP L Ø 6



STP L Ø 8



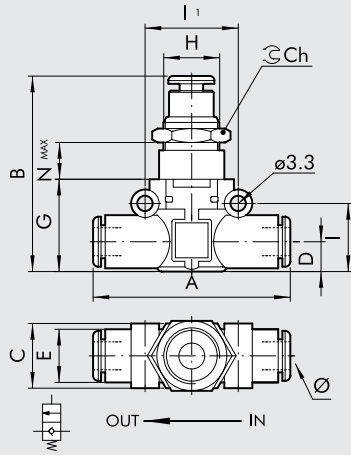
ASSEMBLY OPTIONS



How to mount the STP L:

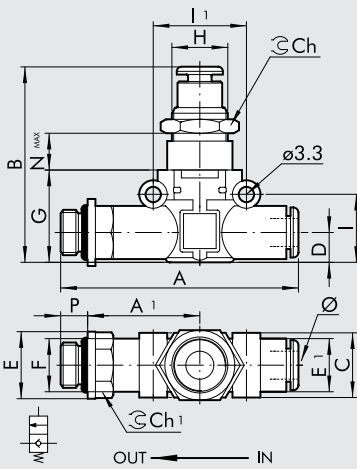
- Fig. (A) With the male threaded port it is possible to mount the STP L straight onto the actuator or the control valve.
- Fig. (B) Fixing to the plate with the special SQU L bracket.
- Fig. (C) There are two robust rings on the plastic body for fixing the STP L straight onto the wall.
- Fig. (D) The ring nut is screwed onto the threaded metal part of the STP L body for panel mounting.

STP L 2/2 PIPE - PIPE



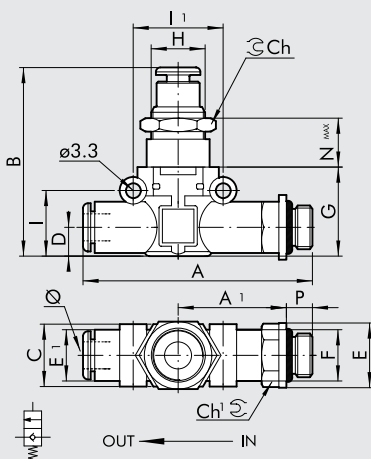
Code	Ref.	Ø	A	B	C	D	E	G	H	I	I1	Ch	Nmax
9065616	STP L 2/2 Ø6 - Ø6	6	49.4	43.2	14.7	6.4	11.4	20	M12x0.75	14.6	20	15	4.7
9065624	STP L 2/2 Ø8 - Ø8	8	57.3	49.7	18.7	9.1	13.8	26	M15x1	18.7	24	17	4

STP L 2/2 PIPE - THREAD



Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	G	H	I	I1	Ch	Ch1	Nmax
9065808	STP L 2/2 Ø6 - 1/8	6	1/8	6	58.5	27.8	43.2	14.7	6.4	14	11.4	20	M12x0.75	14.6	20	15	12	4.7
9065809	STP L 2/2 Ø6 - 1/4	6	1/4	8	61.5	28.8	43.2	14.7	6.4	18	11.4	20	M12x0.75	14.6	20	15	14	4.7
9065810	STP L 2/2 Ø8 - 1/8	8	1/8	6	66.2	31.8	49.7	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	14	4
9065811	STP L 2/2 Ø8 - 1/4	8	1/4	8	70.6	34.2	49.7	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	14	4
9065812	STP L 2/2 Ø8 - 3/8	8	3/8	9	72.2	34.8	49.7	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	17	4

STP L 2/2 THREAD - PIPE



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	I1	Ch	Ch1	Nmax
9065708	STP L 2/2 1/8 - Ø6	1/8	6	6	58.5	27.8	43.2	14.7	6.4	14	11.4	20	M12x0.75	14.6	20	15	12	4.7
9065709	STP L 2/2 1/4 - Ø6	1/4	6	8	61.5	28.8	43.2	14.7	6.4	18	11.4	20	M12x0.75	14.6	20	15	14	4.7
9065710	STP L 2/2 1/8 - Ø8	1/8	8	6	66.2	31.8	49.7	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	14	4
9065711	STP L 2/2 1/4 - Ø8	1/4	8	8	70.6	34.2	49.7	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	14	4
9065712	STP L 2/2 3/8 - Ø8	3/8	8	9	72.2	34.8	49.7	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	17	4

IN-LINE CHECK VALVE SERIES VNR L



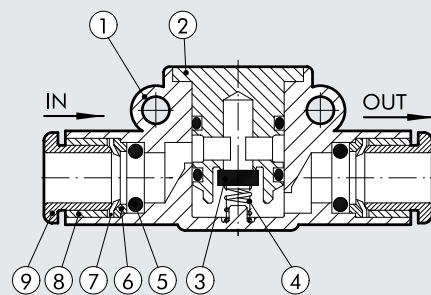
The VNR L check valve belongs to the LINE ON LINE® family, which means it can be connected to all the other components in series or in parallel. Available in the version for pipe-pipe connection with two push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting. It is still the only check valve with holes for wall mounting.



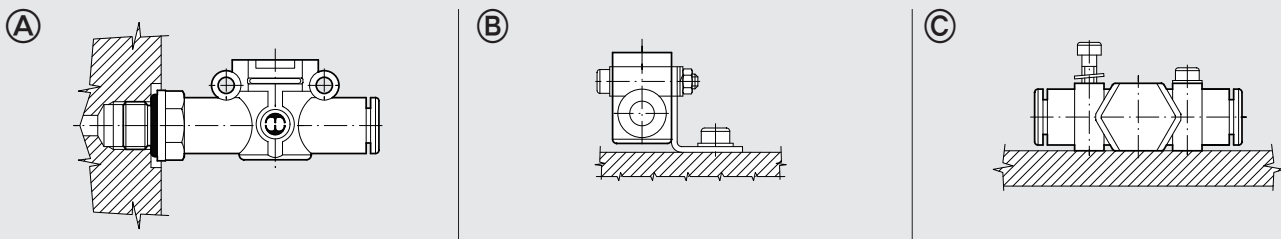
TECHNICAL DATA		Ø 4	Ø 6	Ø 8
Operating pressure	MPa		0.05 - 1.2	
	bar		0.5 - 12	
	psi		7.2 - 174	
Temperature range	°C		-20 to +60	
	°F		-4 to +140	
Flow rate at 6.3 bar ΔP 1 bar	NI/min	80	320	480
Recommended pipe		Rilsan PA11 - Nylon 6 - Polyamide 12 - Polypropylene		
Fluid		Lubricated or unlubricated filtered compressed air		

COMPONENTS

- ① Technopolymer body
- ② Nickel-plated brass insert
- ③ NBR valve
- ④ Stainless steel valve compression spring
- ⑤ NBR gasket
- ⑥ Technopolymer spring ring
- ⑦ Stainless steel folding spring
- ⑧ Technopolymer locking bushing
- ⑨ Technopolymer release bushing



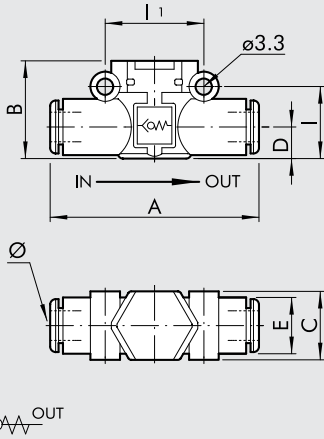
ASSEMBLY OPTIONS



How to mount the VNR L:

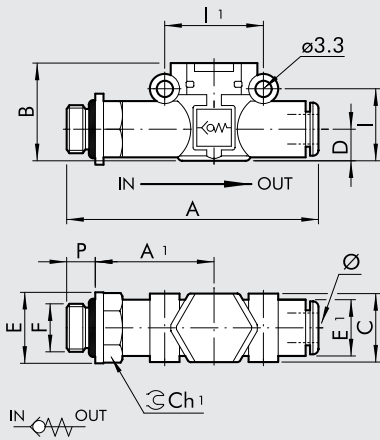
- Fig. A With the male threaded port it is possible to mount the VNR L straight onto the female thread.
- Fig. B Fixing to the plate with the special SQU L bracket.
- Fig. C There are two robust rings on the plastic body for fixing the VNR L straight onto the wall.

VNR L PIPE-PIPE



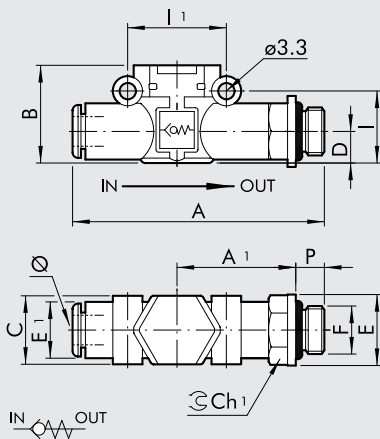
Code	Ref.	Ø	A	B	C	D	E	I	I1
9064001	VNR L 4-4	4	41.8	17.5	10.7	5.6	10	12.8	16
9064016	VNR L 6-6	6	49.4	20	14.7	6.4	11.4	14.6	20
9064024	VNR L 8-8	8	57.3	25.5	18.7	9.1	13.8	18.7	24

VNR L THREAD-PIPE



Code	Ref.	F	Ø	P	A	A1	B	C	E	E1	I	I1	Ch1
9064101	VNR L M5-4	M5	4	4	47.7	22.7	17.5	10.7	9.9	10	12.8	16	9
9064102	VNR L 1/8-4	1/8	4	6	50.6	24.6	17.5	10.7	14	10	12.8	16	12
9064108	VNR L 1/8-6	1/8	6	6	58.5	27.8	20	14.7	14	11.4	14.6	20	12
9064109	VNR L 1/4-6	1/4	6	8	61.5	28.8	20	14.7	18	11.4	14.6	20	14
9064110	VNR L 1/8-8	1/8	8	6	66.2	31.8	25.5	18.7	15	13.8	18.7	24	14
9064111	VNR L 1/4-8	1/4	8	8	70.6	34.2	25.5	18.7	18	13.8	18.7	24	14
9064112	VNR L 3/8-8	3/8	8	9	72.2	34.8	25.5	18.7	22	13.8	18.7	24	17

VNR L PIPE-THREAD



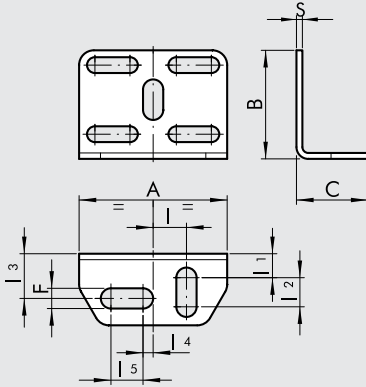
Code	Ref.	Ø	F	P	A	A1	B	C	E	E1	I	I1	Ch1
9064201	VNR L 4-M5	4	M5	4	47.7	22.7	17.5	10.7	9.9	10	12.8	16	9
9064202	VNR L 4-1/8	4	1/8	6	50.6	24.6	17.5	10.7	14	10	12.8	16	12
9064208	VNR L 6-1/8	6	1/8	6	58.5	27.8	20	14.7	14	11.4	14.6	20	12
9064209	VNR L 6-1/4	6	1/4	8	61.5	28.8	20	14.7	18	11.4	14.6	20	14
9064210	VNR L 8-1/8	8	1/8	6	66.2	31.8	25.5	18.7	15	13.8	18.7	24	14
9064211	VNR L 8-1/4	8	1/4	8	70.6	34.2	25.5	18.7	18	13.8	18.7	24	14
9064212	VNR L 8-3/8	8	3/8	9	72.2	34.8	25.5	18.7	22	13.8	18.7	24	17

ACCESSORIES LINE ON LINE®

FIXING SQUARE KIT

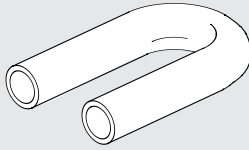
Code	Description	A	B	C	F	I	I1	I2	I3	I4	I5	S
9062110	SQU L	30	22	14.5	4.2	6.8	4.8	5.9	9.1	2	6.5	1.2

NOTE: comes with two m3x16 screws (for L.O.L. Ø 6 - 8), two m3 hexagonal nuts, 2 groovers, 4 washers.



U-BOLT

Code	Description
9062216	TUB L 6-6
9062224	TUB L 8-8



NOTES

NOTES

Lined area for notes.

SUMMARY COUPLINGS



- COMPRESSED AIR QUICK-FIT COUPLINGS SERIES IAC

PAGE 5-42



- QUICK-FIT COUPLINGS FOR MOULD CONDITIONING SERIES ICS

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COMPRESSED AIR QUICK-FIT COUPLINGS SERIES IAC

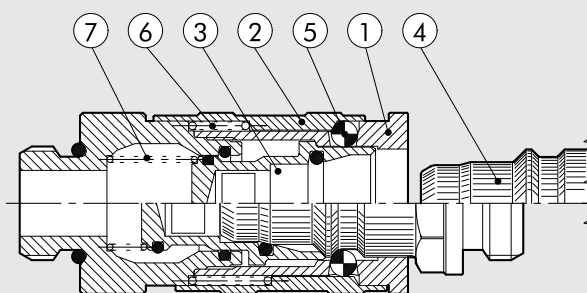
The compressed air quick-fit coupling by Metal Work allows quick replacement of pneumatic equipment (drills, milling machines, screwers and actuators in general) without having to set the line pressure to zero each time. Rapid tool changeover can be easily obtained by fitting a female body on the branch under pressure and the male coupling on the actuator. The presence of a female coupling with a safety valve on the branch under pressure prevents air dispersion during disconnection.



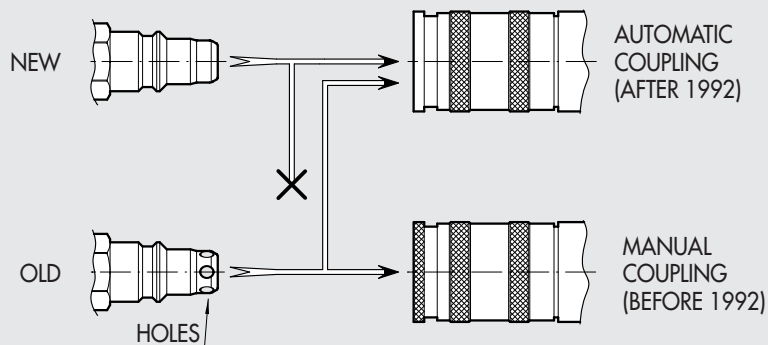
TECHNICAL DATA		MINI		100	200	300
Threaded coupling		1/8"	1/4"	1/4"	3/8"	1/2"
Maximum inlet pressure	MPa	3		3		
	bar	30		30		
	psi	435		435		
Flow rate at 6 bar (0.6 MPa - 87 psi) ΔP 1 bar (0.1 MPa - 14 psi)	NI/min	480		750	1450	1750
Maximum temperature	°C	80		80		
	°F	176		176		

COMPONENTS

- ① Body: nickel-plated brass
- ② Ring nut: nickel-plated brass
- ③ Valve: nickel-plated brass
- ④ Coupling: carbonitrided and zinc-plated steel
- ⑤ Ball: stainless steel
- ⑥ Ring nut spring: AISI 302
- ⑦ Valve spring: AISI 302

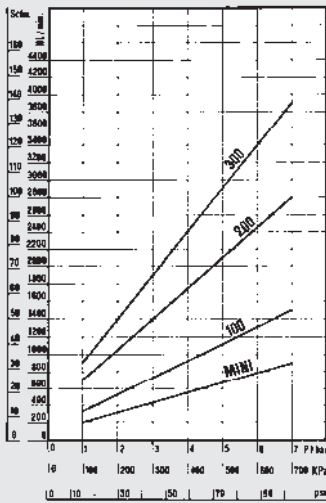


The actual male couplings don't have lateral holes. They cannot be coupled with the manual ports old production.

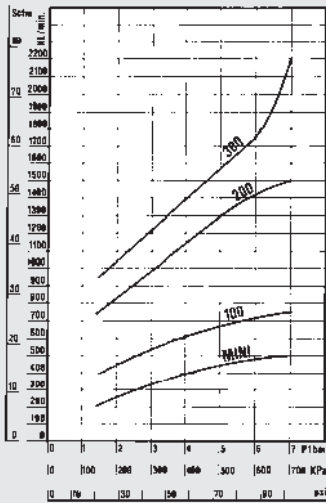


FLOW CHARTS

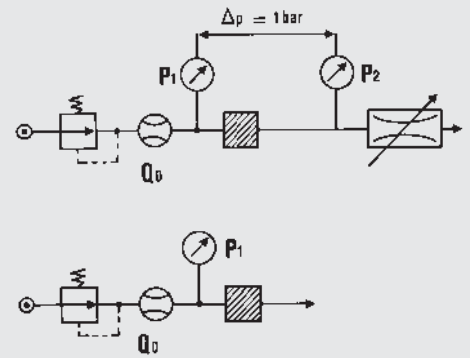
CURVE WITH $\Delta p = 1 \text{ bar}$



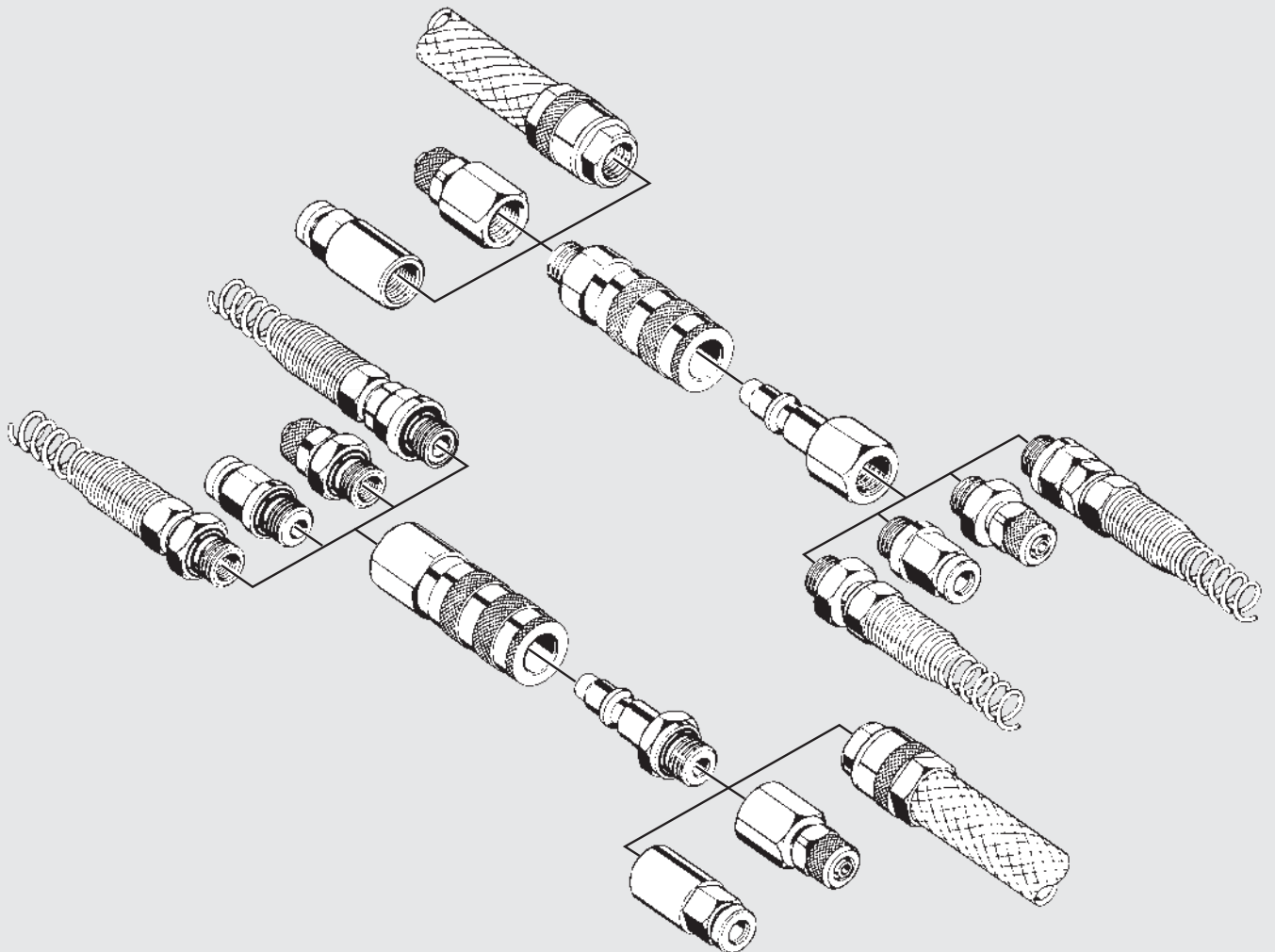
CURVE WITH FREE EXHAUST



FLOW TEST DIAGRAMS

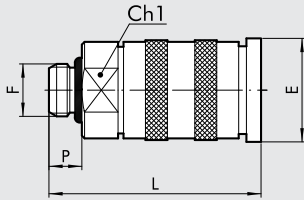


TYPICAL ASSEMBLIES



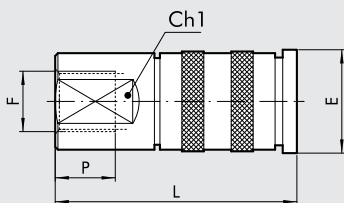
OVERALL DIMENSIONS AND ORDERING CODES

QUICK-FIT PORT, MALE



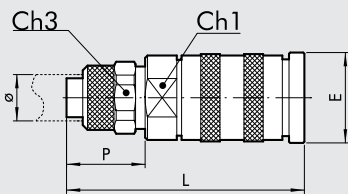
Code	Ref.	Mod.	F	Ch1	P	L	E	O-ring
0101001	01	mini	1/8	16	6.0	38.0	18.8	2031
0101002	02	mini	1/4	16	8.0	40.0	18.8	2043
0201101	101	100	1/4	21	8.0	50.0	24.4	2043
0301201	201	200	3/8	23	9.0	57.6	26.4	2056
0300202	201/A	200	1/4	23	8.0	56.6	26.4	2043
0401301	301	300	1/2	30	11.0	70.8	33.0	3068

QUICK-FIT PORT, FEMALE



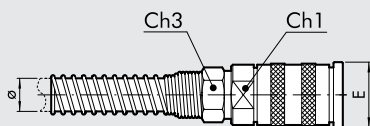
Code	Ref.	Mod.	F	Ch1	P	L	E
0101003	03	mini	1/8	16	7.0	40.5	18.8
0101004	04	mini	1/4	16	8.0	42.0	18.8
0201102	102	100	1/4	21	8.0	52.0	24.4
0301202	202	200	3/8	23	10.0	60.7	26.4
0401302	302	300	1/2	30	11.0	73.8	33.0

QUICK-FIT PORT, NYLON PIPE



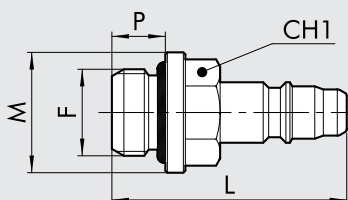
Code	Ref.	Mod.	Ø	Ch1	Ch3	P	L	E
0101005	05	mini	6/4	16	12	14.0	46.0	18.8
0101006	06	mini	8/6	16	14	14.0	46.0	18.8

QUICK-FIT PORT, NYLON PIPE WITH SPRING



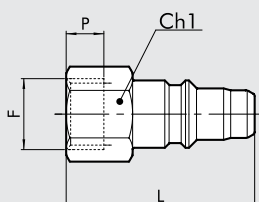
Code	Ref.	Mod.	Ø	Ch1	Ch3	E
0101007	07	mini	6/4	16	12	18.8
0101008	08	mini	8/6	16	14	18.8

QUICK-FIT COUPLING, MALE



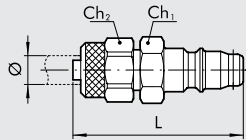
Code	Ref.	Mod.	F	Ch1	P	L	M	O-ring
0102011	11	mini	1/8	13	6.0	29.3	15	2031
0102012	12	mini	1/4	14	8.0	32.7	18	2043
0202111	111	100	1/4	14	8.0	42.2	18	2043
0302211	211	200	3/8	17	9.0	45.8	20	2056
0303205	211/A	200	1/4	16	8.0	46.2	18	2043
0402311	311	300	1/2	22	11.0	55.2	26	3068

QUICK-FIT COUPLING, FEMALE



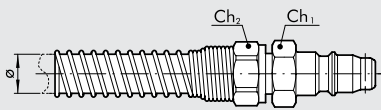
Code	Ref.	Mod.	F	Ch1	P	L
0102013	13	mini	1/8	14	7.0	29.5
0102014	14	mini	1/4	17	8.0	30.5
0202112	112	100	1/4	17	8.0	42.0
0302212	212	200	3/8	20	10.0	48.0
0402312	312	300	1/2	24	11.0	55.0

QUICK-FIT COUPLING, NYLON PIPE



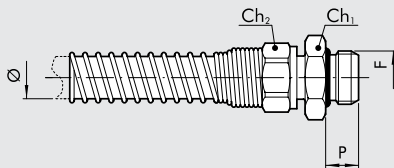
Code	Ref.	Mod.	Ø	Ch1	Ch2	L
0102015	15	mini	6/4	12	12	35.5
0102016	16	mini	8/6	14	14	35.5

QUICK-FIT COUPLING, NYLON PIPE WITH SPRING



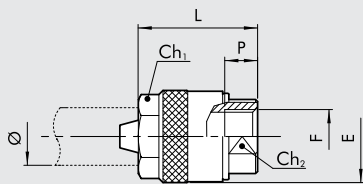
Code	Ref.	Mod.	Ø	Ch1	Ch2
0102017	17	mini	6/4	12	12
0102018	18	mini	8/6	14	14

NYLON PIPE FITTING WITH SPRING



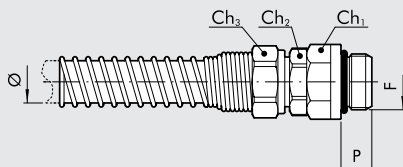
Code	Ref.	F	B	Ch1	Ch2	P
0010001	C1/Z	1/4	8	18	14	8
0010002	C1/Z	3/8	8	21	14	9
0010003	C1/Z	1/4	10	18	17	8
0010004	C1/Z	3/8	10	21	17	9
0010005	C1/Z	3/8	12	21	19	9

HOSE FITTING



Code	Ref.	F	Ø	Ch1	Ch2	P	L	E
2601001	40	1/4	6x14	18	16	8.0	29.0	23.0
2601002	41	1/4	8x17	21	16	8.0	31.0	25.0
2601003	42	1/4	10x19	23	17	8.0	31.0	27.0
2601004	43	1/2	13x23	27	24	11.0	35.5	31.0

SWIVEL NYLON PIPE FITTING WITH SPRING



Code	Ref.	F	Ø	Ch1	Ch2	Ch3	P	O-ring
2501010	50	1/4	6/4	16	14	12	8.0	2043
2501011	51	1/4	8/6	16	14	14	8.0	2043
2501012	52	3/8	10/8	19	17	17	9.0	2056
2501013	53	3/8	12/10	19	17	19	9.0	2056

NOTES

QUICK-FIT COUPLINGS FOR MOULD CONDITIONING SERIES ICS

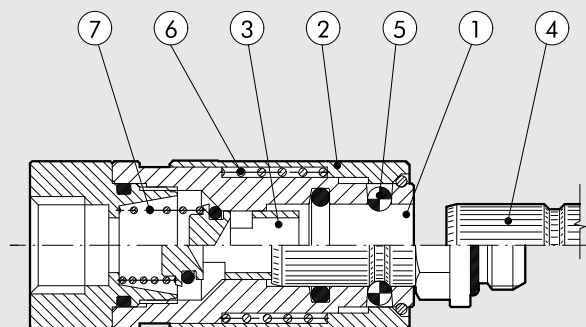
The mould conditioning coupling was specifically designed to speed up and facilitate the replacement of moulds in injection moulding machines. Rapid mould changeover can be easily obtained by fitting a female body at the end of the pipes conveying the thermoregulating fluid and a male coupling to the moulds. With this configuration, each mould can be connected and disconnected from the thermoregulation circuit rapidly. The presence of a female coupling with a safety valve on the pipework prevents the outflow of fluid when coupling with or releasing from the mould.



TECHNICAL DATA		501 V with valve	401 V with valve	503 V without valve	403 V without valve
Threaded coupling		1/8"	1/4"	1/8"	1/4"
Maximum temperature at: 1.8 MPa; 18 bar; 261 psi	°F			+248	
	°C			+120	
Minimum temperature at: 1.8 MPa; 18 bar; 261 psi	°F			-68	
	°C			-20	
Maximum pressure	MPa			1.8	
	bar			18	
	psi			261	
Type of gasket				FKM/FPM	

COMPONENTS

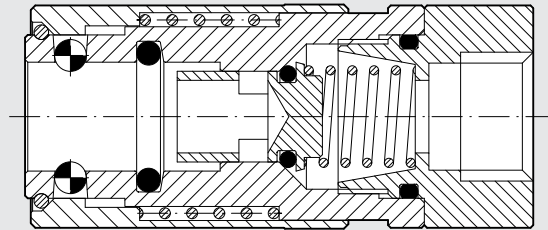
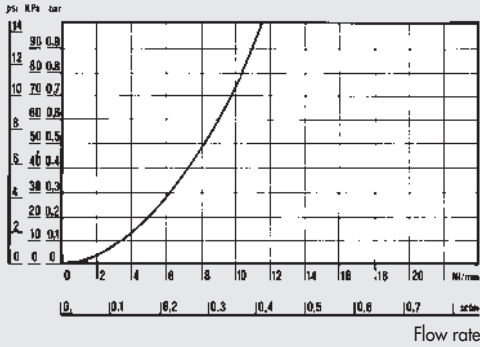
- ① Body: nickel-plated brass
- ② Ring nut: nickel-plated brass
- ③ Valve: nickel-plated brass
- ④ Coupling: nickel-plated brass
- ⑤ Ball: stainless steel
- ⑥ Ring nut spring: AISI 302
- ⑦ Valve spring: AISI 302



ICS WATER FLOW CHARTS WITH SAFETY VALVE

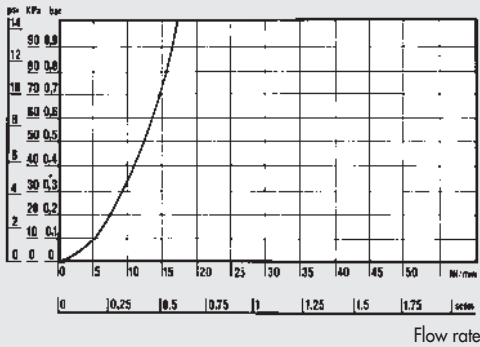
ICS/500 1/8"

ΔP - Pressure



ICS/400 1/4"

ΔP - Pressure



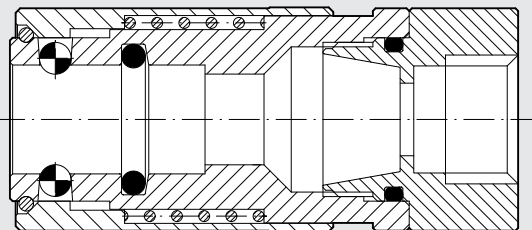
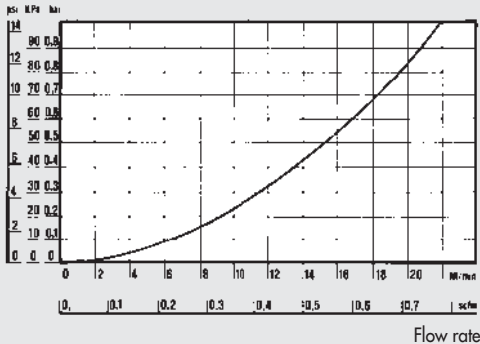
WITH SAFETY VALVE

The female body with safety valve prevents the outflow of thermoregulator fluid when coupling with or releasing from the mould.

ICS WATER FLOW CHARTS WITHOUT SAFETY VALVE

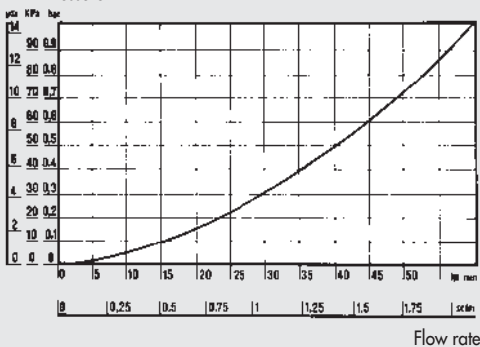
ICS/500 1/8"

ΔP - Pressure



ICS/400 1/4"

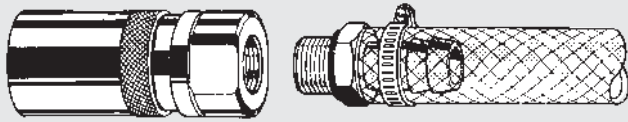
ΔP - Pressure



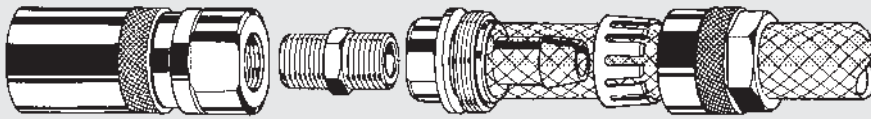
WITHOUT SAFETY VALVE

A version having a female body without a safety valve is available for when a high flow rate is required. This version allows a greater thermoregulator fluid flow rate but does not act as a fluid check valve when coupling with or releasing from the mould.

GENERAL FEATURES



Female body plus conventional hose fitting (pipe locked with metal circlip).



Female body plus self-locking hose fitting patented by Metal Work. When the outer ring nut is tightened, the gripper locks on the pipe.

FIG. A

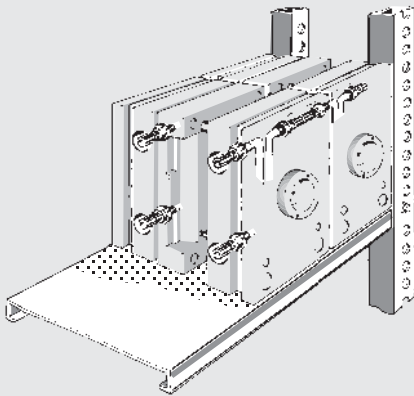


FIG. 1

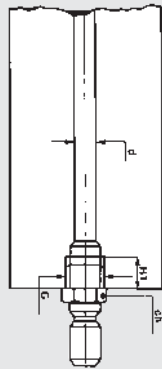
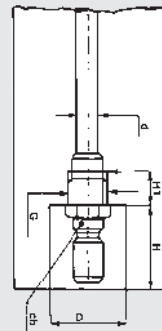


FIG. 2



The male fitting should be coupled with the mould so that it remains embedded (Fig. 2-4). This saves space and protects the coupling. The mould has no projecting parts, which would occupy more space on the storage shelving (Fig. A).

d	G	H1	Ch	D	H
4/6	1/8	7	13	20	23
7/9	1/4	9	14	26	30

FIG. B

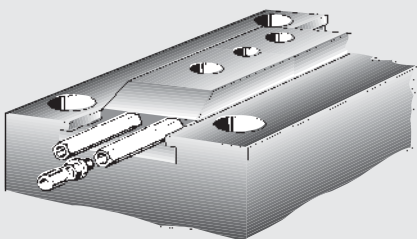


FIG. 3

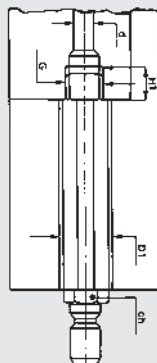
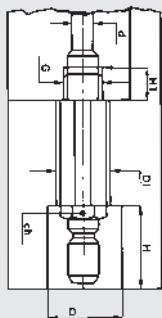


FIG. 4

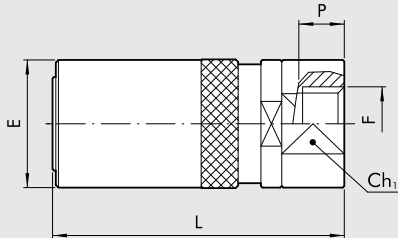


The Extension (see A25 fittings) is available as an accessory. It is extremely useful when parts inside the moulds need to be thermoregulated or when the presence of trucks makes it impossible to connect the moulds to the rubber pipe. (Fig. B).

d	G	H1	Ch	D	H	D1
4/6	1/8	7	13	20	23	17
7/9	1/4	9	14	26	30	21

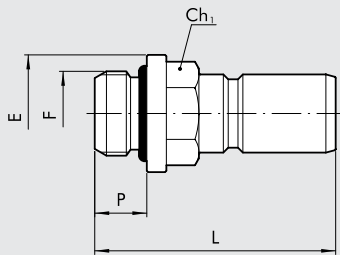
OVERALL DIMENSIONS AND ORDERING CODES

FEMALE PORT



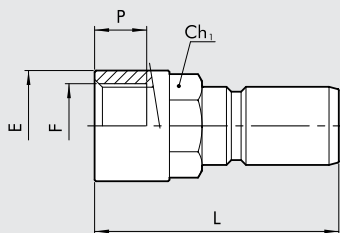
Code	Ref.	F	Safety valve	Ch1	P	L	E
0601040	501V	1/8	yes	16	7.0	45.0	19.0
0501040	401V	1/4	yes	21	8.0	56.0	25.0
0600040	503V	1/8	no	16	7.0	45.0	19.0
0500040	403V	1/4	no	21	8.0	56.0	25.0

MALE COUPLING



Code	Ref.	F	Ch1	P	L	E	O-ring FKM/FPM
0602001	511	1/8	13	6.0	28.5	15.0	2031
0501040	411	1/4	14	8.0	37.0	18.0	2043

FEMALE COUPLING



Code	Ref.	F	Ch1	P	L	E
0602002	512	1/8	12	7.0	28.0	14
0502002	412	1/4	14	8.0	37.5	17

NOTES

NOTES

Lined area for notes.

● **INTRODUCTION FLOW MICRO-REGULATOR**

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● **FLOW MICRO-REGULATOR SERIES COMPACT N and O**

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● **FLOW MICRO-REGULATOR SERIES MRF HIGH-FLOW**

PAGE 5-63



● **FLOW MICRO-REGULATOR SERIES MRF PUSH-LOCK**

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● **IN-LINE FLOW MICRO-REGULATOR SERIES RFL L**

SEE PAGE 5-23



● **IN-LINE FLOW MICRO-REGULATOR SERIES RFL**

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INTRODUCTION FLOW MICRO-REGULATOR

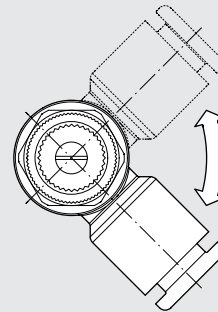
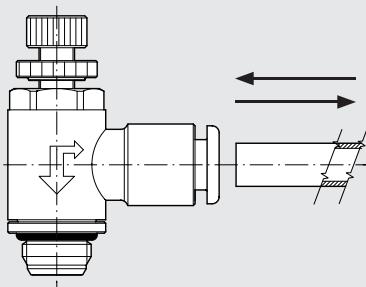
The job of flow microregulators is to regulate speed in the pneumatic cylinders. The configuration of both type C (to be mounted on the cylinder inlet) and type V (to be mounted on the valve port) is such as to ensure full flow on feed and regulated flow on discharge. Type B (bidirectional) can be used to regulate the flow both on feed and discharge. Flow microregulators are divided into 4 series:

- **MRF COMPACT O:** can be adjusted using a screwdriver; the regulation pin is lubricated with a particular antivibration grease; it has reduced dimensions and fine adjustment in the first turns; adjustment can be prevented by assembling a disposable cap (supplied separately) that can be removed using a tool.
- **MRF COMPACT N:** can be adjusted using the knob and/or screwdriver; adjustment can be prevented by tightening the ring nut; it has the same regulation curve as those in series O.
- **MRF HIGH-FLOW:** can be adjusted using the knob and/or screwdriver; adjustment can be prevented by tightening the ring nut; it is ideal for use in installations requiring high flow rates both on regulation and discharge. Available in 1/8" and 1/4" and with a technopolymer ring.
- **MRF PUSH-LOCK:** it is the only one in the MRF series with a PUSH-LOCK knob, that can be replaced by an anti-tampering knob (supplied separately). Available in 1/8" and 1/4" and with a technopolymer ring.

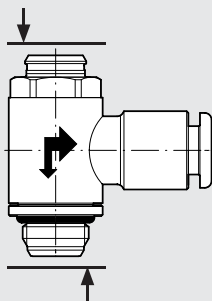


All the MRF with a pipe engage-release system of the latest generation that facilitates detachment of the pipe even under difficult operating conditions.

The rings can be rotated even with the MRF installed, which means that they can be mounted with the pipe facing towards any direction.

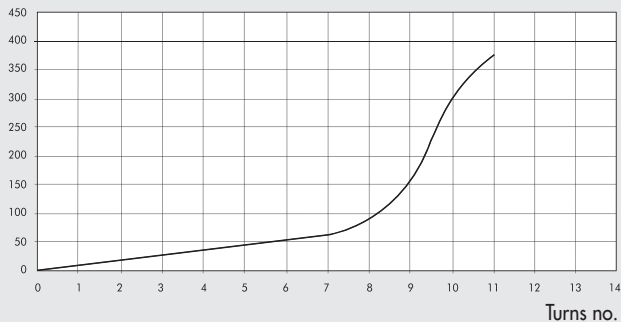


Special focus has been placed on miniaturisation of the components (mainly for COMPACT MRF series O), which saves considerable space.



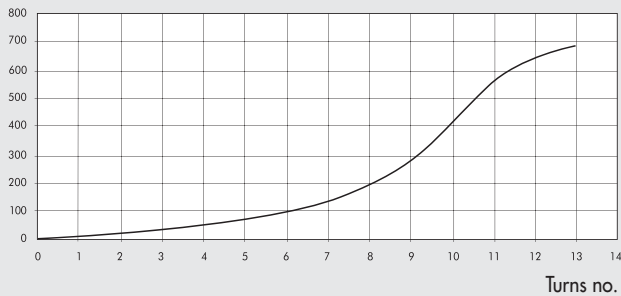
FLOW CHARTS

Flow rate (Nl/min)

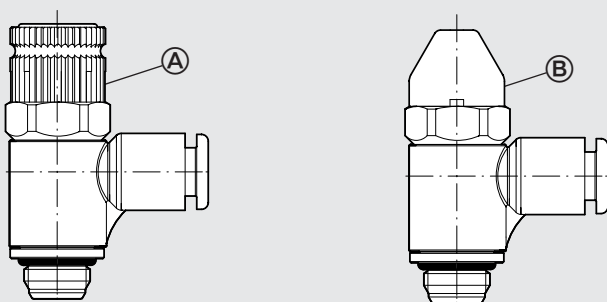


The regulation curve in the MRF series COMPACT N, COMPACT O and PUSH-LOCK takes place in two sections: in the first half of the flash pin stroke for very fine regulation and relatively low flow rates; in the second half, the flash pin quickly opens the passage so as to reach the maximum flow rate quickly.

Flow rate (Nl/min)



The regulation curve in the MRF series HIGH-FLOW is divided into 3 sections: regulation is particularly accurate along the entire flash pin stroke and the maximum flow rate is reached at a good steady rate; in this way, the user can choose the solution which best fits the specific application.



A major innovative aspect of the new MRF is the possibility of using the PUSH-LOCK series that can be mounted with either a push-lock (A) or an anti-tampering knob (B). The push-lock knob prevents decalibration of the MRF due to vibration or incorrect torque. With the anti-tampering knob there is no way to change the position unless you remove the knob using a special tool.



All the new MRF can be fixed from the top using a universal wrench, a pipe wrench or an automatic screwdriver.

Thread	Maximum torque [Nm]*
M5	max 1.8
G 1/8"	max 6
G 1/4"	max 8
G 3/8"	max 10
G 1/2"	max 15

* measured on a metal female thread

FLOW MICROREGULATOR SERIES COMPACT N and O

Main features:

- reduced dimensions
- excellent regulation
- regulation with a screwdriver and disposable anti-tampering cap (COMPACT O)
- regulation with either a screwdriver and/or a knob, can be fixed with a ring nut (COMPACT N)
- available in all sizes (from M5 to 1/2") with a brass or a technopolymer ring
- can be mounted with an automatic screwdriver
- comes with a ring that can rotate even with the MRF mounted in position.



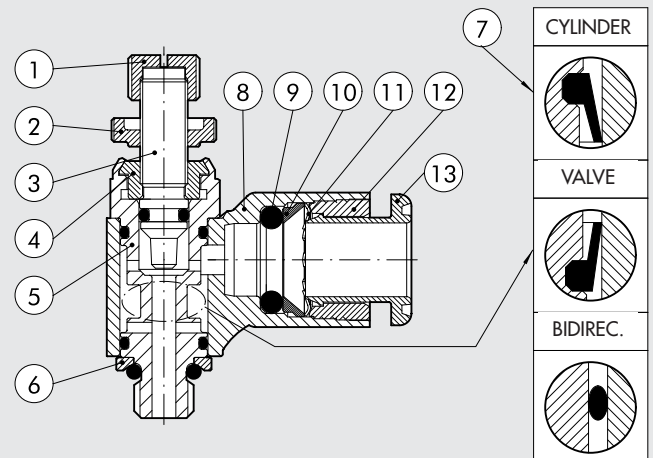
TECHNICAL DATA	M5			1/8"				1/4"				3/8"		1/2"	
	Ø 4	Ø 5*	Ø 6	Ø 4	Ø 5*	Ø 6	Ø 8	Ø 6	Ø 8	Ø 10	Ø 12	Ø 10	Ø 12	Ø 12	
Pipe															
Max input pressure	MPa														
	bar														
	psi														
Temperature range: Technopolymer ring	°C														
	°F														
Brass ring	°C														
	°F														
Max flow rate on regulation at 6.3 bar	Nl/min	150	155	155	350	360	380	400	750	850	950	1000	1300	1400	2000
Max flow rate on exhaust at 6.3 bar with closed pin	Nl/min	140	145	150	300	320	350	390	450	275	500	550	1050	1250	1750
Max flow rate on exhaust at 6.3 bar with open pin	Nl/min	240	245	245	450	510	600	650	850	1050	1150	1250	1700	2100	2700
Regulation	Manual (COMPACT N only) or using a screwdriver														
Internal system	Tapered pin														
Fluid	Filtered, lubricated or unlubricated compressed air														
* Pipe Ø 5 is only available with a brass ring															

FLOW MICROREGULATOR SERIES COMPACT N AND O

ACCESSORIES

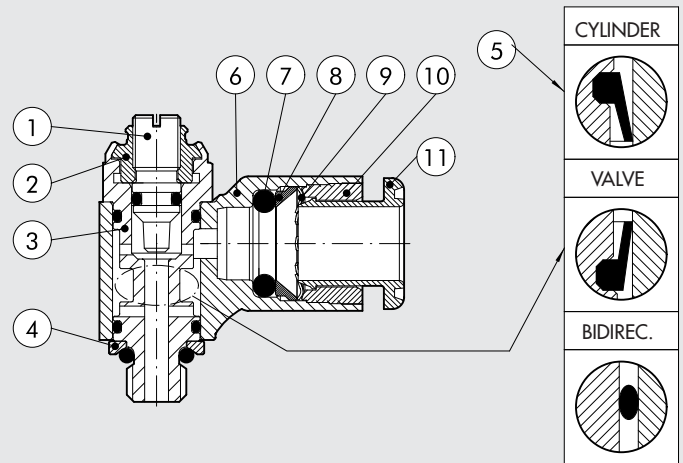
TYPE N COMPONENTS - M5 THREAD

- 1) Nickel-plated brass knob
- 2) Nickel-plated brass securing ring nut
- 3) Brass pin
- 4) Nickel-plated brass bush
- 5) Nickel-plated brass body
- 6) Nickel-plated brass retaining ring
- 7) NBR gasket
- 8) Nickel-plated or technopolymer brass revolving ring
- 9) NBR gasket
- 10) Technopolymer spring supporting ring
- 11) Stainless steel grabbing spring
- 12) Technopolymer retaining bush
- 13) Technopolymer release bush



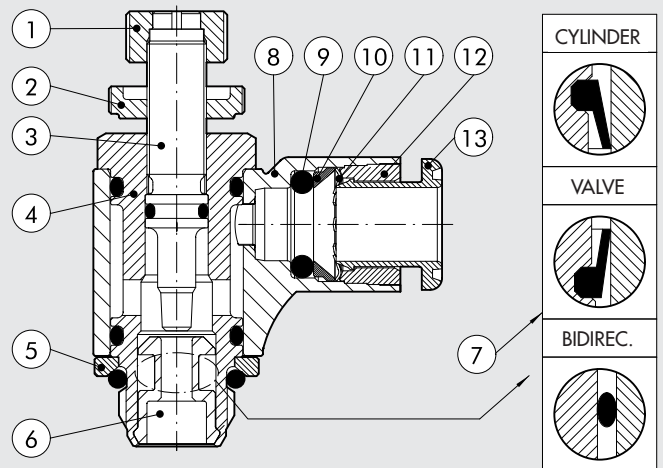
TYPE O COMPONENTS - M5 THREAD

- ① Brass pin
- ② Nickel-plated brass bush
- ③ Nickel-plated brass body
- ④ Nickel-plated brass retaining ring
- ⑤ NBR gasket
- ⑥ Nickel-plated or technopolymer brass revolving ring
- ⑦ NBR gasket
- ⑧ Technopolymer spring supporting ring
- ⑨ Stainless steel grabbing spring
- ⑩ Technopolymer retaining bush
- ⑪ Technopolymer release bush



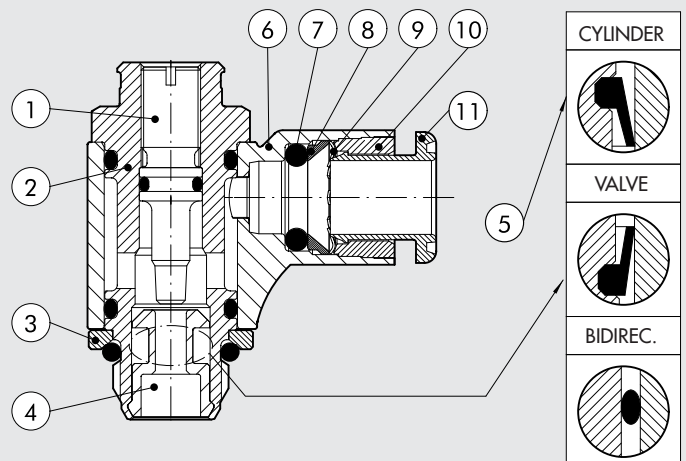
TYPE N COMPONENTS - THREAD 1/8" TO 1/2"

- ① Nickel-plated brass knob
- ② Nickel-plated brass securing ring nut
- ③ Brass pin
- ④ Nickel-plated brass body
- ⑤ Nickel-plated brass retaining ring
- ⑥ Brass gasket holding insert
- ⑦ NBR gasket
- ⑧ Nickel-plated or technopolymer brass revolving ring
- ⑨ NBR gasket
- ⑩ Technopolymer spring supporting ring
- ⑪ Stainless steel grabbing spring
- ⑫ Technopolymer retaining bush
- ⑬ Technopolymer release bush



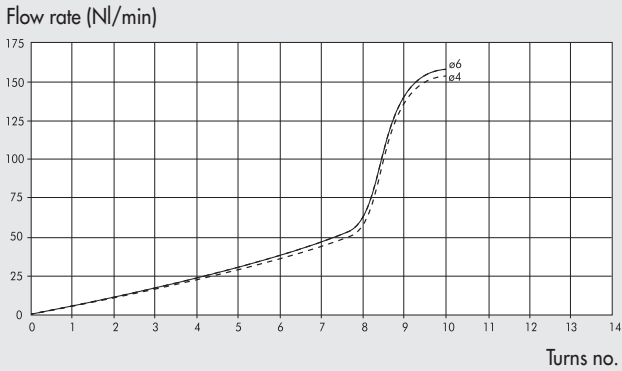
TYPE O COMPONENTS - THREAD FROM 1/8" TO 1/2"

- ① Brass pin
- ② Nickel-plated brass body
- ③ Nickel-plated brass retaining ring
- ④ Brass gasket holding insert
- ⑤ NBR gasket
- ⑥ Nickel-plated or technopolymer brass revolving ring
- ⑦ NBR gasket
- ⑧ Technopolymer spring supporting ring
- ⑨ Stainless steel grabbing spring
- ⑩ Technopolymer retaining bush
- ⑪ Technopolymer release bush

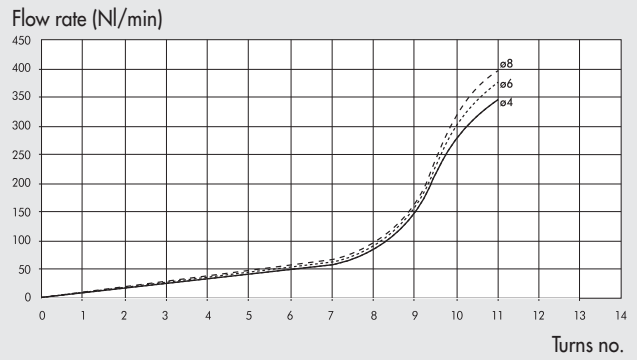


FLOW CHARTS

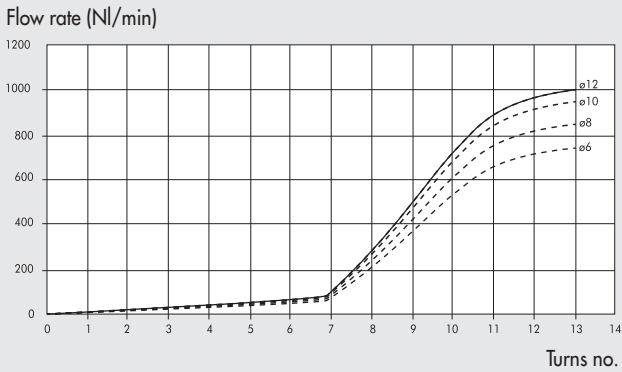
MRF M5 - PIPE Ø 4 - Ø 6



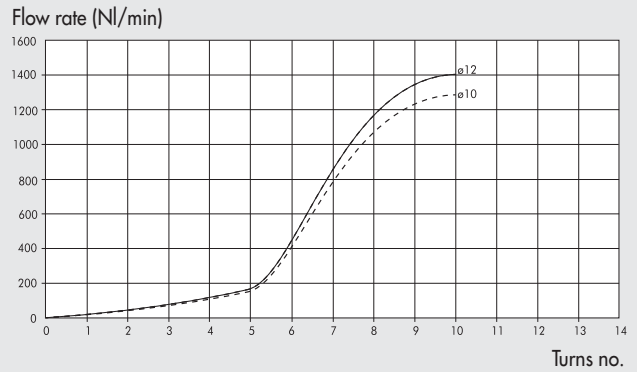
MRF 1/8" - PIPE Ø 4 - Ø 6 - Ø 8



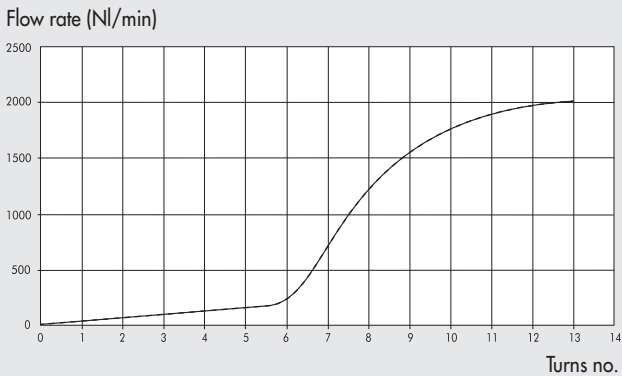
MRF 1/4" - PIPE Ø 6 - Ø 8 - Ø 10 - Ø 12



MRF 3/8" - PIPE Ø 10 - Ø 12



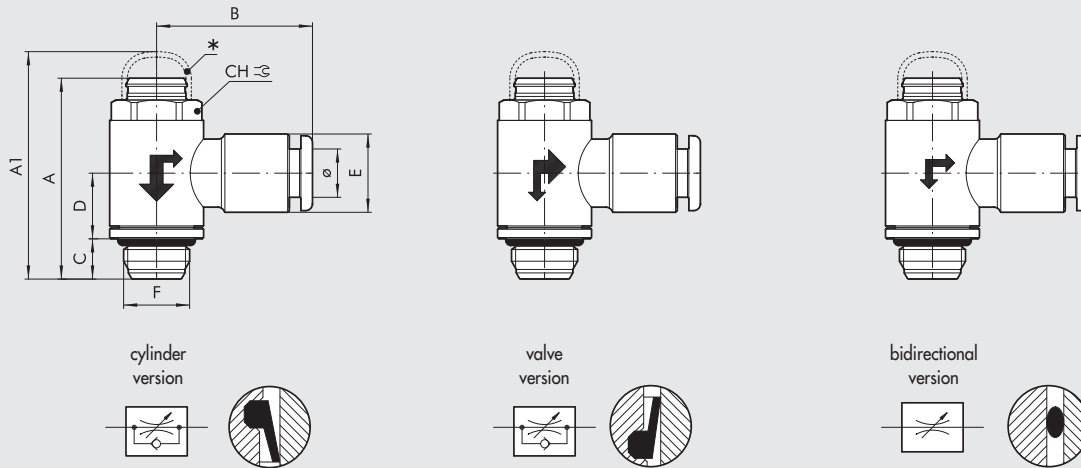
MRF 1/2" - PIPE Ø 12



KEY TO CODES

M R F ELEMENT	N TYPE	M RING	C FUNCTION	4 Ø PIPE	M5 Ø THREAD
	N With knob and ring nut	M Nickel-plated brass with push-in fitting	C For cylinder	4: Ø 4	M5: M5
	O Flash pin	T Technopolymer with push-in fitting	V For valve	5: Ø 5	1/8: G 1/8"
		F Nickel-plated brass with female thread	B Bidirectional	6: Ø 6	1/4: G 1/4"
				8: Ø 8	3/8: G 3/8"
				10: Ø 10	1/2: G 1/2"
				12: Ø 12	
				1/8: G 1/8" F	
				1/4: G 1/4" F	
				3/8: G 3/8" F	

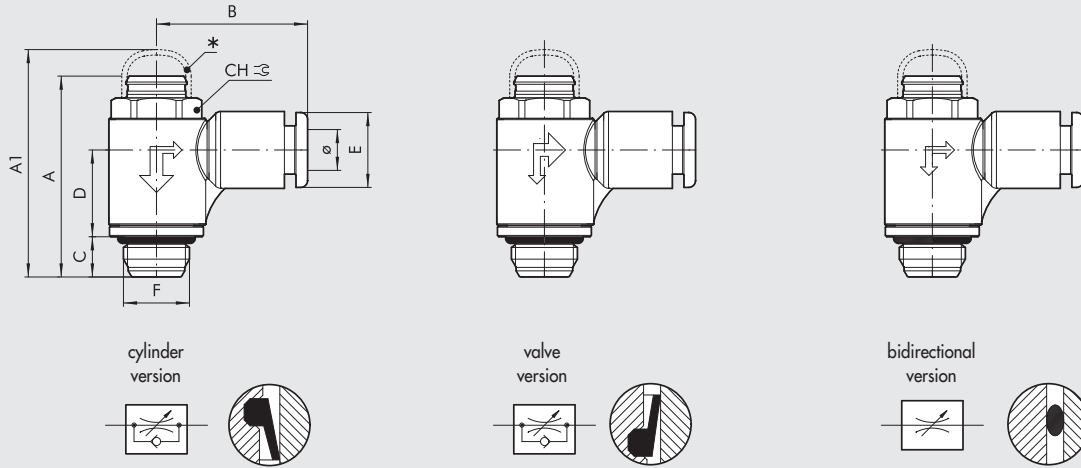
MRF COMPACT "O" BRASS RING



* OPTIONAL ANTI-TAMPERING CAP

Code	Description	F	Ø	CH	A min	A max	A1	B	C	D	E
9001001C	MRF O M C 4 M5	M5	4	9	23.9	25	26.5	20.2	4	9.2	9.5
9001110V	MRF O M V 4 M5	M5	4	9	23.9	25	26.5	20.2	4	9.2	9.5
9001601B	MRF O M B 4 M5	M5	4	9	23.9	25	26.5	20.2	4	9.2	9.5
9001002C	MRF O M C 5 M5	M5	5	9	23.9	25	26.5	23.8	4	9.2	12
9001113V	MRF O M V 5 M5	M5	5	9	23.9	25	26.5	23.8	4	9.2	12
9001603B	MRF O M B 5 M5	M5	5	9	23.9	25	26.5	23.8	4	9.2	12
9001007C	MRF O M C 6 M5	M5	6	9	23.9	25	26.5	23.5	4	9.2	11.3
9001105V	MRF O M V 6 M5	M5	6	9	23.9	25	26.5	23.5	4	9.2	11.3
9001612B	MRF O M B 6 M5	M5	6	9	23.9	25	26.5	23.5	4	9.2	11.3
9001011C	MRF O M C 4 1/8	1/8	4	12	29.8	30.9	34	21.3	6	9.8	9.5
9001111V	MRF O M V 4 1/8	1/8	4	12	29.8	30.9	34	21.3	6	9.8	9.5
9001602B	MRF O M B 4 1/8	1/8	4	12	29.8	30.9	34	21.3	6	9.8	9.5
9001012C	MRF O M C 5 1/8	1/8	5	12	29.8	30.9	34	24.8	6	9.8	12
9001112V	MRF O M V 5 1/8	1/8	5	12	29.8	30.9	34	24.8	6	9.8	12
9001604B	MRF O M B 5 1/8	1/8	5	12	29.8	30.9	34	24.8	6	9.8	12
9001003C	MRF O M C 6 1/8	1/8	6	12	29.8	30.9	34	23	6	9.8	11.5
9001101V	MRF O M V 6 1/8	1/8	6	12	29.8	30.9	34	23	6	9.8	11.5
9001605B	MRF O M B 6 1/8	1/8	6	12	29.8	30.9	34	23	6	9.8	11.5
9001005C	MRF O M C 8 1/8	1/8	8	12	29.8	30.9	34	24.8	6	9.8	13.8
9001103V	MRF O M V 8 1/8	1/8	8	12	29.8	30.9	34	24.8	6	9.8	13.8
9001607B	MRF O M B 8 1/8	1/8	8	12	29.8	30.9	34	24.8	6	9.8	13.8
9001004C	MRF O M C 6 1/4	1/4	6	15	35.4	37	38.9	24.5	8	11.1	11.5
9001102V	MRF O M V 6 1/4	1/4	6	15	35.4	37	38.9	24.5	8	11.1	11.5
9001606B	MRF O M B 6 1/4	1/4	6	15	35.4	37	38.9	24.5	8	11.1	11.5
9001006C	MRF O M C 8 1/4	1/4	8	15	35.4	37	38.9	26.5	8	11.1	13.8
9001104V	MRF O M V 8 1/4	1/4	8	15	35.4	37	38.9	26.5	8	11.1	13.8
9001608B	MRF O M B 8 1/4	1/4	8	15	35.4	37	38.9	26.5	8	11.1	13.8
9001008C	MRF O M C 10 1/4	1/4	10	15	35.4	37	38.9	31.4	8	11.1	16.5
9001106V	MRF O M V 10 1/4	1/4	10	15	35.4	37	38.9	31.4	8	11.1	16.5
9001609B	MRF O M B 10 1/4	1/4	10	15	35.4	37	38.9	31.4	8	11.1	16.5
9001014C	MRF O M C 12 1/4	1/4	12	15	35.4	37	38.9	33	8	11.1	19.5
9001123V	MRF O M V 12 1/4	1/4	12	15	35.4	37	38.9	33	8	11.1	19.5
9001623B	MRF O M B 12 1/4	1/4	12	15	35.4	37	38.9	33	8	11.1	19.5
9001009C	MRF O M C 10 3/8	3/8	10	19	42.7	42.7	49.5	32.8	9	13.4	16
9001114V	MRF O M V 10 3/8	3/8	10	19	42.7	42.7	49.5	32.8	9	13.4	16
9001610B	MRF O M B 10 3/8	3/8	10	19	42.7	42.7	49.5	32.8	9	13.4	16
9001015C	MRF O M C 12 3/8	3/8	12	19	42.7	42.7	49.5	35.3	9	13.4	19.5
9001124V	MRF O M V 12 3/8	3/8	12	19	42.7	42.7	49.5	35.3	9	13.4	19.5
9001624B	MRF O M B 12 3/8	3/8	12	19	42.7	42.7	49.5	35.3	9	13.4	19.5
9001016C	MRF O M C 12 1/2	1/2	12	22	50.6	51.4	55.3	37	11	15.9	19.5
9001125V	MRF O M V 12 1/2	1/2	12	22	50.6	51.4	55.3	37	11	15.9	19.5
9001625B	MRF O M B 12 1/2	1/2	12	22	50.6	51.4	55.3	37	11	15.9	19.5

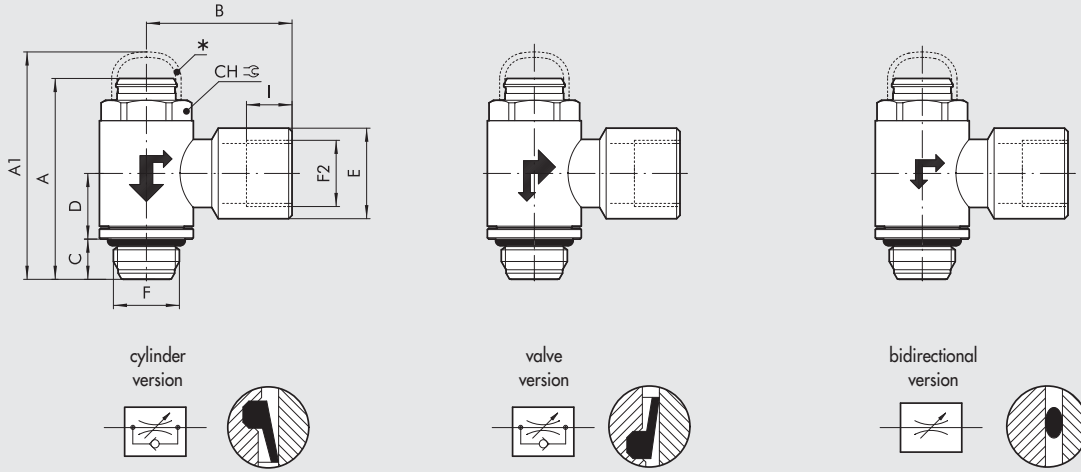
MRF COMPACT "O" TECHNOPOLYMER RING



* OPTIONAL ANTI-TAMPERING CAP

Code	Description	F	Ø	CH	A min	A max	A1	B	C	D	E
9011001C	MRF OTC 4 M5	M5	4	9	23.9	25	26.5	19.1	4	9.5	9.2
9011110V	MRF OTV 4 M5	M5	4	9	23.9	25	26.5	19.1	4	9.5	9.2
9011601B	MRF OTB 4 M5	M5	4	9	23.9	25	26.5	19.1	4	9.5	9.2
9011007C	MRF OTC 6 M5	M5	6	9	23.9	25	26.5	20.8	4	9.5	11.3
9011105V	MRF OTV 6 M5	M5	6	9	23.9	25	26.5	20.8	4	9.5	11.3
9011612B	MRF OTB 6 M5	M5	6	9	23.9	25	26.5	20.8	4	9.5	11.3
9011011C	MRF OTC 4 1/8	1/8	4	12	29.8	30.9	34	21	6	12.9	9.2
9011111V	MRF OTV 4 1/8	1/8	4	12	29.8	30.9	34	21	6	12.9	9.2
9011602B	MRF OTB 4 1/8	1/8	4	12	29.8	30.9	34	21	6	12.9	9.2
9011003C	MRF OTC 6 1/8	1/8	6	12	29.8	30.9	34	22.3	6	12.9	11.3
9011101V	MRF OTV 6 1/8	1/8	6	12	29.8	30.9	34	22.3	6	12.9	11.3
9011605B	MRF OTB 6 1/8	1/8	6	12	29.8	30.9	34	22.3	6	12.9	11.3
9011005C	MRF OTC 8 1/8	1/8	8	12	29.8	30.9	34	25.6	6	12.9	13.8
9011103V	MRF OTV 8 1/8	1/8	8	12	29.8	30.9	34	25.6	6	12.9	13.8
9011607B	MRF OTB 8 1/8	1/8	8	12	29.8	30.9	34	25.6	6	12.9	13.8
9011004C	MRF OTC 6 1/4	1/4	6	15	35.4	37	38.9	24.3	8	15	11.3
9011102V	MRF OTV 6 1/4	1/4	6	15	35.4	37	38.9	24.3	8	15	11.3
9011606B	MRF OTB 6 1/4	1/4	6	15	35.4	37	38.9	24.3	8	15	11.3
9011006C	MRF OTC 8 1/4	1/4	8	15	35.4	37	38.9	27.2	8	15	13.8
9011104V	MRF OTV 8 1/4	1/4	8	15	35.4	37	38.9	27.2	8	15	13.8
9011608B	MRF OTB 8 1/4	1/4	8	15	35.4	37	38.9	27.2	8	15	13.8
9011008C	MRF OTC 10 1/4	1/4	10	15	35.4	37	38.9	28.6	8	15	16
9011106V	MRF OTV 10 1/4	1/4	10	15	35.4	37	38.9	28.6	8	15	16
9011609B	MRF OTB 10 1/4	1/4	10	15	35.4	37	38.9	28.6	8	15	16
9011014C	MRF OTC 12 1/4	1/4	12	15	35.4	37	38.9	31	8	15	19.5
9011123V	MRF OTV 12 1/4	1/4	12	15	35.4	37	38.9	31	8	15	19.5
9011623B	MRF OTB 12 1/4	1/4	12	15	35.4	37	38.9	31	8	15	19.5
9011009C	MRF OTC 10 3/8	3/8	10	19	42.7	42.7	49.5	30.3	9	17.9	16
9011114V	MRF OTV 10 3/8	3/8	10	19	42.7	42.7	49.5	30.3	9	17.9	16
9011610B	MRF OTB 10 3/8	3/8	10	19	42.7	42.7	49.5	30.3	9	17.9	16
9011015C	MRF OTC 12 3/8	3/8	12	19	42.7	42.7	49.5	32.4	9	17.9	19.5
9011124V	MRF OTV 12 3/8	3/8	12	19	42.7	42.7	49.5	32.4	9	17.9	19.5
9011624B	MRF OTB 12 3/8	3/8	12	19	42.7	42.7	49.5	32.4	9	17.9	19.5
9011016C	MRF OTC 12 1/2	1/2	12	22	50.6	51.4	55.3	34	11	20.1	19.5
9011125V	MRF OTV 12 1/2	1/2	12	22	50.6	51.4	55.3	34	11	20.1	19.5
9011625B	MRF OTB 12 1/2	1/2	12	22	50.6	51.4	55.3	34	11	20.1	19.5

MRF COMPACT "O" THREADED BRASS RING

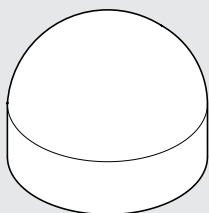


* OPTIONAL ANTI-TAMPERING CAP

Code	Description	F	F2	CH	A min	A max	A1	B	C	D	E	I
9001020C	MRF O F C 1/8 1/8	1/8	1/8	12	29.8	30.9	34	21.4	6	9.8	13.3	6.7
9001120V	MRF O F V 1/8 1/8	1/8	1/8	12	29.8	30.9	34	21.4	6	9.8	13.3	6.7
9001620B	MRF O F B 1/8 1/8	1/8	1/8	12	29.8	30.9	34	21.4	6	9.8	13.3	6.7
9001021C	MRF O F C 1/4 1/4	1/4	1/4	15	35.4	37	38.9	25.5	8	11.1	16.7	8
9001121V	MRF O F V 1/4 1/4	1/4	1/4	15	35.4	37	38.9	25.5	8	11.1	16.7	8
9001621B	MRF O F B 1/4 1/4	1/4	1/4	15	35.4	37	38.9	25.5	8	11.1	16.7	8
9001022C	MRF O F C 3/8 3/8	3/8	3/8	19	42.7	42.7	49.5	31.5	9	13.4	20.2	10
9001122V	MRF O F V 3/8 3/8	3/8	3/8	19	42.7	42.7	49.5	31.5	9	13.4	20.2	10
9001622B	MRF O F B 3/8 3/8	3/8	3/8	19	42.7	42.7	49.5	31.5	9	13.4	20.2	10

ACCESSORIES MRF COMPACT "O"

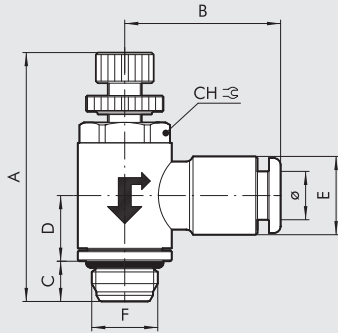
ANTI-TAMPERING CAP



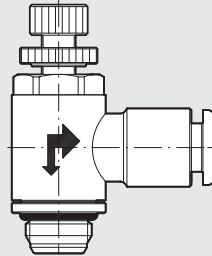
Code	Description
9090001	Cap MRF O M5
9090002	Cap MRF O 1/8-1/4
9090003	Cap MRF O 3/8-1/2

NOTE: Adjust the flow rate via the regulating pin.
Apply the anti-tampering cap and press on firmly to prevent access to the regulation pin.
If the MRF needs to be recalibrated, remove the cap using the grippers provided.
IMPORTANT: The cap cannot be re-used after it has been removed.

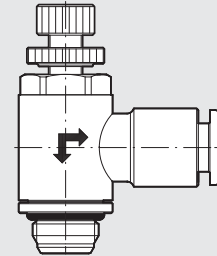
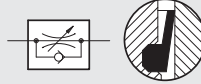
MRF COMPACT "N" BRASS RING



cylinder
version



valve
version

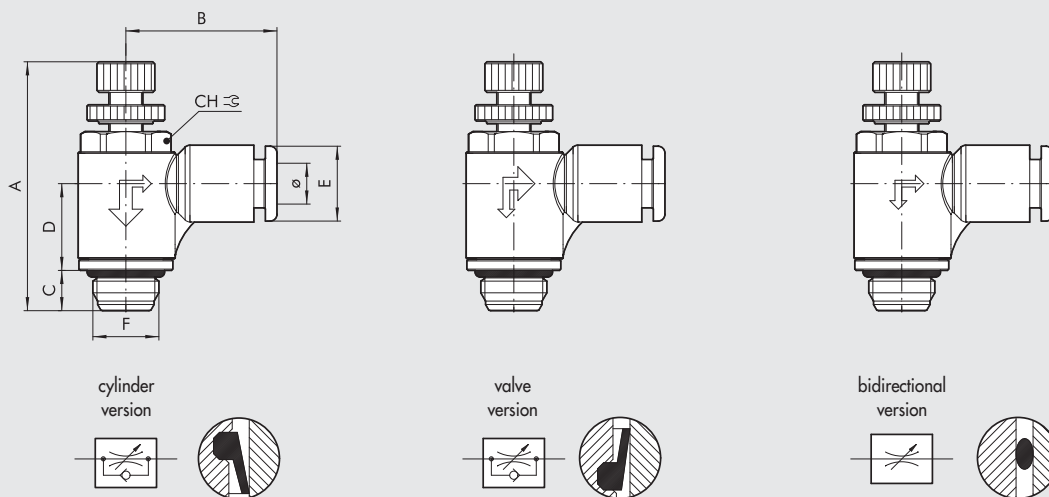


bidirectional
version



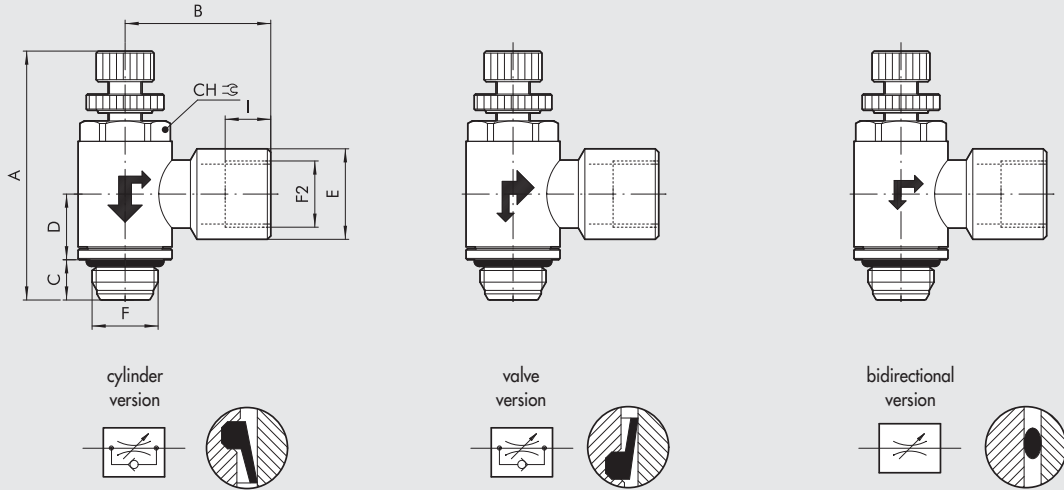
Code	Description	F	Ø	CH	A min	A max	B	C	D	E
9031001C	MRF N M C 4 M5	M5	4	9	27.7	31	20.2	4	9.2	9.5
9031101V	MRF N M V 4 M5	M5	4	9	27.7	31	20.2	4	9.2	9.5
9031201B	MRF N M B 4 M5	M5	4	9	27.7	31	20.2	4	9.2	9.5
9031003C	MRF N M C 5 M5	M5	5	9	27.7	31	23.8	4	9.2	12
9031103V	MRF N M V 5 M5	M5	5	9	27.7	31	23.8	4	9.2	12
9031203B	MRF N M B 5 M5	M5	5	9	27.7	31	23.8	4	9.2	12
9031005C	MRF N M C 6 M5	M5	6	9	27.7	31	23.5	4	9.2	11.3
9031105V	MRF N M V 6 M5	M5	6	9	27.7	31	23.5	4	9.2	11.3
9031205B	MRF N M B 6 M5	M5	6	9	27.7	31	23.5	4	9.2	11.3
9031002C	MRF N M C 4 1/8	1/8	4	12	33.5	37.6	21.3	6	9.8	9.5
9031102V	MRF N M V 4 1/8	1/8	4	12	33.5	37.6	21.3	6	9.8	9.5
9031202B	MRF N M B 4 1/8	1/8	4	12	33.5	37.6	21.3	6	9.8	9.5
9031004C	MRF N M C 5 1/8	1/8	5	12	33.5	37.6	24.8	6	9.8	12
9031104V	MRF N M V 5 1/8	1/8	5	12	33.5	37.6	24.8	6	9.8	12
9031204B	MRF N M B 5 1/8	1/8	5	12	33.5	37.6	24.8	6	9.8	12
9031006C	MRF N M C 6 1/8	1/8	6	12	33.5	37.6	23	6	9.8	11.5
9031106V	MRF N M V 6 1/8	1/8	6	12	33.5	37.6	23	6	9.8	11.5
9031206B	MRF N M B 6 1/8	1/8	6	12	33.5	37.6	23	6	9.8	11.5
9031008C	MRF N M C 8 1/8	1/8	8	12	33.5	37.6	24.8	6	9.8	13.8
9031108V	MRF N M V 8 1/8	1/8	8	12	33.5	37.6	24.8	6	9.8	13.8
9031208B	MRF N M B 8 1/8	1/8	8	12	33.5	37.6	24.8	6	9.8	13.8
9031007C	MRF N M C 6 1/4	1/4	6	15	38.8	43.7	24.5	8	11.1	11.5
9031107V	MRF N M V 6 1/4	1/4	6	15	38.8	43.7	24.5	8	11.1	11.5
9031207B	MRF N M B 6 1/4	1/4	6	15	38.8	43.7	24.5	8	11.1	11.5
9031009C	MRF N M C 8 1/4	1/4	8	15	38.8	43.7	26.5	8	11.1	13.8
9031109V	MRF N M V 8 1/4	1/4	8	15	38.8	43.7	26.5	8	11.1	13.8
9031209B	MRF N M B 8 1/4	1/4	8	15	38.8	43.7	26.5	8	11.1	13.8
9031011C	MRF N M C 10 1/4	1/4	10	15	38.8	43.7	31.4	8	11.1	16.5
9031111V	MRF N M V 10 1/4	1/4	10	15	38.8	43.7	31.4	8	11.1	16.5
9031211B	MRF N M B 10 1/4	1/4	10	15	38.8	43.7	31.4	8	11.1	16.5
9031014C	MRF N M C 12 1/4	1/4	12	15	38.8	43.7	33	8	11.1	19.5
9031114V	MRF N M V 12 1/4	1/4	12	15	38.8	43.7	33	8	11.1	19.5
9031214B	MRF N M B 12 1/4	1/4	12	15	38.8	43.7	33	8	11.1	19.5
9031012C	MRF N M C 10 3/8	3/8	10	19	47.2	52	32.8	9	13.4	16
9031112V	MRF N M V 10 3/8	3/8	10	19	47.2	52	32.8	9	13.4	16
9031212B	MRF N M B 10 3/8	3/8	10	19	47.2	52	32.8	9	13.4	16
9031015C	MRF N M C 12 3/8	3/8	12	19	47.2	52	35.3	9	13.4	19.5
9031115V	MRF N M V 12 3/8	3/8	12	19	47.2	52	35.3	9	13.4	19.5
9031215B	MRF N M B 12 3/8	3/8	12	19	47.2	52	35.3	9	13.4	19.5
9031016C	MRF N M C 12 1/2	1/2	12	22	53	59.8	37	11	15.9	19.5
9031116V	MRF N M V 12 1/2	1/2	12	22	53	59.8	37	11	15.9	19.5
9031216B	MRF N M B 12 1/2	1/2	12	22	53	59.8	37	11	15.9	19.5

MRF COMPACT "N" TECHNOPOLYMER RING



Code	Description	F	Ø	CH	A min	A max	B	C	D	E
9021001C	MRF NTC 4 M5	M5	4	9	27.7	31	19.1	4	9.5	9.2
9021101V	MRF NTV 4 M5	M5	4	9	27.7	31	19.1	4	9.5	9.2
9021201B	MRF NTB 4 M5	M5	4	9	27.7	31	19.1	4	9.5	9.2
9021005C	MRF NTC 6 M5	M5	6	9	27.7	31	20.8	4	9.5	11.3
9021105V	MRF NTV 6 M5	M5	6	9	27.7	31	20.8	4	9.5	11.3
9021205B	MRF NTB 6 M5	M5	6	9	27.7	31	20.8	4	9.5	11.3
9021002C	MRF NTC 4 1/8	1/8	4	12	33.5	37.6	21	6	12.9	9.2
9021102V	MRF NTV 4 1/8	1/8	4	12	33.5	37.6	21	6	12.9	9.2
9021202B	MRF NTB 4 1/8	1/8	4	12	33.5	37.6	21	6	12.9	9.2
9021006C	MRF NTC 6 1/8	1/8	6	12	33.5	37.6	22.3	6	12.9	11.3
9021106V	MRF NTV 6 1/8	1/8	6	12	33.5	37.6	22.3	6	12.9	11.3
9021206B	MRF NTB 6 1/8	1/8	6	12	33.5	37.6	22.3	6	12.9	11.3
9021008C	MRF NTC 8 1/8	1/8	8	12	33.5	37.6	25.6	6	12.9	13.8
9021108V	MRF NTV 8 1/8	1/8	8	12	33.5	37.6	25.6	6	12.9	13.8
9021208B	MRF NTB 8 1/8	1/8	8	12	33.5	37.6	25.6	6	12.9	13.8
9021007C	MRF NTC 6 1/4	1/4	6	15	38.8	43.7	24.3	8	15	11.3
9021107V	MRF NTV 6 1/4	1/4	6	15	38.8	43.7	24.3	8	15	11.3
9021207B	MRF NTB 6 1/4	1/4	6	15	38.8	43.7	24.3	8	15	11.3
9021009C	MRF NTC 8 1/4	1/4	8	15	38.8	43.7	27.2	8	15	13.8
9021109V	MRF NTV 8 1/4	1/4	8	15	38.8	43.7	27.2	8	15	13.8
9021209B	MRF NTB 8 1/4	1/4	8	15	38.8	43.7	27.2	8	15	13.8
9021011C	MRF NTC 10 1/4	1/4	10	15	38.8	43.7	28.6	8	15	16
9021111V	MRF NTV 10 1/4	1/4	10	15	38.8	43.7	28.6	8	15	16
9021211B	MRF NTB 10 1/4	1/4	10	15	38.8	43.7	28.6	8	15	16
9021014C	MRF NTC 12 1/4	1/4	12	15	38.8	43.7	31	8	15	19.5
9021114V	MRF NTV 12 1/4	1/4	12	15	38.8	43.7	31	8	15	19.5
9021214B	MRF NTB 12 1/4	1/4	12	15	38.8	43.7	31	8	15	19.5
9021012C	MRF NTC 10 3/8	3/8	10	19	47.2	52	30.3	9	17.9	16
9021112V	MRF NTV 10 3/8	3/8	10	19	47.2	52	30.3	9	17.9	16
9021212B	MRF NTB 10 3/8	3/8	10	19	47.2	52	30.3	9	17.9	16
9021015C	MRF NTC 12 3/8	3/8	12	19	47.2	52	32.4	9	17.9	19.5
9021115V	MRF NTV 12 3/8	3/8	12	19	47.2	52	32.4	9	17.9	19.5
9021215B	MRF NTB 12 3/8	3/8	12	19	47.2	52	32.4	9	17.9	19.5
9021016C	MRF NTC 12 1/2	1/2	12	22	53	59.8	34	11	20.1	19.5
9021116V	MRF NTV 12 1/2	1/2	12	22	53	59.8	34	11	20.1	19.5
9021216B	MRF NTB 12 1/2	1/2	12	22	53	59.8	34	11	20.1	19.5

MRF COMPACT "N" THREADED BRASS RING



Code	Description	F	F2	CH	A min	A max	B	C	D	E	I
9031301C	MRF N F C 1/8 1/8	1/8	1/8	12	33.5	37.6	21.4	6	9.8	13.3	6.7
9031401V	MRF N F V 1/8 1/8	1/8	1/8	12	33.5	37.6	21.4	6	9.8	13.3	6.7
9031501B	MRF N F B 1/8 1/8	1/8	1/8	12	33.5	37.6	21.4	6	9.8	13.3	6.7
9031302C	MRF N F C 1/4 1/4	1/4	1/4	15	38.8	43.7	25.5	8	11.1	16.7	8
9031402V	MRF N F V 1/4 1/4	1/4	1/4	15	38.8	43.7	25.5	8	11.1	16.7	8
9031502B	MRF N F B 1/4 1/4	1/4	1/4	15	38.8	43.7	25.5	8	11.1	16.7	8
9031303C	MRF N F C 3/8 3/8	3/8	3/8	19	47.2	52	31.5	9	13.4	20.2	10
9031403V	MRF N F V 3/8 3/8	3/8	3/8	19	47.2	52	31.5	9	13.4	20.2	10
9031503B	MRF N F B 3/8 3/8	3/8	3/8	19	47.2	52	31.5	9	13.4	20.2	10

FLOW MICRO-REGULATOR SERIES MRF HIGH-FLOW



Main features:

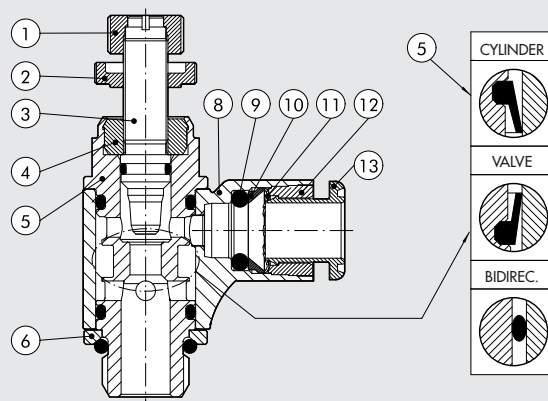
- high flow rate during regulation and discharge
- excellent regulation features
- regulation using a screwdriver and/or a knob and fixing using a ring nut
- available in sizes 1/8" and 1/4" only with a technopolymer ring
- can be mounted with an automatic screwdriver
- fitted with a swivel ring with the MRF mounted in position.



TECHNICAL DATA		1/8"			1/4"			
		Ø 4	Ø 6	Ø 8	Ø 6	Ø 8	Ø 10	Ø 12
Pipe								
Max input pressure	MPa				1			
	bar				10			
	psi				145			
Temperature range: technopolymer ring	°C				- 10 to + 50			
	°F				+ 14 to + 122			
Max flow rate on regulation at 6.3 bar	Nl/min	500	600	650	850	900	1150	1200
Max flow rate on exhaust at 6.3 bar with closed pin	Nl/min	400	500	600	700	850	875	950
Max flow rate on exhaust at 6.3 bar with open pin	Nl/min	500	750	900	1000	1250	1350	1450
Regulation		Manual or via screwdriver						
Internal system		Tapered pin						
Fluid		Filtered, lubricated or unlubricated compressed air						

COMPONENTS

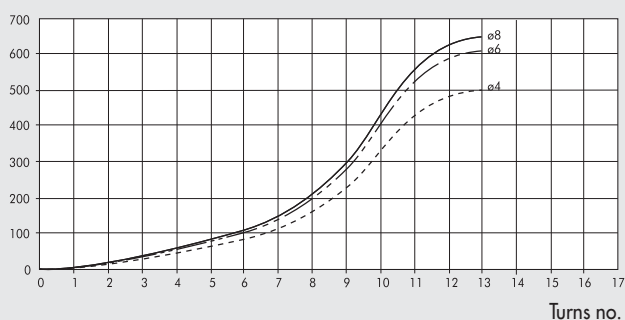
- 1 Nickel-plated brass knob
- 2 Nickel-plated brass securing ring nut
- 3 Brass pin
- 4 Nickel-plated brass bush
- 5 Nickel-plated brass body
- 6 Nickel-plated brass retaining ring
- 7 NBR gasket
- 8 Technopolymer swivel ring
- 9 NBR gasket
- 10 Technopolymer spring supporting ring
- 11 Stainless steel grabbing spring
- 12 Technopolymer retaining bush
- 13 Technopolymer release bush



FLOW CHARTS

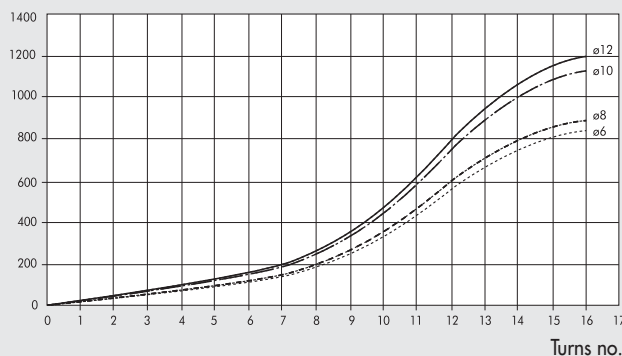
MRF 1/8" - PIPE Ø 4 - Ø 6 - Ø 8

Flow rate (Nl/min)

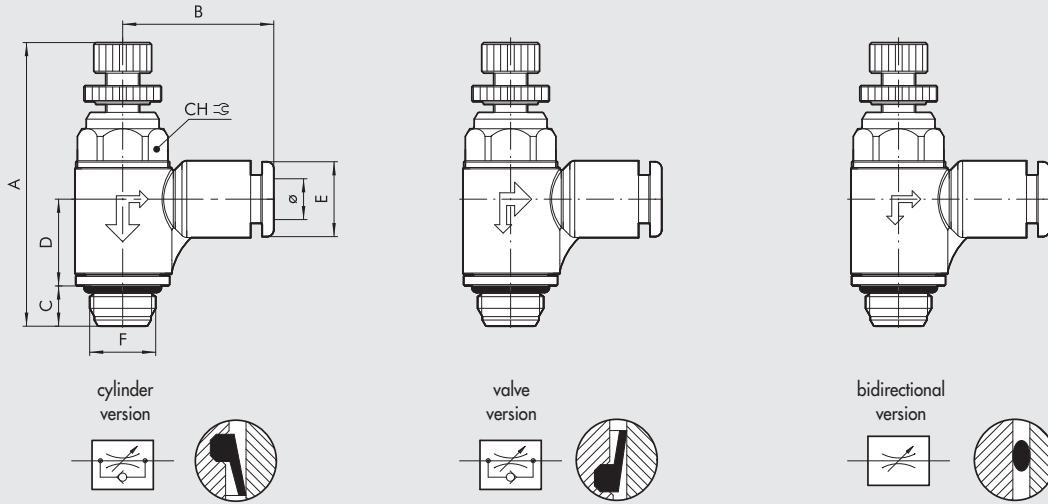


MRF 1/4" - PIPE Ø 6 - Ø 8 - Ø 10 - Ø 12

Flow rate (Nl/min)



MRF HIGH-FLOW



Code	Description	F	Ø	CH	A min	A max	B	C	D	E
9025002C	MRF H T C 4 1/8	1/8	4	12	38.5	43.3	21	6	12.9	9.2
9025102V	MRF H T V 4 1/8	1/8	4	12	38.5	43.3	21	6	12.9	9.2
9025602B	MRF H T B 4 1/8	1/8	4	12	38.5	43.3	21	6	12.9	9.2
9025006C	MRF H T C 6 1/8	1/8	6	12	38.5	43.3	22.3	6	12.9	11.3
9025106V	MRF H T V 6 1/8	1/8	6	12	38.5	43.3	22.3	6	12.9	11.3
9025606B	MRF H T B 6 1/8	1/8	6	12	38.5	43.3	22.3	6	12.9	11.3
9025008C	MRF H T C 8 1/8	1/8	8	12	38.5	43.3	25.6	6	12.9	13.8
9025108V	MRF H T V 8 1/8	1/8	8	12	38.5	43.3	25.6	6	12.9	13.8
9025608B	MRF H T B 8 1/8	1/8	8	12	38.5	43.3	25.6	6	12.9	13.8
9025007C	MRF H T C 6 1/4	1/4	6	15	44.3	49.8	24.3	8	15	11.3
9025107V	MRF H T V 6 1/4	1/4	6	15	44.3	49.8	24.3	8	15	11.3
9025607B	MRF H T B 6 1/4	1/4	6	15	44.3	49.8	24.3	8	15	11.3
9025009C	MRF H T C 8 1/4	1/4	8	15	44.3	49.8	27.2	8	15	13.8
9025109V	MRF H T V 8 1/4	1/4	8	15	44.3	49.8	27.2	8	15	13.8
9025609B	MRF H T B 8 1/4	1/4	8	15	44.3	49.8	27.2	8	15	13.8
9025011C	MRF H T C 10 1/4	1/4	10	15	44.3	49.8	28.6	8	15	16
9025111V	MRF H T V 10 1/4	1/4	10	15	44.3	49.8	28.6	8	15	16
9025611B	MRF H T B 10 1/4	1/4	10	15	44.3	49.8	28.6	8	15	16
9025014C	MRF H T C 12 1/4	1/4	12	15	44.3	49.8	31	8	15	19.5
9025114V	MRF H T V 12 1/4	1/4	12	15	44.3	49.8	31	8	15	19.5
9025614B	MRF H T B 12 1/4	1/4	12	15	44.3	49.8	31	8	15	19.5

KEY TO CODES

M R F ELEMENT	H TYPE	T RING	C FUNCTION	4 Ø PIPE	M5 Ø THREAD
	H High flow	T Technopolymer with push-in fitting	C For cylinder V For valve B Bidirectional	4: Ø 4 6: Ø 6 8: Ø 8 10: Ø 10 12: Ø 12	1/8: G 1/8" 1/4: G 1/4"

FLOW MICRO-REGULATOR SERIE MRF PUSH-LOCK



Main features:

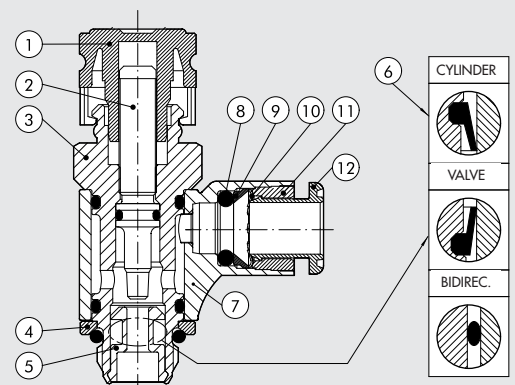
- excellent regulation
- regulation with a push-lock knob: when the desired position has been reached, the knob can be moved to the lock position to maintain the set regulation
- possibility of purchasing the anti-tampering cap that, when pushed into the lock position, prevents the MRF from being operated and any undesired regulation
- available in the sizes 1/8" and 1/4" only with a technopolymer ring
- can be fitted with an automatic screwdriver
- come with a swivel ring with the MRF mounted in position.



TECHNICAL DATA		1/8"			1/4"			
		Ø 4	Ø 6	Ø 8	Ø 6	Ø 8	Ø 10	Ø 12
Pipe								
Max. input pressure	MPa				1			
	bar				10			
	psi				145			
Temperature range: technopolymer ring	°C				- 10 to + 50			
	°F				+ 14 to + 122			
Max. flow rate on regulation at 6.3 bar	Nl/min	350	380	400	750	850	950	1000
Max. flow rate on exhaust at 6.3 with closed pin	Nl/min	300	350	390	450	475	500	550
Max. flow rate on exhaust at 6.3 with open pin	Nl/min	450	600	650	850	1050	1150	1250
Regulation		Manual with Push-Lock knob						
Internal system		Tapered pin						
Fluid		Filtered, lubricated or unlubricated compressed air						

COMPONENTS

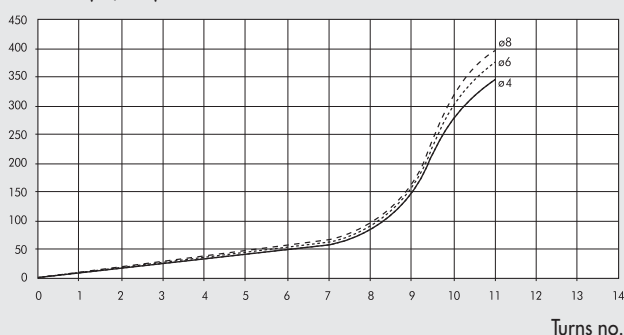
- ① Technopolymer knob
- ② Brass pin
- ③ Nickel-plated brass body
- ④ Nickel-plated brass retaining ring
- ⑤ Brass gasket holder insert
- ⑥ NBR gasket
- ⑦ Technopolymer revolving ring
- ⑧ NBR gasket
- ⑨ Technopolymer spring supporting ring
- ⑩ Stainless steel grabbing spring
- ⑪ Technopolymer retaining bush
- ⑫ Technopolymer release bush



FLOW CHARTS

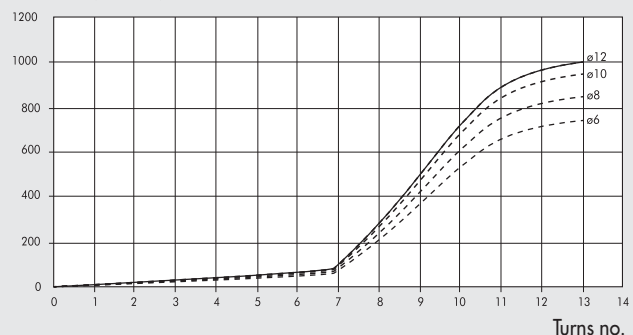
MRF 1/8" - PIPE Ø 4 - Ø 6 - Ø 8

Flow rate (Nl/min)

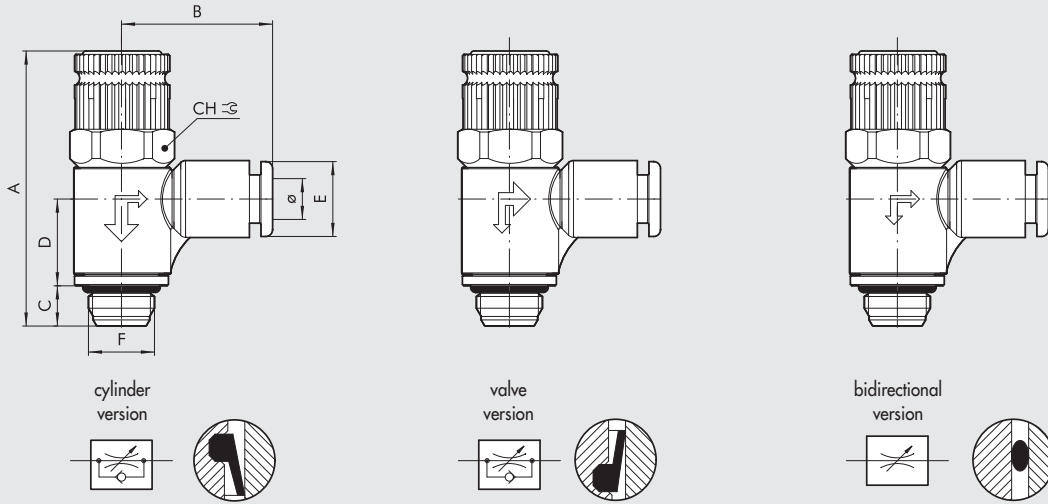


MRF 1/4" - PIPE Ø 6 - Ø 8 - Ø 10 - Ø 12

Flow rate (Nl/min)



MRF PUSH-LOCK



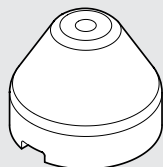
Code	Description	F	Ø	CH	A min	A max	B	C	D	E
9026002C	MRF PTC 4 1/8	1/8	4	14	41.2	43.4	21	6	12.9	9.2
9026102V	MRF PTV 4 1/8	1/8	4	14	41.2	43.4	21	6	12.9	9.2
9026602B	MRF PTB 4 1/8	1/8	4	14	41.2	43.4	21	6	12.9	9.2
9026006C	MRF PTC 6 1/8	1/8	6	14	41.2	43.4	22.3	6	12.9	11.3
9026106V	MRF PTV 6 1/8	1/8	6	14	41.2	43.4	22.3	6	12.9	11.3
9026606B	MRF PTB 6 1/8	1/8	6	14	41.2	43.4	22.3	6	12.9	11.3
9026008C	MRF PTC 8 1/8	1/8	8	14	41.2	43.4	25.6	6	12.9	13.8
9026108V	MRF PTV 8 1/8	1/8	8	14	41.2	43.4	25.6	6	12.9	13.8
9026608B	MRF PTB 8 1/8	1/8	8	14	41.2	43.4	25.6	6	12.9	13.8
9026007C	MRF PTC 6 1/4	1/4	6	15	46.6	48.8	24.3	8	15	11.3
9026107V	MRF PTV 6 1/4	1/4	6	15	46.6	48.8	24.3	8	15	11.3
9026607B	MRF PTB 6 1/4	1/4	6	15	46.6	48.8	24.3	8	15	11.3
9026009C	MRF PTC 8 1/4	1/4	8	15	46.6	48.8	27.2	8	15	13.8
9026109V	MRF PTV 8 1/4	1/4	8	15	46.6	48.8	27.2	8	15	13.8
9026609B	MRF PTB 8 1/4	1/4	8	15	46.6	48.8	27.2	8	15	13.8
9026011C	MRF PTC 10 1/4	1/4	10	15	46.6	48.8	28.6	8	15	16
9026111V	MRF PTV 10 1/4	1/4	10	15	46.6	48.8	28.6	8	15	16
9026611B	MRF PTB 10 1/4	1/4	10	15	46.6	48.8	28.6	8	15	16
9026014C	MRF PTC 12 1/4	1/4	12	15	46.6	48.8	31	8	15	19.5
9026114V	MRF PTV 12 1/4	1/4	12	15	46.6	48.8	31	8	15	19.5
9026614B	MRF PTB 12 1/4	1/4	12	15	46.6	48.8	31	8	15	19.5

KEY TO CODES

M R F ELEMENT	P TYPE	T RING	C RING	4 Ø PIPE	1/8 Ø THREAD
	P Push-lock	T Technopolymer with push-in fitting	C For cylinder V For valve B Bidirectional	4: Ø 4 6: Ø 6 8: Ø 8 10: Ø 10 12: Ø 12	1/8: G 1/8" 1/4: G 1/4"

ACCESSORIES MRF PUSH-LOCK

ANTI-TAMPERING KNOB



Code	Description
9200703	Anti-tampering knob

NOTE: Remove the knob on the Push-Lock MRF by pulling outwards. Fit on the anti-tampering knob and make the necessary settings. When the MRF has been set, press the knob firmly until it locks in position. If the MRF needs to be recalibrated, remove the anti-tampering knob and push laterally using a screwdriver.

IN-LINE FLOW MICRO-REGULATOR SERIES RFL



The in-line flow regulator regulates the speed of the piston rod in the pneumatic cylinders.

Two versions are available:

- type U (unidirectional) regulates the flow only in one of the two directions of air flow.
- type B (bidirectional) regulates the flow in both directions of air flow.

Regulation: manual or with a screwdriver.

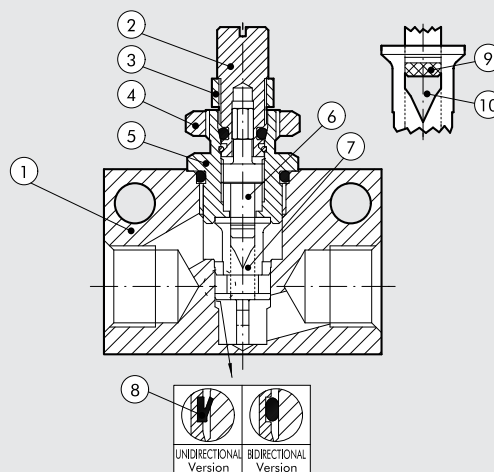
Max. temperature 70°C (158°F)

Max. pressure: 10 bar (1MPa-145 psi)

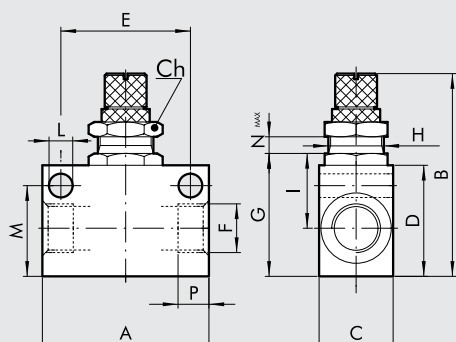


COMPONENTS

- ① Aluminium block
- ② Brass knob locking ring nut
- ③ Brass wall locking ring nut
- ④ Brass nipple
- ⑤ Brass adjusting knob
- ⑥ Technopolymer gasket insert
- ⑦ NBR gasket
- ⑧ Brass regulation needle
- ⑨ Part of needle
- ⑩ Flow window



OVERALL DIMENSIONS

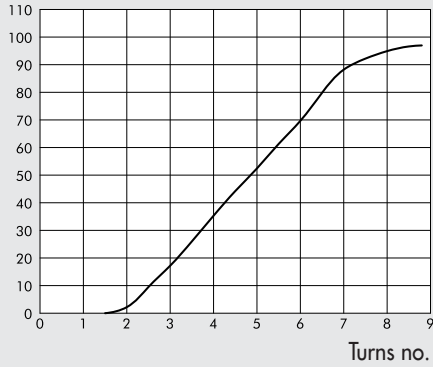


THREAD F	M5	1/8	1/4	3/8	1/2
P	4.2	7	8	10	11
E	15	25	35	35	44
H	M10x0.75	M12x1	M12x1	M15x1	M15x1
N _{max}	3.3	5.5	5	7.5	7.5
A	21	31	45	50	59
B	37	48	53.5	59	67
C	14	16	20	25	30
G	18	25	33	34	43.5
I	11.6	15	22	22	24
D	16	22	30	30	40
M	12.5	18.2	24.5	25.5	35
Ch	12	16	16	20	20
L	4.2	4.2	6.5	6.5	6.5

FLOW CHARTS

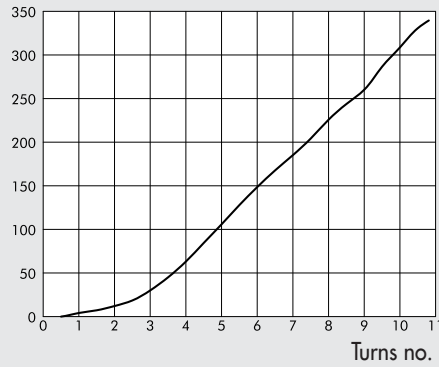
RFL M5

Flow rate (Nl/min)



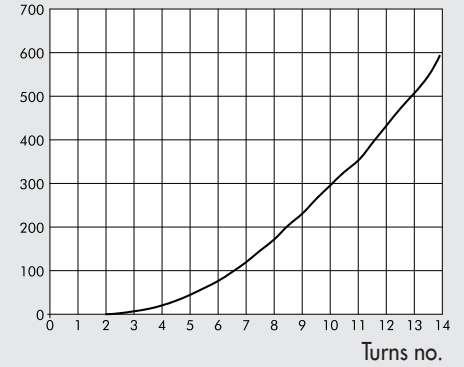
RFL G 1/8"

Flow rate (Nl/min)



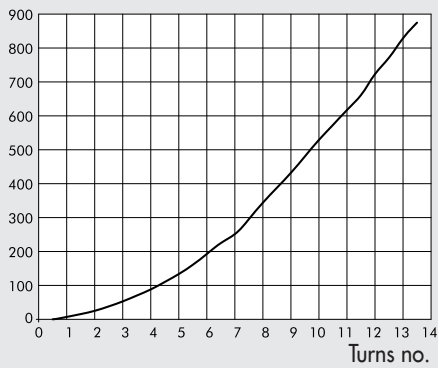
RFL G 1/4"

Flow rate (Nl/min)



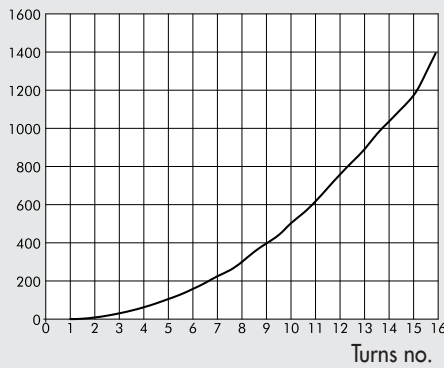
RFL G 3/8"

Flow rate (Nl/min)



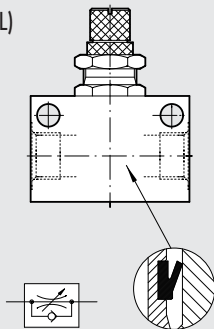
RFL G 1/2"

Flow rate (Nl/min)

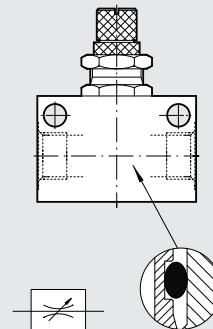


ORDERING CODES

RFL U (UNIDIRECTIONAL)



RFL B (BIDIRECTIONAL)



Code	Ref.
9041001	RFL U M5
9041002	RFL U 1/8
9041003	RFL U 1/4
9041004	RFL U 3/8
9041005	RFL U 1/2

Code	Ref.
9041201	RFL B M5
9041202	RFL B 1/8
9041203	RFL B 1/4
9041204	RFL B 3/8
9041205	RFL B 1/2

SUMMARY AUXILIARY VALVES



● QUICK EXHAUST VALVES SERIES VSR

PAGE 5-70



● STOP VALVES SERIES STP

PAGE 5-71



● SLIDE VALVES SERIES VCS

PAGE 5-74



● CIRCUIT SELECTOR VALVES SERIES VOR

PAGE 5-75



● CHECK VALVE SERIES VNR

PAGE 5-76



● PNEUMATIC LOGIC

PAGE 5-77

QUICK EXHAUST VALVES SERIES VSR

New, more compact and lighter version.
Used to evacuate air in the cylinder quickly, which increases cylinder speed.

- Temperature 0-80°C (32°-176°F)
- Max. pressure 12 bar (1200 KPa)
- Min. pressure 0.5 bar (50 KPa)

Nominal flow rate (P → A) $\Delta P = 1$ bar [Nl/min]:

Pm [bar]	1/8	1/4	1/2
2.5	550	800	2400
4	700	1200	2800
6.3	900	1400	3600

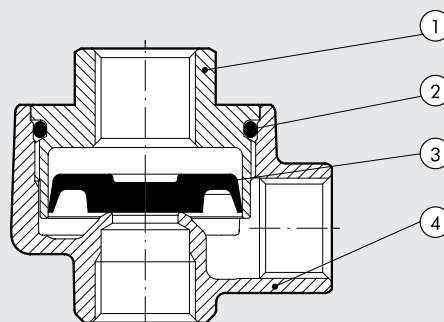
Empty flow rate (A → R) [Nl/min]:

Pm [bar]	1/8	1/4	1/2
2.5	800	1500	4400
4	1200	2450	6300
6.3	1800	3500	8000

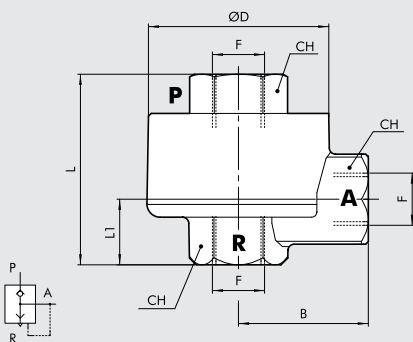


COMPONENTS

- ① Cap: nickel-plated brass for 1/8-1/4
anodised aluminium for 1/2
- ② O-ring: NBR
- ③ Lip-seal: Adiprene
- ④ Body: nickel-plated brass

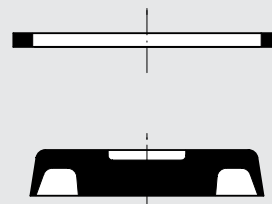


OVERALL DIMENSIONS AND ORDERING CODES



Code	Ref.	F	B	D	CH	L1	Weight [g]
9101201	VSR 1/8	1/8	18.5	29.5	14	13.4	80
9201201	VSR 1/4	1/4	23.3	34	17	16.9	115
9401201	VSR 1/2	1/2	35	47	27	16.2	230

SPARE GASKETS



Code	Ref.
9151501	Spare gaskets VSR 1/8
9251501	Spare gaskets VSR 1/4
9451501	Spare gaskets VSR 1/2

STOP VALVES SERIES STP



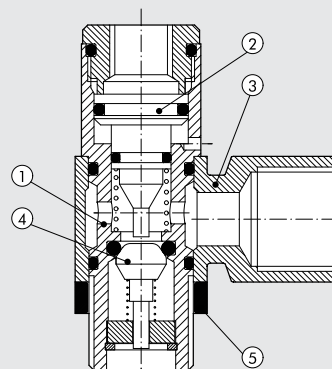
Stop valves mounted on the cylinder inlets allow a flow of air only in the presence of an pneumatic pilot. Unidirectional and bidirectional versions are available. This item is mainly used as a safety valve. When pressure drops in the pneumatic pilot, all cylinder movement is halted.



TECHNICAL DATA		UNIDIRECTIONAL				BIDIRECTIONAL			
		1/8"	1/4"	3/8"	1/2"	1/8"	1/4"	3/8"	1/2"
Operating pressure	bar					0.5 - 10			
	MPa					0.05 - 1			
Operating temperature	°C					-10 to 60			
	°F					14 to 148			
Fluid		Lubricated or unlubricated filtered air							
Flow rate (6 bar)	Nl/min	250	350	950	1450	320	700	1060	1700
Type		Female threaded ports - R automatic cartridge							
Installation		In any position							

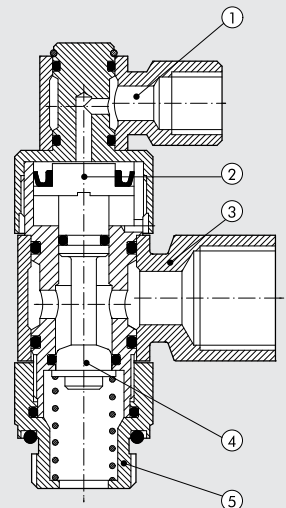
UNIDIRECTIONAL STOP VALVE COMPONENTS

- ① Body: nickel-plated brass
- ② Piston rod: steel
- ③ Rotary ring: nickel-plated brass
- ④ Valve: steel
- ⑤ Gasket: technopolymer
- ⑥ Gasket O-Ring: NBR



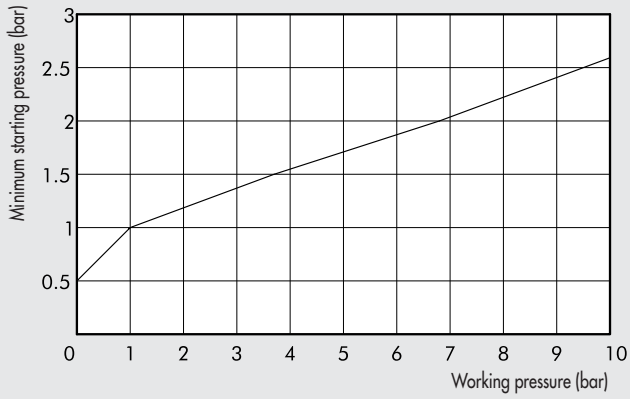
BIDIRECTIONAL STOP VALVE COMPONENTS

- ① Pilot ring: nickel-plated brass
- ② Piston rod: nickel-plated brass
- ③ Rotary ring: nickel-plated brass
- ④ Stem with valve: brass
- ⑤ Body: nickel-plated brass
- ⑥ Gasket O-Ring: NBR

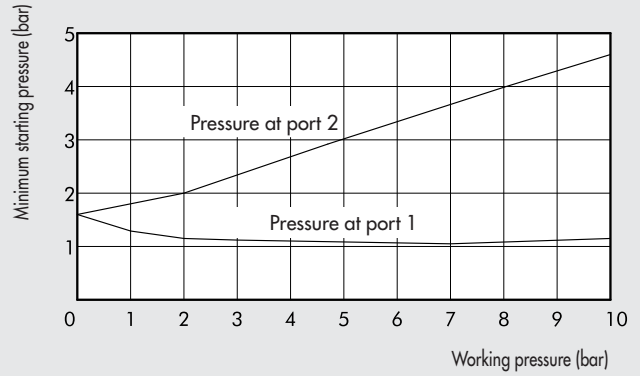


STARTING PRESSURE

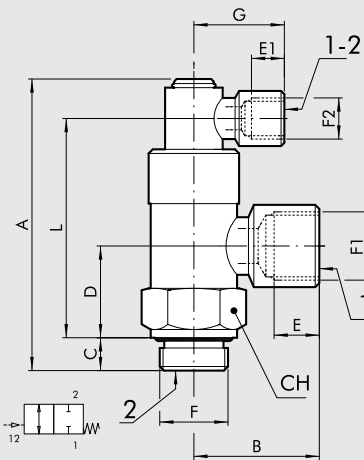
UNIDIRECTIONAL VALVE



BIDIRECTIONAL VALVE

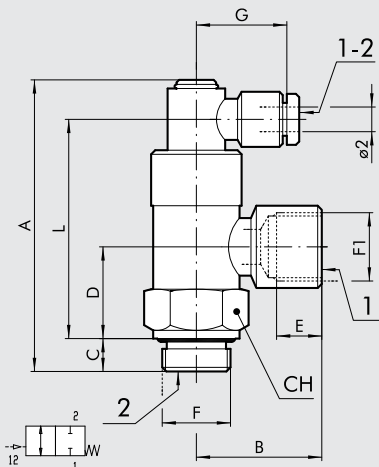


BIDIRECTIONAL THREADED STOP VALVE



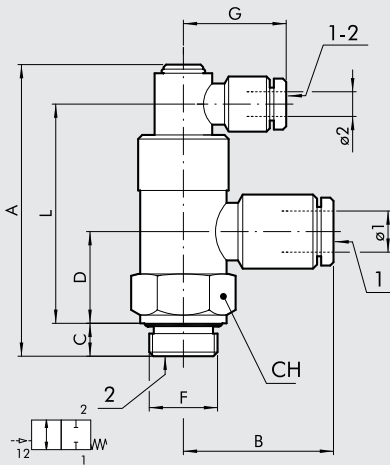
Code	Description	F	F1	F2	A	B	C	D	E	E1	G	L	CH
W6001101001	STP-B 1/8 108	G 1/8	G 1/8	G 1/8	57.5	21.5	6.9	16	7	7	21.5	41.9	14
W6001111011	STP-B 1/4 104	G 1/4	G 1/4	G 1/8	65.7	25.5	8	19.5	8	7	21.5	48.1	17
W6001121021	STP-B 3/8 138	G 3/8	G 3/8	G 1/8	70.9	31	8	22.3	10	7	21.5	53.3	22

THREAD + PIPE BIDIRECTIONAL STOP VALVE



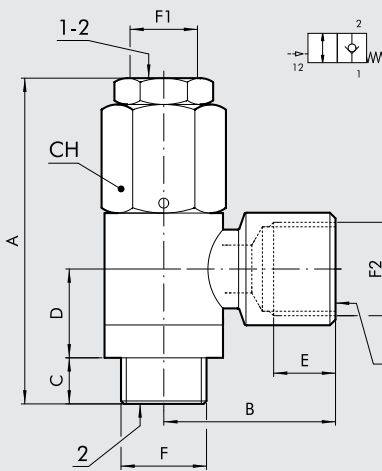
Code	Description	F	F1	Ø 2	A	B	C	D	E	G	L	CH
W6001101002	STP-BX 1/8-1/8 04	G 1/8	G 1/8	4	57.5	21.5	6.9	16	7	25	41.9	14
W6001111012	STP-BX 1/4-1/4 04	G 1/4	G 1/4	4	65.7	25.5	8	19.5	8	25	48.1	17
W6001121022	STP-BX 3/8-3/8 04	G 3/8	G 3/8	4	70.9	31	8	22.3	10	25	53.3	22

PIPE BIDIRECTIONAL STOP VALVE



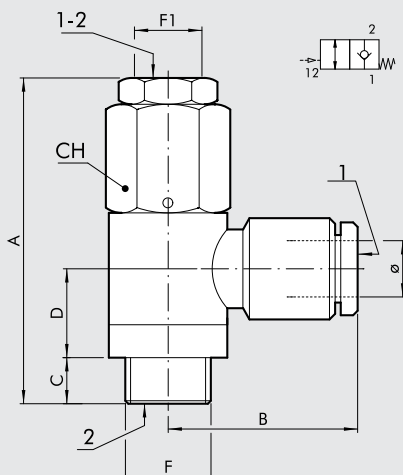
Code	Description	F	Ø 1	Ø 2	A	B	C	D	G	L	CH
W6001101106	STP-B 1/8 006	G 1/8	6	4	57.5	25	6.9	16	25	41.9	14
W6001111106	STP-B 1/4 006	G 1/4	6	4	65.7	27.5	8	19.5	25	48.1	17
W6001111108	STP-B 1/4 008	G 1/4	8	4	65.7	32	8	19.5	25	48.1	17
W6001121108	STP-B 3/8 008	G 3/8	8	4	70.9	31.5	8	22.3	25	53.3	22
W6001121110	STP-B 3/8 010	G 3/8	10	4	70.9	36.5	8	22.3	25	53.3	22
W6001131112	STP-B 1/2 012	G 1/2	12	4	83.5	41.5	12	27	25	71.5	27

UNIDIRECTIONAL THREADED STOP VALVE



Code	Description	F	F2	A	B	C	D	E	F1	CH
W6001001001	STP-U 1/8 108	G 1/8	G 1/8	43.5	21.5	6	13	7	M5	14
W6001011011	STP-U 1/4 114	G 1/4	G 1/4	49.5	25.5	7	13.5	8	G 1/8	17
W6001021021	STP-U 3/8 138	G 3/8	G 3/8	54.9	31	9	15	10	G 1/8	19

UNIDIRECTIONAL PIPE STOP VALVE



Code	Description	F	Ø	A	B	C	D	F1	CH
W6001001106	STP-U 1/8 006	G 1/8	6	43.5	25	6	13	M5	14
W6001011106	STP-U 1/4 006	G 1/4	6	49.5	27.5	7	13.5	G 1/8	17
W6001011108	STP-U 1/4 008	G 1/4	8	49.5	32	7	13.5	G 1/8	17
W6001021108	STP-U 3/8 008	G 3/8	8	54.9	31.5	9	15	G 1/8	19
W6001021110	STP-U 3/8 010	G 3/8	10	54.9	36.5	9	15	G 1/8	19
W6001031112	STP-U 1/2 012	G 1/2	12	61.4	41.5	10	17	G 1/8	24

SLIDE VALVES SERIES VCS

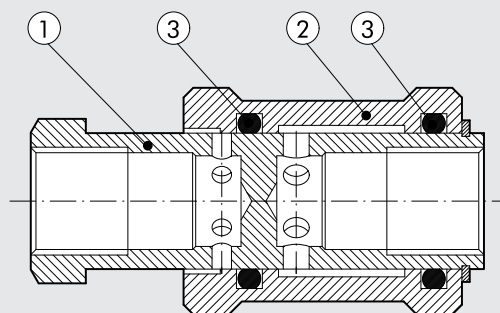
The 3/2 slide valve is normally used as a circuit on-off valve. When the ring nut is moved back, the system downstream is relieved; when the ring nut is moved forward, the system is supplied with compressed air.



TECHNICAL DATA		1/8"	1/4"	3/8"	1/2"
Operating pressure		0 - 10 bar (0 - 1 MPa)			
Operating temperature range	°C	-10 to + 80			
Fluid		Lubricated or unlubricated filtered air			
Flow rate at 6.3 bar (0.63 Mpa - 91 psi) ΔP 0.5 bar	Nl/min	430	680	1400	2200
Flow rate at 6.3 bar (0.63 Mpa - 91 psi) ΔP 1bar	Nl/min	630	1040	2070	3330
Conductance C	Nl/min · bar	170	247	537	833
Critical ratio b	bar/bar	0.2	0.3	0.1	0.2

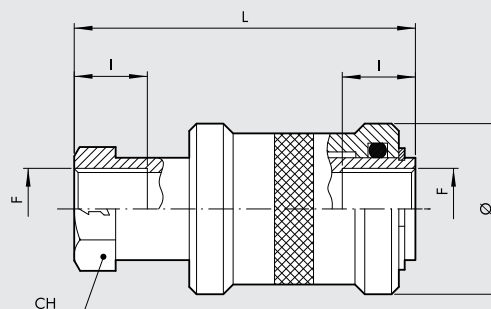
COMPONENTS

- ① Body: chromium-plated brass
- ② Ring nut: anodized aluminium
- ③ Seals: NBR



DIMENSIONS AND ORDERING CODES

Code	Description	F	Ø	I	L	CH
W0970050001	Slide valves 3/2	1/8"	25	10	48	11
W0970050002	Slide valves 3/2	1/4"	30	12	58	19
W0970050003	Slide valves 3/2	3/8"	35	12	68	22
W0970050004	Slide valves 3/2	1/2"	40	15	80	27



CIRCUIT SELECTOR VALVES SERIES VOR



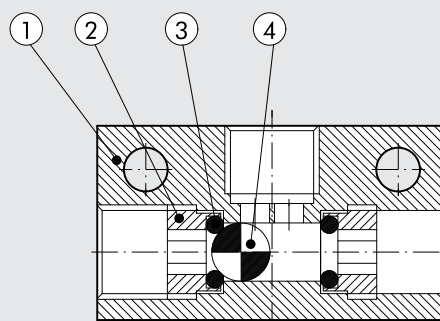
Circuit selector valves select two separate input signal without creating reciprocal interference, giving a single output signal.



TECHNICAL DATA		1/8"	1/4"
Nominal flow rate at 6.3 bar ΔP 1 bar	NI/min	500	1300
Operating temperature range	$^{\circ}C$	-10 to + 80	
	$^{\circ}F$	14 to 176	
Operating pressure	bar	2 - 10	
	MPa	0.2 - 1	
Fluid		Lubricated or unlubricated filtered air	

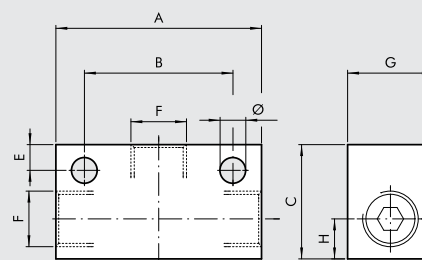
COMPONENTS

- ① Body: passivated aluminium
- ② Insert: brass
- ③ Seal: NBR
- ④ Ball: stainless steel



DIMENSIONS AND ORDERING CODES

Code	Description	A	C	G	H	E	B	F	\varnothing
W3603000001	VOR 1/8	36	20	15	7.5	4	25	G 1/8	4.5
W3603000002	VOR 1/4	43	25	20	8.5	6.5	25	G 1/4	4.5



CHECK VALVE SERIES VNR

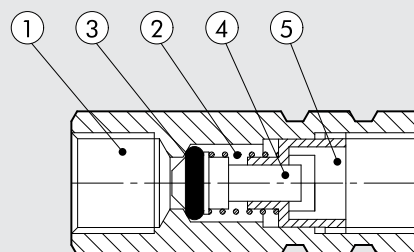
This allow air flow in only one of the two directions.



TECHNICAL DATA		1/8"	1/4"
Ports		G 1/8"	G 1/4"
Nominal diameter	mm	5.2	7
Nominal flow rate	NI/min	900	1100
Operating temperature range	°C	-10 to + 70	
	°F	14 to 158	
Operating pressure	bar	2 - 10	
	MPa	0.2 - 1	
Opening pressure	bar	0.05 (5 KPa)	
Fluid		Lubricated or unlubricated filtered air	

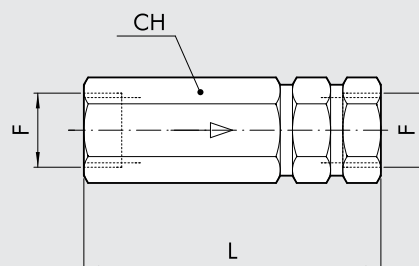
COMPONENTS

- ① Body: OT58 brass
- ② Valve spring: steel
- ③ Seal: NBR for 1/8 valve - FKM/FPM for 1/4 valve
- ④ Stem with OT58 brass valve
- ⑤ Stem insert: OT58 brass



DIMENSIONS AND ORDERING CODES

Code	Description	F	L	CH
W3601000001	VNR 1/8	1/8	35	13
W3601000002	VNR 1/4	1/4	41	17



Metal Work logic elements are available with 5 different functions:
OR, AND, NOT, YES, MEMORY.

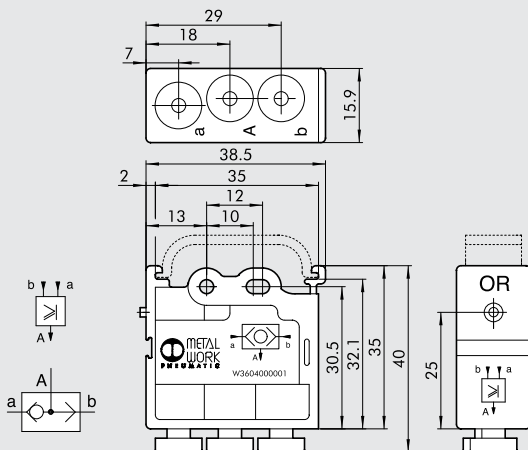
Main features common to all elements:

- Adaptor for Ω bar (DIN EN 50022) integral with the body.
- Built-in pressure indicator.
- Pipe locking system using $\varnothing 4$ built-in fittings.



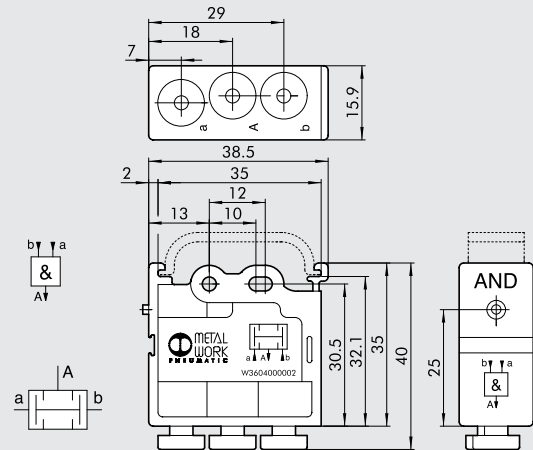
TECHNICAL DATA	
Operating temperature	°C
Valve fitting	Push-in fitting for $\varnothing 4$ pipe
Pressure range	bar
	OR - AND: from 1.5 to 8 bar
	YES-NOT - MEMORY: from 0 to 8 bar, pilot pressure from 1.5 to 8 bar
	NOT: 6 bar switching threshold = 0.4
Nominal diameter	mm
Flow rate at 6 bar (0.6 MPa-87 psi) ΔP 1 bar (0.1 Mpa-14.5 psi)	NI/min
Fluid	2.7
Recommended lubricant	100
Actionment	Lubricated or unlubricated filtered compressed air; must be uninterrupted when lubricated
Reset	ISO e UNI FD22
	Via compressed air
	AND-OR: via compressed air
	YES-NOT via mechanical spring
	MEMORY: via compressed air
Installation	In any position
Mounted	On Omega bar (DIN EN 50022) size 35 x 7 or 35 x 15
	Wall-mounted with $\varnothing 4.2$ holes
MATERIALS	
Body	Technopolymer
Spool	Aluminium
Seal	NBR (FKM/FPM on request)

LOGIC ELEMENT: OR



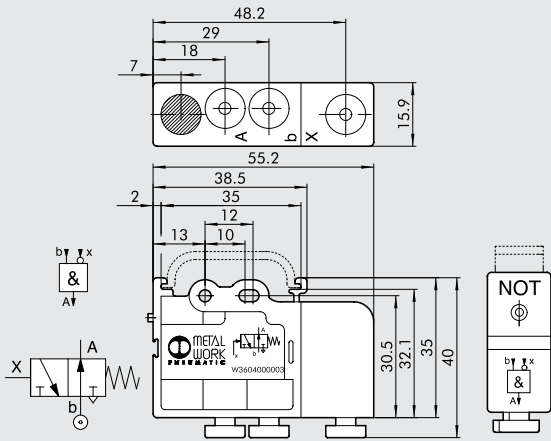
Code W3604000001
Description OR - logic product

LOGIC ELEMENT: AND



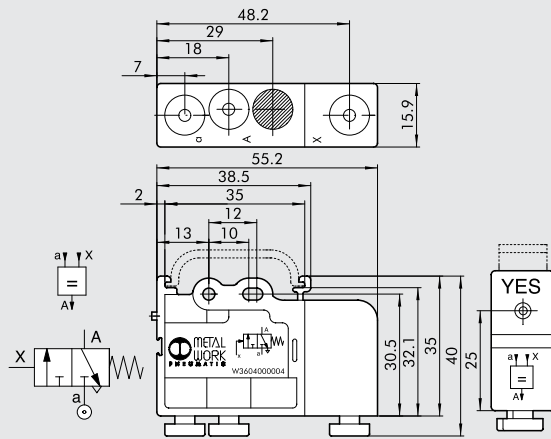
Code W3604000002
Description AND - logic sum

LOGIC ELEMENT: NOT



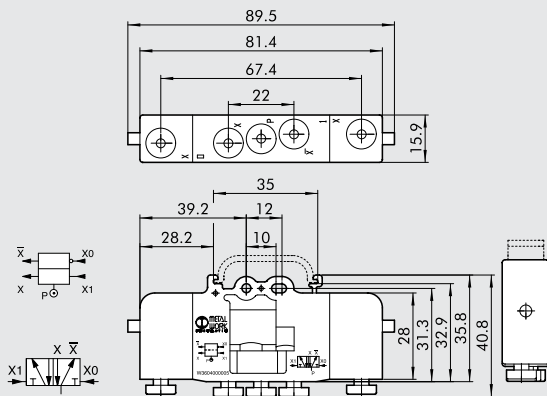
Code	Description
W3604000003	NOT - Negation

LOGIC ELEMENT: YES



Code	Description
W3604000004	YES - Affirmation

LOGIC ELEMENT: MEMORY



Code	Description
W3604000005	Memory

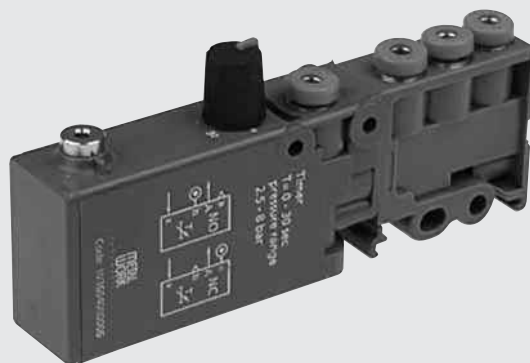
NOTES

The Timer is part of Metal Work range of logic elements, which also includes OR, AND, NOT, YES, MEMORY.

The value of the signal output delay is set by rotating a knob. It can work both as 3/2 NC and 3/2 NO, depending on whether feeding is through port "a" or port "b".

The maximum delay time can be increased by unscrewing a plug and connecting the port to an external auxiliary tank.

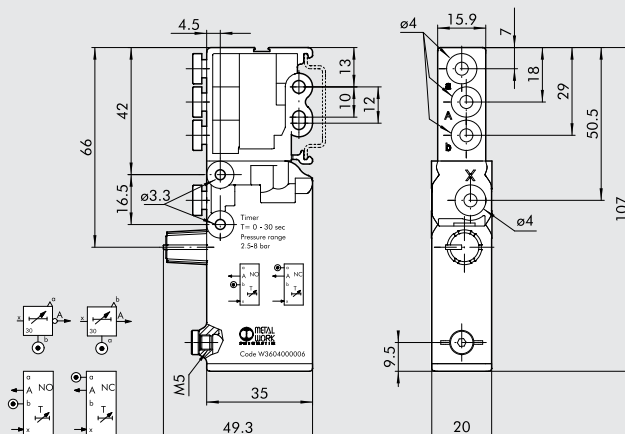
- Adaptor for Ω bar (DIN EN 50022) integrated in the body.
- Pressure indicator via an orange pin
- Pipe clamping system using $\varnothing 4$ built-in push-on fittings.



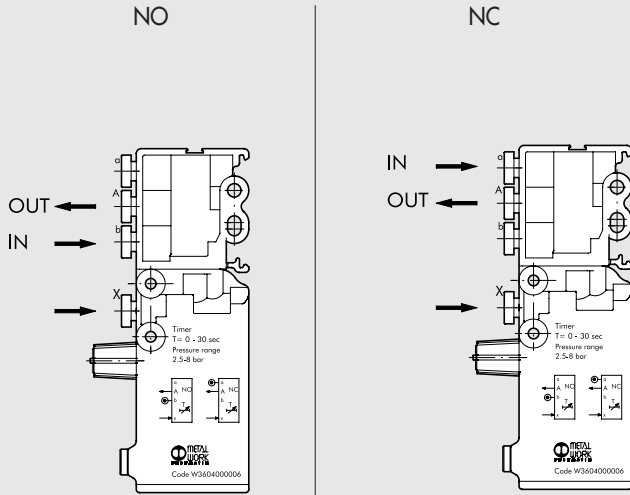
TECHNICAL DATA	
Temperature range	$^{\circ}\text{C}$ - 10 to +60
Valve coupling	mm Push-in fitting for $\varnothing 4$ pipe
Pressure range	bar From 2.5 to 82.7
Nominal diameter	mm 100
Flow rate at 6 bar (0.6 Mpa, 87 psi) ΔP 1 bar (0.1 Mpa, 14.5 psi)	l/min From 0 to 30, at 6 bar
Delay setting range	s < 0.1
Signal shutoff time	s ± 0.4
Repeatability	s Filtered, lubricated or unlubricated compressed air. If used, must be continuous
Fluid	By compressed air
Operating	By mechanical spring
Repositioning	In any direction
Installation	On Ω bar (DIN EN 50022) size 35 x 7 or 35 x 15 - Wall mounting using $\varnothing 4.2$ holes
Assembly	
MATERIALS	
Body	Anodised aluminium / Technopolymer
Internal parts	Brass / Technopolymer
Gaskets	NBR
Spring	Spring steel

DIMENSIONS AND ORDERING CODES

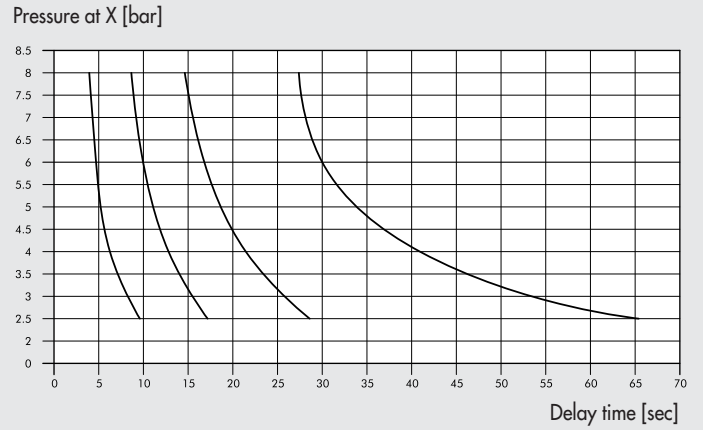
Code	Description
W3604000006	Timer



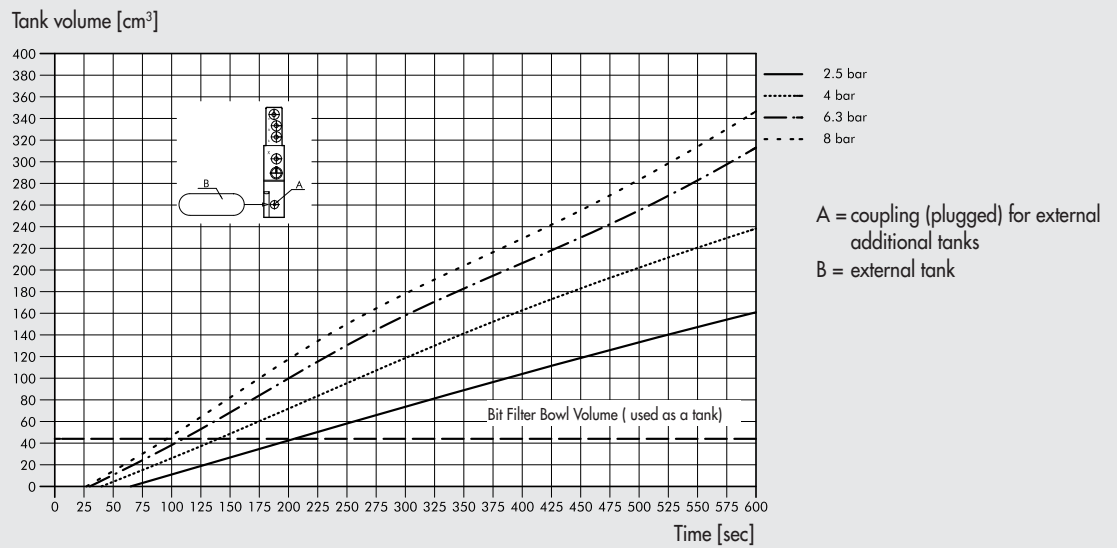
NORMALLY OPEN AND NORMALLY CLOSED OPERATION



CHANGE IN THE DELAY WITH CHANGE IN PRESSURE



HOW TO INCREASE THE DELAY



NOTES

SUMMARY VARIOUS ACCESSORIES



- **AIR-AIR PRESSURE MULTIPLIER (BOOSTER)**

PAGE 5-82



- **IN-LINE PROGRESSIVE STARTER VAP 1/4" AND 1/2"**

PAGE 5-89



- **DISTRIBUTION FRAMES AND ROTARY JOINTS G1/8" - 1/2"**

PAGE 5-91

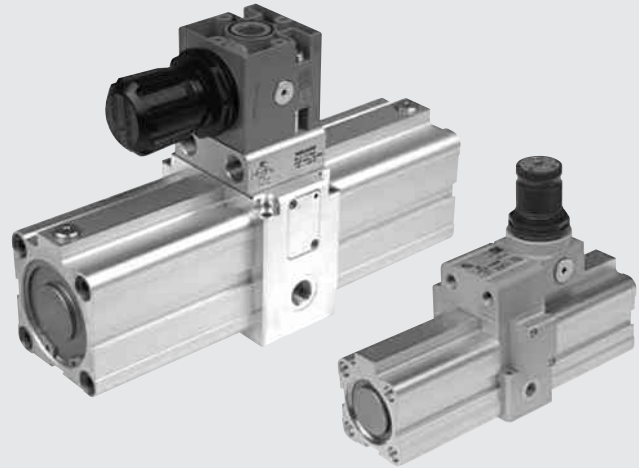


- **SILENCERS**

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AIR-AIR PRESSURE MULTIPLIER (BOOSTER)

The air-air pressure multiplier, or booster, is an automatic device that compresses air to give an outlet pressure that is double the inlet pressure. It is normally used to locally intensify the input pressure of one or more actuators. As it is entirely pneumatic it can be used when electric devices are not recommended. The booster can be supplied with or without a pressure regulator. It is fitted with check valves that maintain the outlet pressure even when the supply of compressed air is switched off. This means it is necessary to interrupt the supply and relieve the circuit before intervening on the device in any way. It is advisable to install a tank after the booster to prevent fluctuations in outlet pressure.



TECHNICAL DATA		Booster Ø 40	Booster Ø 40 with regulator	Booster Ø 63	Booster Ø 63 with regulator
Bore		Ø 40		Ø 63	
Fluid		Filtered unlubricated compressed air, Lubrication, if used, must be continuous.			
Threaded port		1/8"		3/8"	
Inlet pressure	MPa	0.2 - 1			
	bar	2 - 10			
	psi	29 - 145			
Outlet pressure	MPa	max 2	max 1.6 (regulated)	max 2	max 1.6 (regulated)
	bar	max 20	max 16 (regulated)	max 20	max 16 (regulated)
	psi	max 290	max 232 (regulated)	max 290	max 232 (regulated)
Operating temperature	°C	-10 to +60	-10 to +50	-10 to +60	-10 to +60
	°F	14 to 140	14 to 122	14 to 140	14 to 140
Weight	gr	1.380	1.600	4.240	5.350
Mounting		Wall or panel			
Installation		In any position			

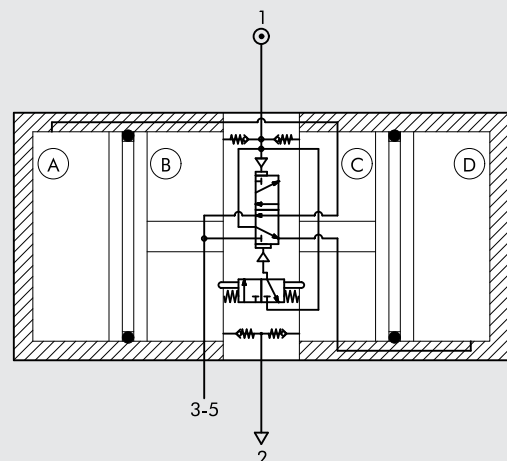
OPERATING LAYOUT

The pressure booster is comprised of a central body (with one 3-2 valve, one 5-2 valve and four check valves), two side liners and a through rod on which two pistons are mounted.

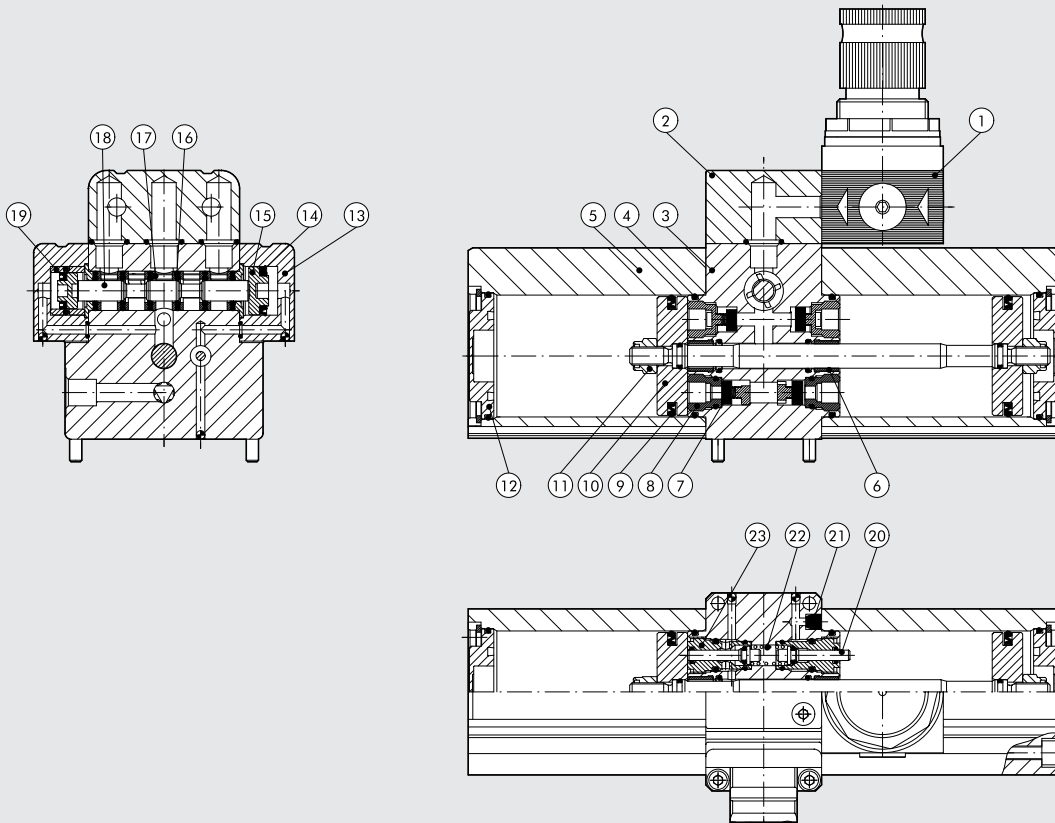
The supply air is compressed alternately by the two pistons in one of the two central chambers (B and C); the other central chamber and one of the two side chambers (A and D) operate the pistons; the external chamber, which is not involved in compression, is relieved.

Air compressed at a ratio of 2:1 passes through a check valve that maintains the output pressure even when compressed air is no longer supplied.

The valves in the central body, which are operated by mechanical pusher pistons, switch the function of the two pairs of chambers (A and D, B and C) at each piston stroke.



COMPONENTS



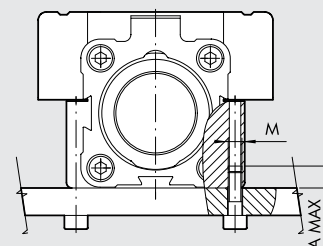
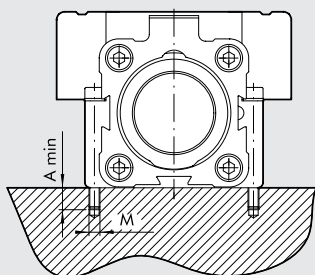
- ① PRESSURE REGULATOR (for 9002200 - 9002600 only)
- ② INTERFACE BLOCK (for 9002200 - 9002600 only):
anodized aluminium
- ③ CENTRAL BODY: anodized aluminium
- ④ OR SEAL: NBR rubber
- ⑤ BARREL: anodized aluminium alloy section
- ⑥ GUIDE BUSHING: steel strip with bronze and PTFE insert
- ⑦ POPPET: NBR rubber
- ⑧ CHECK VALVE: brass
- ⑨ PISTON GASKET: NBR rubber
- ⑩ PISTON: aluminium
- ⑪ SELF-LOCKING NUT: stainless steel

- ⑫ CYLINDER BASE: anodized aluminium
- ⑬ VALVE CONTROL: anodized aluminium
- ⑭ VALVE CONTROL GASKET: NBR rubber
- ⑮ VALVE PISTON: technopolymer
- ⑯ GASKET: NBR rubber
- ⑰ SPACER: technopolymer
- ⑱ SPOOL: nickel-plated aluminium
- ⑲ DIFFERENTIAL BUSHING: brass
- ⑳ PUSHER: stainless steel
- ㉑ SILENCER: technopolymer
- ㉒ SPRING: stainless steel
- ㉓ GUIDE BUSHING: brass

MOUNTING

On a wall using the M4 x 40 - M6 x 10 screws provided with the Booster.

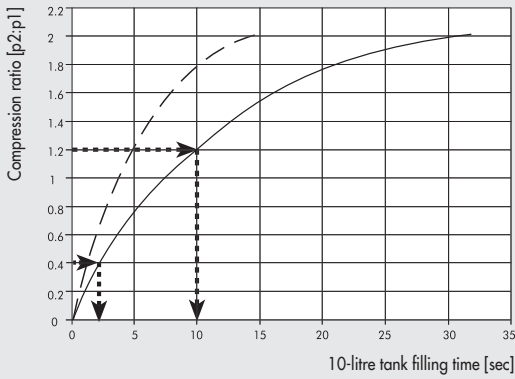
On a panel using M5 - M8 screws.



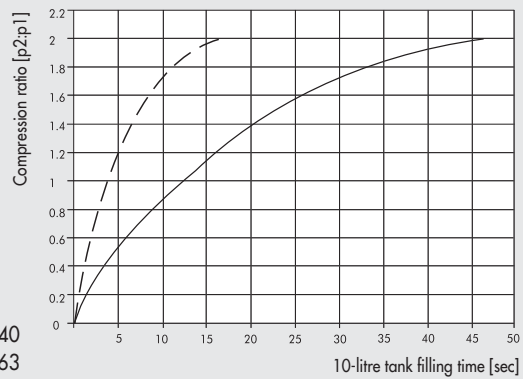
	Ø 40	Ø 63		Ø 40	Ø 63
A	8	12	A	8	10
M	M4	M6	M	M5	M8

TANK FILLING CURVES

WITHOUT REGULATOR



WITH REGULATOR



The graphs refer to the filling of a 10-litre tank and show the ratio of outlet to inlet pressure (= p₂:p₁) as a function of time (sec).

The graphs are valid for any inlet pressure between 2 and 10 bar.

The following formula can be used to calculate the time t (sec) required to switch from pressure ratio 1 to pressure ratio 2 in a tank of volume V (litres):

$$t = \frac{V (t_2 - t_1)}{10}$$

where t₁ and t₂ are the times shown on the x-axis, corresponding to ratios 1 and 2.

E.g.

1 = 0.4 => t₁ = 2.5 sec

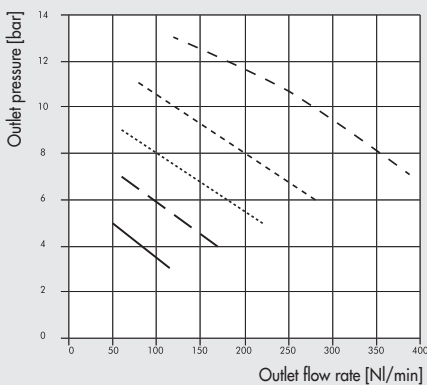
2 = 1.2 => t₂ = 10 sec

The time required to switch from 1 to 2 with a 25-litre tank is:

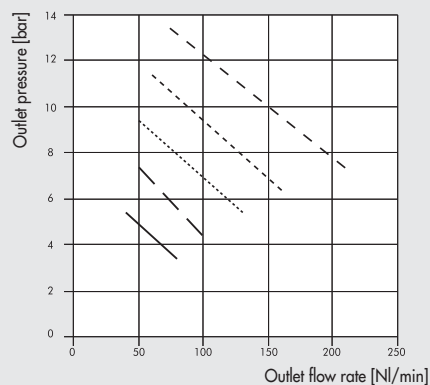
$$t = \frac{25 (10 - 2.5)}{10} \text{ sec} = 18.75 \text{ sec}$$

FLOW CHARTS

WITHOUT REGULATOR Ø 40

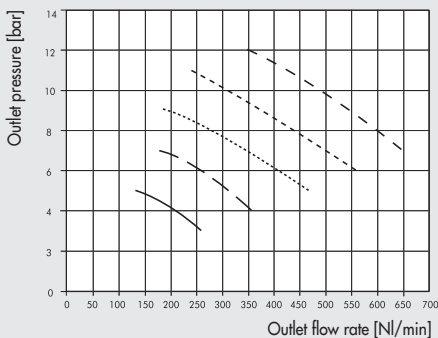


WITH REGULATOR Ø 40

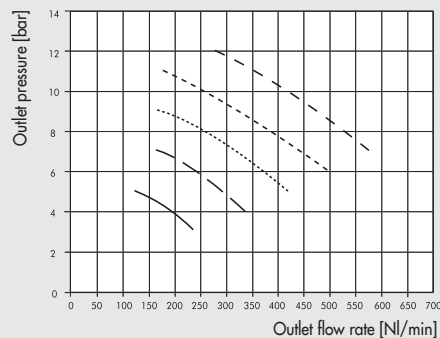


INLET PRESSURE	
---	p ₁ = 7 bar
----	p ₁ = 6 bar
.....	p ₁ = 5 bar
-----	p ₁ = 4 bar
————	p ₁ = 3 bar

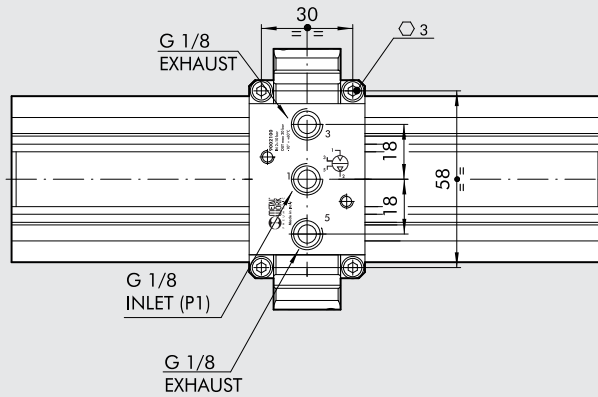
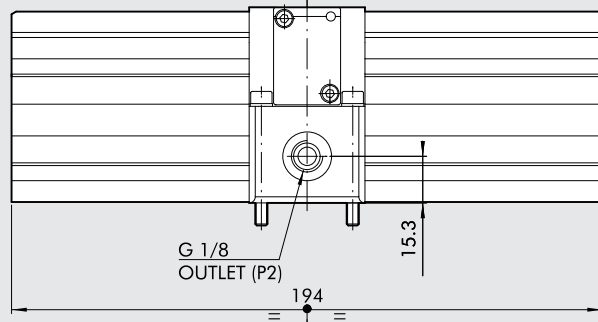
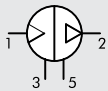
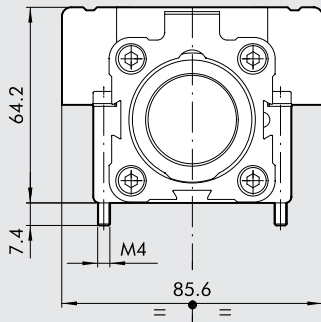
WITHOUT REGULATOR Ø 63



WITH REGULATOR Ø 63

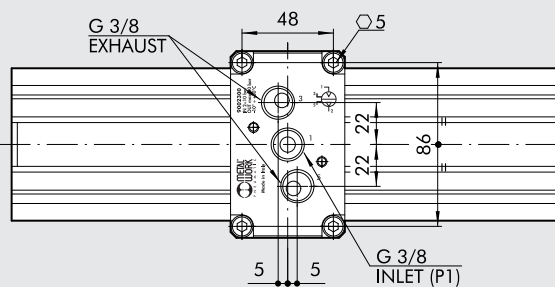
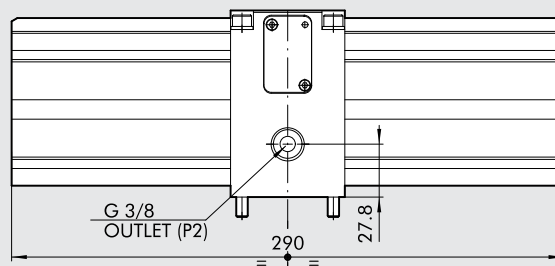
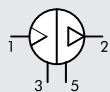
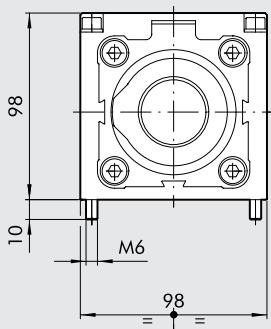


PRESSURE MULTIPLIER (BOOSTER Ø 40)



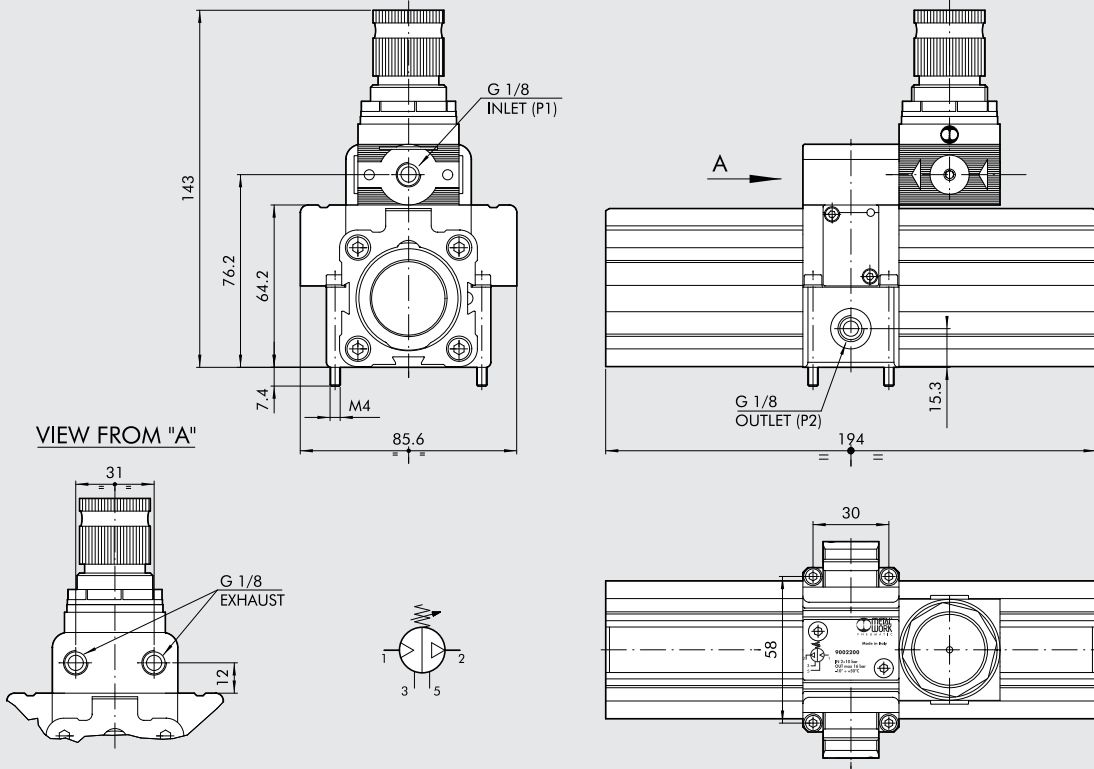
Code	Description
9002100	Booster Ø 40

PRESSURE MULTIPLIER (BOOSTER Ø 63)



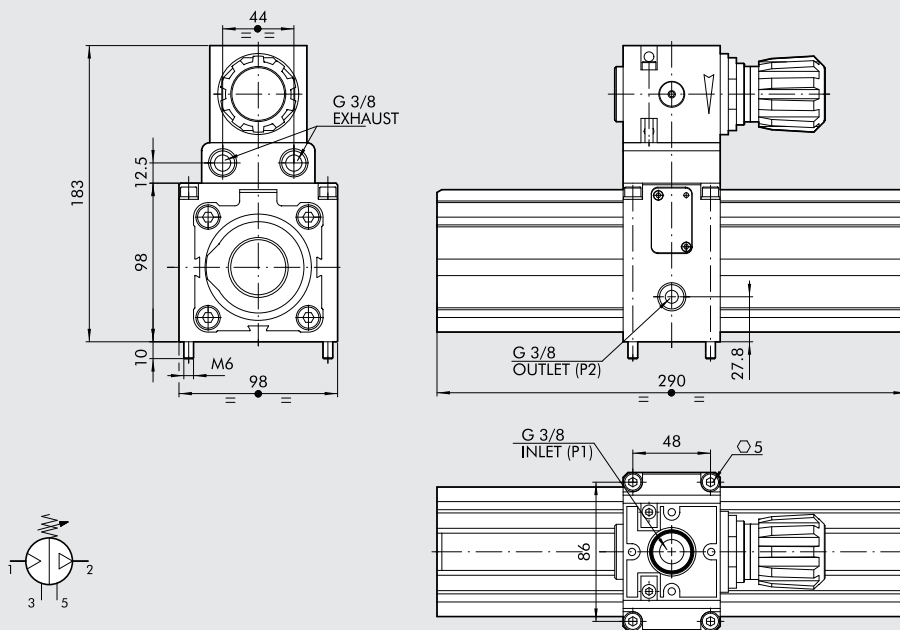
Code	Description
9002300	Booster Ø 63

PRESSURE MULTIPLIER (Ø 40 BOOSTER WITH REGULATOR)



Code	Description
9002200	Booster Ø 40 with regulator

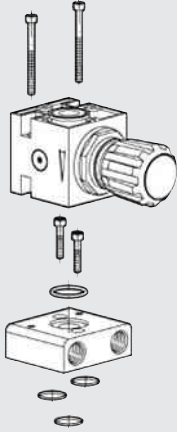
PRESSURE MULTIPLIER (Ø 63 BOOSTER WITH REGULATOR)



Code	Description
9002600	Booster Ø 63 with regulator

ACCESSORIES

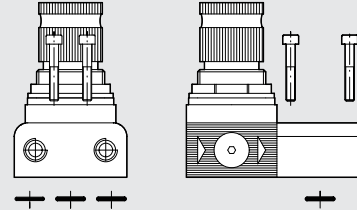
Ø 63 REGULATOR UNIT



Code	Description
9002380	Ø 63 regulator unit

Note: supplied with 4 screws, 4 o-ring

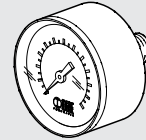
Ø 40 REGULATOR UNIT



Code	Description
9002180	Ø 40 regulator unit

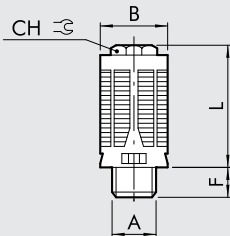
Note: Supplied with 2 screws, 3 O-ring

PRESSURE GAUGE



Code	Description
9700101	M 40 1/8 12

MW SPL-F SILENCER FOR BOOSTER Ø 40

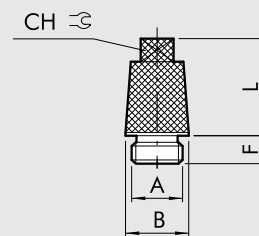


Code	A	B +0.2	F +0.5	L +3%	CH
W097053 0072	G1/8	16.3	85.5	29	10

Materials:
Black acetal resin
Felt

Features:
Pmax: 12 bar
Temp.: -10°C to +60°C

MW SCQ SILENCER FOR BOOSTER Ø 63



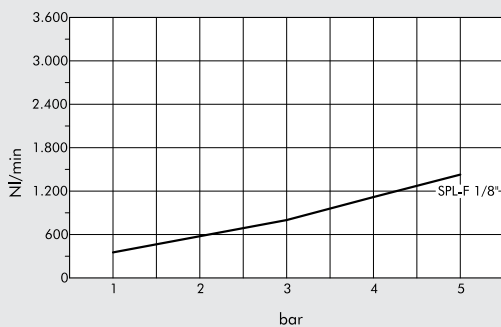
Code	A	B +0.2	F +0.5	L +3%	CH
W 097053 0014	G3/8	19	8.5	29.2	10

Materials:
Nickel-plated brass
Sintered nickel-plated bronze

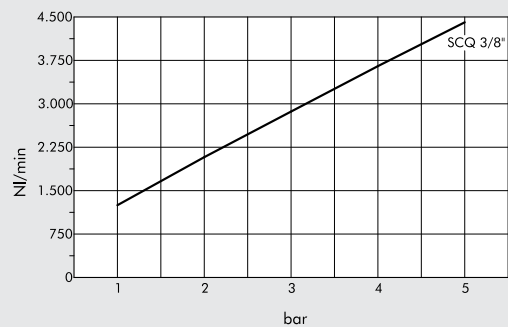
Features:
Pmax: 12 bar
Temp.: -10°C to +80°C

SILENCER FLOW GRAPH

MW SPL-F



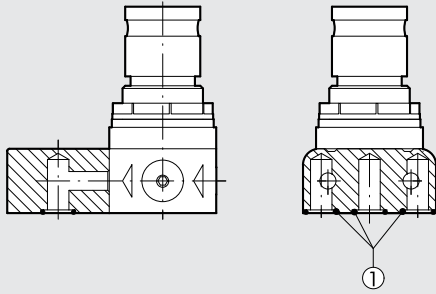
MW SCQ



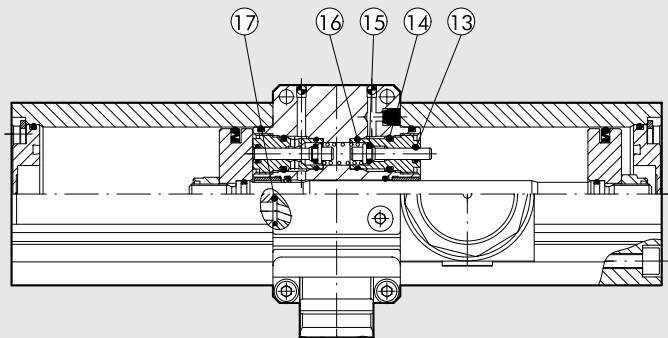
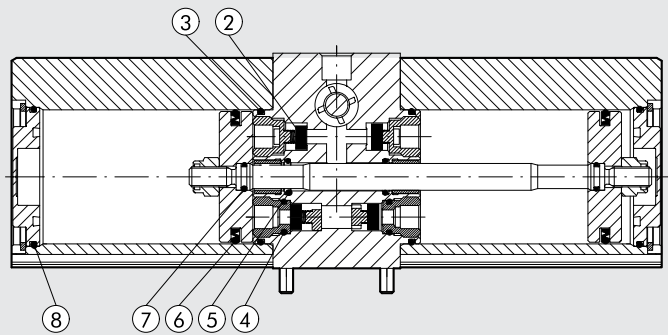
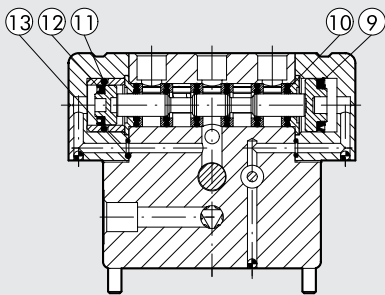
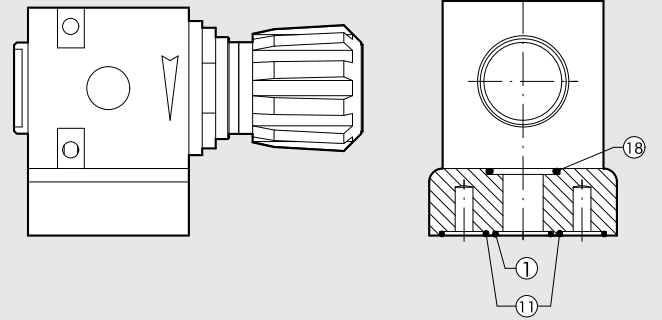
SPARE PARTS

SET OF GASKETS

Ø 40



Ø 63



Code	Description
9002190	Set of gaskets for Ø 40 Booster (includes all gaskets numbered 1 to 17)
9002390	Set of gaskets for Ø 63 Booster (includes all gaskets numbered 1 to 18)

IN-LINE PROGRESSIVE STARTER VAP 1/4" AND 1/2"



The in-line progressive starter is a valve that regulates the flow of air until the outlet pressure reaches a certain value, at which the valve opens and allows air to flow at full rate.

This valve can be used to control a group of valves or a single valve, or it can be mounted between another valve and an actuator.

The air that enters inlet 1 passes through a choke that has a knob adjustment to control the flow. The valve opens completely when the outlet pressure reaches about 60% of the inlet pressure.

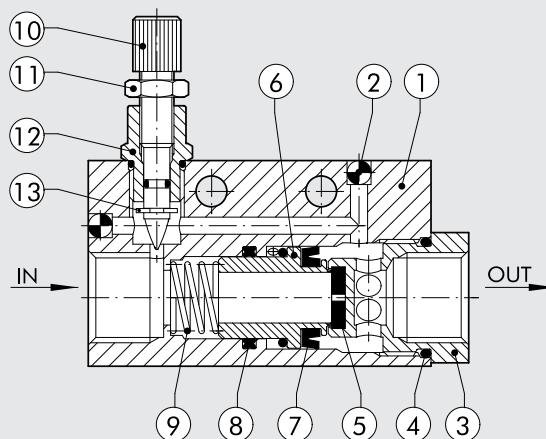
If the air supply is switched off, the valve discharges air from outlet 2 to inlet 1.



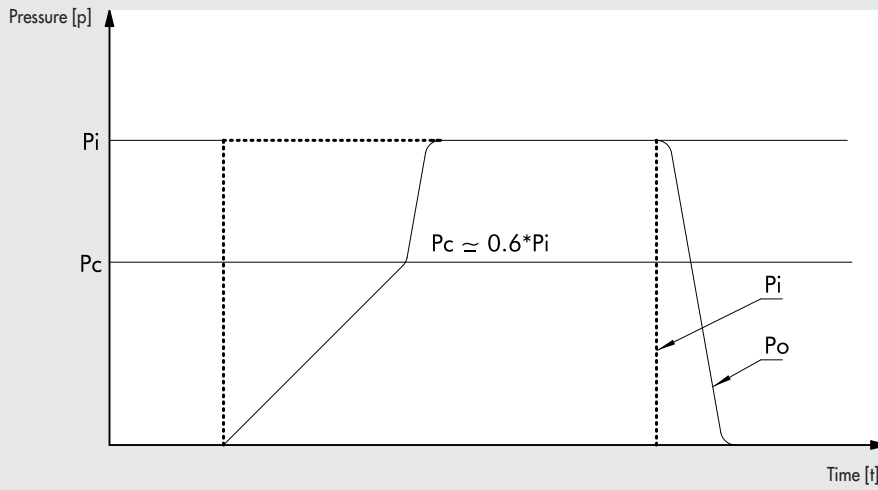
TECHNICAL DATA		VAP 1/4	VAP 1/2
Threaded ports		1/4"	1/2"
Type of valve		2/2 NC	
Minimum operating pressure	bar	2	
	psi	29	
	Mpa	0.2	
Maximum operating pressure	bar	10	
	psi	145	
	Mpa	1	
Switching pressure		About 60% of inlet pressure	
Operating frequency	Hz	max 5	
Flow rate at 6.3 bar, ΔP=0.5 bar:	Nl/min	1050	2350
	scfm	37	83
Flow rate at 6.3 bar, ΔP=1 bar:	Nl/min	1500	3100
	scfm	53	110
Maximum flow rate through flow regulator at 6.3 bar:	Nl/min	200	300
	scfm	7	11
Operating temperature	°C	from -10 to 70	
	°F	from 14 to 158	
Fluid		Filtered, lubricated or unlubricated, compressed air. Lubrication, if used, must be continuous.	
Weight	g	90	220
Wall fixing screws		Min. M4x25	Min. M4x35
Mounting		In any position	

COMPONENTS

- ① BODY: anodized aluminium
- ② BALL: steel
- ③ INSERT: nickel-plated brass
- ④ O-Ring: NBR
- ⑤ POPPET: NBR
- ⑥ PISTON: anodized aluminium
- ⑦ PISTON GASKET: NBR
- ⑧ O-Ring: NBR
- ⑨ SPRING : steel
- ⑩ PIN: nickel-plated brass
- ⑪ NUT: nickel-plated brass
- ⑫ PIN HOLDER: nickel-plated brass
- ⑬ SNAP RING: galvanized steel

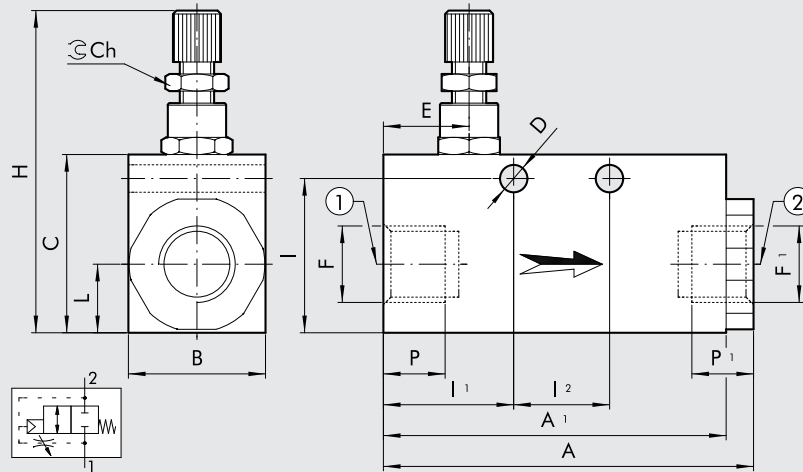


OPERATION



P_i = inlet pressure
 P_o = outlet pressure
 P_c = switching pressure

DIMENSION



Code	Description	F	F'	A	A'	B	C	Ch	D	E	H	I	I'	I ²	L	P	P'
W3606000002	VAP 1/4	G1/4	G1/4	56	50	20	30	8	4.5	10	49-52	25.5	18	16	10	9	9
W3606000004	VAP 1/2	G1/2	G1/2	75.8	65	30	40	8	4.5	13	59-62	35.5	26.5	16	15	12	12

NOTES

DISTRIBUTION FRAMES AND ROTARY JOINTS



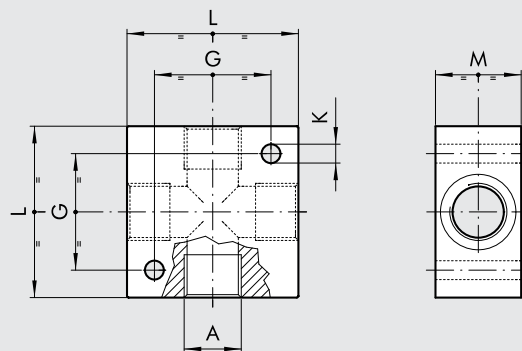
TECHNICAL DATA

Threaded ports		1/8	1/4	3/8	1/2
Max pressure	bar	0 - 12			
	MPa	0 - 1.2			
Operating temperature	°C	-10 - 80			
Fluid	Lubricated or unlubricated filtered air				
Body	Nickel-plated brass				
Gaskets	NBR				



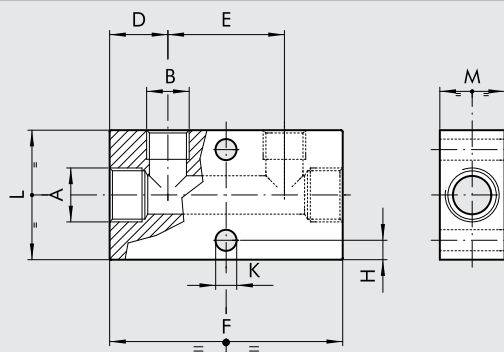
DISTRIBUTION FRAME

4-WAY DISTRIBUTION FRAME



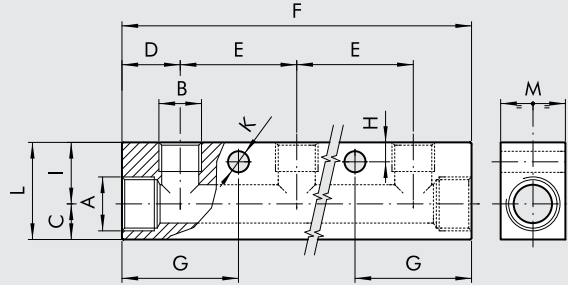
Code	A	G	K	L	M
W0501101001	G 1/8	17	4.5	25	15
W0501111002	G 1/4	26	5.5	40	20
W0501121003	G 3/8	34	5.5	50	25
W0501131004	G 1/2	34	5.5	50	30

RIPARTITORE 2 USCITE LINEARI 1/8"



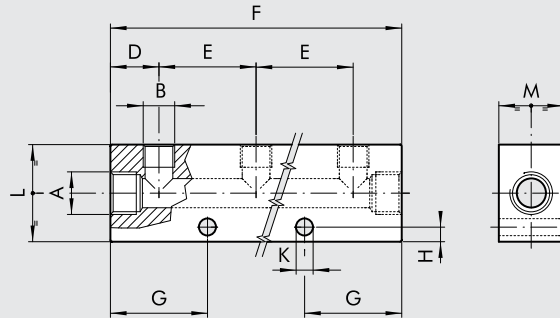
Code	INLETS		OUTLETS								
	N°	A	N°	B	D	E	F	H	K	L	M
W0502111001	2	G 1/4	2	G 1/8	15	30	60	4.5	5.3	30	20
W0502121002	2	G 3/8	2	G 1/4	18	36	72	6	6.5	40	20
W0502131002	2	G 1/2	2	G 1/4	22	36	80	6	6.5	40	30

DISTRIBUTION FRAME WITH MULTIPLE STRAIGHT 1/4" OUTLETS



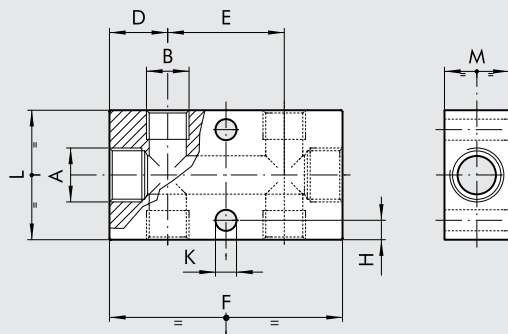
Code	INLETS			OUTLETS										
	N°	A	N°	B	D	E	F	G	H	K	I	C	L	M
W0502121006	2	G 3/8	3	G 1/4	18	36	108	36	6	6.5	19	11	30	20
W0502121008	2	G 3/8	4	G 1/4	18	36	144	36	6	6.5	19	11	30	20
W0502121010	2	G 3/8	5	G 1/4	18	36	180	36	6	6.5	19	11	30	20
W0502121012	2	G 3/8	6	G 1/4	18	36	216	36	6	6.5	19	11	30	20
W0502131006	2	G 1/2	3	G 1/4	18	36	108	36	6	6.5	24	16	40	30
W0502131008	2	G 1/2	4	G 1/4	18	36	144	36	6	6.5	24	16	40	30
W0502131010	2	G 1/2	5	G 1/4	18	36	180	36	6	6.5	24	16	40	30
W0502131012	2	G 1/2	6	G 1/4	18	36	216	36	6	6.5	24	16	40	30

DISTRIBUTION FRAME WITH MULTIPLE STRAIGHT 1/8" OUTLETS



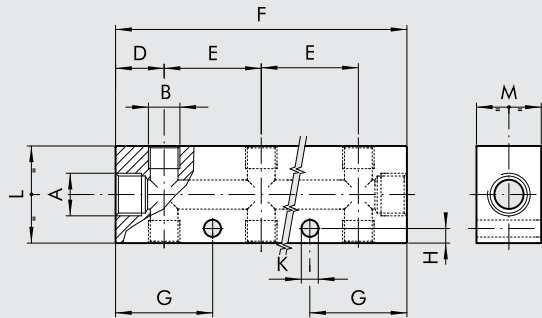
Code	INLETS			OUTLETS										
	N°	A	N°	B	D	E	F	G	H	K	L	M		
W0502111005	2	G 1/4	3	G 1/8	15	30	90	30	4.5	5.3	30	20		
W0502111007	2	G 1/4	4	G 1/8	15	30	120	30	4.5	5.3	30	20		
W0502111009	2	G 1/4	5	G 1/8	15	30	150	30	4.5	5.3	30	20		
W0502111011	2	G 1/4	6	G 1/8	15	30	180	30	4.5	5.3	30	20		

DISTRIBUTION FRAME WITH 2 OPPOSED OULETS



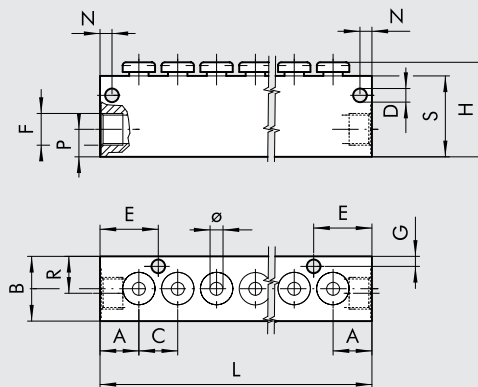
Code	INLETS			OUTLETS										
	N°	A	N°	B	D	E	F	H	K	L	M			
W0503111013	2	G 1/4	2+2	G 1/8	15	30	60	4.5	5.3	30	20			
W0503121014	2	G 3/8	2+2	G 1/4	18	36	72	6	6.5	40	20			
W0503131014	2	G 1/2	2+2	G 1/4	22	36	80	6	6.5	40	30			

DISTRIBUTION FRAME WITH 1/8"-1/4" OPPOSED OUTLETS



Code	INLETS		OUTLETS		D	E	F	G	H	K	L	M
	N°	A	N°	B								
W0503111015	2	G 1/4	3+3	G 1/4	15	30	90	30	4.5	5.3	30	20
W0503111017	2	G 1/4	4+4	G 1/4	15	30	120	30	4.5	5.3	30	20
W0503111019	2	G 1/4	5+5	G 1/4	15	30	150	30	4.5	5.3	30	20
W0503121016	2	G 3/8	3+3	G 1/4	18	36	108	36	6	6.5	40	20
W0503121018	2	G 3/8	4+4	G 1/4	18	36	144	36	6	6.5	40	20
W0503121020	2	G 3/8	5+5	G 1/4	18	36	180	36	6	6.5	40	20
W0503131016	2	G 1/2	3+3	G 1/4	22	36	116	40	6	6.5	40	30
W0503131018	2	G 1/2	4+4	G 1/4	22	36	152	40	6	6.5	40	30
W0503131020	2	G 1/2	5+5	G 1/4	22	36	188	40	6	6.5	40	30

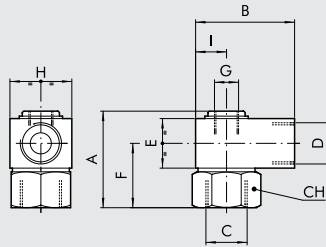
DISTRIBUTOR, Ø 4-6-8 mm



Code	N. positions	Ø	F	A	B	C	D	E	G	H	L	M	N	P	R	S
7304106	6	4	1/8	12	20	12	4.2	3.7	3.1	29	84	6	3.7	8.5	11.4	25
7304112	12	4									156					
7306206	6	6	1/4	14	20	14.6	4.2	21.3	3.1	34	101	6	3.7	10	11	30
7306212	12	6									188.6					
7308306	6	8	3/8	18	25	16.6	4.2	26.3	4.2	39	119	5	5	14	14	35
7308312	12	8									218.6					

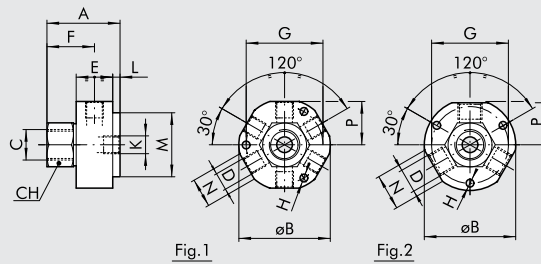
ROTARY JOINT

SINGLE ROTARY JOINT



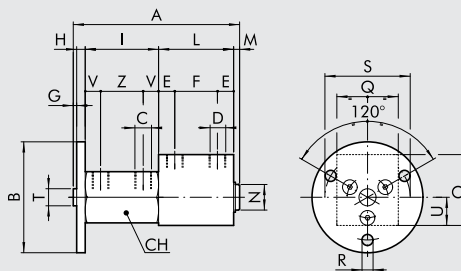
Code	A	B	C	D	E	F	G	H	I	CH	r.p.m.
W0511101101	32	30	G 1/8	G 1/8	16	22	-	16	8	16	550
W0511121121	32	30	G 1/4	G 1/4	16	22	-	16	8	16	550
W0511131131	39	40	G 3/8	G 3/8	20	26	G 1/8	25	12.5	24	300
W0511141141	55	65	G 1/2	G 1/2	30	35	G 3/8	40	20	30	200
W0511151151	70	65	G 3/4	G 3/4	40	45	G 1/2	40	20	36	160
W0511161161	80	80	G 1	G 1	45	52.5	G 3/4	50	26	45	140

MULTIPLE ROTARY JOINT



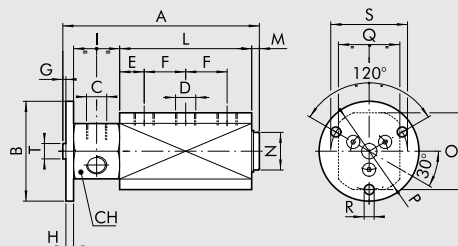
Code	Figure	INLETS				OUTLETS				CH	r.p.m.							
		A	B	N°	C	N°	D	E	F			G	H	K	L	M	N	P
W0513131101	1	40	50	1	G 3/8	6	G 1/8	20	26	42	4.2	G 1/8	4	35	16	23.7	22	300
W0512131121	2	40	50	1	G 3/8	3	G 1/4	20	26	42	4.2	G 1/4	4	35	19	23	24	300

2 INDEPENDENT WAY ROTARY JOINTS



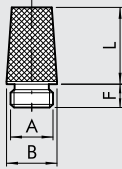
Code	A	B	INLETS		OUTLETS		E	F	G	H	I	L	M	N	O	Q	R	S	T	U	V	Z	CH	r.p.m.
			N°	C	N°	D																		
W0514101101	97.5	64	2	G 1/8	2	G 1/8	9.5	25	2	5	43	44	3.5	15	40	25	6.3	50	10	20	9	25	30	300
W0514121121	132	64	2	G 1/4	2	G 1/4	15	30	2	5	60	60	5	24.5	50	40	6.3	50	10	25	15	30	36	200

3 INDEPENDENT WAY ROTARY JOINTS



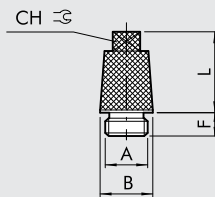
Code	A	B	INLETS		OUTLETS		E	F	G	H	I	L	M	N	O	P	Q	R	S	T	CH	r.p.m.
			N°	C	N°	D																
W0515121121	128	64	3	G 1/4	3	G 1/4	16	27	2	5	30	86	5	24.5	50	54	40	6.3	50	10	36	200

SILENCER MW SC



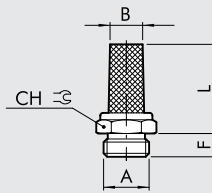
	Code	A	B ±0.2	F	L ±3%
Materials:	W0970530001	M5	6	4.5 ±0.5	10
Nickel-plated brass	W0970530002	G 1/8	12	6 ±0.5	15
Sintered nickel-plated bronze	W0970530003	G 1/4	15	6.7 ±0.5	19
	W0970530004	G 3/8	19	8.5 ±0.5	28.5
	W0970530005	G 1/2	23	8.7 ±0.5	33
Features:	W0970530006	G 3/4	29	11 ±1	40.5
Pmax: 12 bar	W0970530007	G 1	36	11.5 ±1	50.5
Temp.: -10°C - +80°C					

SILENCER MW SCQ



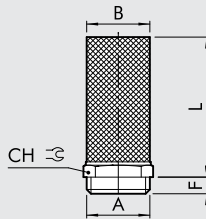
	Code	A	B ±0.2	F	L ±3%	CH
Materials:	W0970530012	G 1/8	12	6 ±0.5	15	7
Nickel-plated brass	W0970530013	G 1/4	15	7.5 ±0.5	19	8
Sintered nickel-plated bronze	W0970530014	G 3/8	19	8.5 ±0.5	29.2	10
	W0970530015	G 1/2	23	9 ±0.5	31.5	14
	W0970530016	G 3/4	29	10 ±1	41.5	17
Features:	W0970530017	G 1	36	12 ±1	51.2	23
Pmax: 12 bar						
Temp.: -10°C - +80°C						

SILENCER MW SE



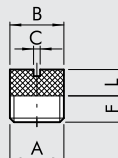
	Code	A	B ±0.5	F	L ±5%	CH
Materials:	W0970530021	M5	4	4 ±0.5	13	8
Nickel-plated brass	W0970530020	M7	5	5 ±0.5	21	10
Sintered nickel-plated bronze	W0970530022	G 1/8	7	6 ±0.5	21	13
	W0970530023	G 1/4	8.5	8 ±0.5	23.5	16
	W0970530024	G 3/8	11	8 ±0.5	33	19
Features:	W0970530025	G 1/2	15	10 ±0.5	37	24
Pmax: 12 bar	W0970530026	G 3/4	21.5	10 ±1	43.5	30
Temp.: -10°C - +80°C	W0970530027	G 1	27	11.5 ±1	56	36

HIGH-CAPACITY SILENCER MW SL



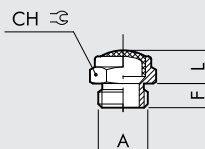
	Code	A	B ±1	F	L ±5%	CH
Materials:	W0970530036	G 3/4	37	12 ±1	215	50
Nickel-plated brass	W0970530037	G 1	37	12 ±1	215	50
Sintered nickel-plated bronze	W0970530038	G 1 1/4	37	15 ±1.5	215	50
	W0970530039	G 1 1/2	37	15 ±1.5	215	50
	W0970530040	G 2	37	17 ±1.5	220	65
Features:						
Pmax: 12 bar						
Temp.: -10°C - +80°C						

SILENCER MW STT



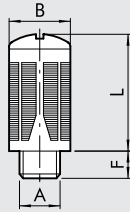
	Code	A	B ±0.2	F	L ±3%	C
Materials:	W0970530042	G 1/8	9.5	6.5 ±0.5	6	2
Nickel-plated brass	W0970530043	G 1/4	12.6	6 ±0.5	7	1.5
Sintered nickel-plated bronze	W0970530044	G 3/8	16.2	7.5 ±0.5	8.5	1.5
	W0970530045	G 1/2	20.5	10 ±0.5	9.6	2.5
	W0970530046	G 3/4	26	11 ±1	12	1.5
Features:	W0970530047	G 1	33	13 ±1	11	-
Pmax: 12 bar						
Temp.: -10°C - +80°C						

SILENCER MW SFE



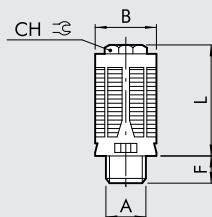
	Code	A	F	L ±3%	CH
Materials:	W0970530051	M5	3.7 ±0.5	4.7	8
Nickel-plated brass	W0970530052	G 1/8	6.2 ±0.5	8.2	13
Stainless steel wire	W0970530053	G 1/4	7.7 ±0.5	11.3	16
	W0970530054	G 3/8	8 ±0.5	11.5	19
	W0970530055	G 1/2	10.3 ±0.5	13	24
Features:	W0970530056	G 3/4	10 ±1	15	30
Pmax: 12 bar	W0970530057	G 1	12 ±1	18	36
Temp.: -10°C - +80°C					

DYNAMIC SILENCER MW SPL



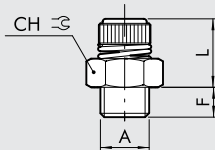
	Code	A	B ±0.2	F	L ±3%
Materials:	W0970530062	G 1/8	15.4	6.2 ±0.5	27
Black acetal resin	W0970530063	G 1/4	19.6	8 ±0.5	35
Acoustic insulation	W0970530064	G 3/8	24.7	11.3 ±0.5	47
	W0970530065	G 1/2	24.7	10.7 ±0.5	47
	W0970530066	G 3/4	48	18 ±1	96
Features:	W0970530067	G 1	48	18 ±1	97
Pmax: 6 bar					
Temp.: -10°C - +60°C					

SILENCER MW SPL-F



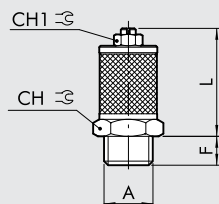
	Code	A	B ±0.2	F ±0.5	L ±3%	CH
Materials:	W0970530072	G 1/8	16.3	5.5	29	10
Black acetal resin	W0970530073	G 1/4	20	7.4	36.5	13
Felt	W0970530074	G 3/8	24.8	11	47	17
	W0970530075	G 1/2	24.8	11	47	17
Features:						
Pmax: 12 bar						
Temp.: -10°C - +60°C						

SILENCED EXHAUST REGULATOR MW SVE



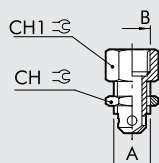
	Code	A	F	L ±0.5	CH
Materials:	W0970520001	G 1/8	6.7 ±0.5	19 - 23	13
Nickel-plated brass	W0970520002	G 1/4	7.4 ±0.5	21 - 24.5	15
Sintered nickel-plated bronze	W0970520003	G 3/8	9.7 ±0.5	23.5 - 29.5	22
Stainless steel spring	W0970520004	G 1/2	10.6 ±0.5	23 - 28	22
	W0970520005	G 3/4	12 ±1	29 - 35	30
Features:	W0970520006	G 1	13.8 ±1	27 - 34	36
Pmax: 12 bar					
Temp.: -10°C - +80°C					

SILENCED EXHAUST REGULATOR MW SVL



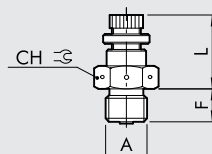
	Code	A	F	L ±0.5	CH	CH1
Materials:	W0970520010	M5	4 ±0.5	17 - 27	8	6
Nickel-plated brass	W0970520011	G 1/8	7 ±0.5	31 - 40	16	9
Sintered nickel-plated bronze	W0970520012	G 1/4	7.5 ±0.5	30 - 37.5	16	9
	W0970520013	G 3/8	10.5 ±0.5	37.5 - 51.5	22	9
	W0970520014	G 1/2	12.4 ±0.5	39.5 - 47.5	22	9
Features:	W0970520015	G 3/4	12.4 ±1	56.5 - 81	30	13
	W0970520016	G 1	12.4 ±1	58.5 - 84.5	36	13
Pmax: 12 bar						
Temp.: -10°C - +80°C						

EXHAUST REGULATOR MW DSN



	Code	A	B	CH	CH1
Materials:	W0970520021	G 1/8	G 1/8	12	12
Nickel-plated brass	W0970520022	G 1/4	G 1/8	14	16
	W0970520023	G 3/8	G 1/4	19	17
	W0970520024	G 1/2	G 1/4	24	22
Features:					
Pmax: 12 bar					
Temp.: -10°C - +80°C					

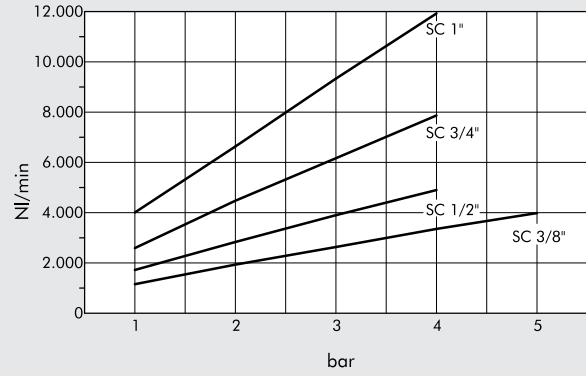
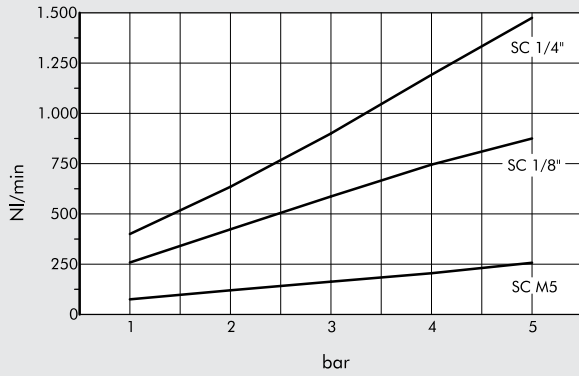
EXHAUST REGULATOR MW DSE



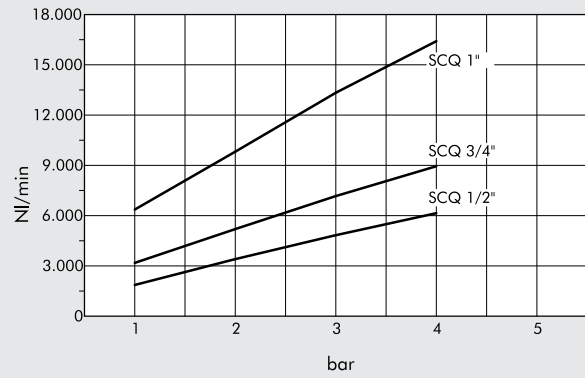
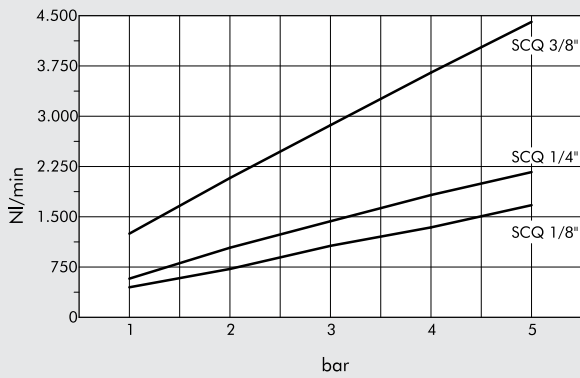
	Code	A	F	L ±0.5	CH
Materials:	W0970520031	G 1/8	7.5 ±0.5	16.8 - 20	14
Nickel-plated brass	W0970520032	G 1/4	10 ±0.5	21.5 - 29	17
Features:					
Pmax: 12 bar					
Temp.: -10°C - +80°C					

FLOW CHARTS

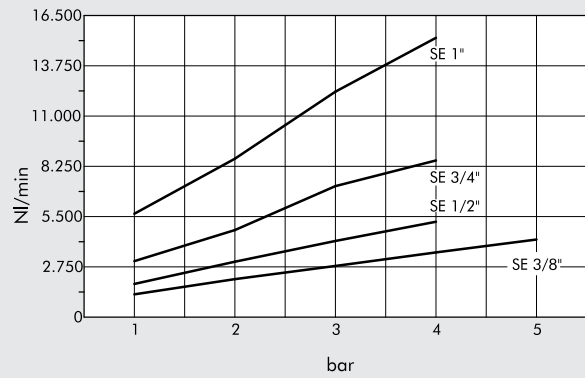
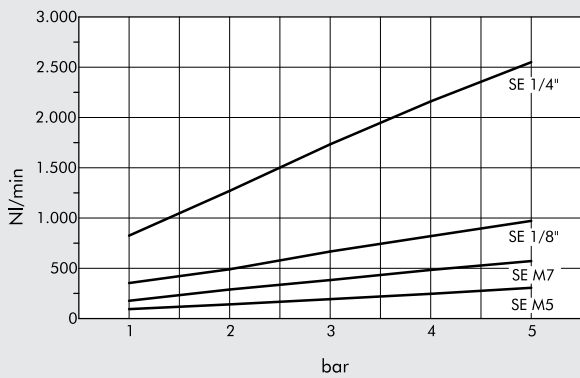
SILENCER MW SC



SILENCER MW SCQ

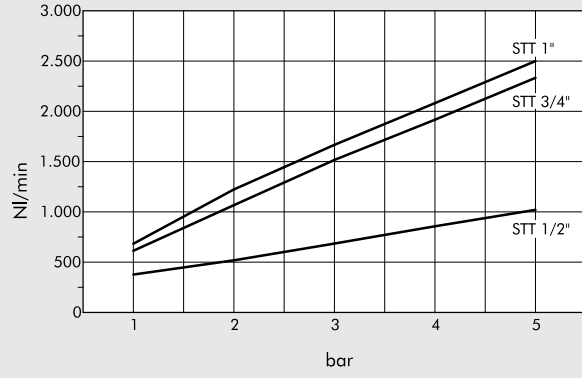
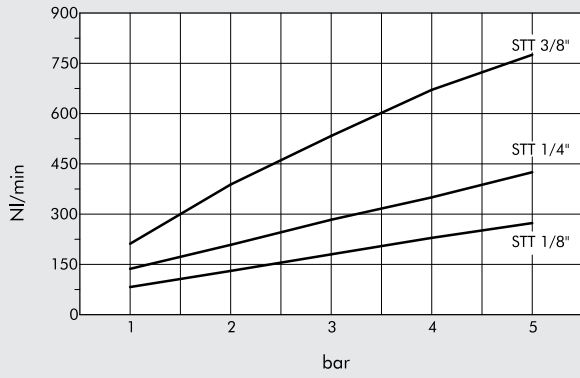


SILENCER MW SE

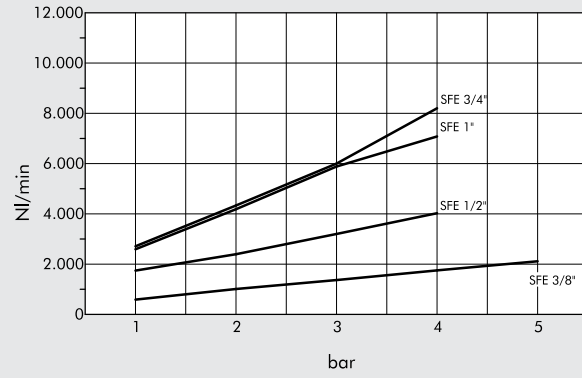
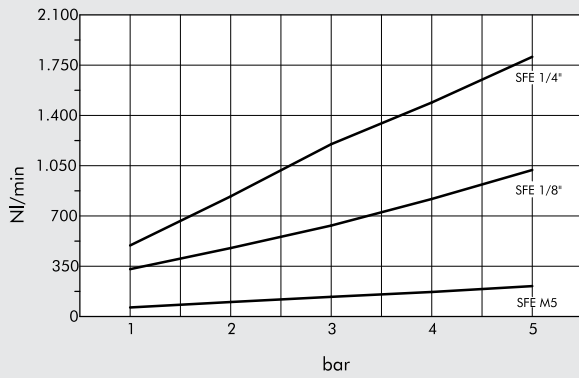


FLOW CHARTS

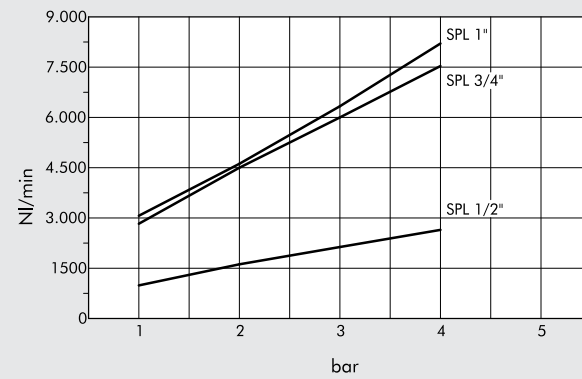
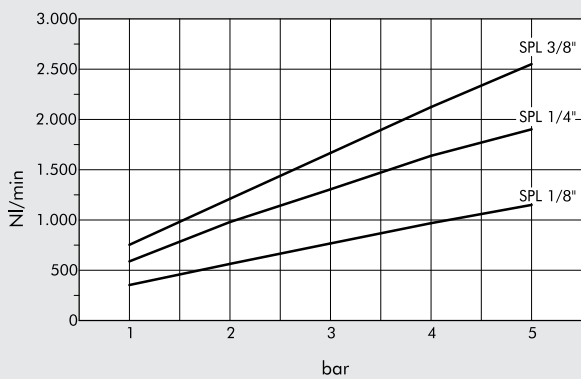
SILENCER MW STT



SILENCER MW SFE

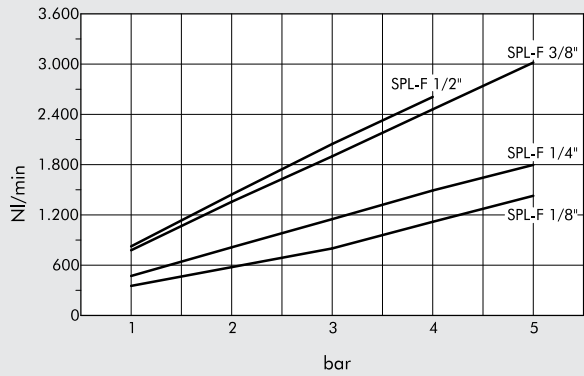


SILENCER MW SPL

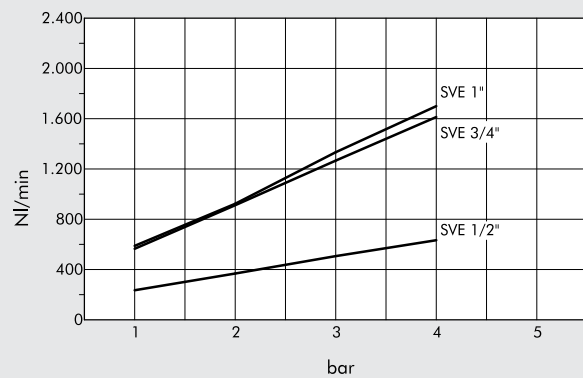
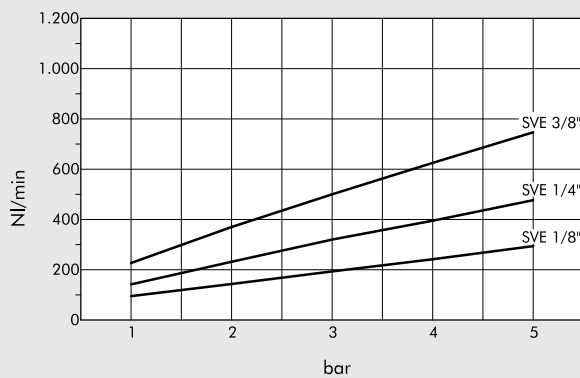


FLOW CHARTS

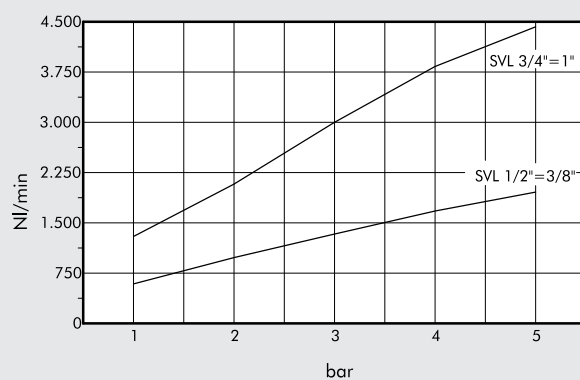
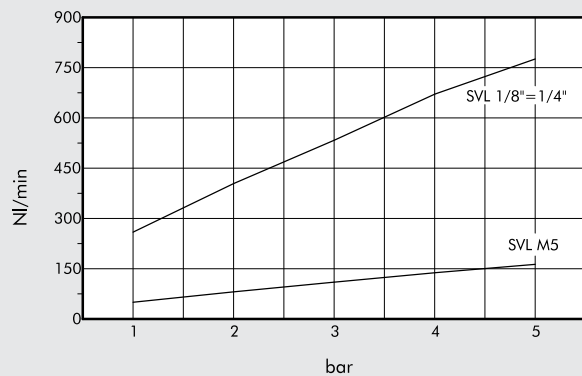
SILENCER MW SPL-F



SILENCER MW SVE



SILENCER MW SVL



NOISE ABATEMENT

Reduction of the noise that you obtain mounting a silencer on a compressed air exhaust, measured by feeding at 5 bar, at a distance of 1 m with 45° angle to the axis of the silencer (for SFE model at 90° in order to avoid the direct jet).

Middle values in the sizes.

MW SC	- 35 Db
MW SCQ	- 35 Db
MW SE	- 28 Db
MW STT	- 32 Db
MW SFE	- 30 Db
MW SPL	- 30 Db
MW SPL-F	- 35 Db
MW SVE	- 25 Db
MW SVL	- 25 Db

NOTES

Lined area for notes.



● PNEUMO-POWER

PAGE 5-102

Supplies 24V electric power via an M8 connector. Compressed air to power the generator can be supplied merely by connecting a pipe to the 1/8" threaded port. To interrupt energy production, all you have to do is to switch off the compressed air supply by means of a cock or solenoid valve. Voltage remains constant irrespective of changes in input pressure or the load applied (within the limits specified in the catalogue). An easy-to-read light display shows the status of the appliance at all times.



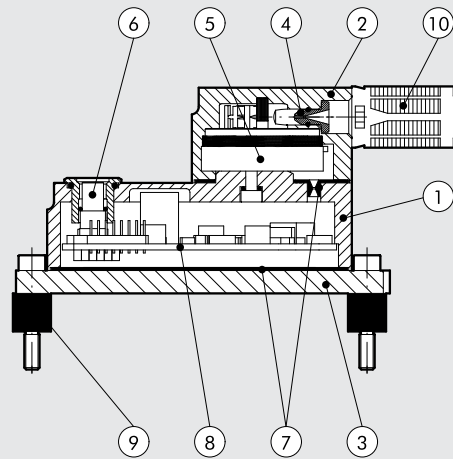
TECHNICAL DATA		50-1	50-2	50-3
Maximum power at 7 bar	W	3	7.5	12
Nominal voltage supplied		24 VDC		
Voltage tolerance		±3%		
Ripple and Noise		Including line regulation, load regulation and factory setup mMax 250 mV p-p o 79 mV rms		
Rise time at 7 bar at max. load	sec	2.5	1.5	1
Hold time at 7 bar at 50% of load	sec	1.3	0.9	0.8
Electrical connector		M8 - 3 poles		
Overload protection e cortocircuito		"Hiccup mode" with automatic recovery upon cessation of overload		
Overvoltage protection		Intervention if output voltage > 120% than nominal value		
Electromagnetic compatibility		In compliance with the following standards: EN 61000-2: Part 6-2: Generic standards - Immunity for industrial environments EN 61000-2: Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments		
Life at 6.3 bar	h	20.000		
Signals		LED diagnostics. Visual signals are flanked by a diagnostic pin on the M8 connector, which closet a GND contact when the voltage is 24 VDC ±3%		
Index of protection for electronic devices		IP 65		
Input fluid		Filter unlubricated air		
Minimum input pressure	bar	4	3	3
Maximum input pressure	bar	7	7	7
Max air consumption at 7 bar (Leq)	Nl/min	32	50	75
Air ports		Input: G1/8" Exhaust: G1/8"		
Temperature range	°C	0 - 50		
Max noise level at 7 bar		75 dB		
Casing material		Painted aluminium		
Assembly position		Any		
Fixing		Using 3 M4x10 screws		
Weight	gr	The device can be stabilised using rubber vibration dampers forniti in dotazione 330		

LED DIAGNOSTICS OVERVIEW

LED off or red LED flashing	Temporarily on start-up: the output voltage has not yet reached 24V If this condition persists, the applied load is probably excessive with respect to the input pressure.
Green LED fixed	Normal operation: the output voltage has reached 24V Optimal use of the compressed air supply.
Green LED flashing	Normal operation: the output voltage has reached 24V but the generator is used below capacity (can supply more power at the same compressed air supply)
Red and Green LED flashing	Charge short-circuited: output voltage is automatically cut off. It will return within the tolerance range upon elimination of overload.
Red LED fixed	The maximum supply pressure has been exceeded and the device risks getting damaged.

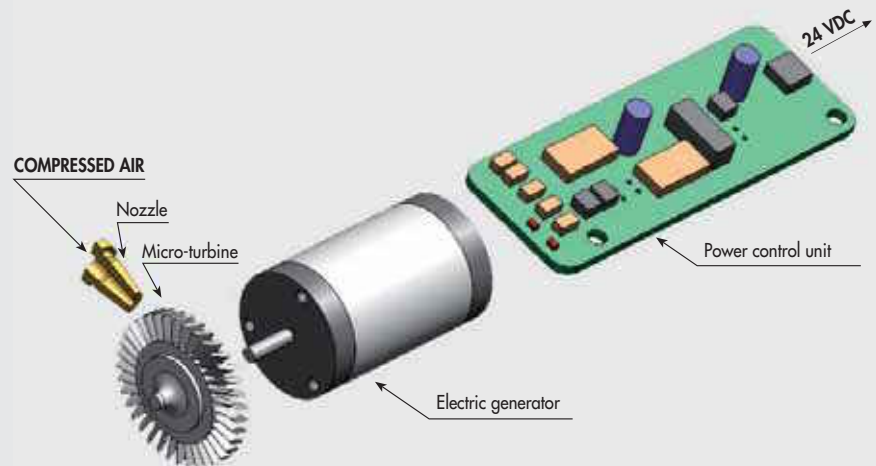
COMPONENTS

- ① Aluminium body, treated and painted
- ② Aluminium body, treated and painted
- ③ Aluminium base, treated and painted
- ④ Brass nozzle
- ⑤ Turbine and electrical generator unit
- ⑥ M8 3-pin connector
- ⑦ NBR gaskets
- ⑧ Electronic board
- ⑨ Vibration dampers
- ⑩ Silencer



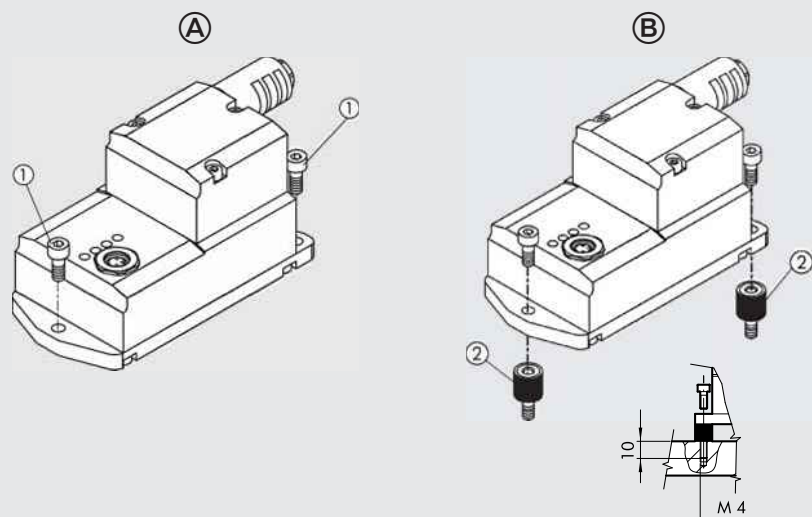
FUNCTION DIAGRAM

The compressed air is supplied via a nozzle that converts pressure energy into kinetic energy. The supersonic jet of air strikes the blades of a micro-turbine, which is integral with an electrical generator. An electronic power management unit ensures constant voltage output at varying input pressures and applied electrical loads. The electrical power thus generated can supply any type of utility.

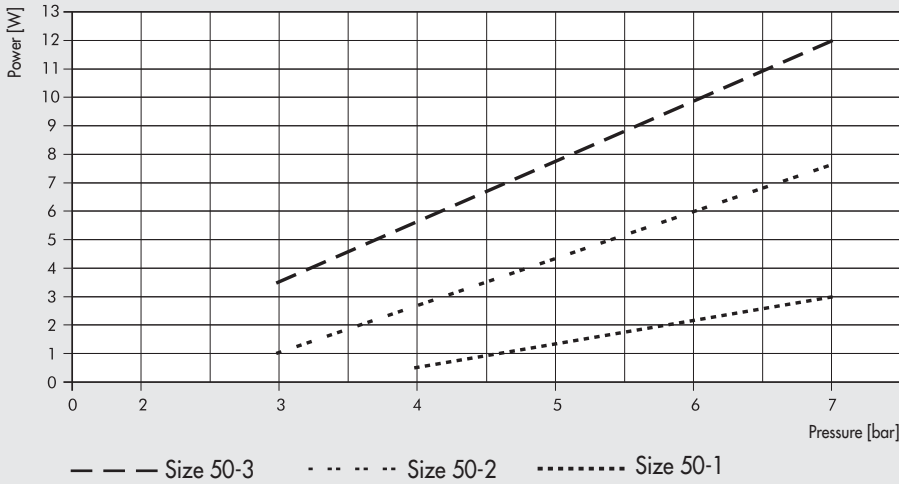


FIXING

The generator can be fixed on a flat surface using the 3 M4x10 screws ① (fig. A), and the 3 vibration dampers ② supplied with the device (fig. B).

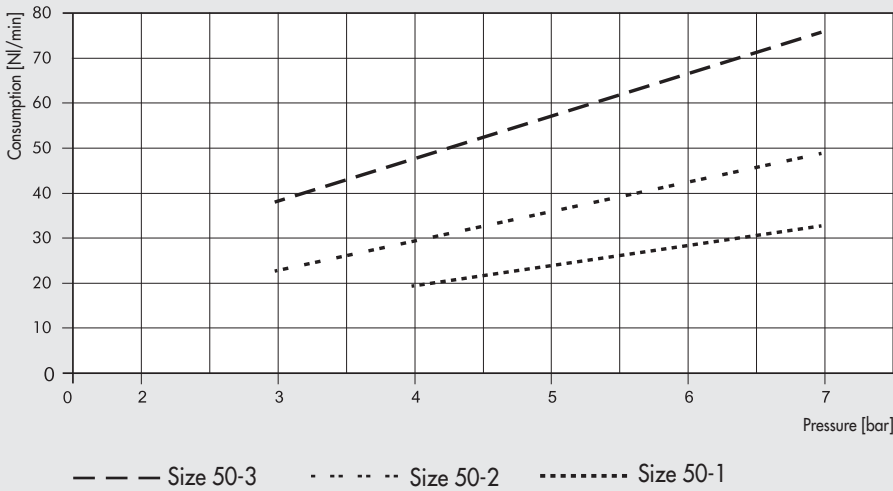


PRESSURE / AVAILABLE POWER

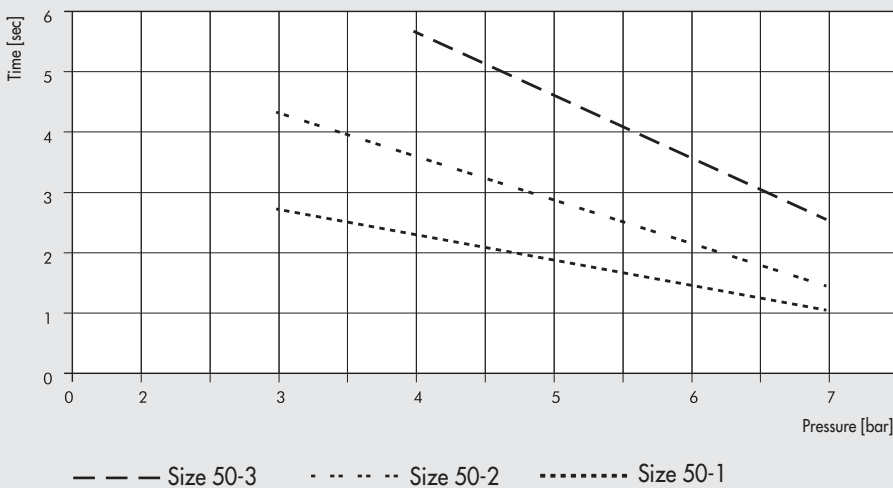


Important: if the input pressure is not sufficient to generate the power required by the electric load, the generator keeps switching on and off (intermittently). You only need to increase the air pressure (as shown in the chart) to get the required power.

PRESSURE / AIR CONSUMPTION

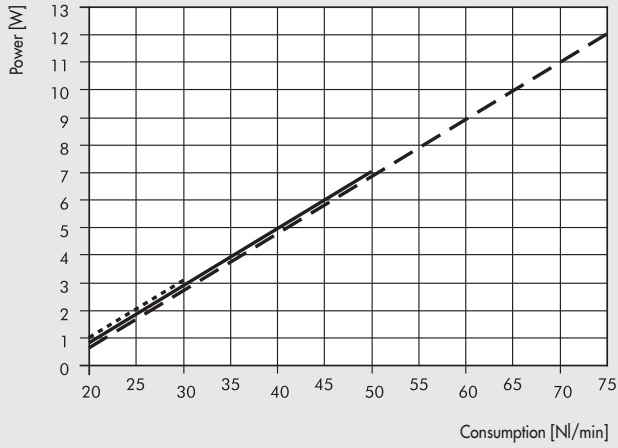


PRESSURE AND ACTUATION TIME WITH ELECTRICAL LOAD



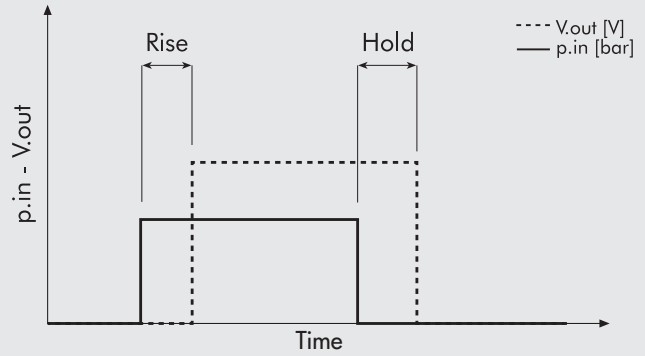
The above graph shows, for a set input pressure, the maximum time required to reach the rated output voltage (with maximum electrical load applicable for this pressure) as the size of the device changes. For example, with a size 50-2 device having an input pressure of 5.2 bar, a 24VDC output voltage will be available about two seconds after start-up.

AVAILABLE AIR / POWER CONSUMPTION



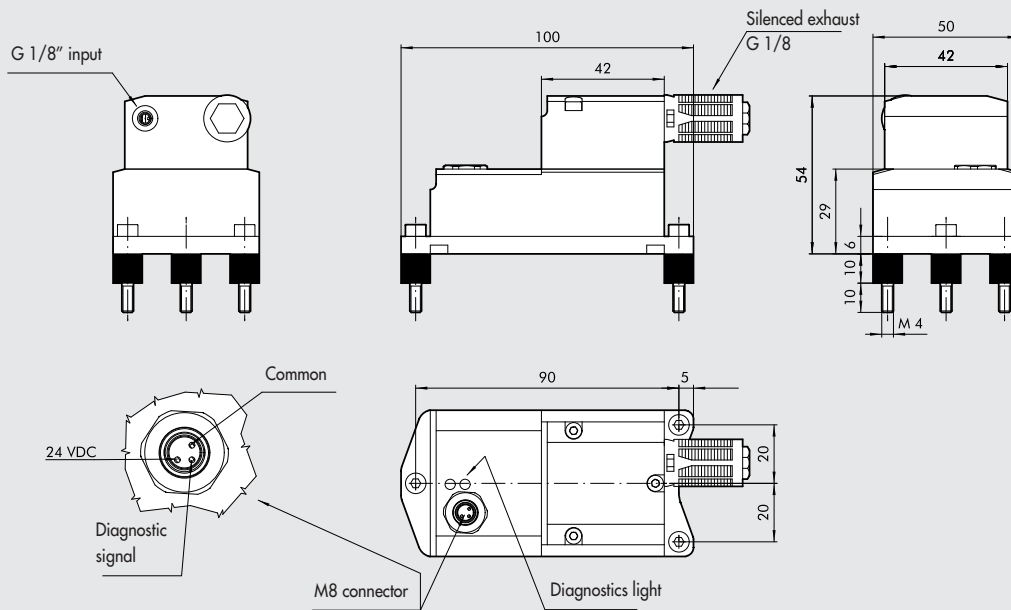
--- Size 50-3 ····· Size 50-2 - - - - - Size 50-1

RISE TIME AND HOLD TIME GRAPH



Rise time: the delay from activation of the compressed air supply to 24V power supply to the M8 connector.
Hold time: the time for which 24V is maintained after the compressed air supply has been switched off.

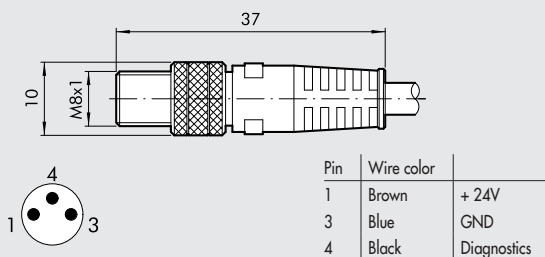
DIMENSIONS



Code	Description
0251530000	PNEUMO POWER 50-1 3 W 24 VDC
0251550000	PNEUMO POWER 50-2 7.5 W 24 VDC
0251570000	PNEUMO POWER 50-3 12 W 24 VDC

ACCESSORIES

M8 CONNECTOR WITH CABLE



Code	Description
0240009053	M8 male 3-pin connector with 2.5 metres of cable

DOCUMENTATION

● TECHNICAL DOCUMENTATION	PAGE 6-2
● ENVIRONMENT AND ENERGY SAVING	PAGE 6-14
● EUROPEAN DIRECTIVE 94/9/EC (ATEX)	PAGE 6-22
● ALPHANUMERIC INDEX	PAGE 6-26

TECHNICAL DOCUMENTATION

PRINCIPLES OF PNEUMATICS

PRESSURE: The ratio between a force and the surface on which it acts.

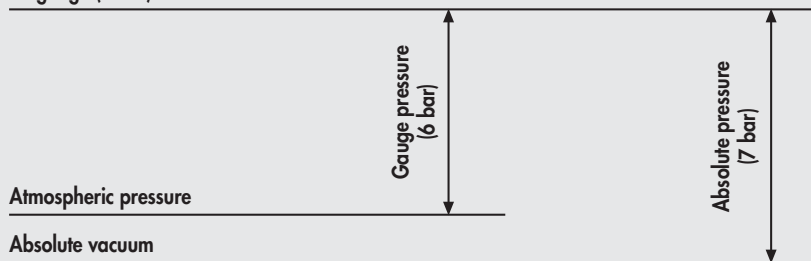
$$P = \frac{F \text{ (N)}}{S \text{ (m}^2\text{)}} = Pa$$

ATMOSPHERIC PRESSURE: Equivalent to the pressure exerted on a surface at sea level at 20°C and with 65% humidity: 10.33 m H₂O; 760 mm Hg; 1.013 x 10⁵ Pa.

ABSOLUTE PRESSURE: The pressure above the absolute zero value - pressure 0 = absolute vacuum.

GAUGE PRESSURE: The pressure referring to ambient atmospheric pressure: it is normally indicated by the pressure gauges used in pneumatic circuits.

Pressure read on gauge (6 bar)



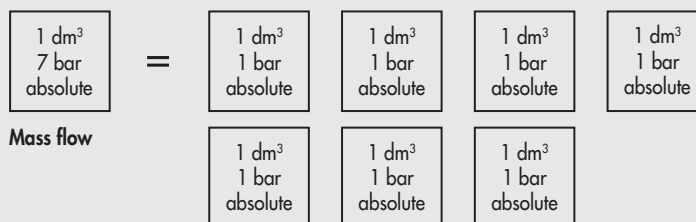
$$\text{Gauge pressure} = (\text{absolute } P) - (\text{atmospheric } P)$$

UPSTREAM PRESSURE: Pressure of the compressed air at the pneumatic component inlet.

DOWNSTREAM PRESSURE: Pressure of the compressed air at the pneumatic component outlet.

ΔP PRESSURE DROP: Difference between upstream and downstream pressure.

FLOW RATE: The volume of air passing through a given section in a unit of time. In pneumatics, the volume unit of measurement is NI (Normal litre). In practice it represents the volumetric capacity of the air referring to ambient atmospheric pressure. E.g. in a conduit of a given section, there is a mass flow of 1 litre of air (1 dm³) at 7 bar absolute pressure. This value expressed as volume of air corresponds to 7 litres of air (7 dm³) at the ambient atmospheric pressure (1 bar).

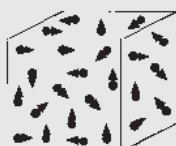


Mass flow

Volumetric flow rate (referring to absolute pressure)

- With the same pressure, the flow rate is directly proportional to the port cross section.
- With the same cross section, the pressure is directly proportional to the flow rate.
- Without a ΔP (difference between upstream and downstream pressure), there can be no flow rate.

PASCAL'S LAW: A confined fluid transmits externally applied pressure uniformly in all directions.



Density of air, measured to 20°C to the atmospheric pressure: 1.275 $\frac{\text{kg}}{\text{m}^3}$

CALCULATING THE FLOW RATE OF A VALVE USING FLOW COEFFICIENT k_v

Coefficient k_v gives approximate values when used for compressed air.
The flow rate Q_N at a normal volume through a valve is:

$$\text{Subsonic flow: } P_2 > \frac{P_1}{2}$$

$$\text{Supersonic flow: } P_2 < \frac{P_1}{2}$$

$$Q_N = 28,6 \cdot k_v \cdot \sqrt{P_2 \cdot \Delta P} \cdot \sqrt{\frac{293}{273 + t}}$$

$$Q_N^* = 14,3 \cdot k_v \cdot P_1 \cdot \sqrt{\frac{293}{273 + t}}$$

where

Q_N = flow rate at a normal volume [Nl/min]

Q_N^* = critical flow rate at a normal volume [Nl/min]

k_v = hydraulic coefficient in $\frac{l}{min} \left(\frac{kg}{dm^3 \cdot bar} \right)^{1/2}$

P_1 = absolute upstream pressure [bar]

P_2 = absolute downstream pressure [bar]

ΔP = difference in pressure $P_1 - P_2$ [bar]

t = input air temperature [°C]

CALCULATING THE FLOW RATE OF A VALVE USING FLOW COEFFICIENTS C AND B

The flow rate Q_N at a normal volume through a valve is:

$$\text{Subsonic flow: } P_2 > b \cdot P_1$$

$$\text{Supersonic flow: } P_2 < b \cdot P_1$$

$$Q_N = C \cdot P_1 \cdot \sqrt{1 - \left(\frac{r-b}{1-b} \right)^2} \cdot \sqrt{\frac{293}{273 + t}}$$

$$Q_N^* = C \cdot P_1 \cdot \sqrt{\frac{293}{273 + t}}$$

where

Q_N = flow rate at a normal volume [Nl/min]

Q_N^* = critical flow rate at a normal volume [Nl/min]

C = conductance in [Nl/min · bar]

P_1 = absolute upstream pressure [bar]

P_2 = absolute downstream pressure [bar]

r = upstream pressure : downstream pressure ratio P_2 / P_1

b = critical pressure ratio $b = P_2^* / P_1$

t = input air temperature [°C]

CALCULATING THE FLOW RATE OF A VALVE USING FLOW COEFFICIENTS C_v

The flow rate Q_N at a normal volume through a valve is:

$$\text{Subsonic flow: } P_2 > 0,528 \cdot P_1$$

$$\text{Supersonic flow: } P_2 < 0,528 \cdot P_1$$

$$Q_N = 400 \cdot C_v \cdot \sqrt{P_2 \Delta P} \cdot \sqrt{\frac{273}{273 + t}}$$

$$Q_N^* = 200 \cdot C_v \cdot P_1 \cdot \sqrt{\frac{273}{273 + t}}$$

where

Q_N = flow rate at a normal volume [Nl/min]

Q_N^* = critical flow rate at a normal volume [Nl/min]

C_v = coefficient of flow [US · GPM / p.s.i.]

P_1 = absolute upstream pressure [bar]

P_2 = absolute downstream pressure [bar]

t = input air temperature [°C]

CALCULATING THE NOMINAL FLOW RATE

The nominal flow rate Q_{Nn} of a valve, i.e. the flow at normal volume passing through a valve with $(P_1 = 6 \text{ [bar]} (P_1 = 7 \text{ [bar]} \text{ absolute}))$ and $\Delta P = 1 \text{ [bar]}$, can be obtained from the previous formula as follows:

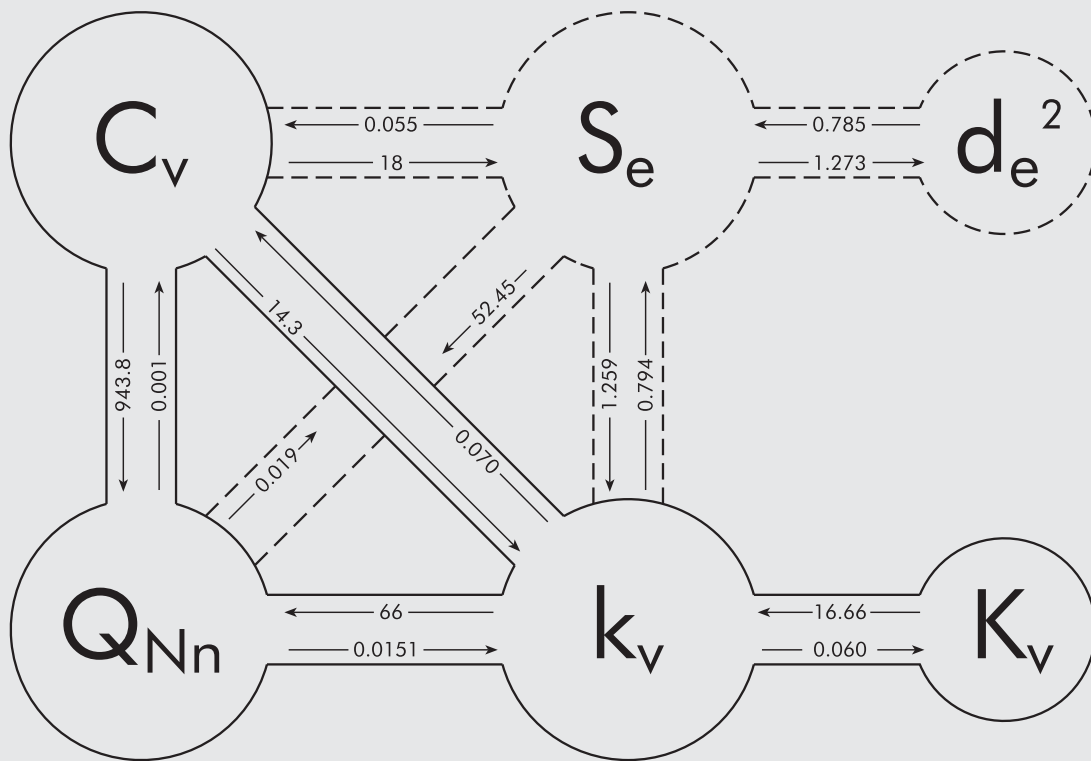
$$Q_{Nn} = 66 \cdot k_v$$

$$Q_{Nn} = 943,8 \cdot C_v$$

$$Q_{Nn} = 7 \cdot C \cdot \sqrt{1 - \left(\frac{0,857 - b}{1 - b}\right)^2}$$

Equalising the first two formulae gives: $k_v = 14,3 \cdot C_v$

- REACTIONS BETWEEN $Q_{Nn} - C_v - k_v - K_v - S_e - d_e^2$



Q_{Nn} = flow rate in [Nl/min] with $p_1 = 6 \text{ [bar]} (P_1 = 7 \text{ [bar]} \text{ absolute})$ and $\Delta P = 1 \text{ [bar]}$

k_v hydraulic coefficient in $\frac{l}{\text{min}} \left(\frac{\text{kg}}{\text{dm}^3 \cdot \text{bar}} \right)^{1/2}$

K_v hydraulic coefficient in $\frac{\text{m}^3}{\text{min}} \left(\frac{\text{kg}}{\text{dm}^3 \cdot \text{bar}} \right)^{1/2}$

C_v coefficient of flow [US · GPM / p.s.i.]

S_e equivalent cross section [mm^2]

$d_e^2 = S_e \cdot \frac{4}{\pi}$ through diameter² in [mm^2] obtained from the equivalent cross section

CONVERSION TABLES

TABLE 1 - CONVERSION BETWEEN SYSTEMS OF MEASUREMENT

	Technical system and CGS system	→ Multiply by	International system	← Multiply by	British system
Length	m	1	m	0.0254	in (inch)
			m	0.3048	ft (foot)
Time	s	1	s	1	s
Area	m ²	1	m ²	0.000645	in ²
			m ²	0.0929	ft ²
Volume	m ³	1	m ³	16.39·10 ⁻⁴	in ³
			m ³	0.02832	ft ³
Speed	m·s ⁻¹	1	m·s ⁻¹	0.3048	ft·s ⁻¹
Acceleration	m·s ⁻²	1	m·s ⁻²	0.3048	ft·s ⁻²
Mass	kg·s ⁻² ·m ⁻¹	9.81	kg	0.4536	lb (pound)
			kg	14.594	slug = lb·f·s ⁻² ·ft ⁻¹
Force	kg o kp	9.81	N	4.4483	lb f (pound)
	kg	0.981	da N = 10 N		
Torque	kg·m	9.81	N·m	1.356	lb f·ft
Density	kg·s ⁻² ·m ⁻¹	9.81	kg·m ⁻³	16.02	lb·ft ⁻³
Specific weight	kg·m ⁻¹	9.81	N·m ⁻³	157.16	lb·f·ft ⁻³
Work, energy	kg·m	9.81	J	1.356	lb·f·ft
			KWh = 3,6·10 ⁶ J		
Heat	Cal	4186	J	1055.1	BTU
Power	kg·m·s ⁻¹	9.81	W	1.3558	lb·f·ft·s ⁻¹
	CV	735	W	745.7	HP
Pressure	kg·m ⁻²	9.81	Pa	6.8948·10	p.s.i.=lb·f·in ⁻²
	kg·cm ⁻²	9.81·10	Pa		
	kg·cm ⁻²	0.981	bar = 10 ⁵ Pa		
Mass flow	kg·s·m ⁻¹	9.81	kg·s ⁻¹	0.4536	lb·s ⁻²
Volume flow	m ³ ·s ⁻¹	1	m ³ ·s ⁻¹	0.02832	ft·s ⁻¹
	NI/min ⁻¹	0.0000167	Nm ³ ·S ⁻¹	0.000472	scfm
Dynamic viscosity	kg·s·m ⁻²	9.81	Pa·s	6.896	lb·f·s·in ⁻²
	Po (poise-system CGS)	0.1	Pa·s		
Kinematic viscosity	m ² ·s ⁻²	1	m ² ·s ⁻²	0.0929	ft ² ·s ⁻¹
	St (stokes-system CGS)	10 ⁻⁴	m ² ·s ⁻²		
	Technical system and CGS system	← Divide by	International system	→ Divide by	British system

TABLE 2 - TEMPERATURE CONVERSION

$$^{\circ}\text{F} = [1.8 \cdot ^{\circ}\text{C}] + 32$$

$$^{\circ}\text{C} = [^{\circ}\text{F} - 32] \cdot 0.55$$

$$^{\circ}\text{K} = ^{\circ}\text{C} + 273$$

$^{\circ}\text{C}$ = degrees Celsius

$^{\circ}\text{K}$ = degrees Kelvin

$^{\circ}\text{F}$ = degrees Fahrenheit

TABLE 3 - MULTIPLES AND SUB-MULTIPLES

Name	Symbol	Value
tera	T	10 ¹²
giga	G	10 ⁹
mega	M	10 ⁶
kilo	k	10 ³
etto	h	10 ²
deca	da	10
deci	d	10 ⁻¹
centi	c	10 ⁻²
milli	m	10 ⁻³
micro	μ	10 ⁻⁶
nano	n	10 ⁻⁹
pico	p	10 ⁻¹²

TABLE 4 - PRESSURE UNIT CONVERSION FACTORS

To obtain the pressure for the following units, multiply the number given for the source units by the coefficient shown.

Source units	Pa	kPa	MPa	bar	mbar	kp/cm ²	cm H ₂ O	mm H ₂ O	mm Hg	p.s.i.
Pa	1	10 ⁻³	10 ⁻⁵	10 ⁻⁵	10 ⁻²	10.1972·10 ⁻⁶	10.1972·10 ⁻³	101.972·10 ⁻³	7.50062·10 ⁻³	0.145038·10 ⁻³
kPa	10 ³	1	10 ⁻³	10 ⁻²	10	10.1972·10 ⁻³	10.1972	101.972	7.50062	0.145038
MPa	10 ⁶	10 ³	1	10	10 ⁴	10.1972	10.1972·10 ³	101.972·10 ³	7.50062·10 ³	0.145038·10 ³
bar	10 ⁵	10 ²	10 ⁻¹	1	10 ³	1.01972	1.01972·10 ³	10.1972·10 ³	750.062	14.5038
mbar	100	0.1	10 ⁻⁴	10 ⁻³	1	1.01972·10 ⁻³	1.01972	10.1972	0.750062	0.145038·10 ⁻³
kp/cm ²	98066.5	98.0665	98.0665·10 ⁻³	0.989665	980.665	1	1000	10.000	735.559	14.2233
cm H ₂ O	98.0665	98.0665·10 ⁻³	98.0665·10 ⁻⁶	0.98665·10 ⁻³	0.98665	10 ⁻³	1	10	0.735559	14.2233·10 ⁻³
mm H ₂ O	9.80665	9.80665·10 ⁻³	9.80665·10 ⁻⁶	9.80665·10 ⁻⁶	9.80665·10 ⁻³	10 ⁻⁴	0.1	1	73.5559·10 ⁻³	14.2233·10 ⁻³
mm Hg	133.322	133.322·10 ⁻³	133.322·10 ⁻³	1.33322·10 ⁻³	1.33322	1.35951·10 ⁻³	1.35951	13.5951	1	19.3368·10 ⁻³
p.s.i.	6894.76	6.89476	6.89476·10 ⁻³	68.9476·10 ⁻³	68.9476	70.307·10 ⁻³	70.307	703.07	51.7149	1

TABLE 5 - AIR CONSTANTS

Entity	Symbol	Value	
Dynamic viscosity	μ	$17.89 \cdot 10^{-6}$	Pa s
Kinematic viscosity	γ	$14.61 \cdot 10^{-6}$	$m^2 s^{-1}$
Density	ρ	1.225	$kg m^{-3}$
Specific heat at constant pressure	C_p	1.004	$KJ kg^{-1} K^{-1}$
Speed of sound	a	340.29	$m s^{-1}$
Gas constant	R	287.1	$J kg^{-1} K^{-1}$

TABLE 6 - CONTENT OF WATER VAPOUR IN SATURATED COMPRESSED AIR

Grams of water vapour per cubic metre (g/m^3) of air at ambient atmospheric pressure 1.013 bar (0 bar gauge pressure), saturated and compressed at the given pressures and temperatures.

Temperature °C	Pressure - bar												
	0	0,4	0,63	1	1,6	2,5	4	6,3	8	10	12,5	16	20
0	4.82	3.45	2.97	2.42	1.87	1.39	0.97	0.67	0.54	0.44	0.36	0.29	0.23
5	6.88	4.93	4.24	3.46	2.68	1.99	1.39	0.95	0.77	0.63	0.52	0.41	0.33
10	9.41	6.74	5.80	4.73	3.66	2.72	1.90	1.30	1.06	0.87	0.70	0.56	0.45
15	12.7	9.08	7.83	6.39	4.94	3.67	2.56	1.76	1.43	1.17	0.95	0.76	0.61
20	17.4	12.5	10.7	8.75	6.77	5.02	3.51	2.41	1.95	1.60	1.30	1.04	0.84
25	23.6	16.9	14.6	11.9	9.18	6.82	4.77	3.27	2.65	2.17	1.77	1.40	1.14
30	30.5	21.8	18.8	15.3	11.9	8.81	6.16	4.22	3.43	2.81	2.29	1.81	1.47
35	39	27.9	24	19.6	15.2	11.3	7.87	5.40	4.38	3.59	2.92	2.32	1.88
40	49.6	35.5	30.6	24.9	19.3	14.3	10	6.87	5.57	4.55	3.72	2.95	2.39
45	63.5	45.45	39.2	31.9	24.7	18.3	12.8	8.79	7.13	5.84	4.76	3.77	3.06
50	81	58	49.9	40.7	31.5	23.4	16.4	11.2	9.10	7.45	6.07	4.82	3.90

TABLE 7 - VOLUME FLOW UNIT CONVERSION FACTORS

To obtain volume flow for the following units, multiply the number given for the source units by the coefficient shown.

Source units	m^3/s	l/s	cm^3/s	m^3/h	m^3/min	l/h	l/min	ft^3/min (scfm)	gallone/min UK	gallone/min USA
m^3/s	1	10^3	10^6	3600	60	$3.6 \cdot 10^3$	$60 \cdot 10^3$	$2.1188 \cdot 10^3$	$13.198 \cdot 10^3$	$15.850 \cdot 10^3$
l/s	10^{-3}	1	10^3	3.6	$60 \cdot 10^{-3}$	$3.6 \cdot 10^3$	60	2.1188	13.198	15.850
cm^3/s	10^{-6}	10^{-3}	1	$3600 \cdot 10^{-6}$	$60 \cdot 10^{-6}$	3.6	$60 \cdot 10^{-3}$	$2.1188 \cdot 10^{-3}$	$13.198 \cdot 10^{-3}$	$15.850 \cdot 10^{-3}$
m^3/h	$0.277778 \cdot 10^{-3}$	0.277778	$0.277778 \cdot 10^3$	1	$16.667 \cdot 10^{-3}$	10^3	16.667	0.58856	3.6661	4.4028
m^3/min	$16.667 \cdot 10^{-3}$	16.667	$16.667 \cdot 10^3$	60	1	$6 \cdot 10^4$	10^3	35.313	219.97	$264.17 \cdot 10^{-3}$
l/h	$0.27778 \cdot 10^{-6}$	$0.27778 \cdot 10^{-3}$	0.27778	10^{-3}	$16.667 \cdot 10^{-6}$	1	$16.667 \cdot 10^{-3}$	$0.58856 \cdot 10^{-3}$	$3.6661 \cdot 10^{-3}$	$4.4028 \cdot 10^{-3}$
l/min	$16.667 \cdot 10^{-6}$	$16.667 \cdot 10^{-3}$	$16.667 \cdot 10^{-6}$	$60 \cdot 10^{-3}$	10^{-3}	60^{-3}	1	$35.313 \cdot 10^{-3}$	$219.97 \cdot 10^{-3}$	$264.17 \cdot 10^{-3}$
ft^3/min	$0.47195 \cdot 10^{-3}$	0.47195	$0.47195 \cdot 10^3$	1.6990	$28.317 \cdot 10^{-3}$	$1.6990 \cdot 10^3$	28.317	1	6.2288	7.4804
UK gallon/min	$75.768 \cdot 10^{-6}$	$75.768 \cdot 10^{-3}$	75.768	0.27276	$4.5461 \cdot 10^{-3}$	272.76	4.5461	0.16054	1	1.2009
US gallon/min	$63.090 \cdot 10^{-6}$	$63.090 \cdot 10^{-3}$	63.090	0.22712	$3.7854 \cdot 10^{-3}$	227.12	3.7854	0.13368	0.83266	1

TABLE 8 - RECOMMENDED FLOW RATE

Maximum recommended flow rate in NI/min for pneumatic circuit piping. Flow rate values are calculated as follows:

- pipes $\varnothing 2$ to $\varnothing 12$ with a pressure drop equal to 0.3% of operating pressure per metre of pipe.
- pipes $\varnothing 15$ to $\varnothing 40$ with a pressure drop equal to 0.15% of the operating pressure per metre of pipe.

Pressure bar	Inside diameter in mm - Nominal diameter in gas inches										
	$\varnothing 2$	$\varnothing 4$	1/8" $\varnothing 6$	1/4" $\varnothing 8$	3/8" $\varnothing 10$	$\varnothing 12$	1/2" $\varnothing 15$	3/4" $\varnothing 20$	1" $\varnothing 25$	1 1/4" $\varnothing 32$	1 1/2" $\varnothing 40$
2	3,5	19	53	110	190	300	370	750	1350	2500	4300
4	6,2	35	97	200	350	550	700	1400	2400	4500	7800
6	9	50	140	290	500	800	1000	2000	3500	6500	11500
8	11,8	66	185	380	660	1050	1300	2600	4500	8500	15000
10	14,5	82	230	470	820	1300	1600	3250	5700	10500	18500

TABLE 9 - INDICATIVE AIR CONSUMPTION FOR DIFFERENT TYPES OF EQUIPMENT

Type of equipment	Consumption at full load NI/min.	Type of equipment	Consumption at full load NI/min.
6 mm Ø drill	300	Bench tamper	350
12 mm Ø drill	500	8 kg tamper	700
20 mm Ø drill	1150	10 mm Ø riveting machine	450
45 mm Ø drill	1650	20 mm Ø riveting machine	1000
M6 screwdriver or bolt screwer	300	4 kg chisel	380
M10 screwdriver or bolt screwer	400	6 kg chisel	500
M16 impulse screwer	1150	Small paint-spray gun	160
M25 impulse screwer	1650	Industrial paint-spray gun	500
1" Ø wheel grinder	350	1 mm Ø cleaning bellows	65
6" Ø disk grinder	1500	2 mm Ø cleaning bellows	250
9" Ø disk grinder	2100	5 mm Ø nozzle sandblasting machine	1600
Polishing machine	1200	8 mm Ø nozzle sandblasting machine	4200
1000 kg hoist	2150	Plaster sprayer	500
Spot welder	300	Heavy-duty concrete vibrator	2500
		35 kg concrete breaker	1650
		18 kg breaker	1850
		30 kg breaker	2850

DEGREE OF PROTECTION

NORMA EN 60529 E CEI 529

IP 6 5

DEGREE OF PROTECTION AGAINST THE PENETRATION OF LIQUIDS

DEGREE OF PROTECTION AGAINST THE PENETRATION OF FOREIGN BODIES COMING INTO CONTACT WITH LIVE PARTS.

1 st No.	DESCRIPTION	2 nd No.	DESCRIPTION
0	Not protected	0	Not protected
1	Protected against solid bodies greater than Ø 50 mm	1	Protected against water falling vertically (condensate)
2	Protected against solid bodies greater than Ø 12 mm	2	Protected against drops of water falling up to 15° off the vertical
3	Protected against solid bodies greater than Ø 2.5 mm	3	Protected against rain water up to 60° off the vertical
4	Protected against solid bodies greater than Ø 1 mm	4	Protected against sprays of water from any direction.
5	Protected against dust	5	Protected against jets of water fired from any direction
6	Totally protected against dust	6	Protected against sea waves or the like
		7	Protected against the effects of immersion

CHECK COMPATIBILITY

Pneumatic products include elastomer gaskets that are made of acryl-nitrile butadiene (NBR), polyurethane or fluorocarbon rubber (FKM/FPM).

It is important for them not to come into contact with incompatible substances, which could cause them to swell or crack and subsequently malfunction.

In particular, it is necessary to check compatibility of:

- the oil used in the air compressor
- any oil used in the lubricator
- the oil or cutting fluids used on the machine, which could get into the cylinders and from there the valves.

We have drawn up a compatibility table containing a list of chemicals and elastomers, and also Hostaform®, the technopolymer most commonly used in our products. Please refer to the English webpage www.metalwork.it/eng/materiali_compatibilita.html or the Italian webpage www.metalwork.it/ita/materiali_compatibilita.html.

The website www.parker.com/o-ring/fcg/fcg.asp of Parker Pradifa, one of our gasket suppliers, contains an interactive table defining incompatibility.

Below are some the oils that are definitely compatible with all the elastomers used with our products:

- UNI and ISO FD 22 lubricants (Energol HPL, Spinesso, Mobil DTE, Tellus Oil).
- low pressure compressor oil: SHELL CORENA OIL D 46
- high pressure compressor oil: SHELL RIMULA X OIL 40.

Please note that some ester-based synthetic oils used in compressors are extremely incompatible with NBR and polyurethane. ROTOROIL 8000 F2 is one of them.

Metal Work can provide you with further information or carry out research and tests if required.

AIR PURITY CLASS

The ISO 8573-1 standard establishes the level of air quality in terms of solid particles, humidity and oil concentration.

Example:

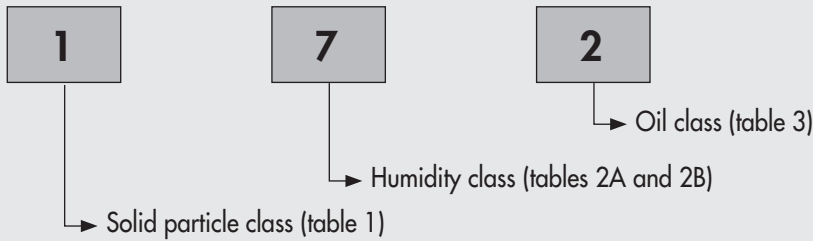


TABLE 1 - SOLID PARTICLE CLASSES

Class	Maximum number of particles for m ³				Particle size µm	Concentration mg/m ³
	Particle size, d µm					
	≤ 0.10	0.10 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0		
0	As specified by the equipment user or supplier and more stringent than class 1				Not applicable	Not applicable
1	Not specified	100	1	0		
2	Not specified	100000	1000	10		
3	Not specified	Not specified	10000	500		
4	Not specified	Not specified	Not specified	1000		
5	Not specified	Not specified	Not specified	20000		
6	Not applicable				≤ 5	≤ 5
7	Not applicable				≤ 40	≤ 10

TABLE 2A - HUMIDITY CLASSES

Class	Pressure dewpoint °C
0	As specified by the equipment user or supplier and more stringent than class 1
1	≤ -70
2	≤ -40
3	≤ -20
4	≤ +3
5	≤ +7
6	≤ +10

TABLE 2B - HUMIDITY CLASSES

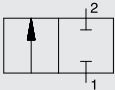

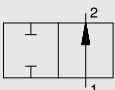

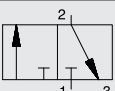

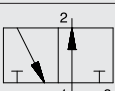

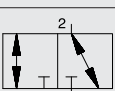

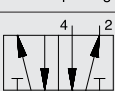







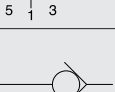

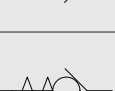

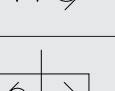



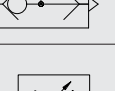

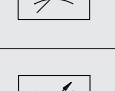

Class	Concentration of liquid water, C _w g/m ³
7	C _w ≤ 0.5
8	0.5 < C _w ≤ 5
9	5 < C _w ≤ 10

TABLE 3 - OIL CLASSES

Class	Oil concentration (aerosol, liquid, vapour) °C
0	As specified by the equipment user or supplier and more stringent than class 1
1	≤ 0.01
2	≤ 0.1
3	≤ 1
4	≤ 5

PNEUMATIC SYMBOL



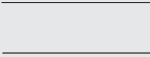

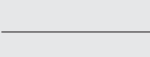
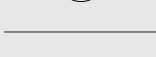
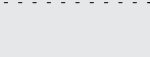

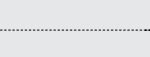

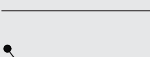

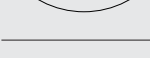













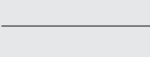

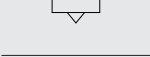
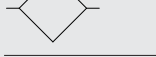
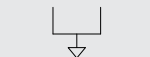


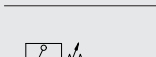
DISTRIBUTION AND REGULATION

	2-way/2 positions valve (2/2) normally closed		Sequence valve
	2-way/2 positions valve (2/2) normally open		Pressure reducer without blowoff valve
	3-way/2 positions valve (3/2) normally closed		Pressure reducer with blowoff relief valve
	3-way/2 positions valve (3/2) normally open		Pressure piloted reducer with blowoff relief valve
	3-way/2 positions valve (3/2) NC-NO		Shutoff valve
	5-way/2 positions valve (5/2)		Dual pressure valve (AND element)
	5-way/3 positions valve (5/3) pressurized centres		Progressive pneumatic starter (APR)
	5-way/3 positions valve (5/3) open centres		Progressive solenoid starter (APR)
	5-way/3 positions valve (5/3) closed centres		Progressive pneumatic starter (APR) (SK 100 only)
	Unidirectional valve		Progressive solenoid starter (APR) (SK 100 only)
	Check valve with spring		3-way shutoff valve (V3V) with lockable control
	Circuit selector valve (OR element)		3-way shutoff valve (V3V) with pneumatic control
	Quick-release valve		3-way shutoff valve (V3V) with solenoid control
	Flow regulator with variable choke		2/2 progressive pneumatic valve (VAP) (SK 100 only)
	Unidirectional flow regulator with variable throat		2/2 progressive solenoid valve (VAP) (SK 100 only)

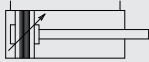
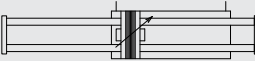
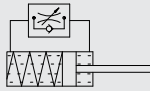
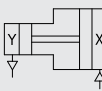
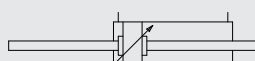
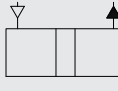

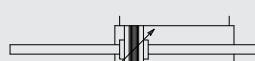

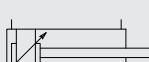

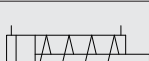
CONTROLS

	Manual control		Mechanical control with sensitive roller lever
	Manual pushbutton control		Mechanical control with unidirectional roller lever
	Manual lever control		Mechanical control with drawer
	Manual control with 2-position lever		Electrical control
	Manual control with 3-position lever		Solenoid control
	Manual pedal-operated control		Solenoid, pilot-assisted control
	Mechanical control with ferrule		Piezoelectric control
	Mechanical control with sensitive ferrule		Pneumatic control
	Mechanical control with spring		Mechanical stop
	Mechanical control with roller lever		Release device

TRANSMISSION AND PREPARATION

	Pneumatic pressure source		Quick-fit (de-coupling with closed terminal section)
	Operating line		1-way swivel coupling
	Pilot line		3-way swivel coupling
	Discharge line		Silencer
	Flexible line connection		Tank
	Electric cable		Filter
	Line connection (welding, screwing)		Condensate separator with manual discharge
	Line connection (welding, screwing)		Condensate separator with automatic discharge
	Crossing of unconnected lines		Filter with condensate separator with manual discharge
	Discharge point		Filter with condensate separator with automatic discharge
	Discharge hole without connection		Lubricator
	Discharge hole with connection		Pressure gauge
	Power pick-up point with closing cap		Pressure switch
	Power pick-up point with port		Optical tester
	Quick-fit coupling without unidirectional valve		FRL+pressure gauge maintenance unit
	Quick-fit coupling with unidirectional valve		FRL+pressure gauge simplified maintenance unit
	Quick-fit coupling (de-coupling with open terminal section)		FR+pressure gauge maintenance unit

TRANSFORMATION

	DE magnetic cylinder with adjustable bilateral cushioning		SE magnetic cylinder
	DE magnetic twin-rod cylinder with adjustable bilateral cushioning		Hydraulic brake with adjustment in one direction only
	DE magnetic twin-rod cylinder with adjustable bilateral cushioning		Hydraulic brake with adjustment in both directions
	DE magnetic twin-rod cylinder with adjustable bilateral cushioning-single through rod		Cushion
	DE magnetic cylinder with adjustable bilateral cushioning + DZB mechanical lock		Pressure multiplier for fluids with identical characteristics
	DE magnetic cylinder with adjustable bilateral cushioning + DZBA mechanical lock		Pressure multiplier for fluids with different characteristics
	DE cylinder with adjustable bilateral cushioning, through-rod		Pneumatic/hydraulic transducer
	DE through-rod cylinder		Constant volume compressor
	DE magnetic cylinder with adjustable bilateral cushioning, through-rod		Constant volume pneumatic motor, unidirectional flow
	DE magnetic cylinder, through-rod		Constant volume pneumatic motor, bidirectional flow
	DE cylinder		Variable volume pneumatic motor, unidirectional flow
	DE cylinder with cushioning		Variable volume pneumatic motor, bi-directional flow
	DE magnetic cylinder		Rotary pneumatic motor
	SE cylinder		Cylinder with adjustable single cushioning

NOTES

ENVIRONMENT AND ENERGY SAVING



Metal Work SpA has always placed great emphasis on environmental issues, and now – following creation of the Environmental Management System and receipt of UNI EN ISO 14001 certification in 2000 – we wish to make our commitment public.

Metal Work is fully committed to:

- A. complying with all the applicable laws and regulations
- B. continuously seeking to reduce emissions and waste
- C. continuously seeking to reduce the consumption of water, energy and raw materials
- D. adopting technological processes having the lowest environmental impact
- E. training all employees in order to encourage the adoption of measures to safeguard the environment.

Metal Work products are sold all over the world. Being pneumatic products, they intrinsically consume large amounts of energy. We are aware of this and we feel it our responsibility to provide our customers with information to help them reduce energy wastage.

At the end of their working life, our products have to be disposed of. Even at this final stage, it is important to note that most of their parts can be recycled, which is why we provide you with information to help you to dispose of them correctly.



MATERIALS USED IN METAL WORK PRODUCTS

Nearly all Metal Work **products** are designed so that at the end of their working life they can be taken apart to separate the constituents. Only certain small subassemblies are difficult to dismantle, so they have to be disposed of still assembled. The materials of which our products are made are listed in detail on the first page of the catalogue for each family, under the heading "Component Parts". There is a full list and a cutaway drawing of a typical product in each family. The choice of using selected materials and lubricants has contributed to position Metal Work products in the class of NON-HAZARDOUS SPECIAL WASTE at the end of their useful life, in accordance with Directive 91/689/CE. This condition only applies if the products have not been contaminated during operation by pollutants included in the list of hazardous substances.

Product **packaging** adopts the following criteria:

- Each product comes in a cardboard box. The cardboard is corrugated and made of recycled material. The printed words cover a small area to save as much ink as possible.
 - When cardboard boxes cannot be used as they do not provide enough protection or the right shape is unavailable, some products are protected by sheets of polyethylene bubble wrap.
 - Small products are contained in clear polyethylene bags.
 - Gaskets are contained in black polyethylene bags as they are sensitive to light.
 - Pneumatic cylinders are protected by polyethylene mesh.
 - The single products are then placed in larger boxes, which are also made of recycled corrugated cardboard and have a white paper film on the outside.
 - The boxes and loose products are held in position inside the larger box by means of crumbled sheets of paper which are fully recycled and can be reused.
- As a result of this policy, 95% of the packaging material is comprised of cardboard, and 80% of this is obtained from recycled paper.



Metal Work is a member of CONAI, the Italian Packaging Consortium, set up to promote the recovery and recycling of packaging material. It must be highlighted that Metal Work is required by law to pay CONAI an environmental contribution of €€ 30/tonne for paper and cardboard, and € 72.30/tonne for plastic packaging (2008 figures). Clearly, it is in the interest of all of us to reduce the weight of packaging, recycle it and prefer paper to plastic.



Below is a list of materials and general indications on how to dispose of them.

METAL

- Aluminium
- Cast aluminium alloy
- Cast zamak
- Steel
- Brass
- Sintered bronze

These materials can be taken to a recycling plant as scrap.

PLASTIC

- POM - Acetal Polyoxymethylene Copolymer: Hostaform[®] and others
- PA - Polyamide polymer/Nylon: Grilamid, Durethaned, Zytel and others
- ABS - Acrylonitrile butadiene styrene polymer: Novodur and others
- PET - Polyester resin: Rynite[®] and others
- PPS - Poly-Phenylene Sulphide: Fortron[®]
- PTFE - Polytetrafluoroethene

These materials can be taken to a recycling plant.

ELASTOMERS

- NBR
- Polyurethane
- FKM/FPM

Since they are only used in our products in small quantities, are greasy and, after long use, are also covered in metal filings, these materials are not taken to a recycling plant but are classified as **non-hazardous special waste**.

OTHERS

- Magnets (neodymium, plastroferrite, plasto-neodymium)
- PC boards
- Magnetic sensors
- Coils (PA+steel+copper)
- Power cables (PA or PU + copper)

These materials, which are generally present in our products in small quantities, are classified as **non-hazardous special waste** and are normally accepted as **urban waste**.

Large amount of power cables and coils can be **sold as scrap** to companies specialised in recycling power cables.

PACKAGING

- Cardboard
- Polyethylene bubble wrap – LDPE
- Polyethylene mesh – LDPE
- Clear or black polyethylene bags

These materials can be **fully recyclable** and can be **taken to disposal centres** for paper and plastic.

SYMBOLS LABELLING OF MATERIALS AND PACKAGING

Labelling to identify the packaging material is optional, and is a self-declared statement by the manufacturer. The normative reference for handling used packaging is Directive 94/62/CE as revised by Directive 2004/12/CE.

Other interesting international standards are:

- EN ISO 1043:2002: Plastics – Symbols and abbreviations
- EN ISO 11469:2001: Plastics – Identification and marking of plastic products
- EN ISO 14021:2002: Environmental labels and declarations – Self-declared environmental claims.



Mobius cycle. This means the material can be recycled.



This means that the material, which can be recycled, contains X % by mass of recycled material.



The RECY symbol, together with the manufacturer's identification code, certifies that the cardboard packaging possesses the requirements to be recycled by the Paper Mills Association.



Marks indicating the material used for packaging and liquid containers.
NO LONGER USED.

Material identification abbreviation and number (Resolution 97/129/CE) + graphic symbol (CR 14311:2002)

MATERIAL	ABBREVIATION	NUMBER	SYMBOL
Polyethylene terephthalate	PET	1	
High-density polyethylene	HDPE	2	
Polyvinyl chloride	PVC	3	
Low-density polyethylene	LDPE	4	
Polypropylene	PP	5	
Polystyrene	PS	6	
Other technopolymers		7	
Corrugated cardboard	PAP	20	
Non-corrugated cardboard	PAP	21	
Paper	PAP	22	
Steel FE	40		
Aluminium	ALU	41	
Other metals		42	
Wood	FOR	50	
Colourless glass	GL	70	
Green glass	GL	71	
Brown glass	GL	72	
Paper and cardboard/various metals	C/*	80	
Paper and cardboard/plastic	C/*	81	
Paper and cardboard/aluminium	C/*	82	
Paper and cardboard/tin	C/*	83	
Paper and cardboard/plastic/aluminium	C/*	84	
Paper and cardboard/plastic/aluminium/tin	C/*	85	
Plastic/aluminium	C/*	90	
Plastic/tin	C/*	91	
Plastic/various metals	C/*	92	
Glass/plastic	C/*	95	
Glass/aluminium	C/*	96	
Glass/tin	C/*	97	
Glass/various metals	C/*	98	

*: Abbreviation of predominant material. Examples:

C/PAP 84: material comprised of paper or cardboard, plastic and aluminium, with a predominance of paper or cardboard (brick).

C/LPDE 90: material comprised of plastic and aluminium, with a predominance of plastic (coffee pack).

ENERGY SAVING

Compressed air is clean energy but producing it requires electricity, which costs money and consumes environmental resources. Below are some indicative averages of the energy ratio of compressed air to its sources. The values vary as a function of the output of the compressor and other factors.

Specific power:	6.5	W/Nl/min	i.e. it takes 6.5 W to generate 1 normal litre per minute of compressed air.
Oil factor:	0.254	lit oil/kWh	i.e. 0.254 litres of oil are burnt to produce 1 kW/h.
	0.00165	lit oil/Nl/min/h	i.e. 0.00165 litres of oil are burnt to produce 1 Nl/min of compressed air.
CO ₂ factor:	0.702	kg/kWh	i.e. 0.702 kg of carbon dioxide is dispersed into the environment to produce 1 kWh.
	0.00456	kg/Nl/min/h	i.e. 0.00456 kg of carbon dioxide is dispersed into the environment to produce 1 Nl/min. for 1 hour.
Cost of air:	0.00065	€/Nl/min/h	i.e. it cost € 0.00065 to generate 1 normal litre/minute of compressed air for one hour.

EXAMPLE:

Flow rate 100 Nl/min, for 10 hours a day for 230 days a year:

Power:	$6.5 \times 100 \text{ Nl/min} = \mathbf{650 \text{ W}}$
Electricity consumption:	$650 \text{ W} \times 10 \text{ hours/day} \times 230 \text{ days/year} = 1495.000 \text{ Wh} = \mathbf{1495 \text{ kWh/year}}$
Oil burnt equivalent:	$0.254 \text{ l/kWh} \times 1495 \text{ kWh} = \mathbf{380 \text{ litres/year}}$
Carbon dioxide emissions:	$0.702 \text{ kg/kWh} \times 1495 \text{ kWh} = \mathbf{1050 \text{ kg/year}}$

THE 4 PILLARS OF SAVING

Considerable energy savings can be achieved by following four simple rules

1 Choose the correct cylinder size

Pneumatic actuators, especially cylinders, consume at each stroke an amount of air that depends on the pressure and the bore.

Using the right cylinder at the right pressure allows considerable saving.

A cylinder that requires a smaller flow enables you to associate valves, fittings and pipes of a smaller size, thereby saving on the cost of the products.

Example

Cylinder Ø 80 mm, stroke 200 mm, 6 bar, 12 cycles/min, 16 hours a day, 230 days a year.
 Consumption: 144 NI/min => 940 W => 3460 kWh/year
 =>880 litres of oil => 2428 kg of CO₂
 If you pay € 0.10/kWh: => € 346/year.
 If the cylinder has been oversized by mistake and a 63 mm cylinder could be used in its place, the figure would be:
 Consumption: 90 NI/min=>584W =>2140 kWh/year
 => 546 litres of oil => 1502 kg of CO₂
 If you pay € 0.10/kWh: => € 214/year.
SAVE: € 132 a year.

2 Use economizers

If in a cylinder you require a thrust in one direction only, e.g. piston rod extension, and a lower thrust and pressure is sufficient in the other direction, you can save a lot of energy by mounting an economizer valve.

It reduces feed pressure to the cylinder chamber and allows air to flow freely during discharge.

Example

If, in the previous example, you install on one of the ports of the Ø 80 cylinder an economizer that reduces the pressure from 6 to 12 bar, you **SAVE: € 115 a year.**



provides easy-to-use software called **EASY SIZER...**



...for sizing pneumatic cylinders, valves, pipes and units.
 You can download it from www.metalwork.it



proposes a series of **miniature economizers...**



...to mount straight onto the cylinder port or in line on the pipe.
 See the line-on-line catalogue, series RML-RMS-RMC.

3 Eliminate air leaks

Compressed air leaks in the system waste a large amount of money.

The problem is that, besides electricity consumption, the compressor undergoes more stress than necessary, even when the machine is not in operation.

Two things can be done to reduce this wastage.

- Periodically check for air leaks.

This should be done when the machinery is not running, so that the leaks can be heard.

So-called sniffers can be bought from the trade to help you detect even small leaks.

- Fit solenoid valves on each machine.

These cutout devices seal off the flow of air when the machine is off.

This prevents accidental leaks and wastage for production requirements when cleaning using compressed air.

Example

In a system operating at 6 bar, there is a leak equivalent to that of a 2 mm hole.

The air flow, in this case, is 220 NI/min.

The leak is 24 hours a day all year round.

Consumption: 220 NI/min => 1430 W => 12526 kWh/year

=> 3180 litres of oil => 8.8 tonnes CO₂

If electricity costs € 0.10/kWh =>

you **WASTE € 1252 a year**

4 Design and operate the air distribution system correctly

The rules of good practice must be followed when designing, developing and operating a pneumatic system.

The followings aspects should be taken into consideration.

- Size pipes so as not to have excessive load losses.

See Table 8 – RECOMMENDED FLOW RATE on page 6-6 in the catalogue.

- Size the compressor and the system for the minimum required pressure - pressure that is too high requires additional energy, which is then lost.

If a system contains a few components requiring a higher pressure, you can use a pressure multiplier, or booster, for them only.

- Deactivate compressors when not used.

Even when not in use, they consume 30-40% of the full power.

Example

A system operates at 7 bar. The average air consumption is 10 Nm³/min for 16 hours a day for 230 days a year.

But it would be enough to use air at 6 bar.

Reducing the pressure from 7 to 6 bar gives the following:

Air saving of 142 Nm³/min. => 929 kWh

=> 34100 kWh/year => 8680 litres of oil => 24 tonnes CO₂

If electricity costs 0.10 €/kWh: =>

you **SAVE € 3410 a year**



offers shut-off **solenoid valves**...



...of the V3V type, with instant opening, or the APR type, with progressive start up.

Refer to the catalogue of Skillair, New Deal and One units.



proposes high-efficiency pressure multipliers **boosters**...



...that can be used to increase the air pressure only for components that effectively require it.

PNEUMATICS AND POTENTIALLY EXPLOSIVE ATMOSPHERES: EUROPEAN DIRECTIVE 94/9/EC (ATEX)

As from 1st July 2003, all products marketed in the European Union and intended for use in potentially explosive atmospheres must be approved in compliance with European Directive 94/9/EC, also known as ATEX.

This new directive also applies to non-electrical components, such as pneumatic controls, for which approval is mandatory.

The main innovations introduced by the new directive 94/9/EC are:

- Inclusion of non-electrical equipment and devices, such as pneumatic cylinders.
- Each device is assigned a category associated to certain potentially explosive atmospheres.
- All products must bear the CE marking.
- Instructions for use and declarations of conformity must be supplied for each product sold for use in potentially explosive atmospheres.
- Products intended for use in potentially explosive atmospheres due to the presence of dust come under this directive, as do products destined for areas in which hazardous gases are present.

A potentially explosive atmosphere may contain gases, mists, vapours or dust that form in factories or other areas in which flammable substances are continuously or occasionally present.

An explosion can occur when flammable substances and a source of ignition are present simultaneously in a potentially explosive atmosphere.

A source of ignition can be:

- of electrical origin (electric arcs, induced currents, heat generated by the Joule effect)
- of mechanical origin (hot surfaces generated by friction, sparks generated by impact between metal bodies, electrostatic discharge, adiabatic compression)
- of chemical origin (exothermic reactions between materials)
- a naked flame

Products subject to approval are all those which, during normal use or due to a malfunction, present one or more sources of ignition for potentially explosive atmospheres.

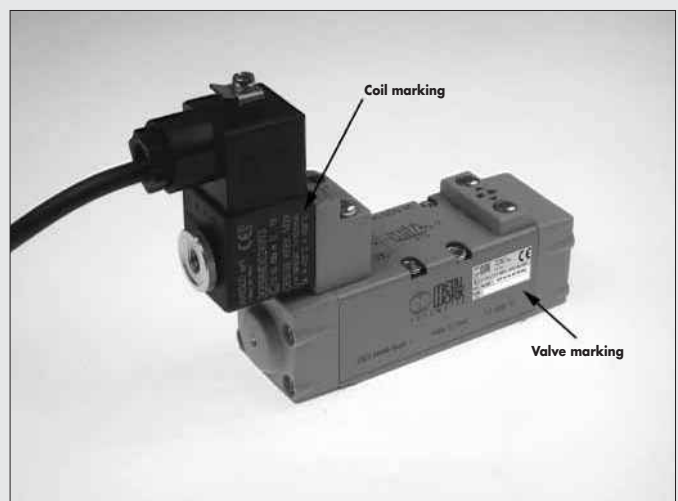
Responsibility lies both with the manufacturer of the device and whoever installs it in equipment that is to operate in a hazardous atmosphere. This requires co-operation between the parties to ensure correspondence between the category of device and the hazardous area in which it is to operate.

The manufacturer of the device must comply with the specifications and classify the product according to directive 94/9/EC. The manufacturer of the equipment, who knows the area in which the device will be operating, must select a suitable device according to the category, pursuant to directive 99/92/EC.

THE COMBINATION OF ELECTRICAL AND MECHANICAL PARTS

According to Directive 94/9/EC, both electrical and mechanical devices are subject to approval.

It is important to note that the component which is classified in the lowest category defines the category of the entire device of which it is a part. If, for example, the coil is marked Ex II 2 ... and the valve is marked Ex II 3... the coil + valve assembly must not be put into service in zone 1 or 21, only in zone 2 or 22.



GROUPS AND CATEGORIES

Devices for use in potentially explosive areas are divided into the following groups:

- GROUP I: devices used in mines
- GROUP II: devices used in surface installations

DEVICES FOR MINES GROUP I

Explosive gas content	No limit	Below a set limit
Category of device to be used according to 94/9/EC	M1	M2

DEVICES FOR SURFACE INSTALLATIONS GROUP II

ZONES	0	20	1	21	2	22
Type of atmosphere	G GAS	D DUST	G GAS	D DUST	G GAS	D DUST
Presence of hazardous atmosphere	Continuously (>1000 h/year)*		Not present during normal operation (>10 <1000 h/year)*		Accidental presence (>0.1<10 h/year)*	
Category of devices to use according to 94/9/EC	1		2		3	

*indicative

CORRESPONDENCE BETWEEN ZONES AND CATEGORIES ACCORDING TO 94/9/EC.

- ZONE 0/ZONE 20 → CATEGORY 1: Devices in this category ensure an adequate degree of safety even in the presence of rare malfunctions. These devices are used in zones in which an explosive atmosphere is present continuously for long periods.
- ZONE 1/ZONE 21 → CATEGORY 2: Devices in this category ensure an adequate degree of safety even in the presence of a probable malfunction. These devices are used in zones in which an explosive atmosphere is present occasionally.
- ZONE 2/ZONE 22 → CATEGORY 3: Devices in this category ensure an adequate degree of safety during normal operation. These devices are used in zones in which an explosive atmosphere is rarely present and only for brief periods.

MARKING: HOW TO READ IT

EXAMPLE	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(L)
	CE	Ex	II	2	GD	c	T4	T120°C	20°C < aT < 60°C

- (A) = Ce mark
- (B) = This means the device can be used in a hazardous area
- (C) = Group to which the device belongs (mines or surface installations)
- (D) = Category: indicates use in different hazardous areas
- (E) = The type of explosive atmosphere: G=gas; D=dust
- (F) = Type of protection against sources of ignition
- (G) = Temperature class: maximum surface temperature
- (H) = Max temperature for use in areas that are hazardous due to dust
- (L) = Temperature range within which the device can be used in a hazardous atmosphere

TYPE OF PROTECTION AGAINST SOURCES OF IGNITION

Protection symbol	Zones						Description
	0	20	1	21	2	22	
c			X	X	X	X	Protection through constructional safety (PrEN13463-5).
d			X	X	X	X	Flameproof enclosure Type of protection of an electrical apparatus that contains parts capable of triggering an explosion in an enclosure able to withstand the pressures generated by internal explosions.
e			X	X	X	X	Enhanced safety Electrical appliance with a high safety coefficient.
i	ia	X	X	X	X	X	Intrinsic safety Electrical circuit in which neither sparks nor temperatures can trigger an explosion during normal operation or a malfunction.
	ib			X	X	X	
m			X	X	X	X	Encapsulation Special casing in which the parts that could trigger an explosion are immersed in a substance that prevents contact with the explosive atmosphere.
n					X	X	Type of protection for electrical appliances designed so that they do not ignite the surrounding explosive atmosphere during normal operation and in specific conditions of malfunction. There are 5 categories: nA (non-scintillating); nC (hermetic seal); nR (limited respiration); nL (limited energy); nP (pressurisation).
o			X	X	X	X	Immersion Electrical appliance immersed in oil.
p			X	X	X	X	Pressurised enclosure Pressurisation with respect to the external pressure is maintained by means of an inert gas.
q			X	X	X	X	Enclosure containing filling powder

TEMPERATURE CLAS

GROUP I: Temperature = 150 °C or = 450 °C according to the layer of dust accumulated on the device.

GROUP II

Temperature classes for gas (G)	Admissible surface temperature
T1	450 °C
T2	300 °C
T3	200 °C
T4	135 °C
T5	100 °C
T6	85 °C

USER AND SUPPLIER: OBLIGATIONS AND RESPONSIBILITIES

It is important to highlight the need for the user and supplier to collaborate and to exchange all the information required to define the types of products that can be used in full compliance with the safety standards.

USER: after performing a company-wide risk analysis (pursuant to directive 99/92/EC) and identifying the risk zone in which the purchased part will be operating, the user must inform the SUPPLIER, who must check that the products supplied are compatible with the zone indicated and that the environmental conditions are within the set operating range for the parts.

It is also important to make sure that the operating instructions are always attached to the products supplied.

CONFORMITY DECLARATIONS, CERTIFICATES, INSTRUCTIONS

Please look at our website www.metalwork.it under the heading "Directives and certificates", then "Atex".

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NOTES

Large area for handwritten notes, consisting of a grid of alternating light and dark gray horizontal lines.

NOTES

Lined area for notes.

NOTES

Lined area for notes.

NOTES

Blank lined area for notes.

The dimensions shown in this catalogue are subject to variations at any time without prior notice.

