CYLINDERS SUMMARY

METAL WORK PNEUMATIC

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 4-7-4, i.e.:
- Solid particles/m^3, classe 4: max 10.000 1 < d < 5 µm
- Humidity classe 7: $C_W \leq 0.5$ g/m^3
- Oil classe 4: Concentration total oil ≤ 5 mg/m^3

In low temperature applications the air must be properly dried in order to avoid the formation of ice inside the cylinder.

Gasket material
For compatibility data, please refer to **chapter Z1**.
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
- Alcohos, 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 –40°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. 1and 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, methylethylchetone, 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.
This indication refers to ISO 15552, ISO 6432 and RNDC cylinders.

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
	250 - 320	-0	+ 4	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 21287	20 - 100	-0.5	+1.5	mm
• Rodless cylinders	16 - 63	-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	250-320
Loss (Nl/hour)	0.6	0.8	1.2	2	3	5

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 will 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.
N.B.: for actuators having a stroke lower than 5 mm, reading difficulties may occur due to sensor hysteresis.

METAL WORK PNEUMATIC

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:

$$F_{cr} \leq \frac{99800\ Ø^4}{C^2 \cdot K^2}$$

$$F_{amm} = \frac{F_{cr}}{K_s}$$

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

$$Ø \geq \sqrt[4]{\frac{F_{amm} \cdot C^2 \cdot K^2}{99800}}$$

Where:

F_{cr}	Critical force	[N]
F_{amm}	Admissable force	[N]
Ø	Diameter of the piston rod	[mm]
C	Stroke	[mm]
K	Free length coefficient depending on the mounting – see diagrams	
K_s	3 ÷ 5 safety coefficient	

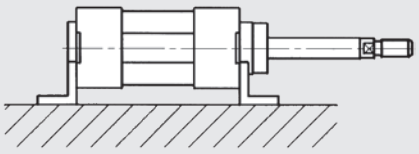
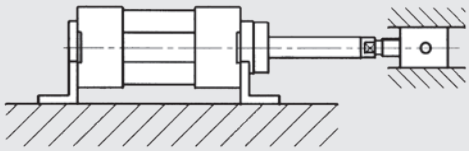
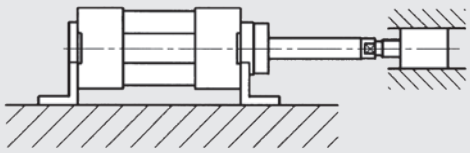
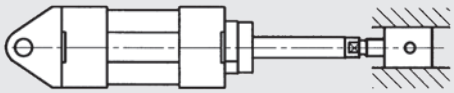
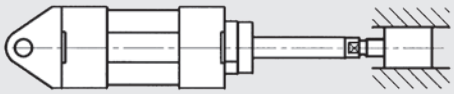
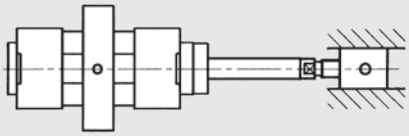
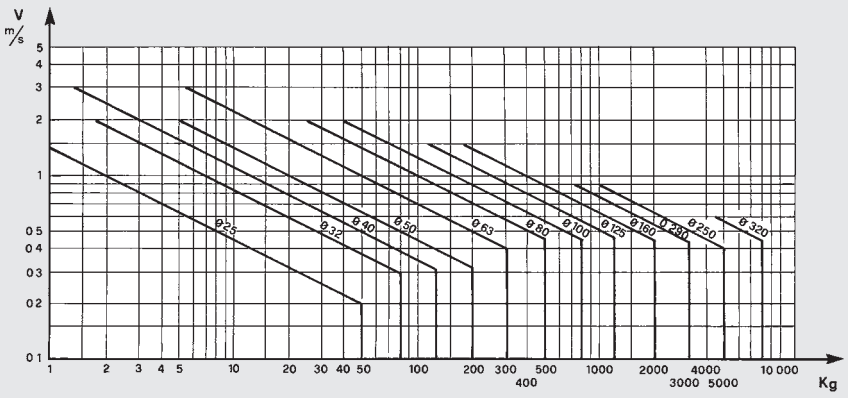
CONSTRAINT	K
	2
	0.7
	0.5
	2
	1
	1.5

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 cm²	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
8	4	thrust	0.50	0.0010	0.0015	0.0020	0.0025	0.0030	0.0035	0.0040	0.0045	0.0050	0.0055
		traction	0.38	0.0008	0.0011	0.0015	0.0019	0.0023	0.0026	0.0030	0.0034	0.0038	0.0041
10	4	thrust	0.79	0.0016	0.0024	0.0031	0.0039	0.0047	0.0055	0.0063	0.0071	0.0079	0.0086
		traction	0.66	0.0013	0.0020	0.0026	0.0033	0.0040	0.0046	0.0053	0.0059	0.0066	0.0073
12	6	thrust	1.13	0.0023	0.0034	0.0045	0.0057	0.0068	0.0079	0.0090	0.0102	0.0113	0.0124
		traction	0.85	0.0017	0.0025	0.0034	0.0042	0.0051	0.0059	0.0068	0.0076	0.0085	0.0093
16	6	thrust	2.01	0.0040	0.0060	0.0080	0.0101	0.0121	0.0141	0.0161	0.0181	0.0201	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
16	8	thrust	2.01	0.0040	0.0060	0.0080	0.0101	0.0121	0.0141	0.0161	0.0181	0.0201	0.0221
		traction	1.51	0.0030	0.0045	0.0060	0.0075	0.0090	0.0106	0.0121	0.0136	0.0151	0.0166
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	0.0237	0.0264	0.0290
20	10	thrust	3.14	0.0063	0.0094	0.0126	0.0157	0.0188	0.0220	0.0251	0.0283	0.0314	0.0346
		traction	2.36	0.0047	0.0071	0.0094	0.0118	0.0141	0.0165	0.0188	0.0212	0.0236	0.0259
25	10	thrust	4.91	0.0098	0.0147	0.0196	0.0245	0.0295	0.0344	0.0393	0.0442	0.0491	0.0540
		traction	4.12	0.0082	0.0124	0.0165	0.0206	0.0247	0.0289	0.0330	0.0371	0.0412	0.0454
32	12	thrust	8.04	0.0161	0.0241	0.0322	0.0402	0.0483	0.0563	0.0643	0.0724	0.0804	0.0885
		traction	6.91	0.0138	0.0207	0.0276	0.0346	0.0415	0.0484	0.0553	0.0622	0.0691	0.0760
40	12	thrust	12.57	0.0251	0.0377	0.0503	0.0628	0.0754	0.0880	0.1005	0.1131	0.1257	0.1382
		traction	11.44	0.0229	0.0343	0.0457	0.0572	0.0686	0.0800	0.0915	0.1029	0.1144	0.1258
40	16	thrust	12.57	0.0251	0.0377	0.0503	0.0628	0.0754	0.0880	0.1005	0.1131	0.1257	0.1382
		traction	10.56	0.0211	0.0317	0.0422	0.0528	0.0633	0.0739	0.0844	0.0950	0.1056	0.1161
50	16	thrust	19.63	0.0393	0.0589	0.0785	0.0982	0.1178	0.1374	0.1571	0.1767	0.1963	0.2160
		traction	17.62	0.0352	0.0529	0.0705	0.0881	0.1057	0.1234	0.1410	0.1586	0.1762	0.1939
50	20	thrust	19.63	0.0393	0.0589	0.0785	0.0982	0.1178	0.1374	0.1571	0.1767	0.1963	0.2160
		traction	16.49	0.0330	0.0495	0.0660	0.0825	0.0990	0.1155	0.1319	0.1484	0.1649	0.1814
63	16	thrust	31.17	0.0623	0.0935	0.1247	0.1559	0.1870	0.2182	0.2494	0.2805	0.3117	0.3429
		traction	29.16	0.0583	0.0875	0.1166	0.1458	0.1750	0.2041	0.2333	0.2624	0.2916	0.3208
63	20	thrust	31.17	0.0623	0.0935	0.1247	0.1559	0.1870	0.2182	0.2494	0.2805	0.3117	0.3429
		traction	28.03	0.0561	0.0841	0.1121	0.1402	0.1682	0.1962	0.2242	0.2523	0.2803	0.3083
80	20	thrust	50.26	0.1005	0.1508	0.2011	0.2513	0.3016	0.3518	0.4021	0.4524	0.5026	0.5529
		traction	47.12	0.0942	0.1414	0.1885	0.2356	0.2827	0.3299	0.3770	0.4241	0.4712	0.5183
80	25	thrust	50.26	0.1005	0.1508	0.2011	0.2513	0.3016	0.3518	0.4021	0.4524	0.5026	0.5529
		traction	45.36	0.0907	0.1361	0.1814	0.2268	0.2721	0.3175	0.3628	0.4082	0.4536	0.4989
100	25	thrust	78.54	0.1571	0.2356	0.3142	0.3927	0.4712	0.5498	0.6283	0.7068	0.7854	0.8639
		traction	73.63	0.1473	0.2209	0.2945	0.3681	0.4418	0.5154	0.5890	0.6627	0.7363	0.8099
125	32	thrust	122.71	0.2454	0.3681	0.4909	0.6136	0.7363	0.8590	0.9817	1.1044	1.2271	1.3499
		traction	114.67	0.2293	0.3440	0.4587	0.5734	0.6880	0.8027	0.9174	1.0321	1.1467	1.2614
160	40	thrust	201.06	0.4021	0.6032	0.8042	1.0053	1.2063	1.4074	1.6084	1.8095	2.0106	2.2116
		traction	188.49	0.3770	0.5655	0.7540	0.9425	1.1309	1.3194	1.5079	1.6964	1.8849	2.0734
200	40	thrust	314.15	0.6283	0.9425	1.2566	1.5708	1.8849	2.1991	2.5132	2.8274	3.1415	3.4557
		traction	301.58	0.6032	0.9048	1.2063	1.5079	1.8095	2.1111	2.4127	2.7143	3.0158	3.3174
250	50	thrust	490.87	0.9817	1.4726	1.9635	2.4544	2.9452	3.4361	3.9270	4.4178	4.9087	5.3996
		traction	471.24	0.9425	1.4137	1.8850	2.3562	2.8274	3.2987	3.7699	4.2412	4.7124	5.1836
320	63	thrust	804.25	1.6085	2.4128	3.2170	4.0213	4.8255	5.6298	6.4340	7.2383	8.0425	8.8468
		traction	773.08	1.5462	2.3192	3.0923	3.8654	4.6385	5.4116	6.1846	6.9577	7.7308	8.5039

METAL WORK PNEUMATIC

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

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

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	21	100	5
20	25	100	12
25	25	100	18

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

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

P_1 = Force with spring extended

P_2 = 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	–

FORCES GENERATED DURING THRUST AND TRACTION (THEORETICAL)

Cylinder bore D mm	Piston rod diameter d mm	Motion	Useful area cm²	Thrust and traction force in daN depending on the operating pressure in bar									
				1 bar	2 bar	3 bar	4 bar	5 bar	6 bar	7 bar	8 bar	9 bar	10 bar
8	4	thrust	0.50	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
		traction	0.38	0.4	0.8	1.1	1.5	1.9	2.3	2.6	3.0	3.4	3.8
10	4	thrust	0.79	0.8	1.6	2.4	3.1	3.9	4.7	5.5	6.3	7.1	7.9
		traction	0.66	0.7	1.3	2.0	2.6	3.3	4.0	4.6	5.3	5.9	6.6
12	6	thrust	1.13	1.1	2.3	3.4	4.5	5.7	6.8	7.9	9.0	10.2	11.3
		traction	0.85	0.8	1.7	2.5	3.4	4.2	5.1	5.9	6.8	7.6	8.5
16	6	thrust	2.01	2.0	4.0	6.0	8.0	10.1	12.1	14.1	16.1	18.1	20.1
		traction	1.73	1.7	3.5	5.2	6.9	8.6	10.4	12.1	13.8	15.6	17.3
16	8	thrust	2.01	2.0	4.0	6.0	8.0	10.1	12.1	14.1	16.1	18.1	20.1
		traction	1.51	1.5	3.0	4.5	6.0	7.5	9.0	10.6	12.1	13.6	15.1
20	8	thrust	3.14	3.1	6.3	9.4	12.6	15.7	18.8	22.0	25.1	28.3	31.4
		traction	2.64	2.6	5.3	7.9	10.6	13.2	15.8	18.5	21.1	23.8	26.4
20	10	thrust	3.14	3.1	6.3	9.4	12.6	15.7	18.8	22.0	25.1	28.3	31.4
		traction	2.36	2.4	4.7	7.1	9.4	11.8	14.1	16.5	18.8	21.2	23.6
25	10	thrust	4.91	4.9	9.8	14.7	19.6	24.5	29.5	34.4	39.3	44.2	49.1
		traction	4.12	4.1	8.2	12.4	16.5	20.6	24.7	28.9	33.0	37.1	41.2
32	12	thrust	8.04	8.0	16.1	24.1	32.2	40.2	48.3	56.3	64.3	72.4	80.4
		traction	6.91	6.9	13.8	20.7	27.6	34.6	41.5	48.4	55.3	62.2	69.1
40	12	thrust	12.57	12.6	25.1	37.7	50.3	62.8	75.4	88.0	100.5	113.1	125.7
		traction	11.44	11.4	22.9	34.3	45.7	57.2	68.6	80.0	91.5	102.9	114.4
40	16	thrust	12.57	12.6	25.1	37.7	50.3	62.8	75.4	88.0	100.5	113.1	125.7
		traction	10.56	10.6	21.1	31.7	42.2	52.8	63.3	73.9	84.4	95.0	105.6
50	16	thrust	19.63	19.6	39.3	58.9	78.5	98.2	117.8	137.4	157.1	176.7	196.3
		traction	17.62	17.6	35.2	52.9	70.5	88.1	105.7	123.4	141.0	158.6	176.2
50	20	thrust	19.63	19.6	39.3	58.9	78.5	98.2	117.8	137.4	157.1	176.7	196.3
		traction	16.49	16.5	33.0	49.5	66.0	82.5	99.0	115.5	131.9	148.4	164.9
63	16	thrust	31.17	31.2	62.3	93.5	124.7	155.9	187.0	218.2	249.4	280.6	311.7
		traction	29.16	29.2	58.3	87.5	116.6	145.8	175.0	204.1	233.3	262.5	291.6
63	20	thrust	31.17	31.2	62.3	93.5	124.7	155.9	187.0	218.2	249.4	280.6	311.7
		traction	28.03	28.0	56.1	84.1	112.1	140.2	168.2	196.2	224.2	252.3	280.3
80	20	thrust	50.27	50.3	100.5	150.8	201.1	251.3	301.6	351.9	402.1	452.4	502.7
		traction	47.12	47.1	94.2	141.4	188.5	235.6	282.7	329.9	377.0	424.1	471.2
80	25	thrust	50.27	50.3	100.5	150.8	201.1	251.3	301.6	351.9	402.1	452.4	502.7
		traction	45.36	45.4	90.7	136.1	181.4	226.8	272.1	317.5	362.9	408.2	453.6
100	25	thrust	78.54	78.5	157.1	235.6	314.2	392.7	471.2	549.8	628.3	706.9	785.4
		traction	73.63	73.6	147.3	220.9	294.5	368.2	441.8	515.4	589.0	662.7	736.3
125	32	thrust	122.72	122.7	245.4	368.2	490.9	613.6	736.3	859.0	981.7	1104.5	1227.2
		traction	114.68	114.7	229.4	344.0	458.7	573.4	688.1	802.7	917.4	1032.1	1146.8
160	40	thrust	201.06	201.1	402.1	603.2	804.2	1005.3	1206.4	1407.4	1608.5	1809.6	2010.6
		traction	188.50	188.5	377.0	565.5	754.0	942.5	1131.0	1319.5	1508.0	1696.5	1885.0
200	40	thrust	314.16	314.2	628.3	942.5	1256.6	1570.8	1885.0	2199.1	2513.3	2827.4	3141.6
		traction	301.59	301.6	603.2	904.8	1206.4	1508.0	1809.6	2111.1	2412.7	2714.3	3015.9
250	50	thrust	490.87	490.9	981.7	1472.6	1963.5	2454.4	2945.2	3436.1	3927.0	4417.8	4908.7
		traction	471.24	471.2	942.5	1413.7	1885.0	2356.2	2827.4	3298.7	3769.9	4241.2	4712.4
320	63	thrust	804.25	804.3	1608.5	2412.8	3217.0	4021.3	4825.5	5629.8	6434.0	7238.3	8042.5
		traction	773.08	773.1	1546.2	2319.2	3092.3	3865.4	4638.5	5411.6	6184.6	6957.7	7730.8

METAL WORK PNEUMATIC

WEIGHT OF CYLINDERS

Mini-cylinders 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

Mini-cylinders 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

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	2.20	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	18.00
160	12979	22.92	13800	30.00
200	17000	28.00	18000	39.00
250	29285	39.00	32640	51.00
320	49100	62.00	58000	71.00

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	7.73	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	2.30
40	774	3.22
50	1245	4.50
63	1697	4.78

Twin-rod cylinder TWNC series STD

Ø	Single-rod		Through-rod	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
32	706	2.61	771	3.79
40	920	2.79	1040	4.03
50	1466	4.00	1704	5.72
63	2340	6.10	2608	8.85
80	4752	10.36	5182	15.52
100	6278	12.19	6783	16.80

Twin-rod cylinder TWNC series 3

Ø	Single-rod		Through-rod	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
32	711	2.64	776	3.82
40	923	2.81	1043	4.05
50	1443	3.84	1681	5.56
63	2295	5.78	2563	8.52
80	4633	9.42	5063	14.58
100	6114	10.87	6619	15.48

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	4.90
63	2300	3.13	4750	4.90
80	3800	4.90	8500	7.26
100	7000	4.90	12000	7.26

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

Compact cylinder series CMPC								
Ø	Single-rod		Through-rod		Non-ratating		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

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

Compact Stopper cylinder		
Ø x Stroke	Trunnion version	Roller version
	Weight [g]	Weight [g]
20x15	210	220
32x20	420	460
50x30	1190	1300
80x30	-	4500
80x40	-	4750

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 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	1354	16.51
40	1028	18.04	1479	18.04
50	1355	23.76	1949	23.76
63	1900	32.56	2714	32.56
80	3910	55.77	-	-
100	5710	73.48	-	-

Short-stroke cylinder series SSCY								
Ø	Single-rod		Through-rod		Non-ratating		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	-	-

Rodless cylinder								
Ø	Standard		Series Double		with ball recirculating Guide		with Guida "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	1421	2.99	953	1.98
32	1707	3.84	3737	7.68	3025	5.04	2150	3.21
40	2911	5.55	–	–	4434	6.75	3210	4.67
63 (Std)	7280	9.22	–	–	10860	10.65	9230	9.27
63 (Heavy)	–	–	–	–	13275	14.02	-	-

Rodless cylinder series PU						
Ø	Standard		with ball recirculating Guide		with Guida "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
25	1009	2.54	-	-	-	-
32	1535	3.72	-	-	-	-
40	2702	4.78	-	-	-	-
50	4875	7.50	7550	8.90	7450	7.50

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

Stainless steel ISO 6432 Mini-cylinders				
Ø	Single-rod		Through-rod	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
16	140	0.50	150	0.90
20	310	0.70	335	1.20
25	410	1.10	445	1.90

Stainless steel round cylinders RNDC				
Ø	Single-rod		Through-rod	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
32	825	1.50	880	2.70
40	1460	2.40	1590	4.50
50	2250	4.10	2670	7.00
63	3280	4.60	3530	7.50

Stainless steel ISO 15552 cylinders				
Ø	Single-rod		Through-rod	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
32	1366	2.4	1467	3.3
40	1885	3.2	203	4.8
50	2837	5.5	3103	8.0
63	4347	5.9	4647	8.4
80	7485	10.8	799	16.3
100	11332	13.9	12033	17.8
125	18259	20.9	19432	27.2

ISO 6432 MINI-CYLINDER SERIES STD

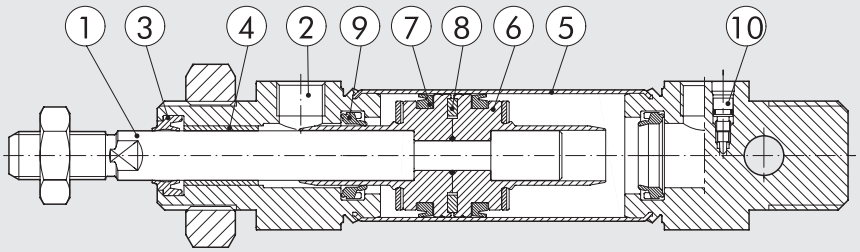
Mini-cylinders to ISO 6432 with a chamfered stainless steel barrel.
Can be used with different types of sensors.
Available in various versions with a wide range of accessories:

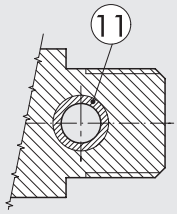
- with or without magnet
- single acting extended, retracted or through piston rod
- double acting, single or through piston rod
- with pneumatic cushioning (Ø 16-20-25)
- gaskets made of NBR, POLYURETHANE, and FKM/FPM (for high temperatures), and low-temperature gaskets
- special executions on request
- fixing accessories, guide units and mechanical rod lock.

TECHNICAL DATA			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25
Max operating pressure		bar	10					
		MPa	1					
		psi	145					
Temperature range	POLYURETHANE	°C	–20 to +80					
	NBR	°C	–10 to +80					
	FKM/FPM	°C	–10 to +150 (non-magnetic cylinder)					
	Low temperature	°C	–35 to +80					
Design			Chamfered stainless steel barrel					
Fluid			Unlubricated air. Lubrication, if used, must be continuous					
Standard strokes ✚	double-acting	mm	1 to 100	1 to 100	1 to 200	1 to 200	1 to 500	1 to 500
	double-acting, cushioned	mm	-	-	-	1 to 300	1 to 500	1 to 500
	double-acting with spring extended or retracted piston rod	mm	-	-	-	1 to 100	1 to 100	1 to 100
	single-acting extended or retracted piston rod	mm	1 to 50	1 to 50	1 to 50	1 to 100	1 to 100	1 to 100
Versions			Double-acting, Double-acting cushioned, Double-acting with spring extended or retracted piston rod, Single-acting extended or retracted rod, Through-rod, Through-rod cushioned, Version suitable for rod lock, No stick-slip					
Magnet for sensors			All versions come complete with magnet. Supplied without magnet on request.					
Inrush pressure	single piston rod	bar	0.8			0.6		
	through-rod	bar	1			0.8		
Forces generated at 6 bar thrust/retraction			See cylinder "**General technical data**" at the beginning of the chapter					
Weights			See cylinder "**General technical data**" at the beginning of the chapter					
Notes			**For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.**					
			✚ Maximum recommended strokes. Higher values can create operating problems					

COMPONENTS

① PISTON ROD: C45 steel or stainless steel, thick chromed
② HEAD: anodized aluminium alloy
③ PISTON ROD GASKET: polyurethane, NBR or FKM/FPM
④ GUIDE BUSHING: steel strip with bronze and PTFE insert
⑤ BARREL: AISI 304 steel
⑥ HALF-PISTON: acetal resin
⑦ PISTON GASKET: polyurethane, NBR or FKM/FPM
⑧ MAGNET: plastoneodymium
⑨ CUSHIONING GASKET: NBR or FKM/FPM
⑩ NEEDLE: OT 58 with needle out movement safety system even when fully open
⑪ BUSHING (optional): self-lubricating bronze

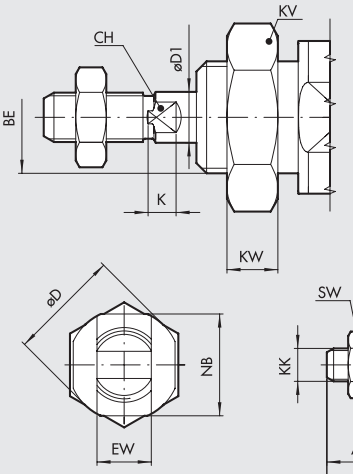




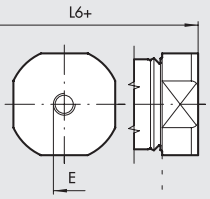
METAL WORK PNEUMATIC

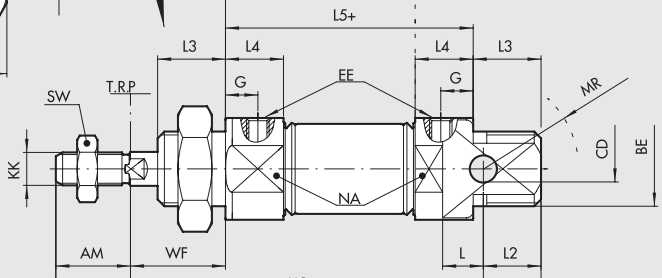
DIMENSIONS OF DOUBLE-ACTING VERSIONS

SINGLE PISTON ROD VERSION

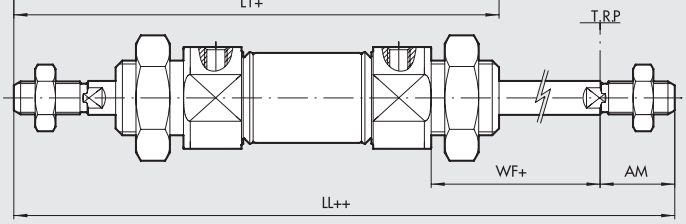


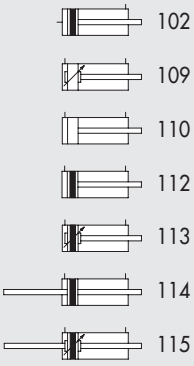
AXIAL COUPLING VERSION





THROUGH-ROD VERSION



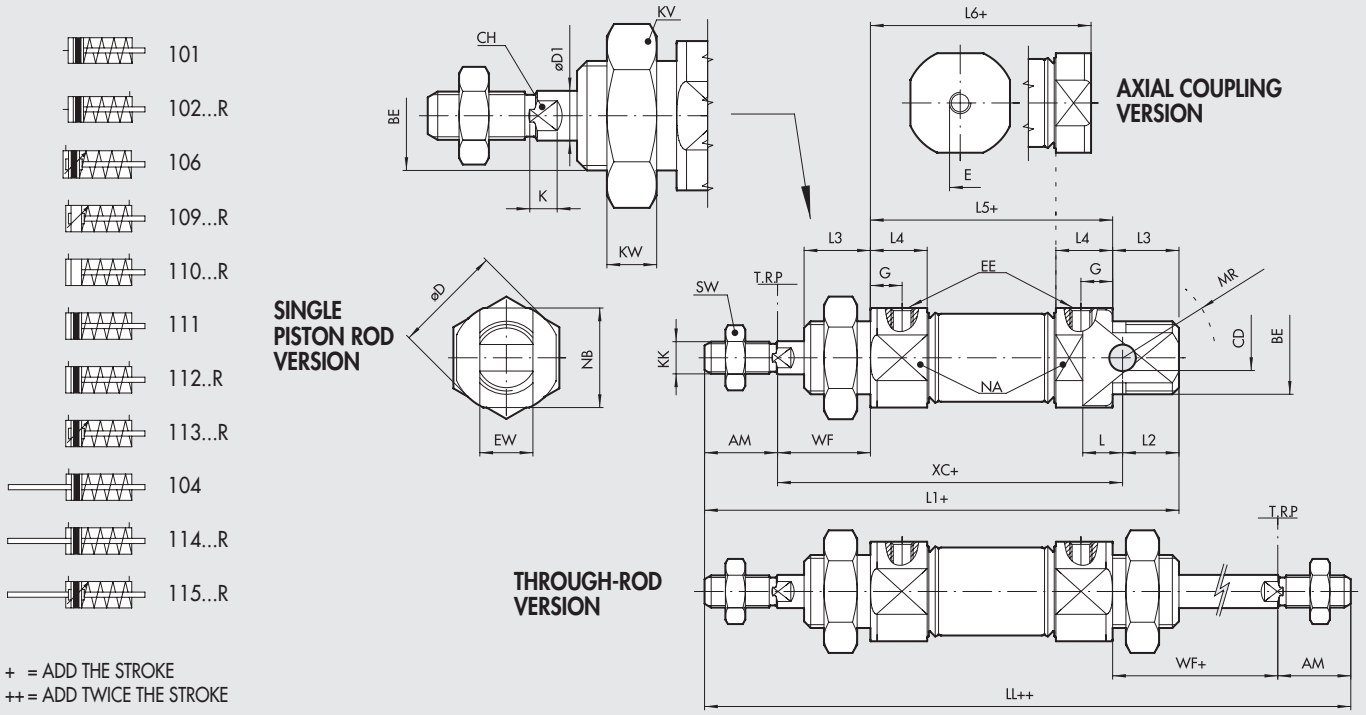


\+ = ADD THE STROKE
++ = ADD TWICE THE STROKE

Ø	AM $^{+0}_{-2}$	BE	øCD H9	øD	øD1	E	G	EE	EW d13	L	LL	L1	L2	L3	L4	L5	L6	KK	XC ±1	WF ±1,2	KW	KV	MR	NA	NB	SW	CH	K
8	12	M12x1.25	4	16.7	4	M5	6	M5	8	6.5	102	86	10	12	10	46	46	M4	64	16	7	19	12	15	15	7	3	3
10	12	M12x1.25	4	16.7	4	M5	6	M5	8	6.5	102	86	10	12	10	46	46	M4	64	16	7	19	12	15	15	7	3	3
12	16	M16x1.5	6	19	6	M5	6	M5	12	9	125	104	13	17	10	49	47	M6	75	22	8	24	16	17	17	10	5	3.5
16	16	M16x1.5	6	19.7	6	1/8	6	M5	12	9	132	111	13	17	10	56	53	M6	82	22	8	24	16	18	18	10	5	3.5
20	20	M22x1.5	8	27.9	8	1/8	8	G 1/8	16	12	156	129	14	17	15.5	68	61	M8	95	24	7	32	18	24	24	13	7	4.6
25	22	M22x1.5	8	33	10	1/8	9	G 1/8	16	12	173	143	17	20	17.1	73	66.5	M10x1.25	104	28	7	32	21	30	30	17	8	5

NOTES

DIMENSIONS OF DOUBLE-ACTING WITH SPRING, RETRACTED PISTON ROD VERSIONS
DIMENSIONS OF SINGLE-ACTING WITH SPRING, RETRACTED PISTON ROD VERSIONS



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

VERSION 101... / 104... / 106... / 111... (Stroke 0-50)

Ø	AM $^{+0}_{-2}$	BE	øCD H9	øD	øD1	E	G	EE	EW d13	L	LL	L1	L2	L3	L4	L5	L6	KK	XC ±1	WF ±1,2	KW	KV	MR	NA	NB	SW	CH	K
8	12	M12x1.25	4	16.7	4	M5	6	M5	8	6.5	102	86	10	12	10	46	46	M4	64	16	7	19	12	15	15	7	3	3
10	12	M12x1.25	4	16.7	4	M5	6	M5	8	6.5	102	86	10	12	10	46	46	M4	64	16	7	19	12	15	15	7	3	3
12	16	M16x1.5	6	19	6	M5	6	M5	12	9	125	104	13	17	10	49	47	M6	75	22	8	24	16	17	17	10	5	3.5
16	16	M16x1.5	6	19.7	6	1/8	6	M5	12	9	132	111	13	17	10	56	53	M6	82	22	8	24	16	18	18	10	5	3.5
20	20	M22x1.5	8	27.9	8	1/8	8	G 1/8	16	12	156	129	14	17	15.5	68	61	M8	95	24	7	32	18	24	24	13	7	4.6
25	22	M22x1.5	8	33	10	1/8	9	G 1/8	16	12	173	143	17	20	17.1	73	66.5	M10x1.25	104	28	7	32	21	30	30	17	8	5

VERSION 101... (single-acting retracted piston rod)

Ø	Dimension	Stroke 51-75	Stroke 76-100
16	L6	101.8	126.2
20	L6	111.8	137.2
25	L6	118.5	144.5

VERSION 102...R (double-acting retracted piston rod)

Ø	Dimension	Stroke 0-25	Stroke 26-50	Stroke 51-75	Stroke 76-100
16	L6	63.4	83.4	107.8	132.2
20	L6	72.4	93.4	118.8	144.2
25	L6	77.6	100.5	126.5	152.5

VERSION 104... (single-acting through-rod)

Ø	Dimension	Stroke 51-75	Stroke 76-100
16	LL	180.8	205.2
	L5	104.8	129.2
20	LL	206.8	232.2
	L5	118.8	144.2
25	LL	225	251
	L5	125	151

VERSION 106... (single-acting cushioned, retracted piston rod)
VERSION 111... (single-acting retracted piston rod)

Ø	Dimension	Stroke 51-75	Stroke 76-100
16	L1	159.8	184.2
	L5	104.8	129.2
	XC ±1	130.8	155.2
20	L1	179.8	205.2
	L5	118.8	144.2
	XC ±1	145.8	171.2
25	L1	195	221
	L5	125	151
	XC ±1	156	182

VERSION 109...R / 113...R (double-acting cushioned, with spring, retracted piston rod)
VERSION 110...R / 112...R (double-acting with spring, retracted piston rod)

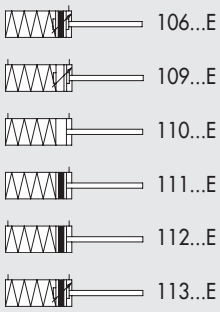
Ø	Dimension	Stroke 0-25	Stroke 26-50	Stroke 51-75	Stroke 76-100
16	L1	121.4	141.4	165.8	190.2
	L5	66.4	86.4	110.8	135.2
	XC ±1	92.4	112.4	136.8	161.2
20	L1	140.4	161.4	186.8	212.2
	L5	79.4	100.4	125.8	151.2
	XC ±1	106.4	127.4	152.8	178.2
25	L1	154.1	177	203	229
	L5	84.1	107	133	159
	XC ±1	115.1	138	164	190

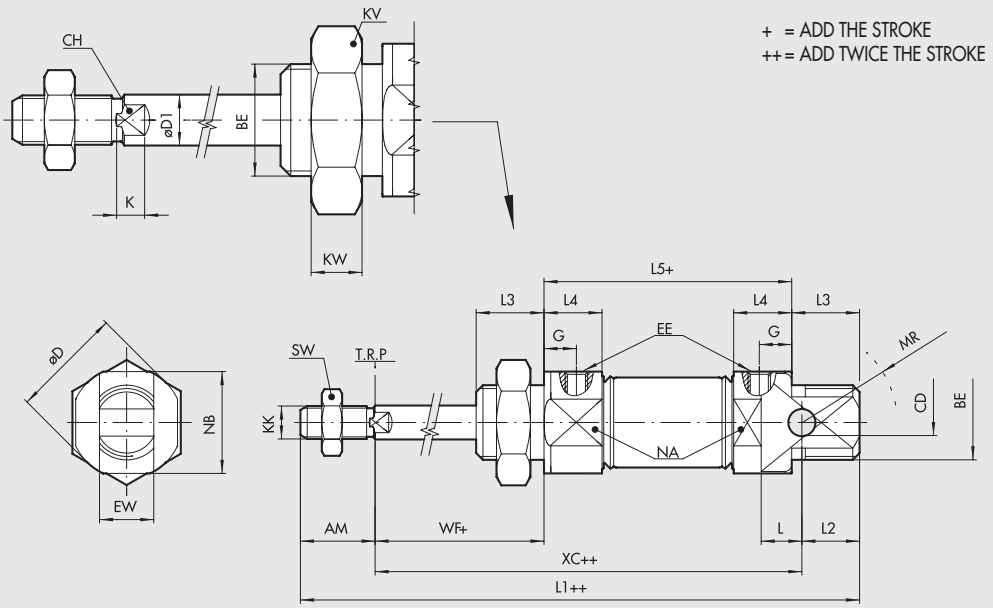
VERSION 114...R (double-acting cushioned, with spring, through-rod)
VERSION 115...R (double-acting with spring, through-rod)

Ø	Dimension	Stroke 0-25	Stroke 26-50	Stroke 51-75	Stroke 76-100
16	LL	142.4	162.4	186.8	211.2
	L5	66.4	86.4	110.8	135.2
20	LL	167.4	188.4	213.8	239.2
	L5	79.4	100.4	125.8	151.2
25	LL	184.1	207	233	259
	L5	84.1	107	133	159

METAL WORK PNEUMATIC

DIMENSIONS OF DOUBLE-ACTING WITH SPRING, EXTENDED PISTON ROD VERSIONS
DIMENSIONS OF SINGLE-ACTING WITH SPRING, EXTENDED PISTON ROD VERSIONS





Ø	AM $^{-0}_{-2}$	BE	øCD ^{H9}	øD	øD1	G	EE	EW ^{d13}	L	L2	L3	L4	KK	WF $^{\pm1,2}$	KW	KV	MR	NA	NB	SW	CH	K
16	16	M16x1.5	6	19.7	6	6	M5	12	9	13	17	10	M6	22	8	24	16	18	18	10	5	3.5
20	20	M22x1.5	8	27.9	8	8	G 1/8	16	12	14	17	15.5	M8	24	7	32	18	24	24	13	7	4.6
25	22	M22x1.5	8	33	10	9	G 1/8	16	12	17	20	17.1	M10x1.25	28	7	32	21	30	30	17	8	5

VERSION 106...E (single-acting cushioned, extended piston rod)
VERSION 111...E (single-acting extended piston rod)

Ø	Dimension	Stroke 0-25	26-50	51-75	76-100
16	**L1**	115.4	135.4	159.8	184.2
	L5	60.4	80.4	104.8	129.2
	XC $^{\pm1}$	86.4	106.4	130.8	155.2
20	**L1**	133.4	154.4	179.8	205.2
	L5	72.4	93.4	118.8	144.2
	XC $^{\pm1}$	99.4	120.4	145.8	171.2
25	**L1**	146.1	169	195	221
	L5	76.1	99	125	151
	XC $^{\pm1}$	107.1	130	156	182

VERSION 109...E / 113...E (double-acting cushioned, with spring, extended piston rod)
VERSION 110...E / 112...E (double-acting with spring, extended piston rod)

Ø	Dimension	Stroke 0-25	26-50	51-75	76-100
16	**L1**	121.4	141.4	165.8	190.2
	L5	66.4	86.4	110.8	135.2
	XC $^{\pm1}$	92.4	112.4	136.8	161.2
20	**L1**	140.4	161.4	186.8	212.2
	L5	79.4	100.4	125.8	151.2
	XC $^{\pm1}$	106.4	127.4	152.8	178.2
25	**L1**	154.1	177	203	229
	L5	84.1	107	133	159
	XC $^{\pm1}$	115.1	138	164	190

NOTES

KEY TO CODES

CYL	1 1 2 TYPE	0 VERSION	16 BORE	0020 STROKE	C MATERIAL	P GASKETS	E
	▷ **101** SA axial coupling ▽ **102** DAM axial coupling ◀ ▷ **104** SA through-rod ■ △ **106** SA cushioned ■ **109** DAC **110** DA △ **111** SA **112** DAM ■ **113** DAMC ✱ ◇ **114** DAM through-rod ✱ ◇ ■ **115** DAMC through-rod ◆ ▷ **116** DAM suitable for rod lock ■ ▷ **117** DAMC suitable for rod lock	**0** Standard ✚ **U** Bronze rear head bushing **V** Without head nut **S** Non-magnetic ▲ **G** No stick-slip	▼ 08 ▼ 10 ▼ 12 16 20 25	For the maximum suppliable strokes, look at the technical data	**A** C45 chrome piston rod, aluminium piston **C** C45 chrome piston rod,technopolymer piston □ **Z** Stainless steel piston rod and nut aluminium piston **X** Stainless steel piston rod and nut technopolymer piston	**P** Polyurethane **N** NBR ● **V** FKM/FPM ● **B** Low temperature	▶ ■ **E** Single-acting extended rod or double-acting with spring, extended piston rod ✖ **R** Double-acting with spring, retracted piston rod

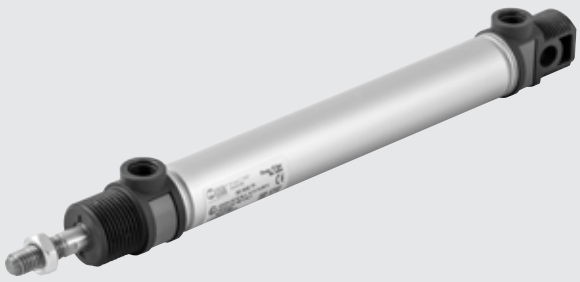
DA: Double-acting (non-cushioned, not magnetic)
DAM: Magnetic double-acting (non-cushioned)
DAMC: Magnetic double-acting (cushioned)
DAC: Cushioned double-acting (non-magnetic)
SA: Single-acting (magnetic). The versions without the final "E" are to be considered with retracted piston rod.

● 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**
▼ Stainless steel piston rod
■ Available from Ø 16
◆ Available from Ø 12
▷ Not available for versions with final letter E or R
△ Not available for versions with final letter R
▽ Not available for versions with final letter E
◇ Stainless steel piston rod. Not available for versions with final letter E
✱ For Ø 16 to 25 aluminium piston, stainless stell piston rod
▶ Letter to be added only to the single acting extended rod version or double-acting with spring, extended piston rod
✖ Letter to be added only for the double-acting version with retracted piston rod spring
✚ Not available for types 101, 102, 104, 114, 115
◀ For Ø 16 to 25 stroke from 51 to 100 aluminium piston
□ For Ø 8 to 12 DEM, material Z is only available for nonmagnetic versions (S)

ISO 6432 MINI-CYLINDER 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:

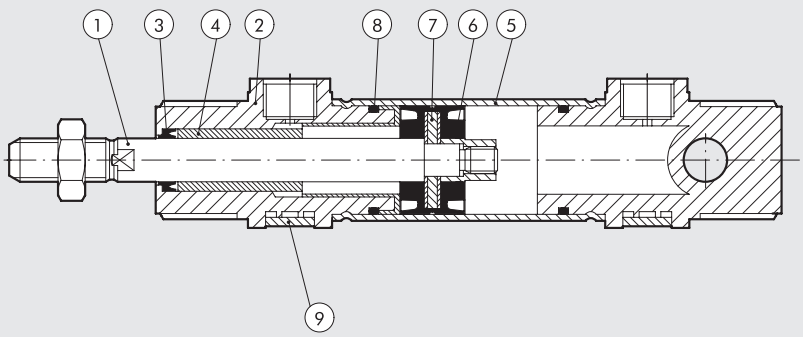
- with or without magnet
- double acting, single or through rod
- gaskets made of POLYURETHANE
- fixing accessories and guide units.



TECHNICAL DATA			Ø16	Ø20	Ø25
Max operating pressure		bar	10		
		MPa	1		
		psi	145		
Temperature range	POLYURETHANE	°C	–10 to +60		
Design			Aluminium liner chamfered on the heads		
Fluid			Unlubricated air. Lubrication, if used, must be continuous		
Standard strokes ✚		mm	1 to 200	1 to 500	
Versions			Double-acting, Double Through-rod		
Sensor magnet			Available magnetic and non-magnetic versions.		
Inrush pressure	single piston rod	bar	0.6		
	through-rod	bar	0.8		
Forces generated at 6 bar thrust/retraction			See cylinder "**General technical data**" at the beginning of the chapter		
Weights			See cylinder "**General technical data**" at the beginning of the chapter		
Notes			The standard version is lacking of the head nut.		
			Use of fittings with a taper thread is NOT recommended.		
			✚ Maximum recommended strokes. Higher values can create operating problems		

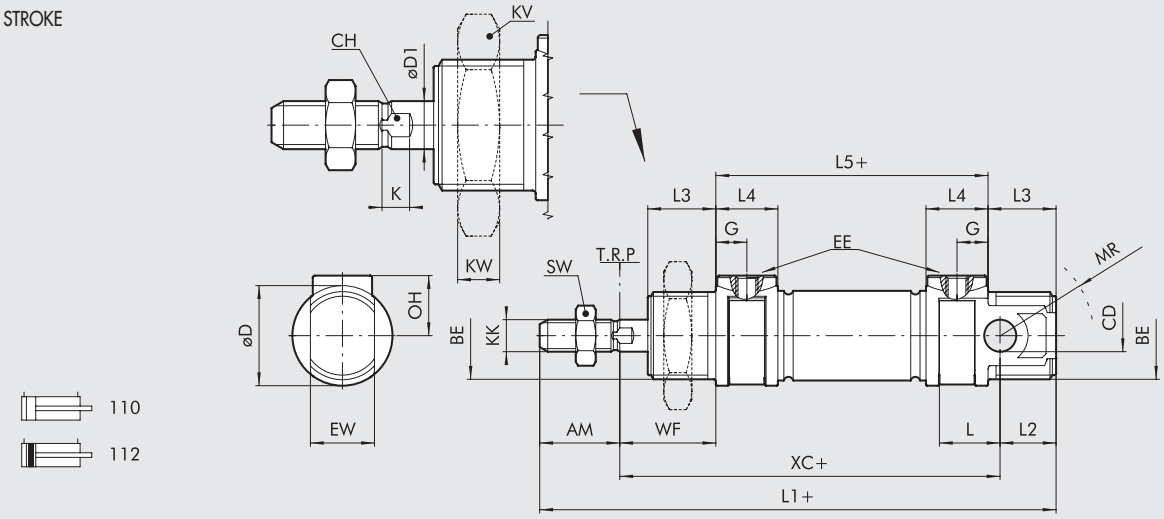
COMPONENTS

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 anoside aluminium alloy
⑥ PISTON GASKET: polyurethane
⑦ MAGNET: plastoneodymium
⑧ STATIC O-RINGS: NBR
⑨ COVER PLATE: technopolymer



DIMENSIONS OF STANDARD VERSIONS

+ = ADD STROKE

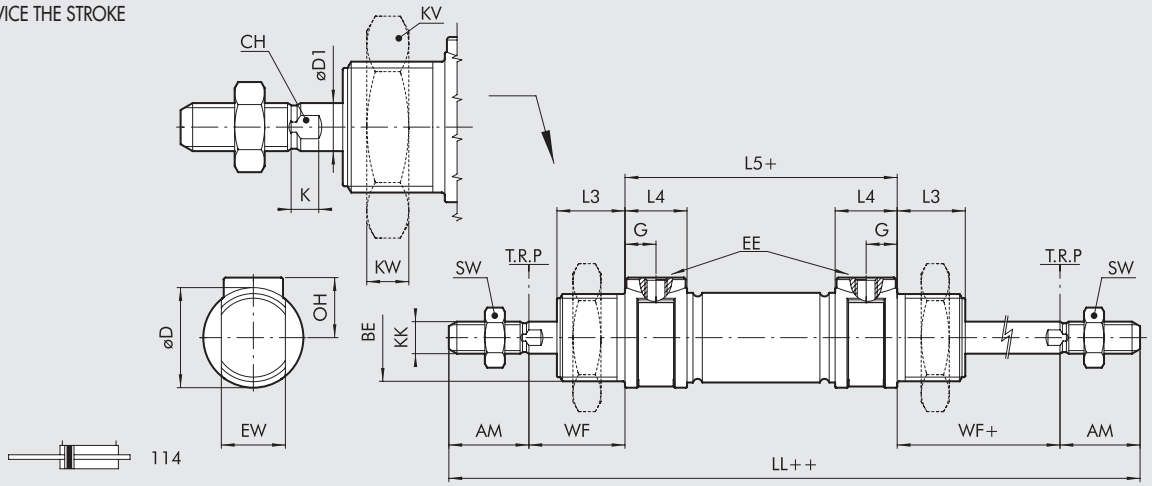


Ø	AM	BE	CD (H9)	øD	øD1	G	EE	EW (d13)	OH	L	L1	L2	L3	L4	L5	KK	XC(±1)	WF	KW	KV	MR	SW	CH	K
16	16	M16x1.5	6	21	6	4.7	M5	12	12	11	111	13	17	9.5	56	M6	82	22	8	24	16	10	5	3.5
20	20	M22x1.5	8	25	8	7.7	1/8"	16	16	15	129	14	17	15.5	68	M8	95	24	7	32	18	13	7	4.6
25	22	M22x1.5	8	30	10	7.7	1/8"	16	17	15	143	17	20	15.5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

MAX LOCKING TORQUE [Nm]		
Ø	BE (front/rear)	EE
16	12/8	1.2
20	22/15	3
25	22/15	3

DIMENSIONS OF STANDARD VERSIONS WITH THROUGH-ROD

+ = ADD STROKE
++ = ADD TWICE THE STROKE



Ø	AM	BE	øD	øD1	G	EE	OH	LL	L3	L4	L5	KK	WF	KW	KV	SW	CH	K
16	16	M16x1.5	21	6	4.7	M5	12	132	17	9.5	56	M6	22	8	24	10	5	3.5
20	20	M22x1.5	25	8	7.7	1/8"	16	156	17	15.5	68	M8	24	7	32	13	7	4.6
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

MAX LOCKING TORQUE [Nm]		
Ø	BE	EE
16	12	1.2
20	22	3
25	22	3

KEY TO CODES

CYL	1 1 0	3	16	0	020	C	P
	TYPE		**BORE**		**STROKE**	**MATERIAL**	**GASKETS**
	110 DA non-magnetic minicylinder **112** DAM minicylinder **114** DAM through-rod minicylinder	● **3** TP heads (standard) **4** TP heads (standard) + head nut	■ 16 20 25	**0** Standard **S** Non-magnetic	For the maximum suppliable strokes, look at the technical data	**C** C45 chrome piston rod **X** Stainless piston rod	**P** Polyurethane

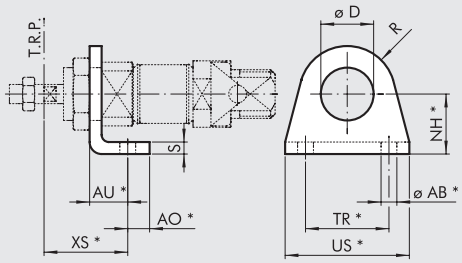
DA: Double-acting (non-cushioned, not magnetic).
DAM: Double action magnetic (unless otherwise specified) not cushioned.

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

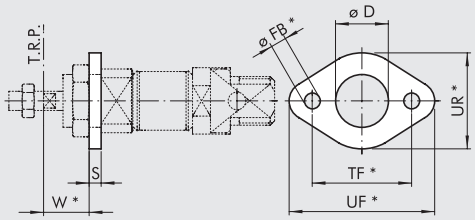


Code	Ø	ø D	XS ±1.4	AU	AO	NH ±0.3	TR Js14	US	ø AB H13	R	S	Weight [g]
W0950080001	8	12	24	11	5	16	25	35	4.5	10	3	22
W0950080001	10	12	24	11	5	16	25	35	4.5	10	3	22
W0950120001	12	16	32	14	6	20	32	42	5.5	13	4	42
W0950120001	16	16	32	14	6	20	32	42	5.5	13	4	42
W0950200001	20	22	36	17	8	25	40	54	6.5	20	5	90
W0950200001	25	22	40	17	8	25	40	54	6.5	20	5	90

*ISO 6432 values

Note: Individually packed

FLANGE MODEL C

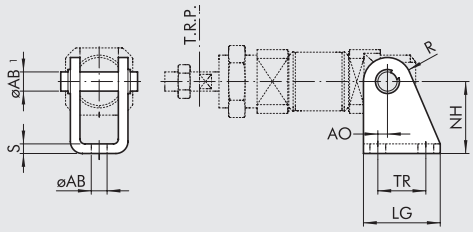


Code	Ø	ø D	W ±1.4	ø FB H13	TF Js14	UF	UR	S	Weight [g]
W0950080002	8	12	13	4.5	30	40	22	3	10
W0950080002	10	12	13	4.5	30	40	22	3	10
W0950120002	12	16	18	5.5	40	52	30	4	26
W0950120002	16	16	18	5.5	40	52	30	4	26
W0950200002	20	22	19	6.5	50	66	40	5	52
W0950200002	25	22	23	6.5	50	66	40	5	52

*ISO 6432 values

Note: Individually packed

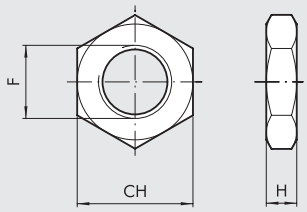
COUNTER-HINGE MODEL BC



Code	Ø	AO	LG	TR Js13	NH ±0.2	MO	ø AB1	ø AB H13	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

Note: Supplied complete with 1 pin and 2 snap rings

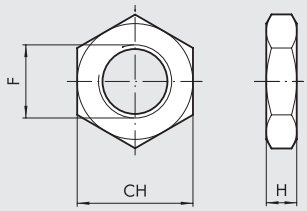
NUT FOR HEADS MODEL D



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

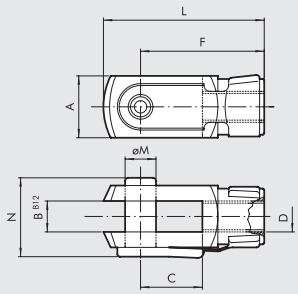
NUT FOR PISTON RODS MODEL DA



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

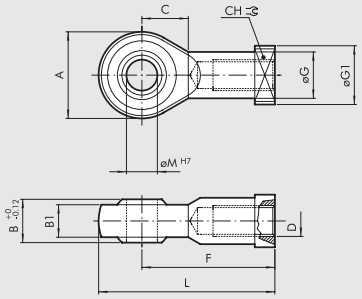
FORK MODEL GK-M



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



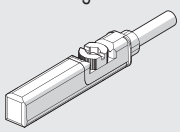
Code	Ø	øM	C	B	B1	A	L	F	D	øG	øG1	CH	Weight [g]
W0950080025	8	5	10	8	6	18	36	27	M4	9	11	9	22
W0950080025	10	5	10	8	6	18	36	27	M4	9	11	9	22
W0950120025	12	6	11	9	6.75	20	40	30	M6	10	13	11	28
W0950120025	16	6	11	9	6.75	20	40	30	M6	10	13	11	28
W0950200025	20	8	13	12	9	24	48	36	M8	12.5	16	14	50
W0950322025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

Note: Individually packed

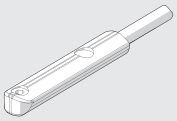
ACCESSORIES FOR ISO 6432 MINI-CYLINDERS: MAGNETIC SENSORS

Ⓔ RETRACTABLE SENSOR

SENSOR, SQUARE TYPE
Latest generation,
secure fixing

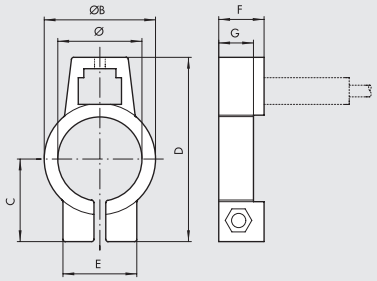


SENSOR, OVAL TYPE
Traditional



For codes and technical data, see **chapter A6**.

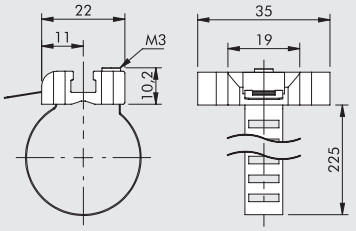
Ⓕ SENSOR BRACKET MOD. DSW



Code	Bore	Model	Ø	ØB	C	D	E	F	G
W0950000608	8	BEF-KHZ-RT-08F23	9.3	12.3	11	24.7	12.2	10	-
W0950000610	10	BEF-KHZ-RT-10F23	11.3	14.3	12	26.7	12.2	10	-
W0950000612	12	BEF-KHZ-RT-12F23	13.3	16.3	13.3	29	12.2	10	-
W0950000616	16	BEF-KHZ-RT-16F23	17.7	20.5	15.5	33.2	12.2	10	7.8
W0950000620	20	BEF-KHZ-RT-20F23	21.7	24.5	17.6	37.3	12.2	10	7.5
W0950000625	25	BEF-KHZ-RT-25F23	26.7	29.5	20.2	42.4	12.2	10	7.5

Note: Individually packed

Ⓖ UNIVERSAL SENSOR BRACKET



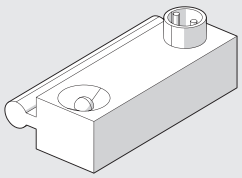
Code	Bore	Model
W0950001103	8 to 25	Sensor bracket 8 to 63

Note: Individually packed
MATERIAL
Bracket: stainless steel
Sensor holder: zamak

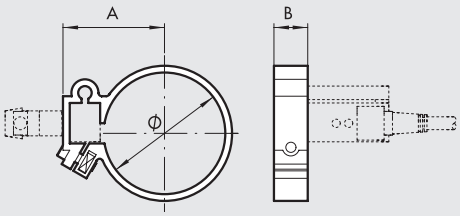
METAL WORK PNEUMATIC

Ⓐ SENSOR SERIES DSM

For codes and technical data, see **chapter A6**.



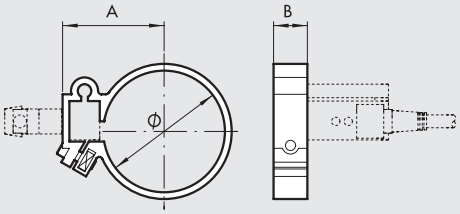
Ⓑ SENSOR BRACKET MOD. DXF FOR STAINLESS STEEL BARREL



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

Note: Individually packed

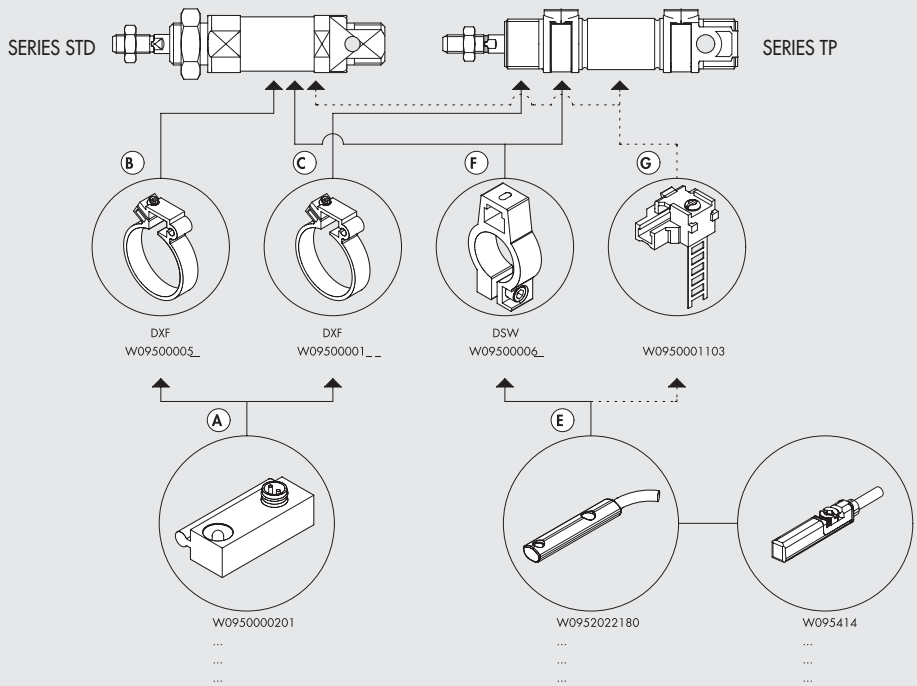
Ⓒ SENSOR BRACKET MOD. DXF FOR ALUMINIUM BARREL



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

Note: Individually packed. For the Ø16 in addition to the bracket 2 reduction rings, for the Ø20 and Ø25 1 reduction ring.

USE SENSORS



ACCESSORIES FOR ISO 6432 MINI-CYLINDERS: MECHANICAL ROD LOCK

TECHNICAL DATA

Operating pressure	bar	3 to 6
	MPa	0.3 to 0.6
Temperature range	°C	-10 to +80
Installation		In any position
Mechanics		Double pad 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
pad		Brass
spring		NBR
piston		Synthetic, with added teflon®
gasket		NBR

OPERATING PRINCIPLE

The mechanical rod lock is a normally-closed mechanism.
In the absence of pneumatic piloting, the two pads (A) lock the cylinder rod in both directions (Fig. 1). With pneumatic piloting, the piston rod guide forces the pads 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 rod lock is a static type, which means that it is necessary to stop the cylinder piston rod pneumatically before locking the part mechanically.

Fig. 1

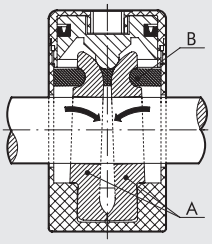
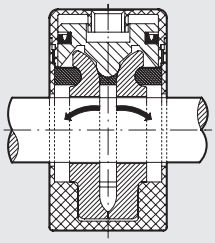
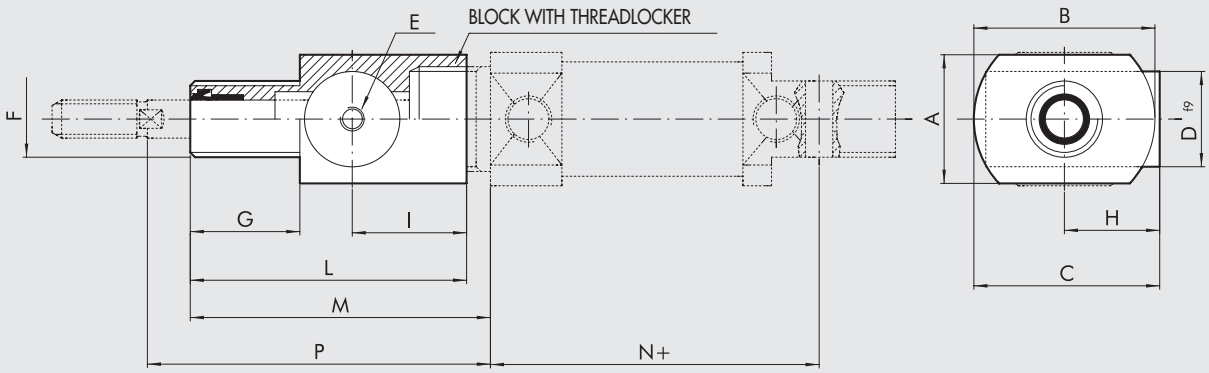


Fig. 2



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

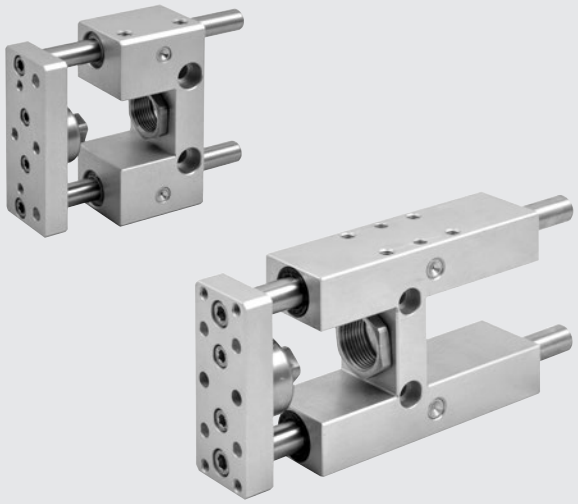
ACCESSORIES FOR ISO 6432 MINI-CYLINDERS: GUIDE UNIT

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 (GDS)*: for limited loads and speeds
H PROFILE (GDH)*: for high loads
H PROFILE (GDM)**: for high speeds

* With bronze guide bushing
** With ball guide bushing

STANDARD STROKES: 50 - 100 - 150 - 200 - 250 - 320 - 400 - 500

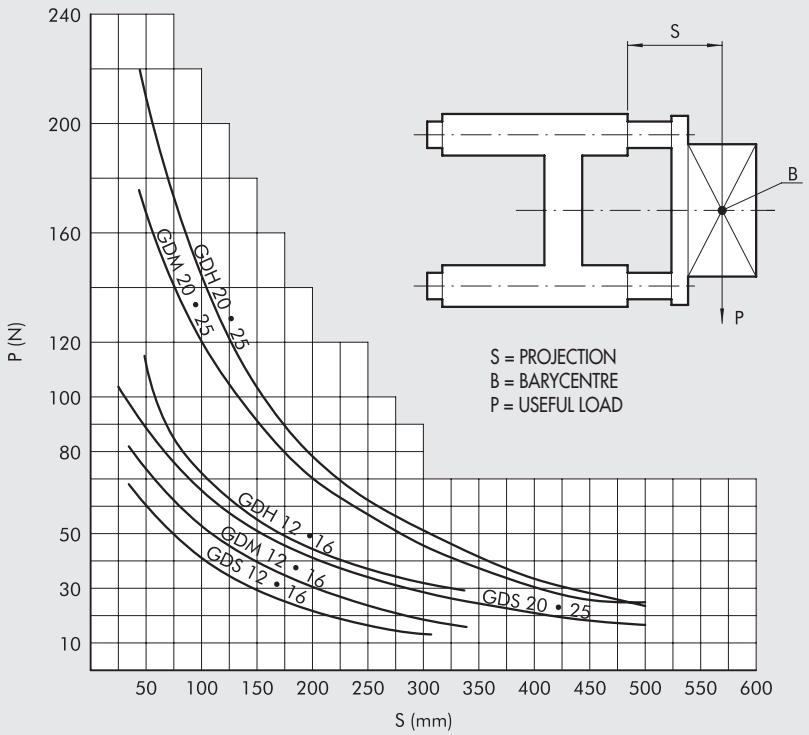
For weights, see cylinder "**General technical data**" at the beginning of the chapter.



GUIDE ELEMENTS

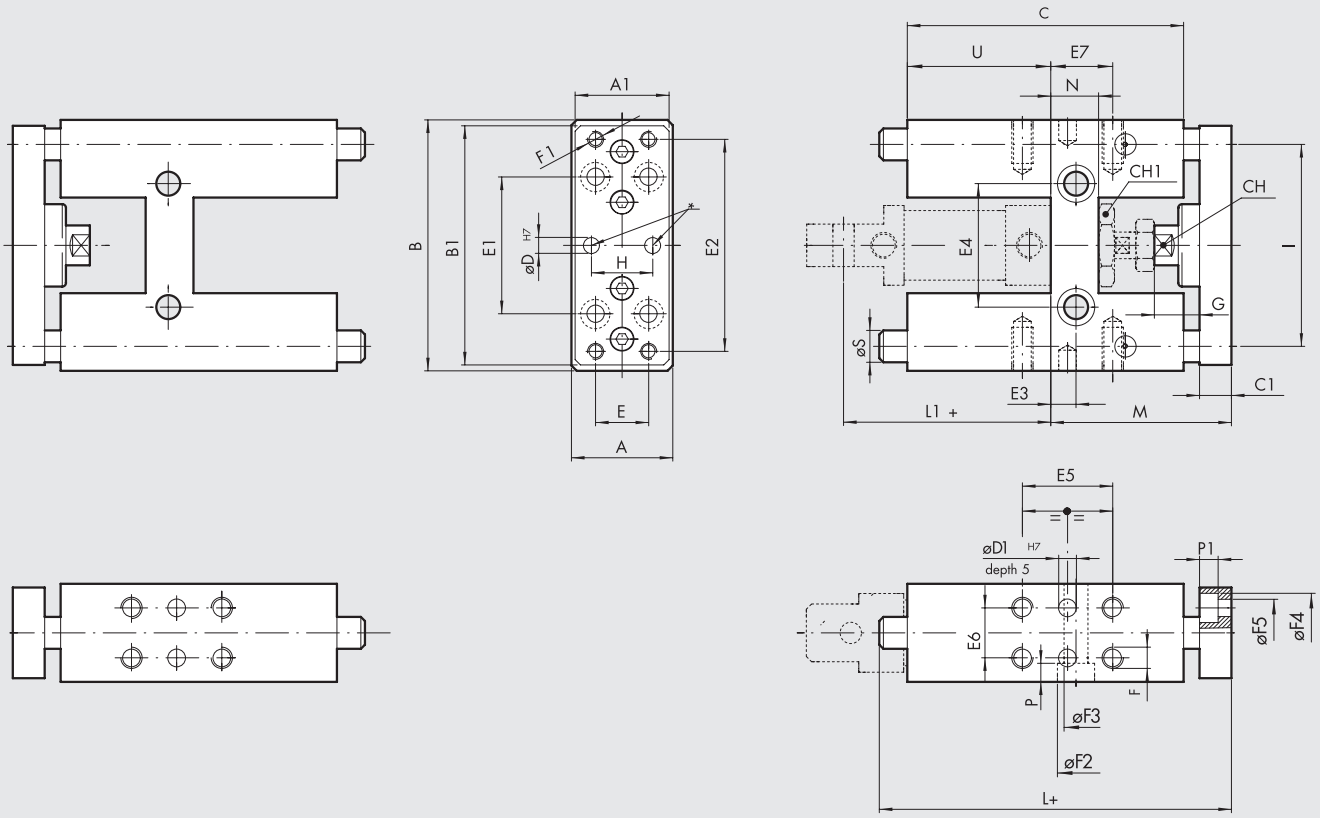
SERIES GDS-GDH	Body:	aluminium alloy
	Guide bushing:	self-lubricating syntered bronze and wiper rings
	Piston rod:	grinded chromed steel
SERIES GDM	Body:	aluminium alloy
	Guide bushing:	linear guide ball bearings and wiper rings
	Piston rod:	hardened, chromed and grinded steel

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).
Also available in V-Lock version (see **chapter A3**).

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).
Also available in V-Lock version (see **chapter A3**).

STROKE

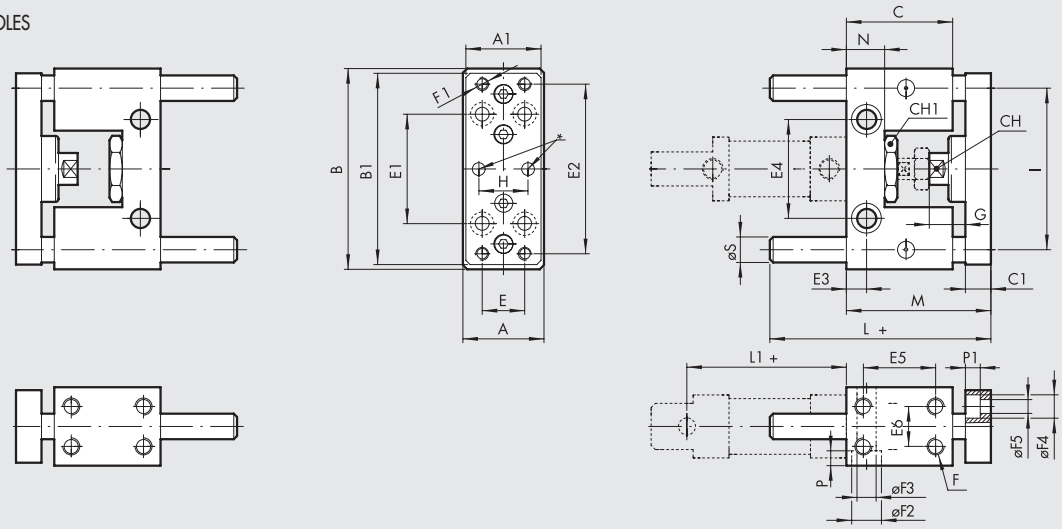
Cylinder stroke [mm]		Guide stroke [mm]
from	**to**	
0	75	50
75	125	100
125	175	150
175	225	200
225	275	250
275	345	320
345	425	400
425	525	500

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.

METAL WORK PNEUMATIC

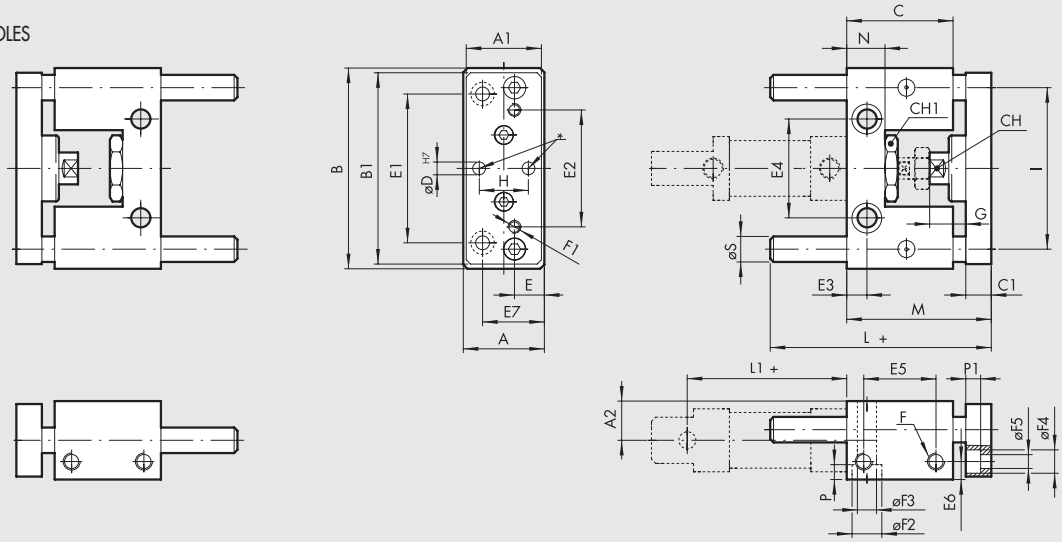
DIMENSIONS OF TYPE GDS

+ = 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	20	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	20	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 CYLINDER

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

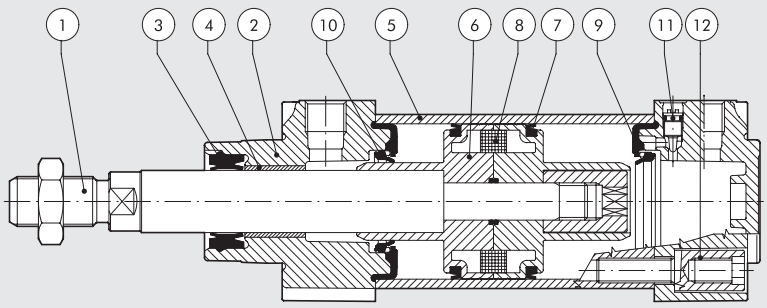
- Configuration with or without magnet
- Single-or double acting – single-or through-rod
- Wide choice of NBR, POLYURETHANE and FKM/FPM gaskets (for high temperatures), for LOW TEMPERATURE
- Piston rod scrapers for use in hostile environments available
- Special versions on request
- Fixing accessories, guide units and mechanical rod lock.

They are available in three versions, series STD, type A, series 3, which differ according to the shape of the barrel and, consequently, the type of sensors and accessories that can be mounted.

TECHNICAL DATA			Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125
Max operating pressure		bar	10						
		MPa	1						
		psi	145						
Temperature range	POLYURETHANE	°C	–25 to +80						
	NBR	°C	–10 to +80						
	FKM/FPM	°C	–10 to +150 (non-magnetic cylinders)						
	Low Temperature	°C	–40 to +80						
	Other piston rod gasket	°C	See next page						
Design			Heads with Tap Tite screws						
Fluid			Unlubricated air. Lubrication, if used, must be continuous						
Standard stroke ✚	single-acting	mm	1 to 250	1 to 250	1 to 250	1 to 250	-	-	-
	double-acting with spring	mm	1 to 250	1 to 250	1 to 250	1 to 250	-	-	-
	double-acting	mm	1 to 2800	1 to 2800	1 to 2800	1 to 2800	1 to 2800	1 to 2600	1 to 2600
Versions			Double-acting cushioned, Double-acting cushioned with spring, extended or retracted piston rod, Single-acting extended or retracted rod cushioned, Through-rod cushioned, Long cushioning, High-temperature, Protective bellows, Rod lock, Oil seal, Through-rod oil seal, Low friction, No stick-slip.						
Sensor magnet			All versions come complete with magnet. Supplied without magnet on request.						
Inrush pressure		bar	0.4	0.4	strokes < 1500 mm: 0.3		strokes < 1500 mm: 0.2		
		bar			strokes > 1500 mm: 0.4		strokes > 1500 mm: 0.4		
	for type-R gasket	bar	1.5	1	1	0.8	0.5	0.5	0.5
Forces generated at 6 bar thrust/retraction			See cylinder "**General technical data**" at the beginning of the chapter						
Weights			See cylinder "**General technical data**" at the beginning of the chapter						
Notes			**For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.**						
			✚ Maximum recommended strokes. Higher values can create operating problems						

COMPONENTS

① PISTON ROD: C45 steel or stainless steel, thick chromed
② HEAD: die cast aluminium
③ PISTON ROD GASKET: polyurethane, NBR, FKM/FPM, FKM/FPM with metal scraper
④ GUIDE BUSHING: steel strip with bronze and PTFE insert
⑤ BARREL: drawn anodized 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



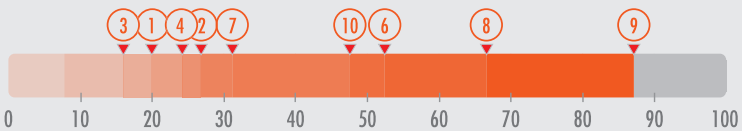
METAL WORK PNEUMATIC

OVERVIEW OF SEALS AND SCRAPERS

	Code identifier	Key feature	Applications	Gasket material	Temperature range	Notes
① 	**....N**	General use.	Standard applications, also with humidity.	NBR	-10 to +80 °C	
② 	**....P**	Long life.	Applications with long strokes or high number of cycles.	Polyurethane	-25 ÷ +80 °C	
③ 	**....V**	High temperatures - chemicals.	Industrial applications with chemical agents and/or at high temperatures.	FPM/FKM	-10 to +150 °C (non magnetic cylinders)	
④ 	**....B**	Low temperatures.	Applications in presence of low temperature such as in cold environments.	NBR	-40 to +80 °C	
⑦ 	**....C**	Dirt and dust. Reference name: COMBI	Applications in dirty and dusty environments.	Scraper made of technopolymer, the other seals are made of NBR.	-10 to +80 °C	Maximum recommended speed: 1 m/s
⑧ 	**....R**	Dirt and low temperatures. Reference name: HARD PU	Medium-Heavy duty applications, with presence of dirt and low temperatures, such as in agricolture or in transport sector.	Piston rod seal made of hard polyurethane, the other seals are made of polyurethane.	-25 to +80 °C	Low temperature versions for a minimum temperature of -35°C are available on request.
⑨ 	**....M**	Dirt and high temperature. Reference name: METAL	Heavy duty applications, in presence of hard dirt and high temperatures, like in cement plants, foundries or in transport sector.	Metal scraper, the other seals are made of FKM/FPM.	-10 to +150 °C	Not available in Ø 32. The scraper is housed in a special head.
SEALS USED IN OTHER FAMILIES OF ISO 15552 CYLINDERS						
① 	**123....** only for series 3	Ultra low friction.	Textile industry, dandy devices, pneumatic springs.	NBR	-10 to +80 °C	
⑩ 	**....BL** and **....WL**	HCR (High Corrosion Resistance)	Food and Beverage sector, such as dairy industry.	Anti-stagnation scraper made of special polyurethane, the other seals are made of NBR.	-10 to +60 °C	
② 	**W184...** **W185...**	INOX	Industrial applications with aggressive chemical agents.	Polyurethane	-20 to +80 °C	
③ 	**W184V...** **W185V...**	Stainless steel high temperature.	Industrial applications, in presence of chemicals and high temperatures requested, such as in chemical plants.	FKM/FPM	-10 to +150 °C	
SEALS AVAILABLE ON REQUEST						
⑥ 	**Only on request**	Self lubricated.	Applications where the lubricants in the cylinder could be removed, such as in car washing plants.	Self lubricated tecnopolymer.	-30 to +80 °C	

Anti-contamination Effect Indicators

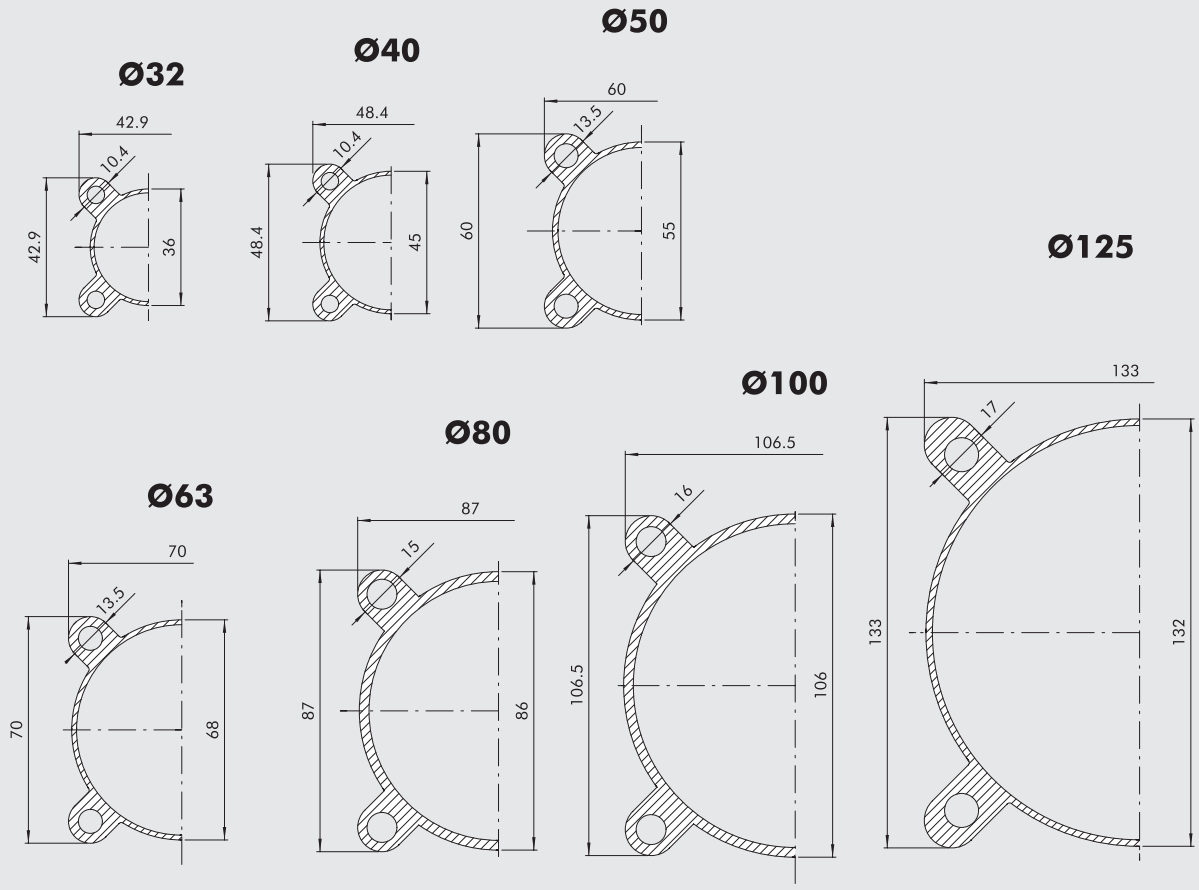
An index of protection against the dirt that settles and adheres to the piston rod is provided for each version, on a 1 to 100 scale.



ISO 15552 CYLINDER
SERIES STD

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.

BARREL CROSS SECTION



METAL WORK PNEUMATIC

KEY TO CODES

CYL	1 2 1	0	3 2	0 0 5 0	C	P	E
	TYPE	VERSION	BORE	STROKE	MATERIAL	GASKETS	
	120 Double-acting, cushioned, non-magnetic	**0** Diameter	32	For the maximum suppliable strokes, look at the technical data	**A** C45 chromed piston rod, aluminium piston: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with Ø 80 mm and over	**N** NBR gaskets	✚ ▼ **E** Single-acting extended rod or double-acting with spring, extended piston rod
	121 Double-acting, cushioned	**S** Non-magnetic	40		**C** C45 chromed piston rod, technopolymer piston: standard for cylinders of Ø 32 to 63 mm with <1000 mm strokes	**P** Polyurethane gaskets	✚ ✖ **R** Double-acting with spring, retracted piston rod
●	**122** Through-rod	▲ **G** No stick-slip	50		**Z** Stainless steel piston rod and nut aluminium piston	**V** FKM/FPM gaskets	★ **1** + Secure Lock with manual control
	124 Double-acting, non-cushioned		63		**X** Stainless steel piston rod and nut technopolymer piston	● **B** Low temperature	★ **2** + Secure Lock without manual control
	125 Opposed		80			**C** "Combi" piston rod gasket	
✚	**126** Single-acting		■ 100			▶ **R** "Hard PU" piston rod gasket	
	127 Tandem		■ 125			● ◘ **M** "Metal" piston rod gasket	
▷	**134** Version suitable for rod lock						
✱ ▷	**136** Version with rod lock						
✱ ◆ ▷	**137** Version suitable for rod lock + guide unit						
✱ ▷ ◇	**154** Version suitable for bellow						
✱ ▷ ◇	**156** Version with mounted bellow						

■ 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). The versions without the final "E" are to be considered with retracted piston rod
◘ Not available in Ø 32
▲ **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
▷ Not available for single-acting and double-acting with spring versions
▼ Letter to be added only to the single acting extended piston rod version or double-acting with spring, extended piston rod
✖ Letter to be added only for the double-acting version with spring, retracted piston rod
★ Extra digit to be added only for types 136 with the "Secure Lock" device
◇ Maximum suppliable strokes: Ø 32 to 63: from 1 to 720 mm; Ø 80 to 125: from 1 to 840 mm
▶ The 126 (single-action) type and the (No-stick-slip) version G are not available

KEY TO CODES VERSION LOW-FRICTION

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

KEY TO CODES VERSION LONG-CUSHIONING

CYL	1 3 1	A	3 2	0 0 5 0	A	P
		TYPE	BORE	STROKE	MATERIAL	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
		B 150 mm front/rear cushioning cone – 150 mm ext.	40		**Z** Stainless steel piston rod and nut aluminium piston	**P** Polyurethane gaskets
		C 100 mm front/rear cushioning cone – 100 mm ext.	50			✱ **V** FKM/FPM gaskets
		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.				

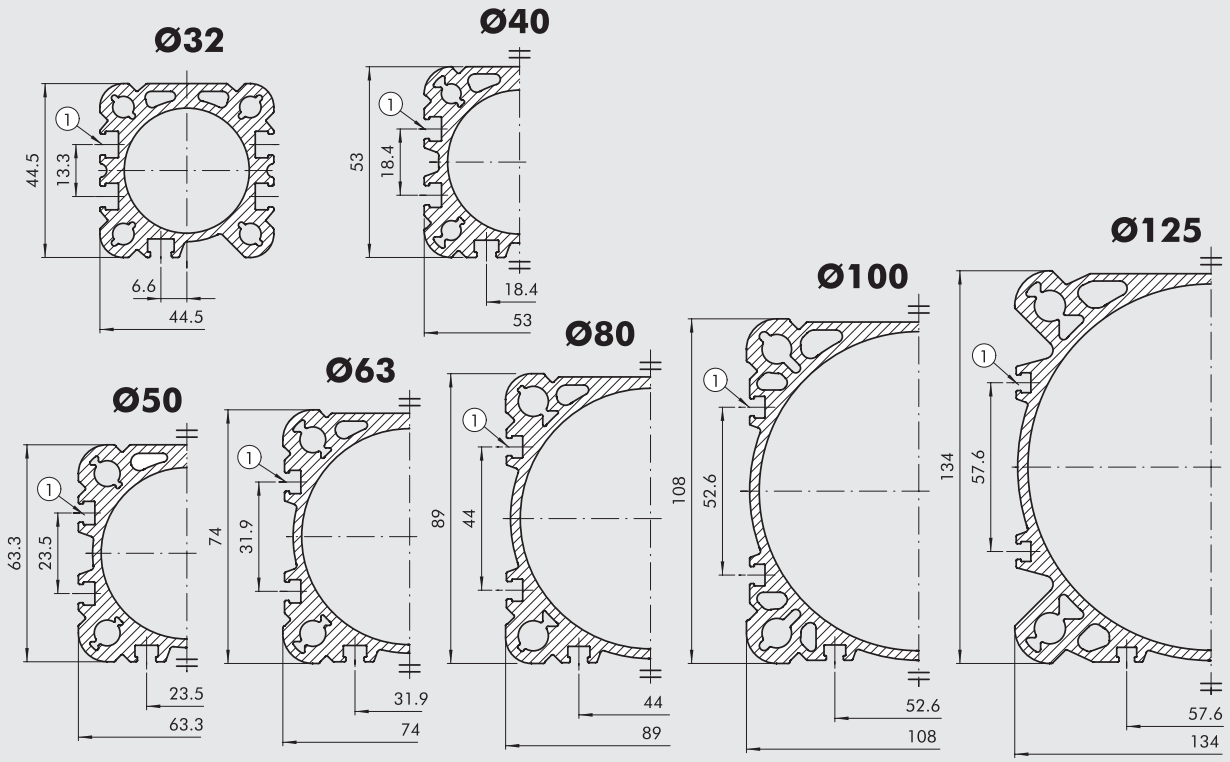
✱ Version valid only for types: Q, R, S, T, U and V.

ISO 15552 CYLINDER
TYPE A

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.

BARREL CROSS SECTION

① SLOTS FOR RETRACTABLE SENSOR



METAL WORK PNEUMATIC

KEY TO CODES

CYL	121 TYPE	A VERISION	32 BORE	0050 STROKE	C MATERIAL	P GASKETS	E
	121 Double-acting, cushioned	A Standard	32	For the maximum suppliable strokes, look at the technical data	A C45 chromed piston rod, aluminium piston: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with Ø 80 mm and over	N NBR gaskets	✚▼ E Single-acting extended rod or double-acting with spring, extended piston rod
●	122 Through-rod	▲ B No stick-slip	40		C C45 chromed piston rod, technopolymer piston: standard for cylinders of Ø 32 to 63 mm with <1000 mm strokes	P Polyurethane gaskets	✚✖ R Double-acting with spring, retracted piston rod
	124 Double-acting, non-cushioned	C Non-magnetic	50		Z Stainless steel piston rod and nut aluminium piston	V FKM/FPM gaskets	★ 1 + Secure Lock with manual control
	125 Opposed		63		X Stainless steel piston rod and nut technopolymer piston	● B Low temperature	★ 2 + Secure Lock without manual control
✚	126 Single-acting		80			C "Combi" piston rod gasket	
	127 Tandem		A1 = Ø 100			▶ R "Hard PU" piston rod gasket	
▷	134 Version suitable for rod lock		A2 = Ø 125			●◘ M "Metal" piston rod gasket	
✱ ▷	136 Version with rod lock						
✱ ◆ ▷	137 Version suitable for rod lock + guide unit						
✱ ▷ ◇	154 Version suitable for bellow						
✱ ▷ ◇	156 Version with mounted bellow						

- ● 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). The versions without the final "E" are to be considered with retracted piston rod.
- ◘ Not available in Ø 32
- ▼ Letter to be added only to the single acting extended piston rod version or double-acting with spring, extended piston rod
- ✖ Letter to be added only for the double-acting version with spring, retracted piston rod
- ★ Extra digit to be added only for types 136 with the "Secure Lock" device
- ◇ Maximum suppliable strokes: Ø 32 to 63: from 1 to 720 mm; Ø 80 to 125: from 1 to 840 mm
- ▲ **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
- ▷ Not available for single-acting and double-acting with spring versions
- ▶ The 126 (single-action) type and the (No-stick-slip) version B are not available

KEY TO CODES VERSION LOW-FRICTION

CYL	129	A TYPE	32 BORE	0050 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 piston rod, aluminium piston: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with Ø 80 mm and over	N NBR gaskets
		B Low friction, type B	40		C C45 chromed piston rod, technopolymer piston: standard for cylinders of Ø 32 to 63 mm with <1000 mm strokes	P Polyurethane gaskets
		C Low friction, type C	50		Z Stainless steel piston rod and nut aluminium piston	V FKM/FPM gaskets
		D Low friction, type D	63		X Stainless steel piston rod and nut technopolymer piston	
		E Low friction, type E	80			
		F Low friction, type F	A1 = Ø 100 A2 = Ø 125			

KEY TO CODES VERSION LONG-CUSHIONING

CYL	130	A TYPE	32 BORE	0050 STROKE	A MATERIAL	P GASKETS
		A 200 mm front/rear cushioning cone – 200 mm ext.	32	1 to 2600 mm	A C45 chromed piston rod, aluminium piston for all sizes	N NBR gaskets
		B 150 mm front/rear cushioning cone – 150 mm ext.	40		Z Stainless steel piston rod and nut aluminium piston	P Polyurethane gaskets
		C 100 mm front/rear cushioning cone – 100 mm ext.	50			✱ V FKM/FPM gaskets
		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.				

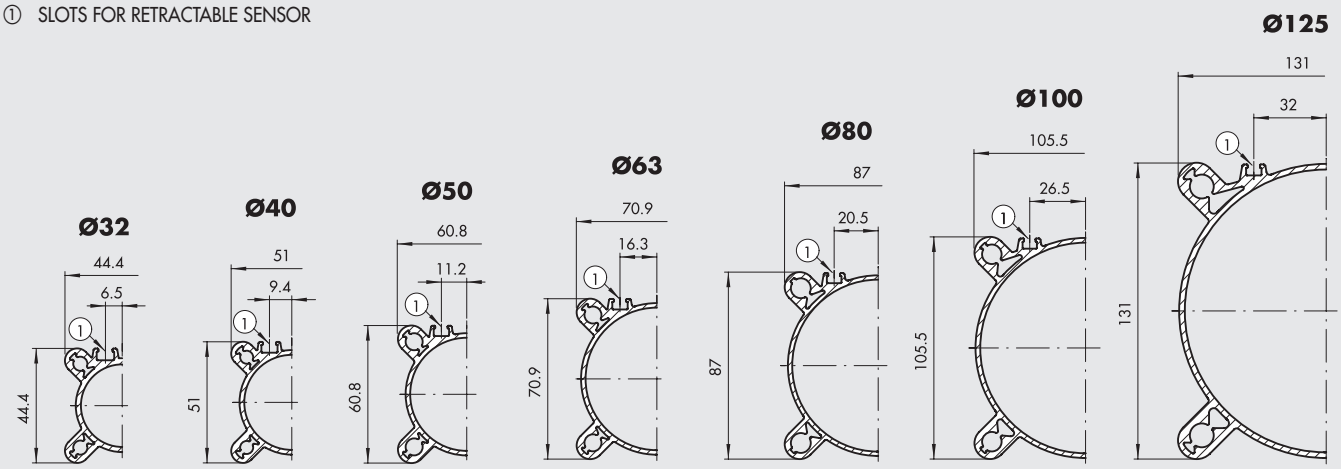
✱ Version valid only for types: Q, R, S, T, U and V.

ISO 15552 CYLINDER SERIES 3

ISO 15552 cylinders, featuring specially-shaped barrels 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.

BARREL CROSS SECTION

① SLOTS FOR RETRACTABLE SENSOR



KEY TO CODES

CYL	1 2 1 TYPE	3 VERSION	3 2 BORE	0 0 5 0 STROKE	C MATERIAL	P GASKETS	E
	121 Double-acting, cushioned	**3** Series 3	32	For the maximum suppliable strokes, look at the technical data	**A** C45 chromed piston rod, aluminium piston: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with Ø 80 mm and over	**N** NBR gaskets	✚ ▼ **E** Single-acting extended rod or double-acting with spring, extended piston rod
●	**122** Through-rod	◆ **4** Series 3 No stick slip	40		**C** C45 chromed piston rod, technopolymer piston: standard for cylinders of Ø 32 to 63 mm with <1000 mm strokes	**P** Polyurethane gaskets	✚ ✖ **R** Double-acting with spring, retracted piston rod
	124 Double-acting, non-cushioned	**5** Series 3 Non-magnetic	50		**Z** Stainless steel piston rod and nut aluminium piston	**V** FKM/FPM gaskets	★ **1** + Secure Lock with manual control
	125 Opposed		63		**X** Stainless steel piston rod and nut technopolymer piston	● **B** Low temperature	★ **2** + Secure Lock without manual control
✚	**126** Single-acting		80			**C** "Combi" piston rod gasket	
	127 Tandem		A1 = Ø 100			▶ **R** "Hard PU" piston rod gasket	
▷	**134** Version suitable for rod lock		A2 = Ø 125			● ◘ **M** "Metal" piston rod gasket	
■ ▷	**136** Version with rod lock						
■ ✱ ▷	**137** Version suitable for rod lock + guide unit						
■ ▷ ◇	**154** Version suitable for bellow						
■ ▷ ◇	**156** Version with mounted bellow						

● 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). The versions without the final "E" are to be considered with retracted piston rod.
▼ Letter to be added only to the single acting extended piston rod version or double-acting with spring, extended piston rod
✖ Letter to be added only for the double-acting version with spring, retracted piston rod
★ Extra digit to be added only for types 136 with the "Secure Lock" device
◇ Maximum suppliable strokes: Ø 32 to 63: from 1 to 720 mm; Ø 80 to 125: from 1 to 840 mm
◆ **For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only.**
✱ Available until Ø 100
▷ Not available for single-acting and double-acting with spring versions
■ Not available for gasket V or B
◘ Not available in Ø 32
▶ The 126 (single-action) type and the (No-stick-slip) version 4 are not available

ISO 15552 LOW-FRICTION CYLINDER
CODE 123 FOR SERIES STD
CODE 129 FOR TYPE A

METAL WORK PNEUMATIC

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:

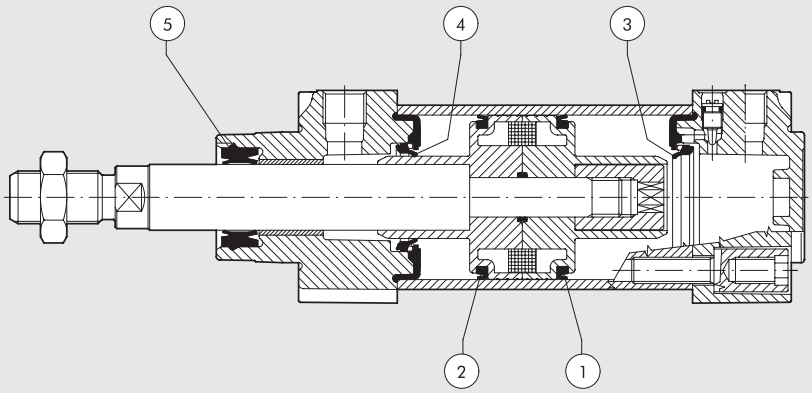
1) The best type is A as it involves less friction.
2) Type B should be used when the cylinder is working under normal conditions outside the pneumatic cushioning area.
   Cushioning is only for emergency use. It acts as a shock absorber in the case of malfunction.
3) Type C differs from type A due to 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, NBR or FKM/FPM
② Front chamber piston gasket made of polyurethane, NBR or FKM/FPM
③ Rear chamber cushioning gasket made of polyurethane, NBR or FKM/FPM
④ Front chamber cushioning gasket made of polyurethane, NBR or FKM/FPM
⑤ Piston rod gasket made of polyurethane, NBR or FKM/FPM



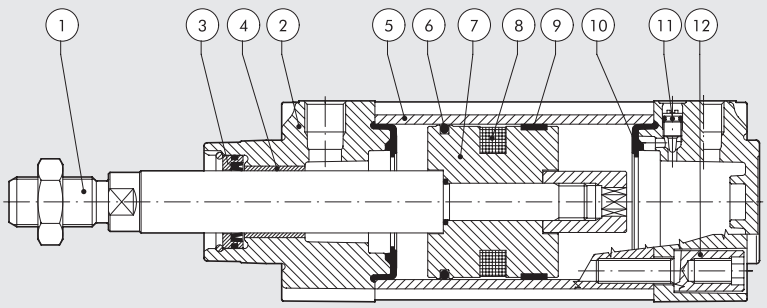
ISO 15552 ULTRA-LOW FRICTIONS CYLINDER

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		Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125
Max operating pressure	bar	10						
	MPa	1						
	psi	145						
Temperature range	NBR °C	–10 to +80						
Design		Heads with Tap Tite screws						
Fluid		Unlubricated air						
Standard strokes	mm	1 to 1200						
Versions		Double-acting magnetic, Double-acting non-magnetic (always "No stick-slip" cylinder)						
Sensor magnet		Available magnetic and non-magnetic versions.						
Inrush pressure	bar	0.08	0.06	0.05	0.04	0.03	0.03	0.03
Forces generated at 6 bar thrust/retraction		See cylinder "**General technical data**" at the beginning of the chapter						
Weights		See cylinder "**General technical data**" at the beginning of the chapter						
Notes		There may be leakage between the two chambers in the presence of low pressures (up to 1 bar).						

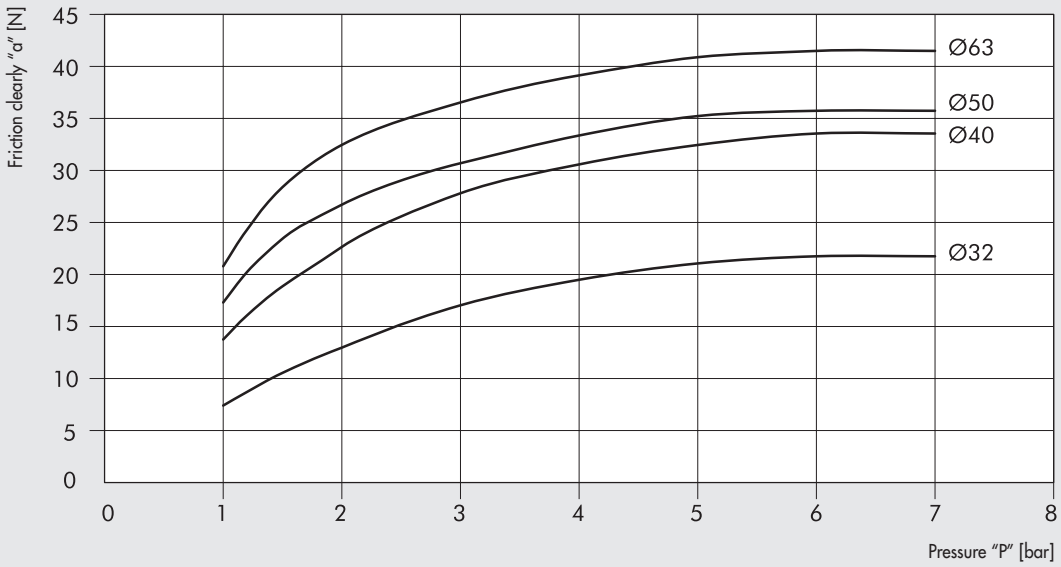
COMPONENTS

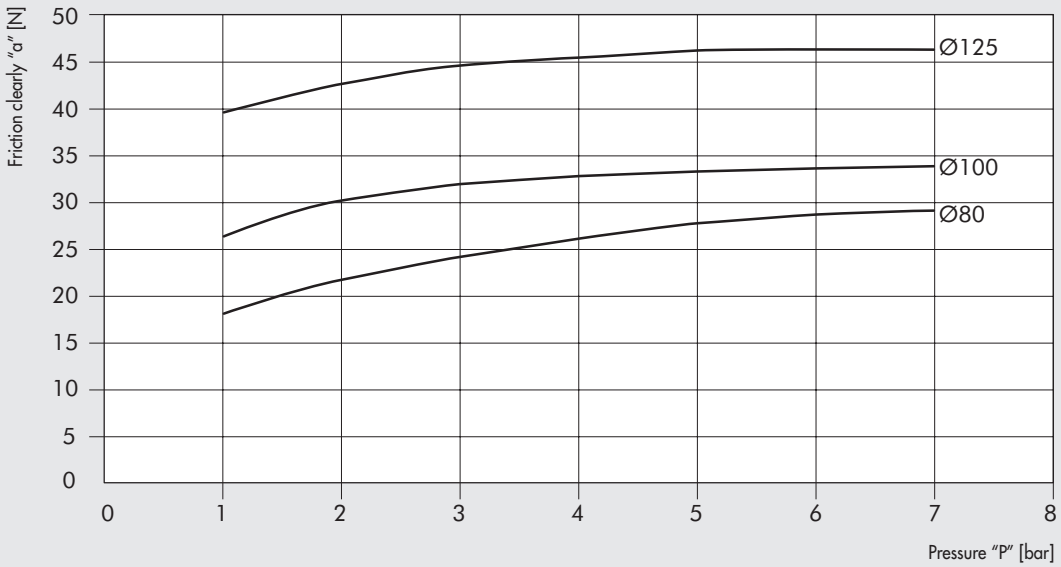
① PISTON ROD: C45 steel or stainless steel, thick chromed
② HEAD: die cast aluminium
③ PISTON ROD GASKET: NBR
④ GUIDE BUSHING: steel strip with bronze insert
⑤ BARREL: drawn anodized calibrated aluminium
⑥ PISTON GASKET: NBR
⑦ HALF-PISTON: aluminium alloy
⑧ MAGNET: plastoferrite
⑨ GUIDE RING: special 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



METAL WORK PNEUMATIC

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 cm^2

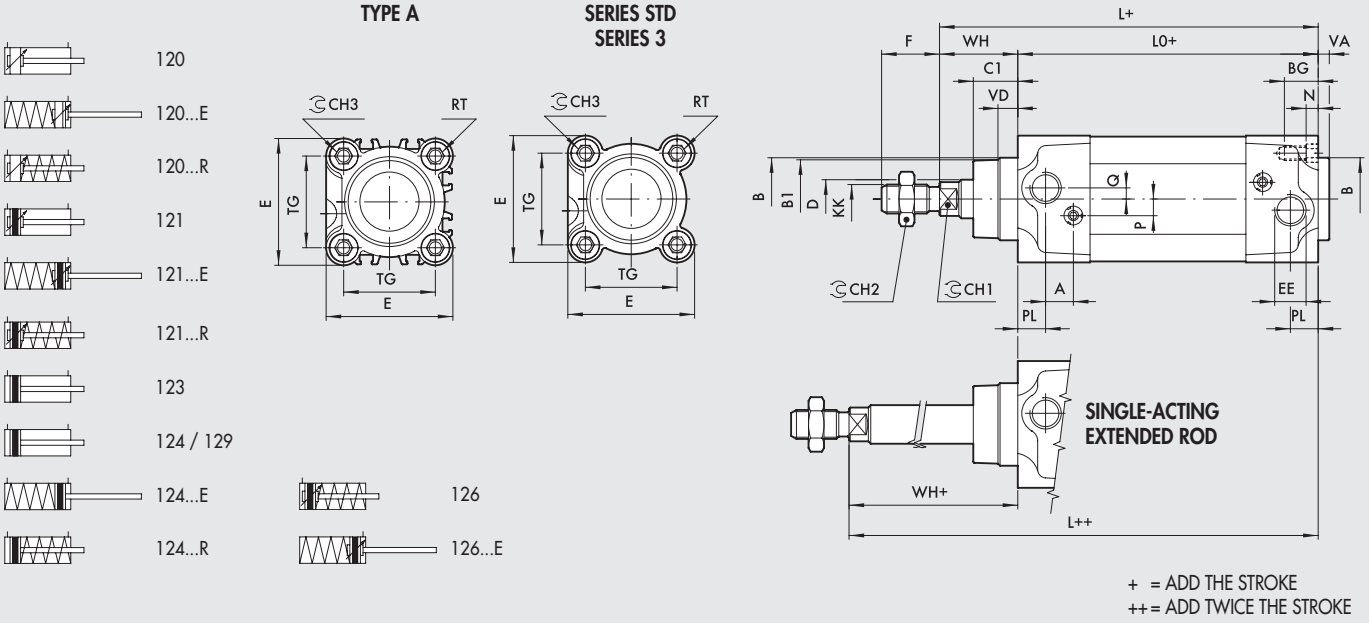
KEY TO CODES

CYL	1 2 3	3	3 2	0 1 0 0	A	N
	TYPE		**BORE**	**STROKE**	**MATERIAL**	**GASKETS**
	123 Ultra-low friction	**3** Double-acting magnetic **5** Double-acting not magnetic	32 40 50 63 80 A1 = 100 A2 = 125	From 1 to 1200 mm	**A** C45 chromed piston 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 CYLINDER DIMENSIONS

DIMENSIONS SINGLE PISTON ROD VERSIONS



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

VERSION 120... / 121... (double-acting cushioned)
VERSION 123... / 124... / 129... (double-acting)

Ø	PL	VD	A	B	B_1	WH	C_1	CH_1	CH_2	KK	CH_3	D	TG	VA	F	EE	RT	E	L	L_0	BG	N	P	Q
32	10	6.5	10	30	28	26	16	10	17	M10x1.25	6	12	32.5	4	22	G1/8	M6	46	120	94	14.5	4.5	6	4
40	12	8	10	35	33	30	20	13	19	M12x1.25	6	16	38	4	24	G1/4	M6	54	135	105	14.5	4.5	6	4
50	14	13	10	40	38	37	25	17	24	M16x1.5	8	20	46.5	4	32	G1/4	M8	64.5	143	106	17.5	5.5	6	6
63	16	14	10	45	40	37	25	17	24	M16x1.5	8	20	56.5	4	32	G3/8	M8	75.5	158	121	17.5	5.5	6	6
80	18	12	12	45	43	46	33	22	30	M20x1.5	10	25	72	4	40	G3/8	M10	94	174	128	21.5	5.5	10	7
100	20	14	12	55	49	51	38	22	30	M20x1.5	10	25	89	4	40	G1/2	M10	111	189	138	21.5	5.5	10	7
125	25	20	10	60	54	65	45	27	41	M27x2	12	32	110	6	54	G1/2	M12	135	225	160	25.5	6.5	12	8

VERSION 126... (single-acting cushioned retracted piston rod)
VERSION 126...E (single-acting cushioned extended piston rod)

	LO								L							
	Ø 32		Ø 40		Ø 50		Ø 63		Ø 32		Ø 40		Ø 50		Ø 63	
Stroke	**126...**	**126...E**	**126...**	**126...E**	**126...**	**126...E**	**126...**	**126...E**	**126...**	**126...E**	**126...**	**126...E**	**126...**	**126...E**	**126...**	**126...E**
0 - 25	94 •	94•	105 •	105 •	106 •	106•	121•	121 •	120 •	120•	135 •	135 •	143 •	143 •	158 •	158 •
26 - 50	94 •	115	105 •	129.5	106 •	130.5	121•	145.5	120 •	141	135 •	159.5	143 •	167.5	158 •	182.5
51 - 75	115	136	129.5	154	130.5	155	145.5	170	141	162	159.5	184	167.5	192	182.5	207
76 - 100	136	157	154	178.5	155	179.5	170	194.5	162	183	184	208.5	192	216.5	207	231.5
101 - 125	157	178	178.5	203	179.5	204	194.5	219	183	204	208.5	233	216.5	241	231.5	256
126 - 150	178	199	203	227.5	204	228.5	219	243.5	204	225	233	257.5	241	265.5	256	280.5
151 - 175	199	220	227.5	252	228.5	253	243.5	268	225	246	257.5	282	265.5	290	280.5	305
176 - 200	220	241	252	276.5	253	277.5	268	292.5	246	267	282	306.5	290	314.5	305	329.5
201 - 225	241	262	276.5	301	277.5	302	292.5	317	267	288	306.5	331	314.5	339	329.5	354
226 - 250	262	283	301	325.5	302	326.5	317	341.5	288	309	331	355.5	339	363.5	354	378.5

• Dimensions according to ISO 15552

VERSION 12....R (double-acting with spring, retracted piston rod)
VERSION 12....E (double-acting with spring, extended piston rod)

	LO								L							
	Ø 32		Ø 40		Ø 50		Ø 63		Ø 32		Ø 40		Ø 50		Ø 63	
Stroke	**12...R**	**12...E**	**12...R**	**12...E**	**12...R**	**12...E**	**12...R**	**12...E**	**12...R**	**12...E**	**12...R**	**12...E**	**12...R**	**12...E**	**12...R**	**12...E**
0 - 25	104	104	117	117	106 •	106 •	121 •	121 •	130	130	147	147	143 •	143 •	158 •	158 •
26 - 50	104	125	117	141.5	106 •	130.5	121 •	145.5	130	151	147	171.5	143 •	167.5	158 •	182.5
51 - 75	125	146	141.5	166	130.5	155	145.5	170	151	172	171.5	196	167.5	192	182.5	207
76 - 100	146	167	166	190.5	155	179.5	170	194.5	172	193	196	220,5	192	216.5	207	231.5
101 - 125	167	188	190.5	215	179.5	204	194.5	219	193	214	220,5	245	216.5	241	231.5	256
126 - 150	188	209	215	239.5	204	228.5	219	243.5	214	235	245	269.5	241	265.5	256	280.5
151 - 175	209	230	239.5	264	228.5	253	243.5	268	235	256	269.5	294	265.5	290	280.5	305
176 - 200	230	251	264	288.5	253	277.5	268	292.5	256	277	294	318.5	290	314.5	305	329.5
201 - 225	251	272	288.5	313	277.5	302	292.5	317	277	298	318.5	343	314.5	339	329.5	354
226 - 250	272	293	313	337.5	302	326.5	317	341.5	298	319	343	367.5	339	363.5	354	378.5

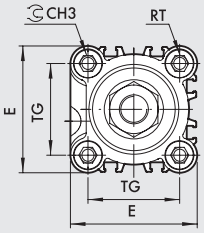
• Dimensions according to ISO 15552

METAL WORK PNEUMATIC

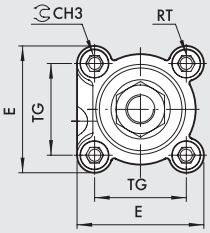
DIMENSIONS THROUGH-ROD VERSIONS

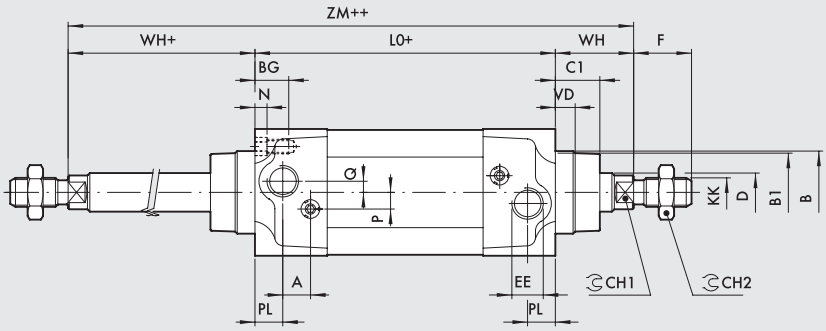
\+ = ADD THE STROKE
++ = ADD TWICE THE STROKE

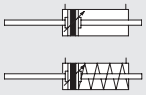
TYPE A



SERIES STD
SERIES 3







VERSION 122... (double-acting cushioned)

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 122...R (double-acting cushioned with spring, retracted piston rod)

	L0				ZM			
Stroke	**Ø 32**	**Ø 40**	**Ø 50**	**Ø 63**	**Ø 32**	**Ø 40**	**Ø 50**	**Ø 63**
0 - 25	104	117	106 •	121 •	156	177	180	195
26 - 50	104	117	106 •	121 •	156	177	180	195
51 - 75	125	141.5	130.5	145.5	177	201.5	204.5	219.5
76 - 100	146	166	155	170	198	226	229	244
101 - 125	167	190.5	179.5	194.5	219	250.5	253.5	268.5
126 - 150	188	215	204	219	240	275	278	293
151 - 175	209	239.5	228.5	243.5	261	299.5	302.5	317.5
176 - 200	230	264	253	268	282	324	327	342
201 - 225	251	288.5	277.5	292.5	303	348.5	351.5	366.5
226 - 250	272	313	302	317	324	373	376	391

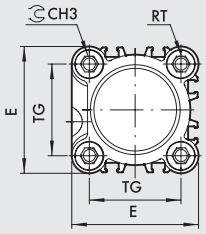
• Dimensions according to ISO 15552

NOTES

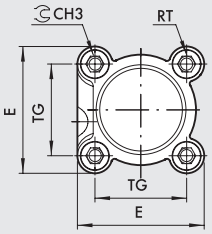
DIMENSIONS LONG-CUSHIONING VERSION

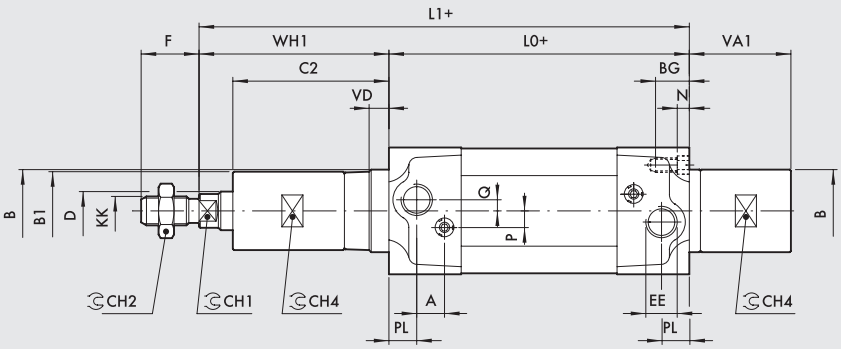
\+ = ADD THE STROKE

SERIES STD



TYPE A





130 / 131

Ø	PL	VD	A	B	B_1	CH_1	CH_2	CH_3	CH_4	KK	D	TG	F	EE	RT	E	L_0	BG	N	P	Q
32	10	6.5	10	30	29	10	17	6	27	M10x1.25	12	32.5	22	G1/8	M6	46	94	14.5	4.5	6	4
40	12	8	10	35	34	13	19	6	30	M12x1.25	16	38	24	G1/4	M6	54	105	14.5	4.5	6	4
50	14	13	10	40	38	17	24	8	35	M16x1.5	20	46.5	32	G1/4	M8	64.5	106	17.5	5.5	6	6
63	16	14	10	45	38	17	24	8	35	M16x1.5	20	56.5	32	G3/8	M8	75.5	121	17.5	5.5	6	6

100 mm LONG-CUSHIONING

Ø	WH_1	C_2	VA_1	L_1
32	106	96	79	200
40	107	97	76.5	212
50	113.5	101.5	76.5	219.5
63	113.5	101.5	76.5	234.5

150 mm LONG-CUSHIONING

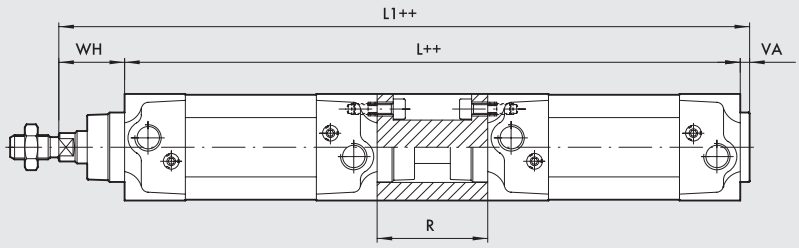
Ø	WH_1	C_2	VA_1	L_1
32	156	146	129	250
40	157	147	121.5	262
50	162.5	150.5	119.5	268.5
63	162.5	150.5	123.5	283.5

200 mm LONG-CUSHIONING

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 TANDEM VERSION

++ = ADD TWICE THE STROKE



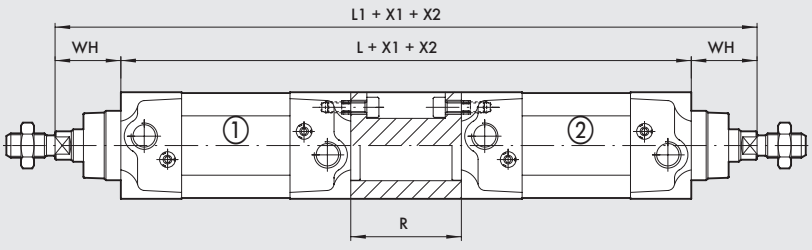
127

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 OPPOSED VERSION

X1 = STROKE CYLINDER 1
X2 = STROKE CYLINDER 2



125

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 CYLINDER

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 or series 3, 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			Ø32	Ø40	Ø50	Ø63
Max operating pressure		bar	10			
		MPa	1			
		psi	145			
Temperature range	POLYURETHANE	°C	–25 to +80			
Design			Heads with Tap Tite screws			
Fluid			Unlubricated air. Lubrication, if used, must be continuous			
Maximun stroke		mm	300	400	500	
Versions			Double-acting cushioned, Through-rod cushioned, No stick-slip			
Sensor magnet			Available magnetic and non-magnetic versions.			
Inrush pressure		bar	0.4	0.4	0.3	0.3
Max torque on piston rod		Nm	0.2	0.4	1	1
Maximum rotation on the rod		degrees	1° 30′	1° 30′	1°	1°
Forces generated at 6 bar thrust/retraction			See cylinder "**General technical data**" at the beginning of the chapter			
Weights			See cylinder "**General technical data**" at the beginning of the chapter			
Notes			**For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.**			

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	32	✚ Ø 32 stroke 1 to 300 mm	**F** "Two-Flat" piston rod AISI 303, stainless steel nut, technopolymer piston	**P** Polyurethane gaskets
	121 Double-acting, cushioned	**S** Non-magnetic	40	✚ Ø 40 stroke 1 to 400 mm		
	● **122** Through-rod	▲ **G** No stick-slip	50	✚ Ø 50 to 63 stroke 1 to 500 mm		
			63			

● Supplied with aluminium piston
▲ **For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only**
✚ Maximum recommended strokes. Higher values can create operating problems

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	32	✚ Ø 32 stroke 1 to 300 mm	**F** "Two-Flat" piston rod AISI 303, stainless steel nut, technopolymer piston	**P** Polyurethane gaskets
	● **122** Through-rod	▲ **B** No stick-slip	40	✚ Ø 40 stroke 1 to 400 mm		
		C Non-magnetic	50	✚ Ø 50 to 63 stroke 1 to 500 mm		
			63			

● Supplied with aluminium piston
▲ **For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only**
✚ Maximum recommended strokes. Higher values can create operating problems

KEY TO CODES FOR ISO 15552 TWO-FLAT SERIES 3 CYLINDERS

CYL	1 2 1 TYPE	3	3 2 BORE	0 0 5 0 STROKE	F MATERIAL	P GASKETS
	121 Double-acting cushioned ● **122** Through-rod	**3** Series 3 ▲ **4** Series 3 No stick-slip **5** Series 3 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, technopolymer piston	**P** Polyurethane gaskets

● Supplied with aluminium piston

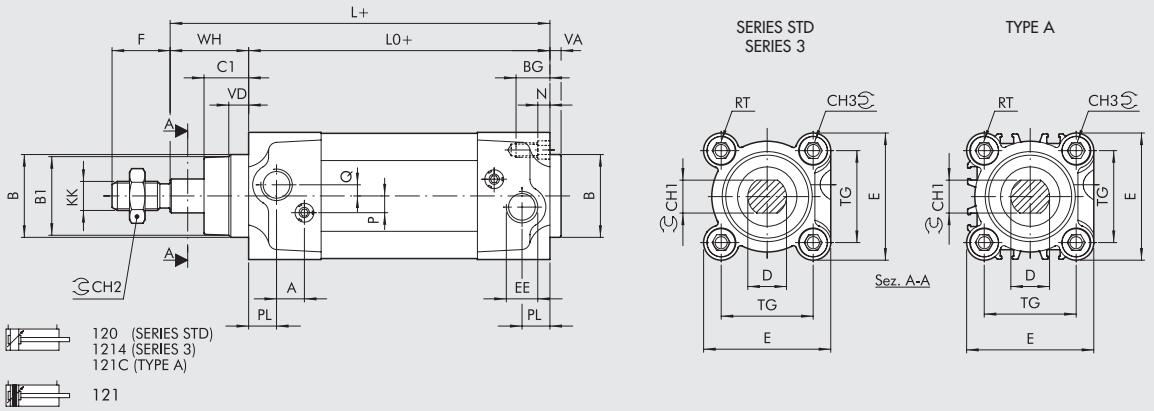
▲ **For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only**

✚ Maximum recommended strokes. Higher values can create operating problems

DIMENSIONS

STANDARD VERSION

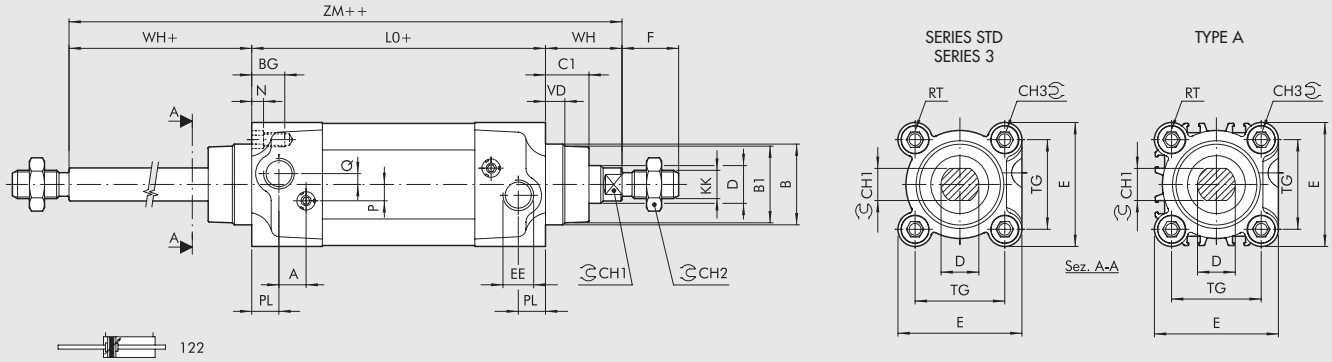
+ = ADD THE STROKE



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

ISO 15552 CYLINDER WITH END-OF-STROKE STOP

The cylinders in this series are designed with a unit that mechanically locks the piston rod at the end of stroke.
When extended, the piston rod can be locked at the front head; when retracted, it is locked either at the rear head or in both positions.
With the cylinder pneumatically powered, the locking unit releases automatically, so no additional piloting is required.
The locking unit can be released manually by inserting a screw into a thread.
This cylinder complies with ISO 15552, except for the length, which is greater than the standard.

TECHNICAL DATA			Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Max operating pressure		bar	10					
		MPa	1					
		psi	145					
Temperature range	POLYURETHANE	°C	-25 to +80					
	NBR	°C	-10 to +80					
	FKM/FPM	°C	-10 to +150					
	Low Temperature	°C	-40 to +80					
Design			Heads with Tap Tite screws					
Fluid			Unlubricated air. Lubrication, if used, must be continuous					
Standard stroke ✚		mm	30 to 2800				35 to 2600	
Versions			Double-acting cushioned, Through-rod cushioned, No stick-slip.					
Sensor magnet			YES					
Static retention force		N	500	500	2000	2000	5000	5000
Maximum axial clearance in the lock position		mm	1.5	1.5	1.5	1.5	1.5	1.5
Minimum release pressure		bar	≥ 2.5	≥ 2.5	≥ 2.5	≥ 2.5	≥ 2	≥ 2
Maximum locking pressure		bar	≤ 0.5					
Forces generated at 6 bar thrust/retraction			See cylinder "**General technical data**" at the beginning of the chapter					
Weights								
Only one stop, with piston rod extended or retracted, stroke = 0		g	573	860	1367	1793	3515	5197
Stops either with piston rod extended or retracted, stoke = 0		g	713	1060	1647	2143	4215	6497
Every mm of stroke, cylinder with piston rod cylinder		g	2.20	2.15	4.57	5.03	7.49	8.79
Every mm of stroke, through-rod cylinder		g	3.09	4.73	7.04	7.44	10.16	12.33
Notes			**For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.**					
			✚ Maximum recommended strokes. Higher values can create operating problems					

FUNCTIONING DIAGRAM

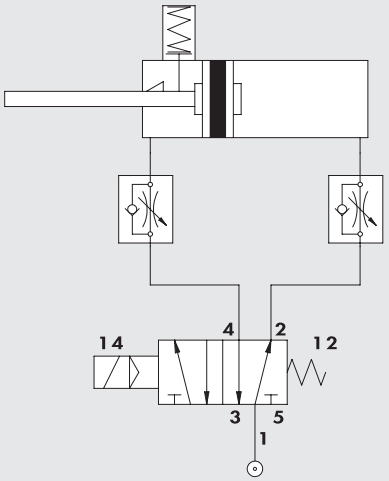
LOCKED VERSION WITH EXTENDED PISTON ROD

When the piston rod extends at the end of stroke, the spring-actuated locking piston enters the slot of the coupling bushing.
When the piston rod retracts, the pressure inside the front chamber overcomes the force of the spring and causes the locking piston to move away; the piston rod can now move freely and retracts.

N.B.: The rear chamber must be pressurized before activating piston rod retraction, otherwise the locking unit will not be disengaged. When the control valve is switched over, by the time the rear chamber relieves, sufficient pressure is created in the front chamber to release the locking unit before the piston rod starts retracting.

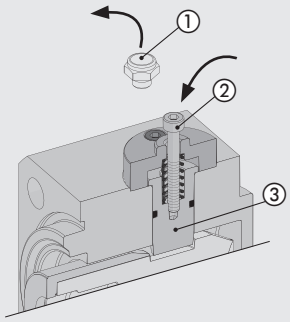
The version with locking with piston rod retracted works in the same way.

Precautions: Do not use 3-position solenoid valves. Use MRF flow regulators that choke the output (type C). Do not use with multiple cylinders moving in a synchronized sequence. Pneumatic cushioning must be adjusted properly; it must not be closed, neither fully nor partially.

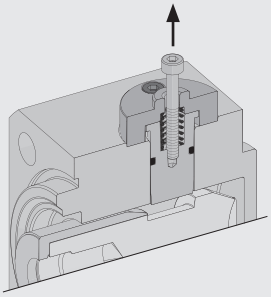


MANUAL RELEASE (WITH NO PRESSURE)

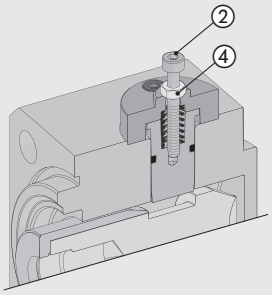
Remove the silencer ①. Tighten one of the screws ② into the locking piston ③.



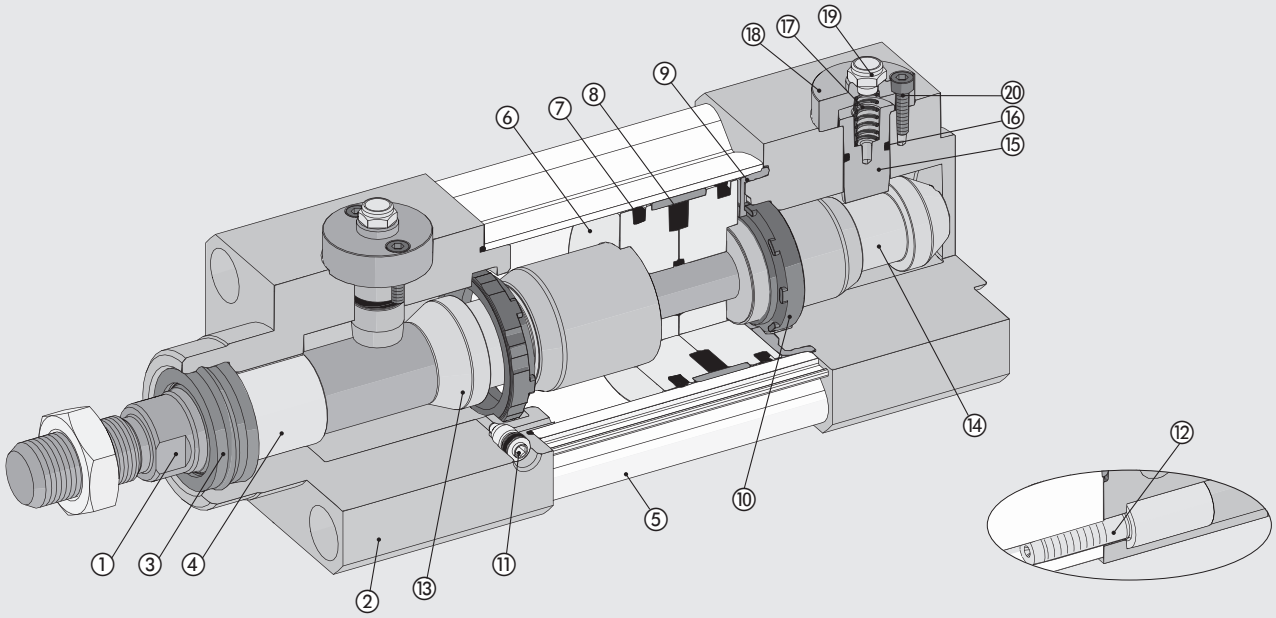
Pull it upwards to release the locking piston.



You can disengage the locking unit permanently by fitting a nut ④ to the screw ② and tightening it until the piston is disengaged.



COMPONENTS



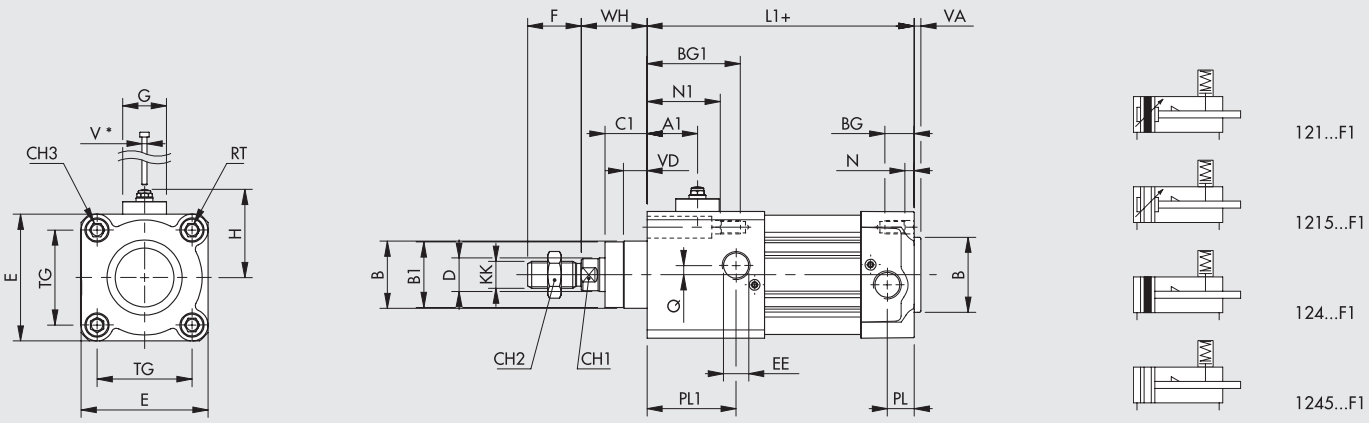
① PISTON ROD: C45 steel or stainless steel, thick chromed
② HEAD: aluminium
③ PISTON ROD GASKET: polyurethane, NBR or FKM/FPM
④ GUIDE BUSHING: steel strip with bronze and PTFE insert
⑤ BARREL: drawn anodized calibrated aluminium
⑥ SEMI-PISTON: made of self-lubricating technopolymer with built-in cushioning olives or in aluminum
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
⑬ FRONT COUPLING BUSHING: hardened alloy steel
⑭ REAR COUPLING BUSHING: hardened alloy steel
⑮ LOCKING PISTON: tempered and chromed alloy steel
⑯ GASKET: NBR or FKM/FPM
⑰ SPRING: stainless steel
⑱ COVER: anodized aluminium
⑲ SILENCER: nickel-plated brass with stainless steel wire
⑳ SCREWS: zinc-plated steel

METAL WORK PNEUMATIC

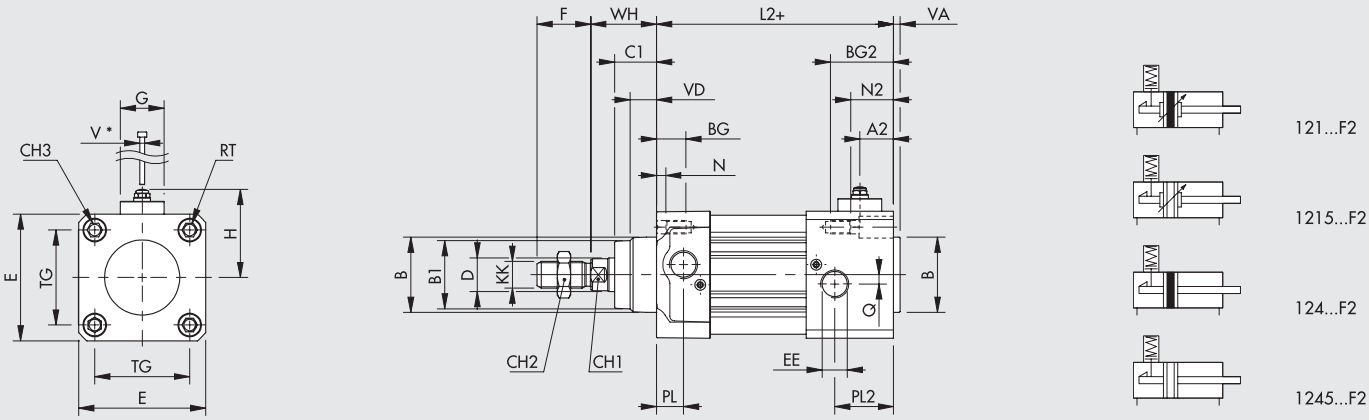
DIMENSIONS OF SINGLE PISTON ROD VERSIONS

LOCKING WITH EXTENDED PISTON ROD

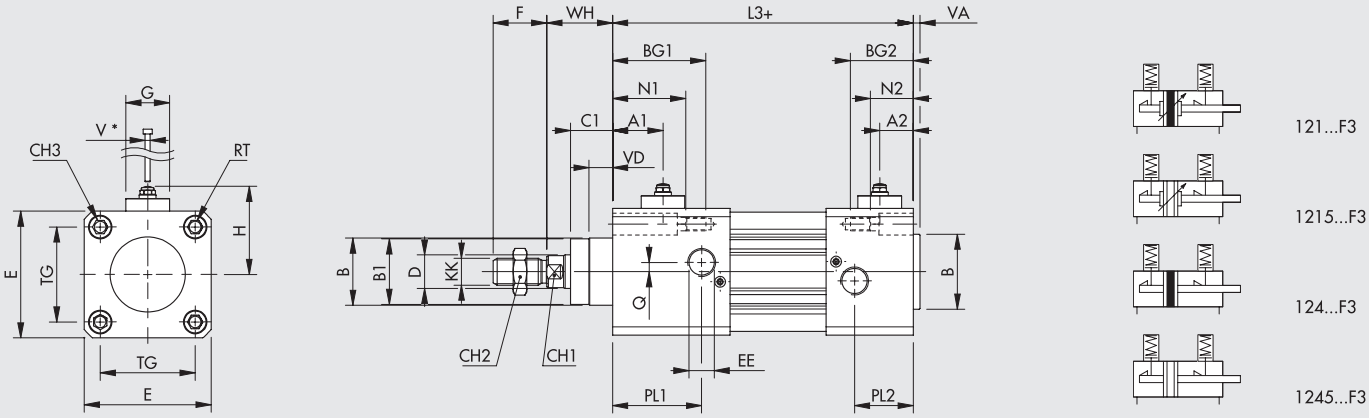
* = THREADING FOR MANUAL RELEASE SCREW
+ = ADD STROKE



LOCKING WITH RETRACTED PISTON ROD



LOCKING WITH EXTENDED AND RETRACTED PISTON ROD

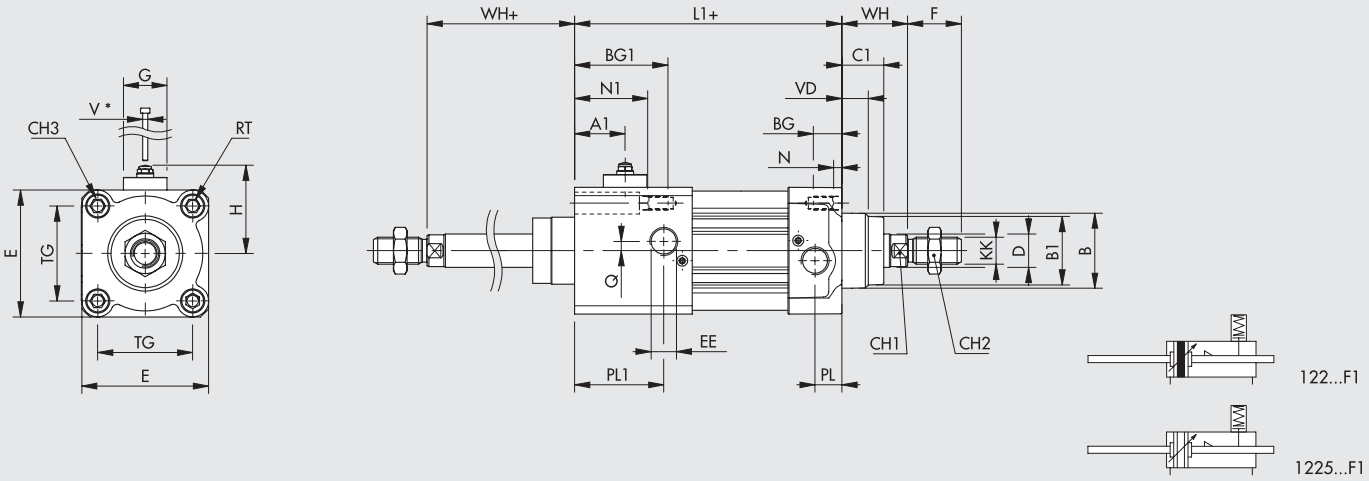


Ø	A1	A2	B	B1	BG	BG1	BG2	C1	CH1	CH2	CH3	D	E	EE	F	G	H	KK	L1	L2	L3	N	N1	N2	PL	PL1	PL2	Q	RT	TG	V*	VA	VD	WH
32	24	15	30	28	14.5	25.5	25.5	16	10	17	6	12	46	1/8	22	24	40	M10x1.25	105	105	116	4.5	15.5	15.5	10	21	21	4	M6	32.5	M3	4	6.5	26
40	26	17	35	33	14.5	39.5	28.5	20	13	19	6	16	54	1/4	24	24	45	M12x1.25	129	119	143	4.5	29.5	18.5	12	35	26	4	M6	38	M3	4	8	30
50	28	20	40	38	17.5	44.5	35.5	25	17	24	8	20	64.5	1/4	32	26	48	M16x1.5	133	124	151	5.5	32.5	23.5	14	41	32	6	M8	46.5	M3	4	13	37
63	28	21	45	40	17.5	43.5	36.5	25	17	24	8	20	75.5	3/8	32	26	55	M16x1.5	147	140	166	5.5	31.5	24.5	16	42	35	6	M8	56.5	M3	4	14	37
80	31.5	24.5	45	43	21.5	50.5	45.5	33	22	30	10	25	94	3/8	40	29	63	M20x1.5	157	152	181	5.5	34.5	29.5	18	47	42	7	M10	72	M3	4	12	46
100	25.5	24.5	55	49	21.5	58.5	46.5	38	22	30	10	25	111	1/2	40	29	72	M20x1.5	161	162	185	5.5	42.5	30.5	20	43	44	7	M10	89	M3	4	14	51

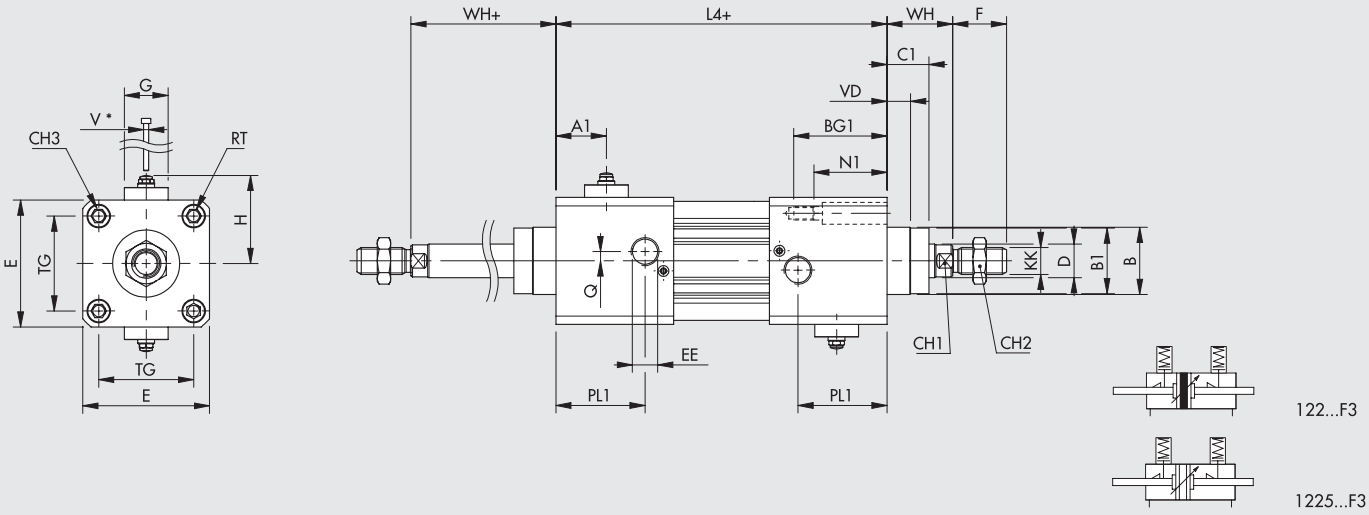
DIMENSIONS OF THROUGH-ROD VERSIONS

LOCKING ON ONE SIDE ONLY

* = THREADING FOR MANUAL RELEASE SCREW
\+ = ADD STROKE



LOCKING WITH EXTENDED AND RETRACTED PISTON ROD



Ø	A1	B	B1	BG	BG1	C1	CH1	CH2	CH3	D	E	EE	F	G	H	KK	L1	L4	N	N1	PL	PL1	Q	RT	TG	V*	VD	WH
32	24	30	28	14.5	25.5	16	10	17	6	12	46	1/8	22	24	40	M10x1.25	105	116	4.5	15.5	10	21	4	M6	32.5	M3	6.5	26
40	26	35	33	14.5	39.5	20	13	19	6	16	54	1/4	24	24	45	M12x1.25	129	153	4.5	29.5	12	35	4	M6	38	M3	8	30
50	28	40	38	17.5	44.5	25	17	24	8	20	64.5	1/4	32	26	48	M16x1.5	133	160	5.5	32.5	14	41	6	M8	46.5	M3	13	37
63	28	45	40	17.5	43.5	25	17	24	8	20	75.5	3/8	32	26	55	M16x1.5	147	173	5.5	31.5	16	42	6	M8	56.5	M3	14	37
80	31.5	45	43	21.5	50.5	33	22	30	10	25	94	3/8	40	29	63	M20x1.5	157	186	5.5	34.5	18	47	7	M10	72	M3	12	46
100	25.5	55	49	21.5	58.5	38	22	30	10	25	111	1/2	40	29	72	M20x1.5	161	184	5.5	42.5	20	43	7	M10	89	M3	14	51

KEY TO CODES

CYL	1 2 1	3	3 2	0 0 5 0	C	P	F1
	TYPE		BORE	STROKE	MATERIAL	GASKETS	END-OF-STROKE STOP
	121 Double-acting cushioned ● **122** Through-rod **124** Double-acting, non-cushioned	**3** Series 3 ◆ **4** Series 3 No stick-slip **5** Series 3 Non-magnetic	▲ **32** = Ø 32 **40** = Ø 40 **50** = Ø 50 **63** = Ø 63 **80** = Ø 80 **A1** = Ø 100	For the maximum suppliable strokes, look at the technical data	**A** C45 chromed piston rod, aluminium piston: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with Ø 80 mm and over **C** C45 chromed piston 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	● **F1** Extended piston rod **F2** Retracting piston rod ● **F3** Retracting piston rod and extended piston rod

● Only available for versions with aluminium piston (A or Z)

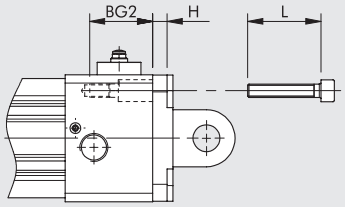
◆ **For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only**

▲ Regarding the Ø32 cylinders, the heads with end-of-stroke stop hasn't the pneumatic csushoning

ACCESSORIES

All the accessories of ISO 15552 cylinders (page **A1**.46) can be used, **except for the guide units (GDS, GDH, GDM)** since the protrusion of the locking piston interferes with the guide unit.

NB: The screws used to secure the accessory to the heads fitted with a stop must be longer than those supplied together with the accessories.
The screw length is calculated by summing up the catalogue-specified thickness of the accessory flange and the BG1 dimension, rounding down to -3 mm.



L = BG2 + H – (0 - 3) mm

NOTES

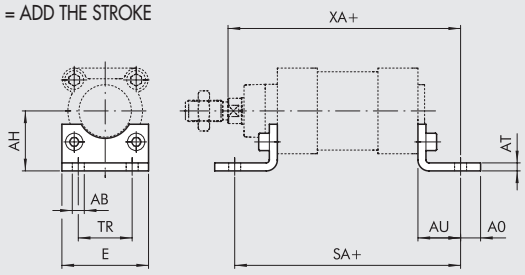
NOTES

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

FIXINGS

FOOT - MODEL A

+ = ADD THE STROKE

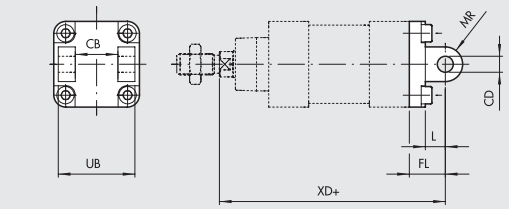


Code	Ø	Ø AB	AH	AO	AT	AU	TR	E	XA	SA	Weight [g]
W0950322001	32	7	32	11	4	24	32	45	144	142	76
W0950402001	40	9	36	15	4	28	36	52	163	161	100
W0950502001	50	9	45	15	5	32	45	65	175	170	162
W0950632001	63	9	50	15	5	32	50	75	190	185	266
W0950802001	80	12	63	20	6	41	63	95	215	210	456
W0951002001	100	14	71	25	6	41	75	115	230	220	572
W0951252001	125	16	90	15	8	45	90	140	270	250	1130

Note: Individually packed with 2 screws

FEMALE HINGE - MODEL B

+ = ADD THE STROKE

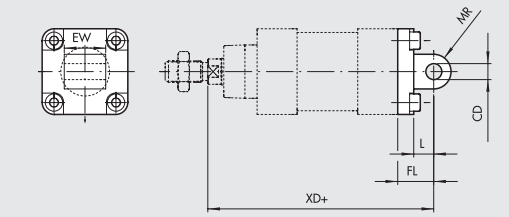


Code	Ø	UB	CB H14	FL	CD H9	XD	MR	L	Weight [g]
W0950322003	32	45	26	22	10	142	10	12	116
W0950402003	40	52	28	25	12	160	12	15	160
W0950502003	50	60	32	27	12	170	12	15	252
W0950632003	63	70	40	32	16	190	16	20	394
W0950802003	80	90	50	36	16	210	16	20	670
W0951002003	100	110	60	41	20	230	20	25	1085
W0951252003	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

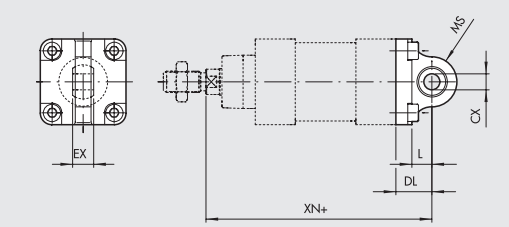


Code	Ø	EW	FL	MR	CD H9	L	XD	Weight [g]
W0950322004	32	26	22	10	10	13	142	94
W0950402004	40	28	25	12	12	16	160	124
W0950502004	50	32	27	12	12	16	170	220
W0950632004	63	40	32	16	16	22	190	316
W0950802004	80	50	36	16	16	22	210	578
W0951002004	100	60	41	20	20	27	230	850
W0951252004	125	70	50	25	25	30	275	1590

Note: Supplied with 4 screws

ARTICULATED MALE HINGE - MODEL BAS

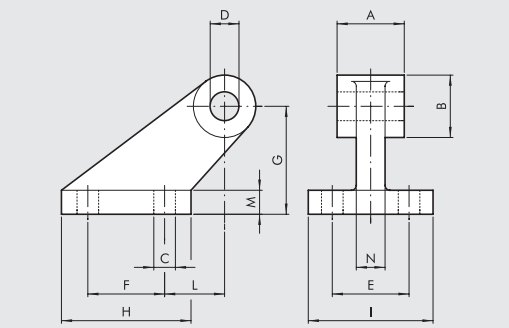
+ = ADD THE STROKE



Code	Ø	DL	MS	L	XN	CX H9	EX	Weight [g]
W0950322006	32	22	16	12	142	10	14	106
W0950402006	40	25	18	15	160	12	16	142
W0950502006	50	27	21	15	170	12	16	236
W0950632006	63	32	23	20	190	16	21	336
W0950802006	80	36	28	20	210	16	21	572
W0951002006	100	41	30	25	230	20	25	840
W0951252006	125	50	40	30	275	25	31	1520

Note: Supplied with 4 screws

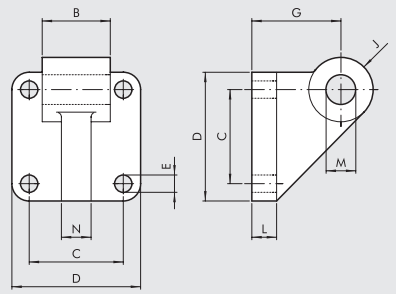
CETOP HINGE FOR MODEL B - MODEL GL



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

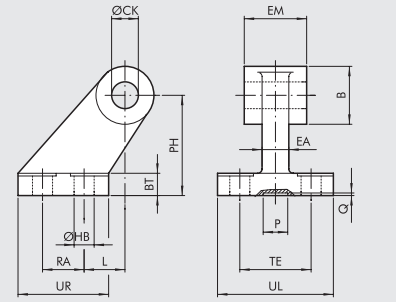
COUNTER-HINGE FOR MODEL B - MODEL GS



Code	Ø	B	C	D	E	G	J	L	M	N	Weight [g]
W0950322108	32	26	32.5	45	7	32	11	10	10	10	106
W0950402108	40	28	38	52	7	36	13	10	12	12	138
W0950502108	50	32	46.5	65	9	45	13	12	12	12	252
W0950632108	63	40	56.5	75	9	50	17	12	16	15	350
W0950802108	80	50	72	95	11	63	17	16	16	15	655
W0951002108	100	60	89	115	11	73	21	16	20	22	980

Note: Supplied with 4 screws, 4 washers

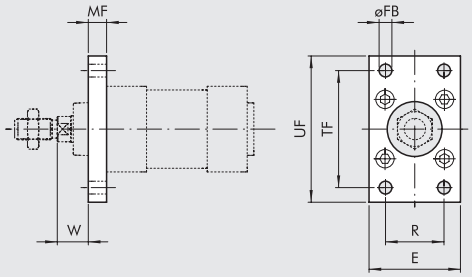
ISO 15552 COUNTER-HINGE FOR MODEL B - MODEL AB7



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

* Dimensions not to ISO 15552

FRONT FLANGE - MODEL C

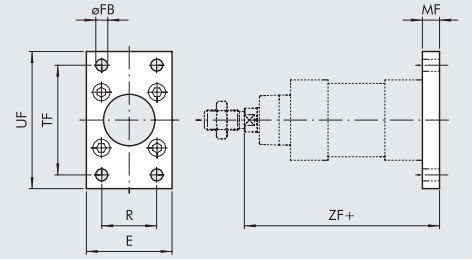


Code	Ø	TF	UF	E	MF	R	øFB	W	Weight [g]
W0950322002	32	64	80	50	10	32	7	16	246
W0950402002	40	72	90	55	10	36	9	20	290
W0950502002	50	90	110	65	12	45	9	25	522
W0950632002	63	100	120	75	12	50	9	25	670
W0950802002	80	126	150	95	15	63	12	30	1420
W0951002002	100	150	178	115	15	75	14	35	2040
W0951252002	125	180	220	140	20	90	16	45	4300

Note: Supplied with 4 screws

REAR FLANGE - MODEL C

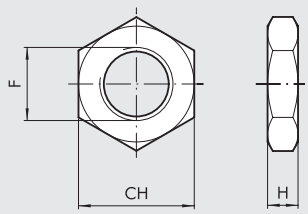
+ = ADD THE STROKE



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	150	95	15	63	12	190	1420
W0951002002	100	150	178	115	15	75	14	205	2040
W0951252002	125	180	220	140	20	90	16	245	4300

Note: Supplied with 4 screws.

ROD NUT - MODEL S

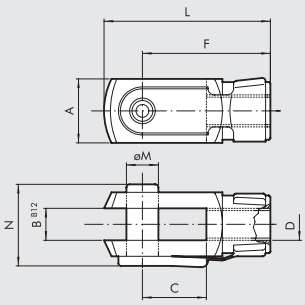


Code	Ø	F	H	CH	Weight [g]
0950322010	32	M10x1.25	6	17	6
0950402010	40	M12x1.25	7	19	12
0950502010	50/63	M16x1.5	8	24	20
0950802010	80/100	M20x1.5	9	30	32
0951252010	125	M27x2	12	41	74

Note: Individually packed

METAL WORK PNEUMATIC

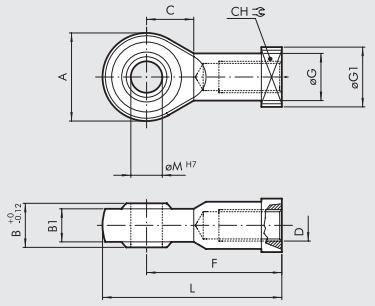
FORK MODEL GK-M



Code	Ø	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: Ø32÷100 Supplied complete with 1 pin and 1 clip; Ø125 Supplied complete with 1 pin and 2 seeger

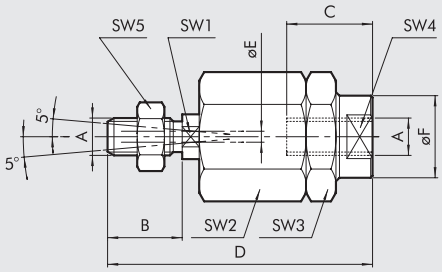
ROD EYE - MODEL GA-M



Code	Ø	øM	C	B1	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	Ø	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

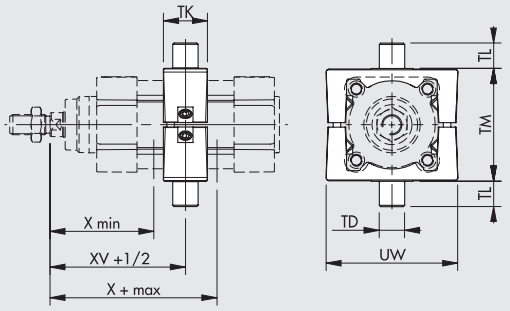
Note: Individually packed

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

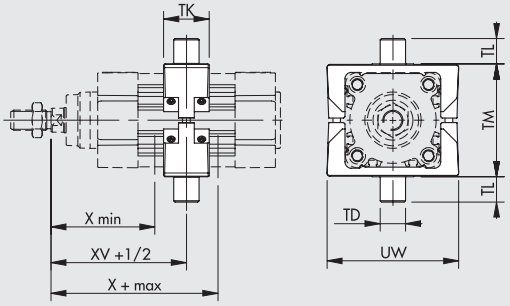


Code	Ø	X (min)	XV	X (max)	TM	TL	TD e 9	TK	UW	Weight [g]	T [Nm] ◆
0950322007	**32**	63	73	83	50	12	12	22	65	282	4
0950402007	**40**	72	82.5	93	63	16	16	28	75	582	10
0950502007	**50**	83	90	97	75	16	16	32	95	870	15
0950632007	**63**	86.5	97.5	108.5	90	20	20	35	105	1192	20
0950802007	**80**	104	110	116	110	20	20	40	130	1950	20
0951002007	**100**	113.5	120	126.5	132	25	25	45	145	2690	25
0951252007	**125**	135	145	155	160	25	25	50	175	3927	30

Note: Supplied with 4 grub screws, 2 pins
◆ Reccommended tightening torque of grub screws

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

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

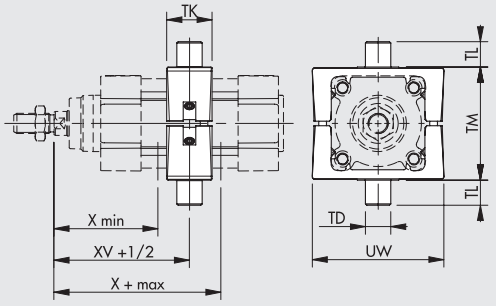


Code	Ø	X (min)	XV	X (max)	TM	TL	TD e 9	TK	UW	Weight [g]	T [Nm] ◆
0950322107	**32**	63	73	83	50	12	12	22	65	170	2
0950402107	**40**	72	82.5	93	63	16	16	28	75	360	5
0950502107	**50**	83	90	97	75	16	16	28	95	595	6
0950632107	**63**	86.5	97.5	108.5	90	20	20	36	105	960	10
0950802107	**80**	104	110	116	110	20	20	36	130	1530	10
0951002107	**100**	113.5	120	126.5	132	25	25	45	145	2417	20
0951252107	**125**	135	145	155	160	25	25	50	175	3480	25

Note: Supplied with 8 grub screws, 2 pins
◆ Reccommended tightening torque of grub screws

INTERMEDIATE HINGE - MODEL EN, FOR SERIES 3 AND TWO-FLAT SERIES 3

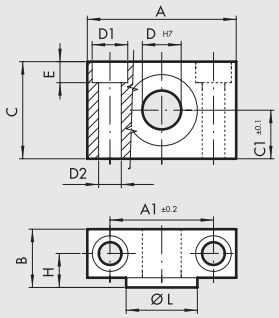
\+ = ADD THE STROKE
\+ 1/2 = ADD HALF THE STROKE



Code	Ø	X (min)	XV	X (max)	TM	TL	TD e 9	TK	UW	Weight [g]	T [Nm] ◆
0950322207	**32**	63	73	83	50	12	12	22	65	212	3
0950402207	**40**	72	82.5	93	63	16	16	28	75	440	8
0950502207	**50**	83	90	97	75	16	16	28	95	644	15
0950632207	**63**	86.5	97.5	108.5	90	20	20	36	105	1080	15
0950802207	**80**	104	10	116	110	20	20	36	130	1654	15
0951002207	**100**	113.5	120	126.5	132	25	25	45	145	2550	20
0951252207	**125**	135	145	155	160	25	25	50	175	3726	20

Note: Supplied with 4 grub screws, 2 pins
◆ Reccommended tightening torque of grub 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: 2-pieces pack with 4 screws

ACCESSORIES FOR ISO 15552 CYLINDERS: PROTECTIVE BELLOWS

The protective bellows is designed to prevent the piston rod and gasket from coming into contact with external agents in applications characterised by the presence of pollutants such as dust, oils or other contaminants.
The design and material chosen (NBR) ensure a long service life of the bellows, compatibly with the operating conditions.
In addition to the bellows as such, other elements are also included in the supply to ensure correct assembly on the cylinder and a tight fit.
Depending on the cylinder size and stroke, three versions are available:
- single, consisting of one collar for the standard cylinder head, one collar for the piston rod (which must be special) and bellows;
- double, which in addition to the collars, includes two bellows and one gasket;
- triple made up of three bellows and two gaskets.

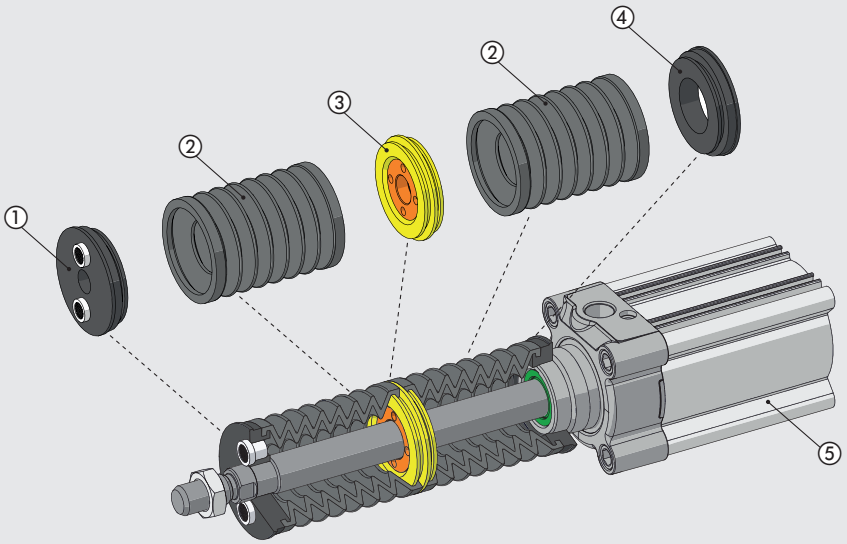
The range offered includes two sizes that cover all ISO 15552 Metal Work cylinders, with Ø32 to Ø125 bores, in versions with a suitably designed piston rod.

TECHNICAL DATA			SIZE 60			SIZE 83		
			SINGLE	DOUBLE	TRIPLE	SINGLE	DOUBLE	TRIPLE
Continuous duty temperature		°C	-10 to +50					
Cylinder strokes ✚	Ø32 to 63	mm	1 to 230	231 to 475	476 to 720	-	-	-
	Ø80 to 125	mm	-	-	-	1 to 270	271 to 555	556 to 840
Maximum recommended speed		m/s	1					
Weights		g	120	210	300	850	1020	1190
Notes			**Can only be fitted to predisposed cylinders, code 154... to be purchased separately**					
			It's possible to order cylinder code 156... with already mounted bellows.					

✚ For higher stroke values, please contact our sales department.

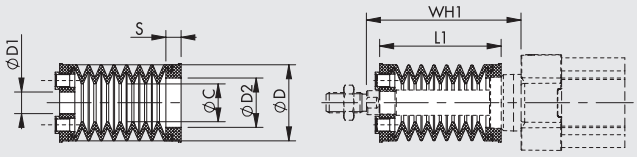
COMPONENTS

① ROD COLLAR: NBR with stainless steel filter
② BELLOWS: NBR
③ JUNCTION: NBR with a POM core (only for double or triple kit)
④ HEAD COLLAR: NBR
⑤ ISO 15552 CYLINDER DESIGNED FOR BELLOWS



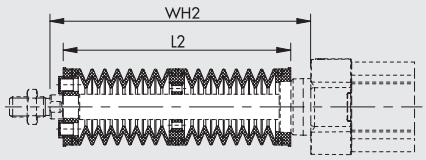
BELLOWS OVERALL DIMENSIONS AND ORDERING CODES

SINGLE



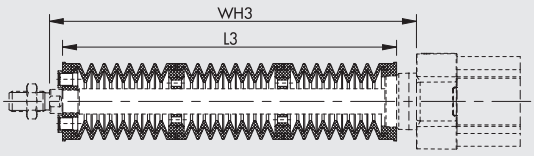
Code	Ø	Cylinder stroke	Ø D	Ø C	S	Ø D1	Ø D2	L1 closed	L1 open	WH1
0950322103	**32**	1 to 230	60	30	12	10	27	70	300	86
0950402103	**40**	1 to 230	60	30	12	13	32	70	300	86
0950502103	**50**	1 to 230	60	30	12	17	37	70	300	93
0950632103	**63**	1 to 230	60	30	12	17	39	70	300	94
0950802103	**80**	1 to 270	83	50	12	22	42	80	350	103
0951002103	**100**	1 to 270	83	50	12	22	48	80	350	105
0951252103	**125**	1 to 270	83	50	12	29	53	80	350	117

DOUBLE



Code	Ø	Cylinder stroke	Ø D	Ø C	S	Ø D1	Ø D2	L2 closed	L2 open	WH2
0950322203	**32**	231 to 475	60	30	12	10	27	125	600	141
0950402203	**40**	231 to 475	60	30	12	13	32	125	600	141
0950502203	**50**	231 to 475	60	30	12	17	37	125	600	148
0950632203	**63**	231 to 475	60	30	12	17	39	125	600	149
0950802203	**80**	271 to 555	83	50	12	22	42	145	700	168
0951002203	**100**	271 to 555	83	50	12	22	48	145	700	170
0951252203	**125**	271 to 555	83	50	12	29	53	145	700	182

TRIPLE



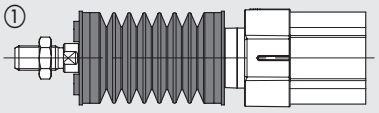
Code	Ø	Cylinder stroke	Ø D	Ø C	S	Ø D1	Ø D2	L3 closed	L3 open	WH3
0950322303	**32**	476 to 720	60	30	12	10	27	180	900	196
0950402303	**40**	476 to 720	60	30	12	13	32	180	900	196
0950502303	**50**	476 to 720	60	30	12	17	37	180	900	203
0950632303	**63**	476 to 720	60	30	12	17	39	180	900	204
0950802303	**80**	556 to 840	83	50	12	22	42	210	1050	233
0951002303	**100**	556 to 840	83	50	12	22	48	210	1050	235
0951252303	**125**	556 to 840	83	50	12	29	53	210	1050	247

Refer to standard cylinders for other values.

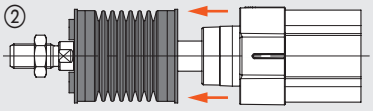
N.B.: Also order the cylinder designed for protective bellows (code 154...)

ASSEMBLY ONTO CYLINDERS Ø32 - Ø40 - Ø50

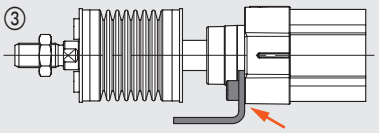
For fixing the cylinder through the front head, in case of bores 32, 40 and 50 the bellows can be mounted **only after having fixed the cylinder**.
For versions **156...** with mounted bellows:

① 

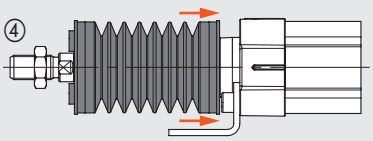
Cylinder supplied with already mounted bellows.

② 

Remove the bellows from the front head, acting on the head collar.

③ 

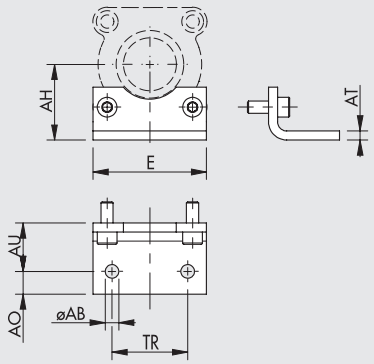
Fix the cylinder to the machine (for example with foot model A).

④ 

Reinsert the bellows on the front head, by pressing the head collar on the conical surface of the front cylinder head until it reaches the shoulder.

METAL WORK PNEUMATIC

FOOT MODEL A

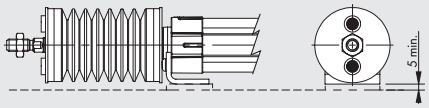


Code	Ø	Ø AB	AH	AO	AT	AU	TR	E	Weight [g]
W0950322507 *	32	7	32	11	4	24	32	45	76
W0950402507 *	40	9	36	15	4	28	36	52	100
W0950502001	50	9	45	15	5	32	45	65	162
W0950632001	63	9	50	15	5	32	50	75	266
W0950802001	80	12	63	20	6	41	63	95	456
W0951002001	100	14	71	25	6	41	75	115	572
W0951252001	125	16	90	15	8	45	90	140	1130

* Version with button head screws to be used in place of standard feet codes W0950322001 and W0950402001. They can be mounted only inwards.

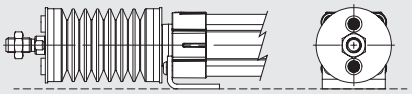
Note: Individually packed with 2 screws

Ø32

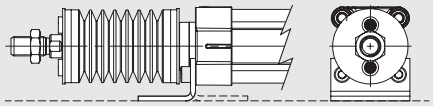


In the case of the Ø32 bore, the foot must be raised to avoid rubbing the bellows on the support surface.

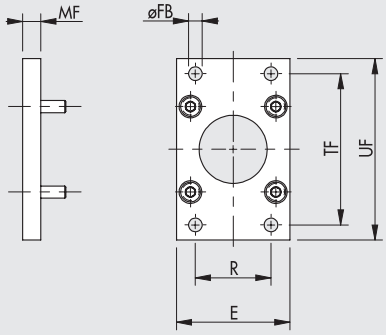
Ø40



Ø50 ... Ø125



FRONT FLANGE - MODEL C



Code	Ø	TF	UF	E	MF	R	øFB	Weight [g]
W0950502002	50	90	110	65	12	45	9	522
W0950632002	63	100	120	75	12	50	9	670
W0950802002	80	126	150	95	15	63	12	1420
W0951002002	100	150	178	115	15	75	14	2040
W0951252002	125	180	220	140	20	90	16	4300

Note: Supplied with 4 screws

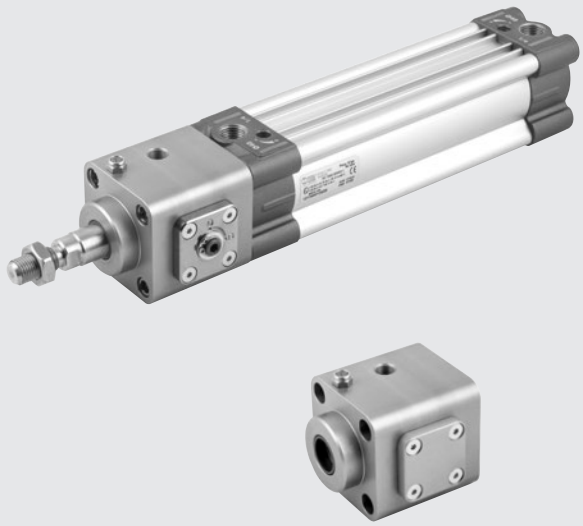
For bores Ø32 and Ø40 it's not possible to use the front flanges codes W0950322002 and W0950402002 because they prevent effective assembly of the collar on the cylinder head.

NOTES

Refer to ISO 15552 cylinders for other accessories.

ACCESSORIES FOR ISO 15552 CYLINDERS: "SECURE LOCK" ROD LOCK

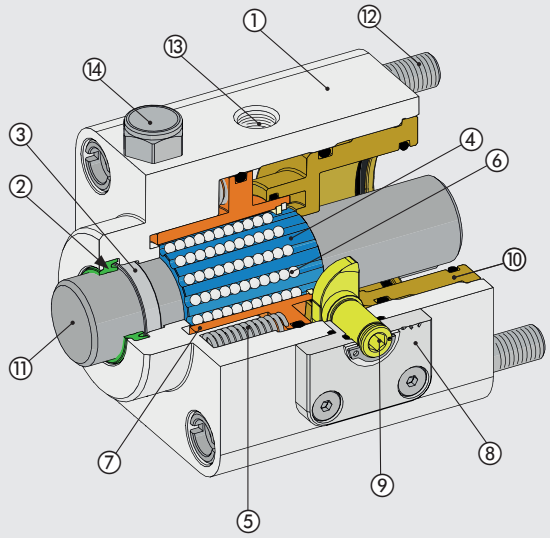
A new series of in-line locking devices by Metal Work with superior characteristics. Performances are guaranteed by a system of springs and conical sliding and ball bearings which, combined with carefully selected materials, ensure reliable and accurate locking of the system, which can be released by supplying air through the relevant inlet.
A version with manual release is also available.
When "Secure Lock" devices are fitted to ISO 15552 cylinders, the piston rod can be locked in position when the system is turned off or an emergency stop occurs.
"Secure Lock" can withstand occasional situations of dynamic locking. It locks the rod and prevents it from moving. Since negligible play is created, it is ideal for high-precision applications.
With the optional cam-operated manual release function, the rod lock can be disengaged mechanically merely by rotating a pin using a standard Allen wrench. When the pin is released, it automatically returns to the "rod locked" position.



TECHNICAL DATA		Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125
Pilot pressure	bar	5 to 10						
	MPa	0.5 to 1						
	psi	72.5 to 145						
Temperature range	°C	−10 to +80						
Operation		NC - Bidirectional						
Mechanics		Locking gripper controlled by a bearing ball piston.						
Locking force	N	650	1100	1600	2500	4000	6300	8700
Notes		The piston rod must be clean and dry.						
		During assembly, do not rotate the piston rod if the Secure Lock device is locked.						
		The cylinder rod must be chromed and in f7 tolerance.						

COMPONENTS

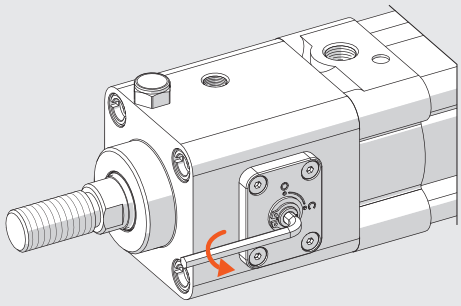
① BODY: anodized aluminium
② WIPER RING: polyurethane
③ GUIDE RING: technopolymer
④ GRIPPER: hardened steel
⑤ SPRINGS: spring steel
⑥ BALLS: hardened steel
⑦ PISTON: hardened steel
⑧ MANUAL RELEASE PLATE: treated aluminum
⑨ MANUAL RELEASE PIN: hardened steel
⑩ PLUG: anodized aluminium
⑪ FALSE ROD: steel
⑫ TIE RODS: stainless steel
⑬ AIR SUPPLY FOR RELEASE
⑭ SILENCER: nickel-plated brass with stainless steel wire



METAL WORK PNEUMATIC

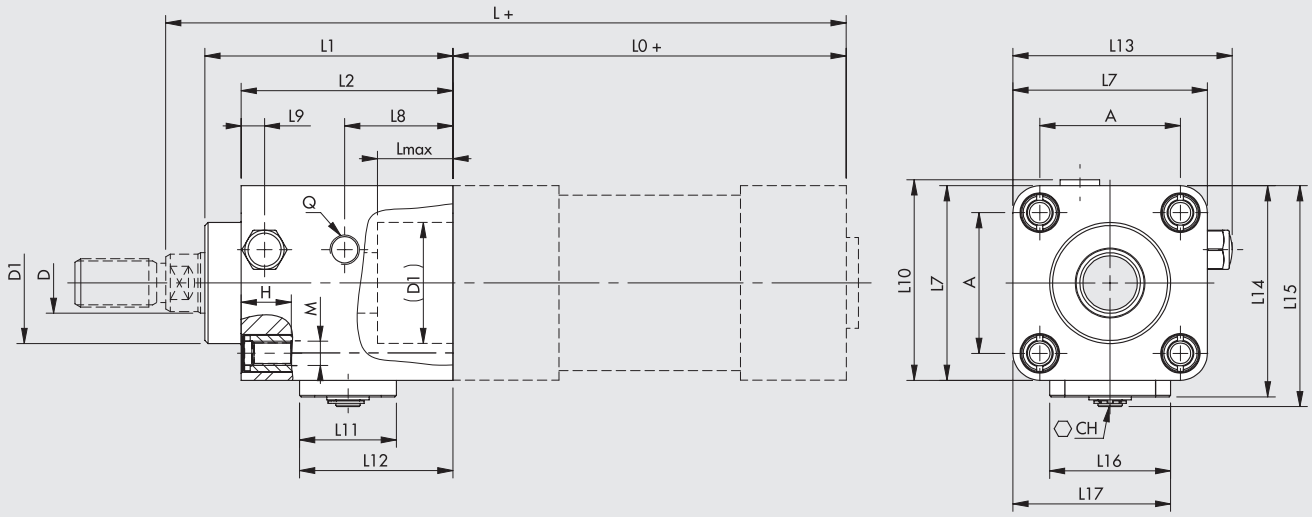
MANUAL RELEASE

In the versions equipped with manual control it is possible to use an hex key to temporarily unlock the device.
The hex key must be inserted in the hexagonal seat of the pin for the manual control (component 9 in the list of components) and used for the rotation of the same as shown in the figure.
Once released, the pin will automatically return to its initial position.



DIMENSIONS

\+ = ADD STROKE



VERSION WITH MANUAL CONTROL

Code	Ø	Lmax	L1	L2	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16	L17	D	D1	A	H	M	Q	CH	L0	L	Weight [g] ◆
W5010010102	32	16	58	48	46	25.2	9.5	48	30	41.2	50.7	51.5	54.3	28	37	12	30	32.5	14.5	M6	M5	2.5	94	162	295
W5010010103	40	20	65	55	54	26.9	6	56.5	32	43.9	58.7	59.5	63	33	43.5	16	35	38	14.5	M6	G1/8	4	105	180	444
W5010010104	50	25	82	70	64.3	35.8	7.7	66.5	32	50.7	72.5	69.8	73	40	52.2	20	40	46.5	17.5	M8	G1/8	4	106	200	826
W5010010105	63	25	82	70	76	34.6	8.7	78.5	32	50.5	84.2	81.5	84.7	40	58	20	45	56.5	17.5	M8	G1/8	4	121	215	1060
W5010010106	80	33	110	90	94	41.3	14.7	96.5	47	66.1	102.2	103	106.3	65	79.5	25	45	72	21.5	M10	G1/8	6	128	251	2272
W5010010107	100	38	115	100	111	49.8	18.2	113.5	47	73.6	119.2	120	123.3	65	88.5	25	55	89	21.5	M10	G1/8	6	138	266	3410
W5010010108	125	45	167	122	135	67.5	23	137	54	90.2	143.2	148	151.8	84	109.5	32	60	110	25.5	M12	G1/8	10	160	347	6328

◆ Weight of the rod lock without the false rod

VERSION WITHOUT MANUAL CONTROL

Code	Ø	Lmax	L1	L2	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16	L17	D	D1	A	H	M	Q	CH	L0	L	Weight [g] ◆
W5010020102	32	16	58	48	46	25.2	9.5	48	30	41.2	50.7	51.5	-	28	37	12	30	32.5	14.5	M6	M5	-	94	162	290
W5010020103	40	20	65	55	54	26.9	6	56.5	32	43.9	58.7	59.5	-	33	43.5	16	35	38	14.5	M6	G1/8	-	105	180	432
W5010020104	50	25	82	70	64.3	35.8	7.7	66.5	32	50.7	72.5	69.8	-	40	52.2	20	40	46.5	17.5	M8	G1/8	-	106	200	814
W5010020105	63	25	82	70	76	34.6	8.7	78.5	32	50.5	84.2	81.5	-	40	58	20	45	56.5	17.5	M8	G1/8	-	121	215	1044
W5010020106	80	33	110	90	94	41.3	14.7	96.5	47	66.1	102.2	103	-	65	79.5	25	45	72	21.5	M10	G1/8	-	128	251	2220
W5010020107	100	38	115	100	111	49.8	18.2	113.5	47	73.6	119.2	120	-	65	88.5	25	55	89	21.5	M10	G1/8	-	138	266	3350
W5010020108	125	45	167	122	135	67.5	23	137	54	90.2	143.2	148	-	84	109.5	32	60	110	25.5	M12	G1/8	-	160	347	6120

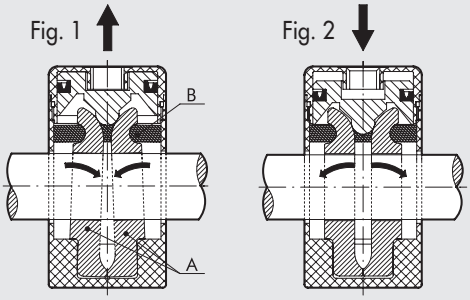
◆ Weight of the rod lock without the false rod

ACCESSORIES FOR ISO 15552 CYLINDERS: MECHANICAL ROD LOCK SERIES RL

TECHNICAL DATA		Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125
Pilot pressure	bar	4 to 8						
	MPa	0.4 to 0.8						
	psi	58 to 118						
Temperature range	°C	–10 to +80						
Operation		NC - Bidirectional						
Mechanics		Double pad with mechanical lock						
		Mechanical stick-slip						
Locking force	N	650	1100	1600	2500	4000	6300	8700
MATERIAL								
body		Aluminium						
pad		Brass						
spring		NBR						
piston		Synthetic material with added Teflon®						
gasket		NBR						
pilot port		M5 o 1/8"						

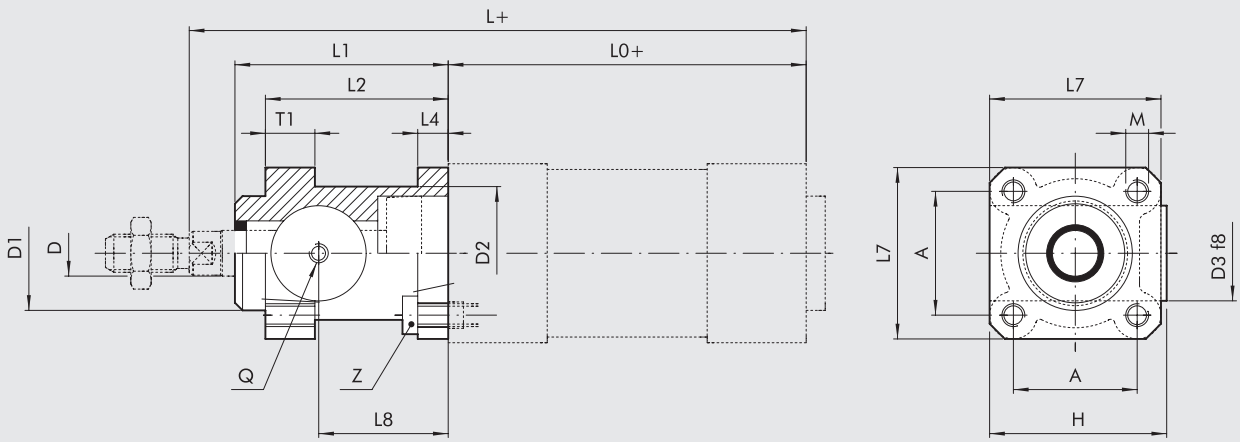
OPERATING PRINCIPLE

The mechanical rod lock series RL is a normally-closed mechanism.
In the absence of pneumatic piloting, the two pads (A) lock the cylinder rod in both directions (Fig. 1). With pneumatic piloting, the piston rod guide forces the pads 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 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

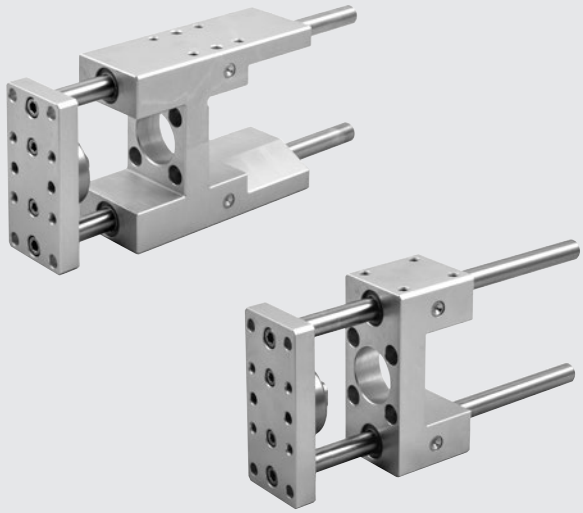
ACCESSORIES FOR ISO 15552 CYLINDERS: GUIDE UNITS

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 (pin and flange).
The guide units can be coupled to ISO 15552 cylinders (Ø 32 to 100).
The following versions are available:
U PROFILE (GDS)*: for limited loads and speeds
H PROFILE (GDH)*: for high loads
H PROFILE (GDM)**: for high speeds

* With bronze guide bushing
** With ball guide bushing

STANDARD STROKES: 50 - 100 - 150 - 200 - 250 - 320 - 400 - 500

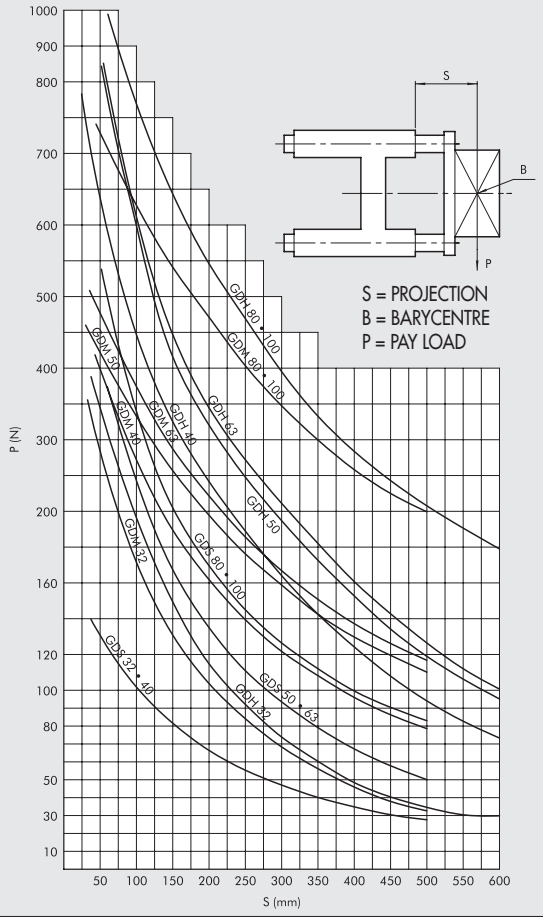
For weights, see cylinder "**General technical data**" at the beginning of the chapter.



COMPONENTS

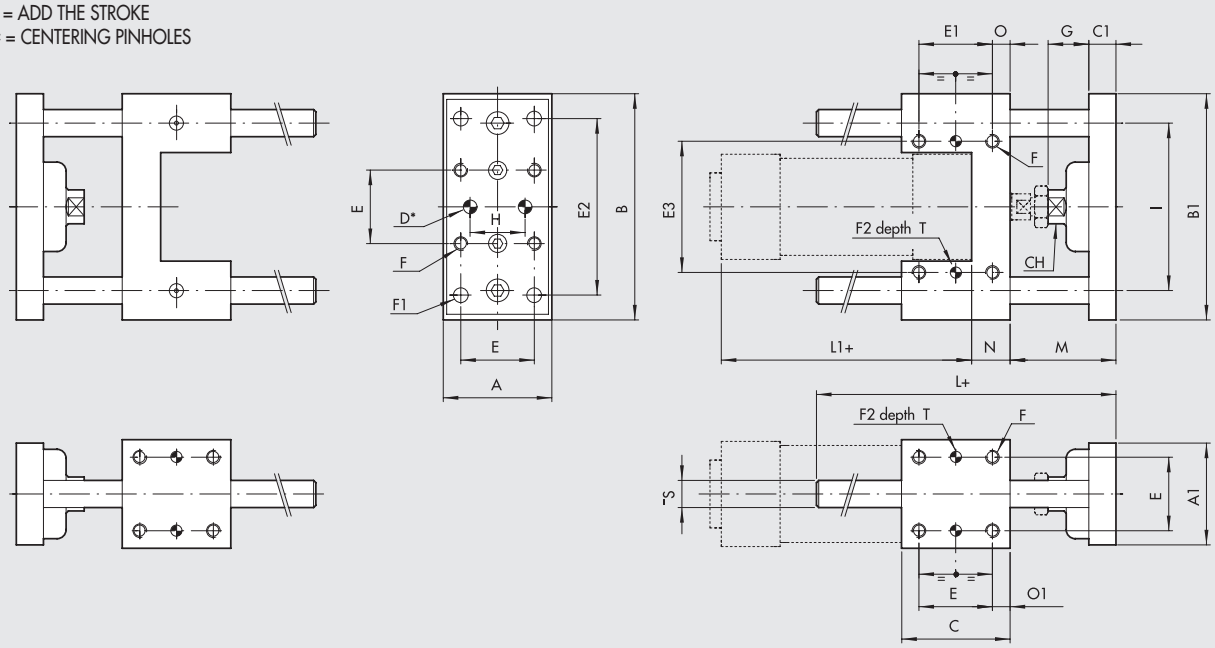
SERIES GDS-GDH	Body:	aluminium alloy
	Guide bushing:	self-lubricating sintered bronze and wiper rings
	Piston rod:	grinded chromed steel
SERIES GDM	Body:	aluminium alloy
	Guide bushing:	ball linear bearings and scraper ring
	Piston rod:	hardened, chromed and grinded steel

GRAPH OF GUIDE UNIT LOADS



DIMENSIONS TYPE GDS

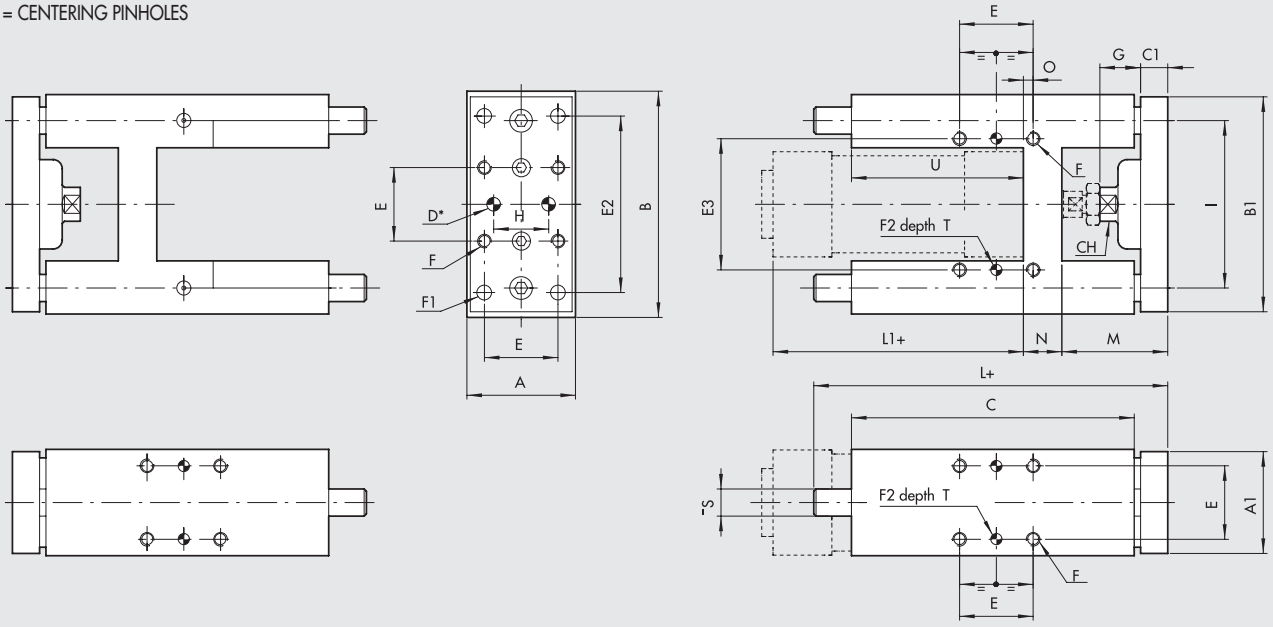
+ = ADD THE STROKE
✱ = CENTERING PINHOLES



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	Ø S	CH	T
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	7
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	7
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	7
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	7
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	10
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	10

DIMENSIONS TYPE GDH-GDM

+ = ADD THE STROKE
✱ = CENTERING PINHOLES



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	Ø S	U	T
32	49	45	97	90	125	12	13	6	32.5	78	61	M6	6.5	6	18	31	74	177	94	48	17	4.3	12	76	7
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	7
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	7
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	7
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	10
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	10

METAL WORK PNEUMATIC

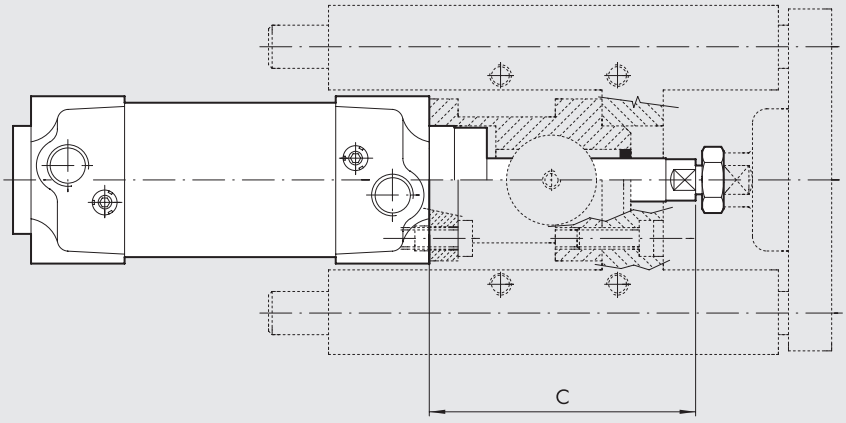
ORDER CODE GUIDE UNIT

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...
	* Also available in V-Lock version (see **chapter A3**).		
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...
	* Also available in V-Lock version (see **chapter A3**).		

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

DIMENSIONS ROD LOCK + GUIDE UNIT COD. 137

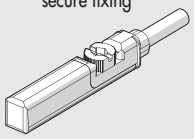
Ø	C
32	74
40	85
50	107
63	107
80	136
100	143



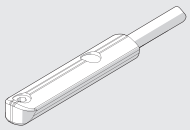
ACCESSORIES FOR ISO 15552 CYLINDERS: MAGNETIC SENSORS AND POSITION SENSOR

RETRACTABLE SENSOR

Ⓐ SENSOR, SQUARE TYPE
Latest generation, secure fixing



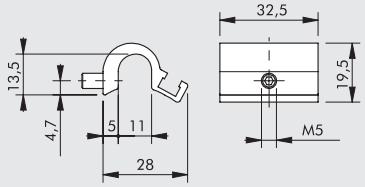
Ⓑ SENSOR, OVAL TYPE
Traditional



For codes and technical data, see **chapter A6**.

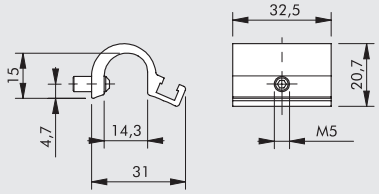
Ⓓ SENSOR SUPPORT BRACKETS FOR SENSORS SQUARE TYPE AND OVAL TYPE

Ø 32 to 40



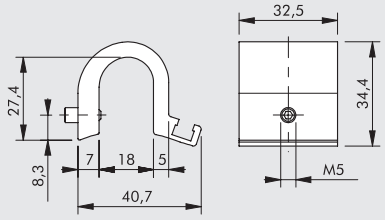
Code	Description
W0950001711	Bracket D.32-40

Ø 50 to 63



Code	Description
W0950001712	Bracket D.50-63

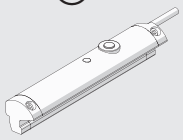
Ø 80 to 125



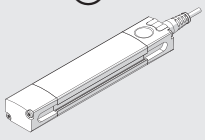
Code	Description
W0950001713	Bracket D.80-100-125

POSITION SENSOR

Ⓖ LTS



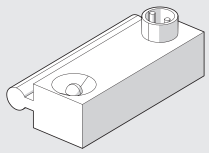
Ⓗ LTL



Model	For ISO 15552 cylinders
LTS	type A - series 3
LTL	type A

For technical data and usage strokes see **chapter A6**.

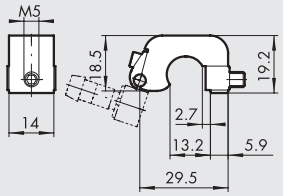
Ⓒ SENSOR SERIES DSM



Can be used on ISO 15552 cylinders in the STD series and series 3.
For codes and technical data, see **chapter A6**.

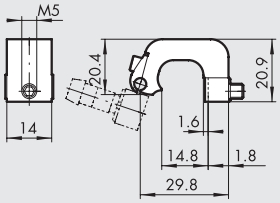
Ⓔ SENSOR SUPPORT BRACKETS FOR SENSORS DSM

Ø 32 to 40



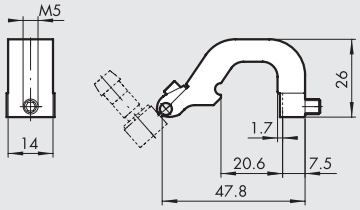
Code	Description
W0950000711	Bracket D.32-40 DST 80

Ø 50 to 63



Code	Description
W0950000712	Bracket Bracket D.50-63 DST 81

Ø 80 to 125

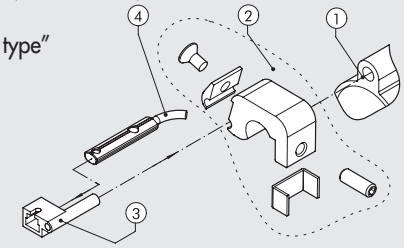


Code	Description
W0950000713	Bracket D.80-100-125 DST 82

Ⓕ ADAPTER FOR OVAL TYPE RETRACTABLE SENSORS

ASSEMBLY DIAGRAM

① ISO 15552 cylinder with serie STD or serie 3 barrel
② Sensor bracket mod. DST (Ø 32 to 125)
③ Adaptor
④ Retractable sensor "oval type"

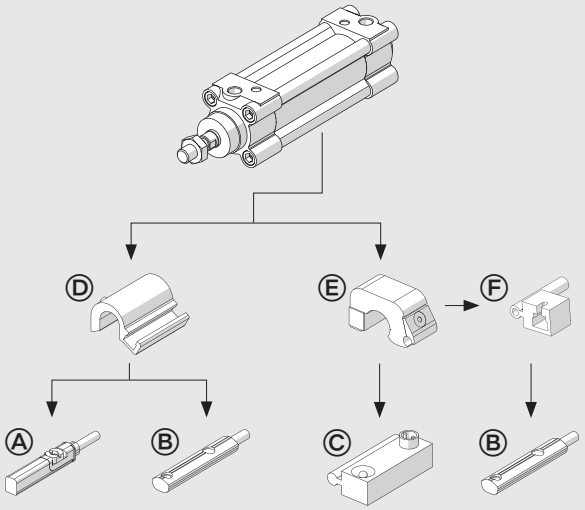


Code	Description
W0950001001	Adaptor DSS005 for DST/ST brackets

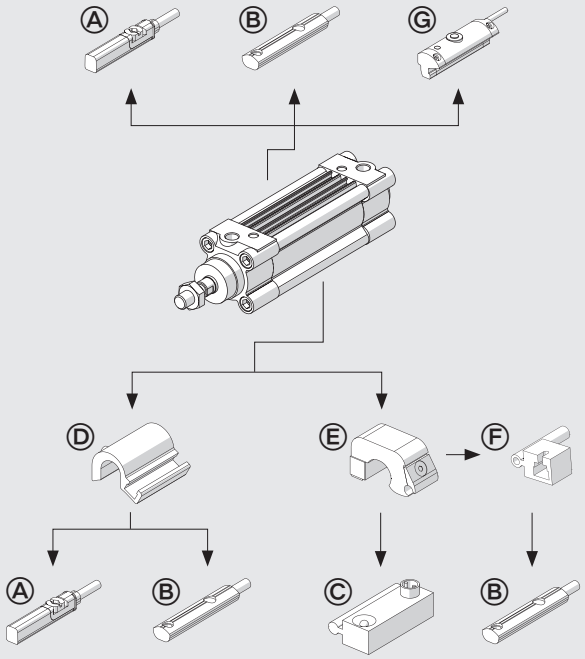
METAL WORK PNEUMATIC

USE SENSORS

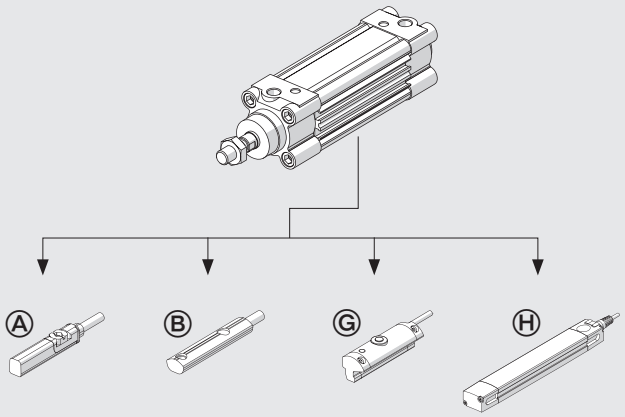
SERIES STD



SERIES 3



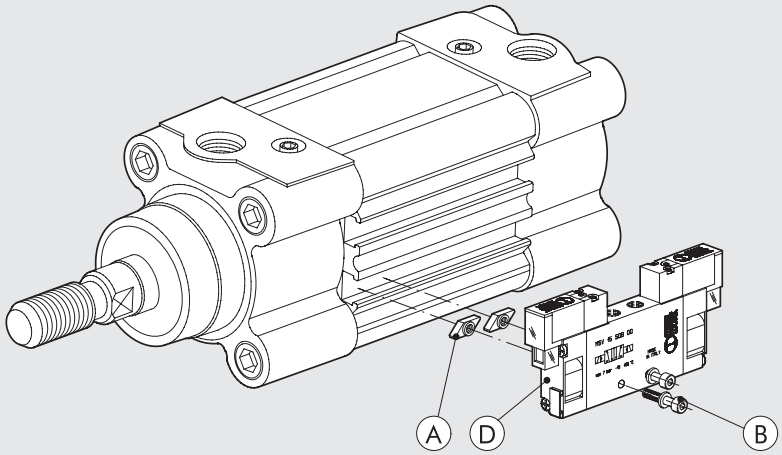
TYPE A



NOTES

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
MINIMACH	n° 2	–	M3x16 UNI 5931 (DIN 912)	A3.2 UNI 1751 (DIN 127A)	–
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 STD AND SERIES 3 CYLINDERS

Fig. Ⓐ

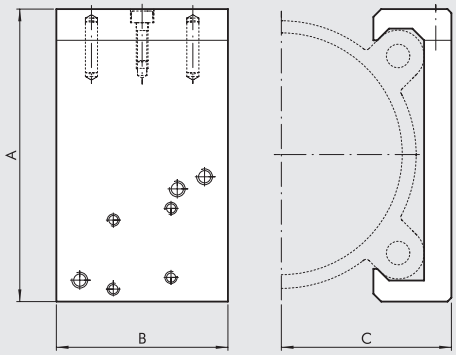
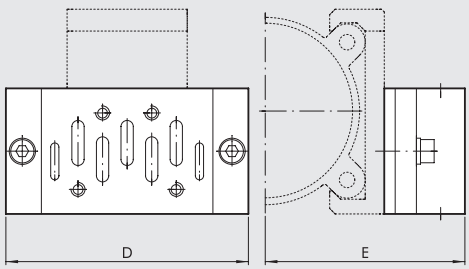


Fig. Ⓑ



VALVE FIXING BRACKET - CYLINDER (Fig. A)

					ISO 1		ISO 2			
Code	Ø	A	B	C	D	E	D	E	Applicable valves	Weight [g]
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

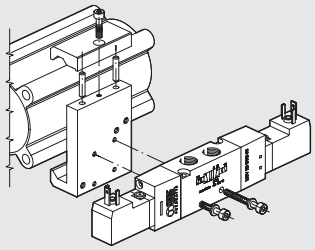
KIT FOR FIXING VALVES TO BRACKETS, FOR SERIES KCV BRACKETS

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 M4x30 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

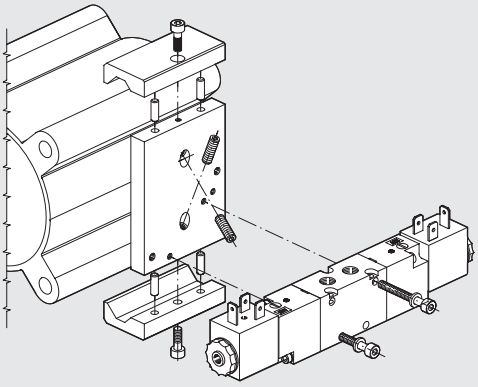
METAL WORK PNEUMATIC

VALVE ASSEMBLY ON CYLINDER

FOR Ø 32-40-50-63



FOR Ø 80-100-125

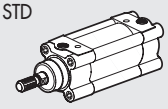


NOTES

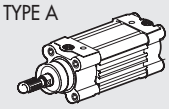
SPARE PARTS

CYLINDERS ISO 15552

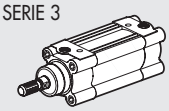
STD

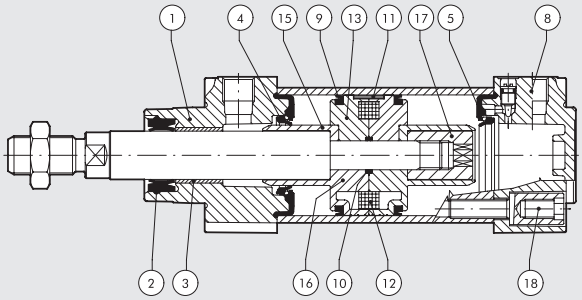


TYPE A



SERIE 3





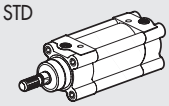
Code	Bore	Type	Parts
009 . . . 0101	Ø 32 to 125	Complete set of polyurethane gaskets	2-4-5-9-10
009 . . . 0103	Ø 32 to 125	Complete set of (high temperature) FKM/FPM gaskets	2-4-5-9-10
009 . . . 0502	Ø 32 to 125	Complete set of NBR gaskets	2-4-5-9-10
009 . . . 1651	Ø 32 to 125	Polyurethane piston rod gasket kit	2
009 . . . 1652	Ø 32 to 125	NBR piston rod gasket kit + seeger	2
009 . . . 1653	Ø 32 to 125	FKM/FPM piston rod gasket kit + seeger	2
009 . . . 0110N	Ø 32 to 125	Complete polyurethane front head kit	1-2-3-4-5-18
009 . . . 0304N	Ø 32 to 125	Complete NBR front head kit	1-2-3-4-5-18
009 . . . 0122N	Ø 32 to 125	Complete R front head kit	1-2-3-4-5-18
009 . . . 0120N	Ø 40 to 125	Complete M front head kit	1-2-3-4-5-18
009 . . . 0111N	Ø 32 to 125	Complete polyurethane rear head kit	4-5-8-18
009 . . . 0305N	Ø 32 to 125	Complete NBR rear head kit	4-5-8-18
009 . . . 0604	Ø 32 to 63	Complete polyurethane piston kit	9-10-16-17
009 . . . 0604	Ø 80 to 125	Complete polyurethane piston kit	9-10-11-13-15-17
009 . . . 0602	Ø 32 to 63	Complete NBR piston kit	9-10-16-17
009 . . . 0602	Ø 80 to 125	Complete NBR piston kit	9-10-11-13-15-17
009 . . . 0704N	Ø 32 to 63	Complete polyurethane head front + rear + piston kit	1-2-3-4-5-8-9-10-16-17-18
009 . . . 0704N	Ø 80 to 125	Complete polyurethane head front + rear + piston kit	1-2-3-4-5-8-9-10-11-13-15-17-18
009 . . . 0702N	Ø 32 to 63	Complete NBR head front + rear + pistion kit	1-2-3-4-5-8-9-10-16-17-18
009 . . . 0702N	Ø 80 to 125	Complete NBR head front + rear + piston kit	1-2-3-4-5-8-9-10-11-13-15-17-18
009 . . . 0800	Ø 32 to 125	Magnet	12

Notes

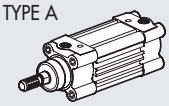
Cylinders in the R and M versions do not come with the single piston rod gasket.
When replacing all the gaskets in the R version cylinders, use the complete set of the R front head, code 009...0122N and the complete set of polyurethane gaskets code 009...0101 (the front head gaskets are in excess).
When replacing all the gaskets in the M version cylinders, use the complete set of the M front head, code 009...0120N and the complete set of FKM/FPM, code 009...0103 (the front head gaskets are in excess).

CYLINDERS ISO 15552 TWO-FLAT

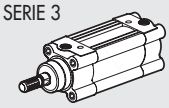
STD

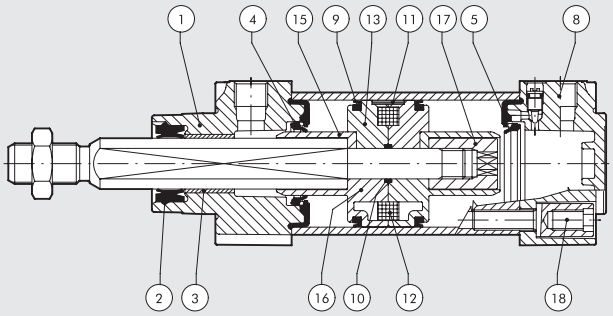


TYPE A



SERIE 3





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

ISO 15552 CYLINDER – SERIES HCR (High Corrosion Resistance)

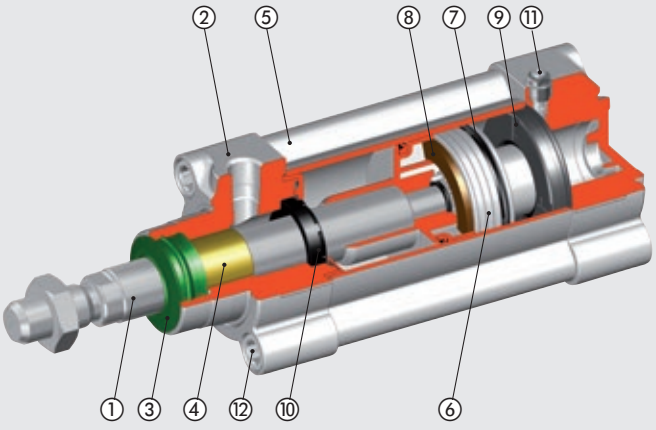
In some applications, the cylinders are exposed to aggressive environments (e.g. the dairy, fruit & vegetable and food industry) or to substances and washings with aggressive detergents (e.g. caustic soda, hydrochloric acid and lactic acid).
Under these conditions, the HCR series cylinders ensure better corrosion resistance.
Cylinders made to ISO 15552, designed and built with materials and/or surface treatments that are highly resistant to corrosion.
They come in various versions and with a specific range of accessories:
- with or without magnet
- with single or through piston rod

Also available with liner in the STD series or series 3.

TECHNICAL DATA		Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125
Max operating pressure	bar	10						
	MPa	1						
	psi	145						
Temperature range	°C	–10 to +60						
Resistance in corrosive environments at 20°C		Basic solution (sodium hydroxide - pH max 12)						
		Acid solution (hydrochloric acid - pH min. 2.5)						
		Salt mist testing to DIN 50021-SS, 500 hours						
Fluid		Unlubricated air. Lubrication, if used, must be continuous						
Standard strokes	mm	1 to 2800					1 to 2600	
Versions		Double-acting, Double-acting cushioned, Through-rod cushioned						
Sensor magnet		Available magnetic and non-magnetic versions.						
Gaskets		Piston rod gaskets made of polyurethane, other gaskets in NBR						
Forces generated at 6 bar thrust/retraction		See cylinder "**General technical data**" at the beginning of the chapter						
Weights		See cylinder "**General technical data**" at the beginning of the chapter						

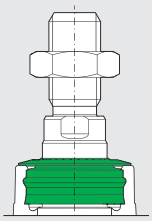
COMPONENTS

① PISTON ROD: AISI 316, thickness-chromed
② HEAD: anodized pressure die-cast aluminium, polyurethane coating
③ PISTON ROD GASKET: special polyurethane
④ GUIDE BUSHING: steel strip with bronze and PTFE insert
⑤ BARREL: drawn anodized calibrated aluminium
⑥ SEMI-PISTON: made of self-lubricating technopolymer with built-in cushioning olives (aluminium with technopolymer pad for Ø 80, 10 and 125)
⑦ PISTON GASKET: NBR
⑧ MAGNET: plastoferrite
⑨ BUFFER + Static O-rings: NBR
⑩ CUSHIONING GASKET: NBR
⑪ NEEDLE: AISI 316
⑫ SCREWS: AISI 316



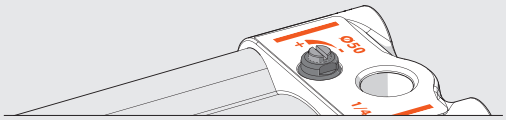
PISTON ROD GASKET FOR HYGIENICALLY-SENSITIVE APPLICATIONS

No fluid stagnation, not even with cylinder in upward direction.
This type of gasket is not available for Ø 125.



CUSHIONING PINS WITHOUT RECESSES

Anti-ejection pin and bushing made of AISI 316 stainless steel, protruding from the head and with a pass-through screwdriver slot to prevent fluid stagnation.



DOUBLE HEAD PROTECTION

POLYURETHANE COATING

ANODISATION

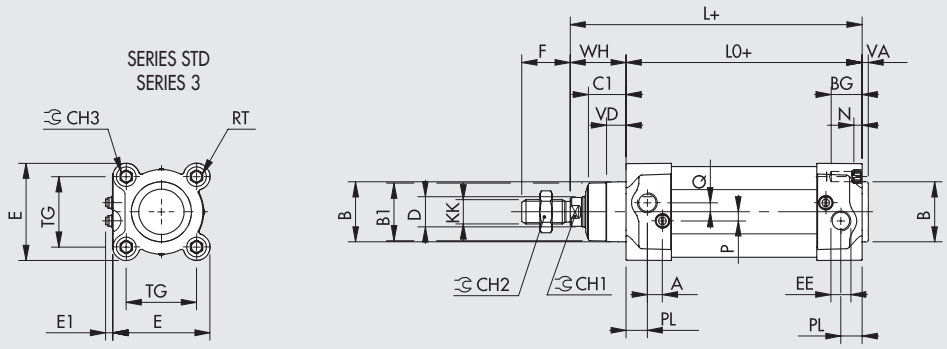
HEAD MADE OF PRESSURE DIE-CAST ALUMINIUM ALLOY

FOOD GRADE GREASE

NSF H1 certified.
Adhesive, waterproof.

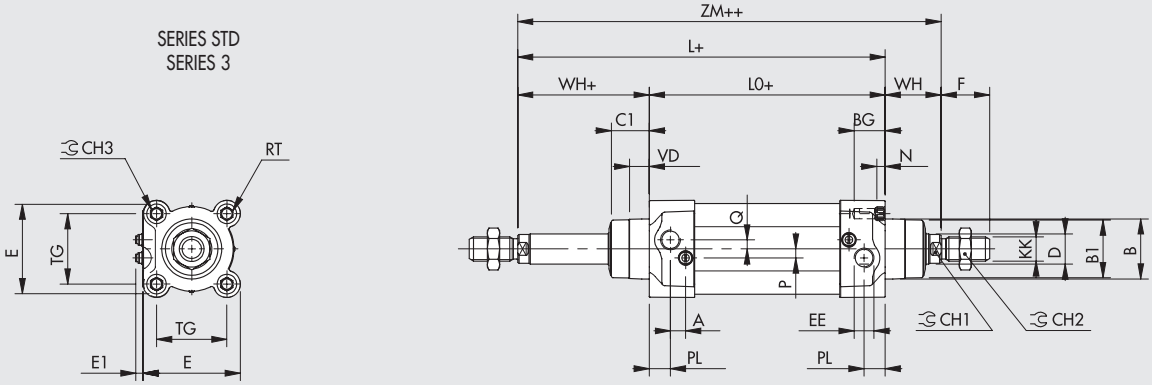
DIMENSIONS

STANDARD VERSION



+ = ADD STROKE
++ = ADD TWICE THE STROKE

THROUGH-ROD VERSION



Ø	PL	VD	A	B	B1	WH	C1	CH1	CH2	CH3	KK	D	TG	VA	F	EE	RT	E	E1 min	E1 max	L	L0	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	5.5	8.4	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	4.5	8.4	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	4.5	8.9	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	4.1	9.5	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	6.2	12.2	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	6.7	12.2	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	5.7	12.7	225	160	290	25.5	6.5	12	8

METAL WORK PNEUMATIC

KEY TO CODES

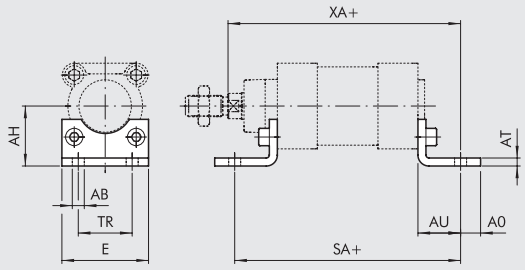
CYL	1 2 1	0	32	0050	B	L
	TYPE		**BORE**	**STROKE**	**MATERIAL**	**GASKETS**
	121 Double-acting, cushioned	**0** Diameter	32	For the maximum suppliable strokes, look at the technical data	**B** AISI 316 piston rod, technopolymer piston: standard for cylinders of Ø32 to Ø63	**L** Piston rod gaskets made of special polyurethane; other gaskets made of NBR
	▲ **122** Through-rod	**S** Standard Non-magnetic	40		**W** AISI 316 piston rod, aluminium piston: standard for all cylinders from Ø80 to 125, Ø32 to 63 with strokes > 999 and Ø32 to125 for through piston rod versions	
	124 Double-acting, non-cushioned	**3** Series 3	50			
		5 Series 3 Non-magnetic	63			
			80			
			■ 100			
			■ 125			

▲ Only available for versions with aluminium piston (W)
■ In the code of cylinder with digit S, 3 or 5 in fourth position bore 100 becomes A1; bore 125 becomes A2

ACCESSORIES: FIXINGS

STAINLESS STEEL SHORT FOOT MOUNTING (AISI 304)

+ = ADD THE STROKE

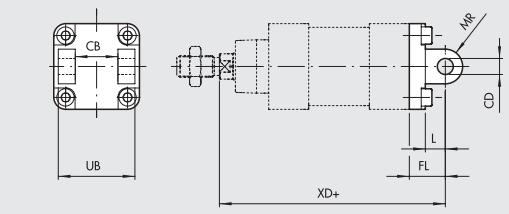


Code	Ø	øAB	AH	AO	AT	AU	TR	E	XA	SA	Weight [g]
W095X322001	**32**	7	32	11	4	24	32	45	144	142	85
W095X402001	**40**	9	36	8	4	28	36	52	163	161	95
W095X502001	**50**	9	45	15	5	32	45	65	175	170	200
W095X632001	**63**	9	50	13	5	32	50	75	190	185	225
W095X802001	**80**	12	63	14	6	41	63	95	215	210	435
W095XA12001	**100**	14	71	16	6	41	75	115	230	220	555
W095XA22001	**125**	18	90	25	8	45	90	140	270	250	1145

Note: Individually packed with 2 screws

STAINLESS STEEL FEMALE HINGE - MODEL B (AISI 304)

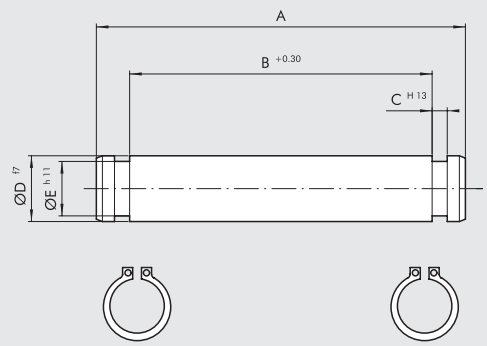
+ = ADD THE STROKE



Code	Ø	UB	CB H14	FL	CD H9	XD	MR	L	Weight [g]
W095X322003	**32**	45	26	22	10	142	10	13	175
W095X402003	**40**	52	28	25	12	160	12	16	250
W095X502003	**50**	60	32	27	12	170	12	16	425
W095X632003	**63**	70	40	32	16	190	16	21	635
W095X802003	**80**	90	50	36	16	210	16	22	1270
W095XA12003	**100**	110	60	41	20	230	20	27	2000
W095XA22003	**125**	130	70	50	25	275	25	30	3715

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

STAINLESS STEEL FEMALE HINGE PIN (AISI 304)

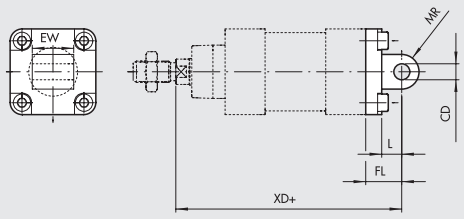


Code	Ø	A	B	C	D	E	Weight [g]
W095X322050	**32**	53	46	1.1	10	9.6	35
W095X402050	**40**	60	53	1.1	12	11.5	55
W095X502050	**50**	68	61	1.1	12	11.5	65
W095X632050	**63**	78	71	1.1	16	15.2	125
W095X802050	**80**	98	91	1.1	16	15.2	160
W095XA12050	**100**	118	111	1.3	20	19	295
W095XA22050	**125**	139	132	1.3	25	23.9	540

Note: Supplied with 2 snap-rings

STAINLESS STEEL MALE HINGE - MODEL BA (AISI 304)

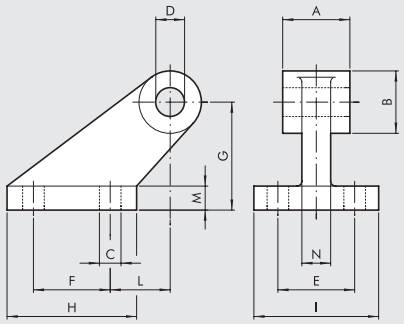
+ = ADD THE STROKE



Code	Ø	EW	FL	MR	CD H9	L	XD	Weight [g]
W095X322004	32	26	22	10	10	13	142	195
W095X402004	40	28	25	12	12	16	160	265
W095X502004	50	32	27	12	12	16	170	445
W095X632004	63	40	32	16	16	21	190	715
W095X802004	80	50	36	16	16	22	210	1375
W095XA12004	100	60	41	20	20	27	230	2165
W095XA22004	125	70	50	25	25	30	275	3800

Note: Supplied with 4 screws.

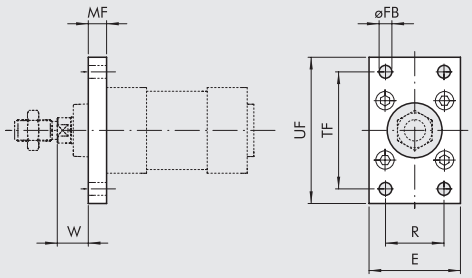
STAINLESS STEEL ISO COUNTER-HINGE FOR MODEL B - MODEL GL (AISI 304)



Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	Weight [g]
W095X322008	32	26	20	6.6	10	38	18	32	31	51	3	8	10	165
W095X402008	40	28	22	6.6	12	41	22	36	35	54	2	10	15	235
W095X502008	50	32	26	9	12	50	30	45	45	65	3	12	16	460
W095X632008	63	40	30	9	16	52	35	50	50	67	2	14	16	590
W095X802008	80	50	30	11	16	66	40	63	60	86	7	14	20	1000
W095XA12008	100	60	38	11	20	76	50	71	70	96	5	17	20	1515
W095XA22008	125	70	45	14	25	94	60	90	90	124	10	20	30	3170

Note: Individually packed

STAINLESS STEEL FRONT FLANGE - MODEL C (AISI 304)

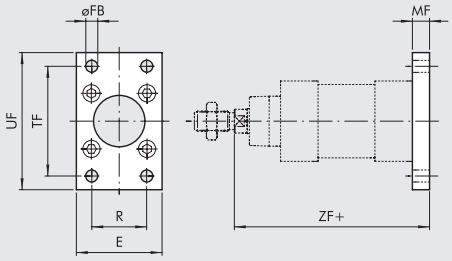


Code	Ø	UF	TF	E	R	MF	øFB	W	Weight [g]
W095X322002	32	80	64	45	32	10	7	16	220
W095X402002	40	90	72	52	36	10	9	20	280
W095X502002	50	110	90	65	45	12	9	25	540
W095X632002	63	120	100	75	50	12	9	25	680
W095X802002	80	150	126	95	63	16	12	30	1550
W095XA12002	100	170	150	115	75	16	14	35	2100
W095XA22002	125	205	180	140	90	20	16	45	3950

Note: Supplied with 4 screws

STAINLESS STEEL REAR FLANGE - MODEL C (AISI 304)

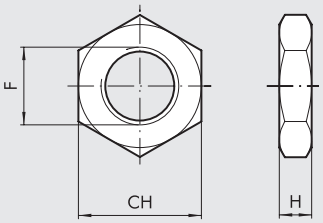
+ = ADD THE STROKE



Code	Ø	UF	TF	E	R	MF	øFB	ZF	Weight [g]
W095X322002	32	80	64	45	32	10	7	105	220
W095X402002	40	90	72	52	36	10	9	115	280
W095X502002	50	110	90	65	45	12	9	118	540
W095X632002	63	120	100	75	50	12	9	133	680
W095X802002	80	150	126	95	63	16	12	144	1550
W095XA12002	100	170	150	115	75	16	14	154	2100
W095XA22002	125	205	180	140	90	20	16	245	3950

Note: Supplied with 4 screws

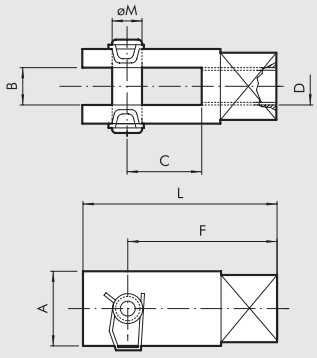
STAINLESS STEEL NUT FOR PISTON RODS (AISI 316)



Code	Ø	F	H	CH	Weight [g]
W095X322011	32	M10x1.25	6	17	8
W095X402011	40	M12x1.25	6	19	11
W095X502011	50	M16x1.5	8	24	18
W095X502011	63	M16x1.5	8	24	18
W095X802011	80	M20x1.5	10	30	31
W095X802011	100	M20x1.5	10	30	31
W095XA22011	125	M27x2	13.5	41	81

Note: Individually packed

STAINLESS STEEL FORK-MODEL GK-M (AISI 304)



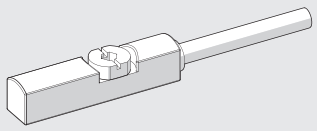
Code	Ø	A	B	C	D	F	L	øM	Weight [g]
W095X322020	32	20	10	20	M10x1.25	40	52	10	90
W095X402020	40	24	12	24	M12x1.25	48	62	12	145
W095X502020	50	32	16	32	M16x1.5	64	83	16	325
W095X502020	63	32	16	32	M16x1.5	64	83	16	325
W095X802020	80	40	20	40	M20x1.5	80	105	20	680
W095X802020	100	40	20	40	M20x1.5	80	105	20	680

Note: Individually packed

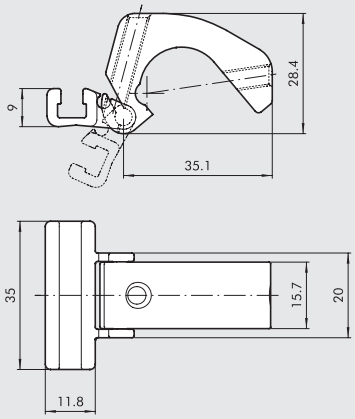
ACCESSORIES: MAGNETIC SENSORS

RETRACTABLE SENSOR, SQUARE TYPE (FOR CORROSIVE ENVIRONMENTS)

For codes and technical data, see **chapter A6**.



SENSOR BRACKET



Code	Bore	Description
W0950001100	32 to 125	Sensor bracket

Note: Individually packed

MATERIAL

Bracket: aluminium
Sensor holder: aluminium
Fixing screw: stainless steel

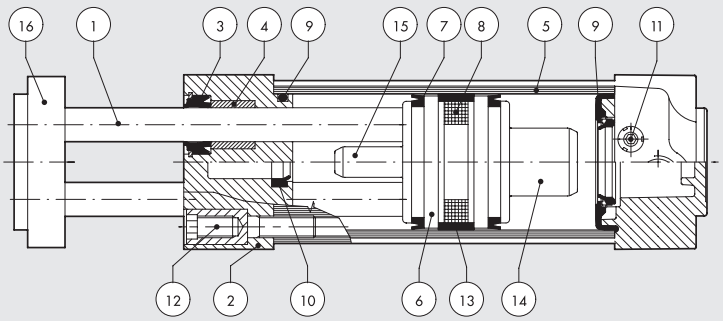
TWIN-ROD CYLINDER SERIES TWNC

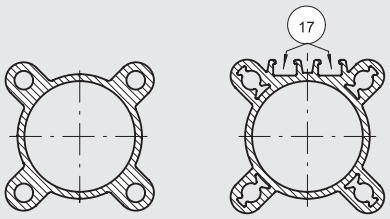
Anti-rotation cylinders with axial dimensions to ISO 15552.
- standard configuration with magnet
- double-acting cushioned
- twinner rods, twinner rods and single through-rod
- rods in C45 steel or stainless steel, thick chromed
- available with STD or series 3 barrel.

TECHNICAL DATA		Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Max operating pressure	bar	10					
	MPa	1					
	psi	145					
Temperature range	°C	–10 to +80					
Design		Extruded profile					
Fluid		Filtered, unlubricated air. Lubrication, if used, must be continuous.					
Standard strokes ✚	mm	25 to 500					
Versions		Double-acting cushioned, Double-acting cushioned single through-rod					
Sensor magnet		Available magnetic versions					
Forces generated at 6 bar thrust/retraction	N	434/350	678/597	1060/940	1683/1471	2714/2295	4241/3812
Weights		See cylinder "**General technical data**" at the beginning of the chapter					
Notes		✚ Maximum recommended strokes. Higher values can create operating problems					

COMPONENTS

① PISTON ROD: C45 steel or stainless steel, thick chromed
② HEAD: aluminium alloy
③ PISTON ROD GASKET: polyurethane
④ GUIDE BUSHING: sintered bronze
⑤ BARREL: drawn anodized aluminium alloy
⑥ PISTON: aluminium alloy
⑦ PISTON GASKET: polyurethane
⑧ MAGNET: plastoferrite
⑨ BUFFER+STATIC O-rings: NBR
⑩ CUSHIONING GASKET: front NBR, rear polyurethane
⑪ NEEDLE: OT 58 brass
⑫ SCREWS: Tap Tite for fixing and assembly
⑬ GUIDE RING: special technopolymer
⑭ REAR CUSHIONING CONE: OT58 brass
⑮ FRONT CUSHIONING CONE: aluminium
⑯ FLANGE: zinc-plated steel
⑰ GROVES FOR SQUARE AND OVAL SENSORS



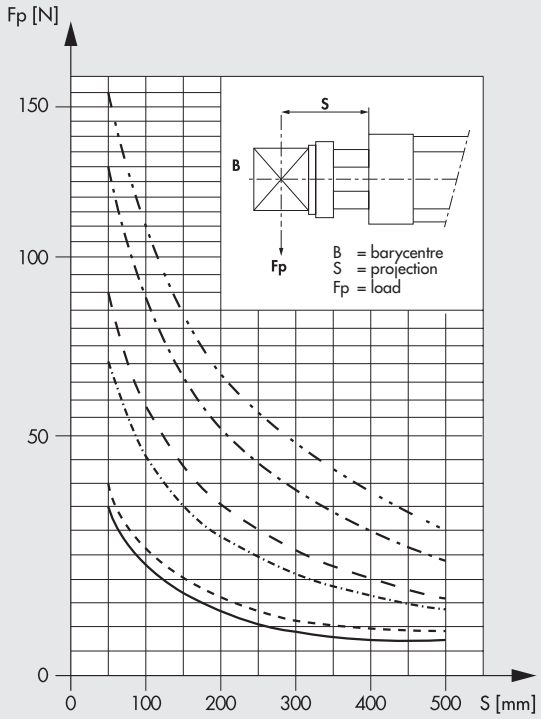


BARREL STD BARREL SERIES 3

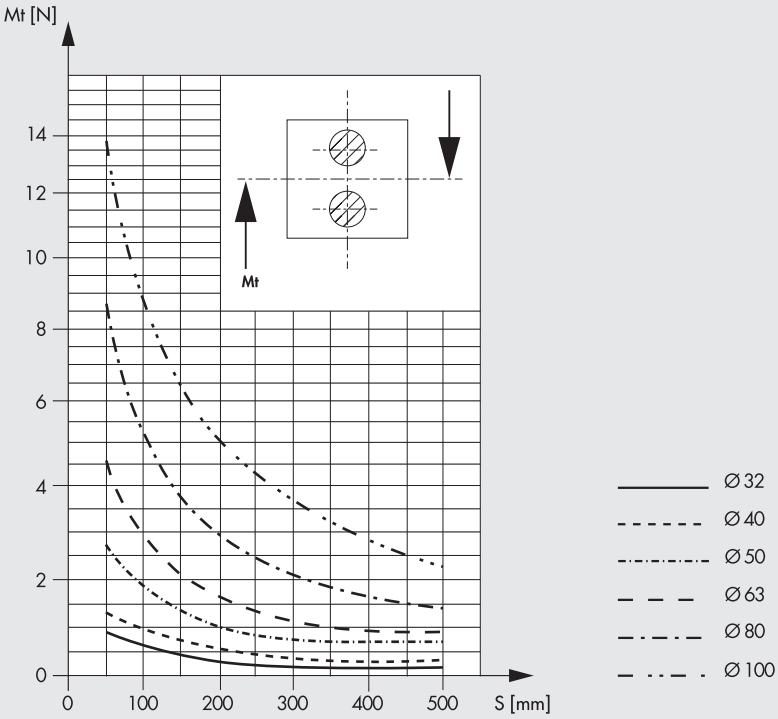
METAL WORK PNEUMATIC

PERMISSIBLE LOADS

FLEXION LOADS

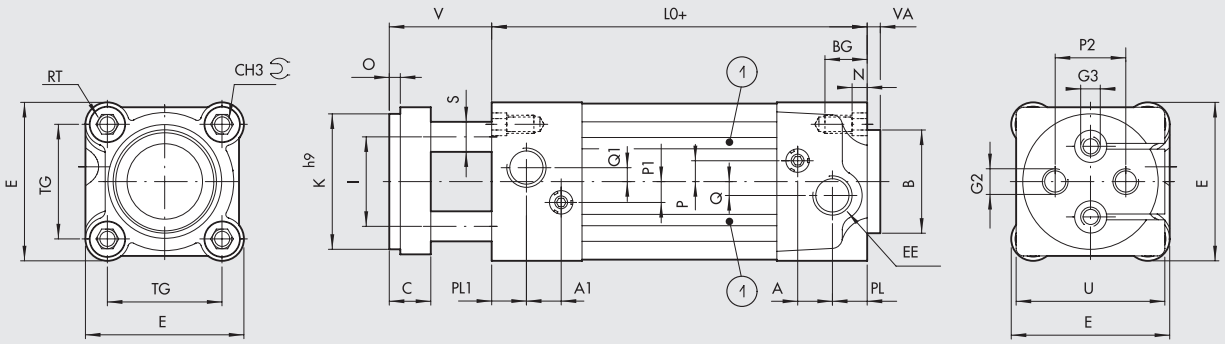


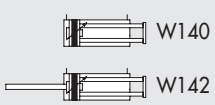
TWISTING MOMENTS



DIMENSIONS

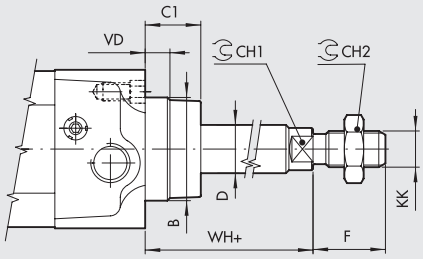
TWIN ROD VERSION (W140)





+ = ADD THE STROKE
1 = GROVES FOR SQUARE AND OVAL SENSORS (only for series 3)

SINGLE THROUGH-ROD VERSION (W142)



Ø	PL	PL1	A	A1	B	CH1	CH2	CH3	TG	VA	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	4	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	4	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	4	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	4	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	4	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	4	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 VERSION STD

CYL	W 1 4 0	0 3 2	0 0 2 5	▶ X
	TYPE	BORES	STROKE	MATERIAL
	W140 Double-acting, magnetic, cushioned **W142** Double-acting, magnetic, cushioned single through-rod	032 040 050 063 080 100	✚ 0025 to 0500 mm	**X** Piston rod AISI 303

✚ Maximum recommended strokes. Higher values can create operating problems.
▶ Letter to be added only for the Stainless steel piston rod version

KEY TO CODES VERSION 3 SERIES

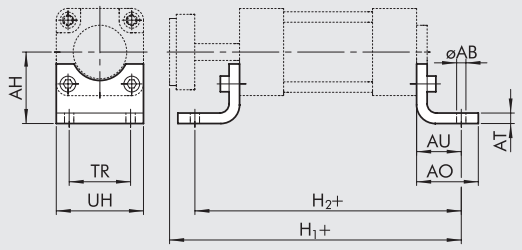
CYL	W 1 4 0	3	3 2	0 0 2 5	▶ X
	TYPE	EXECUTION	BORE	STROKE	MATERIAL
	W140 Double-acting, magnetic, cushioned **W142** Double-acting, magnetic, cushioned single through-rod	**3** Series 3	32 40 50 63 80 A1 = 100	✚ 0025 to 0500 mm	**X** Piston rod AISI 303

✚ Maximum recommended strokes. Higher values can create operating problems.
▶ Letter to be added only for the Stainless steel piston rod version

ACCESSORIES: FIXINGS

FOOT - MODEL A/S

+ = ADD THE STROKE

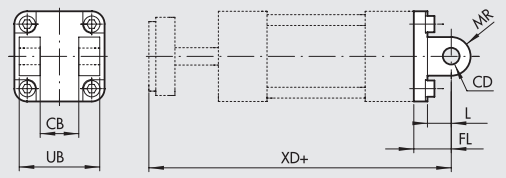


Code	Ø	AB	AH	AO	AT	AU	TR	UH	H_1	H_2	Weight [g]
W0950323001	**32**	7	32	35	4	24	32	45	164	148	76
W0950403001	**40**	9	36	43	4	28	36	52	168	156	98
W0950503001	**50**	9	45	47	4	32	45	65	181	170	156
W0950633001	**63**	9	50	47	6	32	50	75	195	180	246
W0950803001	**80**	12	63	61	6	41	63	95	222	213	406
W0951003001	**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

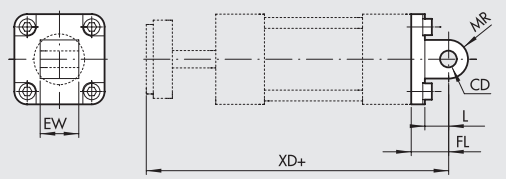


Code	Ø	CB H14	FL	MR	CD H9	L	XD	UB H14	Weight [g]
W0950322003	**32**	26	22	11	10	12	162	45	116
W0950402003	**40**	28	25	13	12	15	165	52	160
W0950502003	**50**	32	27	13	12	15	176	60	252
W0950632003	**63**	40	32	17	16	20	195	70	394
W0950802003	**80**	50	36	17	16	20	217	90	670
W0951002003	**100**	60	41	21	20	25	229	110	1085

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

MALE HINGE - MODEL BA

+ = ADD THE STROKE



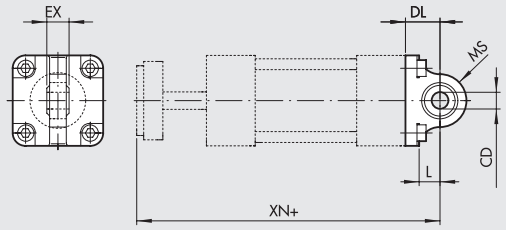
Code	Ø	EW	FL	MR	CD H9	L	XD	Weight [g]
W0950322004	**32**	26	22	10	10	13	162	94
W0950402004	**40**	28	25	12	12	16	165	124
W0950502004	**50**	32	27	12	12	16	176	220
W0950632004	**63**	40	32	16	16	22	195	316
W0950802004	**80**	50	36	16	16	22	217	578
W0951002004	**100**	60	41	20	20	27	229	850

Note: Supplied with 4 screws.

METAL WORK PNEUMATIC

ARTICULATED MALE HINGE - MODEL BAS

+ = ADD THE STROKE

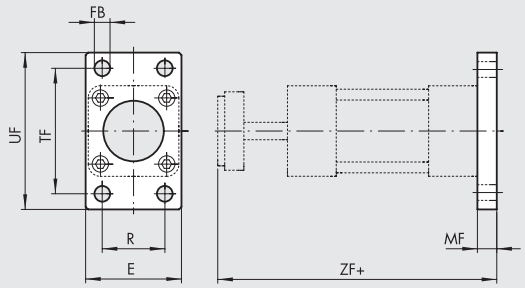


Code	Ø	EX	DL	MF	L	XN	CX H9	Weight [g]
W0950322006	32	14	22	16	12	162	10	106
W0950402006	40	16	25	18	15	165	12	142
W0950502006	50	16	27	21	15	176	12	236
W0950632006	63	21	32	23	20	195	16	336
W0950802006	80	21	36	28	20	217	16	572
W0951002006	100	25	41	30	25	229	20	840

Note: Supplied with 4 screws, 4 washers.

REAR FLANGE - MODEL C

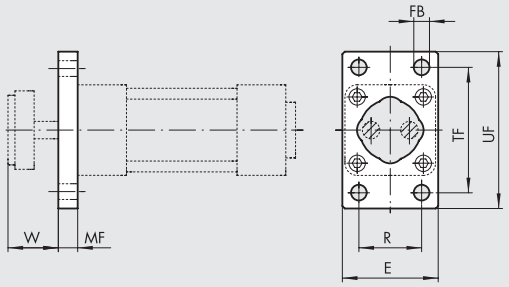
+ = ADD THE STROKE



Code	Ø	TF	UF	E	MF	R	FB	ZF	Weight [g]
W0950322002	32	64	80	50	10	32	7	150	246
W0950402002	40	72	90	55	10	36	9	150	290
W0950502002	50	90	110	65	12	45	9	161	522
W0950632002	63	100	120	75	12	50	9	175	670
W0950802002	80	126	153	95	16	63	12	197	1420
W0951002002	100	150	178	115	16	75	14	204	2040

Note: Supplied with 4 screws.

FRONT FLANGE - MODEL C/S

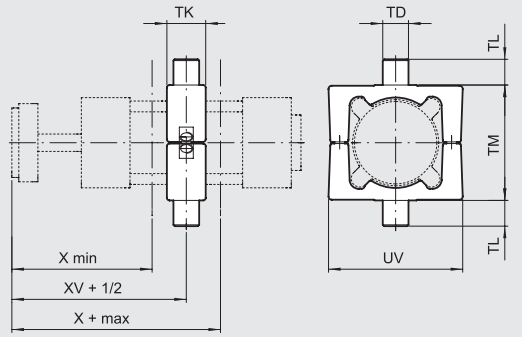


Code	Ø	TF	UF	E	MF	R	FB	W	Weight [g]
W0950323002	32	64	80	50	10	32	7	30	228
W0950403002	40	72	90	55	10	36	9	30	288
W0950503002	50	90	110	65	12	45	9	31	486
W0950633002	63	100	120	75	12	50	9	35	569
W0950803002	80	126	153	95	16	63	12	34	1145
W0951003002	100	150	178	115	16	75	14	34	1760

Note: Supplied with 4 screws.

INTERMEDIATE HINGE - MODEL EN, FOR SERIES STD

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



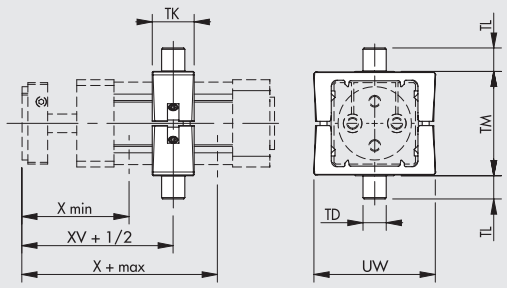
Code	Ø	TM	TL	TD e9	TK	UW	X (min)	XV	X (max)	Weight [g]	T [Nm] ◆
0950322007	32	50	12	12	22	65	79	91	103	282	4
0950402007	40	63	16	16	28	75	82	90	98	582	10
0950502007	50	75	16	16	32	95	91.5	97.5	103.5	870	15
0950632007	63	90	20	20	35	105	95.5	104.5	113.5	1192	20
0950802007	80	110	20	20	40	130	108	115.5	123	1950	20
0951002007	100	132	25	25	45	145	110.5	119	127.5	2690	25

Note: Supplied with 4 screws, 2 pin

◆ Reccommended tightening torque of grub screws

INTERMEDIATE HINGE - MODEL EN, FOR SERIES 3

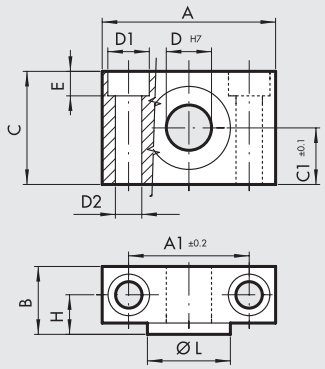
\+ = ADD THE STROKE
\+ 1/2 = ADD HALF THE STROKE



Code	Ø	X (min)	XV	X (max)	TM	TL	TD e 9	TK	UW	Weight [g]	T [Nm] ◆
0950322207	32	79	91	103	50	12	12	22	65	212	3
0950402207	40	82	90	98	63	16	16	28	75	440	8
0950502207	50	91.5	97.5	103.5	75	16	16	28	95	644	15
0950632207	63	95.5	104.5	113.5	90	20	20	36	105	1080	15
0950802207	80	108	115.5	123	110	20	20	36	130	1654	15
0951002207	100	110.5	119	127.5	132	25	25	45	145	2550	20

Note: Supplied with 4 grub screws, 2 pins
◆ Reccommended tightening torque of grub screws

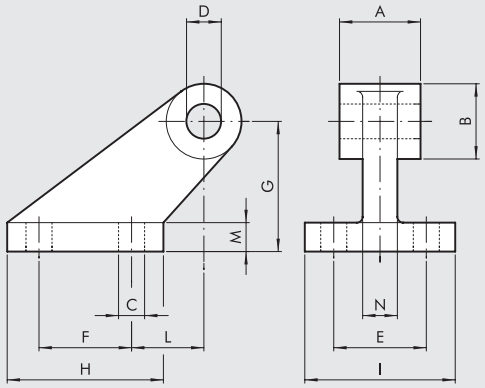
COUNTER-HINGE FOR MODEL EN - MODEL EL



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

Note: 2-pieces pack with 4 screws

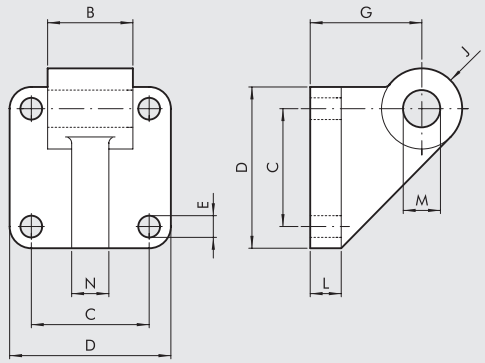
COUNTER-HINGE CETOP FOR MODEL B - MODEL GL



Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	Weight [g]
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 with 4 screws, 4 washers

COUNTER-HINGE FOR MODEL B - MODEL GS



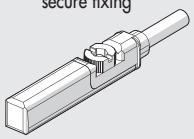
Code	Ø	B	C	D	E	G	J	L	M	N	Weight [g]
W0950322108	32	26	32.5	45	7	32	11	10	10	10	106
W0950402108	40	28	38	52	7	36	13	10	12	12	138
W0950502108	50	32	46.5	65	9	45	13	12	12	12	252
W0950632108	63	40	56.5	75	9	50	17	12	16	15	350
W0950802108	80	50	72	95	11	63	17	16	16	15	655
W0951002108	100	60	89	115	11	73	21	20	20	22	980

Note: Supplied with 4 screws, 4 washers

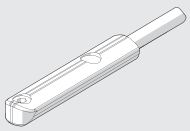
ACCESSORIES FOR TWIN-ROD CYLINDERS: MAGNETIC SENSORS AND POSITION SENSOR

RETRACTABLE SENSOR

Ⓐ SENSOR, SQUARE TYPE
Latest generation, secure fixing



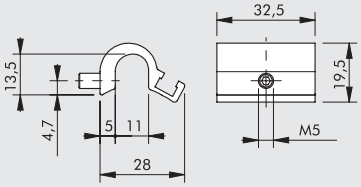
Ⓑ SENSOR, OVAL TYPE
Traditional



For codes and technical data, see **chapter A6**.

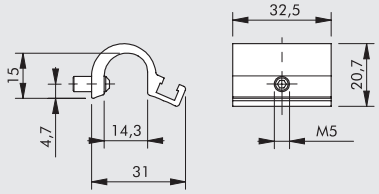
Ⓓ SENSOR SUPPORT BRACKETS FOR SENSORS SQUARE TYPE AND OVAL TYPE

Ø 32 to 40



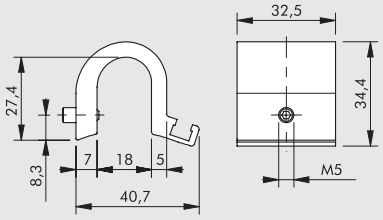
Code	Description
W0950001711	Bracket D.32-40

Ø 50 to 63



Code	Description
W0950001712	Bracket D.50-63

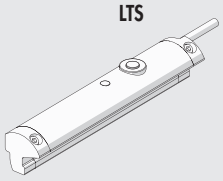
Ø 80 to 100



Code	Description
W0950001713	Bracket D.80-100-125

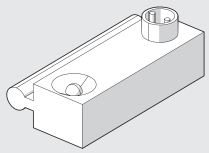
Ⓖ POSITION SENSOR

LTS



For technical data and usage strokes see **chapter A6**.

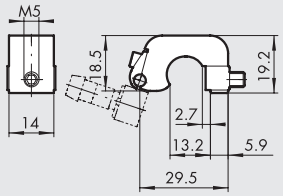
Ⓒ SENSOR SERIES DSM



Can be used on ISO 15552 cylinders in the STD series and series 3.
For codes and technical data, see **chapter A6**.

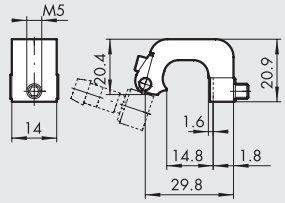
Ⓔ SENSOR SUPPORT BRACKETS FOR SENSORS DSM

Ø 32 to 40



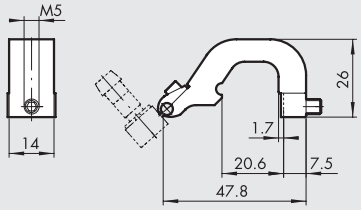
Code	Description
W0950000711	Bracket D.32-40 DST 80

Ø 50 to 63



Code	Description
W0950000712	Bracket D.50-63 DST 81

Ø 80 to 100

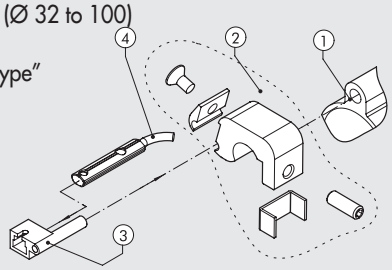


Code	Description
W0950000713	Bracket D.80-100-125 DST 82

Ⓕ ADAPTER FOR OVAL TYPE RETRACTABLE SENSORS

ASSEMBLY DIAGRAM

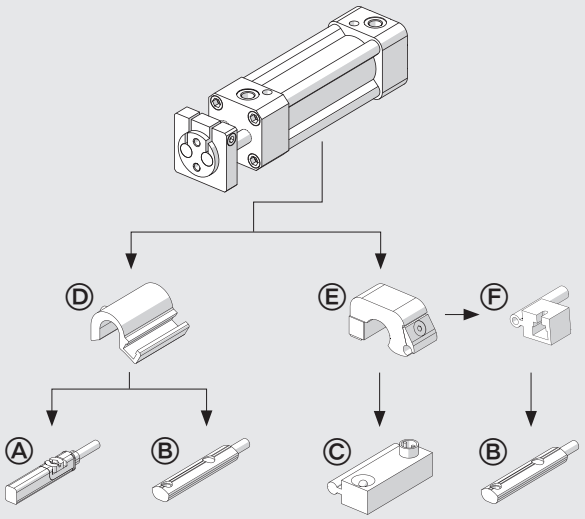
① Twin-rod cylinder with serie STD or serie 3 barrel
② Sensor bracket mod. DST (Ø 32 to 100)
③ Adaptor
④ Retractable sensor "oval type"



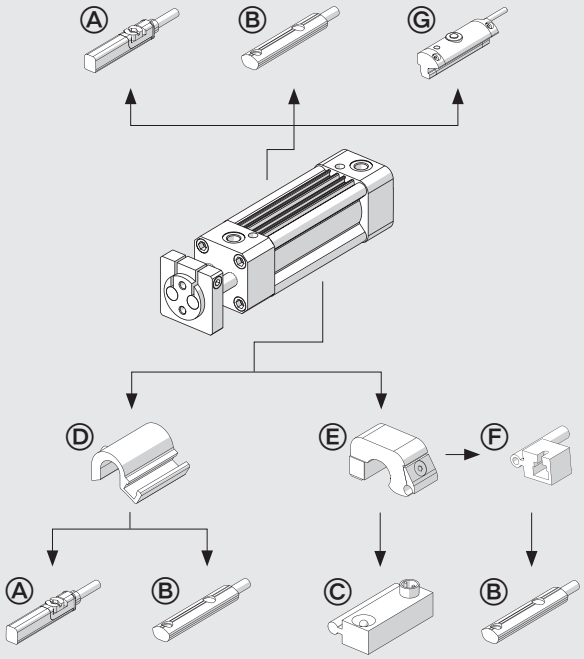
Code	Description
W0950001001	Adaptor DSS005 for DST/ST brackets

USE SENSORS

SERIES STD



SERIES 3



NOTES

METAL WORK PNEUMATIC

NOTES

ISO 15552 CYLINDER Ø 160-200 WITH ROUND BARREL

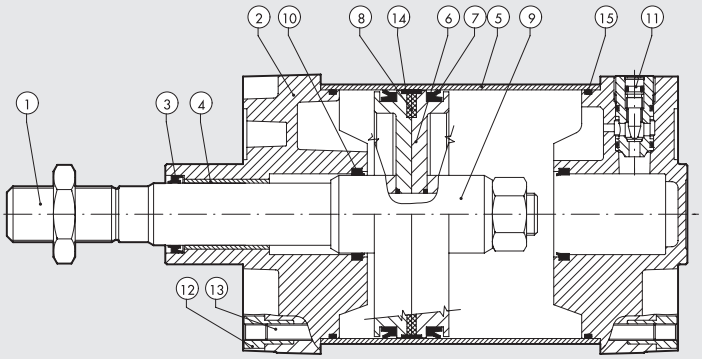
Cylinders made to ISO 15552 available in various versions and with a wide range of accessories:

- configuration with or without magnet
- double-acting – single-or through-rod
- wide choice of NBR and FKM/FPM (for high temperature)
- piston rod scrapers for use in hostile environments available
- available with mounted intermediate hinge
- special configurations on request

TECHNICAL DATA			Ø160	Ø200
Max operating pressure		bar	10	
		MPa	1	
		psi	145	
Temperature range	NBR	°C	–20 to +80	
	FKM/FPM	°C	–10 to +150	
	Other piston rod gasket	°C	See next page	
Design			Round barrel with tie rods	
Fluid			Unlubricated air. Lubrication, if used, must be continuous	
Standard strokes		mm	25-50-75-80-100-125-150-200-250-300-350-400-500-600-700-800-900-1000	
Versions			Double-acting, Cushioned or non-cushioned,	
			Single piston rod or cushioned through piston rod, High-temperature, No stick-slip	
Sensor magnet			Available magnetic and non-magnetic versions.	
Forces generated at 6 bar thrust/retraction			See cylinder "**General technical data**" at the beginning of the chapter	
Weights			See cylinder "**General technical data**" at the beginning of the chapter	
Notes			**For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.**	

COMPONENTS

① PISTON ROD: C45 steel or stainless steel, thick chromed (rod nut in zinc-plated steel)
② HEAD: die cast aluminium
③ PISTON ROD GASKET: NBR, FKM/FPM, FKM/FPM with metal scraper
④ GUIDE BUSHING: sintered bronze
⑤ BARREL: drawn anodized aluminium alloy
⑥ PISTON: aluminium
⑦ PISTON GASKET: NBR or FKM/FPM
⑧ MAGNET: plastoferrite
⑨ CUSHIONING CAP: aluminium
⑩ CUSHIONING GASKET: polyurethane or FKM/FPM
⑪ CUSHIONING NEEDLE: OT 58 with needle out movement safety system even when fully open
⑫ SCREWS: zinc-plated steel
⑬ TIE RODS: stainless steel
⑭ GUIDE BELT: technopolimer
⑮ STATIC O-RINGS: NBR or FKM/FPM

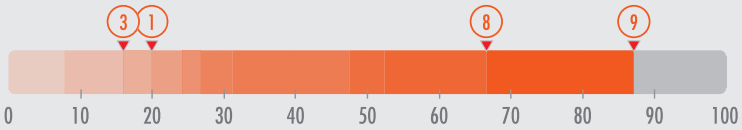


OVERVIEW OF SEALS AND SCRAPERS

	Code identifier	Key feature	Applications	Gasket material	Temperature range
① 	.....	General use.	Standard applications, also with humidity.	NBR	-20 to + 80 °C
③ 	V	High temperatures - chemicals.	Industrial applications with chemical agents and/or at high temperatures.	FPM/FKM	-10 to + 150 °C
⑧ 	....R	Dirt and low temperatures. Reference name: HARD PU	Medium-Heavy duty applications, with presence of dirt and low temperatures, such as in agricolture or in transport sector.	Piston rod seal made of hard polyurethane, the other seals are made of NBR.	-20 to + 80 °C
⑨ 	....M	Dirt and high temperature. Reference name: METAL	Heavy duty applications, in presence of hard dirt and high temperatures, like in cement plants, foundries or in transport sector.	Metal scraper, the other seals are made of FKM/FPM.	-10 to + 150 °C

Anti-contamination Effect Indicators

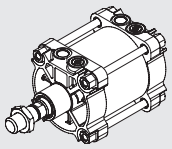
An index of protection against the dirt that settles and adheres to the piston rod is provided for each version, on a 1 to 100 scale.

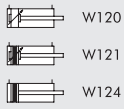


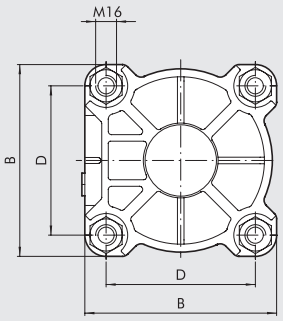
NOTES

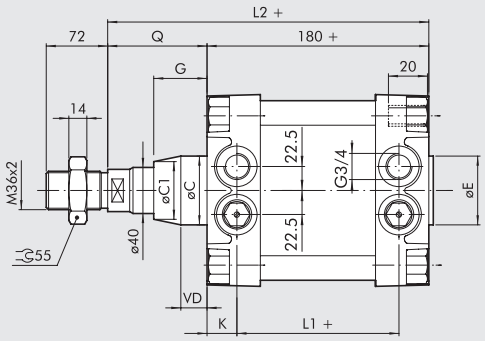
DIMENSIONS OF STANDARD VERSION

+ = ADD THE STROKE





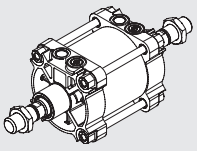


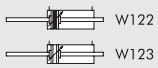


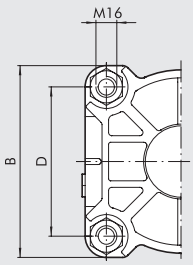
Ø	B	øC	øC1	øE	D	G	L_1	L_2	Q	VD	K
160	180	65	-	65	140	50	124	260	80	-	28
200	220	75	~ 65	75	175	60	122	275	95	~ 15	29

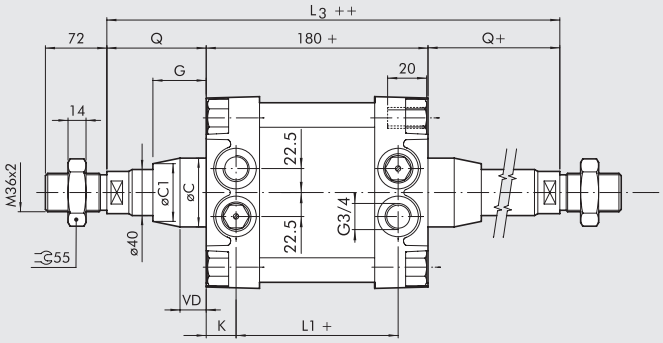
DIMENSIONS OF THROUGH-ROD VERSION

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





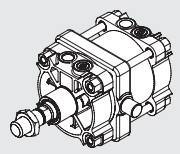


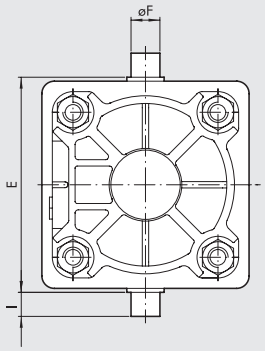


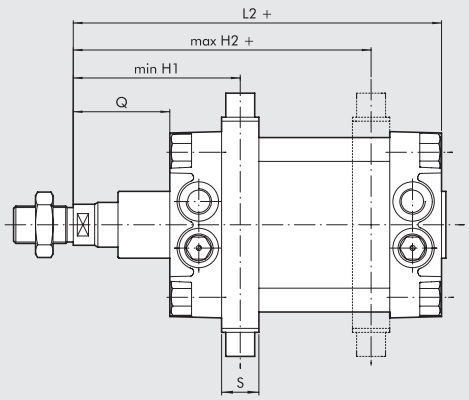
Ø	B	øC	øC1	D	G	L_1	L_3	Q	VD	K
160	180	65	-	140	50	124	340	80	-	28
200	220	75	~ 65	175	60	122	370	95	~ 15	29

DIMENSIONS OF VERSION WITH INTERMEDIATE HINGE

+ = ADD THE STROKE







Ø	E	øF	H1	H2	I	L2	Q	S
160	200	32	150	190	32	260	80	40
200	250	32	165	205	32	275	95	40

For the missing values, refer to standard cylinders. **In your order, please specify the desired value for H1**

METAL WORK PNEUMATIC

KEY TO CODES FOR ROUND BARREL

CIL	W121 TYPE	160 DIAMETER-EXECUTION	0050 STROKE	▼R SPECIAL SCRAPER
	W120 Double-acting, cushioned, non magnetic **W121** Double-acting, cushioned **W122** Double-acting, cushioned, through-rod **W123** Double-acting, cushioned, through-rod, non magnetic **W124** Double-acting, non-cushioned	**160** 160 **200** 200 **XA3** 160 stainless steel piston rod **XA4** 200 stainless steel piston rod **VA3** 160 FKM/FPM gasket, stainless steel piston rod **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 ● **GA3** 160 No stick-slip ● **GA4** 200 No stick-slip	✚ 0025 to 2800 mm	◆ **R** Hard PU ■ **M** Metal

✚ 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.**
▼ Letter to be added only for versions with a special scraper.
◆ To be matched with NBR execution: 160, 200, XA3, XA4
■ To be matched with FKM/FPM execution: VA3, VA4, KA3, KA4

KEY TO CODES FOR CONFIGURATION WITH INTERMEDIATE HINGE

CIL	W121 TYPE	AA3 DIAMETER-EXECUTION	0050 STROKE	0200 EXECUTION	▼R SPECIAL SCRAPER
	W120 Double-acting, cushioned, non magnetic **W121** Double-acting, cushioned **W122** Double-acting, cushioned, through-rod **W123** Double-acting, cushioned, through-rod, non magnetic **W124** Double-acting, non-cushioned	**AA3** 160 + intermediate hinge **AA4** 200 + intermediate hinge	✚ 0025 to 2800 mm	**H1 dimension** (hinge position, see drawing on the previous page)	**R** Hard PU

✚ Maximum recommended strokes. Higher values can create operating problems.
▼ Letter to be added only for versions with a special scraper.
Note: Type M scraper only on request.
For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only. For coding please contact our sales support department.

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

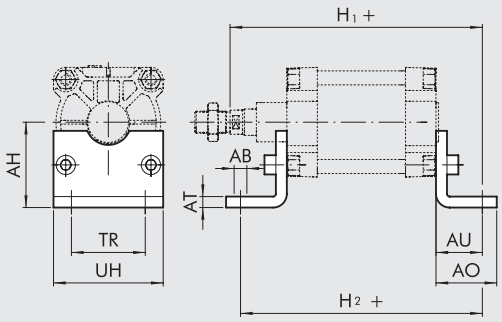
CYL	121 TYPE	160 DIAMETER-EXECUTION	0050 STROKE	A MATERIAL	N GASKETS
	120 Double-acting, cushioned, non-magnetic **121** Double-acting, cushioned **122** Double-acting, cushioned, through-rod **124** Double-acting, non-cushioned	**160** 160 **200** 200 **SA3** 160 non magnetic **SA4** 200 non magnetic ● **GA3** 160 No stick-slip ● **GA4** 200 No stick-slip	✚ 0025 to 2800 mm	**A** C45 chromed, piston rod **Z** Stainless steel chromed, piston rod	**N** NBR gaskets **V** FKM/FPM gaskets

✚ 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**

ACCESSORIES FOR ISO 15552 CYLINDERS Ø 160-200: FIXINGS

FOOT - MODEL A

+ = ADD THE STROKE

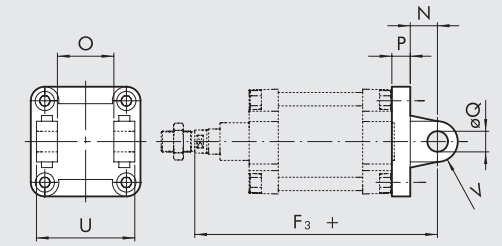


Code	Ø	AB	AH	AO	AT	AU	H_1	H_2	TR	UH	Weight [g]
W0951602001	160	18	115	80	10	60	319	300	115	180	2400
W0952002001	200	22	135	100	12	70	345	320	135	220	4000

Note: Individually packed with 2 screws

FEMALE HINGE - MODEL B

+ = ADD THE STROKE

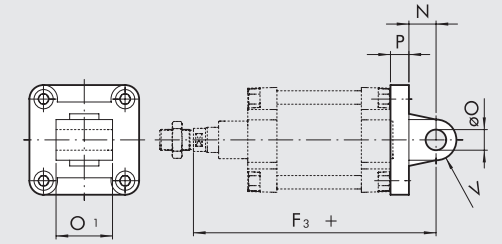


Code	Ø	U	O	øQ	P	N	F_3	V	Weight [g]
W0951602003	160	170	90	30	20	35	314	25	3300
W0952002003	200	170	90	30	25	35	335	25	4300

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

MALE HINGE - MODEL BA

+ = ADD THE STROKE

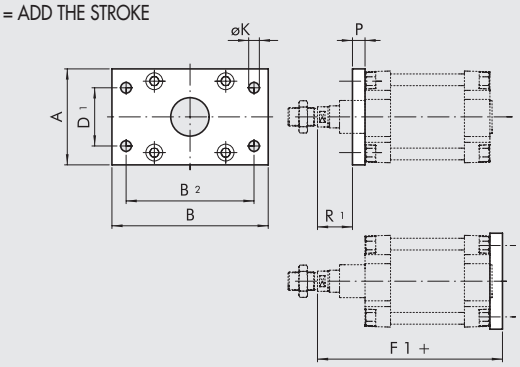


Code	Ø	O_1	øO	P	N	F_3	V	Weight [g]
W0951602004	160	90	30	20	35	314	25	2150
W0952002004	200	90	30	25	35	335	25	3550

Note: Supplied complete with 4 screws

FLANGE - MODEL C (FRONT AND REAR)

+ = ADD THE STROKE



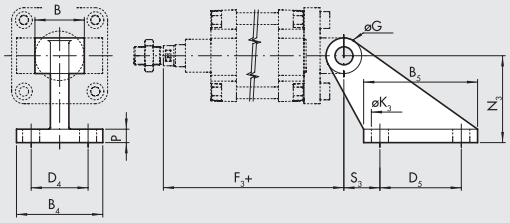
Code	Ø	A	B	B_2	D_1	øK	R_1	P	F_1	Weight [g]
W0951602002	160	180	270	230	115	18	59	20	279	6900
W0952002002	200	225	312	270	135	22	70	25	300	12800

Note: Individually packed with 4 screws

METAL WORK PNEUMATIC

CETOP COUNTER-HINGE - MODEL GL

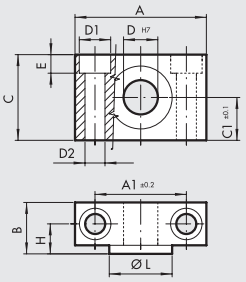
+= ADD THE STROKE



Code	Ø	B	B_4	B_5	D_4	D_5	øG	N_3	S_3	$øK_3$	P	F_3	Weight [g]
W0951602008	160	90	110	154	63	110	53	140	50	18	20	314	2300
W0951602008	200	90	110	154	63	110	53	140	50	18	20	335	2300

Note: Supplied complete with 4 screws, 4 washers

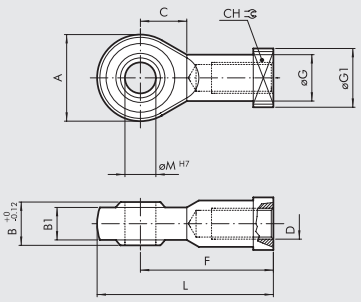
COUNTER-HINGE MODEL EL



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: 2-pieces pack with 4 screws

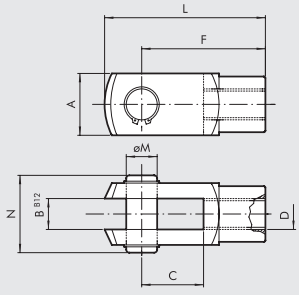
ROD EYE - MODEL GA-M



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

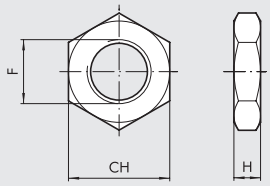
FORK - MODEL GK-M



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

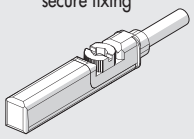
Note: Individually packed

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

RETRACTABLE SENSOR

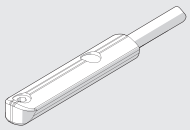
Ⓐ SENSOR, SQUARE TYPE

Latest generation, secure fixing



Ⓑ SENSOR, OVAL TYPE

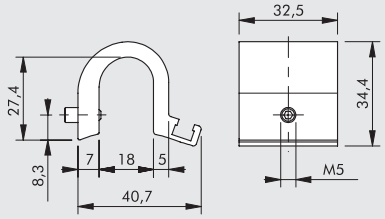
Traditional



For codes and technical data, see **chapter A6**.

Ⓕ SENSOR SUPPORT BRACKETS FOR SENSORS SQUARE TYPE AND OVAL TYPE

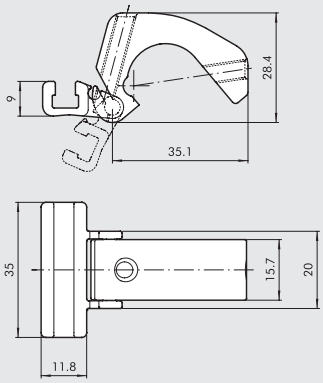
Ø 160



Code	Description
W0950001713	Bracket D.80-100-125

Ⓖ SENSOR SUPPORT BRACKETS FOR SENSORS SQUARE TYPE AND OVAL TYPE

Ø 160-200

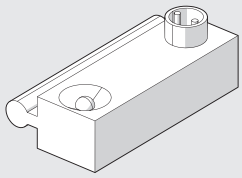


Code	Description
W0950001100	Sensor bracket

Note: Individually packed

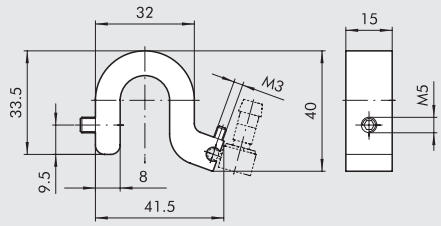
NOTES

Ⓒ SENSOR SERIES DSM



For codes and technical data, see **chapter A6**.

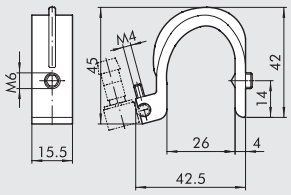
Ⓓ SENSOR SUPPORT BRACKETS FOR SENSORS DSM (FOR ROUND BARREL VERSION)



Code	Description
0951602093	Supporto sensore 160-200

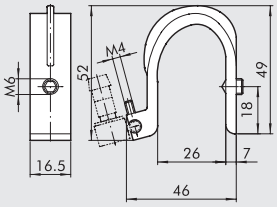
Ⓔ SENSOR SUPPORT BRACKETS FOR SENSORS DSM (FOR SHAPED BARREL VERSION)

Ø 160



Code	Description
W0950000715	Bracket ST160

Ø 200

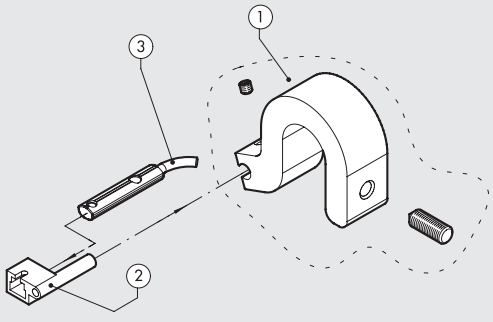


Code	Description
W0950000716	Bracket ST200

Ⓗ ADAPTER FOR OVAL TYPE RETRACTABLE SENSORS

ASSEMBLY DIAGRAM

① Sensor support bracket Ⓓ or Ⓔ
② Adaptor
③ Retractable sensor "oval type"

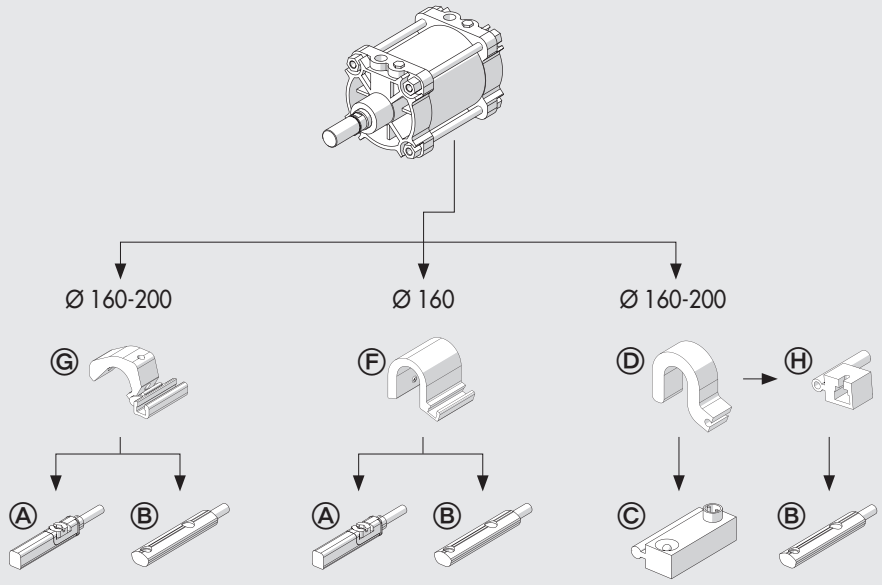


Code	Description
W0950001001	Adaptor DSS005 for DST/ST brackets

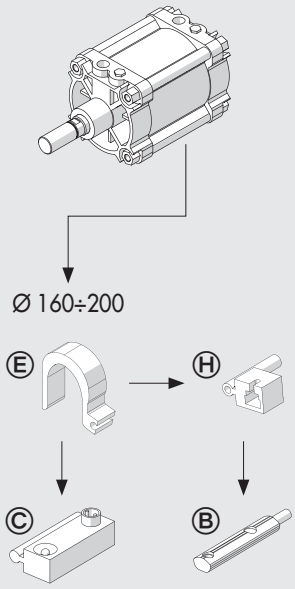
METAL WORK PNEUMATIC

USE SENSORS

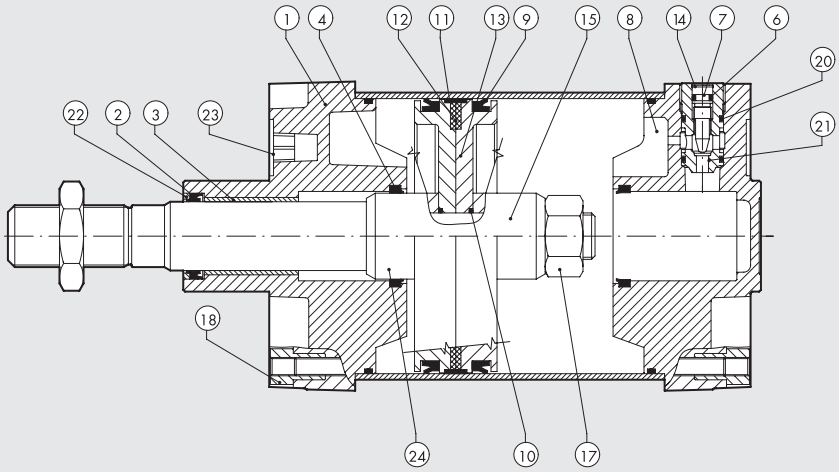
ROUND BARREL



SHAPED BARREL



CYLINDERS ISO 15552 Ø 160-200: SPARE PARTS



Code	Bores	Type	Parts
W095___2101	160 - 200	Complete set of gaskets	2-4-5-6-9-10-20-22
W0951602165	160 - 200	NBR piston rod gasket kit + seeger	2
W0951602166	160 - 200	FKM/FPM piston rod gasket kit + seeger	2
W095___2102	160 - 200	Complete set of (high temperature) FKM/FPM gaskets	2-4-5-6-9-10-20-22
W095___0104	160 - 200	Complete front head kit	1-2-3-4-5-6-7-14-18-20-21-22-23
W095___0122	160 - 200	Complete R front head kit	1-2-3-4-5-6-7-14-18-20-21-22-23
W095___0120	160 - 200	Complete M front head kit	1-2-3-4-5-6-7-14-18-20-21-22-23
W095___0105	160 - 200	Complete rear head kit	4-5-6-7-8-14-18-20-21-23
W095___2115	160 - 200	Complete magnetic piston kit	9-10-11-12-13-15-17-24
W095___2118	160 - 200	Complete non-magnetic piston kit	9-10-11-13-15-17-24
W095___2120	160 - 200	Complete head A + P + non-magnetic piston	1-2-3-4-5-6-7-8-9-10-11-13-14-15-17-18-20-21-22-23-24
W095___2119	160 - 200	Complete head A + P + magnetic piston	1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-17-18-20-21-22-23-24
W095___2300	160 - 200	Magnet	12

Notes

Cylinders in the R and M versions do not come with the single piston rod gasket.

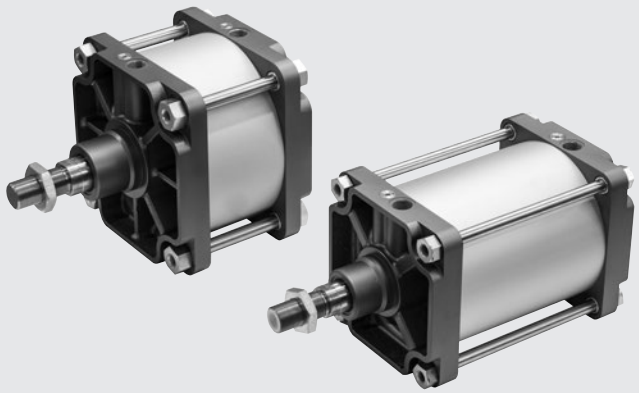
When replacing all the gaskets in the R version cylinders, use the complete set of the R front head, code W095___0122, and the complete set of gaskets code W095___2101 (the front head gaskets are in excess).

When replacing all the gaskets in the M version cylinders, use the complete set of the M front head, code W095___0120 and the complete set of FKM/FPM, code W095___2101 (the front head gaskets are in excess).

ISO 15552 CYLINDER Ø 250-320

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

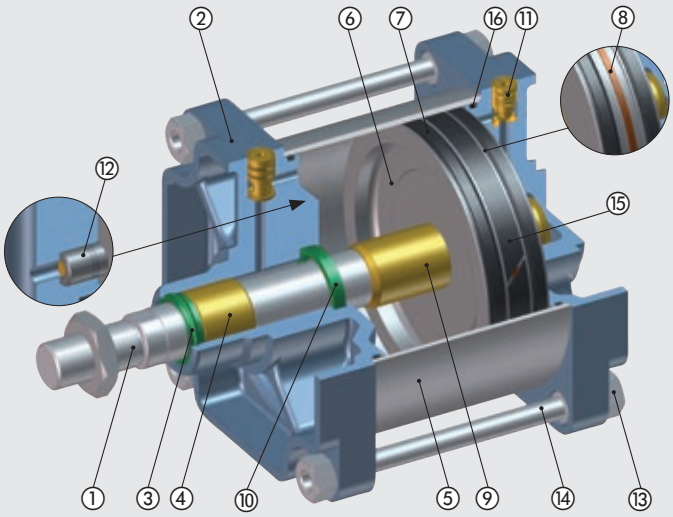
- double-acting – single-or through-rod
- with or without cushioning
- configuration with or without magnet
- with NBR gaskets, and polyurethane gasket for the piston rod only
- with FKM/FPM gaskets (high temperature versions)
- available with mounted intermediate hinge
- special configurations on request



TECHNICAL DATA			Ø250	Ø320
Max operating pressure		bar	10	
		MPa	1	
		psi	145	
Temperature range	NBR	°C	–20 to +80	
	FKM/FPM	°C	–10 to +150	
Design			Round barrel with tie rods	
Fluid			Unlubricated air. Lubrication, if used, must be continuous	
Standard strokes		mm	1 to 2000	
Versions			Double-acting, Cushioned or non-cushioned,	
			Single piston rod or cushioned through piston rod, High-temperature, No stick-slip	
Sensor magnet			Available magnetic and non-magnetic versions.	
Inrush pressure		bar	0.2	0.15
Forces generated at 6 bar thrust/retraction			See cylinder "**General technical data**" at the beginning of the chapter	
Weights			See cylinder "**General technical data**" at the beginning of the chapter	
Notes			**For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.**	

COMPONENTS

① PISTON ROD: High thickness C45 chrome steel or stainless steel (AISI 304)
② HEAD: fused aluminum painted
③ PISTON ROD GASKET: polyurethane or FKM/FPM
④ GUIDE BUSHING: sintered bronze
⑤ BARREL: anodized aluminium
⑥ PISTON: aluminium
⑦ PISTON GASKET: NBR or FKM/FPM
⑧ MAGNET: plastoferrite
⑨ CUSHIONING CAP: aluminium
⑩ CUSHIONING GASKET: NBR or FKM/FPM
⑪ CUSHIONING NEEDLE: OT 58
⑫ ONE-WAY VALVE for Ø 320 only: to speed up restart from end of stroke, bypassing the cushioning gasket
⑬ SCREWS: zinc-plated steel
⑭ TIE RODS: C45 steel, chromed
⑮ GUIDE BELT: PTFE
⑯ STATIC O-RINGS: NBR or FKM/FPM

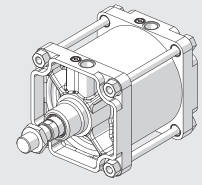


METAL WORK PNEUMATIC

DIMENSIONS

STANDARD VERSION

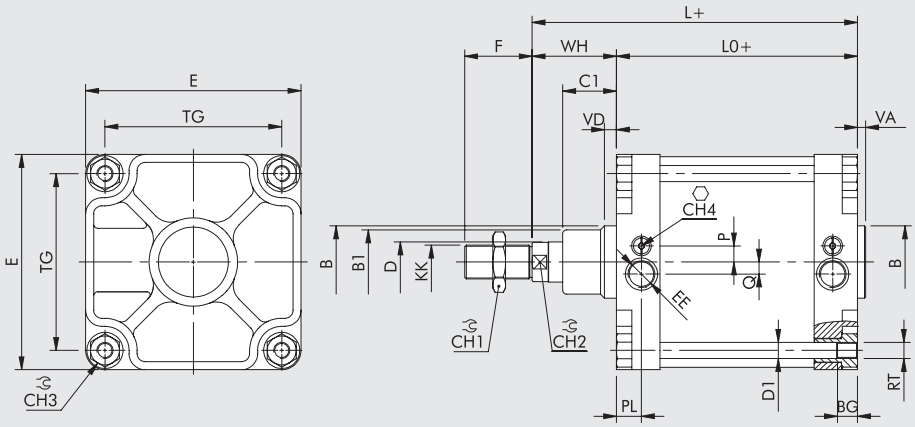
+ = ADD THE STROKE




W120

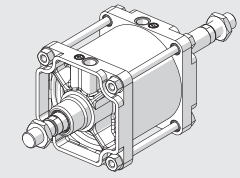

W121

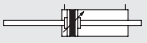

W124

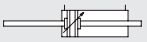


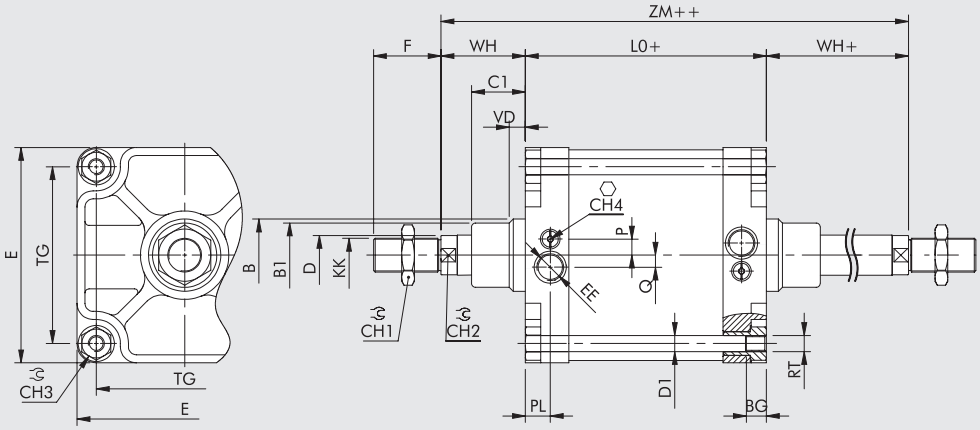
THROUGH-ROD VERSION

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




W122

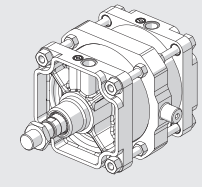

W123



Ø	PL	VD	B	B_1	WH	C_1	CH_1	CH_2	CH_3	CH_4	KK	D	D_1	TG	VA	F	EE	RT	E	L	L_0	ZM	BG	P	Q
250	31	20	90	80	105	67	65	46	36	6	M42x2	50	20	220	10	84	G1	M20	268	305	200	410	25	15	20
320	31	20	110	100	120	82	75	55	46	6	M48x2	63	25	270	10	96	G1	M24	340	340	220	460	28	36	-

DIMENSIONS OF VERSION WITH INTERMEDIATE HINGE

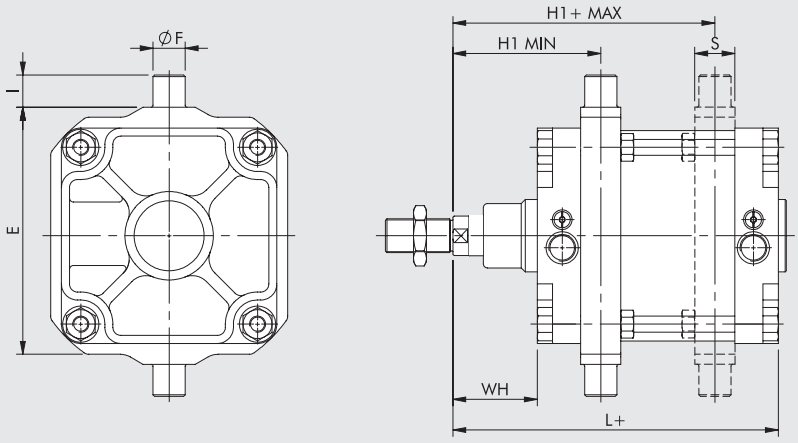
+ = ADD THE STROKE




W120


W121


W124



Ø	E	øF	$H1_{min}$	$H1_{max}$	I	L	WH	S
250	320	40	184	226	40	305	105	50
320	400	50	212	248	50	340	120	70

For the missing values, refer to standard cylinders. **In your order, please specify the desired value for H1**

KEY TO CODES

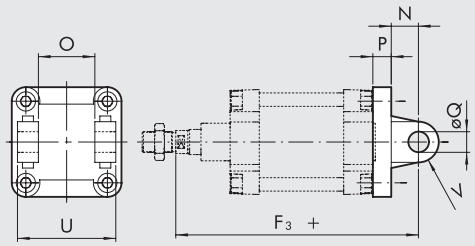
CIL	W 1 2 1 TYPE	2 5 0 DIAMETER-EXECUTION	0 3 0 0 STROKE	0 2 0 0 EXECUTION
	W120 Double-acting, cushioned, non magnetic **W121** Double-acting, cushioned **W122** Double-acting, cushioned, through-rod **W123** Double-acting, cushioned, through-rod, non magnetic **W124** Double-acting, non-cushioned	**250** 250 **320** 320 **XA5** 250 stainless steel piston rod and nut **XA6** 320 stainless steel piston rod and nut **KA5** 250 FKM/FPM gasket, C45 piston rod and nut **VA5** 250 FKM/FPM gasket, stainless steel piston rod and nut **AA5** 250 + intermediate hinge **AA6** 320 + intermediate hinge ● **GA5** 250 no stick-slip ● **GA6** 320 no stick-slip	0001 to 2000 mm	**Specify H1 value ONLY for version with intermediate hinge**

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

ACCESSORIES: FIXINGS

FEMALE HINGE - MODEL B

+ = ADD THE STROKE

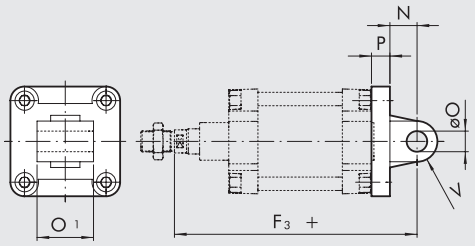


Code	Ø	U	O	øQ	P	N	F_3	V	Weight [g]
W0952502003	**250**	200	110	40	25	45	375	40	7600
W0953202003	**320**	220	120	45	30	50	420	45	13200

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

MALE HINGE - MODEL BA

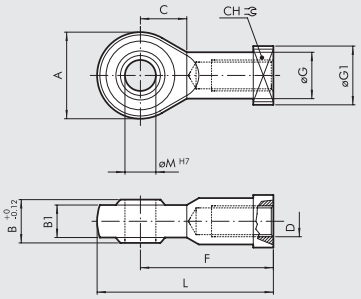
+ = ADD THE STROKE



Code	Ø	O_1	øO	P	N	F_3	V	Weight [g]
W0952502004	**250**	110	40	25	45	375	40	5910
W0953202004	**320**	120	45	30	50	420	45	10900

Note: Supplied complete with 4 screws

ROD EYE - MODEL GA-M

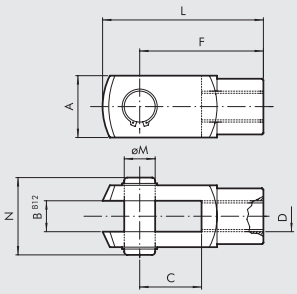


Code	Ø	øM	C	B_1	B	A	L	F	D	øG	CH	$øG_1$	Weight [g]
W0952502025	**250**	40	45	33	49	102	193	142	M42x2	56	55	69	2800
W0953202025	**320**	50	60	45	60	117	218.5	160	M48x2	66	65	75	5000

Note: Individually packed

METAL WORK PNEUMATIC

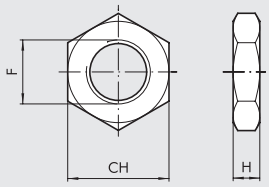
FORK - MODEL GK-M



Code	Ø	øM	C	B	A	L	F	D	N	Weight [g]
W0952502020	**250**	42	84	42	85	232	168	M42x2	102	6400
W0953202020	**320**	50	96	50	95	265	192	M48x2	113	9600

Note: invidually packed with 2 seeger and 1 pin

ROD NUT - MODEL S



ZINC-PLATED STEEL

Code	Ø	F	H	CH	Weight [g]
W0952502010	**250**	M42x2	16	65	285
W0953202010	**320**	M48x2	18	75	420

Note: Individually packed

STAINLESS STEEL (AISI 304)

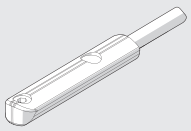
Code	Ø	F	H	CH	Weight [g]
W095XA52010	**250**	M42x2	16	65	285
W095XA62010	**320**	M48x2	18	75	420

Note: Individually packed

ACCESSORIES: MAGNETIC SENSORS

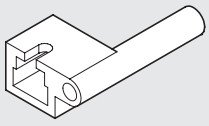
RETRACTABLE SENSOR

SENSOR, OVAL TYPE
Traditional



For codes and technical data, see **chapter A6**.

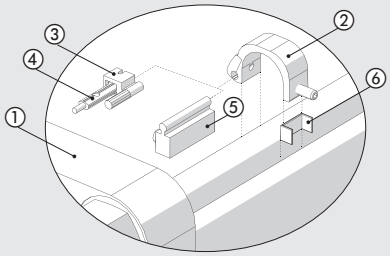
ADAPTOR FOR RETRACTABLE SENSOR



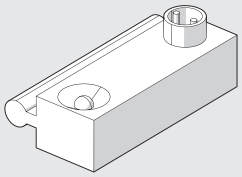
Code	Description
W0950001001	Adaptor DSS005 for DST/ST brackets

ASSEMBLY DIAGRAM

① ISO 15552 cylinder, round pipe with tie rods
② Sensor bracket mod. ST (Ø 250 and 320)
③ Adaptor for retractable sensor
④ Retractable sensor
⑤ Sensor DSM
⑥ Adaptor (only for Ø 250)



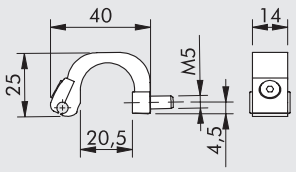
SENSOR SERIES DSM



For codes and technical data, see **chapter A6**.

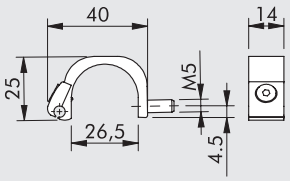
SENSOR SUPPORT BRACKET

Ø 250



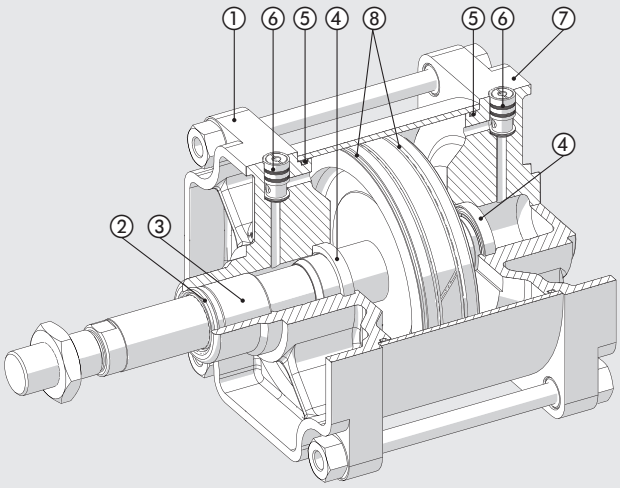
Code	Description
W0950000722	Bracket ST250

Ø 320



W0950000723	Bracket ST320

SPARE PARTS



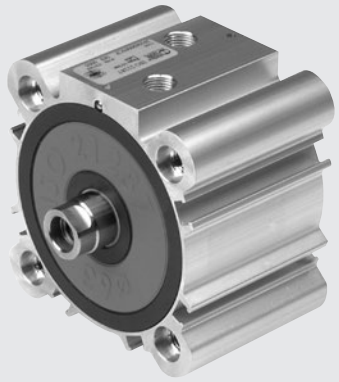
Code	Bores	Type	Parts
W095 . . . 2101	250 - 320	Complete set of gaskets	2-4-5-8
W0952502102	250	Complete set of (high temperature) FKM/FPM gaskets	2-4-5-8
W095 . . .0104	250 - 320	Complete front head kit	1-2-3-4-5-6
W095 . . .0105	250 - 320	Complete rear head kit	4-5-6-7

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.

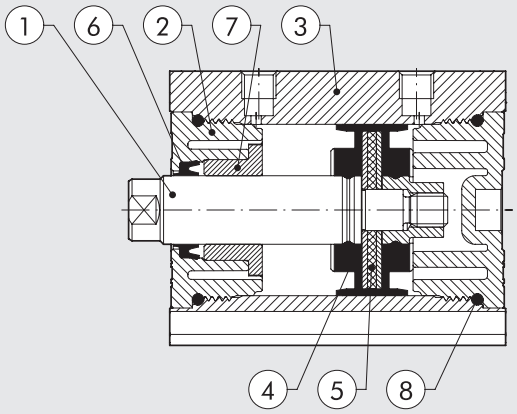
The heads have been eliminated for ease of installation, improved sturdiness and precision. The metal lining is designed to withstand heavy-duty work, tensile stress and impact. Technopolymer parts can withstand dynamic and pneumatic thrust. The lining virtually acts as a "bearing" to which most of user 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			Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Max operating pressure		bar	10							
		MPa	1							
		psi	145							
Temperature range	POLYURETHANE	°C	–10 to +60						–10 to +80	
	FKM/FPM	°C	–10 to +150 (non-magnetic cylinders)							
Design			With profile							
Fixing centre distances			According to ISO 21287							
Fluid			Unlubricated air. Lubrication, if used, must be continuous							
Versions			Double-acting, Double-acting through-rod, Single-acting extended or retracted rod, Single-acting through-rod, Single-acting through piston rod perforated, Double-acting through-rod perforated, Double-acting non-rotating, Double-acting through-rod non-rotating, No stick-slip. All versions are available with male or female piston rod.							
Sensor magnet			Available magnetic and non-magnetic versions.							
Inrush pressure	single piston rod	bar	0.6	0.6	0.6	0.4	0.4	0.4	0.4	0.4
	through-rod	bar	0.8	0.8	0.6	0.4	0.4	0.4	0.4	0.4
Forces generated at 6 bar thrust/retraction			See cylinder "**General technical data**" at the beginning of the chapter							
Weights			See cylinder "**General technical data**" at the beginning of the chapter							
Notes			For correct operation, it is advisable to use 50 µm filtered air							
			For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.							

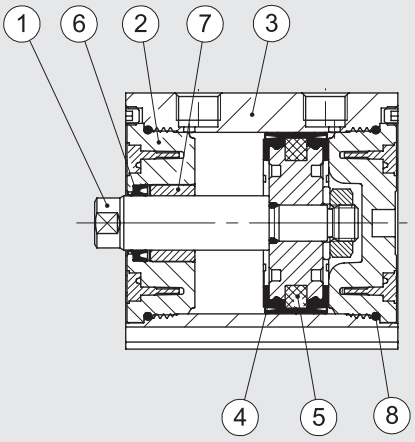
COMPONENTS Ø 20-25

① PISTON ROD: stainless steel, thick chromed
② END CAP: high-performance technopolymer
③ BARREL: drawn anodized 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)



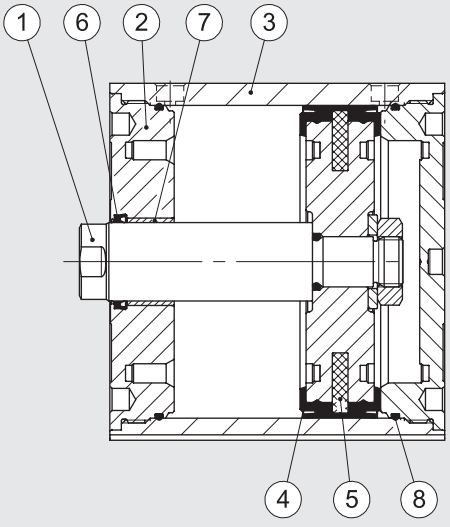
COMPONENTS Ø 32-63

① PISTON ROD: C45 stell or stainless steel, thick chromed
② END CAP: high-performance technopolymer
③ BARREL: drawn anodized 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)

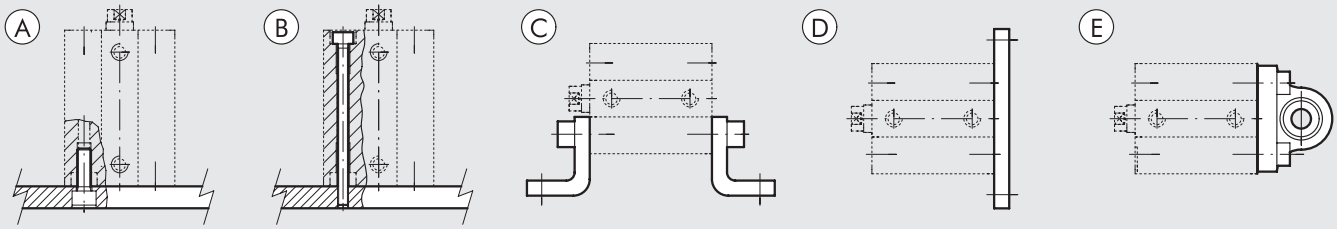


COMPONENTS Ø 80-100

① PISTON ROD: C45 stell or stainless steel, thick chromed
② END CAP: anodized aluminium alloy
③ BARREL: drawn anodized 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.

METAL WORK PNEUMATIC

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

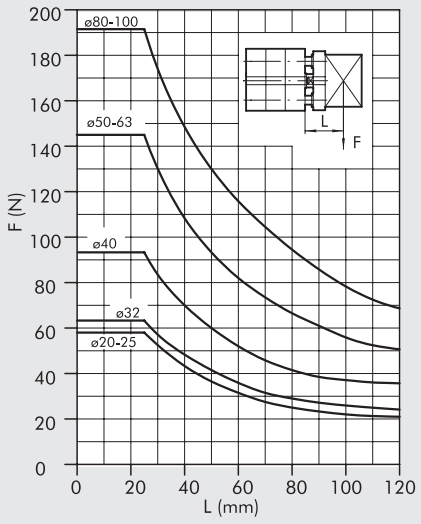
STROKES FOR COMPACT CYLINDERS ISO 21287

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 → from 1 to 25 mm	Ø 20 to 25 → from 1 to 60 mm	Ø 20 to 25 → 300 mm	Ø 20 to 63 → 120 mm	Ø 20 to 40 → from 1 to 80 mm
	Ø 32 to 100 → from 1 to 80 mm	Ø 32 to 63 → 400 mm	Ø 80 to 100 → 150 mm	Ø 50 to 63 → from 1 to 100 mm
		Ø 80 to 100 → 500 mm		Ø 80 to 100 → from 1 to 160 mm

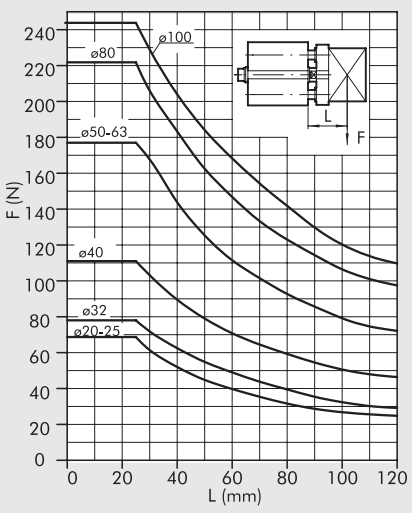
Maximum recommended strokes. Higher values can create operating problems

MAXIMUM LOADS FOR NON-ROTATING VERSION

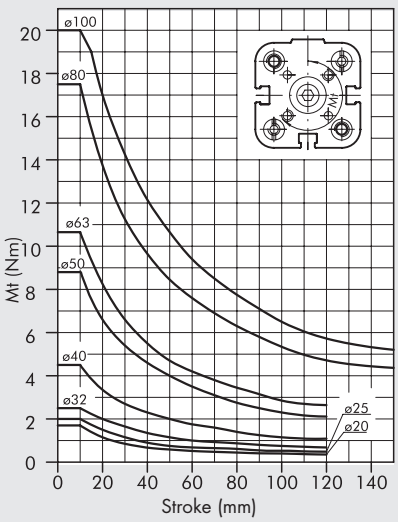
TRANSVERSAL FORCE FOR NON-ROTATING



TRANSVERSAL FORCE FOR NON-ROTATING THROUGH-ROD

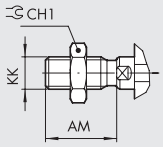


TORQUE DEPENDING ON STROKE

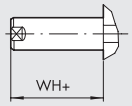


DIMENSIONS OF DOUBLE-ACTING Ø 20 to 50 AND SINGLE-ACTING Ø 20 to 50

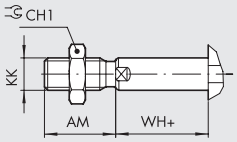
SE-DE MALE PISTON ROD



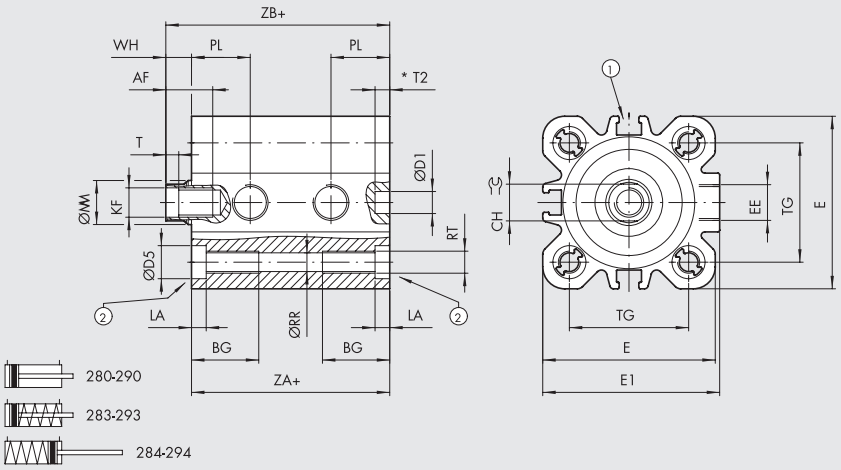
SE EXTENDED PISTON ROD



SE MALE EXTENDED PISTON ROD



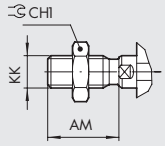
\+ = ADD THE STROKE
* = SECTION WITH TOLERANCE
1 = SENSOR SLOT
2 = SEAT FOR DIN 7984 SCREWS



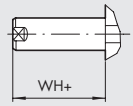
Ø	AF	AM	BG	CH	CH1	ØD1 H9	ØD5	E	E1	EE	KF	KK	LA	ØMM	PL	ØRR	RT	T	T2	TG ±0.2	WH	ZA +0.3 -0	ZB
20	14	16	17.5	8	13	6	7.5	35.5	36.5	M5	M6	M8	4.2	10	12	4.2	M5	2.5	3	22	6	37	43
25	14	16	17.5	8	13	6	7.5	39.5	40	M5	M6	M8	4.2	10	13	4.2	M5	2.5	3.5	26	6	39	45
32	16.5	19	21.5	10	17	6	9	47	48.2	G1/8	M8	M10x1.25	4	12	16	5.1	M6	3.5	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	3.5	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	4	3	46.5	8	45	53

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

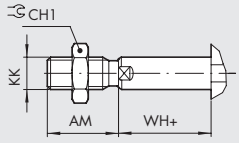
SE-DE MALE PISTON ROD



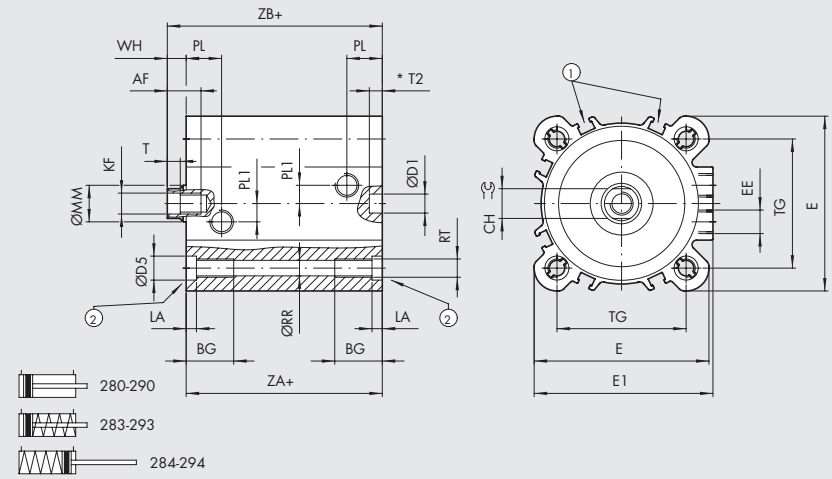
SE EXTENDED PISTON ROD



SE MALE EXTENDED PISTON ROD



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

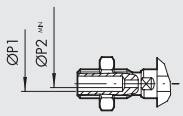


Ø	AF	AM	BG	CH	CH1	ØD1 H9	ØD5	E	E1	EE	KF	KK	LA	ØMM	PL1	PL	ØRR	RT	T	T2	TG ±0.2	WH	ZA +0.4 -0	ZB
63	17	22	21	13	19	8	10.5	76.5	78.3	G1/8	M10	M12x1.25	4.5	16	8	15.5	6.8	M8	4	3.5	56.5	8	49	57
80	22	28	22.5	17	24	8	14	95.5	95.5	G1/8	M12	M16x1.5	5	20	14	16.5	8.5	M10	5	4	72	10	54	64
100	24	28	25.5	22	30	8	14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

METAL WORK PNEUMATIC

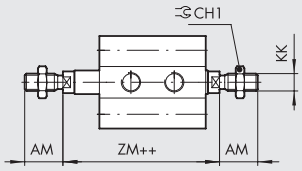
DIMENSIONS OF THROUGH-ROD Ø 20 to 50

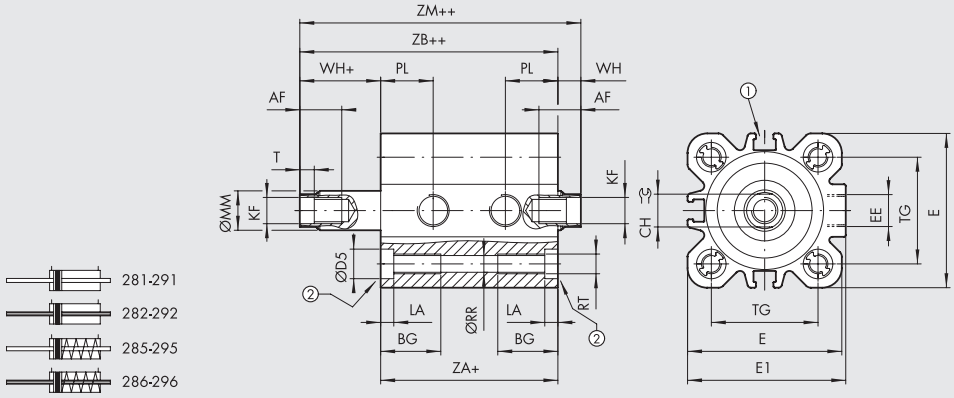
SE-DE MALE PERFORATED THROUGH-ROD



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

SE-DE MALE PISTON ROD

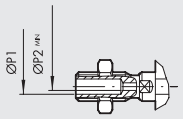




Ø	AF	AM	BG	CH	CH1	ØD5	E	E1	EE	KF	KK	LA	ØMM	ØP1	ØP2	PL	ØRR	RT	T	TG$^{\pm0.2}$	WH	ZA$^{+0.3}_{0}$	ZB	ZM
20	14	16	17.5	8	13	7.5	35.5	36.5	M5	M6	M8	4.2	10	3	1.5	12	4.2	M5	2.5	22	6	37	43	49
25	14	16	17.5	8	13	7.5	39.5	40	M5	M6	M8	4.2	10	3	1.5	13	4.2	M5	2.5	26	6	39	45	51
32	16.5	19	21.5	10	17	9	47	48.2	G1/8	M8	M10x1.25	4	12	4	2.5	16	5.1	M6	3.5	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	3.5	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	4	46.5	8	45	53	61

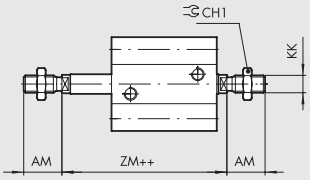
DIMENSIONS OF THROUGH-ROD Ø 63 to 100

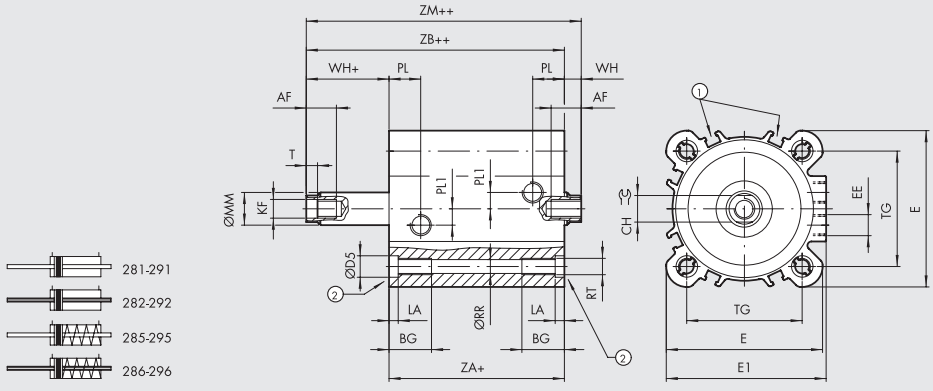
SE-DE MALE PERFORATED THROUGH-ROD



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

SE-DE MALE PISTON ROD

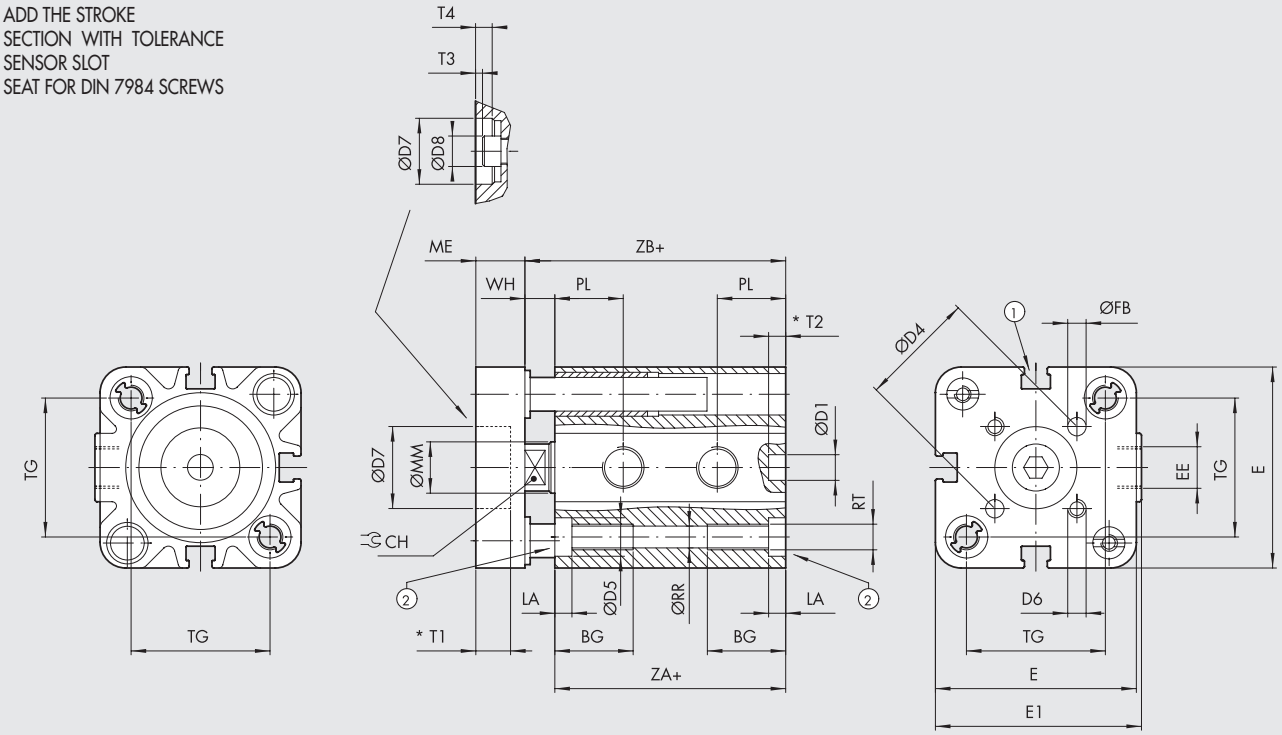




Ø	AF	AM	BG	CH	CH1	ØD5	E	E1	EE	KF	KK	LA	ØMM	ØP1	ØP2	PL1	PL	ØRR	RT	T	TG$^{\pm0.2}$	WH	ZA$^{+0.4}_{0}$	ZB	ZM
63	17	22	21	13	19	10.5	76.5	78.3	G1/8	M10	M12x1.25	4.5	16	6	4	8	15.5	6.8	M8	4	56.5	8	49	57	65
80	22	28	22.5	17	24	14	95.5	95.5	G1/8	M12	M16x1.5	5	20	G1/8	5	14	16.5	8.5	M10	5	72	10	54	64	74
100	24	28	25.5	22	30	14	114	114	G1/8	M12	M16x1.5	5	25	G1/8	6	19	19.2	8.5	M10	5	89	10	67	77	87

DIMENSIONS OF NON-ROTATING Ø 20 to 50

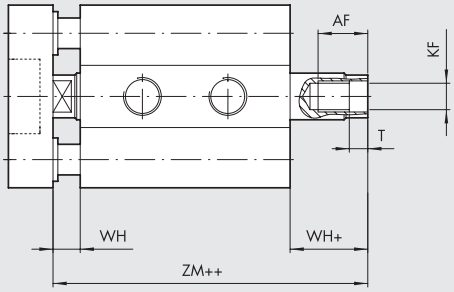
\+ = ADD THE STROKE
* = SECTION WITH TOLERANCE
1 = SENSOR SLOT
2 = SEAT FOR DIN 7984 SCREWS



297

NON-ROTATING FEMALE THROUGH-ROD

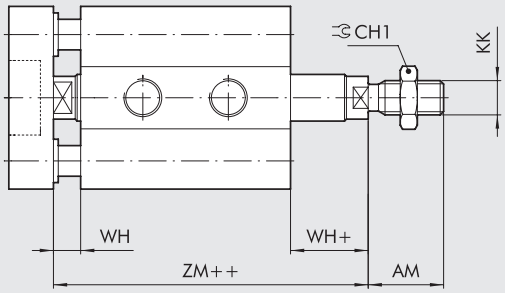
\+ = ADD THE STROKE
++ = ADD TWICE THE STROKE



29A

NON-ROTATING MALE THROUGH-ROD

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



28A

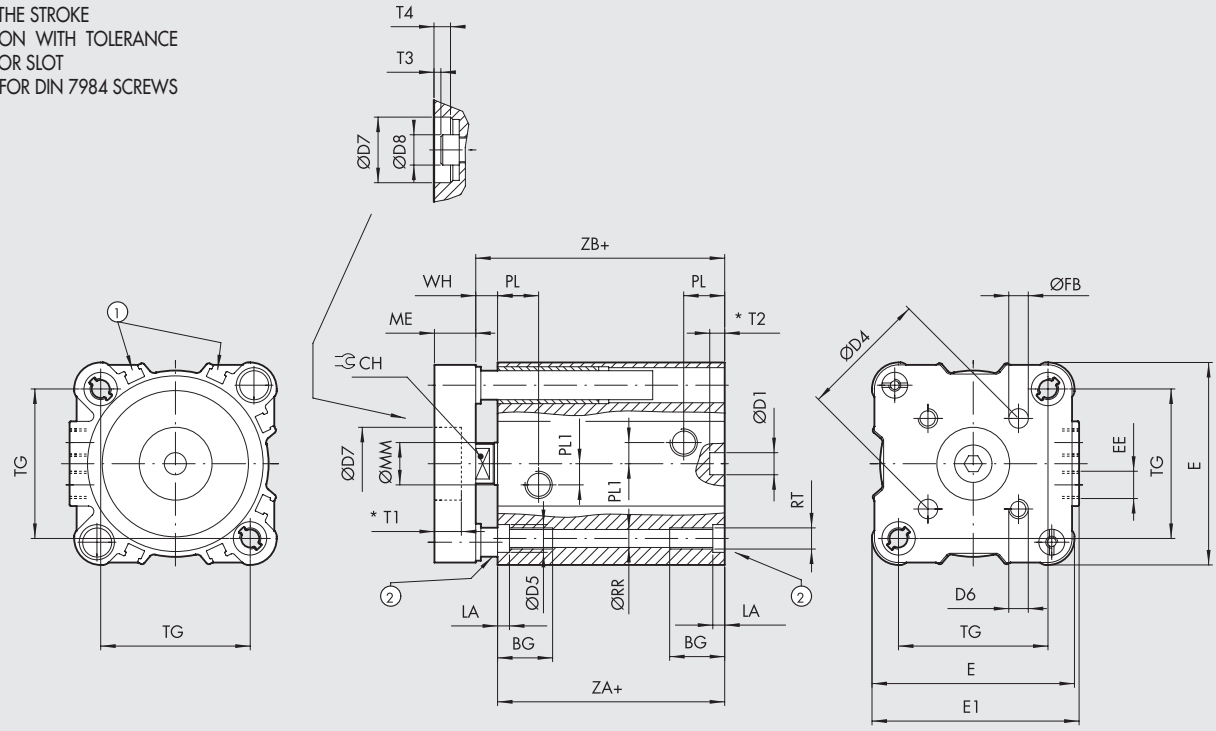
Ø	AF	AM	BG	CH	CH1	ØD1 H9	ØD4	ØD5	D6	ØD7 H9	ØD8	E	E1	EE	ØFB	KF	KK	LA	ME	ØMM	PL	ØRR	RT	T	T1	T2	T3	T4
20	14	16	17.5	8	13	6	17	7.5	M4	-	-	35.5	36.5	M5	4	M6	M8	4.2	8	10	12	4.2	M5	2.5	-	3	-	-
25	14	16	17.5	8	13	6	22	7.5	M5	14	10	39.5	40	M5	5	M6	M8	4.2	8	10	13	4.2	M5	2.5	3.5	3.5	1	3.5
32	16.5	19	21.5	10	17	6	28	9	M5	17	13	47	48.2	G1/8	5	M8	M10x1.25	4	10	12	16	5.1	M6	3.5	3.5	4	1	3.5
40	16.5	19	21.5	10	17	6	33	9	M5	17	13	55.5	56.5	G1/8	5	M8	M10x1.25	4	10	12	16	5.1	M6	3.5	3.5	4	1	3.5
50	17	22	21	13	19	6	42	10.5	M6	22	16	66.5	67.8	G1/8	6	M10	M12x1.25	4.5	12	16	15.5	6.8	M8	4	5	3	1.5	5

Ø	TG ±0.2	WH	ZA +0.3 0	ZB	ZM
20	22	6	37	43	49
25	26	6	39	45	51
32	32.5	7	44	51	58
40	38	7	45	52	59
50	46.5	8	45	53	61

METAL WORK PNEUMATIC

DIMENSIONS OF NON-ROTATING Ø 63 to 100

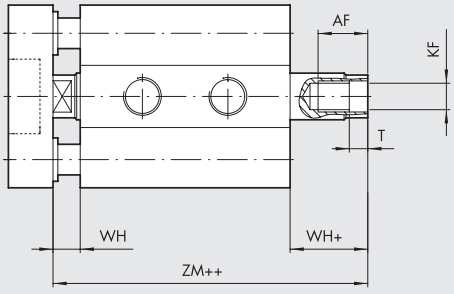
\+ = ADD THE STROKE
* = SECTION WITH TOLERANCE
1 = SENSOR SLOT
2 = SEAT FOR DIN 7984 SCREWS



297

NON-ROTATING FEMALE THROUGH-ROD

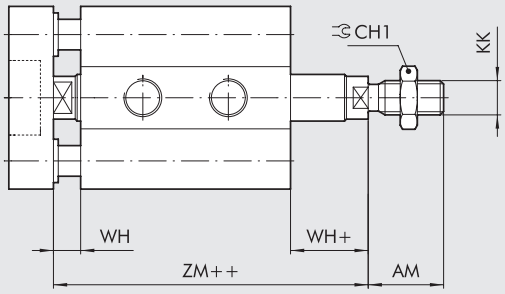
\+ = ADD THE STROKE
++ = ADD TWICE THE STROKE

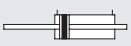


29A

NON-ROTATING MALE THROUGH-ROD

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





28A

Ø	AF	AM	BG	CH	CH1	ØD1 H9	ØD4	ØD5	D6	ØD7 H9	ØD8	E	E1	EE	ØFB	KF	KK	LA	ME	ØMM	PL1	PL	ØRR	RT	T	T1	T2	T3
63	17	22	21	13	19	8	50	10.5	M6	22	16	76.5	78.3	G1/8	6	M10	M12x1.25	4.5	12	16	8	15.5	6.8	M8	4	5	3.5	1.5
80	22	28	22.5	17	24	8	65	14	M8	24	18	95.5	95.5	G1/8	8	M12	M16x1.5	5	14	20	14	16.5	8.5	M10	5	7.5	4	3.5
100	24	28	25.5	22	30	8	80	14	M10	24	18	114	114	G1/8	10	M12	M16x1.5	5	14	25	19	19.2	8.5	M10	5	7.5	4	3.5

Ø	T4	TG ±0.2	WH	ZA +0.4 0	ZB	ZM
63	5	56.5	8	49	57	65
80	7.5	72	10	54	64	74
100	7.5	89	10	67	77	87

KEY TO CODE

CYL	28 TYPE	0	0	20 BORE	0	050 STROKE **	X MATERIAL	P GASKETS
	28 Compact cylinder ISO 21287 male piston rod **29** Compact cylinder ISO 21287 female 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 ● **6** Single-acting through piston rod perforated ▼ **7** Double-acting non-rotating **A** Double-acting through-rod non-rotating	**0** Magnetic □ **S** Non-magnetic ▲ **G** No stick-slip	20 25 32 40 50 63 80 ◆ 100	**0** Standard		✱ **C** C45 piston rod chromium-plated ▷ **X** Stainless steel piston rod and nut ◁ **A** C45 chromed piston rod, aluminium piston ○ **Z** Stainless steel piston rod and nut aluminium piston	**P** Polyurethane gaskets ▶ **V** FKM/FPM gaskets

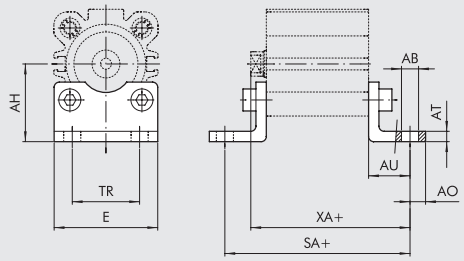
** For the maximum suppliabe stroke, see page **A1**.93
● Can also be used as double-acting with spring return
▼ For versions 29 only (female piston rod)
▲ For Ø 12 to 25 the standard version (0 or S) it's already No stick-slip
For Ø 20 to 100 version with gaskets in FKM / FPM (0 or S) is already "No stick-slip"
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 (for Ø20 and Ø25 only "non-magnetic" version provided)
□ 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



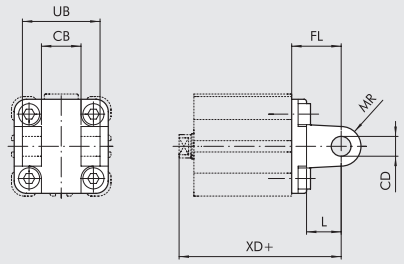
Code	Ø	ØAB	AH	AO	AT	AU	E	SA	TR	XA	Weight [g]
W0950206001	20	6.6	27	6	4	16	36	69	22	59	46
W0950256001	25	6.6	30*	6	4	16	40	71	26	61	52
W0950322001	32	7	32*	11*	4	24*	45	92*	32	75*	76
W0950402001	40	9	36*	15*	4	28*	52	101*	36	80*	100
W0950502001	50	9	45	15*	5	32*	65	109*	45	85*	162
W0950632001	63	9	50	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

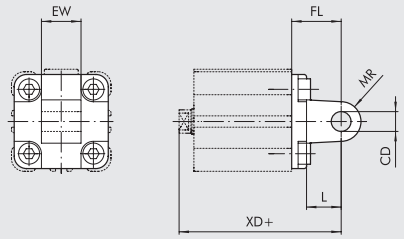


Code	Ø	CB H14	CD H9	FL	L	MR	UB H14	XD	Weight [g]
W0950322003	32	26	10	22	12	10	45	73	112
W0950402003	40	28	12	25	15	12	52	77	159
W0950502003	50	32	12	27	15	12	60	80	250
W0950632003	63	40	16	32	20	16	70	89	390
W0950802003	80	50	16	36	20	16	90	100	668
W0951002003	100	60	20	41	25	20	110	118	1047

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

MALE HINGE-MODEL BA

+ = ADD THE STROKE

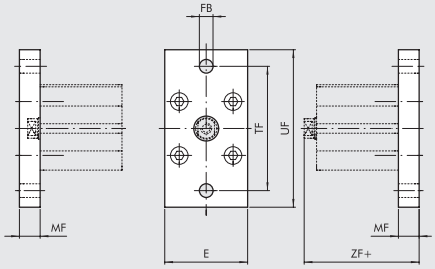


Code	Ø	CD H9	EW	FL	L	MR	XD	Weight [g]
W0950206004	20	8	16	20	12	8	63	44
W0950256004	25	8	16	20	12	8	65	48
W0950322004	32	10	26	22	13	10	73	94
W0950402004	40	12	28	25	16	12	77	124
W0950502004	50	12	32	27	16	12	80	220
W0950632004	63	16	40	32	22	16	89	316
W0950802004	80	16	50	36	22	16	100	578
W0951002004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

Note: Supplied with 4 screws.

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

+ = ADD THE STROKE



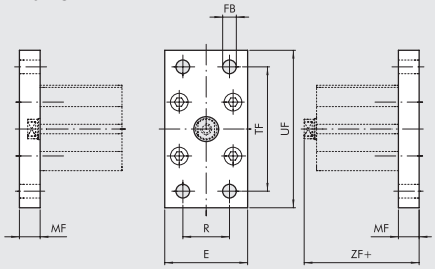
Code	Ø	E	ØFB	MF	TF	UF	ZF	Weight [g]
W0950206002	20	36	6.6	10*	55	70	53*	184
W0950256002	25	40	6.6	10*	60	76	55*	226

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

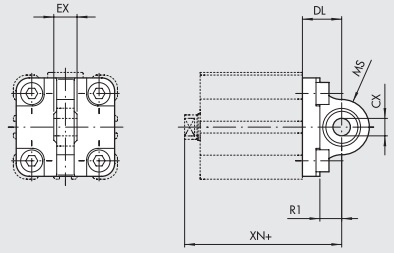


Code	Ø	E	ØFB	MF	R	TF	UF	ZF	Weight [g]
W0950322002	32	50	7	10	32	64	80	61	246
W0950402002	40	55	9	10	36	72	90	62	290
W0950502002	50	65	9	12	45	90	110	65	522
W0950632002	63	75	9	12	50	100	120	69	670
W0950802002	80	95	12	15	63	126	150	80	1420
W0951002002	100	115	14	15	75	150	178	93	2040

Note: Supplied with 4 screws.

ARTICULATED MALE HINGE - MODEL BAS

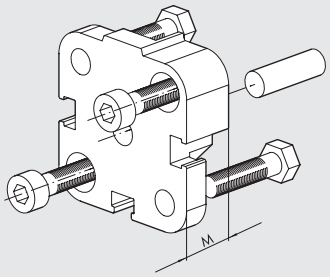
+ = ADD THE STROKE



Code	Ø	CX H9	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

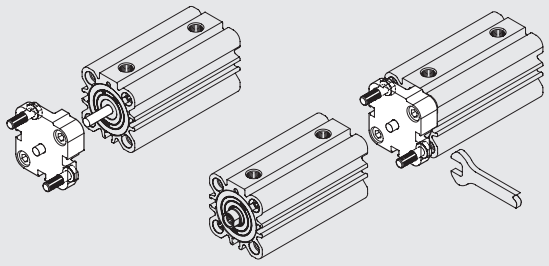
FLANGE FOR OPPOSITE CYLINDERS



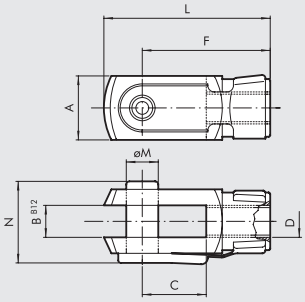
Code	Ø	M	Weight [g]
0950203060	20	12.5	45
0950253060	25	13	57
0950323060	32	14.5	88
0950403061	40	14.5	106
0950503061	50	14.5	158
0950633061	63	14.5	258
0950803061	80	16.5	452
0951003061	100	19.5	801

Note: Supplied complete with 1 pin, 4 screws

ASSEMBLING OPPOSING CYLINDERS



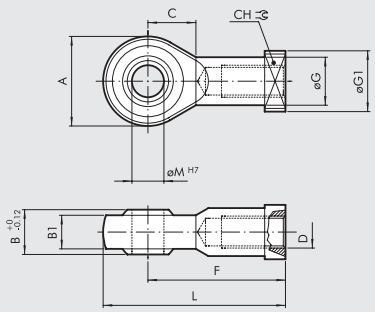
FORK - MODEL GK-M



Code	Ø	A	B	C	D	F	L	øM	N	Weight [g]
W0950200020	20	16	8	16	M8	32	42	8	22	48
W0950200020	25	16	8	16	M8	32	42	8	22	48
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
W0950502020	100	32	16	32	M16x1.5	64	83	16	40	340

Note: Individually packed

ROD EYE - MODEL GA-M

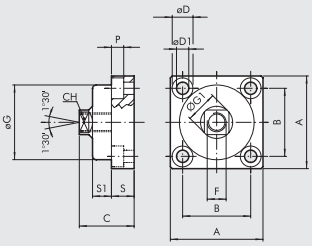


Code	Ø	A	B	B1	C	CH	D	F	øG	øG1	L	øM	Weight [g]
W0950200025	20	24	12	9	13	14	M8	36	12.5	16	48	8	50
W0950200025	25	24	12	9	13	14	M8	36	12.5	16	48	8	50
W0950322025	32	28	14	10.5	15	17	M10x1.25	43	15	19	57	10	78
W0950322025	40	28	14	10.5	15	17	M10x1.25	43	15	19	57	10	78
W0950402025	50	32	16	12	17	19	M12x1.25	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

METAL WORK PNEUMATIC

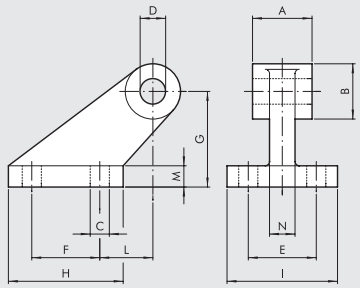
COMPENSATION JOINT - MODEL GA



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

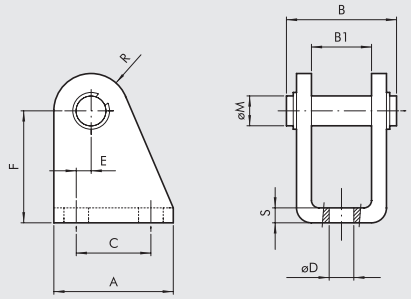
COUNTER-HINGE CETOP Ø 32 to 100



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

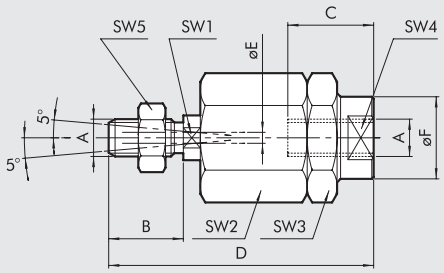
COUNTER-HINGE Ø 16 to 25 - MODEL BC



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



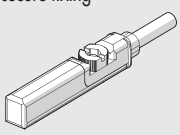
Code	Ø	A	B	C	D	øE	øF	SW1	SW2	SW3	SW4	SW5	Weight [g]
W0950200030	20	M8	20	20	57	4	12.5	7	17	17	11	13	56
W0950200030	25	M8	20	20	57	4	12.5	7	17	17	11	13	56
W0950322030	32	M10x1.25	20	20	71	4	22	12	30	30	19	17	216
W0950322030	40	M10x1.25	20	20	71	4	22	12	30	30	19	17	216
W0950402030	50	M12x1.25	24	20	75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

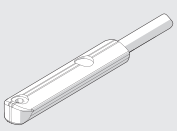
RETRACTABLE SENSOR

For codes and technical data, see **chapter A6**.

SENSOR, SQUARE TYPE
Latest generation,
secure fixing

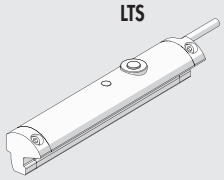


SENSOR, OVAL TYPE
Traditional



POSITION SENSORS

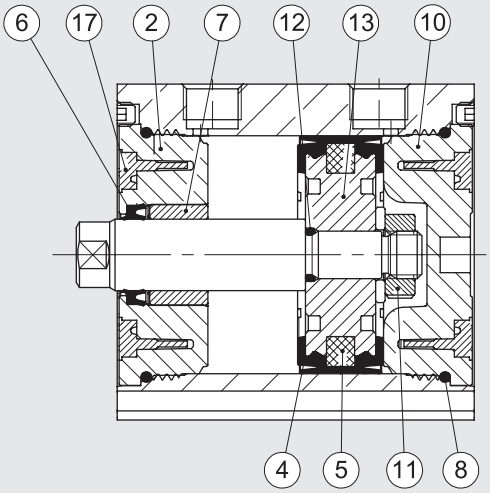
LTS



For technical data and usage strokes see **chapter A6**.

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 . . . L008	Ø 20, 25	Complete set of (high temperature) FKM/FPM gaskets	④ ⑥ ⑧
009 . . . L008	Ø 32 to 63	Complete set of (high temperature) FKM/FPM gaskets	④ ⑥ ⑧ ⑫ ⑰
009 . . . L008	Ø 80, 100	Complete set of (high temperature) FKM/FPM gaskets	④ ⑥ ⑧ ⑫
009 . . . 7013	Ø 20 to 100	Polyurethane piston rod gasket kit	⑥
009 . . . 7014	Ø 20 to 100	FKM/FPM piston rod gasket kit	⑥
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

COMPACT CYLINDER SERIES CMPC

METAL WORK PNEUMATIC

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

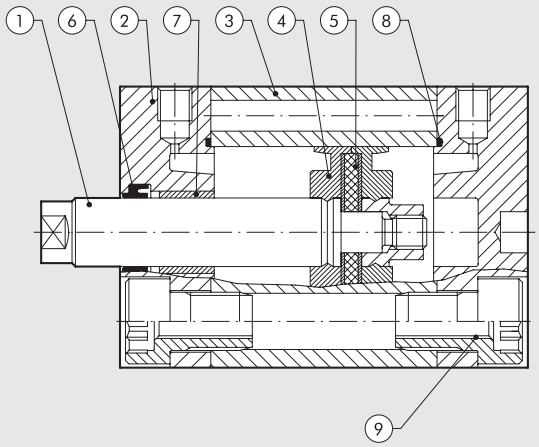
- With or without magnet
- Single-acting extended rod, retracted or through-rod
- Dual-acting non-rotating and dual-acting through-rod versions
- Tandem with two, three or four stages
- Multi-position with two and three stages
- Fixing centre distances to ISO 15552 from Ø 32 to Ø 100 and from Ø 20 to 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 barrel 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			Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Max operating pressure		bar	10									
		MPa	1									
		psi	145									
Temperature range	POLYURETHANE	°C	–10 to +80									
	FKM/FPM	°C	–10 to +150 (non-magnetic cylinders)									
Design			With profile, heads with screws									
Fixing centre distances	ISO 15552		*	*	-	-	x	x	x	x	x	x
	NFE 49-004-1 e 2 (UNITOP)		*	*	x	x	x	x	x	x	x	x
Fluid			Unlubricated air. Lubrication, if used, must be continuous									
Versions			Double-acting, Double-acting through-rod, Single-acting extended or retracted rod, Single-acting through-rod, Single-acting through piston rod perforated, Double-acting through-rod perforated, Double-acting non-rotating, Double-acting through-rod non-rotating, No stick-slip. All versions are available with male or female piston rod.									
Sensor magnet			Available magnetic and non-magnetic versions.									
Inrush pressure	single piston rod	bar	0.6	0.6	0.6	0.6	0.6	0.4	0.4	0.4	0.4	0.4
	through-rod	bar	1	0.8	0.8	0.8	0.6	0.4	0.4	0.4	0.4	0.4
Forces generated at 6 bar thrust/retraction			See cylinder "**General technical data**" at the beginning of the chapter									
Weights			See cylinder "**General technical data**" at the beginning of the chapter									
Notes			For correct operation, it is advisable to use 50 µm filtered air									
			For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.									
			* Interchangeable with similar products.									

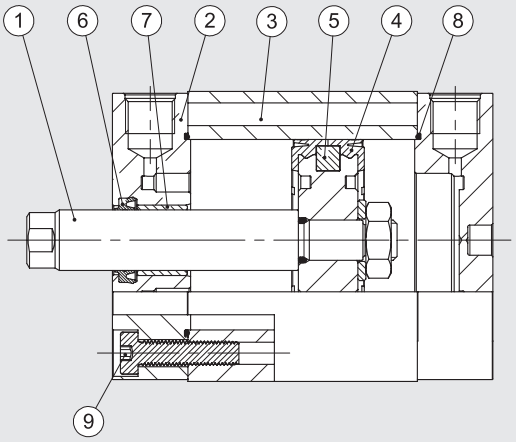
COMPONENTS Ø 12 to 25

① PISTON ROD: stainless steel, thick chromed
② HEAD: extruded anodized aluminium alloy
③ BARREL: drawn anodized 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



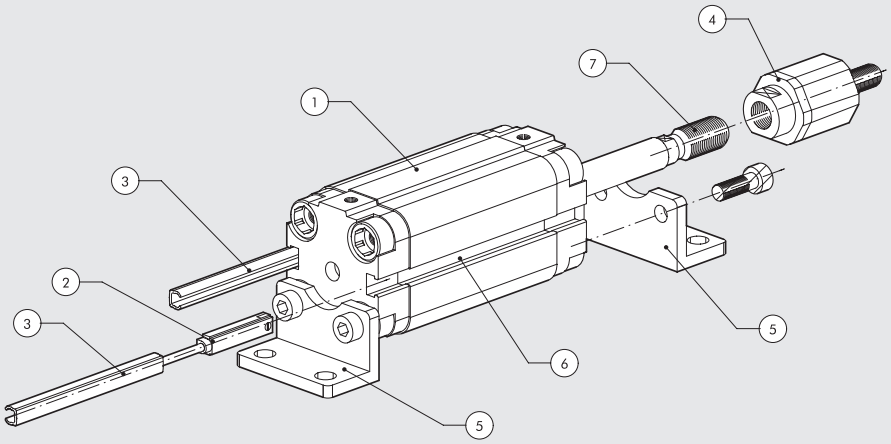
COMPONENTS Ø 32 to 100

① PISTON ROD: C45 steel or stainless steel, thick chromed
② HEAD: extruded anodized aluminium alloy
③ BARREL: drawn anodized 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

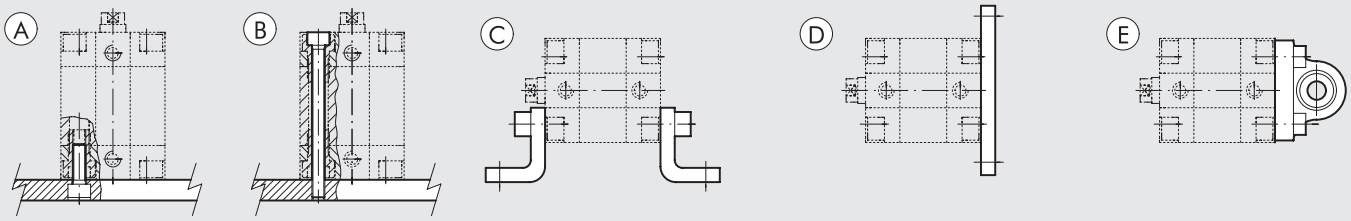


TECHNICAL DATA

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

METAL WORK PNEUMATIC

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

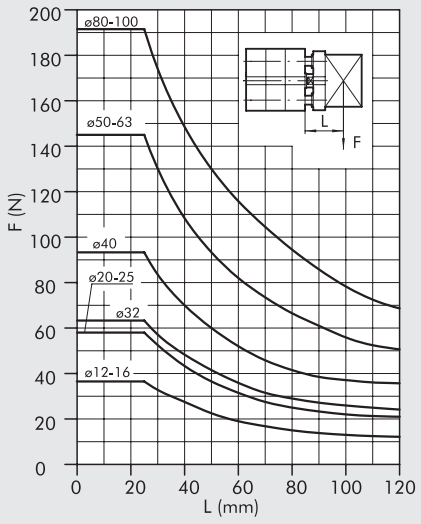
STROKES FOR COMPACT CYLINDERS

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 → from 5 to 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 → from 5 to 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		

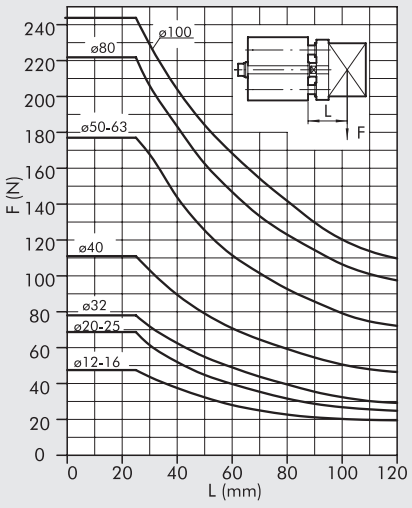
Maximum recommended strokes. Higher values can create operating problems

MAXIMUM LOADS FOR NON-ROTATING VERSION

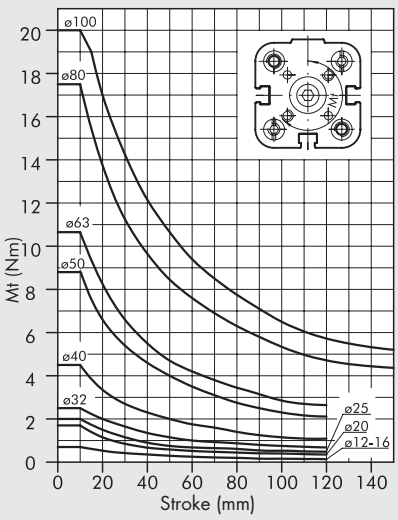
TRANSVERSAL FORCE FOR NON-ROTATING



TRANSVERSAL FORCE FOR NON-ROTATING THROUGH-ROD

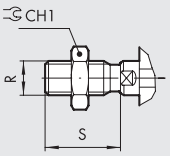


TORQUE DEPENDING ON STROKE

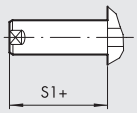


DIMENSIONS OF DOUBLE-ACTING Ø 12 to 25 AND SINGLE-ACTING Ø 12 to 25

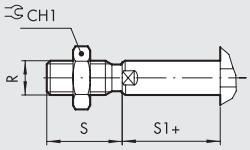
SE-DE MALE PISTON ROD



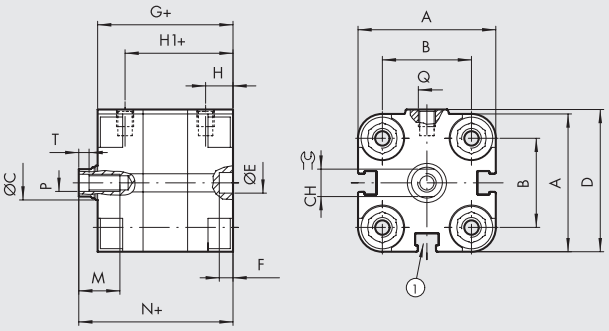
SE EXTENDED PISTON ROD

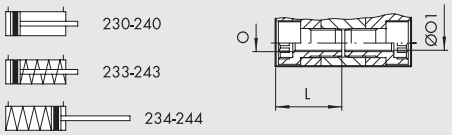


SE MALE EXTENDED PISTON ROD



+ = ADD THE STROKE
1 = SENSOR SLOT

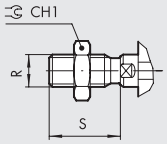




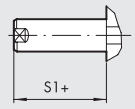
Ø	A	B	ØC	CH	CH1	D	ØE H9	F	G	H	H1	L	M	N	O	ØO1	P	Q	R	S	S1	T	NORM
12	29	18	6	5	10	30	6	4	38	8	30	18.5	8	42.5	M4	3.2	M3	M5	M6	16	4.5	2	-
16	29	18	8	7	13	30	6	4	38	8	30	18.5	10	42.5	M4	3.2	M4	M5	M8	20	4.5	2	-
20	36.5	22	10	8	17	37.5	6	4	38	8	30	18.5	12	42.5	M5	4.2	M5	M5	M10x1.25	22	4.5	2	UNITOP
25	40.5	26	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	2	UNITOP

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

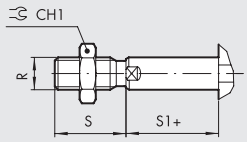
SE-DE MALE PISTON ROD



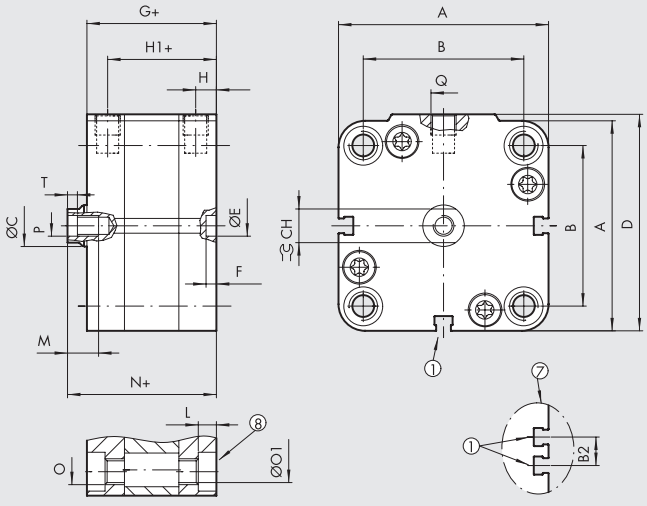
SE EXTENDED PISTON ROD

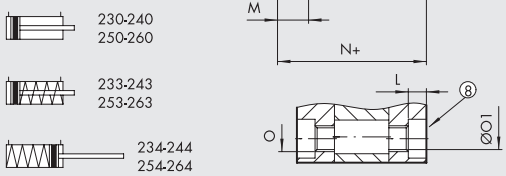


SE MALE EXTENDED PISTON ROD



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



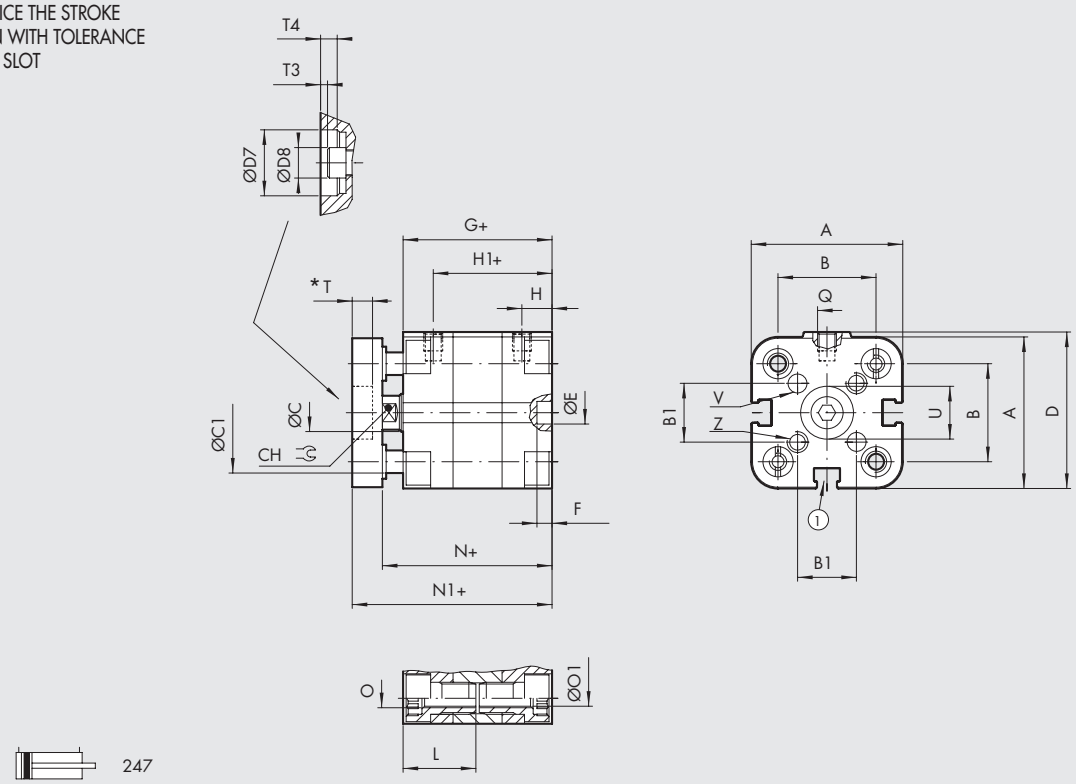


		B															O		ØO1							
Ø	**A**	**ISO**	**UNITOP**	**B2**	**ØC**	**CH**	**CH1**	**D**	**ØE H9**	**F**	**G**	**H**	**H1**	**L**	**M**	**N**	**ISO**	**UNITOP**	**ISO**	**UNITOP**	**P**	**Q**	**R**	**S**	**S1**	**T**
32	47	32.5 $^{+0.1}_{-0.4}$	32 $^{+0.4}_{-0.1}$	–	12	10	17	48.5	6	4	44.5	7.5	37	4	14	50.5	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22	6	2.5
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	2.5
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	3.5
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	3.5
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	4
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	5

METAL WORK PNEUMATIC

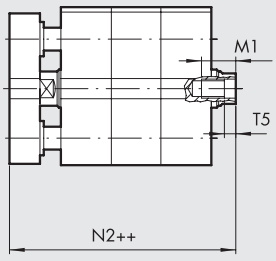
DIMENSIONS OF NON-ROTATING Ø 12 to 25

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



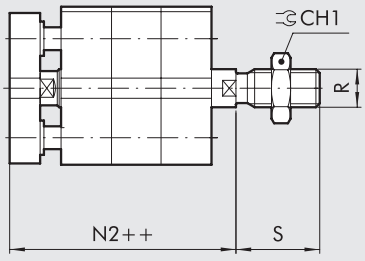
247

NON-ROTATING FEMALE THROUGH-ROD



24A

NON-ROTATING MALE THROUGH-ROD



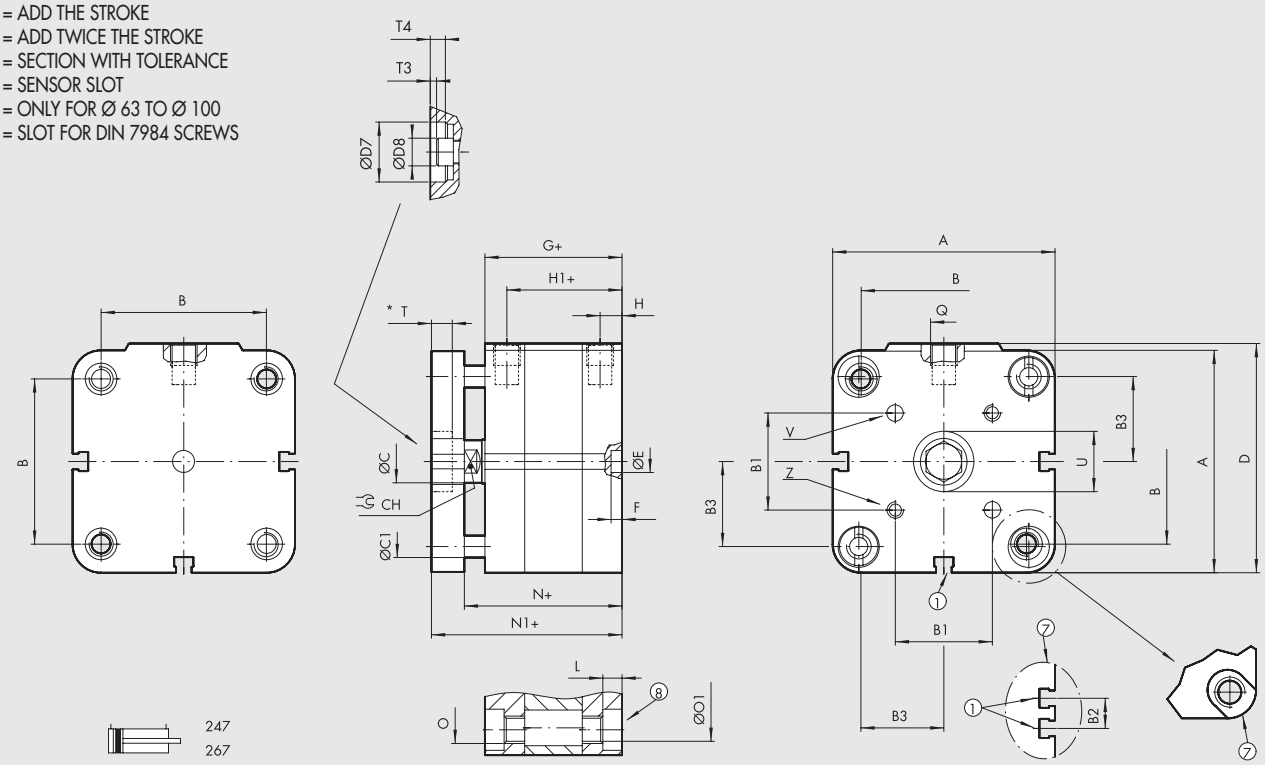
23A

Ø	A	B	B1	ØC	ØC1	CH	CH1	D	ØD7 H9	ØD8	ØE H9	F	G	H	H1	L	M1 x strokes < 5	M1 x strokes ≥ 5	N	N1	N2	O	ØO1	P	Q	R	S	T
12	29	18	9.9	6	5	5	10	30	6	5.5	6	4	38	8	30	18.5	5	8	42.5	48.5	53	M4	3.2	M3	M5	M6	16	2
16	29	18	9.9	8	5	7	13	30	8	7	6	4	38	8	30	18.5	5	10	42.5	48.5	53	M4	3.2	M4	M5	M8	20	2
20	36.5	22	12	10	6	8	17	37.5	10	8.5	6	4	38	8	30	18.5	7	12	42.5	50.5	55	M5	4.2	M5	M5	M10x1.25	22	3.5
25	40.5	26	15.6	10	6	8	17	41.5	14	8.5	6	4	39.5	8	31.5	19	7	12	45	53	58.5	M5	4.2	M5	M5	M10x1.25	22	4

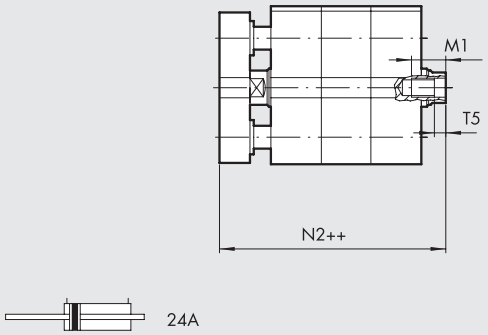
Ø	T3	T4	T5	ØU H9	ØV H8	Z	NORM
12	1	2	2	6	3	M3	-
16	0.5	2	2	8	3	M3	-
20	1.7	3.5	2	10	4	M4	UNITOP
25	2.2	4	2	14	5	M5	UNITOP

DIMENSIONS OF NON-ROTATING Ø 32 to 100

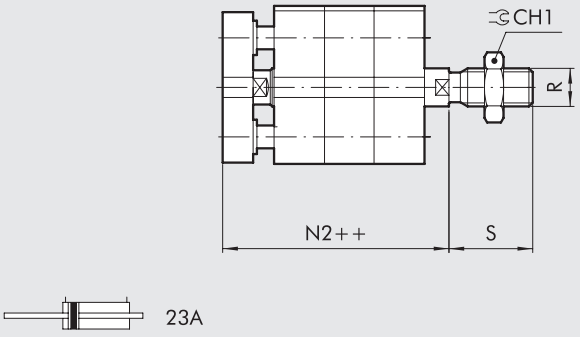
\+ = ADD THE STROKE
++ = ADD TWICE THE STROKE
* = SECTION WITH TOLERANCE
1 = SENSOR SLOT
7 = ONLY FOR Ø 63 TO Ø 100
8 = SLOT FOR DIN 7984 SCREWS



NON-ROTATING FEMALE THROUGH-ROD



NON-ROTATING MALE THROUGH-ROD



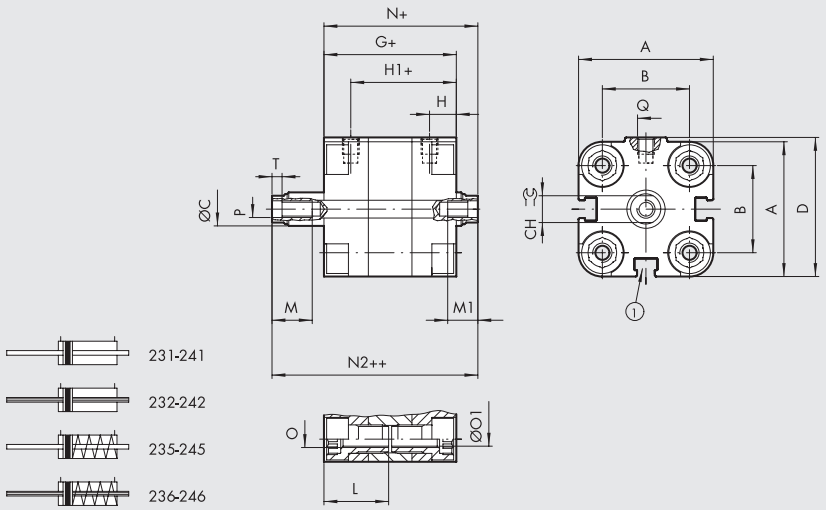
Ø	A	B ISO	B UNITOP	B1	B2	B3	ØC	ØC1	CH	CH1	D	ØD7 H9	ØD8	ØE H9	F	G	H	H1	L
32	47	32.5 +0.1 -0.4	32 +0.4 -0.1	19.8	–	16.1	12	8	10	17	48.5	17	11.5	6	4	44.5	7.5	37	4
40	56	38	42	23.3	–	20	12	8	10	17	57.5	17	11.5	6	4	45.5	7.5	38	4.5
50	67	46.5	50	29.7	–	24	16	10	13	19	69	22	15	6	4	45.5	7.5	38	4.5
63	80	56.5	62	35.4	13	30	16	10	13	19	82	22	15	8	4	50	7.5	42.5	5.5
80	102	72	82	46	17	38.5	20	12	17	24	105	28	18.5	8	4	56	8.5	47.5	5.5
100	123	89	103	56.6	21	48	25	12	22	30	126	30	21	8	4	66.5	10.5	56	5.5

Ø	M1 x strokes < 5	M1 x strokes ≥ 5	N	N1	N2	O ISO	O UNITOP	ØO1 ISO	ØO1 UNITOP	P	Q	R	S	T	T3	T4	T5	ØU H9	ØV H8	Z
32	14	9	50.5	60.5	66.5	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22	4.5	1	4.5	2.5	17	5	M5
40	14	9	52	62	68.5	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22	4.5	1	4.5	2.5	17	5	M5
50	16	11	53	65	72.5	M8	M8	6.2	6.2	M8	G1/8	M12x1.25	24	6	1	6	3.5	22	6	M6
63	16	11	57.5	69.5	77	M8	M10	6.2	8.5	M8	G1/8	M12x1.25	24	6	1	6	3.5	22	6	M6
80	20	15	64	78	86	M10	M10	8.5	8.5	M10	G1/8	M16x1.5	32	8	1	8	4	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	-	8.5	5	30	10	M10

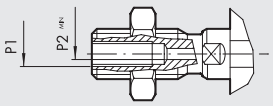
METAL WORK PNEUMATIC

DIMENSIONS OF THROUGH-ROD Ø 12 to 25

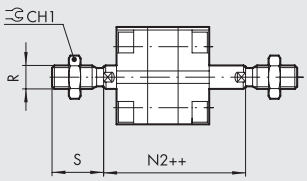
\+ = ADD THE STROKE
++ = ADD TWICE THE STROKE
1 = SENSOR SLOT



SE-DE MALE PERFORATED THROUGH-ROD



SE-DE MALE THROUGH-ROD

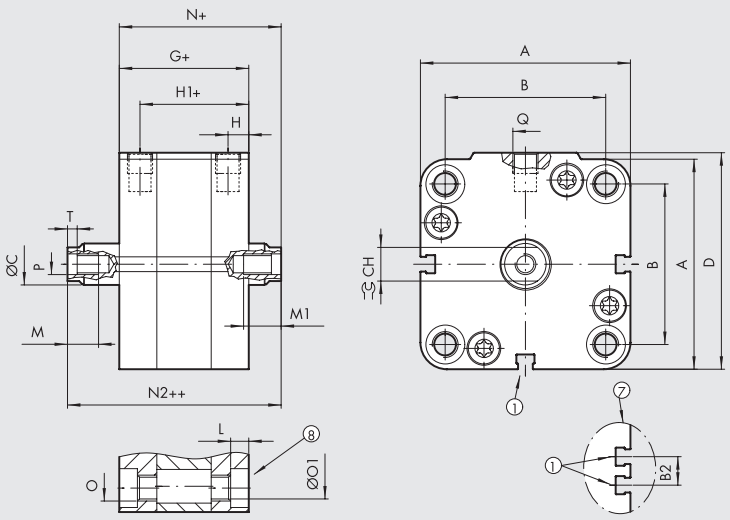


												M1 x strokes												
Ø	A	B	ØC	CH	CH1	D	G	H	H1	L	M	< 5	≥ 5	N	N2	O	ØO1	P	P2	Q	R	S	T	NORM
12	29	18	6	5	10	30	38	8	30	18.5	8	5	8	42.5	47	M4	3.2	M3	–	M5	M6	16	2	-
16	29	18	8	7	13	30	38	8	30	18.5	10	5	10	42.5	47	M4	3.2	M4	–	M5	M8	20	2	-
20	36.5	22	10	8	17	37.5	38	8	30	18.5	12	7	12	42.5	47	M5	4.2	M5	1.5	M5	M10x1.25	22	2	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	2	UNITOP

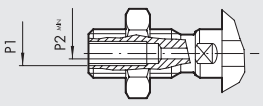
DIMENSIONS OF THROUGH-ROD Ø 32 to 100

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

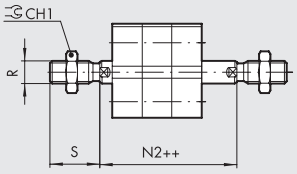
1 = SENSOR SLOT
7 = ONLY FOR Ø 63 TO Ø 100
8 = SLOT FOR DIN 7984 SCREWS

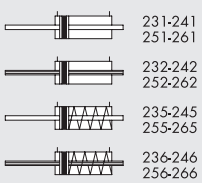


SE-DE MALE PERFORATED THROUGH-ROD



SE-DE MALE THROUGH-ROD





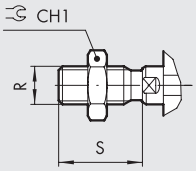
		B											M1 x strokes				O		ØO1							
Ø	A	ISO	UNITOP	B2	ØC	CH	CH1	D	G	H	H1	L	M	< 5	≥ 5	N	N2	ISO	UNITOP	ISO	UNITOP	P	P1	P2	Q	R	S	T
32	47	32.5 $^{+0.1}_{-0.4}$	32 $^{+0.4}_{-0.1}$	–	12	10	17	48.5	44.5	7.5	37	4	14	14	9	50.5	56.5	M6	M6	5.2	5.2	M6	–	2.5	G1/8	M10x1.25	22	2.5
40	56	38	42	–	12	10	17	57.5	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	2.5
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	3.5
63	80	56.5	62	13	16	13	19	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	3.5
80	102	72	82	17	20	17	24	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	4
100	123	89	103	21	25	22	30	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	5

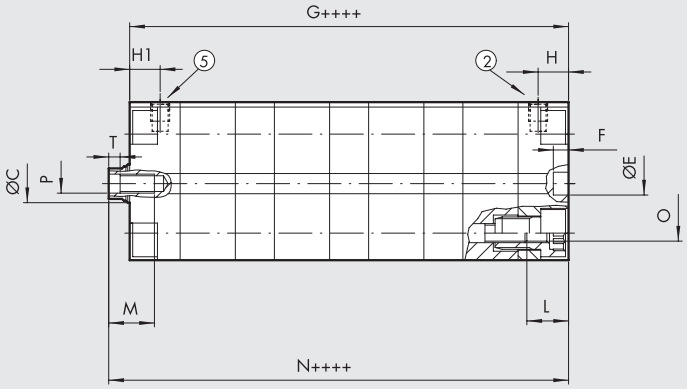
DIMENSIONS OF TANDEM Ø 20 to 25 - 4-STAGES

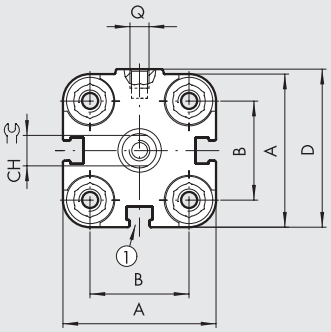
++ = ADD TWICE THE STROKE
+++ = ADD THREE TIMES THE STROKE
++++ = ADD FOUR TIMES THE STROKE

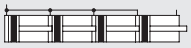
1 = SENSOR SLOT
2 = CYLINDERS OUT
5 = CYLINDERS IN

MALE PISTON ROD



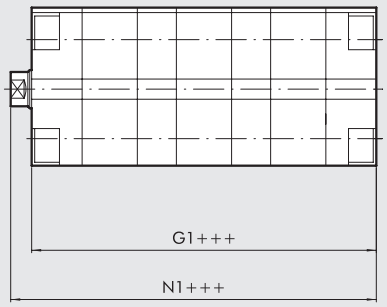






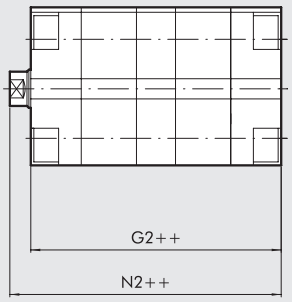
230-240

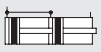
TANDEM 3 STAGES



230-240

TANDEM 2 STAGES





230-240

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	T	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	2	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	2	UNITOP

METAL WORK PNEUMATIC

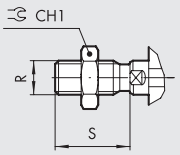
DIMENSIONS OF TANDEM Ø 32 to 100 - 4-STAGES

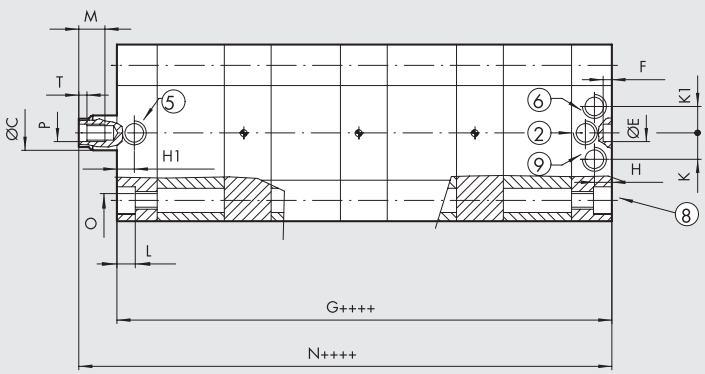
++ = ADD TWICE THE STROKE
+++ = ADD THREE TIMES THE STROKE
++++ = ADD FOUR TIMES THE STROKE

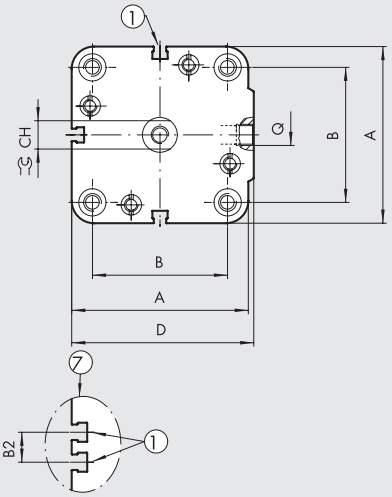
2 = CYLINDERS OUT FOR Ø 32 to 63
5 = CYLINDERS IN FOR Ø 32 to 63
6 = CYLINDERS IN FOR Ø 80; 100
9 = CYLINDERS OUT FOR Ø 80; 100

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

MALE PISTON ROD

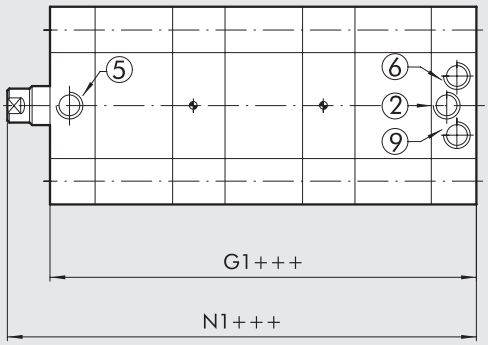






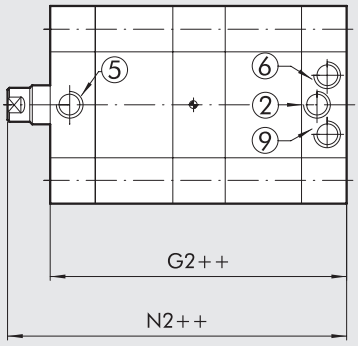
230-240
250-260

TANDEM 3-STAGES



230-240
250-260

TANDEM 2-STAGES



230-240
250-260

Ø	A	B ISO	B UNITOP	B2	ØC	CH	CH1	D	ØE H9	F	G	G1	G2	H	H1	K	K1
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

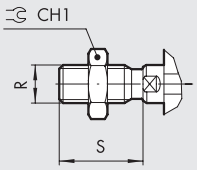
Ø	L	M	N	N1	N2	O ISO	O UNITOP	P	Q	R	S	T
32	4	14	160	123.5	87	M6	M6	M6	G1/8	M10x1.25	22	2.5
40	4.5	14	169	130	91	M6	M6	M6	G1/8	M10x1.25	22	2.5
50	4.5	16	171	131.5	92.5	M8	M8	M8	G1/8	M12x1.25	24	3.5
63	5.5	16	189.5	145.5	101.5	M8	M10	M8	G1/8	M12x1.25	24	3.5
80	5.5	20	212.5	163	113.5	M10	M10	M10	G1/8	M16x1.5	32	4
100	5.5	24	253	194	135.5	M10	M10	M12	G1/4	M20x1.5	40	5

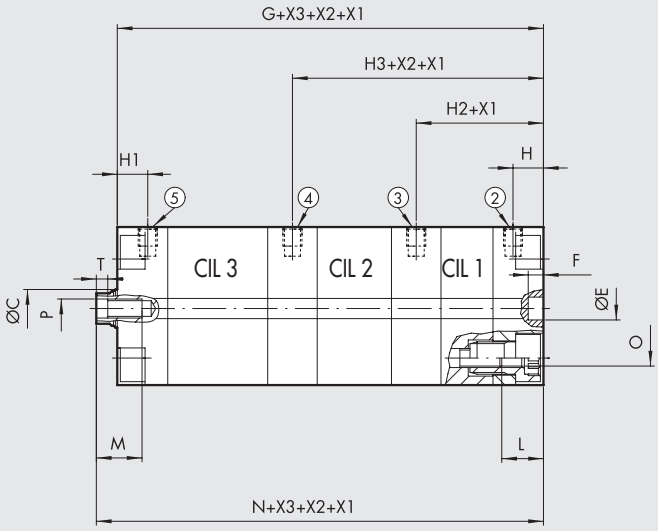
DIMENSIONS OF MULTI-POSITION Ø 12 to 25 - 3-STAGES

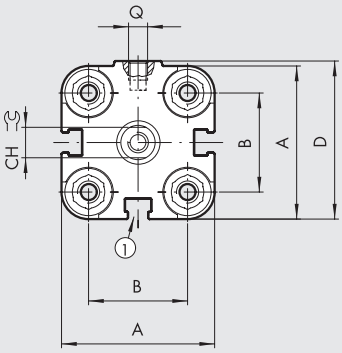
1 = SENSOR SLOT
2 = CYLINDER 1 OUT
3 = CYLINDER 2 OUT
4 = CYLINDER 3 OUT
5 = CYLINDERS 1-2-3 IN

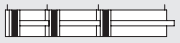
X1 = CYLINDER 1 STROKE
X2 = CYLINDER 2 STROKE
X3 = CYLINDER 3 STROKE

MALE PISTON ROD







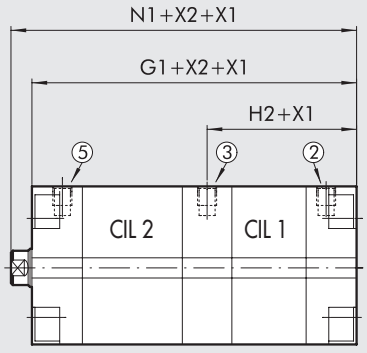


230-240

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



230-240

Ø	A	B	ØC	CH	CH1	D	ØE H9	F	G	G1	H	H1	H2	H3	L	M	N	N1	O	P	Q	R	S	T	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	2	-
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	2	-
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	M10x1.25	22	2	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	M10x1.25	22	2	UNITOP

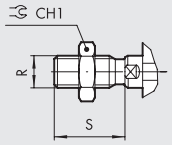
METAL WORK PNEUMATIC

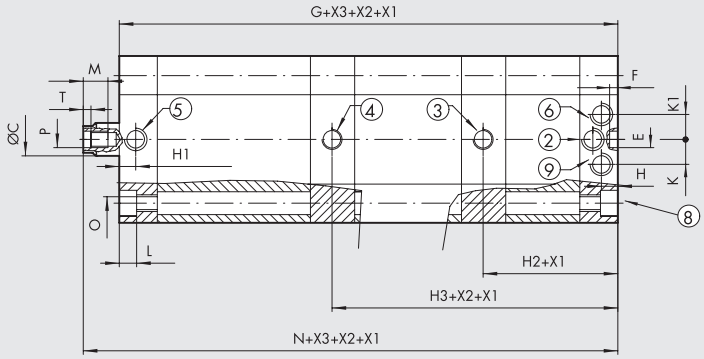
DIMENSIONS OF MULTI-POSITION Ø 32 to 100 - 3-STAGES

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

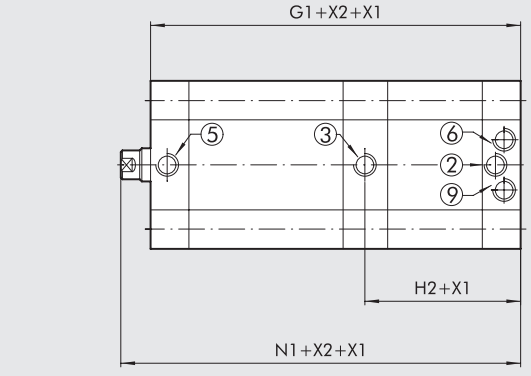




MULTI-POSITION 2-STAGES

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

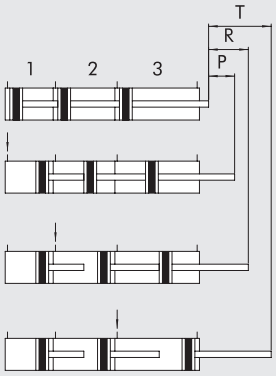


Ø	A	B ISO	B UNITOP	B2	ØC	CH	CH1	D	ØE H9	F	G	G1	H	H1	H2	H3
32	47	32.5 $^{+0.1}_{-0.4}$	32 $^{+0.4}_{-0.1}$	–	12	10	17	48.5	6	4	117.5	81	7.5	7.5	44	80.5
40	56	38	42	–	12	10	17	57.5	6	4	123.5	84.5	7.5	7.5	46.5	85.5
50	67	46.5	50	–	16	13	19	69	6	4	124	85	7.5	7.5	47	86
63	80	56.5	62	13	16	13	19	82	8	4	138	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 ISO	O UNITOP	P	Q	R	S	T
32	–	–	4	14	123.5	87	M6	M6	M6	G1/8	M10x1.25	22	2.5
40	–	–	4.5	14	130	91	M6	M6	M6	G1/8	M10x1.25	22	2.5
50	–	–	4.5	16	131.5	92.5	M8	M8	M8	G1/8	M12x1.25	24	3.5
63	–	–	5.5	16	145.5	101.5	M8	M10	M8	G1/8	M12x1.25	24	3.5
80	10.5	10.5	5.5	20	163	113.5	M10	M10	M10	G1/8	M16x1.5	32	4
100	14.5	14.5	5.5	24	194	135.5	M10	M10	M12	G1/4	M20x1.5	40	5

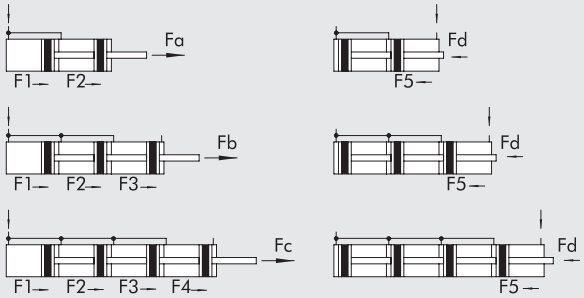
FUNCTIONAL DIAGRAMS

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

Fa = F1+F2 [N]
Fb = F1+F2+F3 [N]
Fc = F1+F2+F3+F4 [N]
Fd = F5 [N]

KEY TO CODE

CYL	23	1	0	25	O	050	X	P
	TYPE			**BORE**		**STROKE ****	**MATERIAL**	**GASKETS**
	23 Compact cylinder centre distances to UNITOP male piston rod **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	**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 ●✚ **6** Single-acting through-rod piston rod perforated ▼ **7** Double-acting non-rotating **A** Double-acting through-rod non-rotating	**0** Magnetic □ **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 **MULTI-POSITION** ●● **P** Stage 1 ●● **R** Stage 2 ●● **T** Stage 3		✱ **C** C45 piston rod chromium-plated ▷ **X** Stainless steel piston rod and nut ◁ **A** C45 chromed piston rod, aluminium piston ○ **Z** Stainless steel piston rod and nut aluminium piston	**P** Polyurethane gaskets ▶✚ **V** FKM/FPM gaskets

** For the maximum suppliabe stroke, see page **A1**.105

◆ In the code of cylinder with letter in fourth position Ø 100 becomes A1
■ Codes only for cylinders Ø 32 to100
● 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 Ø 20 to 100 version with gaskets in FKM / FPM (0 or S) is already "no sick 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 (for Ø20 and Ø25 only "non-magnetic" version provided)
□ Compulsory for Ø 20 and Ø 25 version Z
✱ Only for Ø 32 to 100 P version (Polyurethane gaskets)
▷ Only for Ø 12 to 100 P version (Polyurethane gaskets)
◁ Only for Ø 32 to 100 V version (FKM/FPM gaskets)
○ Only for Ø 20 to 100 V version (FKM/FPM 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

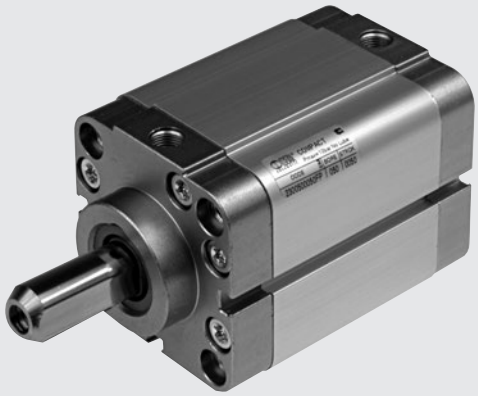
Coding example for a UNITOP multiposition cylinder
3 stages Ø 25 strokes 15 + 30 + 40 (total stroke 85 mm) male rod:
1° STADIO (P): 230025P015XP +
2° STADIO (R): 230025R045XP +
3° STADIO (T): 230025T085XP

COMPACT CYLINDER 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 or with French standard NFE 49-004-1 and 2 (UNITOP).

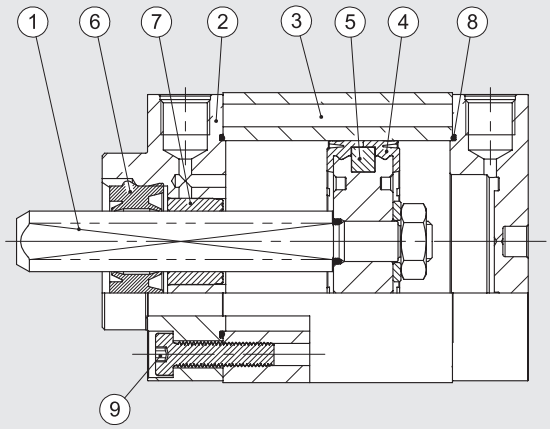
The special profile and the fact that the external heads are screwed onto the liner give an excellent guide. Numerous fixing options are available thanks to wide range of anchor points. Retractable magnetic limit switches can be mounted in slots in the cylinder to measure the position.



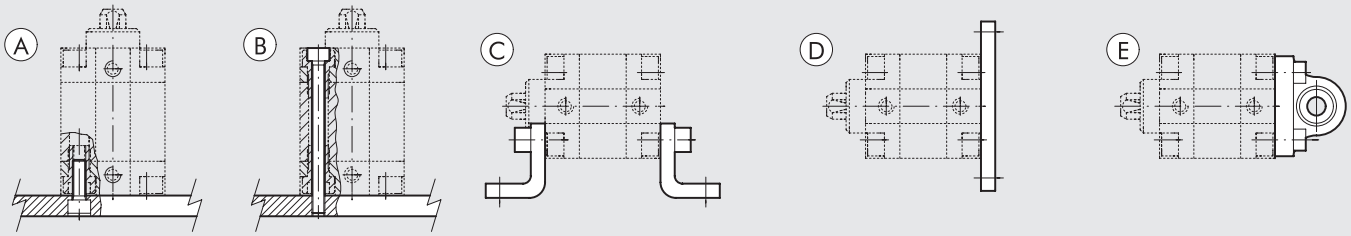
TECHNICAL DATA			Ø32	Ø40	Ø50	Ø63	Ø80
Max operating pressure		bar	10				
		MPa	1				
		psi	145				
Temperature range	POLYURETHANE	°C	–10 to +80				
Design			With profile, heads with screws				
Fixing centre distances			ISO 15552 - VDMA 24562 o NFE 49-004-1 e 2 (UNITOP)				
Fluid			Unlubricated air. Lubrication, if used, must be continuous				
Maximun stroke ✚		mm	300		400		500
Versions			Double-acting, Double-acting Through-rod				
Sensor magnet			Available magnetic and non-magnetic versions.				
Inrush pressure		bar	0.8	0.6			
Max torque on piston rod		Nm	0.2		0.4		1
Maximum rotation on the rod		degrees	1° 30°		1° 30°		1°
Weights			See cylinder "**General technical data**" at the beginning of the chapter				
Notes			**For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.**				
			✚ Maximum recommended strokes. Higher values can create operating problems				

COMPONENTS Ø 12 to 25

① PISTON ROD: stainless steel, Two-Flat
② HEAD: extruded anodized aluminium alloy
③ BARREL: drawn anodized 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 **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	**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

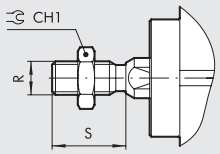
✱ For the maximum suppliable strokes, look at the technical data
▲ **For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only**

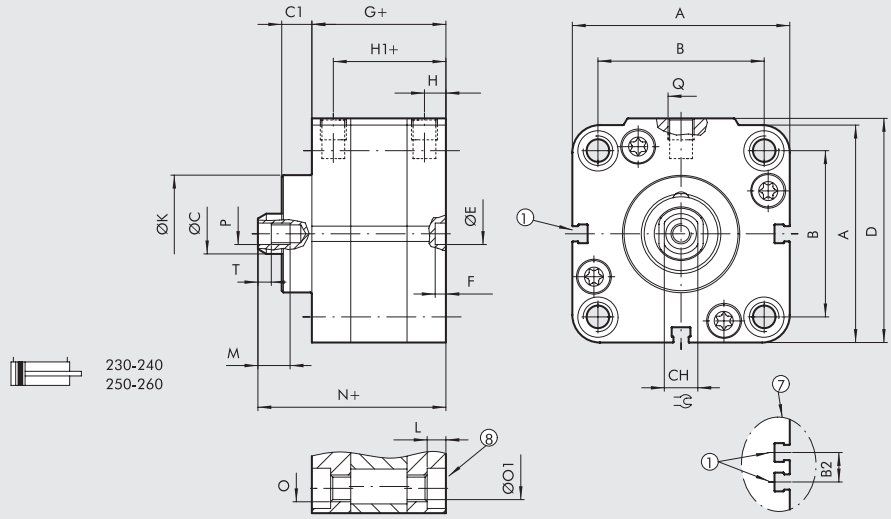
METAL WORK PNEUMATIC

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





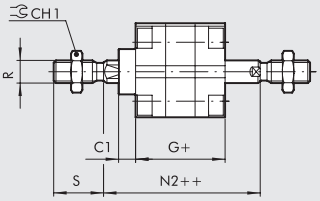
Ø	A	B ISO	B UNITOP	B2	ØC	C1	CH	CH1	D	ØE H9	F	G	H	H1	ØK	L	M	N	O ISO	O UNITOP	ØO1 ISO	ØO1 UNITOP	P	Q	R	S	T
32	47	32.5 $^{+0.1}_{-0.4}$	32 $^{+0.4}_{-0.1}$	–	12	9	10	17	48.5	6	4	44.5	7.5	37	30	4	14	59.5	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22	2.5
40	56	38	42	–	12	9	10	17	57.5	6	4	45.5	7.5	38	35	4.5	14	61	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22	2.5
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	3.5
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	3.5
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	4

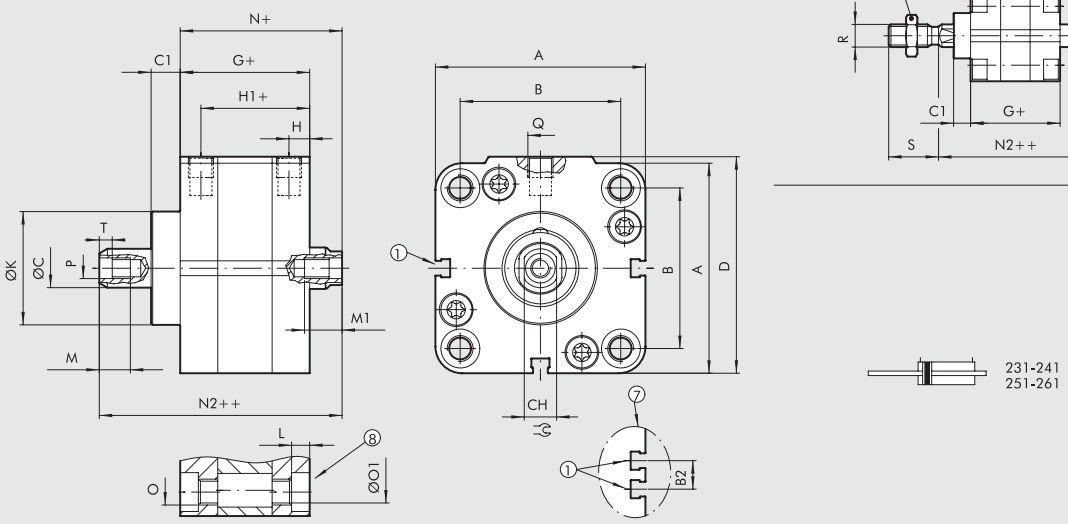
DIMENSIONS OF THROUGH-ROD

+ = 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





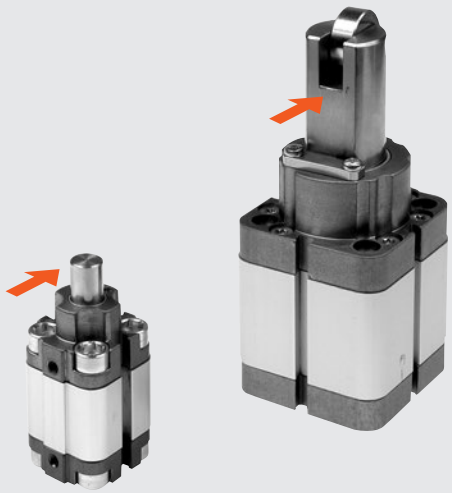
Ø	A	B ISO	B UNITOP	B2	ØC	C1	CH	CH1	D	G	H	H1	ØK	L	M	M1 x strokes ≥ 5	M1 x strokes < 5	N	N2	O ISO	O UNITOP	ØO1 ISO	ØO1 UNITOP	P	Q	R	S	T
32	47	32.5 $^{+0.1}_{-0.4}$	32 $^{+0.4}_{-0.1}$	–	12	9	10	17	48.5	44.5	7.5	37	30	4	14	14	9	50.5	65.5	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22	2.5
40	56	38	42	–	12	9	10	17	57.5	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	2.5
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	3.5
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	3.5
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	4

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 whith spring return
- Fixing centre distances to ISO 15552 for Ø 32, Ø 50, Ø 80 and French standard NFE 49-004-1 and 2 (UNITOP).

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

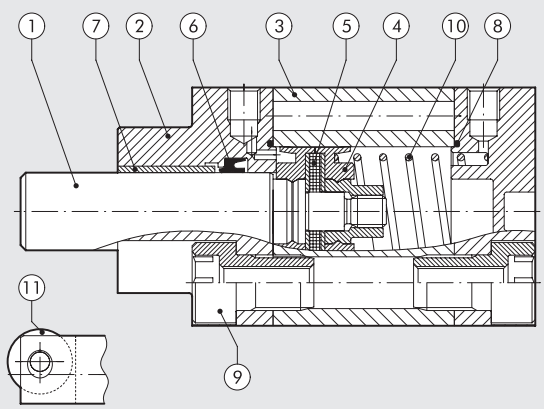


Chuck impact direction

TECHNICAL DATA		Ø20 Stroke 15	Ø32 Stroke 20	Ø50 Stroke 30	Ø80 Stroke 30	Ø80 Stroke 40
Max operating pressure	bar	10				
	MPa	1				
	psi	145				
Temperature range	°C	–10 to +80				
Design		With profile, heads with screws				
Fixing centre distances	ISO 15552	-	x	x	x	x
	NFE 49-004-1 e 2 (UNITOP)	x	x	x	x	x
Fluid		Unlubricated air. Lubrication, if used, must be continuous				
Versions		Single-acting extended rod, Can be also used as double-acting whith spring return				
Sensor magnet		Available magnetic and non-magnetic versions.				
Inrush pressure	bar	1.2	1		0.5	
Weights		See cylinder "**General technical data**" at the beginning of the chapter				
Notes		For correct operation, it is advisable to use 50 µm filtered air				

COMPONENTS Ø 20

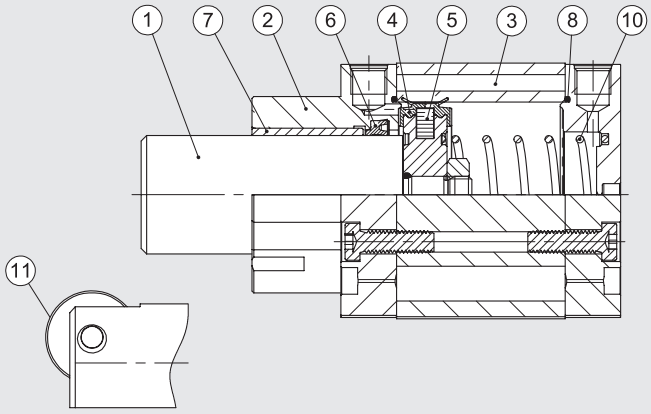
① PISTON ROD: Stainless steel, thick chromed
② HEAD: extruded anodized aluminium alloy
③ BARREL: drawn anodized and calibrated aluminium alloy
④ PISTON GASKET: polyurethane
⑤ MAGNET: neodymium-plastic
⑥ PISTON ROD GASKET: polyurethane
⑦ GUIDE BUSHING: steel strip with bronze and PTFE insert
⑧ STATIC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



METAL WORK PNEUMATIC

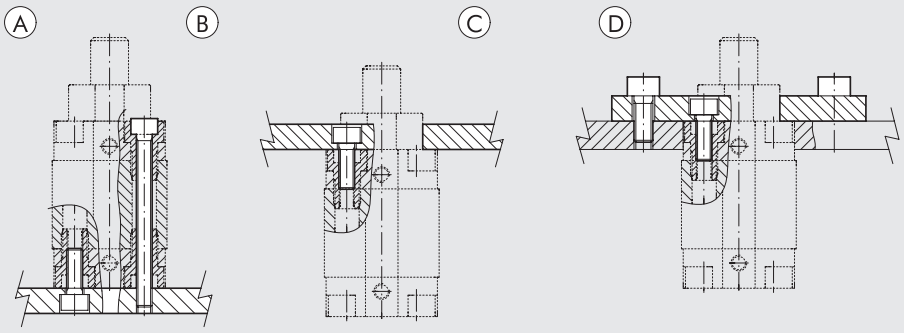
COMPONENTS Ø 32, Ø 50, Ø 80

① PISTON ROD: Stainless steel, thick chromed
② HEAD: extruded anodized aluminium alloy
③ BARREL: drawn anodized 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.

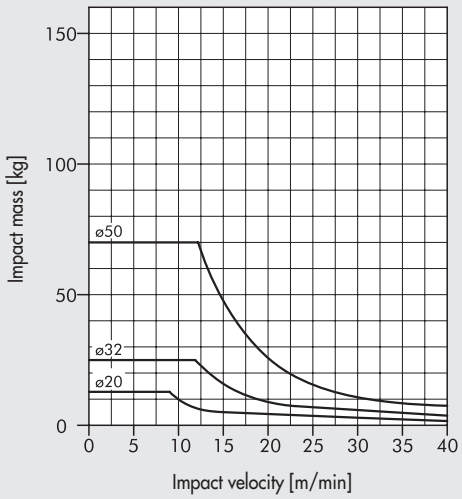


FORCE OF SPRINGS IN COMPACT STOPPER CYLINDERS (THEORETICAL)

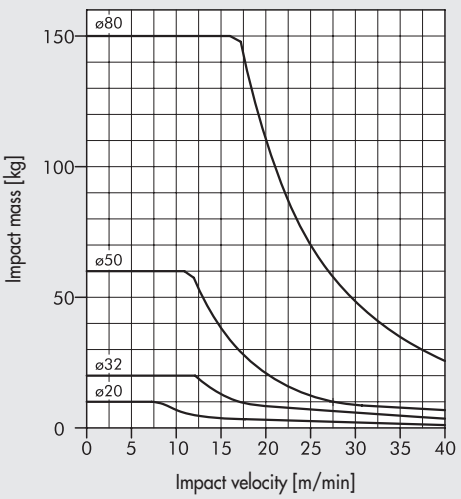
Stroke bore	Ø 20 x 15	Ø 32 x 20	Ø 50 x 30	Ø 80 x 30	Ø 80 x 40
Min. load (N)	13.7	22.4	50.2	97.9	71.0
Max. load (N)	21.2	36.0	115.9	178.5	178.5

LOAD GRAPH

TRUNNION VERSION



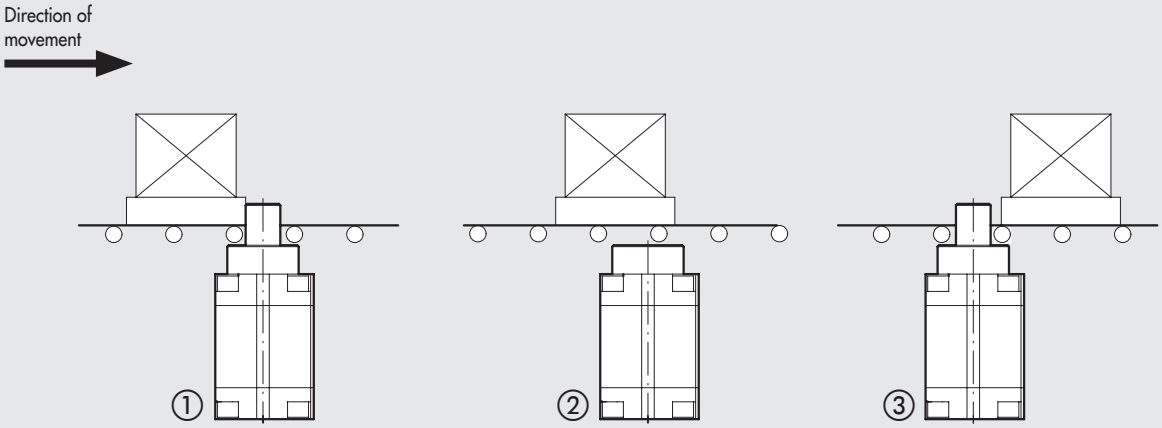
ROLLER VERSION



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).

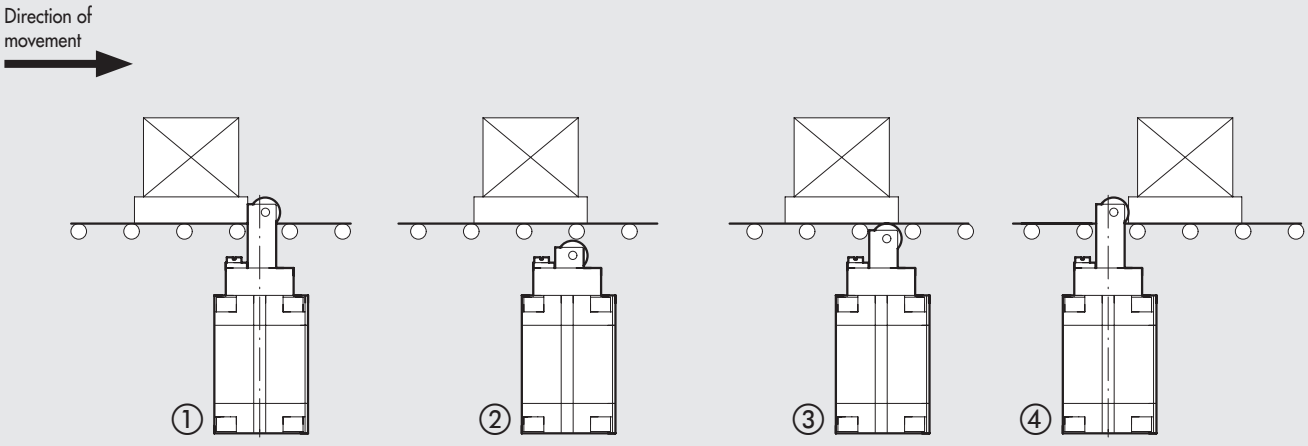
OPERATING DIAGRAMS

TRUNNION VERSION



① Deceleration of the chuck as it comes into contact with the piston rod, with elastic deformation of about 1 mm.
② The cylinder is pressurized to release the chuck.
③ The pressure in the front chamber is maintained until the chuck has passed the stopper cylinder.
The piston rod extends due to the effect of the spring and any pressure in the opposite chamber.
The system is now ready to stop the next chuck.

ROLLER VERSION

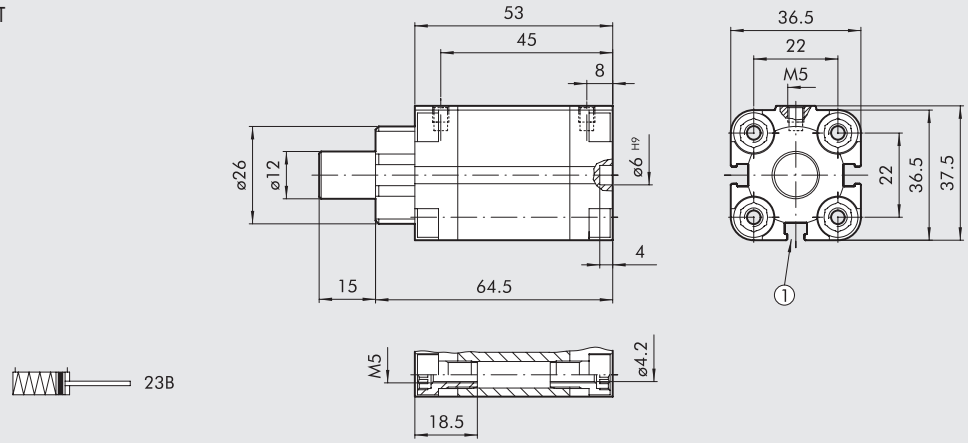


① Deceleration of the chuck as it comes into contact with the piston rod, with elastic deformation of about 1 mm.
② The cylinder is pressurized to release the chuck.
③ When the pressure in the front chamber drops, the piston rod extends due to the effect of the spring or any pressure until the wheel reaches the chuck and moves it on.
④ After the chuck has passed, the cylinder extends the piston rod fully. The system is now ready to stop the next chuck.

METAL WORK PNEUMATIC

Ø 20 STROKE 15 mm TRUNNION VERSION

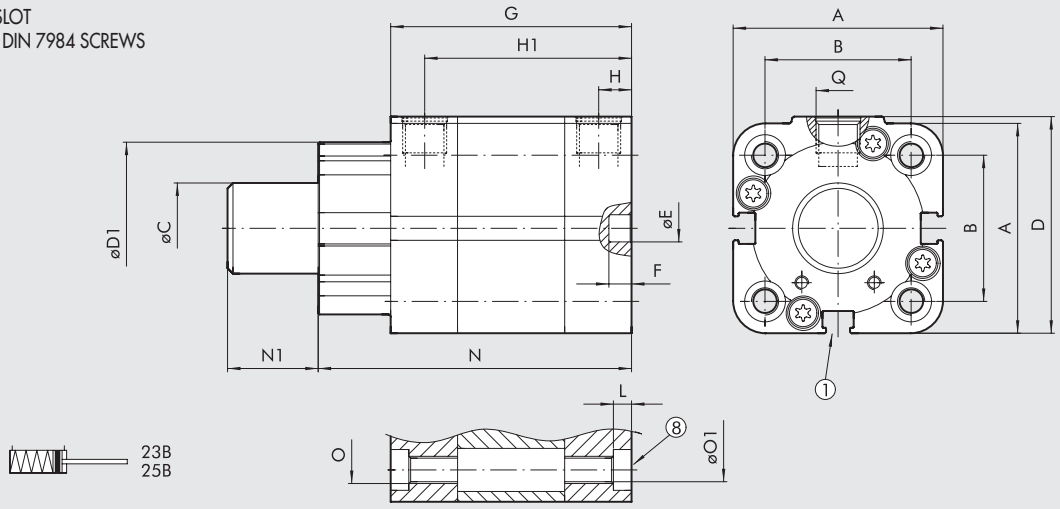
1 = SENSOR SLOT



Code	Description
23B0200015XP	Compact stopper cylinder, trunnion Ø 20, stroke 15
23BS200015XP	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

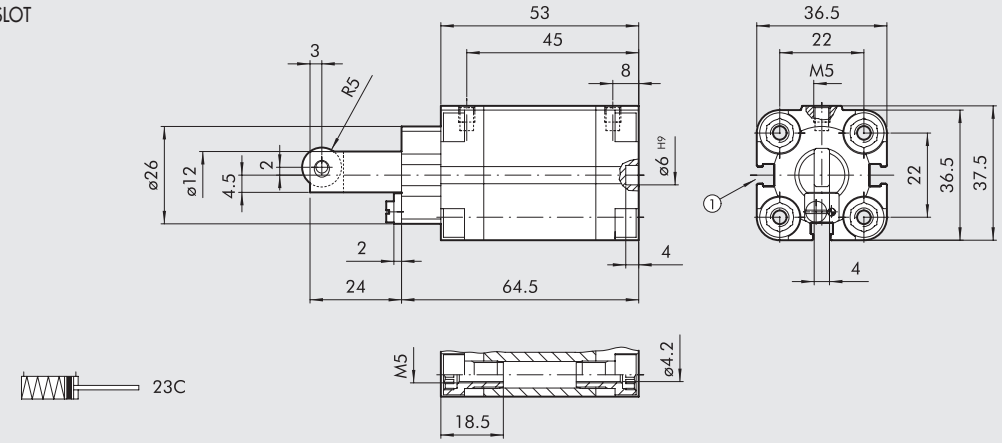


		B													O		ØO1		
Ø	**A**	**ISO**	**UNITOP**	**ØC**	**D**	**D1**	**ØE H9**	**F**	**G**	**H**	**H1**	**L**	**N**	**N1**	**ISO**	**UNITOP**	**ISO**	**UNITOP**	**Q**
32x20	47	32.5 $^{+0.1}_{-0.4}$	32 $^{+0.4}_{-0.1}$	20	48.5	38	6	4	64.5	7.5	57	4	80.5	20	M6	M6	5.2	5.2	G1/8
50x30	67	46.5	50	32	69	53	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
23BS320020XP	Compact stopper cylinder, trunnion Ø 32, stroke 20 UNITOP (non-magnetic version)
25BS320020XP	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
23BS500030XP	Compact stopper cylinder, trunnion Ø 50, stroke 30 UNITOP (non-magnetic version)
25BS500030XP	Compact stopper cylinder, trunnion Ø 50, stroke 30 ISO 15552 (non-magnetic version)

Ø 20 STROKE 15 mm ROLLER VERSION

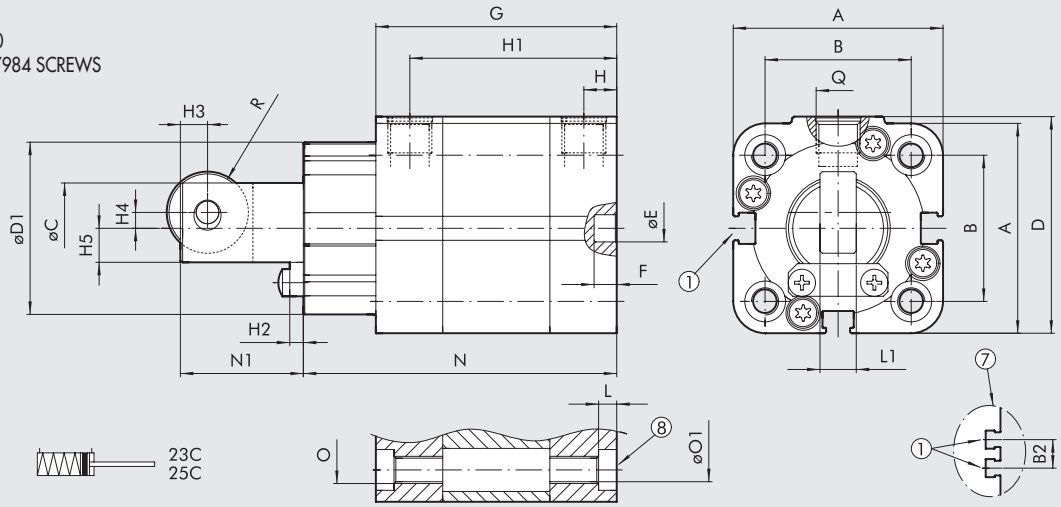
1 = SENSOR SLOT



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



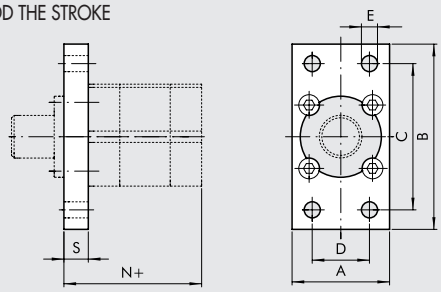
		B															O		ØO1							
Ø	**A**	**ISO**	**UNITOP**	**B2**	**ØC**	**D**	**D1**	**ØE H9**	**G**	**F**	**H**	**H1**	**H2**	**H3**	**H4**	**H5**	**ISO**	**UNITOP**	**ISO**	**UNITOP**	**L**	**L1**	**N**	**N1**	**Q**	**R**
32x20	47	32.5 +0.1 +0.4	32 +0.4 +0.1	-	20	48.5	38	6	64.5	4	7.5	57	3	6	3.5	7.5	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

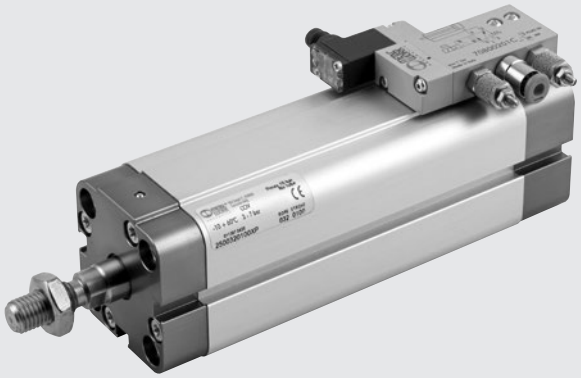
Code	Ø	A	B	C	D	E	N	S	Weight [g]
W0950326302	32	50	80	64	32	7	54.5	10	210
W0950506312	50	65	110	90	45	9	57.5	12	447
W0950806312	80	95	153	126	63	12	112	16	1190

Note: Supplied with 4 screws.

NOTES

COMPACT CYLINDER WITH INTEGRATED VALVE, SERIES CCIV

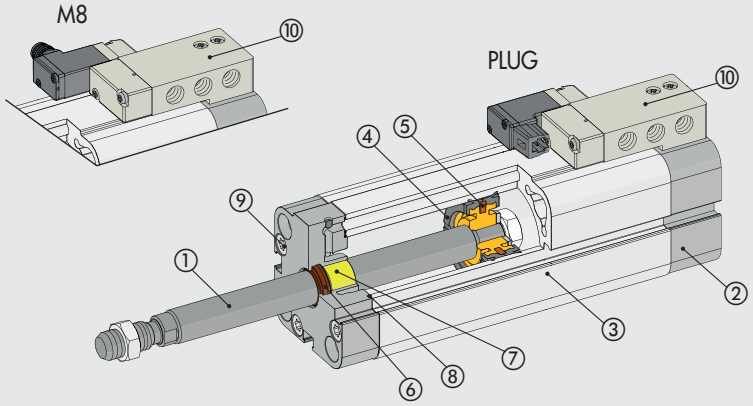
How many times would we have liked to have a pneumatic actuator complete with a control system, so that we would simply need to connect a compressed air hose and a power cable to control the movement of the piston rod?
CCIV is the simple, direct answer to this requirement.
In order to control a standard cylinder, you need a solenoid valve, the required space and a system to fix the solenoid valve, 3 or 5 fittings, 3 pipes, flow regulators, if needed, silencers on the exhaust side; this means 12-14 component parts to be handled and assembled. With CCIV a code is enough to obtain a fully assembled and tested product, in line with the "plug & play" philosophy.
They are double-acting cylinders derivatives from the CMPC series, with a low power consumption solenoid valve. The solenoid valve is the 5/2 monostable type, so the piston rod comes out when it is powered on, and retracts when it is powered off.
You can choose whether to have a product ready assembled with automatic fitting on the inlet port and fixed or adjustable silencers on the exhaust ports or simply with threaded connections of the inlet and outlet ports.



TECHNICAL DATA		Ø 20	Ø 25	Ø 32	Ø 40
Pressure range	bar	3 to 7			
	MPa	0.3 to 0.7			
	psi	44 to 102			
Temperature range	°C	-10 to +50			
	°F	14 to 122			
Fluid		Unlubricated air; lubrication, if used, must be continuous			
Versions		Double-acting cylinder			
		Monostable 5/2 solenoid valve; when operated, the piston rod comes out. Plug-in or M8 connector			
		With M7 threaded ports or a solenoid valve complete with automatic connector and fixed or adjustable silencers, on the exhaust ports			
Magnet for sensors		YES			
Inrush pressure	bar	0.6	0.6	0.6	0.4
Standard strokes	mm	from 5 to 50	from 5 to 50	from 5 to 80	from 5 to 80
Maximum recommended strokes	mm	200	200	300	300
Maximum speed at 6 bar OUT/IN	m/s	1.4 / 1.2	1 / 0.8	0.6 / 0.5	0.4 / 0.4
Forces generated at 6 bar thrust/retraction		See cylinder "**General technical data**" at the beginning of the chapter			
Voltage range		24VDC ±10%			
Power	W	0.9			
Solenoid rating		100% ED			
Manual operator		Monostable			
Insulation class		F155			
Degree of protection		With plug-in connector: IP51; with M8 connector: IP65			
Installation		In any position			
Weights	stroke = 0 [g]	220	250	295	420
	each mm stroke [g]	2.35	2.73	3.17	4.41
Air quality required		ISO 8573-1 class 4-7-3			
Notes		**For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air**			

COMPONENTS

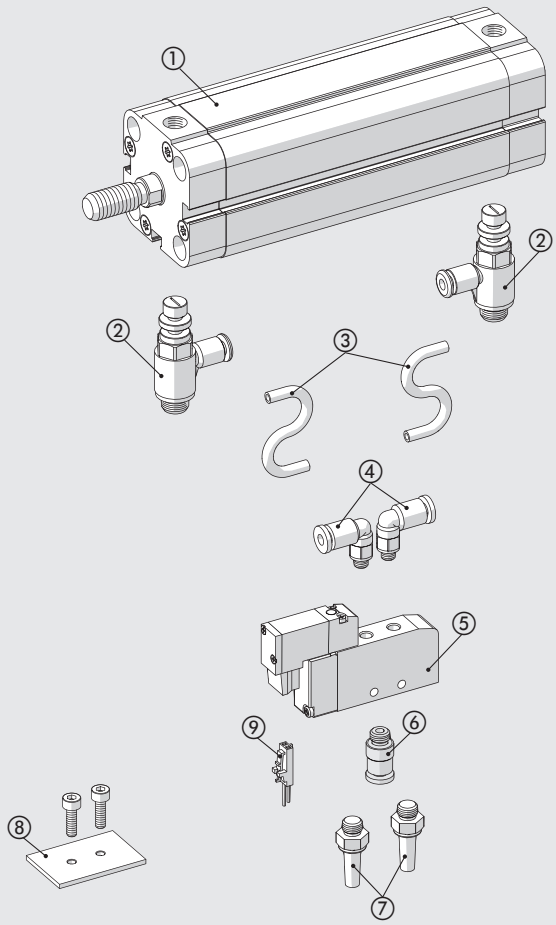
① PISTON ROD: C45 steel or stainless steel, thick chromed
② HEAD: extruded anodized aluminium alloy
③ BARREL: drawn anodized and calibrated aluminium alloy
④ PISTON GASKET: polyurethane
⑤ MAGNET: Ø 20 to 32 neodymium-plastic; Ø 40 plastoferrite
⑥ PISTON ROD GASKET: polyurethane
⑦ GUIDE BUSHING: steel strip with bronze and PTFE insert
⑧ STATIC O-RINGS: NBR
⑨ SECURING SCREWS: zinc-plated steel
⑩ VALVE: painted aluminium + technopolymer



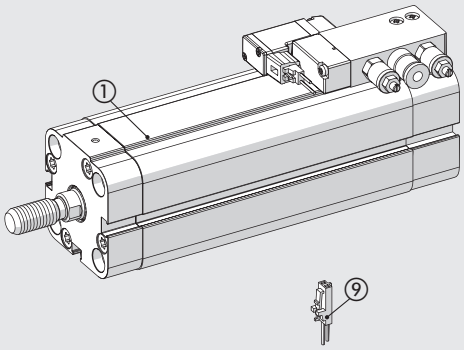
METAL WORK PNEUMATIC

THE ADVANTAGES OF INTEGRATION

TRADITIONAL SOLUTION



CCIV

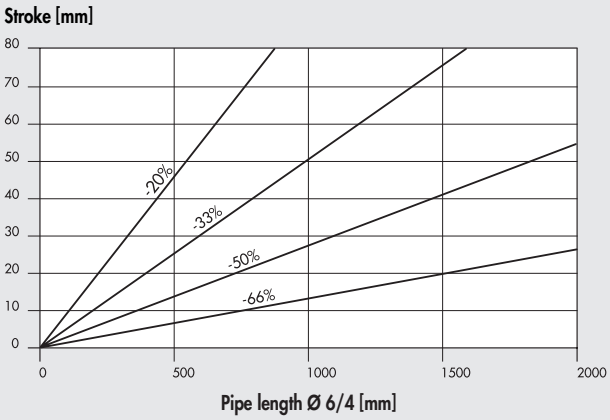


- One code only instead of 10-12 codes when ordering
- Savings in labour costs for assembly operations

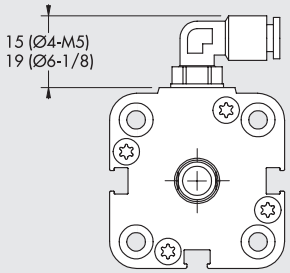
① CYLINDER
② FITTINGS OR FLOW REGULATORS
③ PIPES
④ DELIVERY FITTINGS
⑤ SOLENOID VALVE
⑥ INLET FITTING
⑦ SILENCERS ON THE EXHAUST SIDE
⑧ VALVE-FIXING SYSTEM
⑨ ELECTRICAL CONNECTOR

ENERGY SAVING

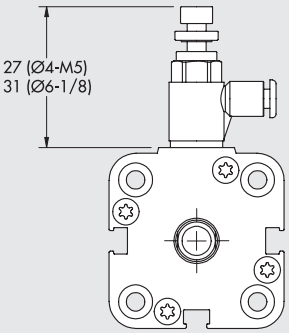
Reduced air consumption as the result of the elimination of pipes between valves and cylinder.
The sample diagram shows the air savings as a percentage for a Ø 25 cylinder, depending on the cylinder stroke and the length of Ø 6/4 pipes.



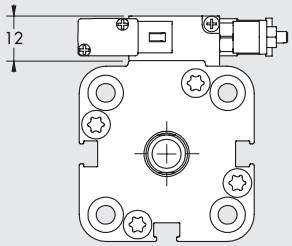
REDUCED OVERALL DIMENSIONS



TRADITIONAL SOLUTION
WITH FITTING



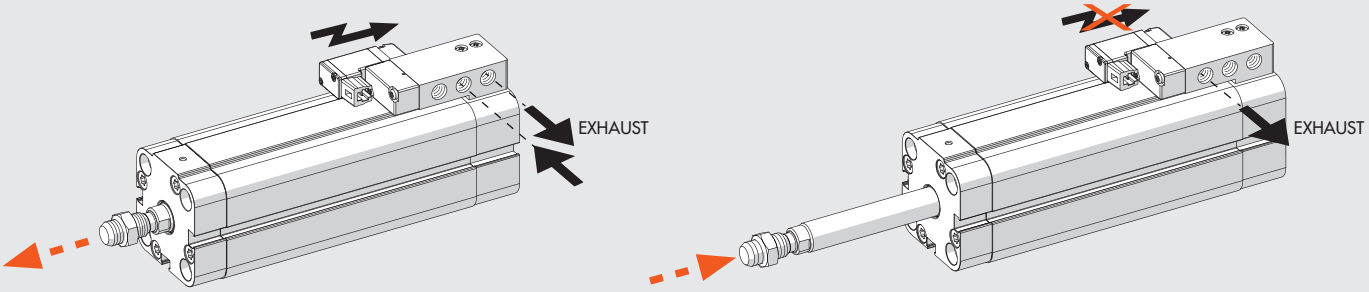
TRADITIONAL SOLUTION
WITH FLOW REGULATOR



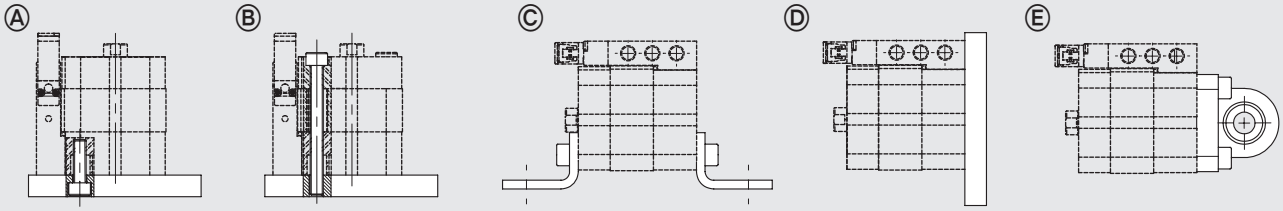
CCIV

OPERATION

The piston rod comes out when the valve is powered on. The piston rod retracts when the valve is powered off.



FIXING OPTIONS

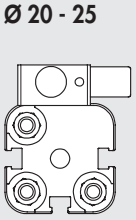


Ⓐ Fixing to structural work with a screw, using the thread in the heads.
Ⓑ Direct fixing from above using long through screws or tie rods. Non-magnetic stainless steel must be used (e.g. AISI 304).
Ⓒ Fixing with feet; the ordering code covers the supply of only one foot and two screws for fixing to the 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.

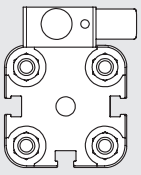
METAL WORK PNEUMATIC

DIMENSIONS

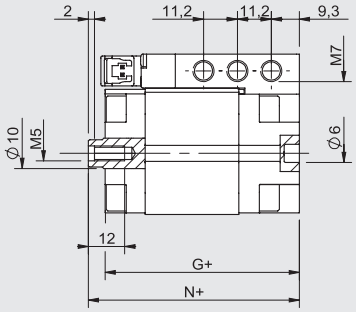
Ø 20 - 25

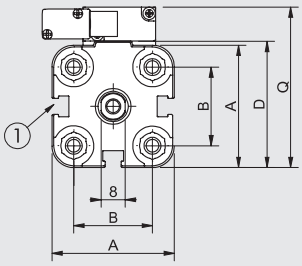


Ø20

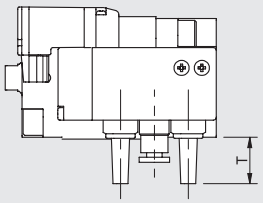


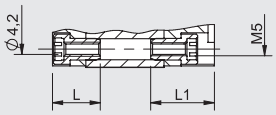
Ø25



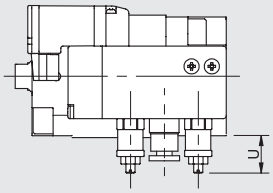


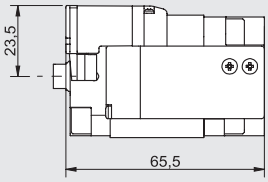
Version with fitting + silencers



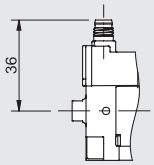


Version with fitting + silenced exhaust regulators



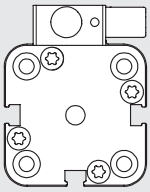


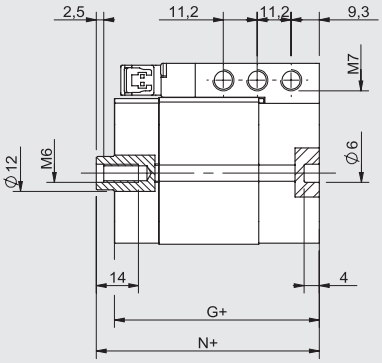
PLUG-IN connector

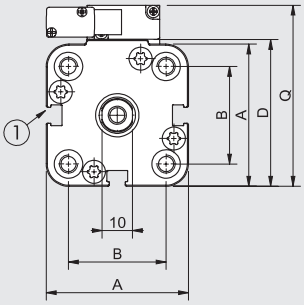


M8 connector

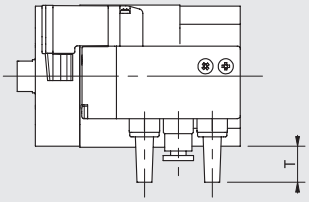
Ø 32 - 40

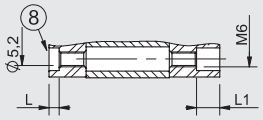




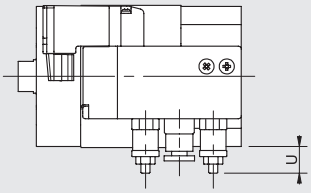


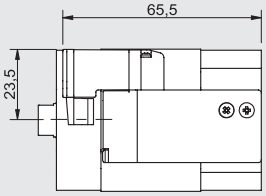
Version with fitting + silencers



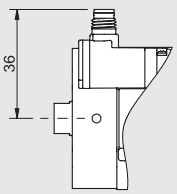


Version with fitting + silenced exhaust regulators





PLUG-IN connector

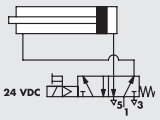


M8 connector

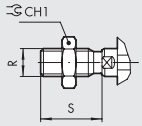
\+ = ADD THE STROKE
1 = SENSOR SLOT
8 = SEAT FOR DIN 7984 SCREWS

M8 CONNECTOR

1 Not used
3 0 V (Operation also with reverse polarity)
4 +24V



MALE PISTON ROD



Ø	A	B ISO	B UNITOP	CH1	D	G	L	N	R	S	S1	L1	Q	T	U
20	36.5	-	22	17	37.5	45.5	18.5	50	M10x1.25	22	4.5	26	49	17	15÷27
25	40.5	-	26	17	41.5	46.5	19	52	M10x1.25	22	5.5	26	53	15	13÷24
32	47	32.5 $^{+0.1}_{-0.4}$	32 $^{+0.4}_{-0.1}$	17	48.5	50	4	56	M10x1.25	22	6	9.5	60	12	10÷21
40	56	38	42	17	57.5	50.5	4.5	57	M10x1.25	22	6.5	9.5	69	7	5÷17

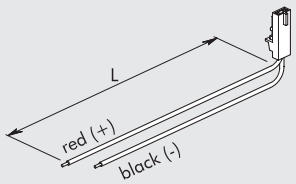
KEY TO CODES

CYL	23	0	0	32	0050	C	P	2	2
	TYPE			BORE	STROKE	MATERIAL	GASKETS	ELECTRICAL CONNECTION	PNEUMATIC FITTINGS
	23 Compact cylinder centre distances to UNITOP male piston rod **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	**0** Double-acting	**0** Magnetic **S** Non-magnetic ◆ **G** No stick-slip	▲ 20 ▲ 25 32 40	Ø 20 - 25: max 200 mm Ø 32 - 40: max 300 mm	■ **C** C45 piston rod chromium-plated **X** Stainless steel piston rod and nut	**P** Polyurethane gaskets	**2** Plug-in **M** M8	**1** M7 port **2** Straight fitting Ø 4 + silencers **3** Straight fitting Ø 4 + silenced exhaust regulators **4** Straight fitting Ø 6 + silencers **5** Straight fitting Ø 6 + silenced exhaust regulators

■ Only for Ø 32 and 40
▲ Stainless steel piston rod
◆ Standard for Ø 20 and 25

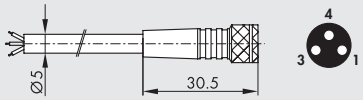
ACCESSORIES

PLUG-IN CONNECTOR



Code	Description
W0970512000	Plug-in connector for Mach 11 L = 300 mm
W0970512007	Plug-in connector for Mach 11 L = 1 m
W0970512002	Plug-in connector for Mach 11 L = 2 m

M8 STRAIGHT CONNECTOR WITH CABLE

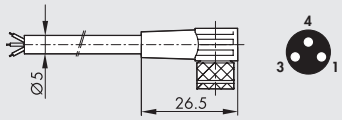


Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400A0100	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 1 m
02400A0250	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 2.5 m
02400A0500	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 5 m
02400A1000	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 10 m

Very flexible cables, class 6 according to IEC 60228

90° M8 CONNECTOR WITH CABLE



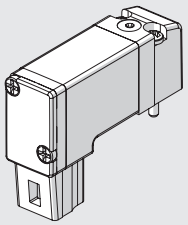
Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400B0100	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 1 m
02400B0250	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 2.5 m
02400B0500	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 5 m
02400B1000	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 10 m

Very flexible cables, class 6 according to IEC 60228

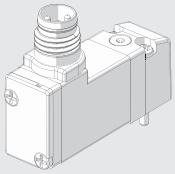
SPARE PARTS

PLUG-IN PILOT



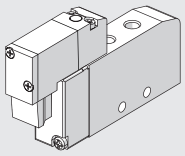
Code	Description
722113541100	PLT-10 3/2 NC 0.8W 24VDC LED plug-in with manual

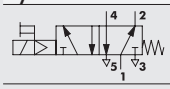
M8 PILOT



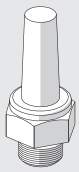
Code	Description
7222M3541100	PLT-10 3/2 NC 0.8W 24VDC LED M8 with manual

CCIV 5/2 SOLENOID-PNEUMATIC MONOSTABLE VALVE 24 VDC



Symbol	Code	Abbrev.	Weight [g]
	**70800201C2**	MSV 15 SOS OO 24VDC PLUG-IN	43.3
	70800201CM	MSV 15 SOS OO 24VDC M8	43.3

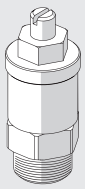
SILENCER MW SE



Code	Description
W0970530020	Silencer MW SE M7

For technical data, see **chapter E5**

SILENCED EXHAUST REGULATOR MW SVL



Code	Description
W0970520009	Silenced exhaust regulator MW SVL M7

For technical data, see **chapter E5**

NOTES

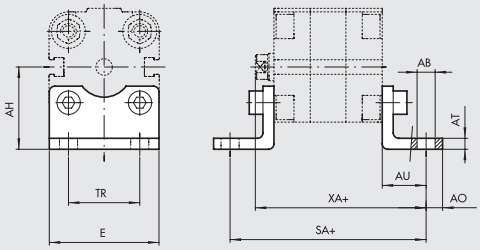
For other spare parts, such as gaskets and magnets, see page **A1**.136

ACCESSORIES AND SPARE PARTS FOR CMPC, TWO-FLAT, STOPPER AND CCIV COMPACT CYLINDERS

ACCESSORIES

FOOT - MODEL A

+ = ADD THE STROKE



CMPC UNITOP, TWO-FLAT UNITOP, CCIV UNITOP

											TWO-FLAT		CCIV		
Code	Ø	E	AO	TR	AU	AB	AH	AT	XA	SA	XA	SA	XA	SA	Weight [g]
W0950126001 ▲	12	30	4.5	18	13	5.5	22	3	55.5	64	–	–	–	–	26
W0950126001 ▲	16	30	4.5	18	13	5.5	22	3	55.5	64	–	–	–	–	26
W0950206001	20	36	6	22	16	6.6	27	4	58.5	70	–	–	66	77.5	46
W0950256001	25	40	6	26	16	6.6	30	4	58.5	71.5	–	–	65.5	78.5	52
W0950322001	32	45	11	32	24	7	31.9	4	74.5	92.5	83.5	101.5	80	98	76
W0950406001	40	60	8	42	20	9	42.5	5	72	85.5	–	–	77	90.5	88
W0950406001F ✱	40	60	8	42	20	9	42.5	5	72	85.5	81	94.5	–	–	88
W0950506001	50	68	8	50	24	9	47	6	77	93.5	–	–	–	–	176
W0950506001F ✱	50	68	8	50	24	9	47	6	77	93.5	88.5	105	–	–	176
W0950636001	63	84	12	62	27	11	59.5	6	84.5	104	–	–	–	–	276
W0950636001F ✱	63	84	12	62	27	11	59.5	6	84.5	104	96	115.5	–	–	276
W0950806001	80	102	12	82	30	11	65.5	8	94	116	107	129	–	–	392
W0951006001	100	123	12	103	33	13.5	78	8	109.5	132.5	–	–	–	–	558

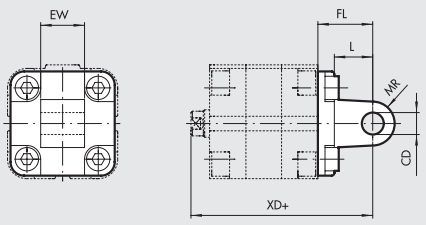
CMPC ISO, TWO-FLAT ISO, CCIV ISO

											TWO-FLAT		CCIV		
Code	Ø	E	AO	TR	AU	AB	AH	AT	XA	SA	XA	SA	XA	SA	Weight [g]
W0950322001	32	45	11	32	24	7	31.9	4	74.5	92.5	83.5	101.5	80	98	76
W0950402001	40	52	15	36	28	9	36	4	80	101.5	89	110.5	85	106.5	100
W0950502001	50	65	15	45	32	9	45	5	85	109.5	96.5	121	–	–	162
W0950632001	63	75	15	50	32	9	50	5	89.5	114	101	125.5	–	–	266
W0950802001	80	95	20	63	41	12	63	6	105	138	118	151	–	–	456
W0951002001	100	115	25	75	41	14	71	6	117.5	148.5	–	–	–	–	572

Note: Individually packed with 2 screws.
✱ Only for Two-Flat version
▲ Non UNITOP norm fixing distance

MALE HINGE-MODEL BA

+ = ADD THE STROKE



CMPC UNITOP, CCIV UNITOP

								CCIV	
Code	Ø	EW	FL	CD H9	MR	L	XD	XD	Weight [g]
W0950126004 ▲	12	12	16	6	6	10	58.5	–	24
W0950126004 ▲	16	12	16	6	6	10	58.5	–	24
W0950206004	20	16	20	8	8	12	62.5	70	44
W0950256004	25	16	20	8	8	12	62.5	69.5	48

CMPC ISO, TWO-FLAT ISO, CCIV ISO

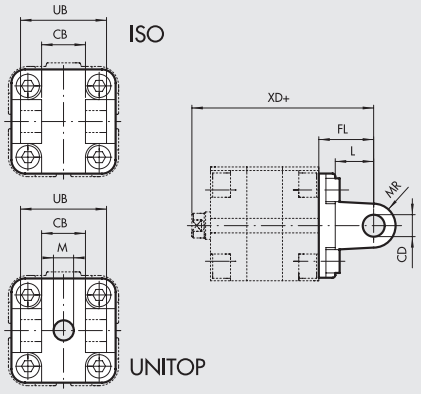
								TWO-FLAT	CCIV	
Code	Ø	EW	FL	CD H9	MR	L	XD	XD	XD	Weight [g]
W0950322004	32	26	22	10	10	13	72.5	81.5	78	94
W0950402004	40	28	25	12	12	16	77	86	82	124
W0950502004	50	32	27	12	12	16	80	91.5	–	220
W0950632004	63	40	32	16	16	22	89.5	101	–	316
W0950802004	80	50	36	16	16	22	100	113	–	578
W0951002004	100	60	41	20	20	27	117.5	–	–	850

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

METAL WORK PNEUMATIC

FEMALE HINGE-MODEL B

+ = ADD THE STROKE



CMPC UNITOP, TWO-FLAT UNITOP, CCIV UNITOP

Code	Ø	UB	CB H14	FL	CD H9	M	MR	L	XD	TWO-FLAT XD	CCIV XD	Weight [g]
W0950322003	32	45	26	22	10	14	11	12	72.5	81.5	78	116
W0950406003	40	52	28	25	12	14	12.5	16	77	86	82	184
W0950506003	50	60	32	27	12	18	12.5	16	80	91.5	–	266
W0950636003	63	70	40	32	16	-	15	21	89.5	101	–	470
W0950806003	80	90	50	36	16	23	15	23	100	113	–	670
W0951006003	100	110	60	41	20	28	20	26	117.5	–	–	1110

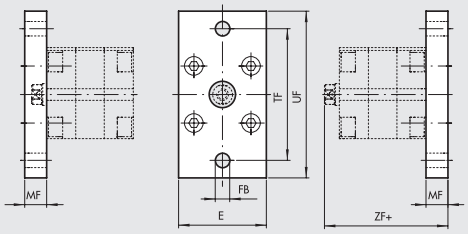
CMPC ISO, TWO-FLAT ISO, CCIV ISO

Code	Ø	UB	CB H14	FL	CD H9	MR	L	XD	TWO-FLAT XD	CCIV XD	Weight [g]
W0950322003	32	45	26	22	10	11	12	72.5	81.5	78	116
W0950402003	40	52	28	25	12	13	15	77	86	82	160
W0950502003	50	60	32	27	12	13	15	80	91.5	–	252
W0950632003	63	70	40	32	16	17	20	89.5	101	–	394
W0950802003	80	90	50	36	16	17	20	100	113	–	670
W0951002003	100	110	60	41	23	21	25	117.5	–	–	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, CCIV

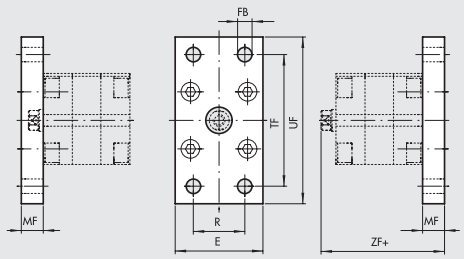
Code	Ø	E	UF	TF	FB	MF	ZF	CCIV ZF	Weight [g]
W0950126002 ▲	12	29	55	43	5.5	10	52.5	–	112
W0950126002 ▲	16	29	55	43	5.5	10	52.5	–	112
W0950206002	20	36	70	55	6.6	10	52.5	60	184
W0950256002	25	40	76	60	6.6	10	55	62	226

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, CCIV UNITOP

Code	Ø	E	UF	TF	R	FB	MF	ZF	CCIV ZF	Weight [g]
W0950322002	32	50	80	64	32	7	10	60.5	66	246
W0950406002	40	60	102	82	36	9	10	62	67	454
W0950506002	50	68	110	90	45	9	12	65	–	655
W0950636002	63	87	130	110	50	9	15	72.5	–	1255
W0950806002	80	107	160	135	63	12	15	79	–	1900
W0951006002	100	128	190	163	75	14	15	91.5	–	2700

TWO-FLAT UNITOP

Code	Ø	E	UF	TF	R	FB	MF	ZF	Weight [g]
W0950322002	32	50	80	64	32	7	10	69.5	246
W0950406002F	40	60	102	82	36	9	10	71	454
W0950506002F	50	68	110	90	45	9	12	76.5	655
W0950636002F	63	87	130	110	50	9	15	84	1255
W0950806002F	80	107	160	135	63	12	15	92	1900

CMPC ISO, TWO-FLAT ISO, CCIV ISO

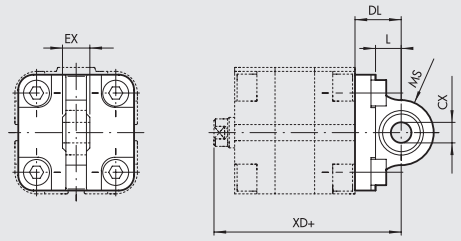
Code	Ø	E	UF	TF	R	FB	MF	ZF	TWO-FLAT ZF	CCIV ZF	Weight [g]
W0950322002	32	50	80	64	32	7	10	60.5	69.5	66	246
W0950402002	40	55	90	72	36	9	10	62	71	67	290
W0950502002	50	65	110	90	45	9	12	65	76.5	–	522
W0950632002	63	75	120	100	50	9	12	72.5	84	–	670
W0950802002	80	95	150	126	63	12	15	79	92	–	1420
W0951002002	100	115	178	150	75	14	15	91.5	–	–	2040

Note: Supplied with 4 screws

Note: When installing the flange on the CCIV front heads, the cylinder stroke must be min. 20 mm

ARTICULATED MALE HINGE - MODEL BAS

+ = ADD THE STROKE

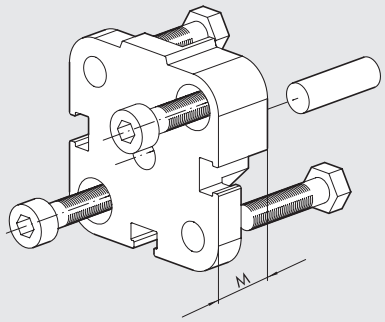


CMPC ISO, TWO-FLAT ISO, CCIV ISO

Code	Ø	EX	DL	CX H9	MS	L	XD	TWO-FLAT XD	CCIV XD	Weight [g]
W0950322006	32	14	22	10	16	12	72.5	81.5	78	106
W0950402006	40	16	25	12	18	15	77	86	82	142
W0950502006	50	16	27	12	21	15	80	91.5	–	236
W0950632006	63	21	32	16	23	20	89.5	101	–	336
W0950802006	80	21	36	16	28	20	100	113	–	572
W0951002006	100	25	41	20	30	25	117.5	–	–	840

Note: Supplied with 4 screws, 4 washers

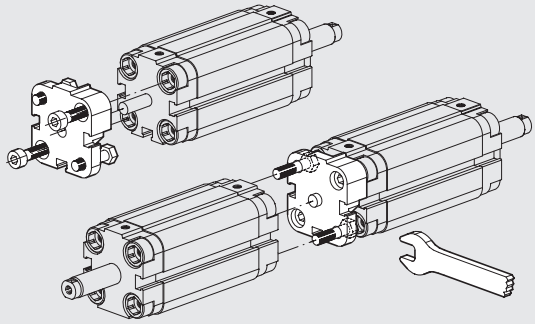
FLANGE FOR OPPOSITE CYLINDERS



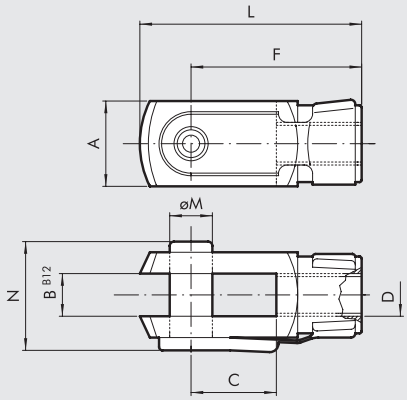
CMPC UNITOP Code	CMPC ISO Code	Ø	M	Weight [g] UNITOP	ISO
0950123060 ▲	–	12	12.5	29	–
0950123060 ▲	–	16	12.5	29	–
0950203060	–	20	12.5	45	–
0950253060	–	25	13	57	–
0950323060	0950323060	32	14.5	88	88
0950403060	0950403061	40	14.5	106	106
0950503060	0950503061	50	14.5	172	158
0950633060	0950633061	63	14.5	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



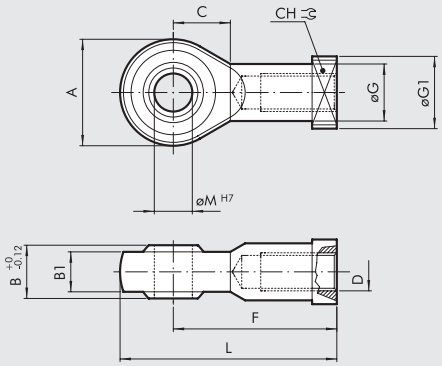
CMPC UNITOP AND ISO, TWO-FLAT UNITOP AND ISO, CCIV UNITOP AND ISO

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

METAL WORK PNEUMATIC

ROD EYE - MODEL GA-M

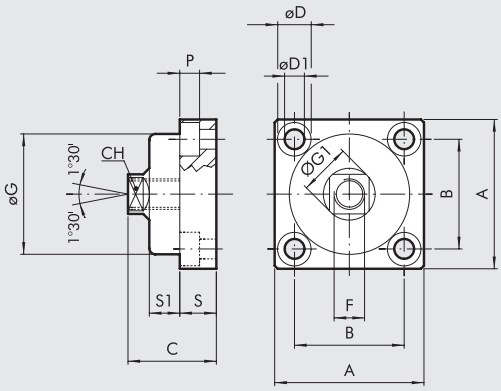


CMPC UNITOP E ISO, TWO-FLAT UNITOP E ISO, CCIV UNITOP AND ISO

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

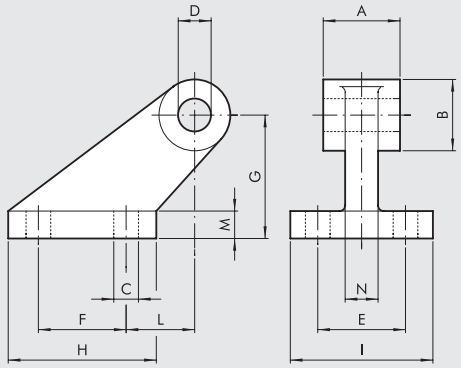


CMPC UNITOP E ISO, TWO-FLAT UNITOP AND ISO, CCIV UNITOP AND ISO

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	M12x.125	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

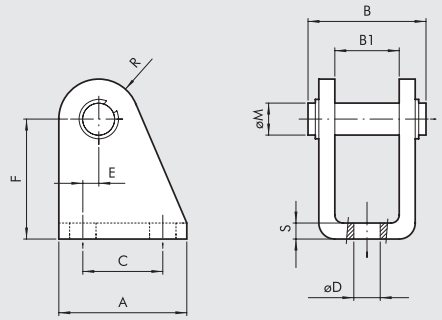


CMPC UNITOP E ISO, TWO-FLAT UNITOP E ISO, CCIV UNITOP AND ISO

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 12 to 25 - MODEL BC

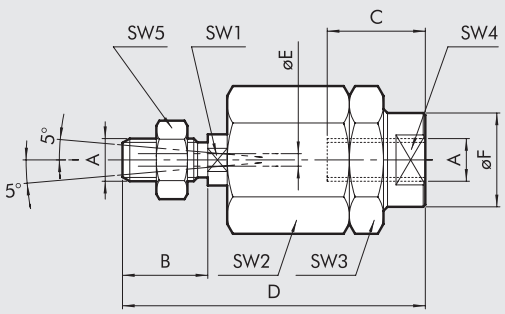


CMPC UNITOP, CCIV UNITOP

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 and 2 snap rings

SELF ALIGNING ROD COUPLER - MODEL GA-K



CMPC UNITOP AND ISO, TWO-FLAT UNITOP AND ISO, CCIV UNITOP AND ISO

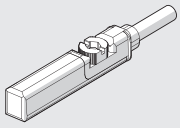
Code	Ø	A	B	C	D	ØE	ØF	SW1	SW2	SW3	SW4	SW5	Weight [g]
W0950120030	12	M6	10	10	35	2	8.5	5	13	13	7	10	24
W0950200030	16	M8	20	20	57	4	12.5	7	17	17	11	13	56
W0950322030	20	M10x1.25	20	20	71	4	22	12	30	30	19	17	216
W0950322030	25	M10x1.25	20	20	71	4	22	12	30	30	19	17	216
W0950322030	32	M10x1.25	20	20	71	4	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.

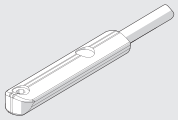
RETRACTABLE SENSOR

For codes and technical data, see **chapter A6**.

SENSOR, SQUARE TYPE
Latest generation, secure fixing



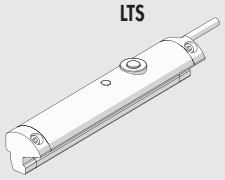
SENSOR, OVAL TYPE
Traditional



POSITION SENSORS

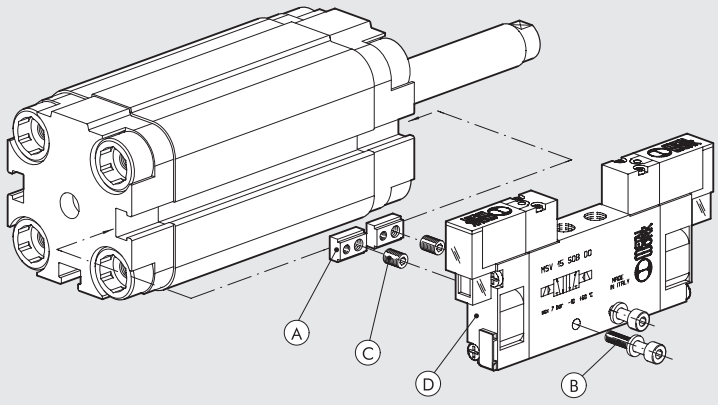
For technical data and usage strokes see **chapter A6**.

LTS



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.

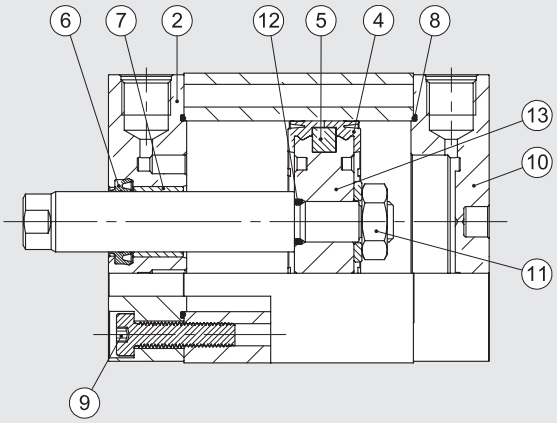


Type of valve to mount (D)	Fixing plate (A) CODE 0950003000	Position memory: grub screw (C) to be used	Screw (B) for connection to the cylinder (one per plate)	Washer (B) (one per screw)
MINIMACH	n° 2	M4	M3x16 UNI 5931 (DIN 912)	A3.2 UNI 1751 (DIN 127A)
MACH 11	n° 2	M4	M3x16 UNI 5931 (DIN 912)	A3.2 UNI 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)

METAL WORK PNEUMATIC

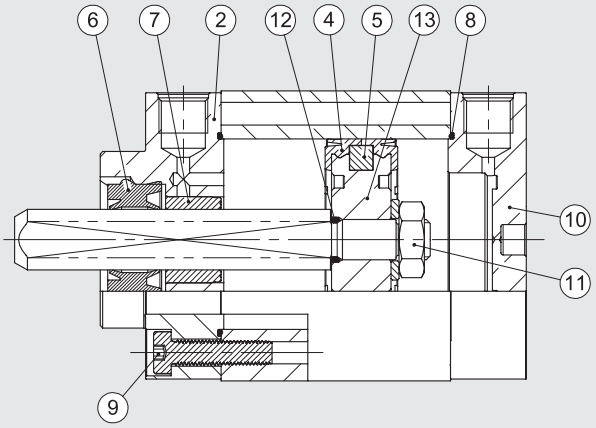
SPARE PARTS

COMPACT CYLINDERS, SERIES CMPC



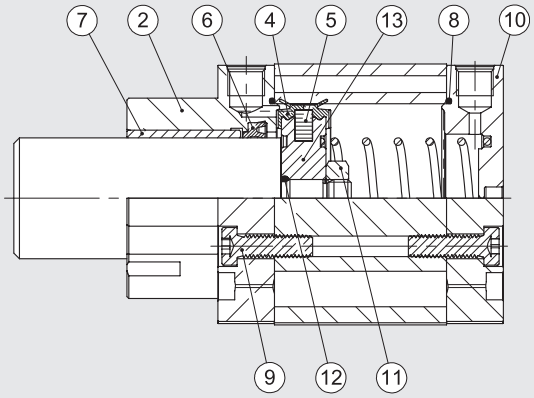
Code	Bores	Type	Parts
009 . . . 7001	Ø 12 to 100	Complete set of gaskets polyurethane	④⑥⑧
009 . . . 7008	Ø 20 to 100	Complete set of (high temperature) FKM/FPM gaskets	④⑥⑧
009 . . . 7013	Ø 12 to 100	Polyurethane piston rod gasket kit	⑥
009 . . . 7014	Ø 20 to 100	FKM/FPM piston rod gasket kit	⑥
009 . . . 7101	Ø 12 to 100	Front cylinder head kit for UNITOP polyurethane	②⑦⑥⑧⑨
0090327101	Ø 32	Front cylinder head kit for ISO Ø 32 polyurethane	②⑦⑥⑧⑨
009 . . . 8101	Ø 40 to 100	Front cylinder head kit for ISO polyurethane	②⑦⑥⑧⑨
009 . . . 7201	Ø 12 to 100	Rear cylinder head kit for UNITOP polyurethane	⑧⑨⑩
0090327201	Ø 32	Rear cylinder head kit for ISO Ø 32 polyurethane	⑧⑨⑩
009 . . . 8201	Ø 40 to 100	Rear cylinder head kit for ISO polyurethane	⑧⑨⑩
009 . . . 7401	Ø 12 to 100	Piston kit polyurethane	④⑤⑪⑫⑬
009 . . . 7501	Ø 12 to 100	Magnet	⑤
009 . . . 7901	Ø 12 to 100	Front + rear cylinder head + piston kit for UNITOP polyurethane	②④⑤⑥⑦⑧⑨⑩⑪⑫⑬
0090327901	Ø 32	Front + rear cylinder head + piston kit for ISO Ø 32 polyurethane	②④⑤⑥⑦⑧⑨⑩⑪⑫⑬
009 . . . 8901	Ø 40 to 100	Front + rear cylinder head + piston kit for ISO polyurethane	②④⑤⑥⑦⑧⑨⑩⑪⑫⑬

COMPACT CYLINDERS, SERIES CMPC TWO-FLAT



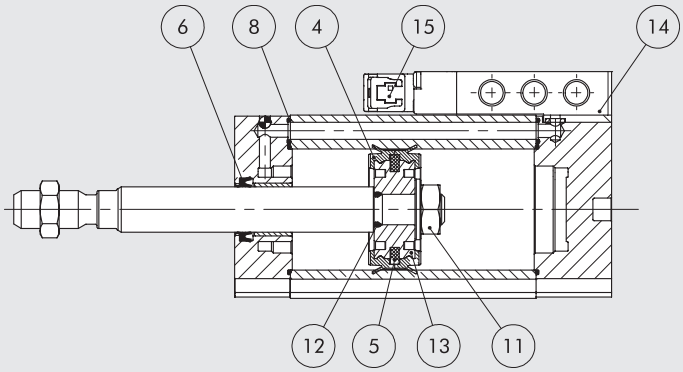
Code	Bores	Type	Parts
009 . . . 7001F	Ø 32 to 80	Set of gaskets	④⑧⑫
009 . . . 7101F	Ø 40 to 80	Front cylinder head kit for UNITOP	②⑦⑥⑧⑨
0090327101F	Ø 32	Front cylinder head kit for ISO Ø 32	②⑦⑥⑧⑨
009 . . . 8101F	Ø 40 to 80	Front cylinder head kit for ISO	②⑦⑥⑧⑨
009 . . . 7201	Ø 40 to 80	Rear cylinder head kit for UNITOP	⑧⑨⑩
0090327201	Ø 32	Rear cylinder head kit for ISO Ø 32	⑧⑨⑩
009 . . . 8201	Ø 40 to 80	Rear cylinder head kit for ISO	⑧⑨⑩
009 . . . 7401	Ø 32 to 80	Piston kit	④⑤⑪⑫⑨⑬
009 . . . 7501	Ø 32 to 80	Magnet	⑤
009 . . . 7901F	Ø 40 to 80	Front + rear cylinder head + piston kit for UNITOP	②④⑤⑥⑦⑧⑨⑩⑪⑫⑬
0090327901F	Ø 32	Front + rear cylinder head + piston kit for ISO Ø 32	②④⑤⑥⑦⑧⑨⑩⑪⑫⑬
009 . . . 8901F	Ø 40 to 80	Front + rear cylinder head + piston kit for ISO	②④⑤⑥⑦⑧⑨⑩⑪⑫⑬

COMPACT CYLINDERS, STOPPER



Code	Bores	Type	Parts
009 . . . 7060	Ø 20; 32; 50; 80	Complete set of gaskets	④⑥⑧
009 . . . 7160	Ø 20; 32; 50; 80	Front cylinder head kit for UNITOP	②⑦⑥⑧⑨
0090327160	Ø 32	Front cylinder head kit for ISO Ø 32	②⑦⑥⑧⑨
009 . . . 8160	Ø 50; 80	Front cylinder head kit for ISO	②⑦⑥⑧⑨
009 . . . 7201	Ø 20; 32	Rear cylinder head kit for UNITOP Ø 20 - Ø 32	⑧⑨⑩
009 . . . 7260	Ø 50; 80	Rear cylinder head kit for UNITOP	⑧⑨⑩
0090327201	Ø 32	Rear cylinder head kit for ISO Ø 32	⑧⑨⑩
009 . . . 8260	Ø 50; 80	Rear cylinder head kit for ISO	⑧⑨⑩
0090207401	Ø 20	Piston kit Ø 20	④⑤⑪
009 . . . 7460	Ø 32; 50; 80	Piston kit	④⑤⑪⑫⑬
009 . . . 7501	Ø 20; 32; 50; 80	Magnet	⑤
009 . . . 7960	Ø 20; 32; 50; 80	Front + rear cylinder head + piston kit for UNITOP	②④⑤⑥⑦⑧⑨⑩⑪⑫⑬
0090327960	Ø 32	Front + rear cylinder head + piston kit for ISO Ø 32	②④⑤⑥⑦⑧⑨⑩⑪⑫⑬
009. . . 8960	Ø 50; 80	Front + rear cylinder head + piston kit for ISO	②④⑤⑥⑦⑧⑨⑩⑪⑫⑬

COMPACT CYLINDER WITH INTEGRATED VALVE, SERIES CCIV



Code	Bores	Type	Parts
009...7001	Ø 20 to 40	Complete set of gaskets polyurethane	④⑥⑧
009...7013	Ø 20 to 40	Polyurethane piston rod gasket kit	⑥
009...7401	Ø 20 to 40	Piston kit polyurethane	④⑤⑪⑫⑬
009...7501	Ø 20 to 40	Magnet	⑤
70800201C2	Ø 20 to 40	CCIV solenoid-pneumatic monostable 24 VDC plug-in valve	⑭
70800201CM	Ø 20 to 40	CCIV solenoid-pneumatic monostable 24 VDC M8 valve	⑭
722113541100	Ø 20 to 40	Plug-in pilot	⑮
7222M3541100	Ø 20 to 40	M8 pilot	⑮

METAL WORK PNEUMATIC

NOTES

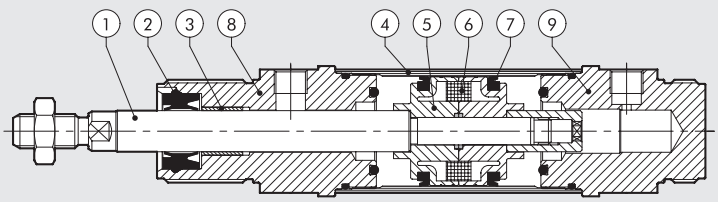
ROUND CYLINDER SERIES RNDC

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			Ø32	Ø40	Ø50
Max operating pressure		bar	10		
		MPa	1		
		psi	145		
Temperature range	POLYURETHANE	°C	–25 to +80		
	NBR	°C	–10 to +80		
	FKM/FPM	°C	–10 to +150 (non-magnetic cylinders)		
	Low Temperature	°C	–35 to +80		
Design			Screwed heads		
Fluid			Unlubricated air. Lubrication, if used, must be continuous.		
Standard strokes ✚	Single-acting	mm	1 to 250		
	Double-acting	mm	1 to 500		
Versions			Double-acting, Double-acting through-rod, Double-acting cushioned, Double-acting through-rod cushioned, Single-acting, Single-acting through-rod, No stick-slip.		
Sensor magnet			Available magnetic and non-magnetic versions.		
Inrush pressure		bar	0.4		0.3
Forces generated at 6 bar thrust/retraction			See cylinder "**General technical data**" at the beginning of the chapter		
Weights			See cylinder "**General technical data**" at the beginning of the chapter		
Notes			**For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.** ✚ Maximum recommended strokes. Higher values can create operating problems		

COMPONENTS

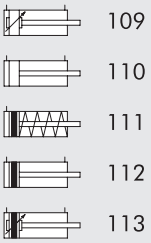
① PISTON ROD: C45 steel or stainless steel, thick chromed
② PISTON ROD GASKET: polyurethane, NBR or FKM/FPM
③ GUIDE BUSHING: steel strip with bronze and PTFE insert
④ BARREL: drawn anodized aluminium alloy
⑤ HALF-PISTON: self-lubricating technopolymer with integrated cushioning olives
⑥ MAGNET: plastoferrite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

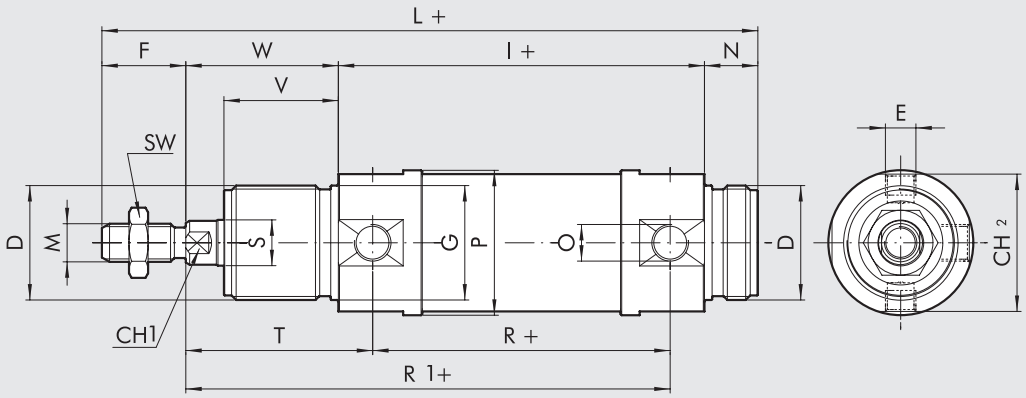


METAL WORK PNEUMATIC

DIMENSIONS OF STANDARD VERSIONS

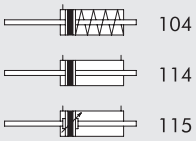
+ = ADD STROKE

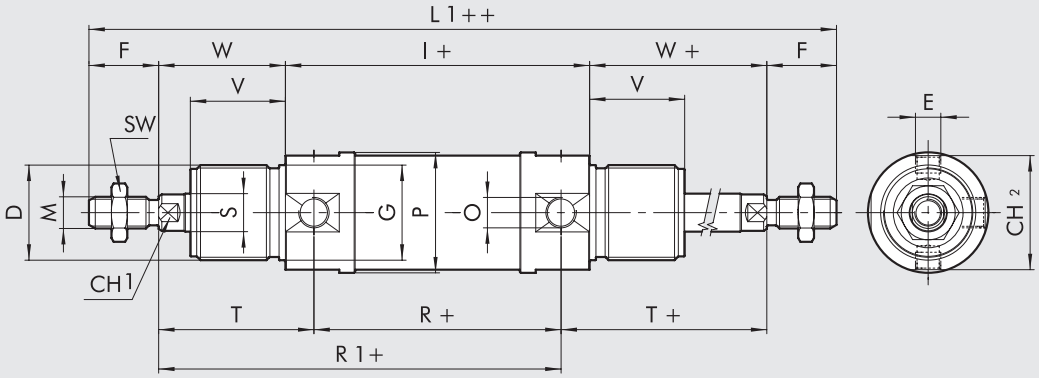




DIMENSIONS OF THROUGH-ROD VERSIONS

+ = ADD STROKE
++ = ADD TWICE THE STROKE





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

			I			L			R1			L1		
Lower limit	Stroke	Upper limit	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

KEY TO CODES

CYL	1 1 2 TYPE	0	3 2 BORE	0 0 2 5 STROKE	C MATERIAL	P GASKETS
	■ **104** SA through-rod **109** DAC **110** DA ■ **111** SA **112** DAM **113** DAMC **114** DAM through-rod **115** DAMC through-rod	**0** Standard ▲ **G** No stick-slip **S** Non-magnetic	32 40 50	For the maximum suppliable strokes, look at the technical data	**A** C45 chrome piston rod, aluminium piston **C** C45 chrome rod, technopolymer piston rod **Z** Stainless steel piston rod and nut aluminium piston **X** Stainless steel piston rod and nut technopolymer piston	**P** polyurethane **N** NBR ● **V** FKM/FPM ● **B** low temperature

DA: Double-acting (non-cushioned, not magnetic)
DAM: Magnetic double-acting (non-cushioned)
DAMC: Magnetic double-acting (cushioned)
DAC: Cushioned double-acting (non-magnetic)
SA: Single-acting (magnetic)

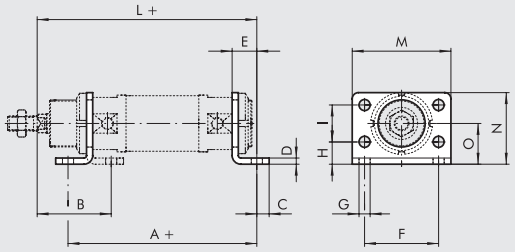
● Only available for non-magnetic versions (S) and with aluminium piston (A or Z)
▲ **For speeds lower than 0.2m/s, to prevent surging.**
Use no-lubricated air only
■ Only available for versions with aluminium piston (A or Z)

NOTES

ACCESSORIES FOR ROUND CYLINDER: FIXINGS

FOOT MODEL AC

+ = ADD STROKE

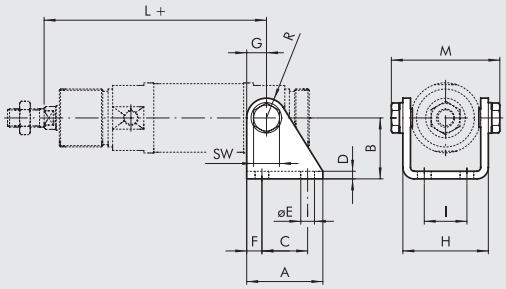


Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	O	Weight [g]
W0950320002	32	124	50	7	4	14	52	7	14	28	150	66	49	28	104
W0950400002	40	153	60	10	5	20	60	9	18	30	178	80	58	33	190
W0950500002	50	160	64	10	6	20	70	9	20	40	190	90	70	40	296

Note: Individually packed

COUNTER-HINGE MODEL BC

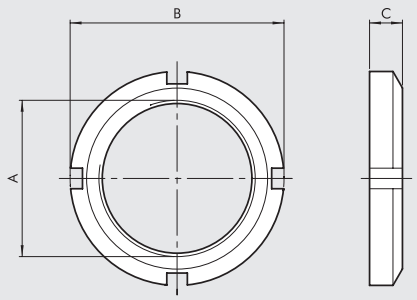
+ = ADD STROKE



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	57.5	28	146	74	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

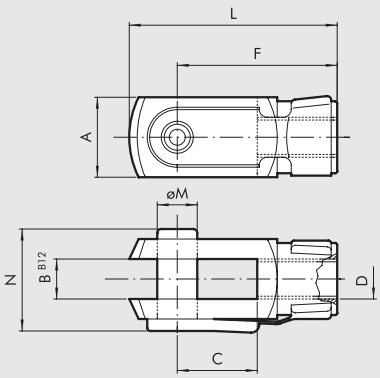
HEAD LOCK RING MODEL G



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

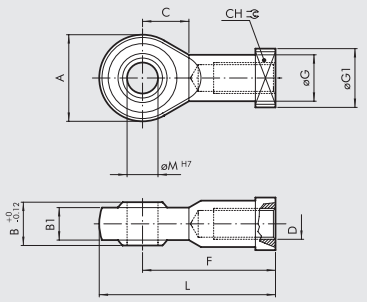
FORK MODEL GK-M



Code	Ø	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

Note: Individually packed

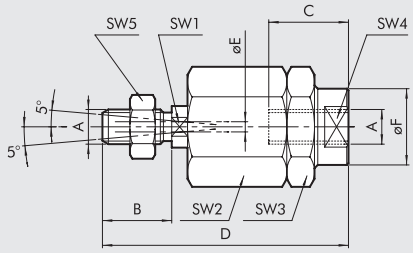
SPHERICAL JOINT MODEL GA-M



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

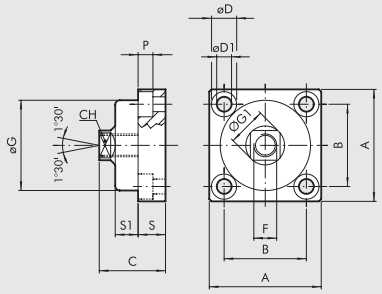
ARTICULATED JOINT MODEL GA-K



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

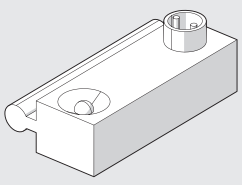


Code	Ø	A	B	C	CH	øD	øD1	F	øG	ØG1	P	S	S1	Weight [g]
W0950326021	32	49	36	30	13	11	6.5	M10x1.25	39.5	17	6.5	12	10	172
W0950406021	40	59	42	36	15	14	8.5	M12x.125	44	19	8.5	15	13.5	286
W0950506021	50	79	58	44	22	17	10.5	M16x1.5	59	26	10.5	20	15	628

Note: Individually packed

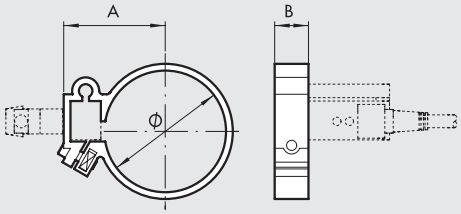
ACCESSORIES FOR ROUND CYLINDER: MAGNETIC SENSORS

SENSOR SERIES DSM

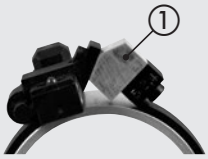


For codes and technical data, see **chapter A6**.

SENSOR BRACKET



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



FOR MOUNTING ON THE CYLINDER Ø 50 INSERT
THE ALUMINIUM SPACER ① YOU FIND IN THE PACKAGE

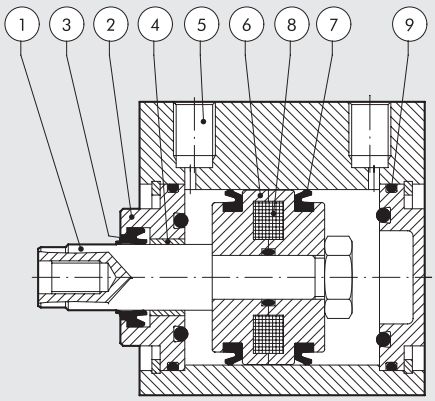
SHORT-STROKE CYLINDER SERIES SSCY

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.

TECHNICAL DATA			Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Max operating pressure		bar	10									
		MPa	1									
		psi	145									
Temperature range	POLYURETHANE	°C	–10 to +80									
	NBR	°C	–10 to +80									
	FKM/FPM	°C	–10 to +150 (non-magnetic cylinders)									
	Low Temperature	°C	–35 to +80									
Design			With profile									
Fluid			Unlubricated air. Lubrication, if used, must be continuous									
Standard strokes ✚	single-acting	mm		5 to 25			5 to 50				-	
	double acting	mm		5 to 50			5 to 70		5 to 110		5 to 150	
	anti-rotation	mm				5 to 120					5 to 150	
	perforated through-rod	mm	-			5 to 100			5 to 130		5 to 165	
Versions			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.									
Sensor magnet			Available magnetic and non-magnetic versions.									
Inrush pressure	single piston rod	bar	0.6	0.6	0.6	0.6	0.6	0.4	0.4	0.4	0.4	0.4
	through-rod	bar	1	0.8	0.8	0.8	0.6	0.4	0.4	0.4	0.4	0.4
Forces generated at 6 bar thrust/retraction			See cylinder "**General technical data**" at the beginning of the chapter									
Weights			See cylinder "**General technical data**" at the beginning of the chapter									
Notes			**For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.**									
			✚ Maximum recommended strokes. Higher values can create operating problems									

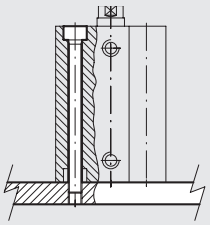
COMPONENTS

① PISTON ROD: C45 steel or stainless steel, thick chromed
② HEAD:
Ø 12 to 25 nichel-plated brass
Ø 32 to 100 anodized aluminium
③ PISTON ROD GASKET: polyurethane, NBR or FKM/FPM
④ GUIDE BUSHING: steel strip with bronze and PTFE insert
⑤ BARREL: drawn anodized 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



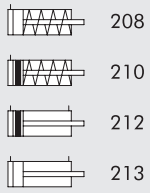
FIXING METHOD

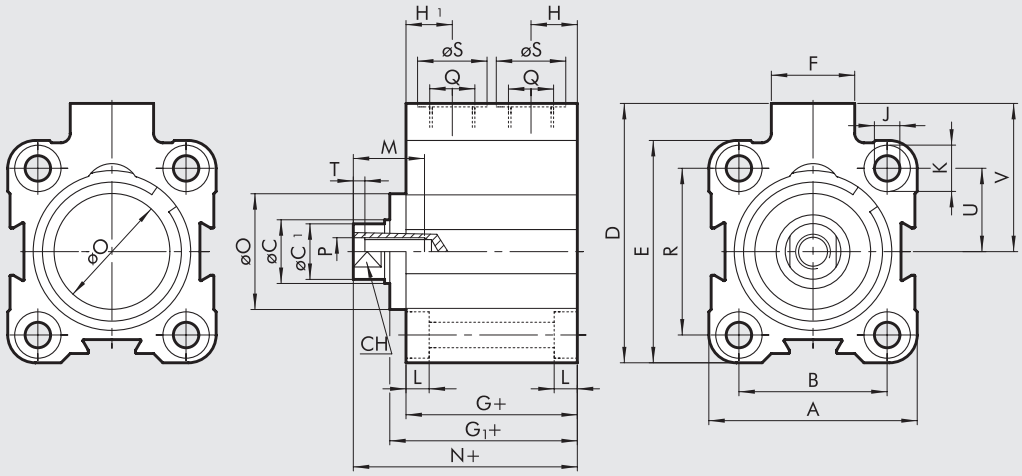
Fix directly from above using long through-screws or tie rods.
Non-magnetic stainless steel must be used (e.g. AISI 304).



DIMENSIONS STANDARD VERSIONS

+ = ADD THE STROKE





DIMENSIONS OF DOUBLE ACTING

Ø	A	B	øC	øC1	D	E	F	G	G1	H	H1	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	37.6	-	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	54.3	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

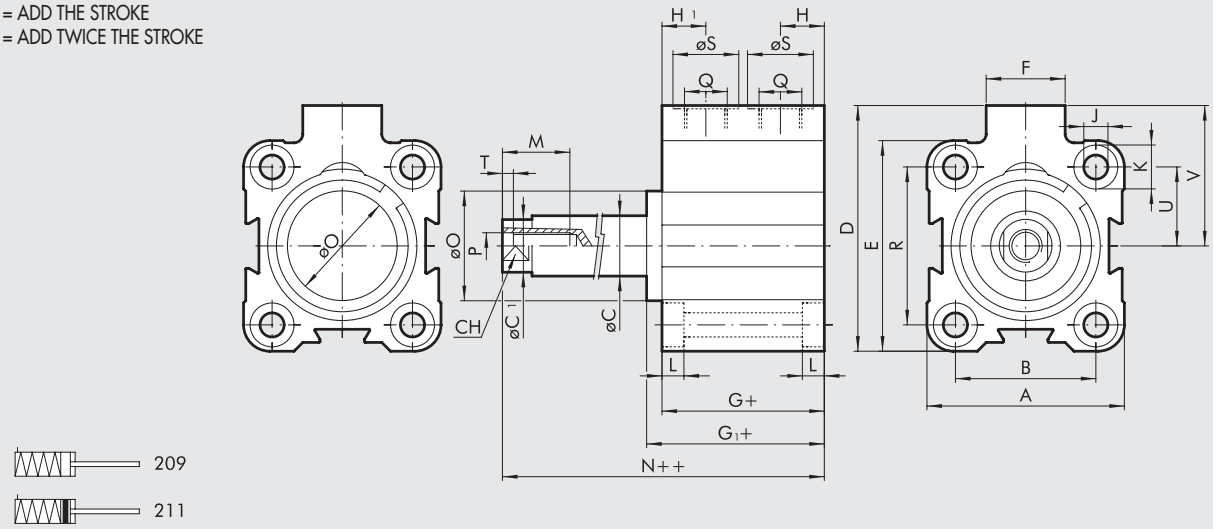
DIMENSIONS OF SINGLE-ACTING, RETRACTED PISTON ROD

Ø	stroke	A	B	øC	øC1	D	E	F	G	G1	H	H1	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	37.6	-	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	54.3	35	M8	G1/8	50	15	13	3.5	25	40
	> 25 to 50								47.5	54.2							62.3									
63	5 to 25	80	62	16	15	88	80	23	42	48.7	12	12	9	15	9	18	62.3	35	M8	G1/8	62	15	13	3.5	31	48
	> 25 to 50								50	56.7							65.7									

METAL WORK PNEUMATIC

DIMENSIONS OF SINGLE-ACTING EXTENDED PISTON ROD

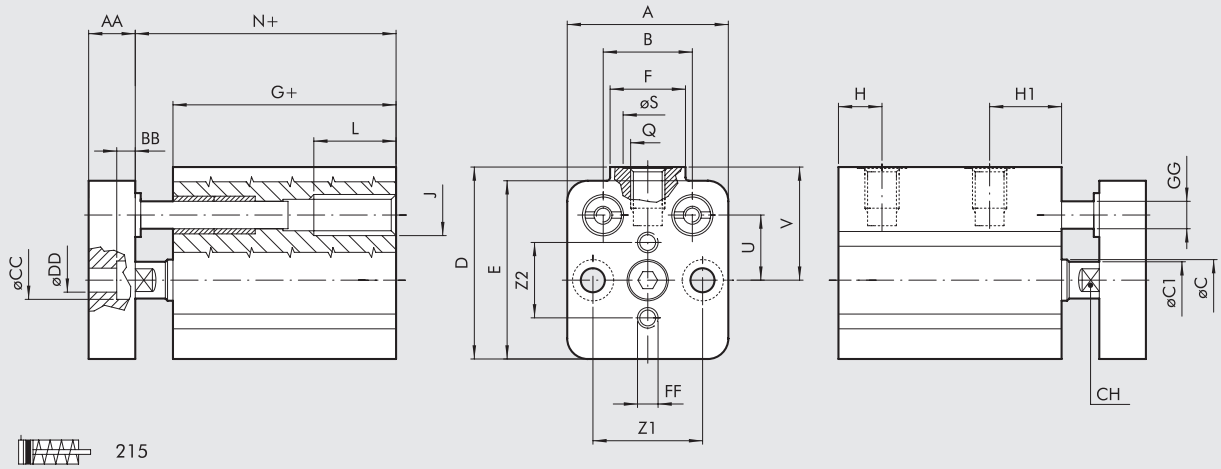
\+ = ADD THE STROKE
++ = ADD TWICE THE STROKE

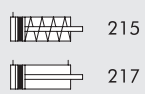


Ø	stroke	A	B	øC	øC1	D	E	F	G	G1	H	H1	J	K	L	M	N	øO	P	Q	R	øS	CH	T	U	V
12	5 to 25	23.5	13	6	5.5	28	26	11	32.5	-	6.5	10.5	3.7	6	3.7	7	38	-	M3	M5	-	8	5	2	9.5	16.5
16	5 to 25	28	20	8	7.5	33	28	11	33	-	6.7	10.5	3.7	6	3.7	10	37.5	-	M5	M5	20	8	7	2	10	19
20	5 to 25	32	22	10	9	37	32	11	32	-	6.5	10.5	4.6	7.5	4.6	10	37.6	-	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	54.3	35	M8	G1/8	50	15	13	3.5	25	40
	> 25 to 50								47.5	54.2							62.3									
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

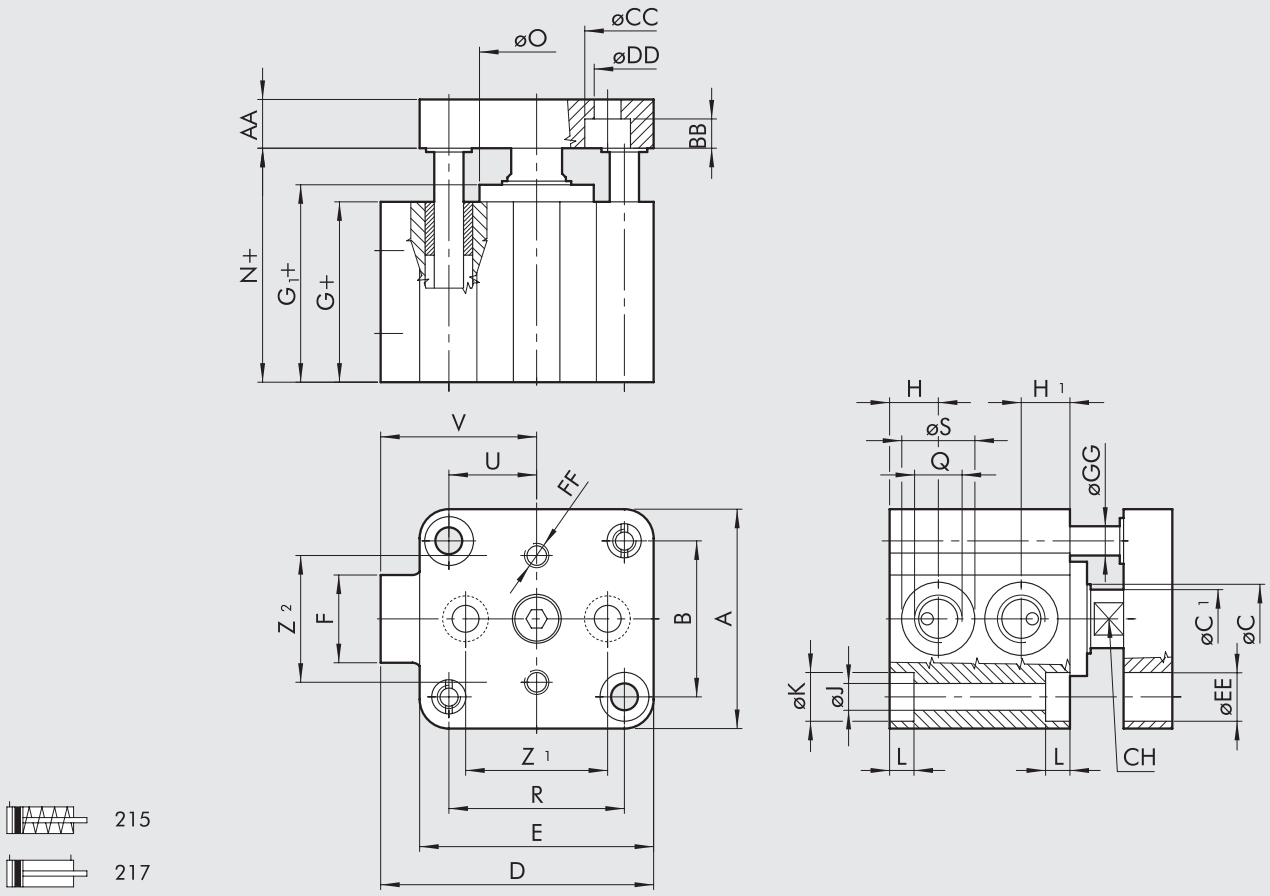




Ø	A	B	øC	øC1	D	E	F	G	H	H1	J	L	N	Z1	Z2	Q	øS	CH	U	V	AA	BB	øCC	øDD	FF	øGG
12	23.5	13	6	5.5	28	26	11	32.5	6.5	10.5	M6	12	38	16	11	M5	8	5	9.5	16.5	8	3.5	6	3.5	M3	4

DIMENSIONS OF Ø 16 TO Ø 100 ANTI-ROTATION

+ = ADD THE STROKE



DOUBLE ACTING VERSION (217)

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	37.6	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	54.3	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

SINGLE-ACTING THROUGH-ROD VERSION (215)

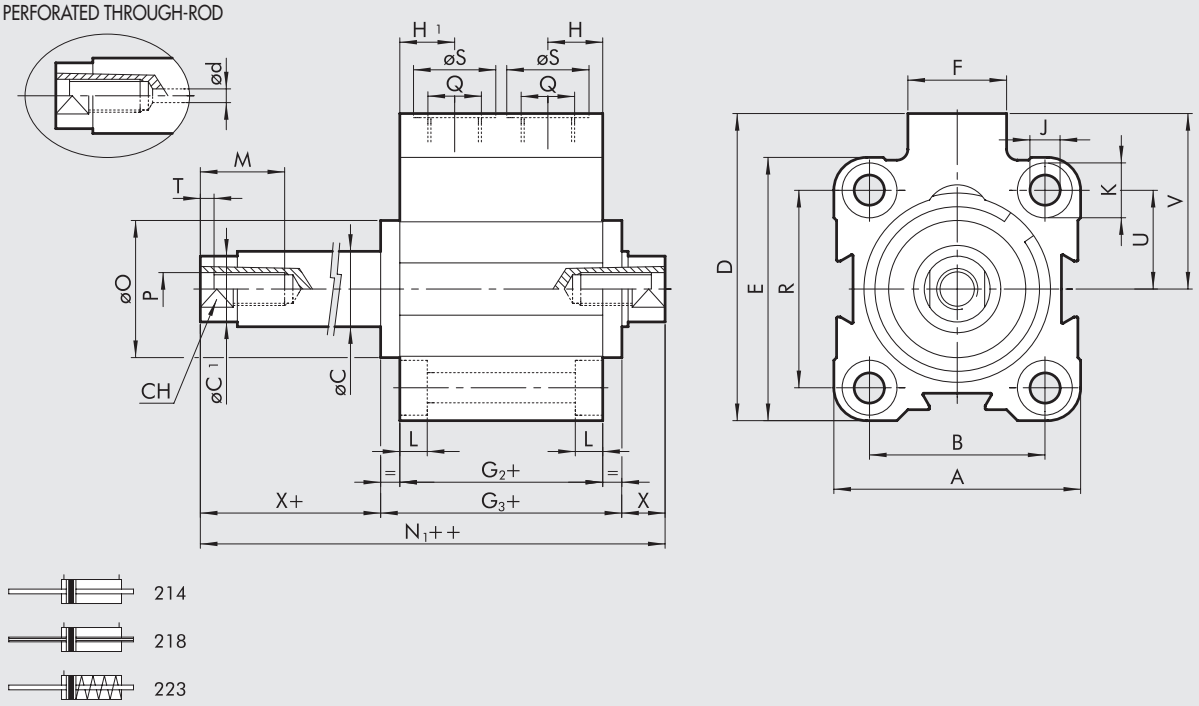
Ø	Hub	A	B	øC	øC1	D	E	F	G	G1	H	H1	J	K	L	M	N	øO	P	Q	R	øS	CH	T	U	V
16	5 - 25	28	20	8	7.5	33	28	11	33	-	6.7	10.5	3.7	6	3.7	10	37.5	-	M5	M5	20	8	7	2	10	19
20	5 - 25	32	22	10	9	37	32	11	32	-	6.5	10.5	4.6	7.5	4.6	10	37.6	-	M5	M5	22	8	8	2	11	21
25	5 - 25	37	26	10	9	47.5	39	18	33	36.5	8.5	8.5	4.6	7.5	4.6	10	42.5	20	M5	G1/8	28	15	8	2	14	28
32	5 - 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 - 50								45	48.8							56.3									
40	5 - 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 - 50								47.5	52.7							61.2									
50	5 - 25	66	50	16	15	73	66	18	39.5	46.2	11	11	6.6	11	6.8	18	54.3	35	M8	G1/8	50	15	13	3.5	25	40
	> 25 - 50								47.5	54.2							62.3									
63	5 - 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 - 50								50	56.7							65.7									

METAL WORK PNEUMATIC

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	øC1	D	ød**	E	F	G2	G3	H	H1	J	K	L	M	N1	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	47.2	-	M5	M5	22	8	8	2	11	21	5.6
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	69.1	35	M8	G1/8	50	15	13	3.5	25	40	8.1
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: $(N_1++) = (G_2+) + (X) + (X+)$
** column for perforated through-rod only

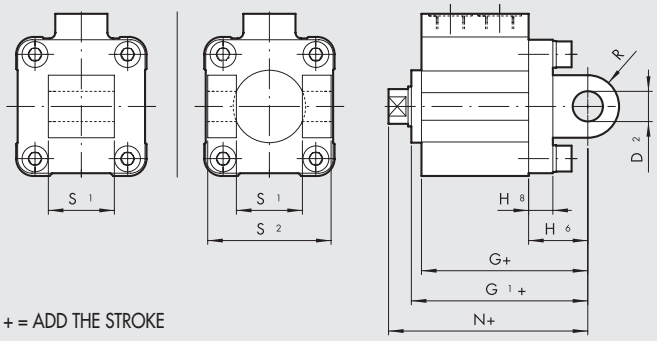
DIMENSION OF SINGLE-ACTING THROUGH-ROD

Ø	stroke	A	B	øC	øC1	D	E	F	G2	G3	H	H1	J	K	L	M	N1	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	47.2	-	M5	M5	22	8	8	2	11	21	5.6
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	57.7	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	69.1	35	M8	G1/8	50	15	13	3.5	25	40	8.1
	> 25 to 50								47.5	60.9							77.1										8.1
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: $(N_1++) = (G_2+) + (X) + (X+)$

DIMENSIONS: SAME AS 221 VERSION (MALE HINGE MOD. BA) - SAME AS 222 VERSION (FEMALE HINGE MOD. B)

VERSION 221 VERSION 222



+ = 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

KEY TO CODES

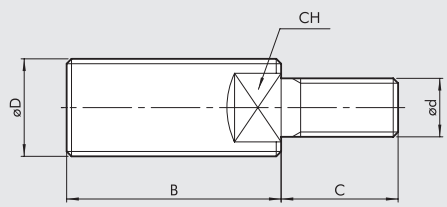
CYL	2 1 2 TYPE	0	4 0 BORE	0 0 1 0 STROKE	C MATERIAL	P GASKETS
	■ **208** Single-acting retracted rod, non-magnetic	**0** Standard	12	For the maximum suppliable strokes, look at the technical data	**C** C45 chrome piston rod, technopolymer piston Ø 12 to 63 mm	**P** Polyurethane gaskets
	■ **209** Single-acting extended rod, non-magnetic	**S** Non-magnetic	16		**A** C45 chrome piston rod, aluminium piston (standard Ø 80 to 100 mm)	**N** NBR gaskets
	■ **210** Single-acting, retracted rod	▲ **G** No stick-slip	20		**X** Stainless steel piston rod and nut technopolymer piston Ø 12 to 63 mm	● **V** FKM/FPM gaskets
	■ **211** Single acting, extended rod		25		**Z** Stainless steel piston rod and nut aluminium piston (standard Ø 80 to 100 mm)	● **B** Low temperature
	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					
	✚ **222** Oscillating female hinge					
	■ **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
✚ Available only Ø 32-63

● 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**

ACCESSORIES

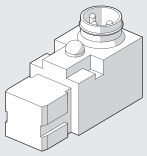
MALE NIPPLE FOR PISTON ROD



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

MAGNETIC SENSORS

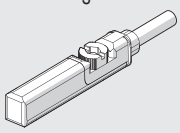
SENSOR SERIES DCB



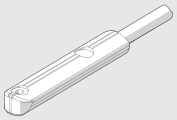
For codes and technical data, see **chapter A6**.

RETRACTABLE SENSOR

SENSOR, SQUARE TYPE
Latest generation,
secure fixing

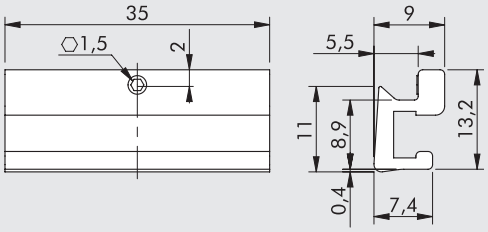


SENSOR, OVAL TYPE
Traditional



For codes and technical data, see **chapter A6**.

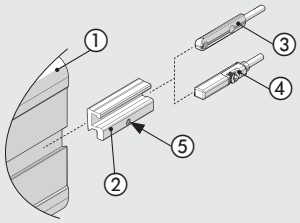
ADAPTER FOR RETRACTABLE SENSOR SQUARE AND OVAL TYPES



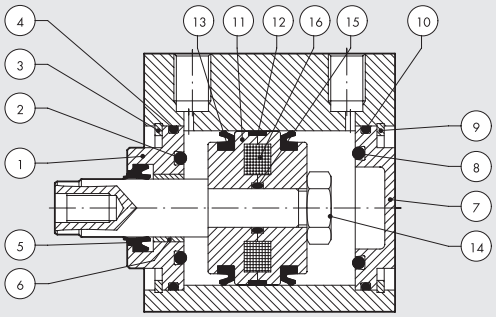
Code	Ø	Description
W0950001101	Ø 12 to 100	Sensor Adapter for SSC cylinders

ASSEMBLY DIAGRAM

① SSCY cylinder
② Sensor adapter for SSCY cylinders
③ Retractable sensor "oval type"
④ Retractable sensor "square type"
⑤ Grub screw for fixing adapter on profile



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 . . . 0007	Ø 12 to 100	Complete set of (high temperature) FKM/FPM gaskets	② ④ ⑤ ⑧ ⑩ ⑬ ⑮
009 . . . 2008	Ø 12 to 63	Polyurethane piston rod gasket kit	⑤
009 . . . 2008	Ø 80 to 100	Polyurethane piston rod gasket kit + seeger	⑤
009 . . . 2009	Ø 12 to 63	NBR piston rod gasket kit	⑤
009 . . . 2009	Ø 80 to 100	NBR piston rod gasket kit + seeger	⑤
009 . . . 2010	Ø 12 to 63	FKM/FPM piston rod gasket kit	⑤
009 . . . 2010	Ø 80 to 100	FKM/FPM piston rod gasket kit + seeger	⑤
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 frequences 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)

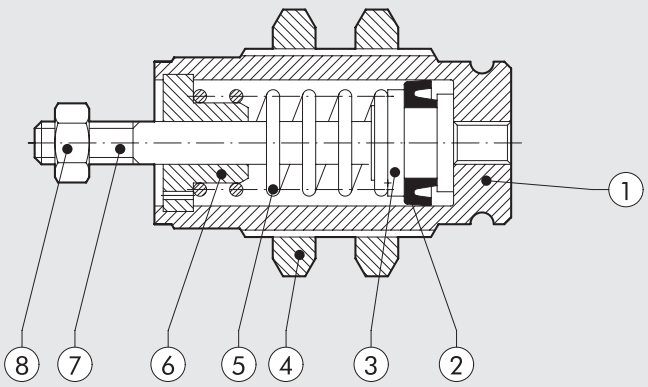
Ø	OR
6	7x1
10	9.5x1.5
16	16x1.5

Weight g

Ø	STROKE		
	5	10	15
6	14	16	19
10	30	35	40
16	76	84	90

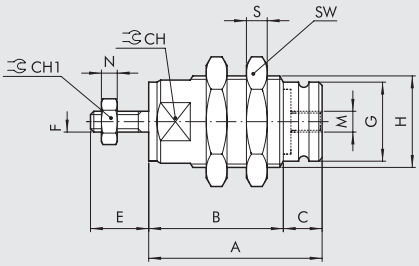
COMPONENTS

① Nickel-plated brass body
② NBR rubber piston rod gasket (for Ø 6), polyurethane (for Ø 10 - Ø 16)
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



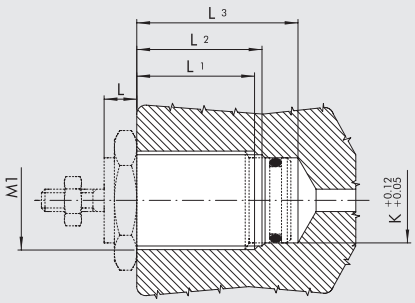
METAL WORK PNEUMATIC

CARTRIDGE CYLINDER DIMENSIONS, Ø 6, 10, 16



Ø	A Stroke 5	A Stroke 10	A Stroke 15	B Stroke 5	B Stroke 10	B Stroke 15	C	CH	CH1	E	F	G	H	M	N	S	SW
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 Stroke 5	L Stroke 10	L Stroke 15	L1 Stroke 5	L1 Stroke 10	L1 Stroke 15	L2 Stroke 5	L2 Stroke 10	L2 Stroke 15	L3 Stroke 5	L3 Stroke 10	L3 Stroke 15	K	Hole	M1
6	5	5	5	10	17	24	11	18	25	16	24	31	8.5	9	M10x1
10	6	6	6	10	17	24	12	18.5	25.5	20	26	34	12	13.5	M15x1.5
16	7	7	7	14	19	24	15	20	25	26	31	36	19	20.5	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 CYLINDER SERIES MULTIFIX

This functional and heavy-duty cylinder is a further development of the well-known and proven CMPG series. It is designed to allow the fixing on multiple sides using different methods, compressed air supply on both sides and double sensor slots, on both the upper and lower side.
The bushing guides of the piston rods are fitted directly into the anodized aluminium alloy cylinder liner.
There are two possible guiding solutions: sintered bronze bushings coupled with piston rods made of ground chromed carbon steel or ball recirculating bushings coupled with hardened, chromed and ground steel.
A silenced version with elastic end-stroke elements and a version with pneumatic cushioning with adjustable pins to control the braking are also available.

TECHNICAL DATA			Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80
Operating pressure		bar	1 to 10							
		MPa	0.1 to 1							
		psi	14.5 to 145							
Temperature range		°C	-20 to +80							
		°F	14 to 176							
Fluid			Unlubricated air. Lubrication, if used, mast be continuos.							
Version			With bronze bushings, with ball recirculating bearings							
			Silenced or with pneumatic cushioning							
Magnet for sensors			Yes							
Maximum impact energy	silenced	J	0.06	0.14	0.2	0.4	0.6	0.9	1.3	2
	with pneumatic cushioning	J	See diagram page **A1**.154							
Inrush pressure	with bronze bearings	bar	0.8	0.8	0.8	0.5	0.5	0.4	0.4	0.4
	with ball recirculating bearings	bar	0.6	0.6	0.6	0.4	0.4	0.3	0.3	0.3
Forces generated in thrust/retraction			See cylinder "**General technical data**" at the beginning of the chapter							

WEIGHTS [kg] - STROKES

SILENCED VERSION

Bore	Strokes [mm]															
	10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
16	0.3	0.35	–	0.4	0.45	0.5	0.7	0.85	1	1.15	1.3	1.45	1.6	–	–	–
20	–	0.55	–	0.65	0.75	0.85	1.15	1.35	1.55	1.75	1.95	2.15	2.5	2.9	3.3	3.7
25	–	0.9	–	1.05	1.2	1.35	1.9	2.25	2.55	2.85	3.15	3.35	4	4.35	4.7	5
32	–	–	1.5	–	–	1.85	2.25	2.6	3	3.35	3.7	4.05	5.2	5.9	6.6	7.3
40	–	–	1.75	–	–	2.15	2.55	2.95	3.35	3.75	4.15	4.55	5.8	6.6	7.4	8.2
50	–	–	2.56	–	–	3.18	4.26	4.89	5.51	6.13	6.75	7.37	8.90	10.14	11.38	12.73
63	–	–	3.17	–	–	3.90	5.10	5.84	6.57	7.31	8.04	8.78	10.63	12.11	13.58	15.05
80	–	–	5	–	–	5.89	7.60	8.46	9.32	10.18	11.14	11.91	13.94	15.66	18.35	19.11

Other strokes on request but with the same cylinder dimensions as the standard stroke immediately above.

VERSION WITH PNEUMATIC CUSHIONING

Bore	Strokes [mm]											
	25	50	75	100	125	150	175	200	250	300	350	400
16	0.55	0.65	0.8	0.95	1.2	1.35	1.5	1.65	1.8	–	–	–
20	0.8	1	1.25	1.5	1.75	2	2.25	2.5	2.75	3	3.25	3.5
25	1.3	1.6	2	2.4	2.7	3	3.3	3.6	4.2	4.8	5.4	6
32	1.8	2.1	2.5	2.9	3.3	3.7	4.1	4.5	5.3	6.1	6.9	7.7
40	2.1	2.5	2.9	3.4	3.8	4.2	4.6	5	6.1	7.1	8.2	9.3
50	3.35	3.70	4.79	5.41	6.03	6.65	7.27	7.90	9.42	10.66	11.90	13.53
63	3.87	4.07	5.80	6.54	7.28	8.01	8.75	9.48	11.29	12.71	14.18	15.65
80	5.82	6.85	8.59	9.46	10.91	11.20	12.08	12.95	15.11	16.96	19.33	20.68

METAL WORK PNEUMATIC

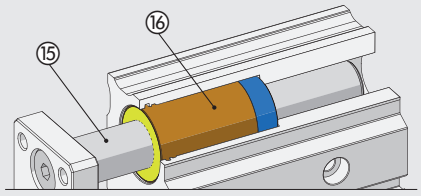
COMPONENTS SILENCED VERSION

① BODY: anodized extruded aluminium alloy
② PISTON ROD: grinded chromed steel
③ REAR BASE: anodized aluminium alloy
④ FRONT BASE: anodized aluminium alloy
⑤ PISTON: aluminium alloy
⑥ MAGNET: plastoferrite
⑦ PISTON GASKET: NBR or polyurethane
⑧ GASKET O-Ring: NBR
⑨ FLANGE: anodized aluminium alloy
⑩ ELASTIC BUFFER: polyurethane
⑪ THREADED PLUG: nickel-plated brass with O-Ring
N.B.: when using side compressed air supplies, unscrew the caps and tighten them onto the threads of the compressed air supplies on the upper side.

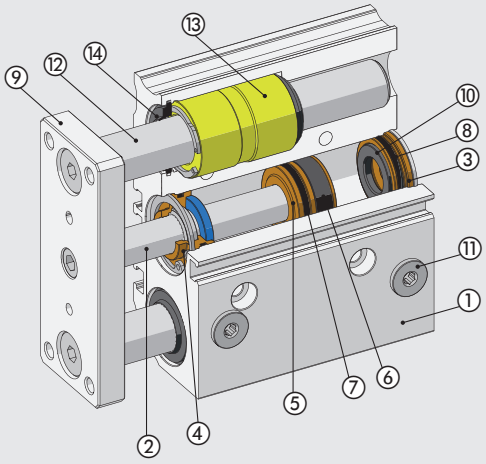
Version with bronze bushings
⑫ GUIDE ROD: grinded chromed steel
⑬ SLIDE BUSHING: sintered bronze
⑭ WIPER RING: NBR

Version with ball recirculating bearings
⑮ GUIDE ROD: tempered and chromed chrome steel
⑯ BALL RECIRCULATING BEARING

Version with ball recirculating bearings



Version with bronze bushings



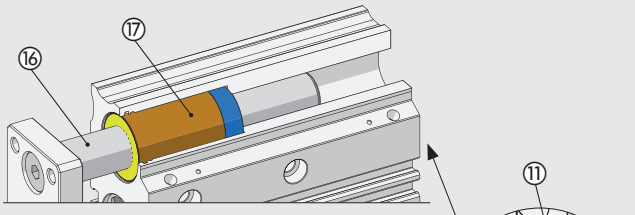
COMPONENTS VERSION WITH PNEUMATIC CUSHIONING

① BODY: anodized extruded aluminium alloy
② PISTON ROD: grinded chromed steel
③ REAR BASE: anodized aluminium alloy
④ FRONT BASE: anodized aluminium alloy
⑤ PISTON: aluminium alloy
⑥ MAGNET: plastoferrite
⑦ PISTON GASKET: NBR or polyurethane
⑧ GASKET O-Ring: NBR
⑨ FLANGE: anodized aluminium alloy
⑩ CUSHIONING GASKET: NBR
⑪ CUSHIONING NEEDLE: brass
⑫ THREADED PLUG: nickel-plated brass with O-Ring
N.B.: when using side compressed air supplies, unscrew the caps and tighten them onto the threads of the compressed air supplies on the upper side.

Version with bronze bushings
⑬ GUIDE ROD: grinded chromed steel
⑭ SLIDE BUSHING: sintered bronze
⑮ WIPER RING: NBR

Version with ball recirculating bearings
⑯ GUIDE ROD: tempered and chromed chrome steel
⑰ BALL RECIRCULATING BEARING

Version with ball recirculating bearings



Version with bronze bushings

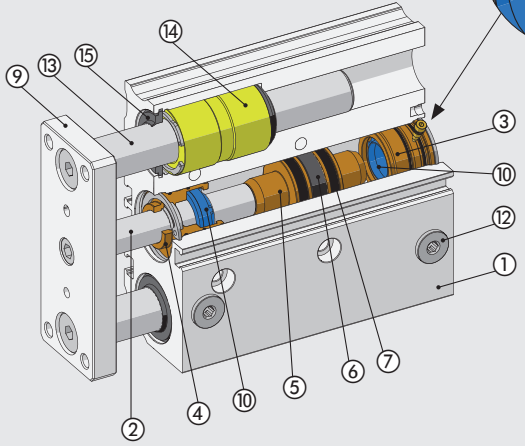
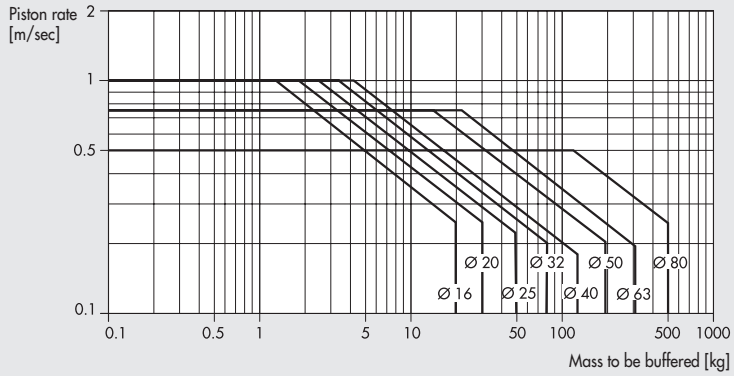
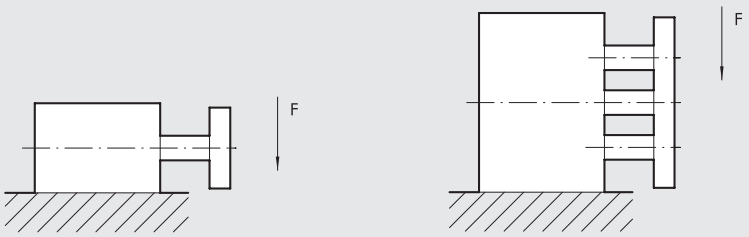


DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

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 SIDE LOAD

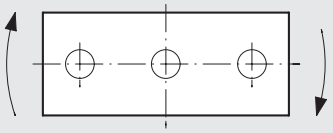


Ø	Guide unit	Strokes [mm]															
[mm]		10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
16	Bushes	40	35	32	29	25	24	25	20	19	18	16	13	10	–	–	–
	Balls	35	38	33	30	29	28	35	24	21	19	16	13	10	–	–	–
20	Bushes	–	40	35	33	32	30	63	52	49	40	36	32	26	22	14	10
	Balls	–	40	34	32	31	28	55	50	45	38	34	30	25	21	12	8
25	Bushes	–	70	60	50	40	36	80	70	65	55	50	45	35	25	18	10
	Balls	–	70	60	50	40	36	65	55	62	52	45	42	30	23	15	6
32	Bushes	–	–	140	–	–	120	150	120	110	90	80	70	50	40	20	10
	Balls	–	–	120	–	–	100	180	140	125	120	110	90	80	60	30	15
40	Bushes	–	–	140	–	–	120	150	120	110	90	80	70	50	40	20	10
	Balls	–	–	120	–	–	100	180	140	125	120	110	90	80	60	30	15
50	Bushes	–	–	180	–	–	150	200	170	150	140	130	100	70	55	25	15
	Balls	–	–	125	–	–	110	220	190	185	180	160	150	130	110	60	40
63	Bushes	–	–	180	–	–	150	200	170	150	140	130	100	70	55	25	15
	Balls	–	–	125	–	–	110	220	190	185	180	160	150	130	110	65	40
80	Bushes	–	–	250	–	–	190	250	220	200	150	130	125	95	70	30	20
	Balls	–	–	170	–	–	170	320	300	280	250	200	190	160	140	70	60

Centre of gravity distance from the front plane = 50 mm
N.B.: Forces are expressed in N

METAL WORK PNEUMATIC

MAXIMUM TORQUE ON PLATE



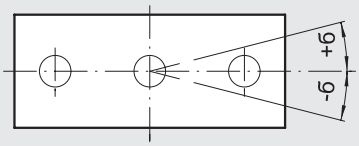
Ø	Guide unit	Strokes [mm]															
[mm]		10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
16	Bushes	0.71	0.60	0.54	0.50	0.44	0.39	0.71	0.60	0.52	0.45	0.41	0.37	0.31	–	–	–
	Balls	1.02	0.76	0.62	0.61	1.02	0.89	0.67	0.54	0.44	0.38	0.33	0.29	0.24	–	–	–
20	Bushes	–	1.08	1.03	0.96	0.85	0.77	1.94	1.68	1.48	1.32	1.19	1.09	0.93	0.80	0.71	0.64
	Balls	–	1.30	1.13	1.06	2.24	2.00	1.57	1.29	1.38	1.21	1.06	0.96	0.78	0.67	0.58	0.50
25	Bushes	–	1.81	1.67	1.60	1.42	1.29	3.05	2.65	2.33	2.08	1.88	1.72	1.46	1.28	1.12	1.01
	Balls	–	2.17	2.01	1.80	3.47	3.11	2.45	2.03	2.11	1.83	1.63	1.45	1.19	1.01	0.88	0.76
32	Bushes	–	–	6.54	–	–	5.28	5.86	5.12	4.55	4.10	3.72	3.41	2.93	2.55	2.27	2.04
	Balls	–	–	6.13	–	–	5.04	5.26	4.65	6.53	5.96	5.49	5.08	4.42	3.89	3.48	3.13
40	Bushes	–	–	7.21	–	–	5.83	6.46	5.64	5.02	4.51	4.10	3.76	3.22	2.82	2.50	2.26
	Balls	–	–	6.75	–	–	5.55	5.79	5.11	7.19	6.57	6.05	5.59	4.86	4.28	3.82	3.45
50	Bushes	–	–	13.39	–	–	11.12	12.36	10.92	9.79	8.86	8.10	7.46	6.43	5.65	5.05	4.56
	Balls	–	–	9.45	–	–	7.85	10.12	9.00	11.95	11.02	10.12	9.39	8.19	7.23	6.45	5.80
63	Bushes	–	–	15.14	–	–	12.46	13.91	12.26	11.02	9.98	9.13	8.40	7.25	6.38	5.69	5.14
	Balls	–	–	10.51	–	–	8.73	11.33	10.03	13.39	12.26	11.33	10.51	9.11	8.03	7.15	6.43
80	Bushes	–	–	22.55	–	–	19.15	23.58	21.11	19.15	17.51	16.06	14.93	12.97	11.53	10.30	9.38
	Balls	–	–	15.55	–	–	23.99	23.38	21.21	19.46	17.81	16.48	15.24	13.28	11.63	10.30	9.20

N.B.: Forces are expressed in Nm

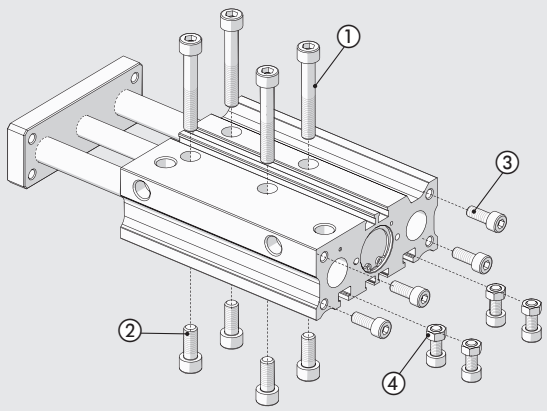
TORSIONAL BACKLASH

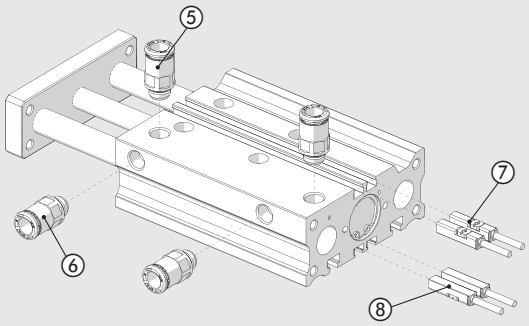
Torsional backlash δ with piston rods retracted and without applied loads.

	Ø [mm]							
Torsional backlash δ [°]	**16**	**20**	**25**	**32**	**40**	**50**	**63**	**80**
With bronze bushings	±0.07	±0.06	±0.06	±0.05	±0.05	±0.04	±0.04	±0.03
With ball recirculating bearings	±0.05	±0.04	±0.04	±0.03	±0.03	±0.03	±0.03	±0.03



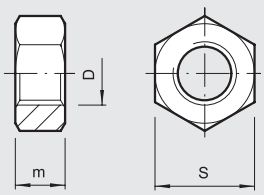
MOUNTING OPTIONS





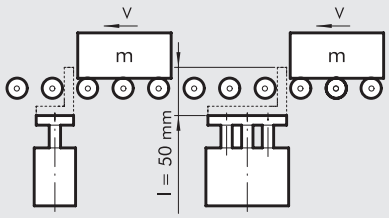
① Fixing with through screws
② Fixing with threaded holes
③ Fixing from the back side, using threaded holes
④ Fixing with DIN 834 hexagonal nuts inserted into the T-slots

Ø	Hexanogal nut DIN 834 (UNI 5588)		
	D	m	S
16	M4	3.2	7
20	M5	4	8
25	M5	4	8
32	M6	5	10
40	M6	5	10
50	M8	6.5	13
63	M10	8	17
80	M12	10	19

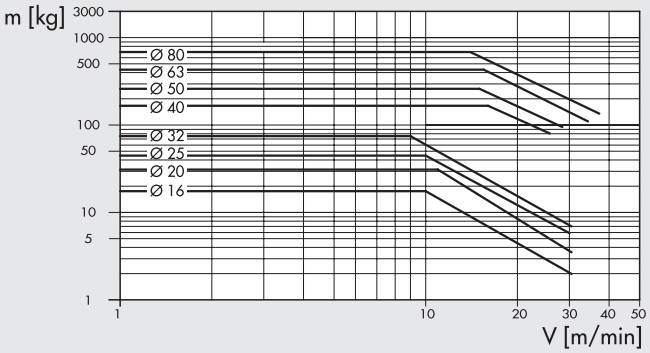


⑤ Compressed air supply on the upper side
⑥ Compressed air supply on the lateral side
⑦ Two sensor slots on the upper side
⑧ Two sensor slots on the lower side

STOPPER FUNCTIONS

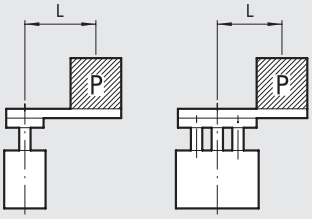


The graph refers to a cylinder with a maximum stroke of 50 mm and with bushing guides.

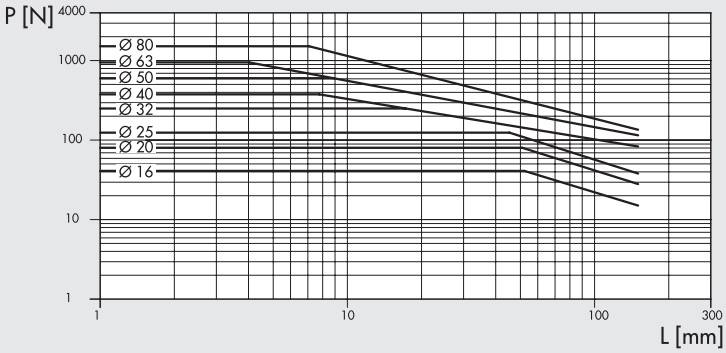


N.B.: The version with a ball bushing must not be used as a stopper.

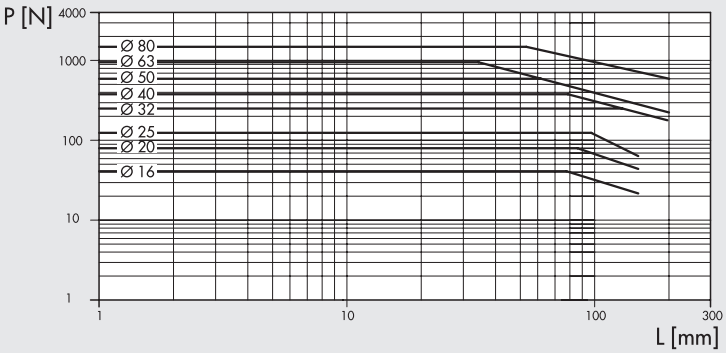
LIFTING FUNCTIONS



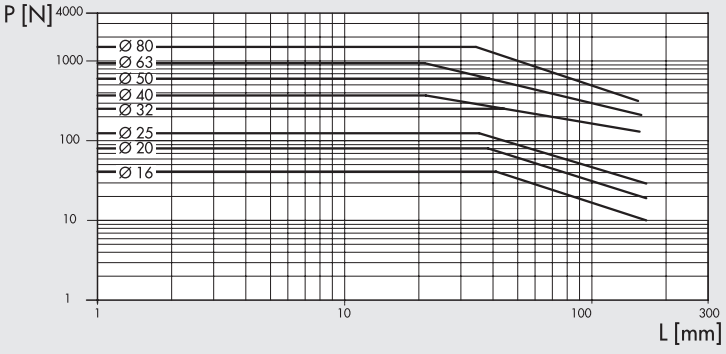
The graph refers to cylinders with a stroke of up to 50 mm with a ball recirculation guide.



The graph refers to cylinders with a stroke greater than 50 mm with a ball recirculation guide.

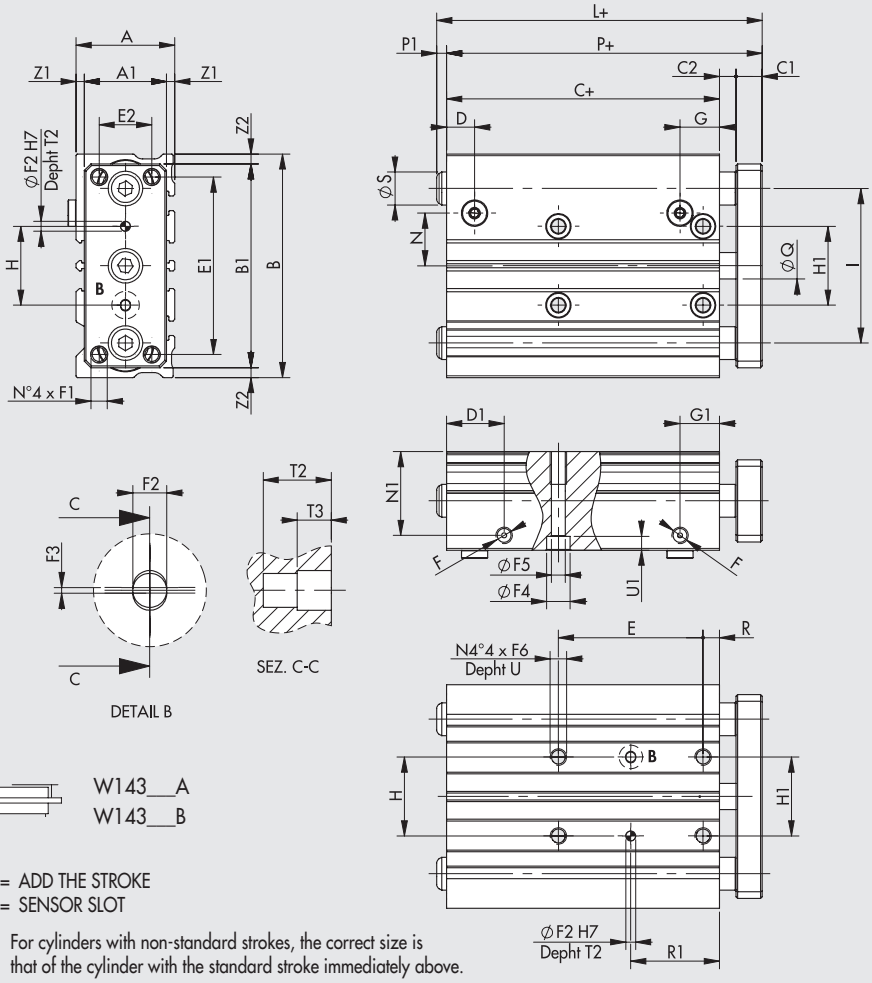


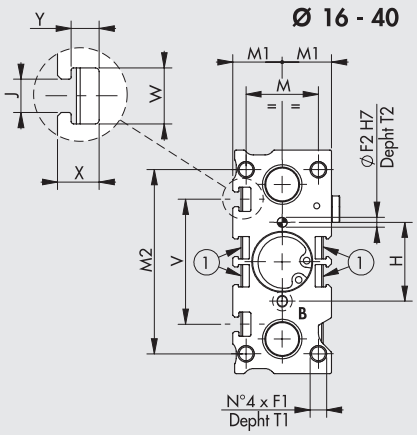
The graph refers to cylinders with a bushing guide.

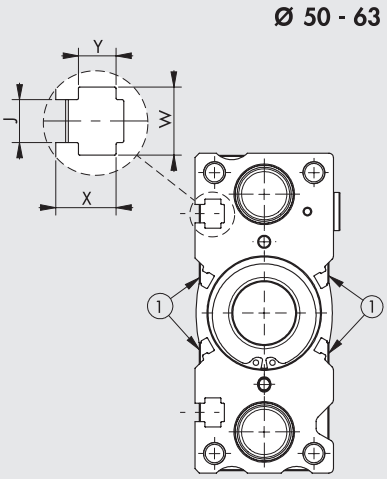


METAL WORK PNEUMATIC

DIMENSIONS SILENCED VERSION Ø 16 - 63







+ = ADD THE STROKE
1 = SENSOR SLOT

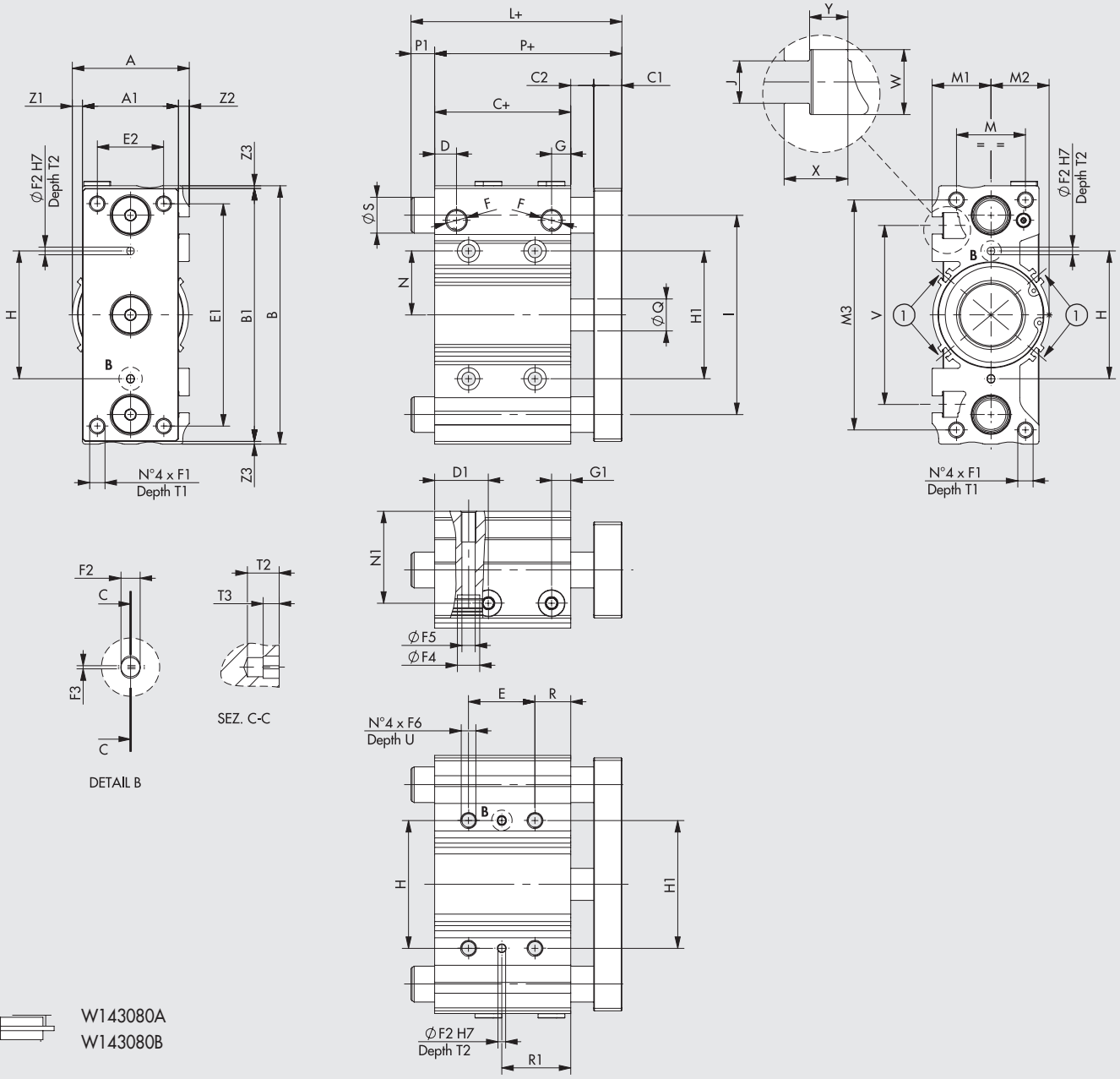
◆ For cylinders with non-standard strokes, the correct size is that of the cylinder with the standard stroke immediately above.

Ø	A	A1	B	B1	C◆	C1	C2	D	D1	E1	E2	F	F1	F2^{H7}	F3	F4	F5	F6	G	G1	H$^{\pm 0.025}$	H1	I	J	M	M1
16	30	25	68	62	33	8	5	8.5	17.5	54	16	M5	M5	3	0.5	7.2	4.2	M5	12	12	24	24	47	4.4	22	15
20	36	30	83	81	37	10	6	9.5	24.5	70	18	G1/8	M5	3	0.5	8.8	5.2	M6	10.5	10.5	28	28	54	5.4	24	18
25	42	38	101	91	37.5	10	6	10	24.5	78	26	G1/8	M6	4	0.5	8.8	5.2	M6	10	10	34	34	68	5.4	30	21
32	48	44	112	110	37.5	12	10	10	28	96	30	G1/8	M8	4	0.5	10.2	6.8	M8	10.5	10.5	42	42	78	6.5	34	24
40	54	44	120	118	44	12	10	12.5	31	104	30	G1/8	M8	4	0.5	10.2	6.8	M8	12.5	12.5	50	50	86	6.5	40	27
50	64	60	148	146	44	16	12	11	35	130	40	G1/4	M10	5	1	14	8.6	M10	14	12	66	66	110	8.5	46	32
63	78	70	162	158	49	16	12	13.5	35	130	50	G1/4	M10	5	1	14	8.6	M10	16.5	16.5	80	80	124	11	58	39

Ø	M2	N	N1	P◆	Q	R	S	T1	T2	T3	U	U1	V	W	X	Y	Z1	Z2
16	56	16	25.5	46	8	5	10	10	6	3	10	4.2	38	7.4	5.5	3.7	2.5	3
20	72	25	29.5	53	10	17	12	12	6	3	12	5.2	44	8.4	7	4.5	3	1
25	82	25.5	36	53.5	12	17	16	12	6	3	12	5.2	50	8.4	7	4.5	2	5
32	98	35.5	41	59.5	16	21	20	16	6	3	16	6.2	63	10.5	7.5	5.5	2	1
40	106	36	46.5	66	16	22	20	16	6	3	16	6.2	72	10.5	7.5	5.5	5	1
50	130	47	54	72	20	24	25	21	8	4	20	9	92	13.5	12	7.5	2	1
63	142	55	67	77	20	24	25	21	8	4	20	9	110	17.8	17	10	4	2

	E					R1					L◆			P1		
	Strokes					Strokes					Strokes			Strokes		
Ø	10-30	40-100	125-200	250-300	350-400	10-30	40-100	125-200	250-300	350-400	10-50	75-200	250-400	10-50	75-200	250-400
16	24	44	110	200	-	17	27	60	105	-	49	79	109	3	33	63
20	24	44	120	200	300	29	39	77	117	167	58	88	118	5	35	65
25	24	44	120	200	300	29	39	77	117	167	70.5	103	118	17	49.5	64.5
32	24	48	124	200	300	33	45	83	121	171	88	88	138	28.5	28.5	78.5
40	24	48	124	200	300	34	46	84	122	172	88	88	138	22	22	72
50	24	48	124	200	300	36	48	86	124	174	79	112	160	7	40	88
63	28	52	128	200	300	38	50	88	124	174	78.5	111.5	159.5	1.5	34.5	82.5

DIMENSIONS SILENCED VERSION Ø 80



W143080A
W143080B

\+ = ADD THE STROKE
1 = SENSOR SLOT

◆ For cylinders with non-standard strokes, the correct size is that of the cylinder with the standard stroke immediately above.

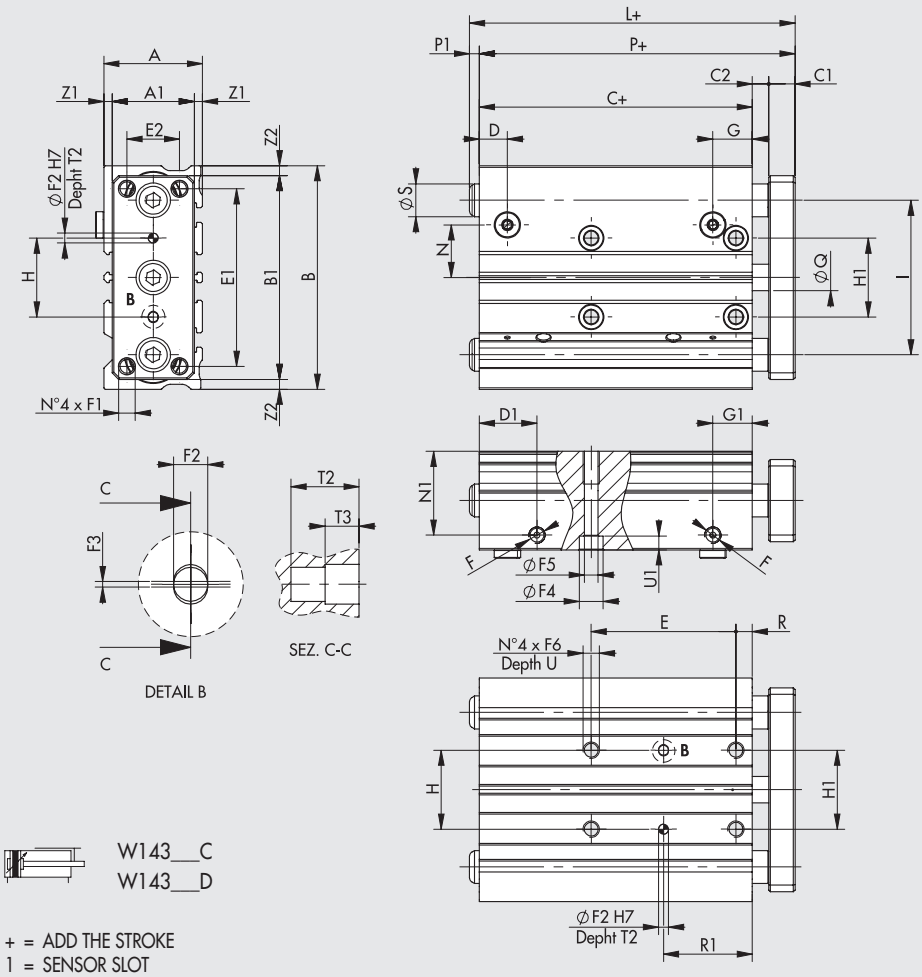
Ø	A	A1	B	B1	C◆	C1	C2	D	D1	E1	E2	F	F1	$F2^{H7}$	F3	F4	F5	F6	G	G1	$H^{\pm 0.025}$	H1	I	J	M	M1
80	91.5	75	202	198	56.5	22	18	17	42	174	52	G3/8	M12	6	1	17.5	10.5	M12	15	15	100	100	156	13.3	54	46

Ø	M2	M3	N	N1	P◆	Q	R	S	T1	T2	T3	U	V	W	X	Y	Z1	Z2	Z3
80	45.5	180	50	72	96.5	25	28	28	25	10	5	24	140	20.3	20	12	8	8.5	2

	E					R1					L◆			P1		
	Strokes					Strokes					Strokes			Strokes		
Ø	25	50-100	125-200	250-300	350-400	25	50-100	125-200	250-300	350-400	25-50	75-200	250-400	25-50	75-200	250-400
80	28	52	128	200	300	42	54	92	128	178	115	163	194	18.5	66.5	97.5

METAL WORK PNEUMATIC

DIMENSIONS WITH PNEUMATIC CUSHIONING VERSION Ø 16 - 63

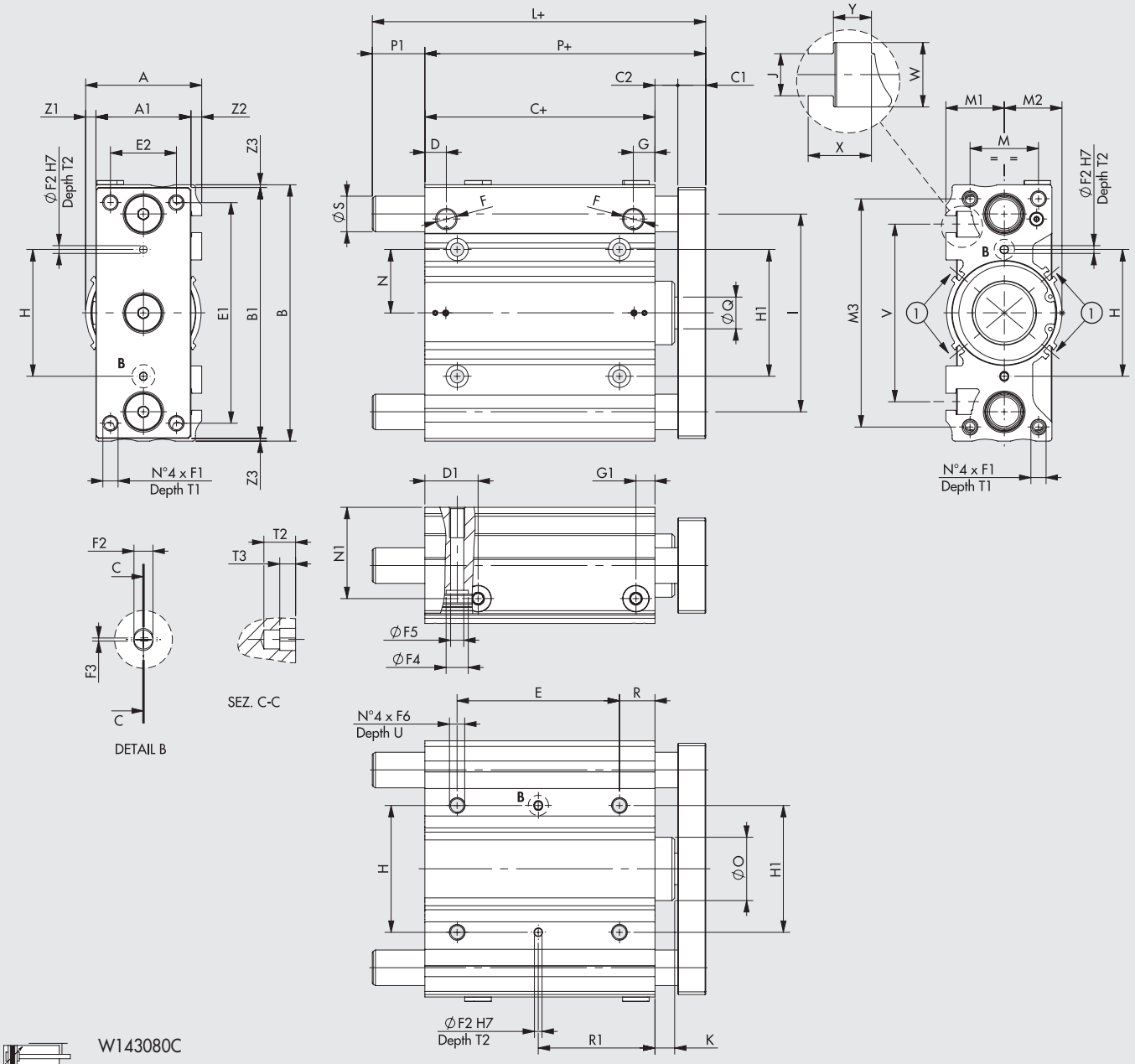


Ø	A	A1	B	B1	C	C1	C2	D	D1	E1	E2	F	F1	F2^{H7}	F3	F4	F5	F6	G	G1	H$^{\pm 0.025}$	H1	I	J	M	M1
16	30	25	68	62	58	8	5	8.5	17.5	54	16	M5	M5	3	0.5	7.2	4.2	M5	12	12	24	24	47	4.4	22	15
20	36	30	83	81	62	10	6	9	24.5	70	18	G1/8	M5	3	0.5	8.8	5.2	M6	11.5	11.5	28	28	54	5.4	24	18
25	42	38	101	91	62.5	10	6	9.5	24.5	78	26	G1/8	M6	4	0.5	8.8	5.2	M6	10	10	34	34	68	5.4	30	21
32	48	44	112	110	62.5	12	10	9	28	96	30	G1/8	M8	4	0.5	10.2	6.8	M8	9	9	42	42	78	6.5	34	24
40	54	44	120	118	69	12	10	10	31	104	30	G1/8	M8	4	0.5	10.2	6.8	M8	10	10	50	50	86	6.5	40	27
50	64	60	148	146	69	16	12	11	35	130	40	G1/4	M10	5	1	14	8.6	M10	14	12	66	66	110	8.5	46	32
63	78	70	162	158	74	16	12	13.5	35	130	50	G1/4	M10	5	1	14	8.6	M10	16.5	16.5	80	80	124	11	58	39

Ø	M2	N	N1	P	Q	R	S	T1	T2	T3	U	U1	V	W	X	Y	Z1	Z2
16	56	16	25.5	71	8	5	10	10	6	3	10	4.2	38	7.4	5.5	3.7	2.5	3
20	72	25	29.5	78	10	17	12	12	6	3	12	5.2	44	8.4	7	4.5	3	1
25	82	25.5	36	78.5	12	17	16	12	6	3	12	5.2	50	8.4	7	4.5	2	5
32	98	35.5	41	84.5	16	21	20	16	6	3	16	6.2	63	10.5	7.5	5.5	2	1
40	106	36	46.5	91	16	22	20	16	6	3	16	6.2	72	10.5	7.5	5.5	5	1
50	130	47	54	97	20	24	25	21	8	4	20	9	92	13.5	12	7.5	2	1
63	142	55	67	102	20	24	25	21	8	4	20	9	110	17.8	17	10	4	2

	E				R1				L			P1		
	Strokes				Strokes				Strokes			Strokes		
Ø	25-75	100-175	200-250	300-400	25-75	100-175	200-250	300-400	25-50	75-200	250-400	25-50	75-200	250-400
16	44	110	200	-	27	60	105	-	71	79	109	0	8	38
20	44	120	200	300	39	77	117	167	78	88	118	0	10	40
25	44	120	200	300	39	77	117	167	78.5	103	118	0	24.5	39.5
32	48	124	200	300	45	83	121	171	88	88	138	3.5	3.5	53.5
40	48	124	200	300	46	84	122	172	91	91	138	0	0	47
50	48	124	200	300	48	86	124	174	97	112	160	0	15	63
63	52	128	200	300	50	88	124	174	102	111.5	159.5	0	9.5	57.5

DIMENSIONS WITH PNEUMATIC CUSHIONING VERSION Ø 80



W143080C
W143080D

\+ = ADD THE STROKE
1 = SENSOR SLOT

Ø	A	A1	B	B1	C	C1	C2	D	D1	E1	E2	F	F1	F2^{H7}	F3	F4	F5	F6	G	G1	H$^{\pm 0.025}$	H1	I	J	K	M
80	91.5	75	202	198	81.5	22	18	17	42	174	52	G3/8	M12	6	1	17.5	10.5	M12	17	15	100	100	156	13.3	15.5	54

Ø	M1	M2	M3	N	N1	O	P	Q	R	S	T1	T2	T3	U	V	W	X	Y	Z1	Z2	Z3
80	46	45.5	180	50	72	50	121.5	25	28	28	25	10	5	24	140	20.3	20	12	8	8.5	2

	E				R1				L			P1		
	Strokes				Strokes				Strokes			Strokes		
Ø	25-75	100-175	200-300	350-400	25-75	100-200	250-300	350-400	25-50	75-200	250-400	25-50	75-200	250-400
80	52	128	200	300	54	92	128	150	121.5	163	194	0	41.5	72.5

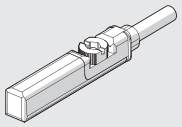
KEY TO CODES

W 1 4 3	0 2 0	D	0 7 5
TYPE	**DIAMETER**	**VERSION**	**STROKE**
Compact guided cylinder	**016** 16 **020** 20 **025** 25 **032** 32 **040** 40 **050** 50 **063** 63 **080** 80	**A** Bronze bushings, silenced **B** Ball recirculating bearings, silenced **C** Bronze bushings with pneumatic cushioning **D** Ball recirculating bearings with pneumatic cushioning	SILENCED VERSION ◆ **Ø 16:** 10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250 **Ø 20 to 25:** 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400 **Ø 32 to 80:** 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400 WITH PNEUMATIC CUSHIONING VERSION **Ø 16:** 25, 50, 75, 100, 125, 150, 175, 200, 250 **Ø 20 to 80:** 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400 ◆ Other strokes on request but with the same cylinder dimensions as the standard stroke immediately above.

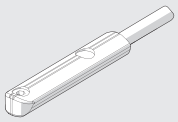
ACCESSORIES

RETRACTABLE SENSOR

SENSOR, SQUARE TYPE
Latest generation, secure fixing



SENSOR, OVAL TYPE
Traditional

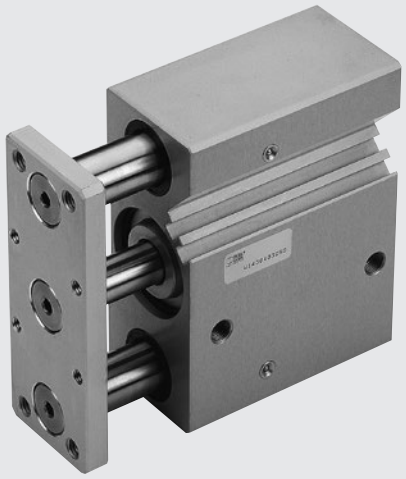


For codes and technical data, see **chapter A6**.

NOTES

COMPACT GUIDED CYLINDER SERIES CMPG

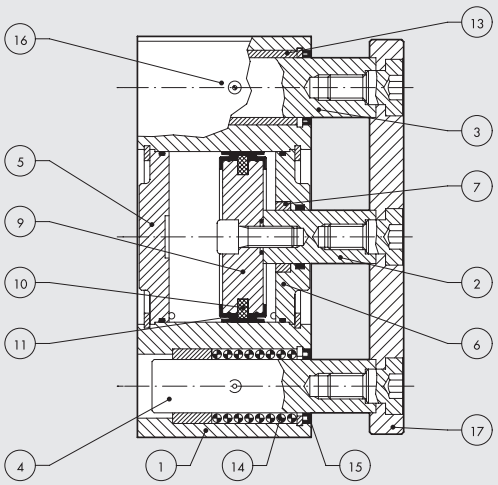
The guided compact cylinder series CMPG is a robust and practical solution with a built-in guide unit. The rod guiding bushes are mounted directly in the anodized aluminium alloy lining.
Two guiding solutions are available: sintered bronze bushes coupled with ground carbon chromed steel rods, or ball 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	-10 to +80	
	°F	14 to 176	
Fluid		Unlubricated air. Lubrication, if used, mast be continuos	
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	
Weights		See cylinder "**General technical data**" at the beginning of the chapter	

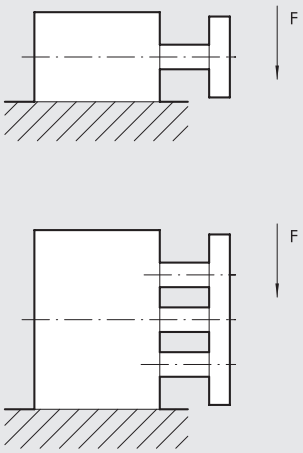
COMPONENTS

① BARREL: anodized aluminium alloy
② PISTON ROD: grinded chromed steel
③ GUIDE ROD: grinded chromed 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
⑨ PISTON: aluminium alloy
⑩ MAGNET: plastoferrite
⑪ PISTON GASKET: polyurethane
⑬ SLIDE BUSHING: sintered bronze
⑭ BALL BEARINGS
⑮ DUST SCRAPER RING: NBR or FKM/FPM
⑯ GREASE NIPPLES: zinc-plated or stainless steel
⑰ FLANGE: anodized aluminium alloy



METAL WORK PNEUMATIC

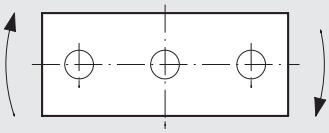
MAXIMUM SIDE LOAD



Ø	Guide unit	Stroke (mm)										
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

N.B.: Forces are expressed in N

MAXIMUM TORQUE ON PLATE

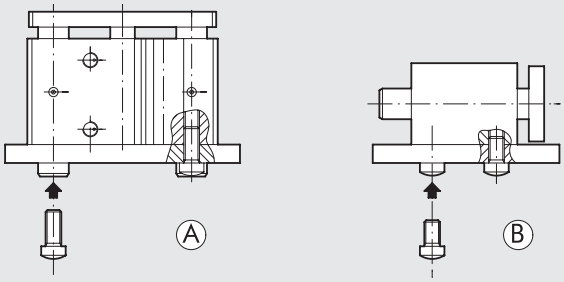


Ø	Guide unit	Stroke (mm)										
mm		10	20	25	30	40	50	75	100	150	175	200
16	Bushes	0.51	0.45	0.40	0.36	0.32	0.28	0.24	0.20	0.46	–	0.12
	Balls	0.74	0.60	–	0.50	0.72	0.65	0.54	0.45	0.35	–	0.25
20	Bushes	–	0.92	0.85	0.79	0.72	0.64	1.05	0.90	0.69	–	0.56
	Balls	–	1.28	–	1.08	1.78	1.59	1.24	1	0.61	–	0.49
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

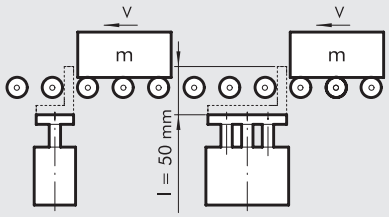
N.B.: Forces are expressed in Nm

ASSEMBLY OPTIONS

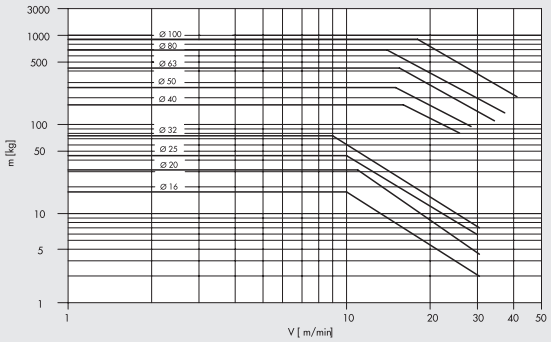
If the compact guided cylinder is mounted as shown in figure A, there need to be two through holes in the frame for the guide columns.



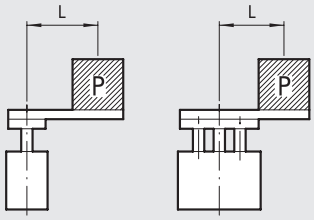
STOPPER FUNCTIONS



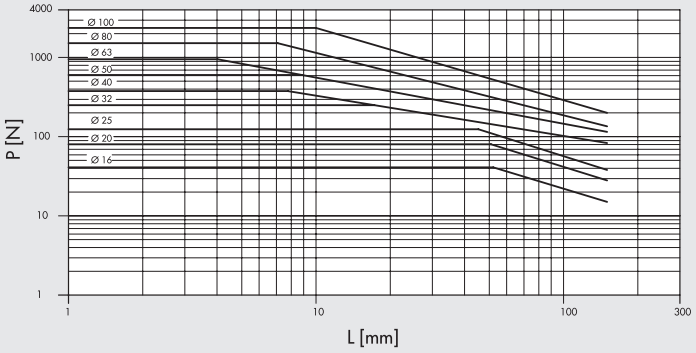
The graph refers to a 50mm-stroke cylinder with bushing guide unit



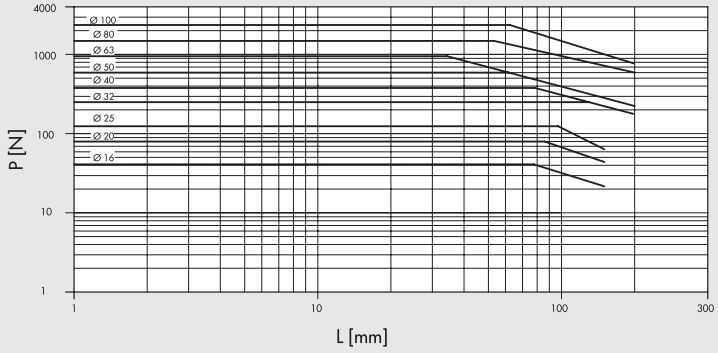
LIFTING FUNCTIONS



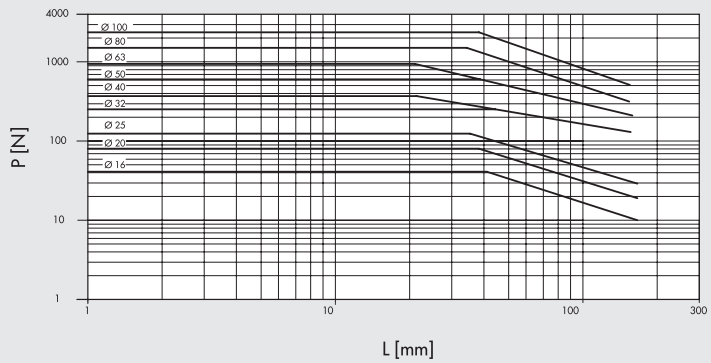
The graph refers from 25 to 50 mm-stroke cylinders with ball re-circulation guide unit



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

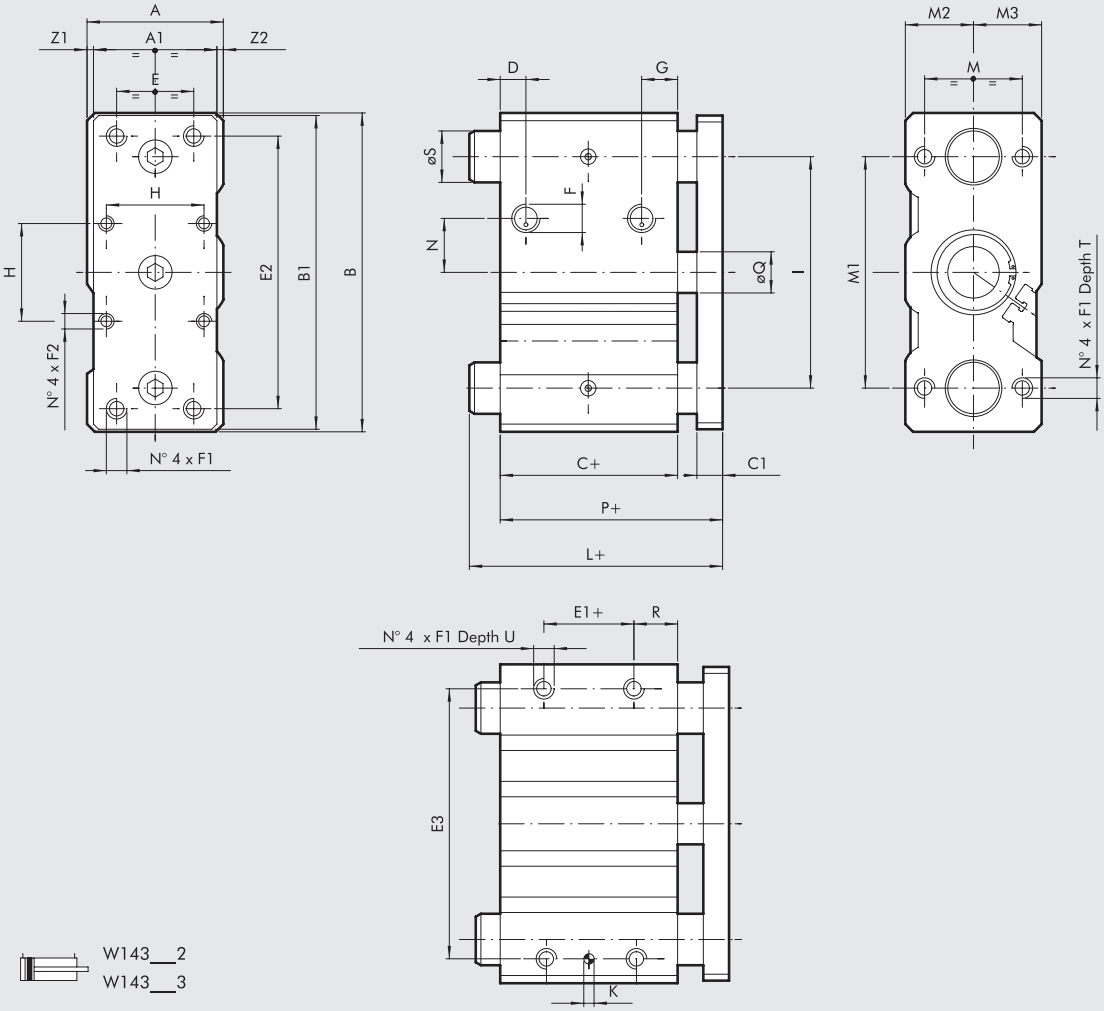


The graph refers to 50 mm-stroke cylinders with bushing guide unit



METAL WORK PNEUMATIC

DIMENSIONS OF NO-CUSHIONED COMPACT GUIDED CYLINDERS



BORE	Ø S		L ◆			
			stroke 0 to 50		stroke > 50 to 200	
	Version BA (bronze bushings)	Version BB (ball bearings)	Version BA (bronze bushings)	Version BB (ball bearings)	Version BA (bronze bushings)	Version BB (ball bearings)
16	10	10	46	46	74.5	74.5
20	12	10	49	49	79	79
25	16	16	49.5	49.5	79.5	79.5
32	20	20	74.5	74.5	74.5	74.5
40	20	20	74.5	74.5	74.5	74.5
50	25	**	83	104	83	104
63	25	**	83	83	83	83
80	28	25	93	111	93	111
100	35	30	105	105	105	135

+ = ADD THE STROKE

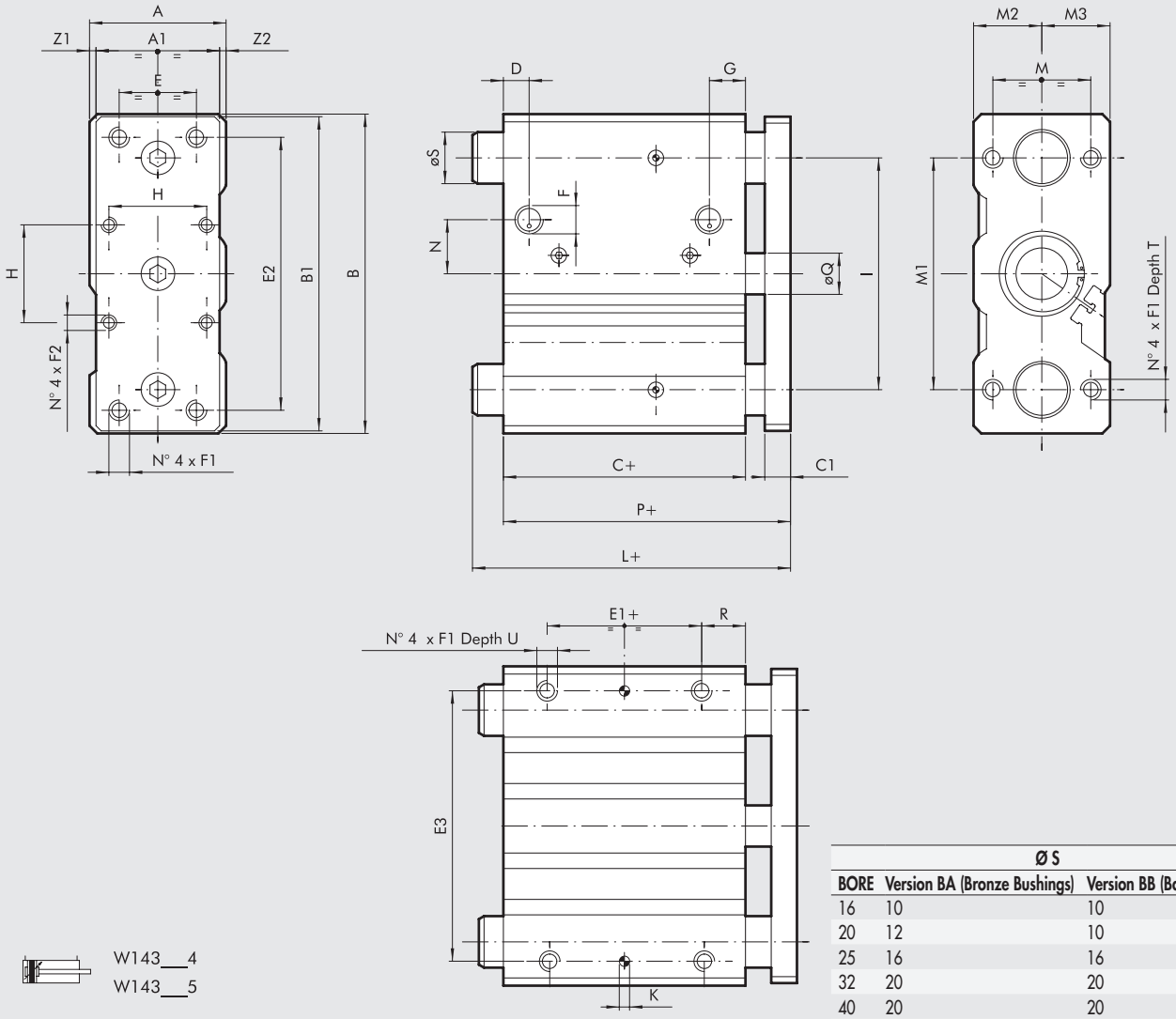
◆ For cylinders with non-standard strokes, the correct size is that of the cylinder with the standard stroke immediately above.

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

Ø	A	A1	B	B1	C ◆	C1	D	E	E1	E2	E3	F	F1	F2	G	H	K H7	I	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	6	46	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	8	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	48	114	112	37.5	10	9	30	5	96	100	1/8	M8	M6	12.5	32.5	6	80	38	80	25.5	25.5	14	49.5	16	16	20	11	1.5	1.5
40	51	48	124	122	44	10	11	30	10	106	110	1/8	M8	M6	14	38	6	90	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	44	100	29.5	29.5	27	58	20	17	25	12.5	1.5	1.5
63	72	69	150	148	49	12	13	50	10	130	132	1/4	M10	M8	15	56.5	6	110	44	110	36	36	33	63	20	20	25	15	1.5	1.5
80	92	88	188	185	56.5	16	15	60	15	160	166	3/8	M12	M10	15	72	6	140	56	140	46	46	36	74.5	25	21	30	18	2	2
100	112	108	224	221	66	16	19	80	15	190	200	3/8	M14	M10	21	89	8	170	62	170	56	56	40	84	32	25	35	21	2	2

DIMENSIONS OF CUSHIONED COMPACT GUIDED CYLINDERS

+ = ADD THE STROKE



W143__4
W143__5

	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

* =	stroke	
BORE	0 to 50	75 to 200
16	73	–
20	78	105.5
25	78.5	108.5

Ø	A	A1	B	B1	C	C1	D	E	E1	E2	E3	F	F1	F2	G	H	K^{H7}	I	L	M	M1	M2	M3	N	P	ØQ	R	T	U	Z1	Z2
16	33	25	64	62	58	10	8	16	32	52	54	M5	M5	–	10.5	–	4	40	*	22	42	15	18	12	73	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	8.5	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	56	*	32	62	21	21	13.5	78.5	12	14	25	9	2	2
32	51	48	114	112	62.5	10	8	30	30	96	100	1/8	M8	M6	10	32.5	6	80	106.5	38	80	25.5	25.5	15	82.5	16	16	20	11	1.5	1.5
40	51	48	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	20	89	16	17	20	11	1.5	1.5
50	59	56	140	138	69	12	11.5	40	35	120	124	1/4	M10	M8	14.5	46.5	6	100	118	44	100	29.5	29.5	37	93	20	17	25	12.5	1.5	1.5
63	72	69	150	148	74	12	11.5	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

KEY TO CODES

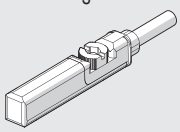
W 1 4 3	0 3 2	2	0 2 5
TYPE	**DIAMETER**	**VERSION**	**STROKE**
	16 20 25 32 40 50 63 ✱ 80 ✱ A1=100	**2** Bronze bushings **3** Ball bearings **4** Cushioned with bronze bushings **5** Cushioned with ball bearings	CUSHIONED VERSION **Ø 16:** 20, 30, 40, 50 **Ø 20 to 25:** 20, 30, 40, 50, 75, 100, 150 **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

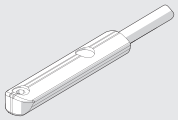
ACCESSORIES FOR COMPACT GUIDED CYLINDER: MAGNETIC SENSORS

RETRACTABLE SENSOR

SENSOR, SQUARE TYPE
Latest generation, secure fixing



SENSOR, OVAL TYPE
Traditional



For codes and technical data, see **chapter A6**.

NOTES

ROTOLINEAR SWING CLAMP CYLINDERS SERIES SWC AND SWH

When retracting, the piston rod of rotolinear swing clamp cylinders first rotates by 90° and then moves straight forward. When exiting, the sequence is reversed.
This facilitates the positioning of the workpiece to be clamped.
You can choose either a clockwise or an anti-clockwise direction.
A version without rotation is also available. The mechanism is very simple. It consists of a spiral groove and a pin that fits into the groove.
The fixing bracket, which can be ordered as an accessory, can be freely orientated through 360° and locked to the piston rod.
Two series are available:

- Series SWC (SWing Compact), which has the same fixings as CMPC series compact cylinders and can use the same flange and feet as the CMPC
- Series SWH (Swing Heavy Duty), which is more sturdy and features an enlarged body and piston rod guide system.

Possibility of choosing between polyurethane or FKM/FPM gaskets (for high temperatures).

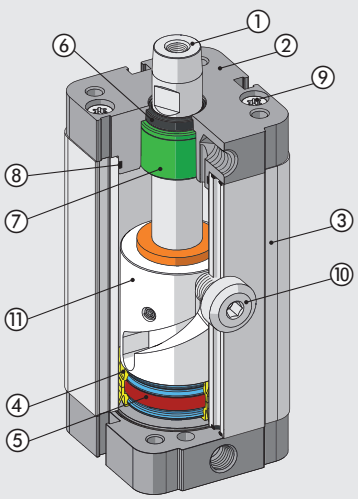
series SWC

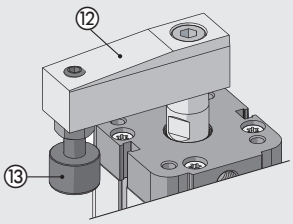
series SWH

TECHNICAL DATA			SWC					SWH		
Bore		mm	16	25	32	40	50	40	50	63
Operating pressure		bar	2 to 10							
		MPa	0.2 to 1							
		psi	29 to 145							
Temperature range	Polyurethane	°C	-20 to +80							
	FKM/FPM		-10 to +150							
Fluid			Unlubricated air; lubrication, if used, must be continuous.							
Design			Linear and rotating movement by means of a cam integral to the piston					Linear and rotating movement by means of a cam in the rod guide bushing		
Clamping stroke (linear)		mm	10	10	10	10	20	10	25	8
Overal Stroke		mm	20	25	25	27.3	40	25	43	25
Direction of rotation			Right or left or straight							
Rotation angle		degrees	90° ± 4°							
Sensor magnet			Yes							
Theoretical clamping force at 6 bar		N	90	220	360	630	970	630	970	1650
Effective clamping force at 6 bar, in relation to the distance of the clamping point from the cylinder axis										
	Locking force	N	80	180	300	450	810	420	800	1200
	Distance	mm	27	35	50	50	65	70	80	90
Weights		g	190	432	599	962	1577	1497	2895	2960

COMPONENTS SERIES SWC

① PISTON ROD: grinded chromed steel
② HEAD: extruded anodized aluminium alloy
③ BARREL: extruded aluminium, anodized
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
⑨ SECURING SCREWS: zinc-plated steel
⑩ PIN: hardened steel
⑪ CAM: Ø 16 steel - Ø 25 to 50 technopolymer
⑫ BRACKET: anodized aluminium
⑬ BRACKET PLUG: zinc-plated steel and technopolymer

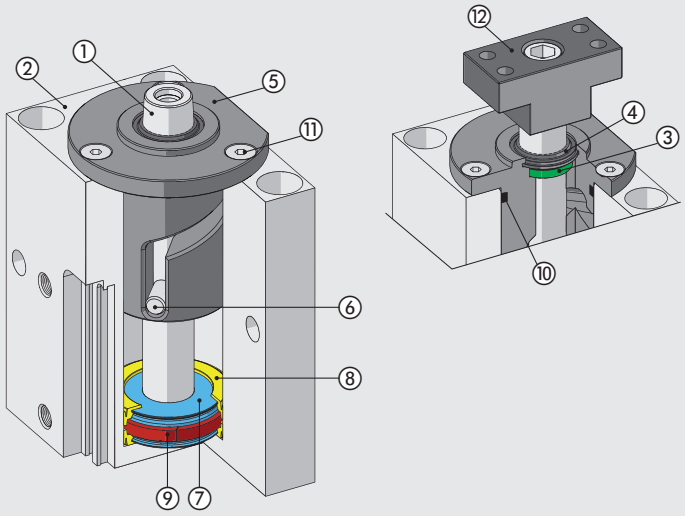




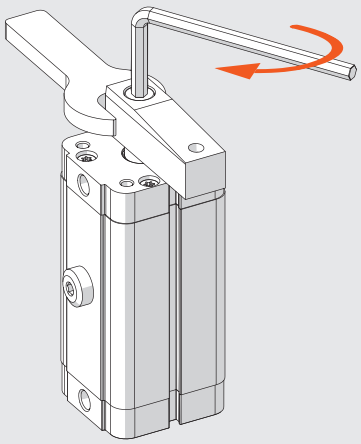
METAL WORK PNEUMATIC

COMPONENTS SERIES SWH

① SPISTON ROD: grinded chromed steel
② BODY: anodized aluminium
③ PISTON ROD GASKET: polyurethane or FKM/FPM
④ SCRAPER GASKET: polyurethane or FKM/FPM
⑤ HEADER FOR GUIDE AND PISTON ROD ROTATION: technopolymer
⑥ PIN: hardened steel
⑦ PISTON: aluminium
⑧ PISTON GASKET: polyurethane or FKM/FPM
⑨ MAGNET: plastoneodymium or plastoferrite
⑩ STATIC O-RINGS: NBR
⑪ SECURING SCREWS: zinc-plated steel
⑫ ADAPTOR: anodized aluminium



BRACKET FIXING

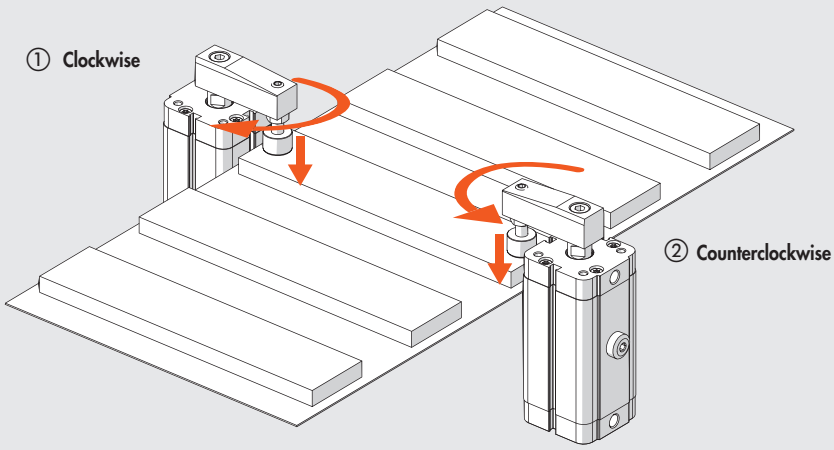


Series SWC	
Ø	**Maximum tightening torque [Nm]**
16	3
25	12
32	24
40	24
50	40

Series SWH	
Ø	**Maximum tightening torque [Nm]**
40	24
50	40
63	40

N.B.: When tightening or loosening the screw, DO NOT hold the cylinder body, only hold the bracket in place using a spanner.

DIRECTION OF ROTATION

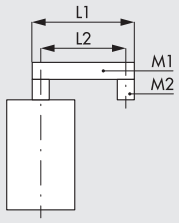


The right or left direction of rotation is determined by looking at the cylinder from the piston rod side, when the rod retracts:
① Right (R) = clockwise
② Left (L) = counterclockwise

MAXIMUM PERMISSIBLE MOMENT OF INERTIA

The permissible moment of inertia depends on the speed of movement. Refer to the formula below to calculate the moment of inertia.

$$J = \frac{M1 \cdot L1^2}{4} + M2 \cdot L2^2$$

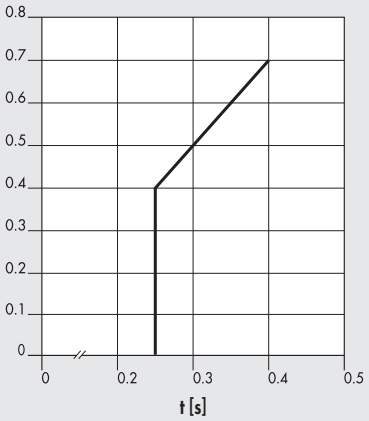


M1 = Mass of the lever arm [kg]
M2 = Mass of the screw and plug [kg]
L1 = Lever arm length [cm]
L2 = Distance from the screw centre to the cylinder axis [cm]

J = Moment of inertia [kg · cm²]
t = Time to run each stroke

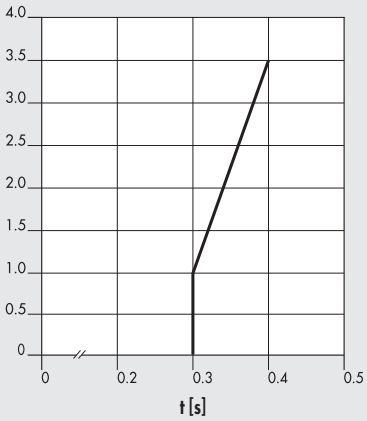
SWC 16

J [kg cm²]



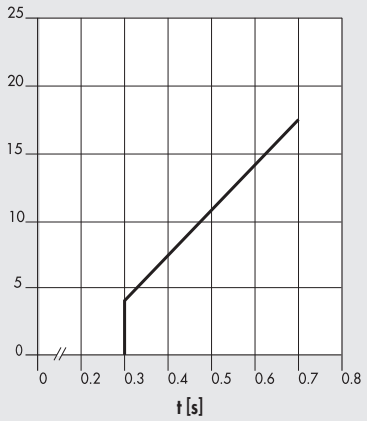
SWC 25

J [kg cm²]



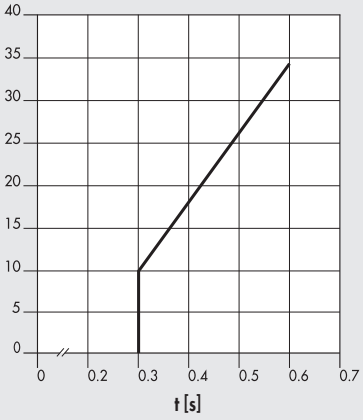
SWC 32

J [kg cm²]



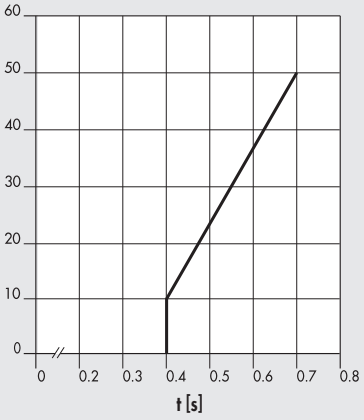
SWC 40

J [kg cm²]



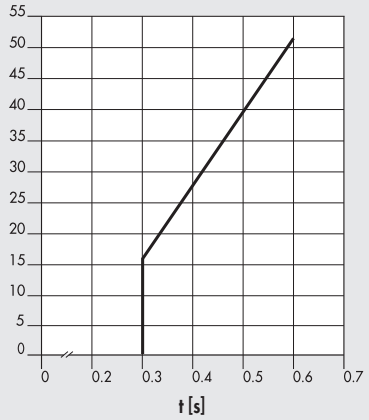
SWC 50

J [kg cm²]



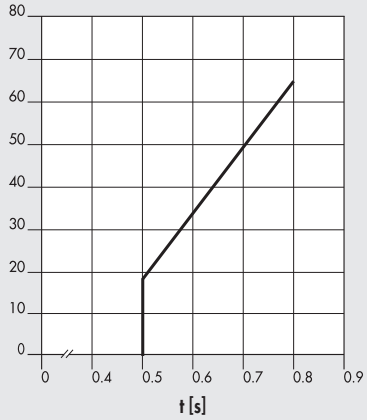
SWH 40

J [kg cm²]



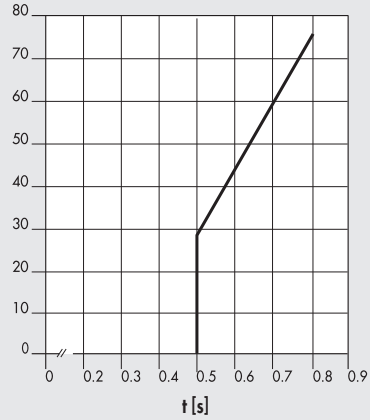
SWH 50

J [kg cm²]



SWH 63

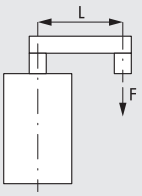
J [kg cm²]



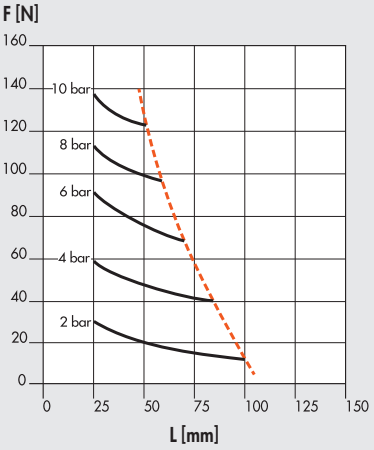
METAL WORK PNEUMATIC

LOCKING FORCE

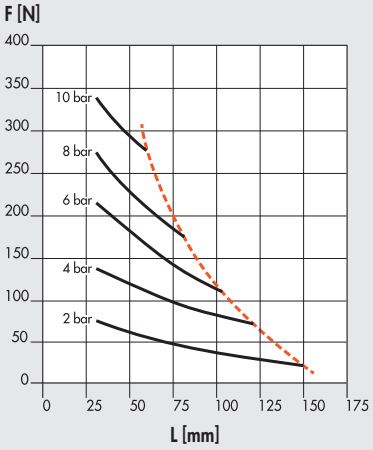
Locking force "F" as a function of the length "L" of the bracket and pressure, measured at 5 mm from the limit switch.



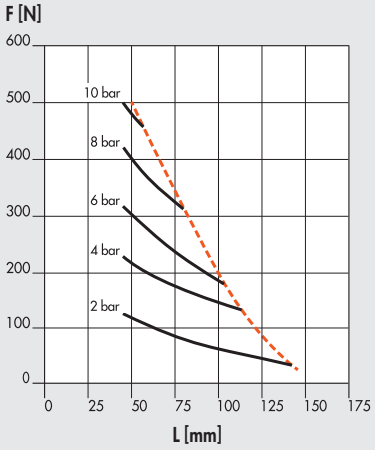
SWC 16



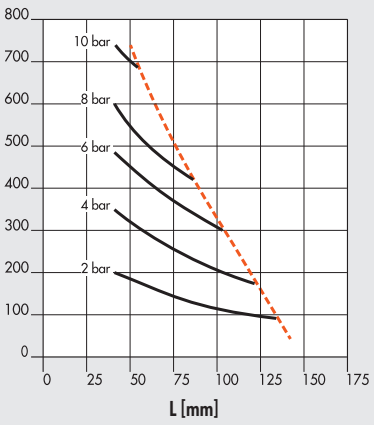
SWC 25



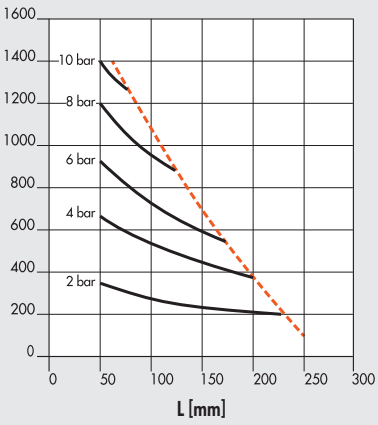
SWC 32



SWC 40

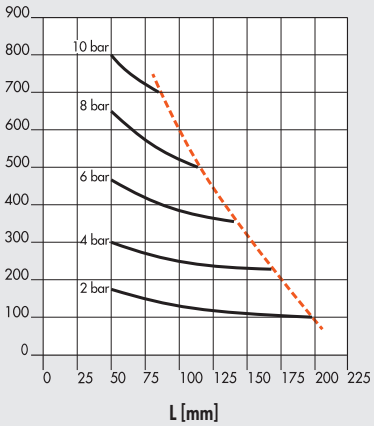


SWC 50

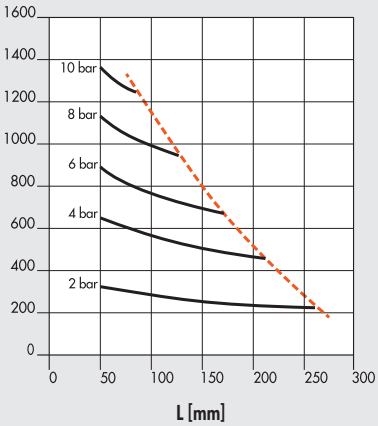


Maximum lever arm length

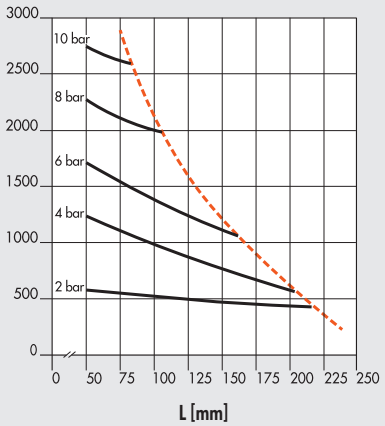
SWH 40



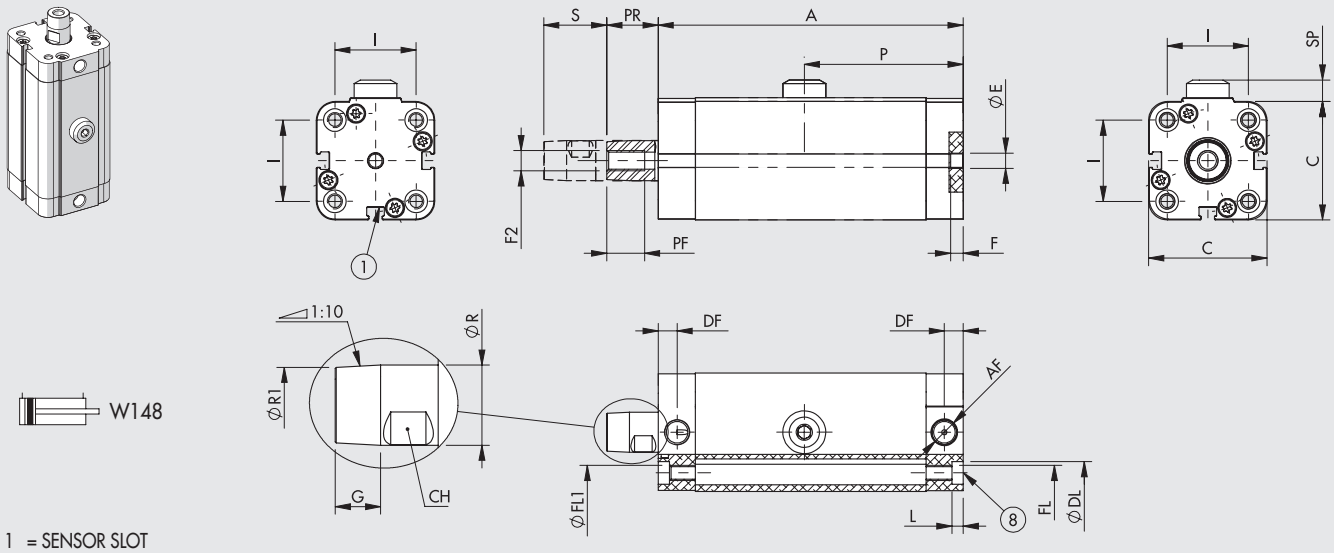
SWH 50



SWH 63



DIMENSIONS - SERIES SWC



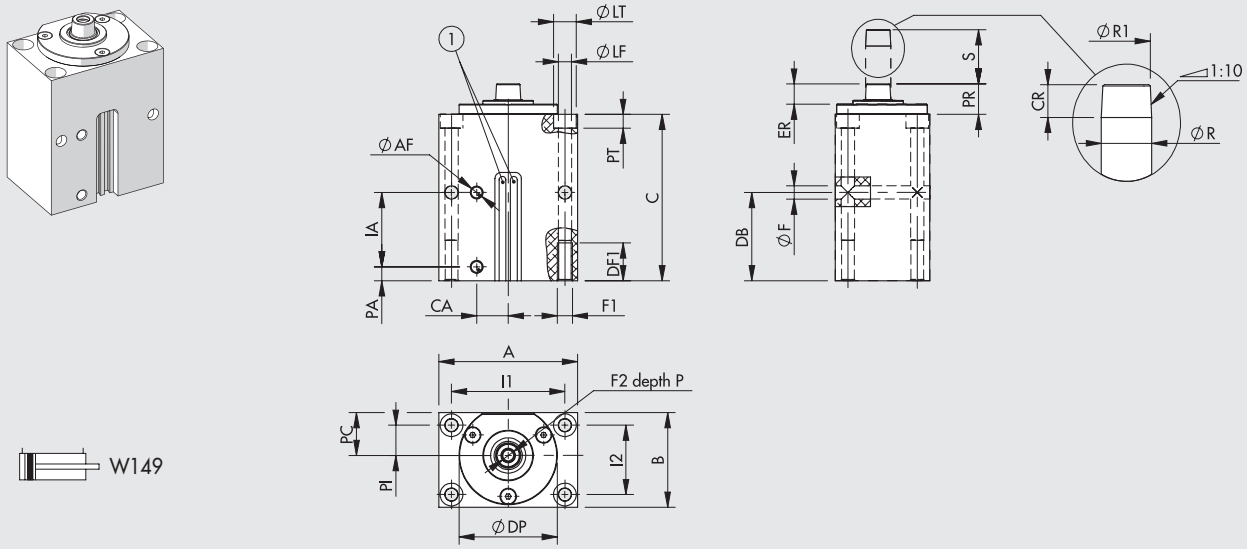
W148

1 = SENSOR SLOT
8 = SEAT FOR DIN 7984 SCREWS (only Ø 32 - 50)

Ø	Overal Stroke S	A	AF	C	CH	DF	ØDL *	ØE H9	F	F2	FL *	ØFL1	G	I *	L	P	PF	PR	ØR	ØR1	SP	Weight [g]
16	20	85	M5	29.4	7	4	6	6	5	M4	M4	3.2	5	18	3.2	31.5	13	11	8	7.5	4.8	190
25	25	102.5	M5	40.4	10	6	7.5	6	5	M6	M5	4.2	7.4	26	4.2	38.3	15	16.4	12	11.3	5.3	432
32	25	121	1/8"	47	13	7.5	9	6	5	M8	M6	5.2	9	32.3	4.5	63	15	20.4	16	15	8.5	599
40	27.3	122.5	1/8"	56	13	7.5	9	6	5	M8	M6	5.2	9	38	4.5	65	15	20.4	16	15	8.5	962
50	40	158	1/8"	67	17	7.5	10.7	6	5	M10	M8	6.2	10.3	46.5	5	85.3	15	20.8	20	19	9.5	1577

* For Ø 16, 25 according to UNITOP; for Ø 32 - 50 according to ISO

DIMENSIONS - SERIES SWH



W149

1 = SENSOR SLOT

Ø	Overal Stroke S	A	ØAF	B	C	CA	CR	DB	DF1	ØDP	ER	ØF	F1	F2	I1	I2	IA	ØLF	LT	P	PA	PC	PI	PR	ØPT	ØR	ØR1	Weight [g]
40	25	90	1/8"	65	96	20	10	50	25	64	14	8.5	M10	M8	73	48	42	8.5	15	18	8	27.5	19	19	9	16	15	1497
50	43	110	1/8"	75	132	25	13	70	30	78	16	10.5	M12	M10	90	55	59	10.5	18	23	11	34	24	24	11	20	18.7	2895
63	25	120	1/4"	90	107.5	25	13	55	30	95	16	10.5	M12	M10	100	70	85	10.5	18	23	11	40	30	24	11	20	18.7	2960

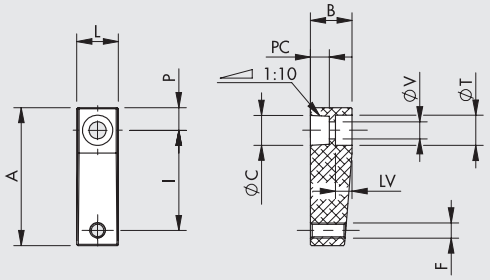
METAL WORK PNEUMATIC

KEY TO CODES

CYL	W149 SERIES		C VERSION		40 BORE	10 CLAMPING STROKE	R DIRECTION OF ROTATION		A EXECUTION		P GASKETS	
	W149	Swing clamp cylinders SW	C	Compact	16	10	R	Clockwise	A	C45 chromed and ground piston rod, aluminium piston rod	P	Polyurethane gaskets
					25	10	L	Counter-clockwise			V	FKM/FPM gaskets
					32	10						
					40	10	S	Straight				
					50	20						
			H	Heavy duty	40	10						
					50	25						
					63	08						

ACCESSORIES FOR CYLINDERS SERIES SWC

BRACKET



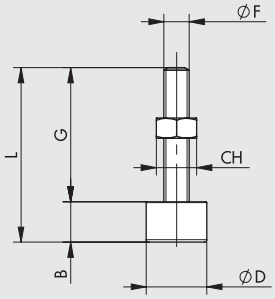
Code	Ø	A	L	I	P	C	PC	LV	V	B	T	F	Weight [g]
W0950166022	16	36.5	11	26.5	6	7.9	5	4.5	4.5	11	8	M4	10
W0950256022	25	50	16	35	9	11.9	7.5	6.5	6.5	16	11	M6	28
W0950326022	32-40	69	20	49	12	15.9	10.1	8.5	9	20	15	M8	65
W0950506022	50	88	25	65	13	19.9	10.5	7	11	25	18	M10	118

MATERIAL

Bracket: anodized aluminium

Screws TCE: zinc-plated steel

BRACKET PLUG



Code	Ø	L	B	G	F	CH	D	Weight [g]
W0950166023	16	32	6.5	25.5	M4	7	11	5
W0950256023	25	43	10	33	M6	10	15	11
W0950326023	32-40	49	13	36	M8	13	19	27
W0950506023	50	69	16	53	M10	16	24	58

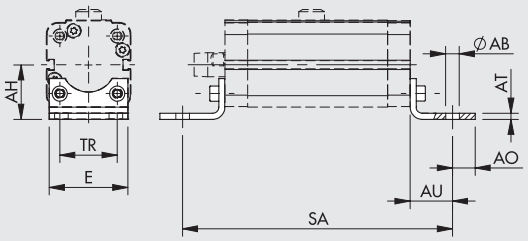
MATERIAL

Plug: technopolymer

Screw and nut: zinc-plated steel

Note: if there is no risk of engraving the part to be clamped, the customer can use an hex an hexagonal-head screw available from the trade, instead of the coded pad.

FOOT - MODEL A



UNITOP

Code	Ø	Clamping stroke	E	TR	AU	AB	AH	SA	AT	AO	Weight [g]
W0950126001 ▲	16	10	30	18	13	5.5	22	111	3	4.5	26
W0950256001	25	10	40	26	16	6.6	30	134.5	4	6	52

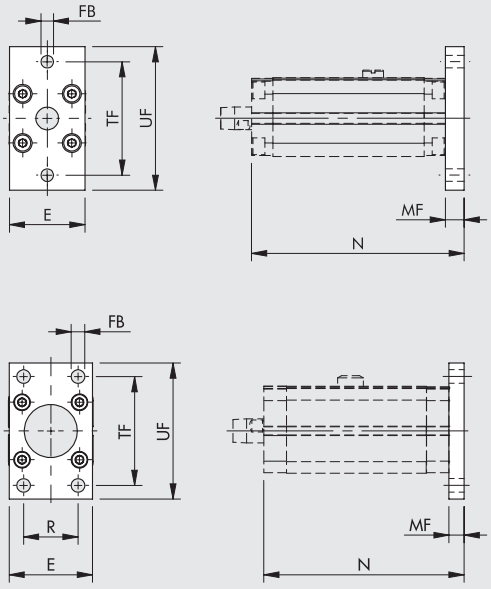
ISO

Code	Ø	Clamping stroke	E	TR	AU	AB	AH	SA	AT	AO	Weight [g]
W0950322001	32	10	45	32	24	7	31.9	169	4	11	76
W0950402001	40	10	52	36	28	9	36	178.5	4	15	100
W0950502001	50	20	65	45	32	9	45	222	5	15	162

▲ Non UNITOP norm fixing distance

Note: Individually packed with 2 screws.

FLANGE - MODEL C



UNITOP

Code	Ø	Clamping stroke	E	UF	TF	FB	MF	N	Weight [g]
W0950126002 ▲	16	10	29	55	43	5.5	10	95	112
W0950256002	25	10	40	76	60	6.6	10	112.5	226

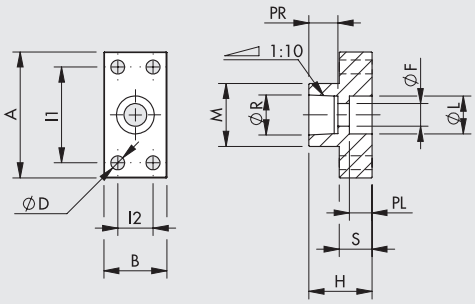
ISO

Code	Ø	Clamping stroke	E	UF	TF	R	FB	N	MF	Weight [g]
W0950322002	32	10	50	80	64	32	7	131	10	246
W0950402002	40	10	55	90	72	36	9	132.5	10	290
W0950502002	50	20	65	110	90	45	9	170	12	522

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

ACCESSORIES FOR CYLINDERS SERIES SWH

ADAPTOR



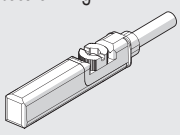
Code	Ø	A	B	L1	L2	D	H	M	S	L	F	PL	R	PR	Weight [g]
W0950406024	40	50	25	38	14	5.5	25	25	13	15	9	9	15.9	11.5	50
W0950506024	50	60	30	45	15	7	30	30	15	18	11	11	17.9	15	85
W0950636024	63	65	35	48	18	9	35	32	17	18	11	11	19.9	17	125

MATERIAL
Adaptor: anodized aluminium
Screws TCE: zinc-plated steel

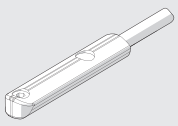
ACCESSORIES FOR CYLINDERS SERIES SWC AND SWH: MAGNETIC SENSORS AND POSITION SENSORS

RETRACTABLE SENSOR

SENSOR, SQUARE TYPE
Latest generation, secure fixing



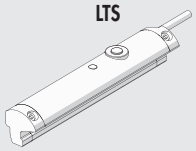
SENSOR, OVAL TYPE
Traditional



For codes and technical data, see **chapter A6**.

POSITION SENSORS

LTS



For technical data and usage strokes see **chapter A6**.

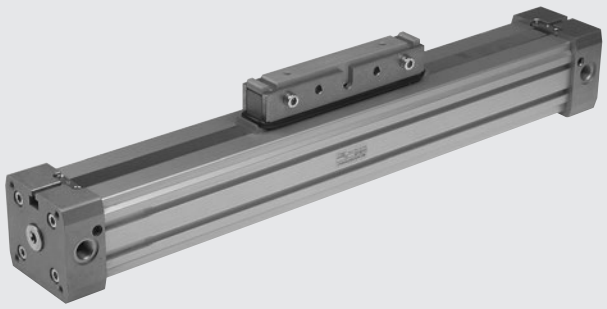
METAL WORK PNEUMATIC

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.

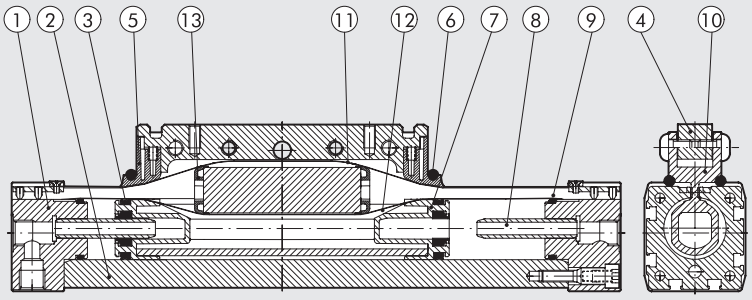
- Calibrated extruded anodized aluminium alloy barrel
- Sensor slots and accessory slots in the barrel itself
- Longitudinal seal by means of specially-shaped indeformable stainless steel strips
- Strokes 100 to 5700 mm with 1mm intervals
- Adjustable integrated pneumatic cushioning
- Adjustable limit 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 **A1**.62



TECHNICAL DATA			Ø16	Ø25	Ø32	Ø40	Ø63
Operating pressure		bar	1 to 8				
		MPa	0.1 to 0.8				
		psi	14.5 to 116				
Temperature range	NBR - FKM/FPM	°C	–10 to +80				
Design			Double-acting rodless cylinder with direct transmission system				
Fluid			50 µm unlubricated filtered air Lubrication, if used, must be continuous				
Standard strokes		mm	100 to 5000	100 to 5700			100 to 5500
Sensor magnet			Available magnetic and non-magnetic versions.				
Recommended speeds	NBR	m/s	<1				
	FKM/FPM	m/s	≥1				
Max. speed with decelerators	NBR	m/s	<1				
	FKM/FPM	m/s	2				
Weights			See cylinder "**General technical data**" at the beginning of the chapter				
Notes			**For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.**				

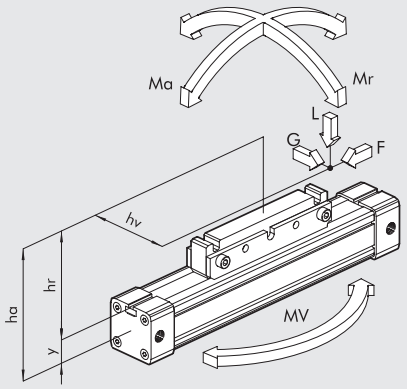
COMPONENTS

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®



METAL WORK PNEUMATIC

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

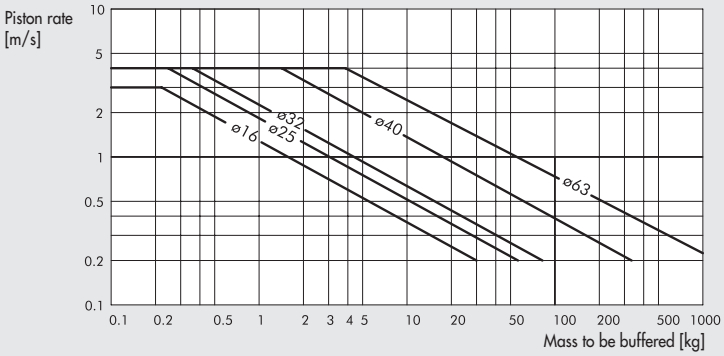
N.B.: When the cylinder is subjected simultaneously to torque and force, keep to the following equations, where the lengths have to be given in metres.

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

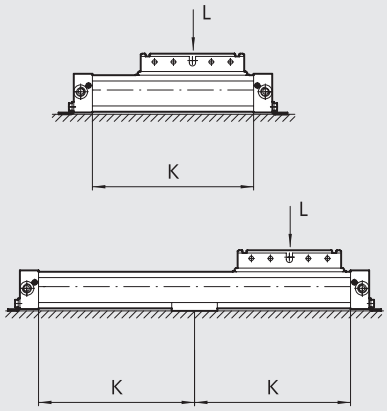
$$\frac{Mv}{Mv_{max}} \leq 1; \qquad \frac{L}{L_{max}} \leq 1; \qquad \frac{Ma}{Ma_{max}} + \frac{Mr}{Mr_{max}} + 0.22 \times \frac{Mv}{Mv_{max}} + 0.4 \frac{L}{L_{max}} \leq 1$$

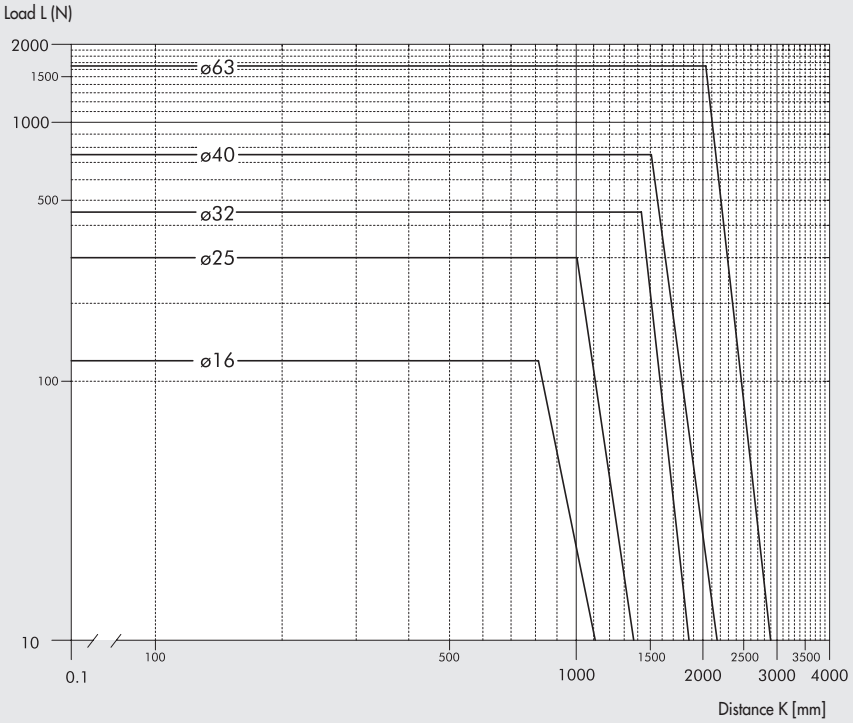
DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

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.

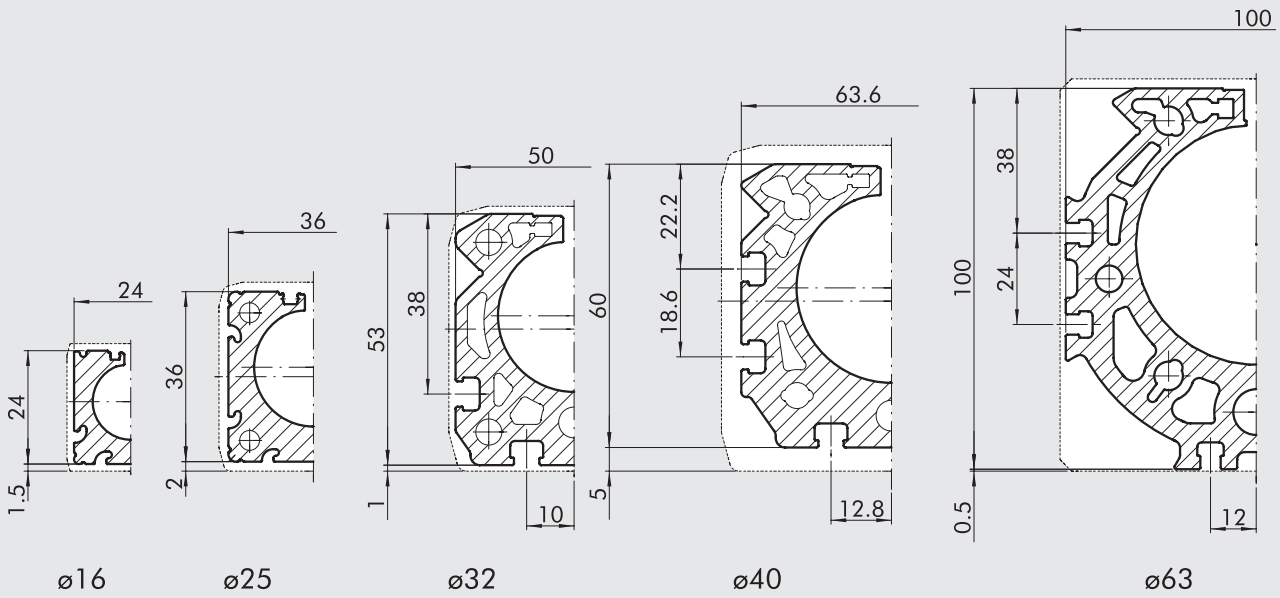


MAXIMUM LOAD ACCORDING TO THE DISTANCE BETWEEN SUPPORTS



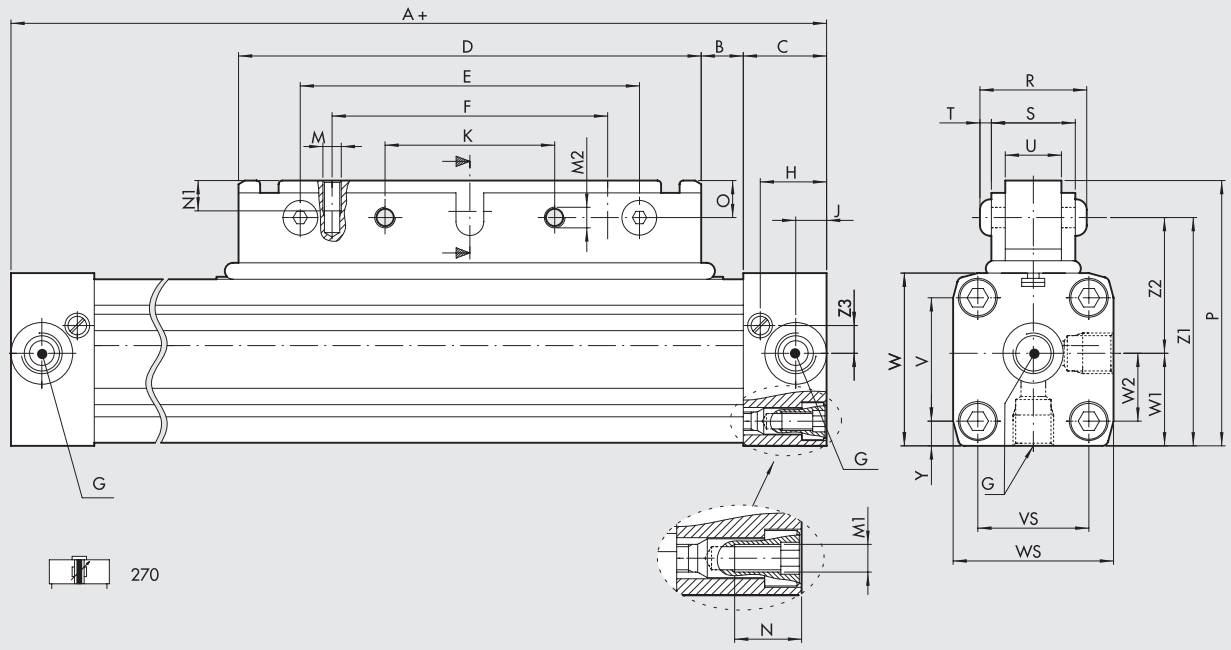


BARREL CROSS SECTION



DIMENSIONS Ø 16 to 40

+ = ADDED STROKE

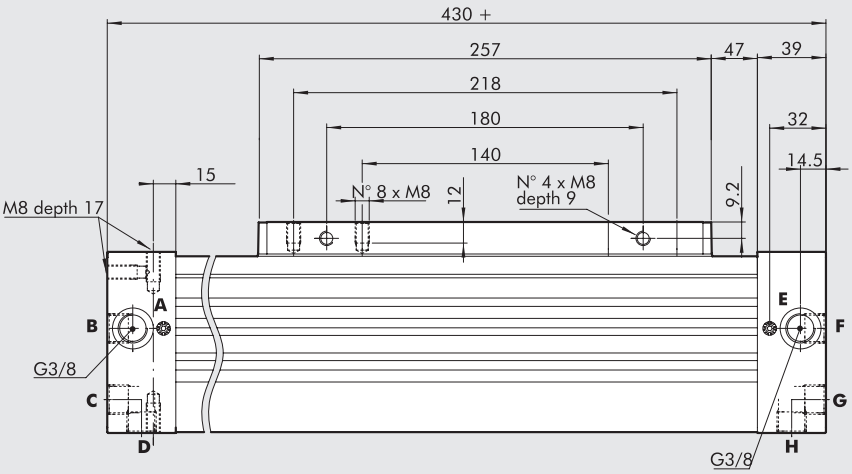


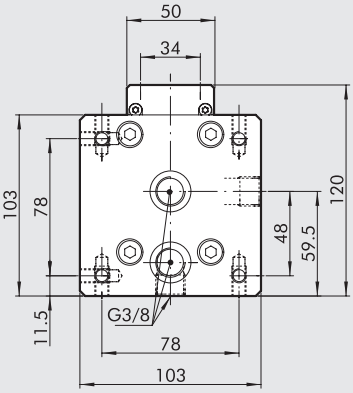
Ø	A	B	C	D	E	F	G	H	J	K	M	M1	M2	N	N1	O	P	R	S	T	U	V	VS	W	WS	W1	W2	Y	Z1	Z2	Z3	Z4
16	130	12	15	76	64	48	M5	12	6.4	32	M4	M3	M5	7	8	6	43.5	23.5	18	2.75	10	18	18	27	27	13.5	9	4.5	37.5	24	4.5	28
25	200	17	23	120	100	80	1/8	18.5	8.5	50	M5	M5	M6	12	11	13	66	29.6	23	3.3	15	27	27	40	40	20	13.5	6.5	53	33	6.5	42
32	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

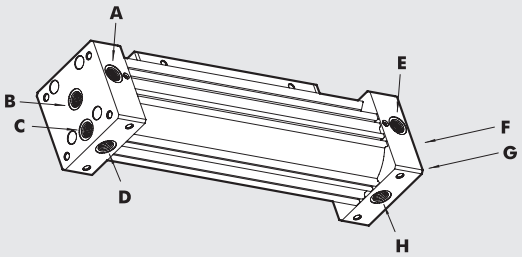
METAL WORK PNEUMATIC

DIMENSIONS Ø 63

+ = ADDED STROKE





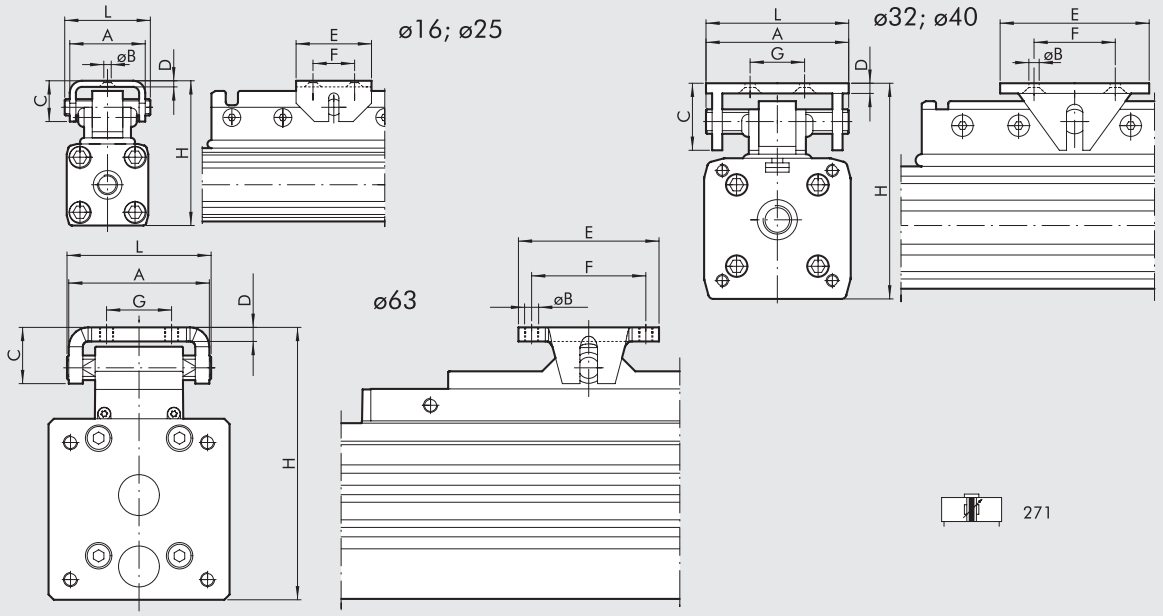


Basic supply
A, B, C, D to feed to left chambers
E, F, G, H to feed the right chambers
Note: B, C, D, F, G and H are supplied closed with threaded plugs

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

all feeds from the left	**all feeds from the right**
A, B feed the left chambers	E, F feed the right chambers
C, D feed the right chambers	G, H feed the left chambers

VERSION WITH SWING CARRIAGE

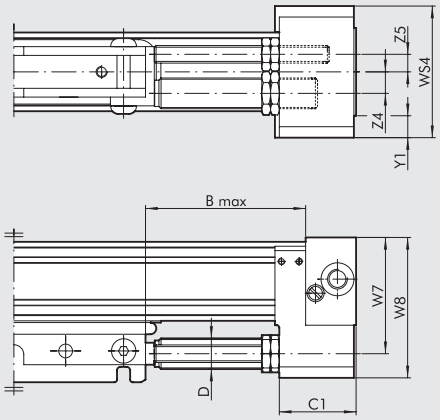


NOTE: For other dimensions see code 270

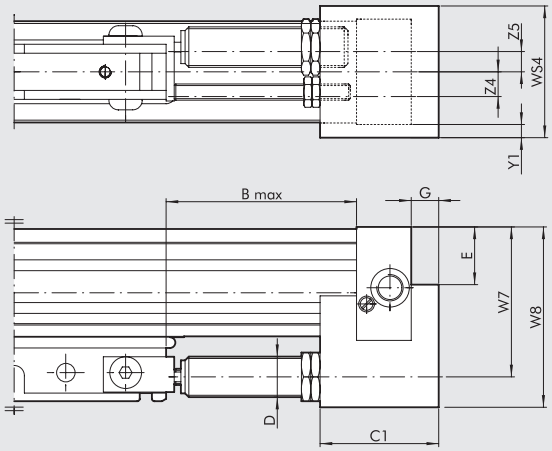
Ø	A	ØB	C	D	E	F	G	H	L
16	25	4.5	13	2	20	10	–	47-50	28
25	37	5.5	20	3	30	16	–	72-75	42
32	70	6.5	38	5	90	75	55	91-100	70
40	70	6.5	38	5	90	75	55	111-120	70
63	80	M8	32	8	80	65	37	155-162	82

DIMENSIONS VERSION WITH ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS

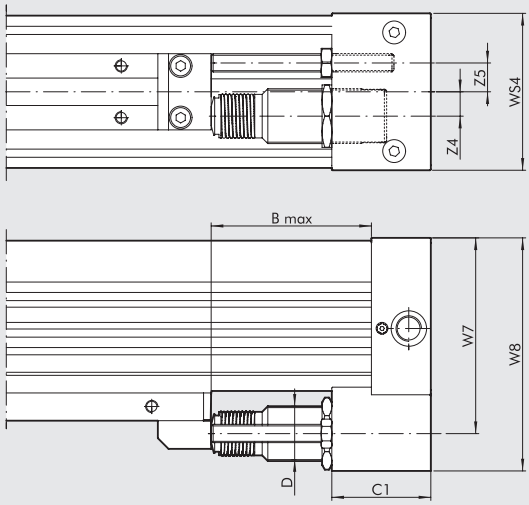
ø16



ø25÷ø40



ø63



Ø	B Max	C1	D	E	G	W7	W8	WS4	Y1	Z4	Z5	Stroke	Max. cushioned force For stroke [J]	Max. cushioned force For hour [J]	Max. impact force [N]	Max. thrust force [N]
16	42	22	M12x1	–	–	38	46	42	7.5	7	7.5	10.4	10	14125	1000	220
25	72	44	M14x1.5	17	9	53	67	50	5	8	9.8	16	26	34000	2800	530
32	90	56	M20x1.5	29	11	74	89	60	4	10	12.2	22	54	53700	3750	890
40	105	74	M25x1.5	32.8	14	89	108	75	1.5	12.5	12.7	25	90	70000	5500	1550
63	105	65	M36x1.5	–	–	128.5	153	103	–	16	19	25	160	91000	11120	2220

For graphs to help choose shock absorbers see page **A1**.195

KEY TO CODES

CYL	27 TYPE	0	0	25 BORE	0150 STROKE	C	N GASKETS
	27 Rodless cylinder	**0** Double-acting cushioned magnetic **1** Double-acting with swing carriage ✚ **2** Twin cushioned series "Double" **3** Double-acting 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 speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only** ● For speed ≥ 1/m/s ✚ Available up to Ø 32

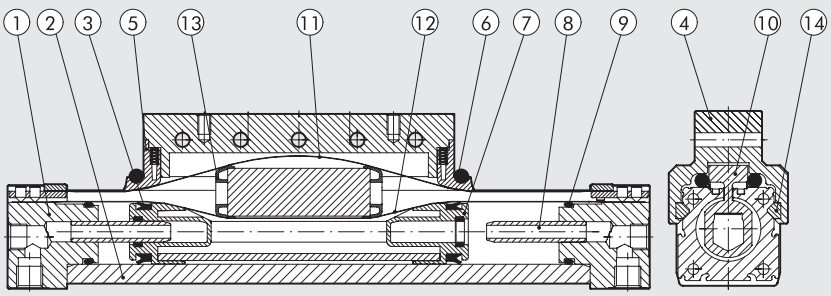
RODLESS CYLINDER WITH "V" GUIDE

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.

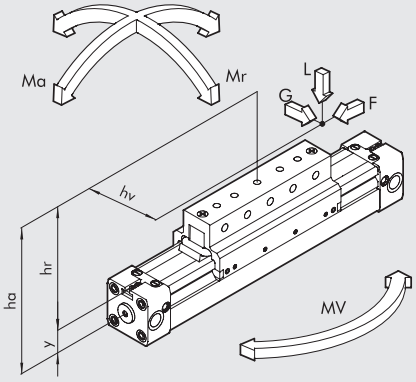
TECHNICAL DATA			Ø25	Ø32	Ø40	Ø63
Operating pressure		bar	1.5 to 8			
		MPa	0.15 to 0.8			
		psi	21.8 to 116			
Temperature range	NBR - FKM/FPM	°C	−10 to +80			
Design			Double-acting rodless cylinder with direct transmission system			
Fluid			50 µm unlubricated filtered air Lubrication, if used, must be continuous			
Standard strokes		mm	100 to 5700			100 to 5500
Sensor magnet			Available magnetic and non-magnetic versions.			
Recommended speeds	NBR	m/s	<1			
	FKM/FPM	m/s	≥1			
Max. speed with decelerators	NBR	m/s	<1			
	FKM/FPM	m/s	2			
Weights			See cylinder "**General technical data**" at the beginning of the chapter			
Notes			**For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.**			

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

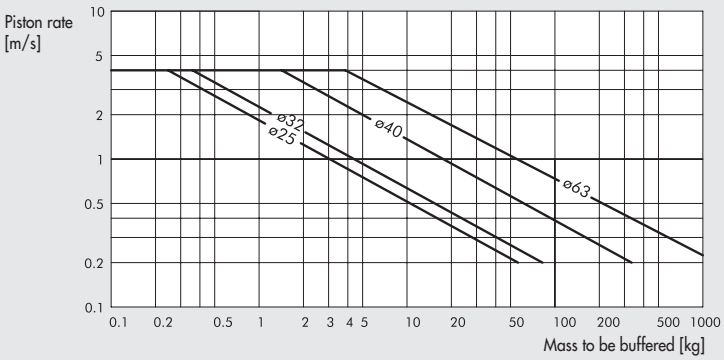
N.B.: The loads can be applied for speeds below 0.2 m/s. For higher speeds, it is advisable not to exceed 1 m/s
N.B.: When the cylinder is subjected simultaneously to torque and force, keep to the following equations, where the lengths have to be given in metres.

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

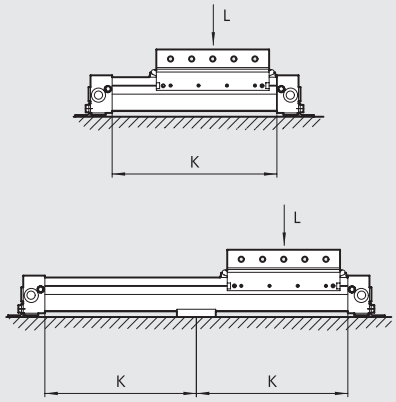
$$\frac{Mv}{Mv\ max} \leq 1; \qquad \frac{L}{L\ max} \leq 1; \qquad \frac{Ma}{Ma\ max} + \frac{Mr}{Mr\ max} + 0.22 \times \frac{Mv}{Mv\ max} + 0.4\,\frac{L}{L\ max} \leq 1$$

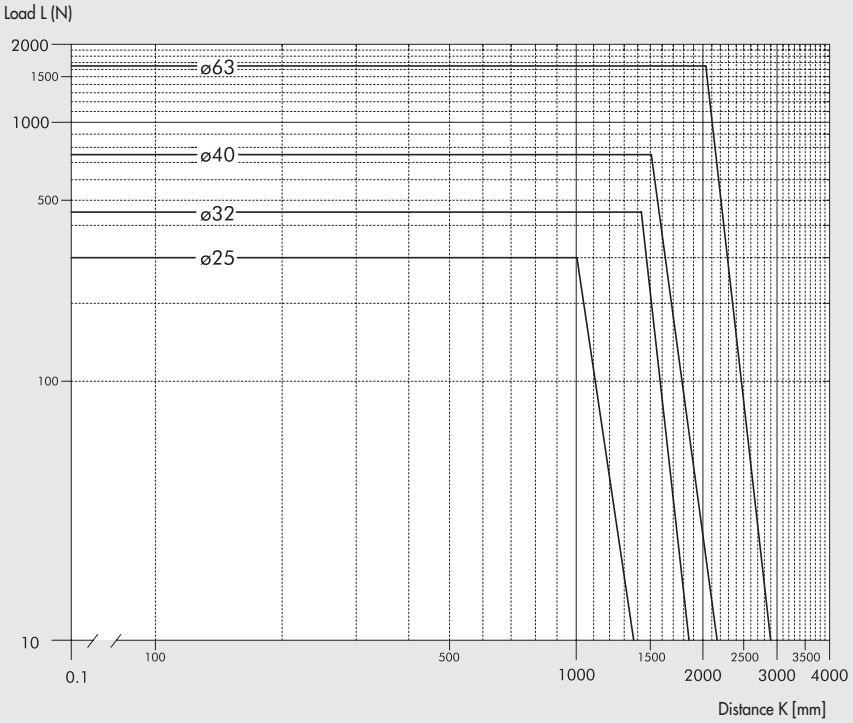
DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

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.



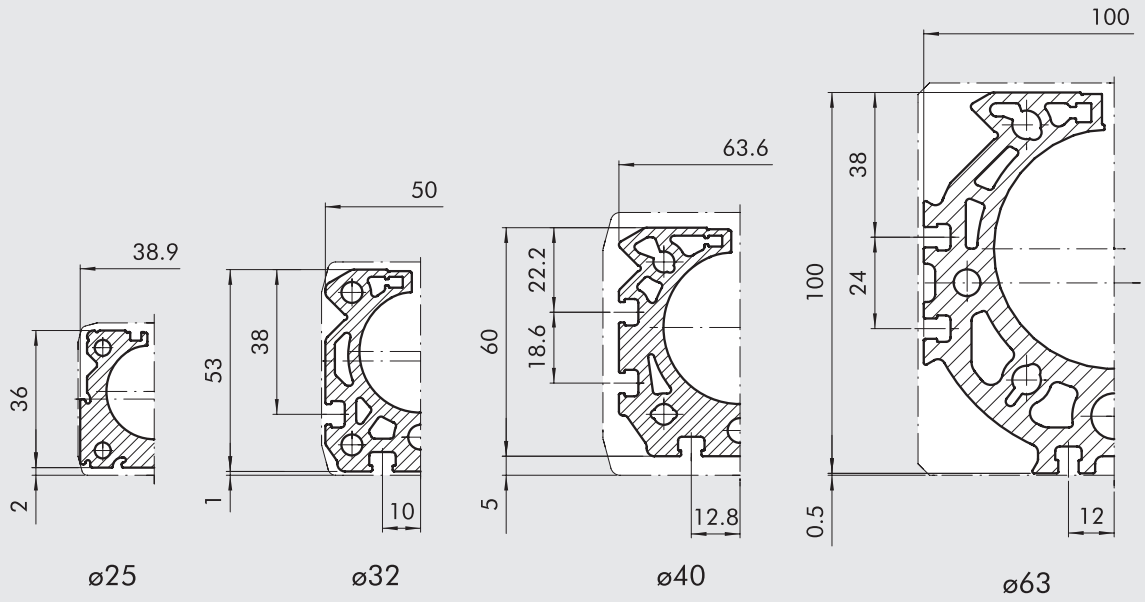
MAXIMUM LOAD ACCORDING TO THE DISTANCE BETWEEN SUPPORTS





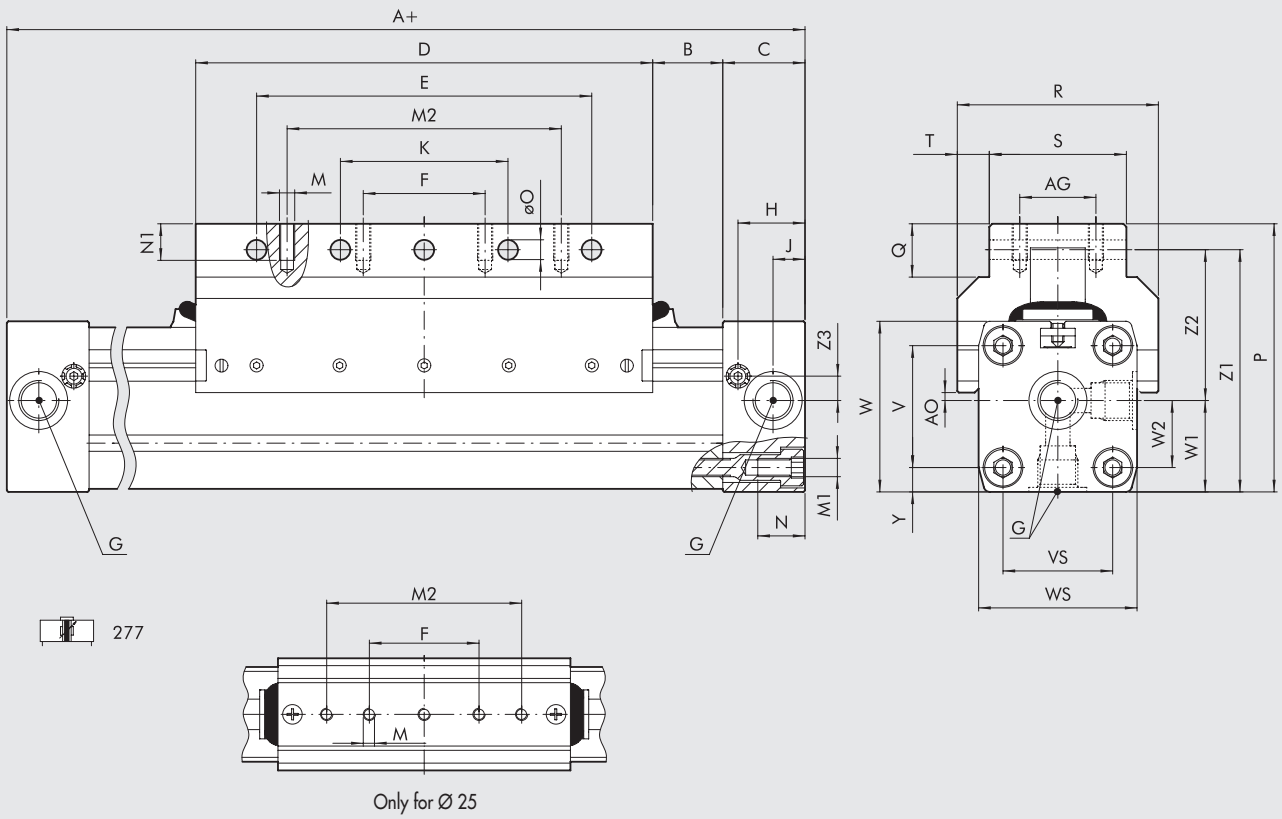
METAL WORK PNEUMATIC

BARREL CROSS SECTION



DIMENSIONS Ø 25 to 40

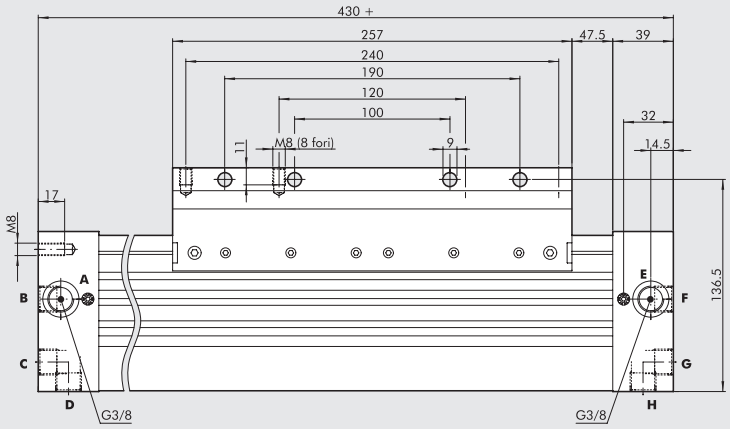
+ = ADDED STROKE

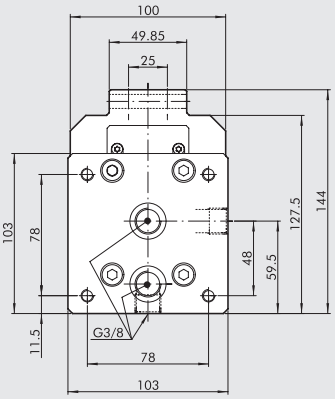


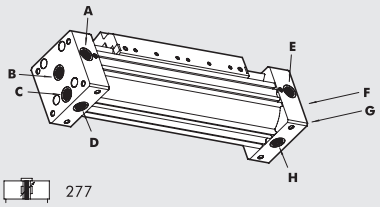
Ø	A	AG	AO	B	C	D	E	F	G	H	J	K	M	M1	M2	N	N1	øO	P	Q	R	S	T	V	VS	W	WS	W1	W2	Y	Z1	Z2	Z3
25	200	-	2	17	23	120	90	45	1/8	18.5	8.5	45	M5	M5	80	12	8	5.5	67.5	21	46	26	10	27	27	40	40	20	13.5	6.5	57.5	37.5	6.5
32	250	25	2.6	23	27	150	110	40	1/4	22	10.5	55	M5	M6	90	15	12	6.4	88	17.5	66	45	10.5	40	36	56	52	30	22	8	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







277

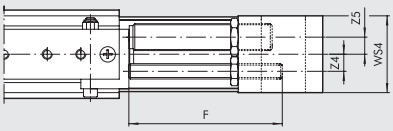
Basic supply
A, B, C, D to feed to left chambers
E, F, G, H to feed the right chambers
Note: B, C, D, F, G and H are supplied closed with threaded plugs

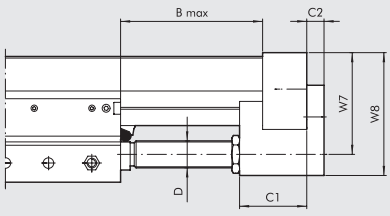
If you modify the position of an inner plug following the instructions provided with the cylinder, you can arrange:

all feeds from the left	**all feeds from the right**
A, B feed the left chambers	E, F feed the right chambers
C, D feed the right chambers	G, H feed the left chambers

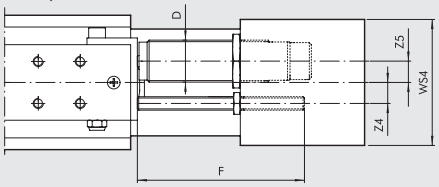
DIMENSIONS VERSION WITH ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS

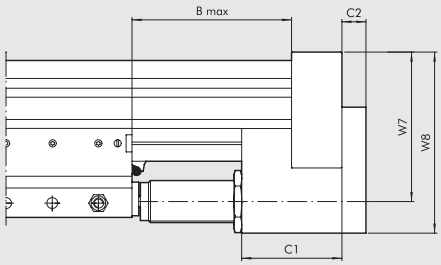
Ø 25



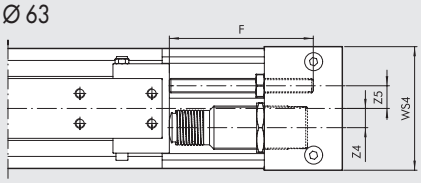


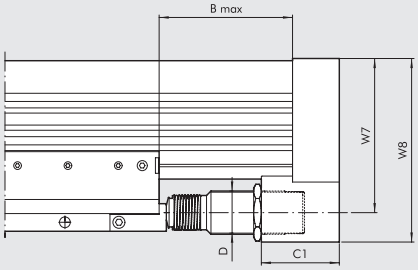
Ø 32; Ø 40





Ø 63





278

Ø	B Max	C1	C2	D	F	W7	W8	WS4	Z4	Z5	Stroke	Max. cushioned force For stroke [J]	Max. cushioned force For hour [J]	Max. impact force [N]	Max. thrust force [N]
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 **A1**.195

KEY TO CODES

CYL	27	7	0	25	0150	C	N
	TYPE			**BORE**	**STROKE**		**GASKETS**
	27 Rodless cylinder	**7** Double-acting cushioned Magnetic with "V" guide **8** Double-acting cushioned Magnetic with "V" guide + 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

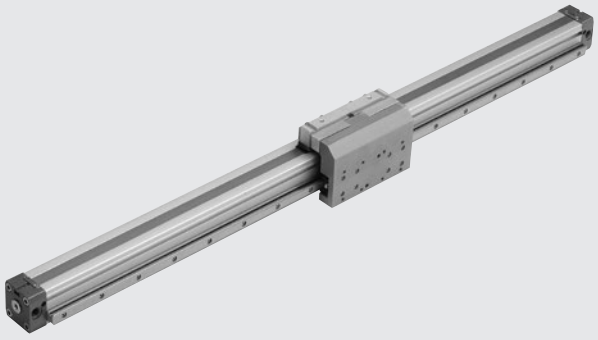
✱ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only ● For speed ≥ 1/m/s

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 barrel.
- Ball circulation pads 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 **A1**.62



TECHNICAL DATA			Ø16	Ø25	Ø32	Ø40	Ø63	Ø63 heavy
Operating pressure		bar	1 to 8					
		MPa	0.1 to 0.8					
		psi	14.5 to 116					
Temperature range	NBR - FKM/FPM	°C	−10 to +80					
Design			Double-acting rodless cylinder with direct transmission system					
Fluid			50 µm unlubricated filtered air Lubrication, if used, must be continuous					
Standard strokes		mm	100 to 1350	100 to 2300		100 to 2250	100 to 2100	100 to 2650
Sensor magnet			Available magnetic and non-magnetic versions.					
Recommended speed	NBR	m/s	<1					
	FKM/FPM	m/s	≥1					
Max. speed with decelerators	NBR	m/s	<1					
	FKM/FPM	m/s	2					
Weights			See cylinder "**General technical data**" at the beginning of the chapter					
Notes			**For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.**					

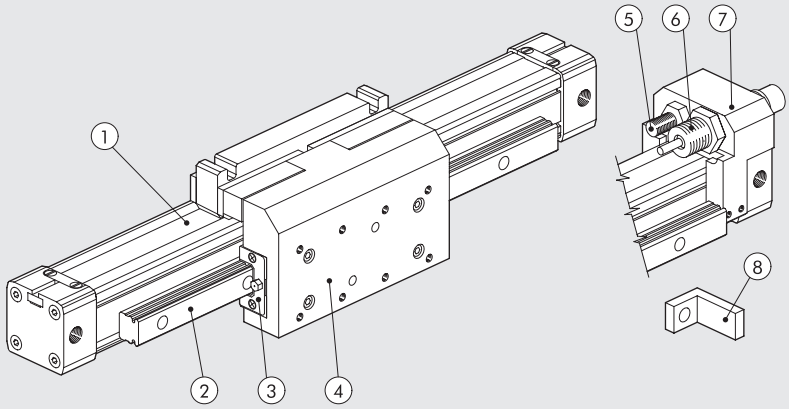
COMPONENTS

For version 275

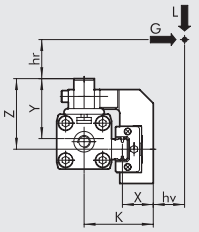
① CYLINDER: see components of **rodless cylinders - series STD**
② GUIDE: hardened steel
③ PAD: steel with hardened ball circulation
④ SLIDE SUPPORT: anodized aluminium

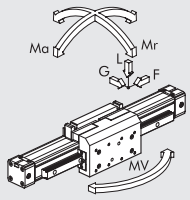
For version 276

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: anodized 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

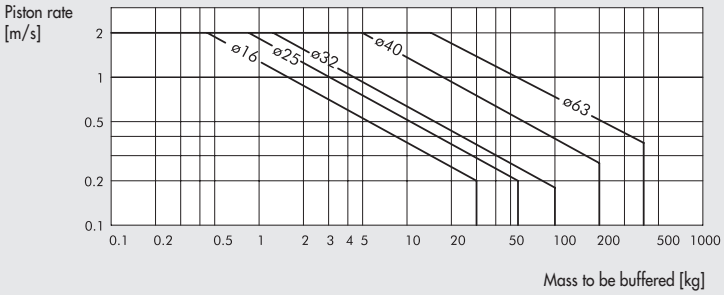
N.B.: When the cylinder is subjected simultaneously to torque and force, keep to the following equations, where the lengths have to be given in metres.

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

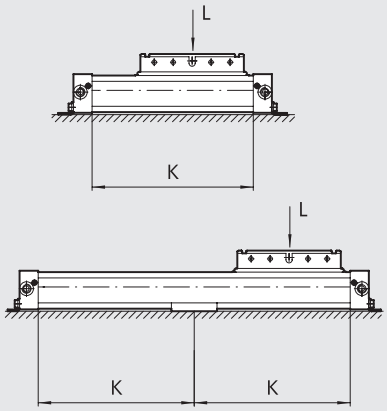
$$\frac{Ma}{Ma\ max} + \frac{Mr}{Mr\ max} + \frac{Mv}{Mv\ max} + \frac{L}{L\ max} + \frac{G}{G\ max} \leq 1$$

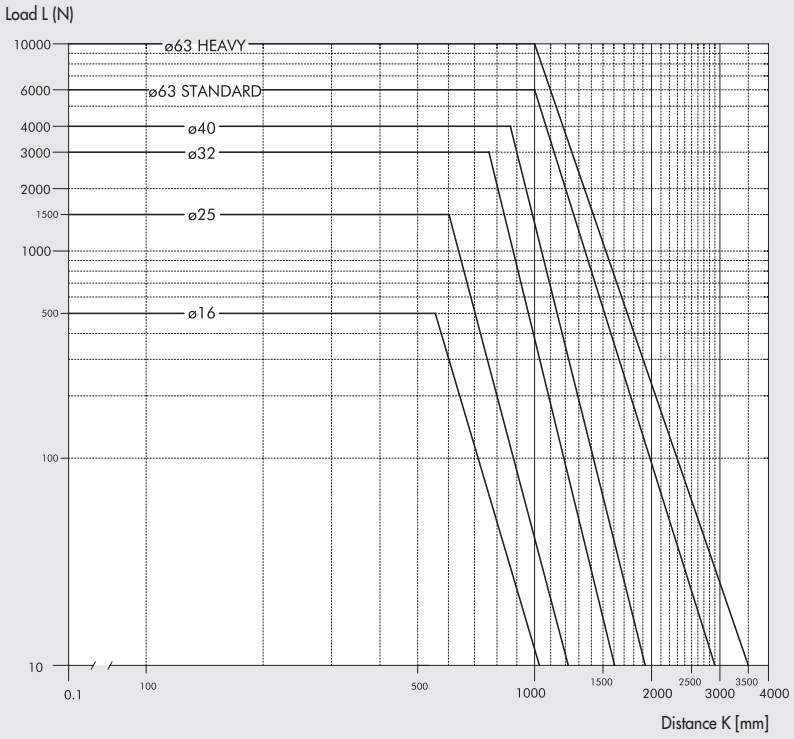
DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

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

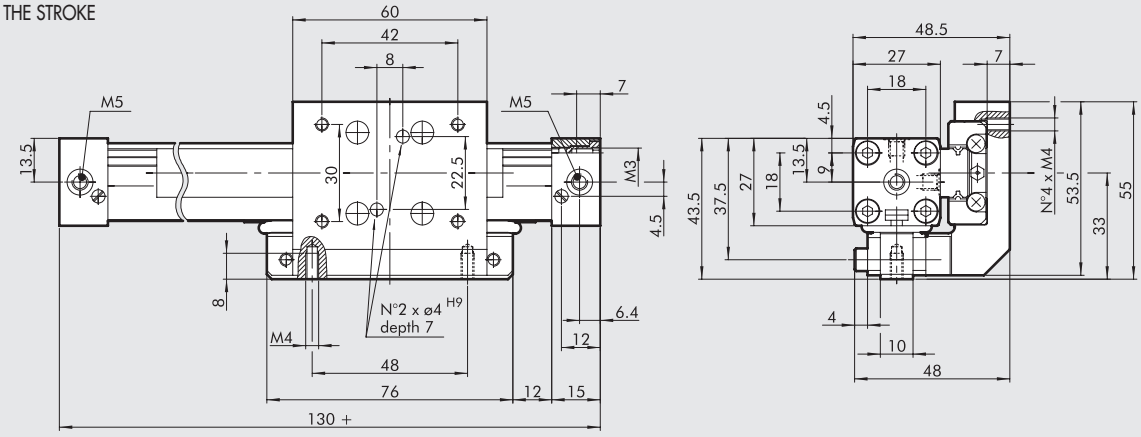




METAL WORK PNEUMATIC

DIMENSIONS Ø 16

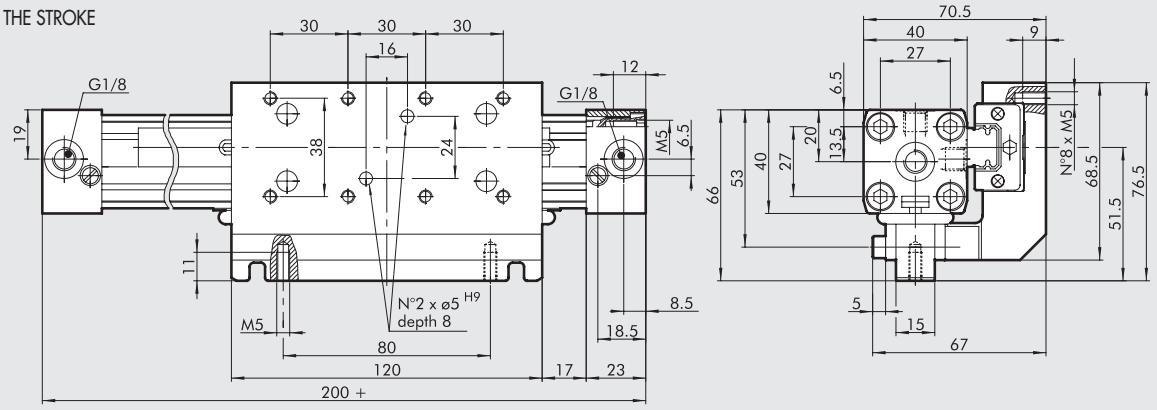
+ = ADD THE STROKE



275

DIMENSIONS Ø 25

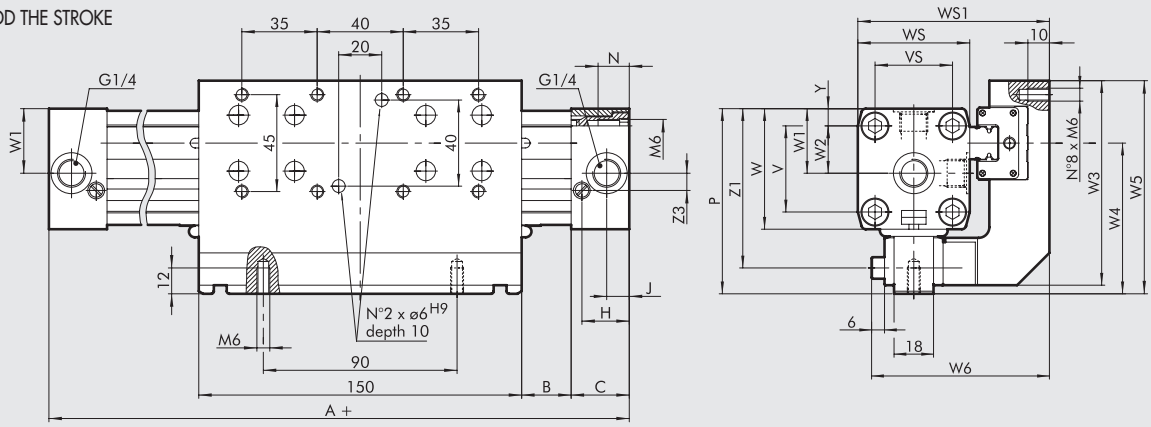
+ = ADD THE STROKE



275

DIMENSIONS Ø 32; Ø 40

+ = ADD THE STROKE

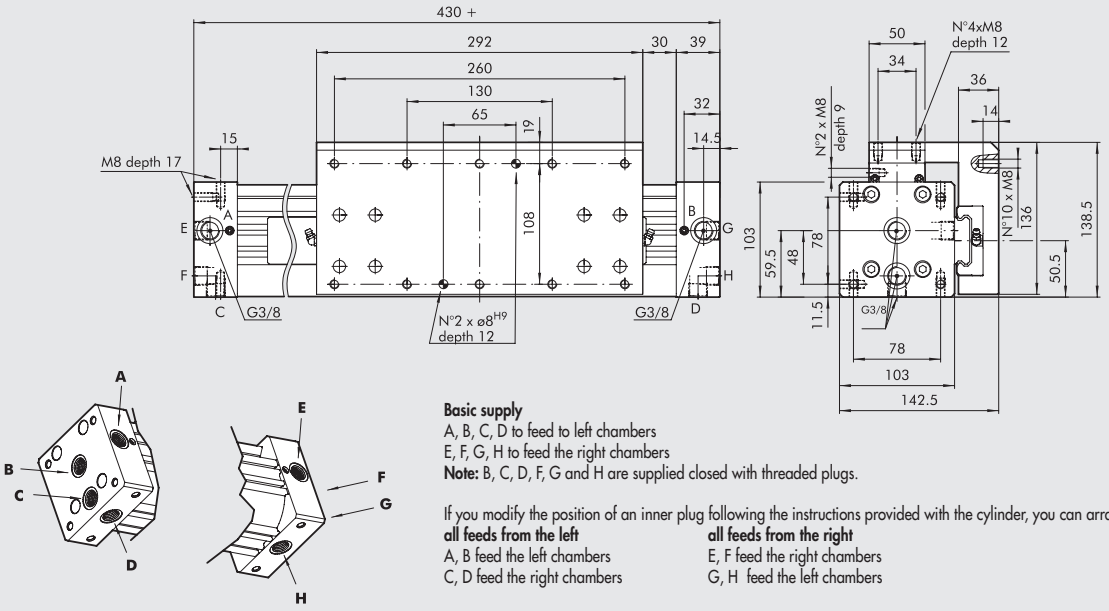


275

Ø	A	B	C	H	J	N	P	V	VS	W	WS	WS1	W1	W2	W3	W4	W5	W6	Y	Z1	Z3
32	250	23	27	22	10.5	14	86	40	36	56	52	85	30	22	95	70	99	78.5	8	74	8
40	300	45	30	24	15	17.5	97	54	54	69	72	104	36	27	98	73	102	88	9	85	11.8

DIMENSIONS Ø 63

HEAVY

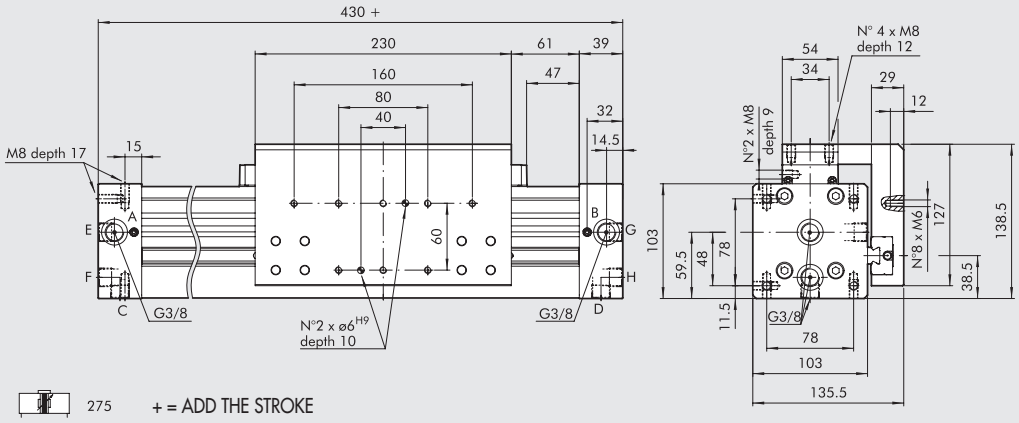


Basic supply
A, B, C, D to feed to left chambers
E, F, G, H to feed the right chambers
Note: B, C, D, F, G and H are supplied closed with threaded plugs.

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

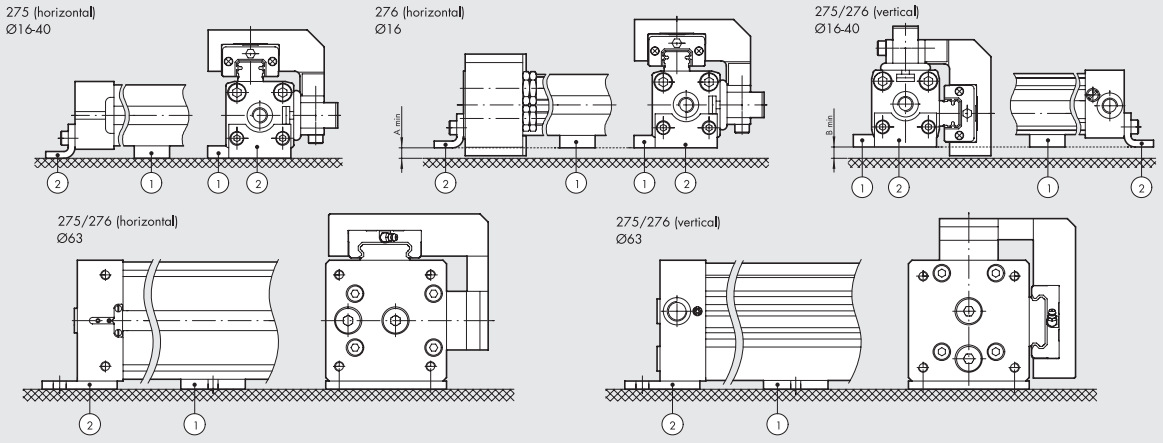
all feeds from the left	**all feeds from the right**
A, B feed the left chambers	E, F feed the right chambers
C, D feed the right chambers	G, H feed the left chambers

STANDARD



275 + = ADD THE STROKE

ASSEMBLY DIAGRAMS

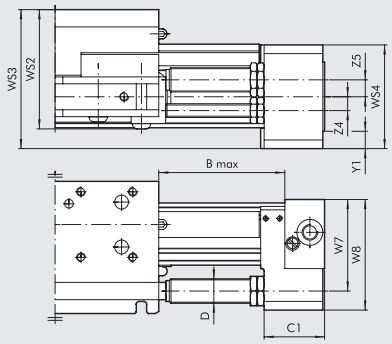


Ø	A min	Horizontal layout Interm. support code (1)	Leg code (2)	B min	Vertical layout Interm. support code (1)	Leg code (2)
16	8	W0950164004	W0950167001	12	W0950164004	W0950167001
25	10	W0950254004	W0950257001	10	W0950254004	W0950257001
32	4	W0950324004	W0950328035	11	W0950324004	W0950327001
40	3	W0950404004	W0950407001	5	W0950404004	W0950407001
63	–	W0950637036	W0950637001	–	W0950637033	W0950637001

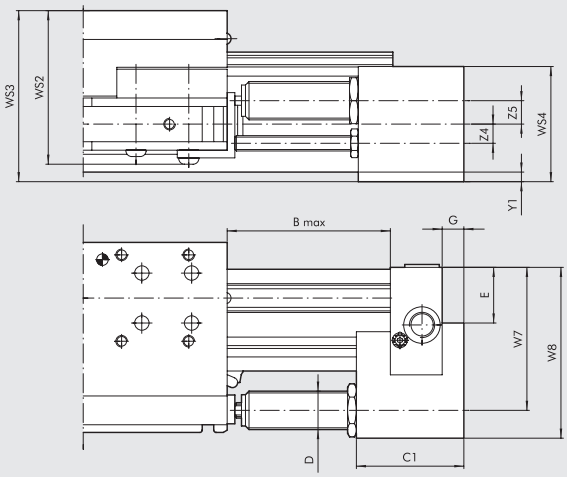
METAL WORK PNEUMATIC

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

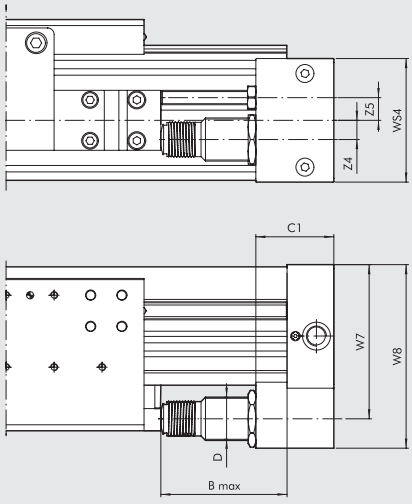
ø16



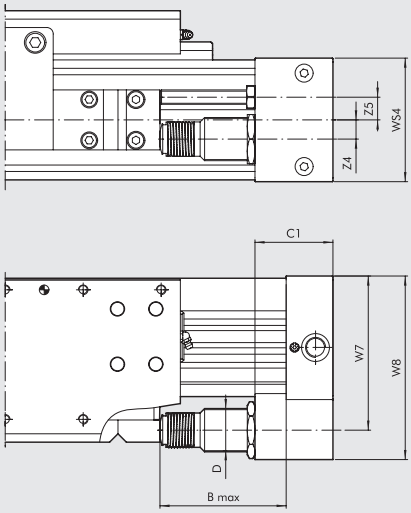
ø25; ø32; ø40



ø63 STD



ø63 HEAVY



276

Ø	Version	B max	C1	D	E	G	W7	W8	WS2	WS3	WS4	Y1	Z4	Z5	Stroke	Max. cushioned force Per stroke [J]	Max. cushioned force Per hour [J]	Max. impact force [N]	Max. thrust force [N]
16	–	50	22	M12x1	–	–	38	46	52	56	42	7.5	7	7.5	10.4	10	14125	1000	220
25	–	72	44	M14x1.5	17	9	53	67	71	80.5	50	5	8	9.8	16	26	34000	2800	530
32	–	90	56	M20x1.5	29	11	74	89	82.5	91	60	4	10	12.2	22	54	53700	3750	890
40	–	105	74	M25x1.5	32.8	14	89	108	92	108	75	1.5	12.5	12.7	25	90	70000	5500	1550
63	standard	105	65	M36x1.5	–	–	128.5	153	–	–	103	–	16	19	25	160	91000	11120	2220
63	heavy	105	65	M36x1.5	–	–	128.5	153	–	–	103	–	16	19	25	160	91000	11120	2220

For graphs to help choose shock absorbers see page **A1**.195

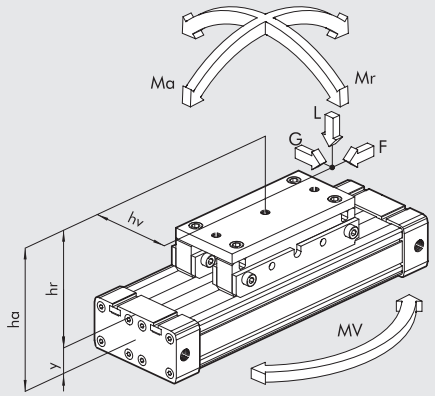
KEY TO CODES

CYL	2 7	5	0	2 5	0 1 5 0	C	N
	TYPE			**BORE**	**STROKE**		**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 speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only** ● For speed ≥ 1/m/s

RODLESS CYLINDER SERIES DOUBLE

DIMENSIONING – FORCES AND MOMENTS



Bore	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, keep to the following equations, where the lengths have to be given in metres.

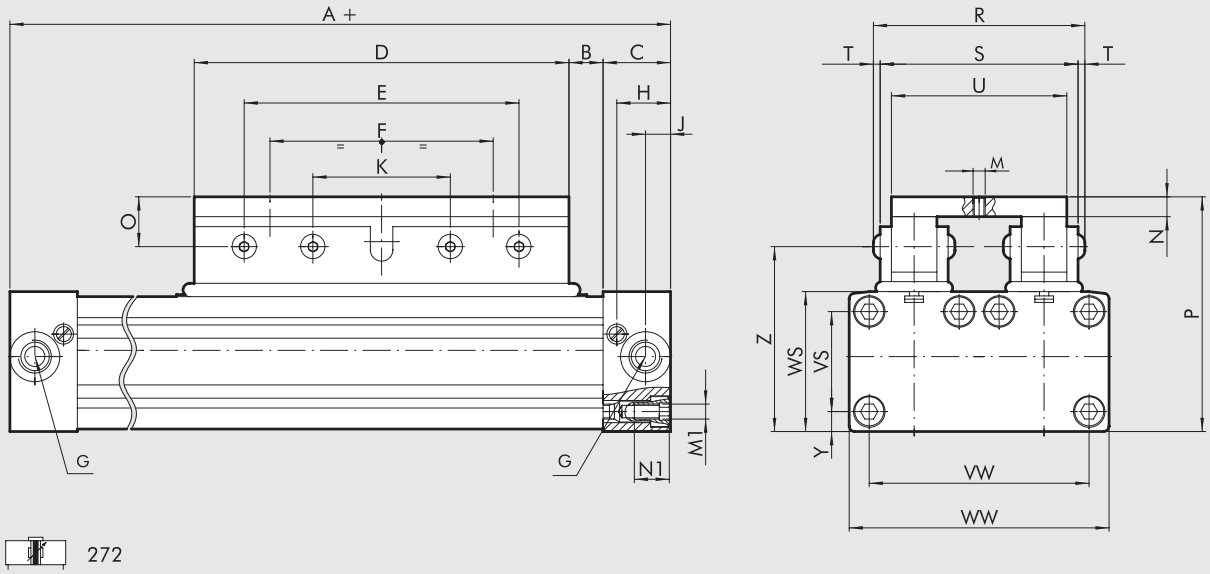
$Ma = F \times ha \qquad Mr = L \times hv + G \times hr \qquad Mv = F \times hv$

$$\frac{Mv}{Mv\ max} \leq 1; \quad \frac{L}{L\ max} \leq 1; \quad \frac{Ma}{Ma\ max} + \frac{Mr}{Mr\ max} + 0.22 \times \frac{Mv}{Mv\ max} + 0.4\,\frac{L}{L\ max} \leq 1$$

For technical data, see **rodless cylinders - series STD**.
For weights, see cylinder "**General technical data**" at the beginning of the chapter.

DIMENSIONS OF RODLESS CYLINDER, DOUBLE SERIES

+ = ADD THE STROKE

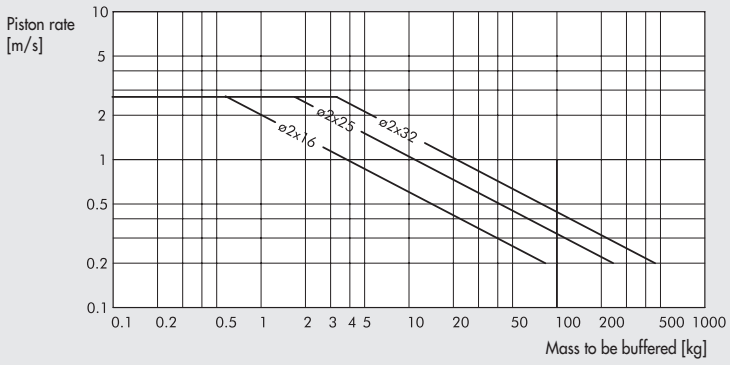


272

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.

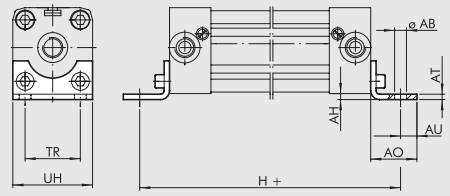


ACCESSORIES AND SPARE PARTS FOR RODLESS CYLINDERS

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

FOOT Ø 16; 25

+ = ADDED STROKE

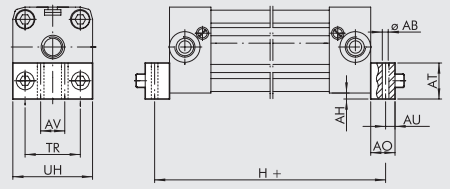


Code	Ø	ØAB	AH	AO	AT	AU	TR	UH	H	Weight [g]
W0950167001	16	3.6	1.5	14	1.6	4	18	26	150	10
W0950257001	25	5.5	2	22	2.5	6	27	40	232	32

Note: Individually packed with 2 screws

FOOT Ø 32; 40

+ = ADDED STROKE

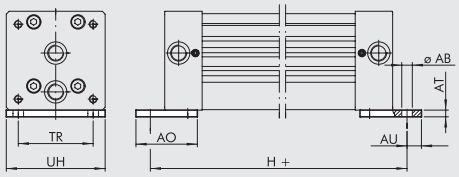


Code	Ø	ØAB	AH	AO	AT	AU	AV	TR	UH	H	Weight [g]
W0950327001	32	6.6	4	25	20	8	20	36	51	284	88
W0950407001	40	9	2	25	20	11.5	30	54	71	327	112

Note: Individually packed with 2 screws

FOOT Ø 63

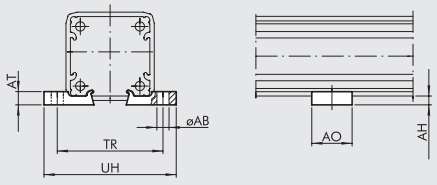
+ = ADDED STROKE



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

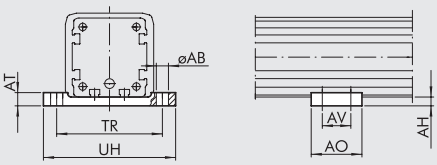
INTERMEDIATE FOOT Ø 16; 25 FOR STD AND "V" GUIDE



Code	Ø	ØAB	AH	AO	AT	TR	UH	Weight [g]
W0950167031	16	5.5	3	20	5	41	53	4
0950254094	25	5.5	4	20	6	48	60	6

Note: Individually packed.

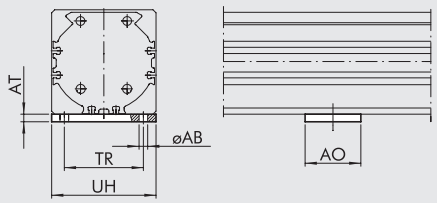
INTERMEDIATE FOOT Ø 32; 40 FOR STD AND "V" GUIDE



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

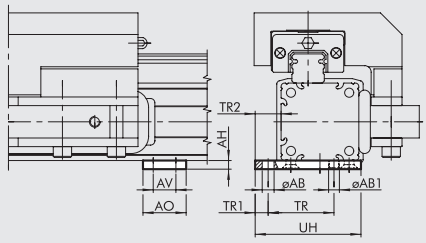
INTERMEDIATE SUPPORT Ø 63 FOR VERSION STD, "V" GUIDE AND VERTICAL POSITION BALL RECIRCULATING



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

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

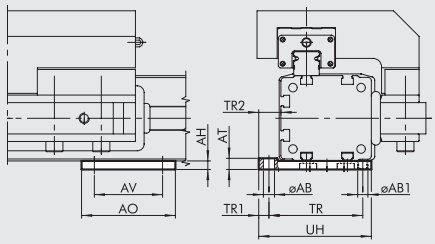
INTERMEDIATE SUPPORT Ø 16 to 25 FOR BALL RECIRCULATING



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

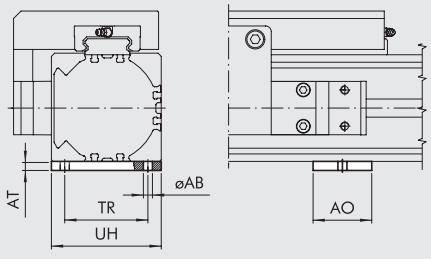
INTERMEDIATE SUPPORT Ø 32 to 40 FOR BALL RECIRCULATING



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

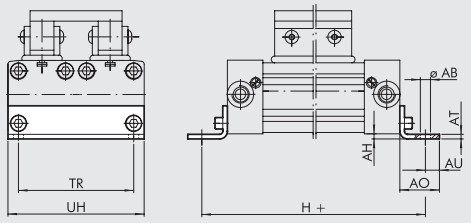
Note: Supplied complete with 4 screws, 4 plates.

NOTES

FIXINGS FOR RODLESS CYLINDER SERIE DOUBLE

FOOT Ø 16; 25

+ = ADD STROKE

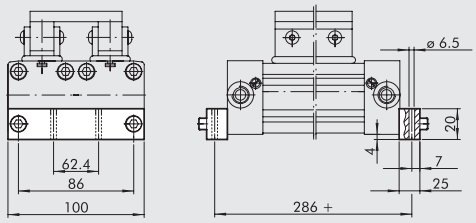


Code	Ø	ØAB	AH	AO	AT	AU	TR	UH	H	Weight [g]
W0950168001	2x16	3.6	1.5	14	1.6	4	42	51	150	18
W0950258001	2x25	5.5	2	22	2.5	6	63	72	232	54

Note: Individually packed complete with 2 screws

FOOT Ø 32

+ = ADD STROKE

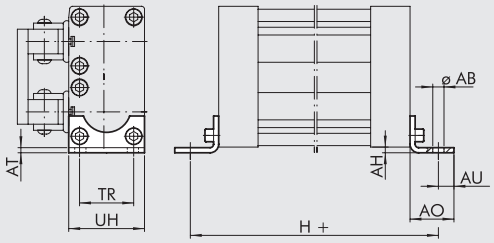


Code	Description	Weight [g]
W0950328036	Foot DOUBLE Ø 32	156

Note: Individually packed complete with 2 screws

VERTICAL FOOT Ø 16; 25

+ = ADD STROKE

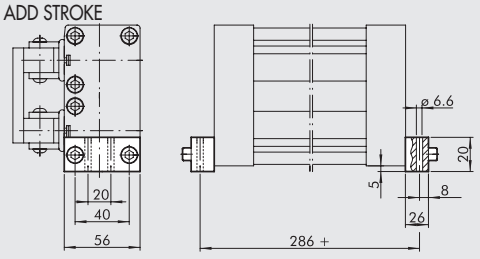


Code	Ø	ØAB	AH	AO	AT	AU	TR	UH	H	Weight [g]
W0950167001	2x16	3.6	1.5	14	1.6	4	18	26	150	10
W0950257001	2x25	5.5	4	22	2.5	6	27	40	232	32

Note: Individually packed complete with 2 screws

VERTICAL FOOT Ø 32

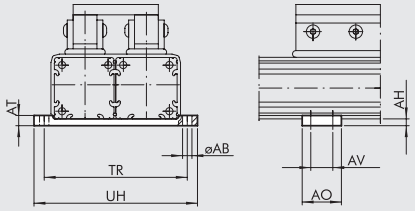
+ = ADD STROKE



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

Note: Individually packed complete with 2 screws

INTERMEDIATE FOOT Ø 16 to 32



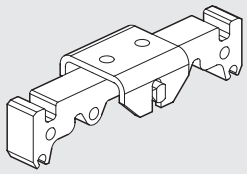
Code	Ø	ØAB	AH	AO	AT	AV	TR	UH	Weight [g]
W0950168037	2x16	3.5	3	12	6	6	60.5	64	16
W0950258037	2x25	5.5	4	20	6	10.5	84.5	96	34
W0950328037	2x32	6.5	5	55	8	40	111.5	123	96

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

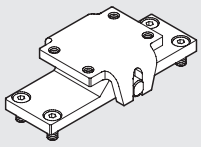
ACCESSORIES FOR CONVERTING STD RODLESS CYLINDERS INTO SWING CYLINDERS

KIT TO TRANSFORM INTO SWING VERSION

Ø16 to 40



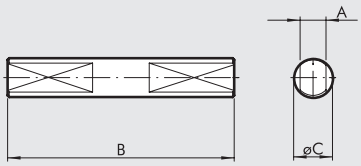
Ø63



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

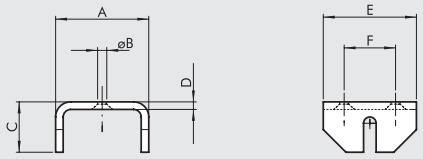
DRIVE PIN



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

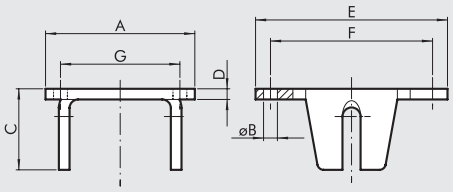
SWING SUPPORT Ø 16; 25



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



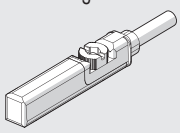
Code	Ø	A	ØB	C	D	E	F	G	Weight [g]
W0950327033	32	70	6.5	38	5	90	75	55	274
W0950327033	40	70	6.5	38	5	90	75	55	274
W0950637033	63	80	M8	32	8	80	65	37	400

Note: Individually packed

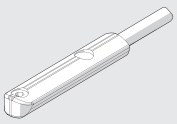
SENSOR MAGNETIC

RETRACTABLE SENSOR

SENSOR, SQUARE TYPE
Latest generation,
secure fixing



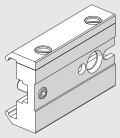
SENSOR, OVAL TYPE
Traditional



For codes and technical data, see **chapter A6**.

Note: For rodless cylinders Ø25 having "V" guide use only the HS version of the oval type.

SENSOR SUPPORT Ø 16; 25

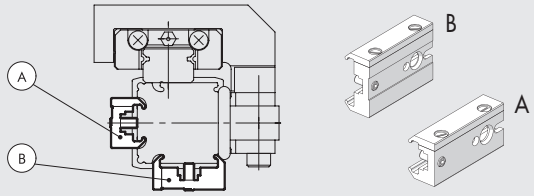


Code	Description
0950164001	Sensor support STD

Note: Supplied with 1 stud pin, 2 screws

METAL WORK PNEUMATIC

SENSOR SUPPORT Ø 16 FOR RODLESS CYLINDER WITH BALL RECIRCULATING

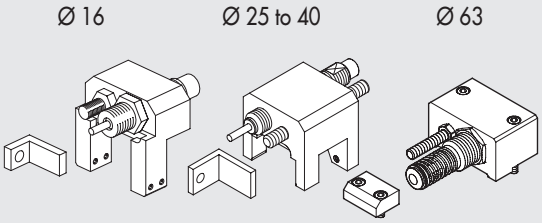


Code sensor support	Description sensor support	Type sensor support	Mounting on the carriage opposite side	Mounting on the guide opposite side
0950164003	Sensor support short	A	•	
0950164001	Sensor support std	B		•

Note: Supplied complete with 2 screws, 1 pin

SHOCK ABSORBERS

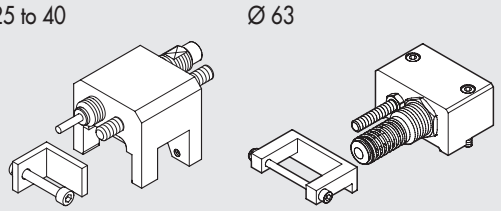
ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS KIT



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)

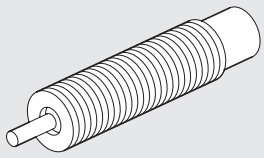
ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS KIT FOR RODLESS CYLINDER WITH "V" GUIDE



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)

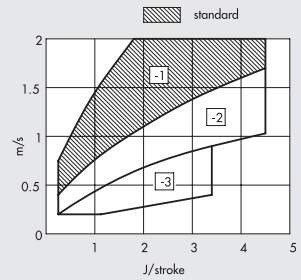
SHOCK ABSORBERS



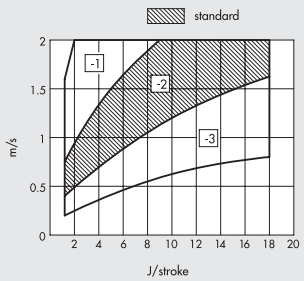
Code	Description	Ø
0950004003	Shock absorbers ECO15 MF1 + nut M12x1	16
0950004004	Shock absorbers ECO25 MC2 + nut M14x1.5	25
0950004005	Shock absorbers ECO50 MC2 + nut M20x1.5	32
0950004006	Shock absorbers ECO100 MF2 + nut M25x1.5	40
0950004007	Shock absorbers ECO125 MF3 + nut M36x1.5	63

GRAPHS TO HELP CHOOSE THE RIGHT SHOCK ABSORBERS

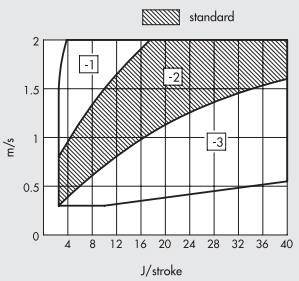
Ø 16



Ø 25



Ø 32



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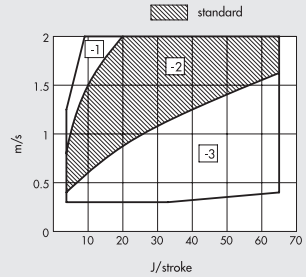
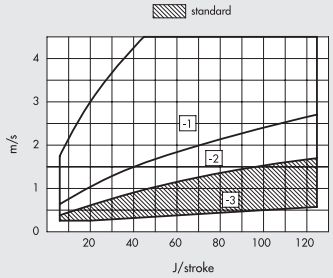


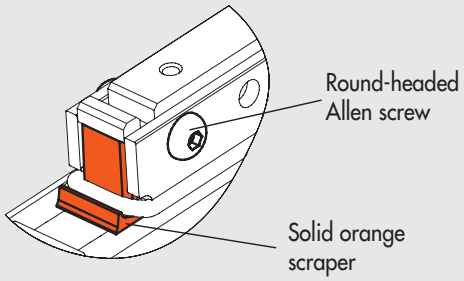
Ø 63

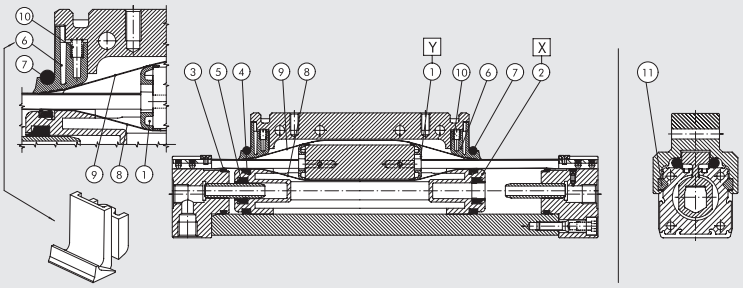


The dotted areas indicate that the SHOCK ABSORBERS is supplied standard. Other options can be selected depending on the speed [m/sec] and the maximum work force [J/stroke] to dissipate at each stroke. Refer to the diagrams above to select the correct option.

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

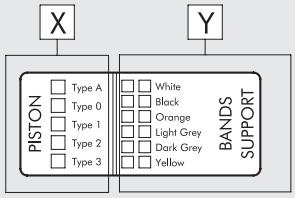
"LAST RELEASE" CYLINDER





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

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

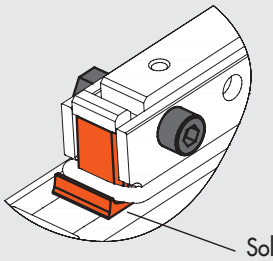
FKM/FPM GASKET KIT POS 3-4-5-6-7-10

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

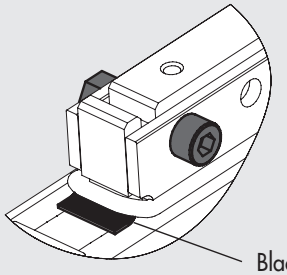
NOTES

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

"INTERMEDIATE RELEASE"



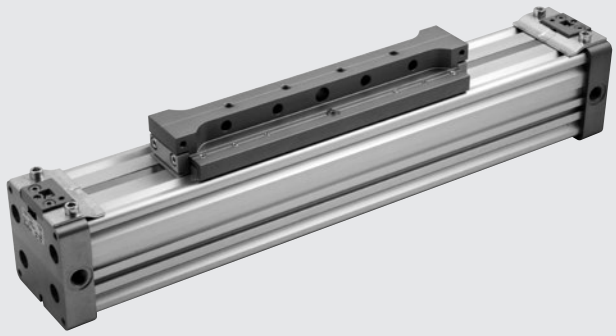
"OLD RELEASE"



RODLESS CYLINDER SERIES PU

METAL WORK PNEUMATIC

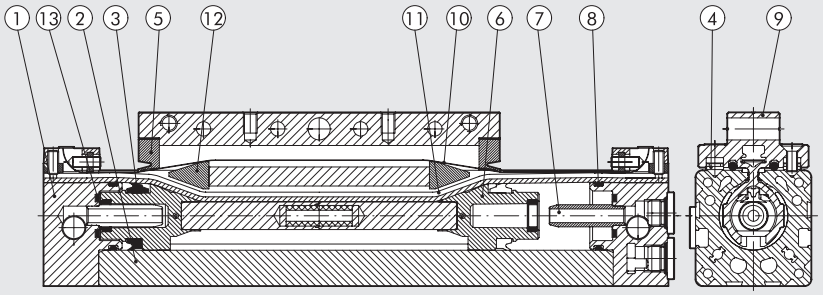
Series PU rodless cylinders have an internal strip for longitudinal tightness made of polyurethane (PU) with a harmonic steel wire core. This solution gives excellent air tightness values. It is particularly suitable for high-speed and highly cyclical applications, even with long strokes.
The external strip, which merely provides protection against of foreign bodies entry, is made of harmonic steel. The anodized 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 page **A1**.62). There are plastic anti-wear guide pads 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.



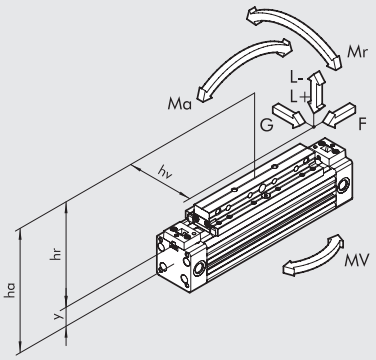
TECHNICAL DATA		Ø25	Ø32	Ø40	Ø50
Operating pressure	bar	1 to 8			
	MPa	0.1 to 0.8			
	psi	14.5 to 116			
Temperature range	°C	–10 to +80			
Design		Double-acting rodless cylinder with direct transmission system			
Fluid		50 µm unlubricated filtered air Lubrication, if used, must be continuous			
Standard strokes	mm	100 to 5700			100 to 5600
Sensor magnet		Available magnetic and non-magnetic versions.			
Recommended speeds	m/s	< 2			
Max. speed with decelerators	m/s	< 2			
Weights		See cylinder "**General technical data**" at the beginning of the chapter			
Notes		**For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.**			

COMPONENTS

① CYLINDER HEAD: anodized aluminium alloy
② BARREL: profiled anodized aluminium alloy
③ PISTON GASKET: polyurethane
④ V-SHAPED GUIDE PAD: 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: polyurethane



DIMENSIONING - FORCE AND TORQUE



Bore	Centre Distance Y	Cushioning stroke [mm]	Actual Force F at 6 bar [N]	G [N]	Max. load L + [N]	Max. load L - [N]	Ma max [Nm]	Mr max [Nm]	Mv max [Nm]
25	16.5	20	250	350	480	350	22	5	10
32	20.1	24	420	450	650	450	40	10	20
40	25.3	33	640	750	900	750	70	26	35
50	30.4	39	1000	900	1100	900	90	32	45

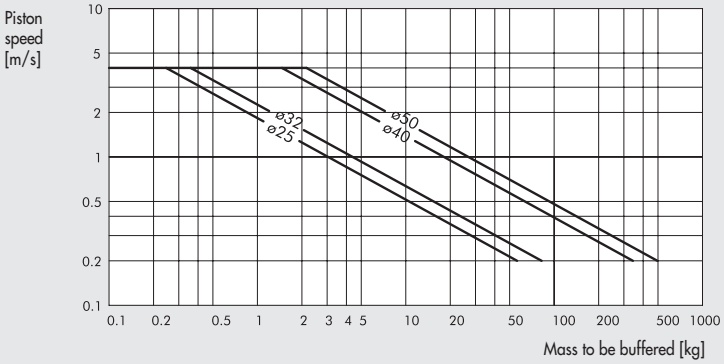
N.B.: When the cylinder is subjected simultaneously to torque and force, keep to the following equations, where the lengths have to be given in metres.

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

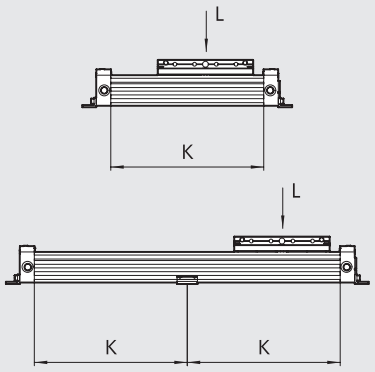
$$\frac{Mv}{Mv\ max} \leq 1; \qquad \frac{L}{L\ max} \leq 1; \qquad \frac{Ma}{Ma\ max} + \frac{Mr}{Mr\ max} + 0.22 \times \frac{Mv}{Mv\ max} + 0.4\,\frac{L}{L\ max} \leq 1$$

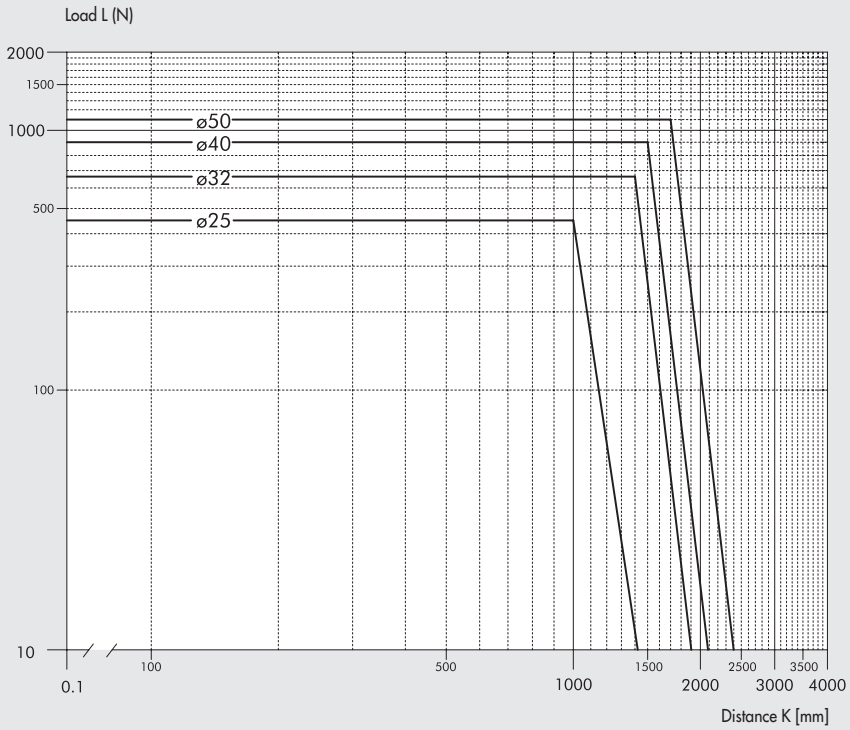
DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

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.



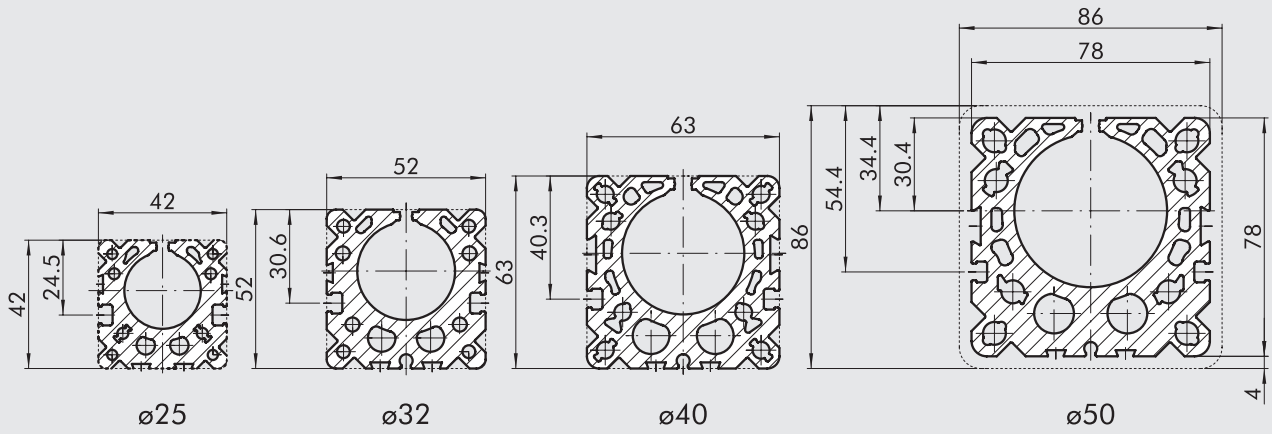
MAXIMUM LOAD ACCORDING TO THE DISTANCE BETWEEN SUPPORTS





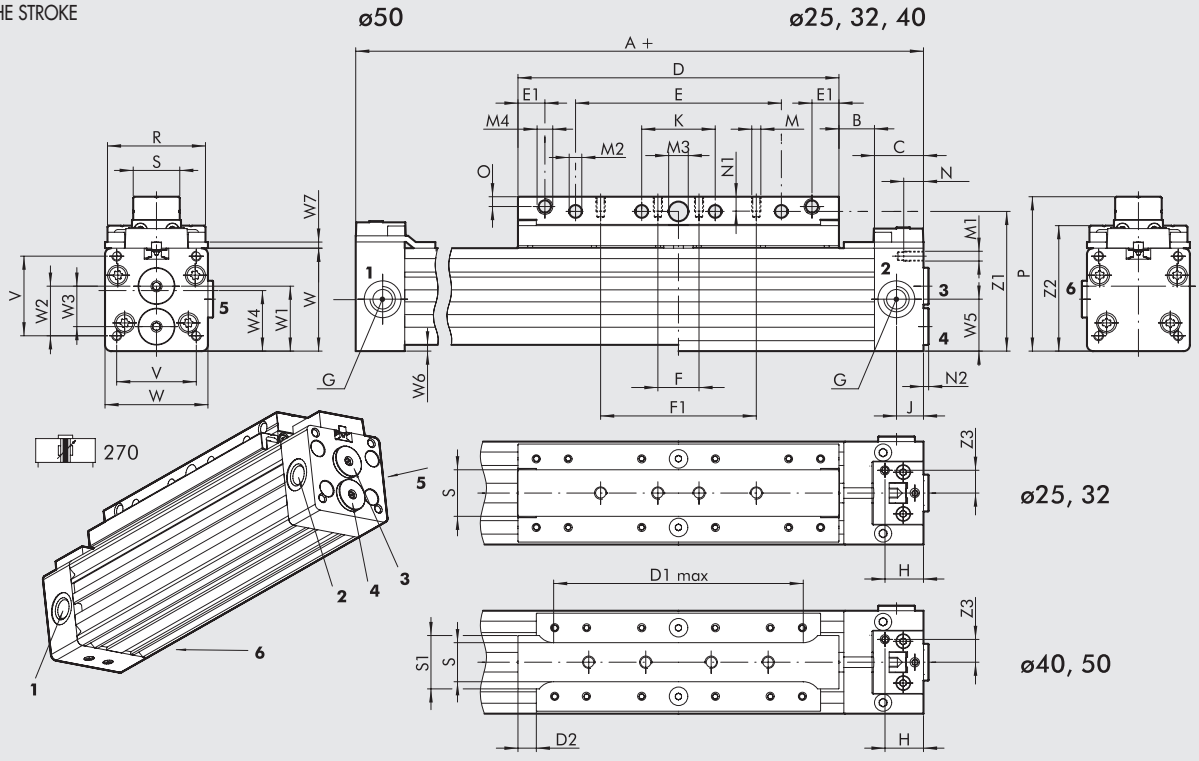
METAL WORK PNEUMATIC

BARREL CROSS SECTION



DIMENSIONS

+ = ADD THE STROKE



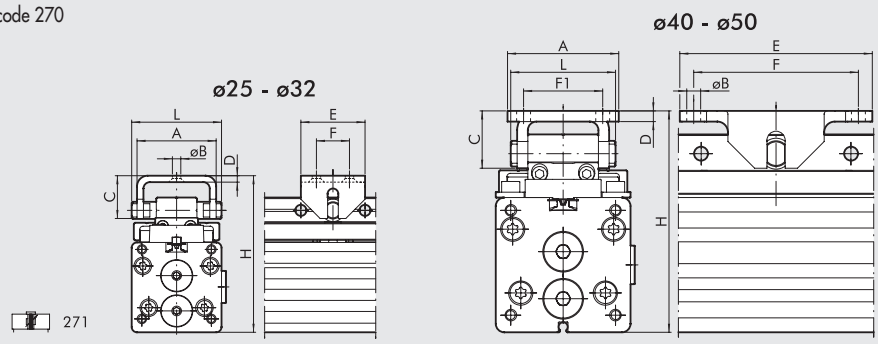
1 and **6** feed the left-hand chamber from the left side
4 feeds the left-hand chamber from the right side
2, **3** and **5** feed the right-hand chamber from the right side
NOTE: **3**, **4**, **5** and **6** are closed with threaded caps

Ø	A	B	C	D	D1 max	D2	E	E1	F	F1	G	H	J	K	M	M1	M2	M3 H10	M4	N	N1	N2	O	P	R	S	S1	V	W	W1	W2
25	200	14.5	20	131	-	-	84	11	50	-	G1/8	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
32	250	19.5	20	171	-	-	124	11	30	100	G1/8	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
40	300	19.8	23	214.5	168	10	150	5.2	40	130	G1/4	18	12.5	70	M6	M5	6.5	10	M5	15	11	2	5.5	92.5	60	21	33	49	63	37.7	29.7
50	350	19.9	23	264.3	198	10	170	6.2	50	150	G1/4	18	12.5	80	M8	M6	8.5	12	M6	16	12.5	2	6.5	115	74	24	42	72	86	53.4	46.4

Ø	W3	W4	W5	W6	W7	Z1	Z2	Z3
25	16.5	25.5	21.2	-	2.5	57	51.2	9.3
32	19	31.9	27	-	2.5	67	61	9.3
40	22	37.7	31.5	-	2.5	83.5	75.7	11
50	31.8	51.6	43	4	2.5	106	97	11

RODLESS CYLINDER WITH SWING CARRIAGE

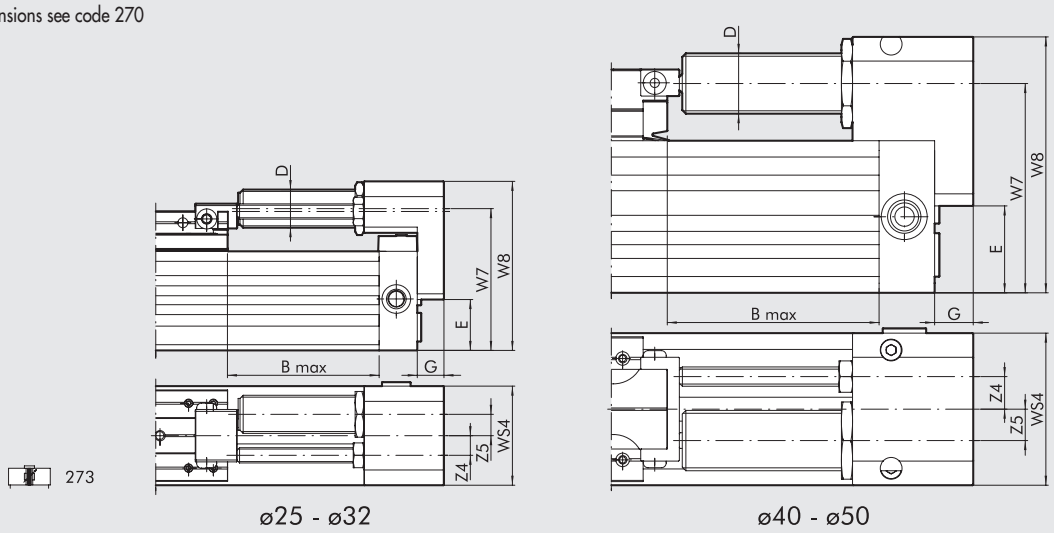
NOTE: For other dimensions see code 270



Ø	A	ØB	C	D	E	F	F1	H	L
25	37	5.5	20	3	30	16	-	73 - 75	42
32	37	5.5	20	3	30	16	-	83 - 85	42
40	52	6.5	26.8	5	90	77	37	103.5 - 105.5	49
50	52	6.5	26.8	5	90	77	37	125.3 - 128.3	49

DIMENSIONS VERSION WITH ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS

NOTE: For other dimensions see code 270



Ø	B Max	D	E	G	W7	W8	WS4	Z4	Z5	Stroke	Max. cushioned force For stroke [J]	Max. cushioned force For hour [J]	Max. impact force [N]	Max. thrust force [N]
25	50	M14x1.5	21.5	12	61.5	72	42	9.2	6	16	26	34000	2800	530
32	75	M20x1.5	26.7	14	74.4	88.7	52	10.3	11.2	22	54	53700	3750	890
40	88	M25x1.5	36	16	86.7	106	63	13.5	13	25	90	70000	5500	1550
50	82	M25x1.5	49	20	108.5	129	86	17.5	9	25	90	70000	5500	1550

For graphs to help choose shock absorbers see page **A1**.211

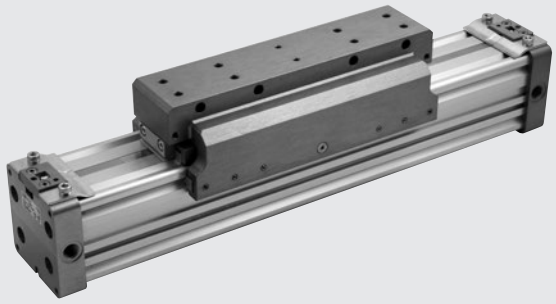
KEY TO CODES

CYL	27 TYPE	0	3	25 BORE	0100 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 40 50	Ø 25 to 40: from 100 to 5700 mm Ø 50: from 100 to 5600 mm		**P** Polyurethane gaskets

■ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only.

RODLESS CYLINDER WITH "V" GUIDE SERIES PU

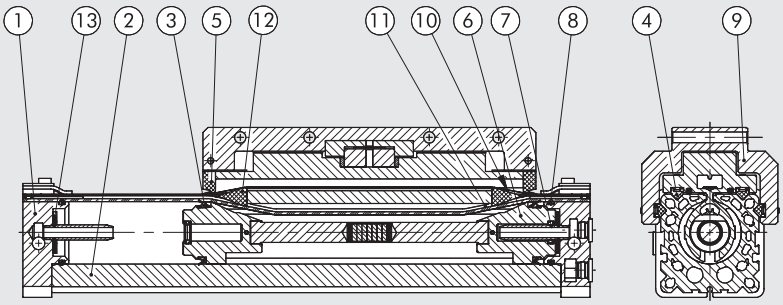
Series PU rodless cylinders have an internal strip for longitudinal tightness made of polyurethane (PU) with a harmonic steel wire core. This solution gives excellent air tightness values. It is particularly suitable for high-speed and highly cyclical applications, even with long strokes.
The external strip, which merely provides protection against of foreign bodies entry, is made of harmonic steel. The anodized 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 page **A1**.62).
In order to increase the load capacity, side pads are mounted in addition to the guide pads normally present on the standard PU version. They run in grooves and support the central element (cap), which has a carriage-piston rocking coupling.
This means the carriage only transmits axial loads; it does not support loads and moments in other directions. Pad clearance can be adjusted by means of lateral threaded screws to reduce wear. The pads can be replaced without having to remove the cylinder. This family of cylinders has the same features as described for the basic version, such as built-in adjustable pneumatic cushioning and sensor and accessory slots. A version with adjustable limit switches and hydraulic decelerators is available. They can be purchased and added at any time, even to basic cylinders.



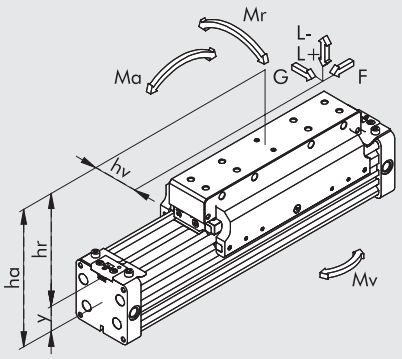
TECHNICAL DATA		Ø50
Operating pressure	bar	1 to 8
	MPa	0.1 to 0.8
	psi	14.5 to 116
Temperature range	°C	–10 to +80
Design		Double-acting rodless cylinder with direct transmission system
Fluid		50 µm unlubricated filtered air Lubrication, if used, must be continuous
Standard strokes	mm	100 to 5600
Sensor magnet		Available magnetic and non-magnetic versions.
Recommended speeds	m/s	< 2
Max. speed with decelerators	m/s	< 2
Weights		See cylinder "**General technical data**" at the beginning of the chapter
Notes		**For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.**

COMPONENTS

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



DIMENSIONING - FORCE AND TORQUE



Bore	Centre Distance Y	Cushioning stroke [mm]	Actual Force F at 6 bar [N]	G [N]	Max. load L + [N]	Max. load L - [N]	Ma max [Nm]	Mr max [Nm]	Mv max [Nm]
50	30.4	39	850	1100	1400	1100	100	40	100

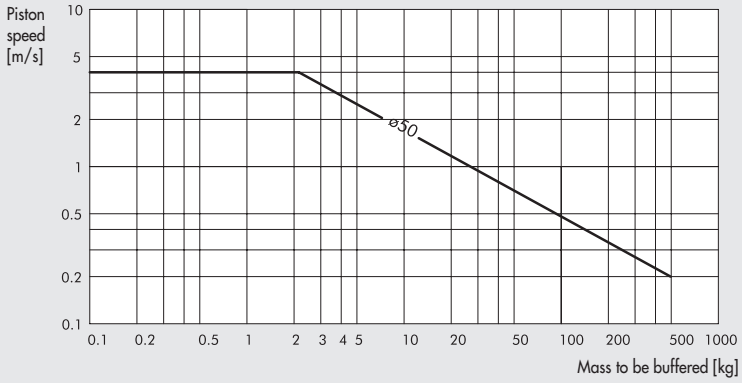
N.B.: When the cylinder is subjected simultaneously to torque and force, keep to the following equations, where the lengths have to be given in metres.

Ma = F x ha Mr = L x hv + G x hr Mv = F x hv

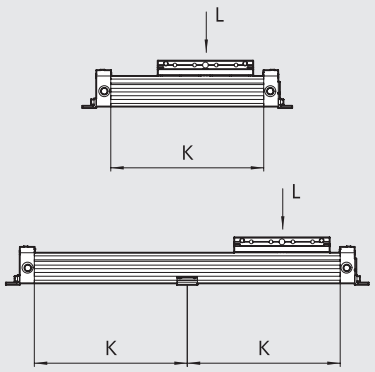
$$\frac{Mv}{Mv\ max} \leq 1; \quad \frac{L}{L\ max} \leq 1; \quad \frac{Ma}{Ma\ max} + \frac{Mr}{Mr\ max} + 0.22 \times \frac{Mv}{Mv\ max} + 0.4\frac{L}{L\ max} \leq 1$$

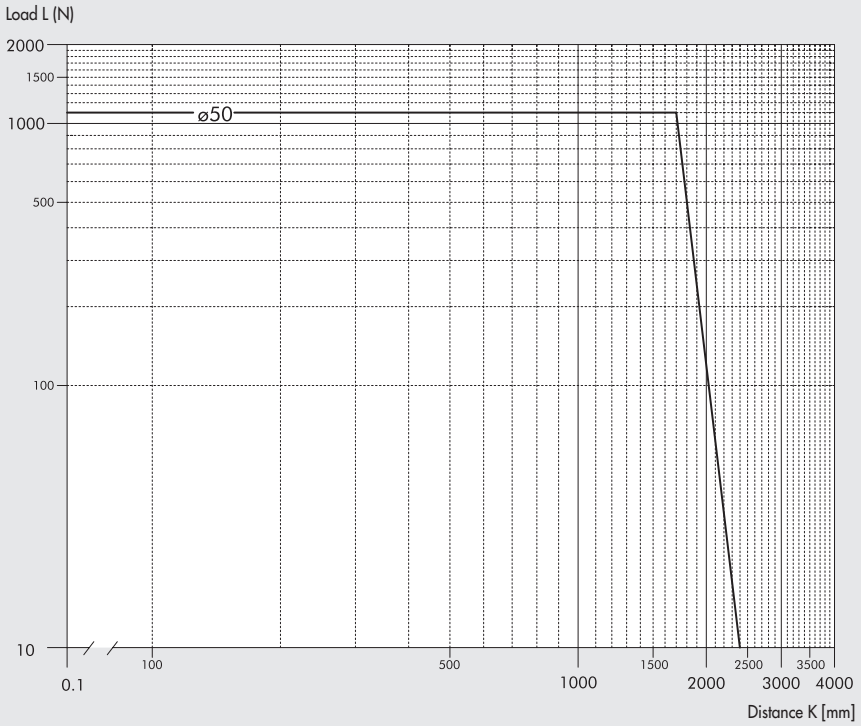
DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

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.



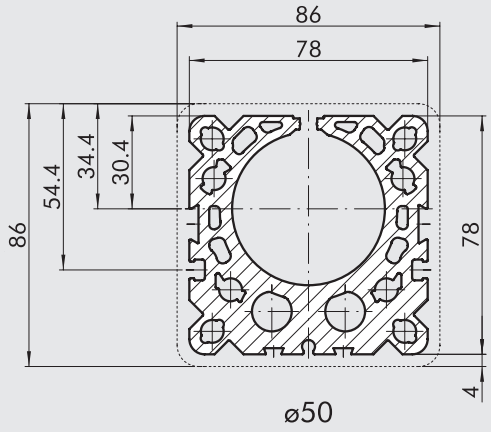
MAXIMUM LOAD ACCORDING TO THE DISTANCE BETWEEN SUPPORTS





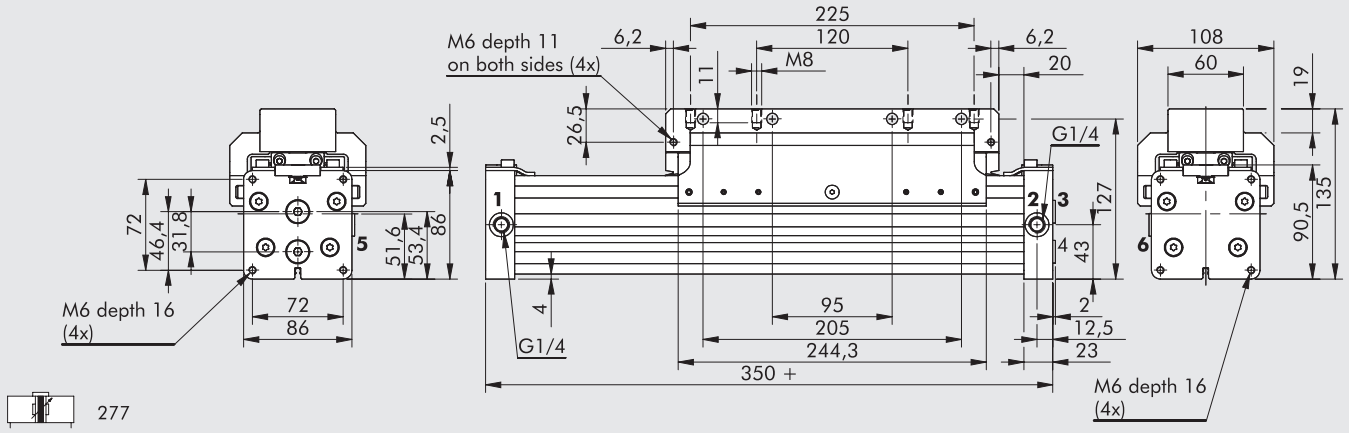
METAL WORK PNEUMATIC

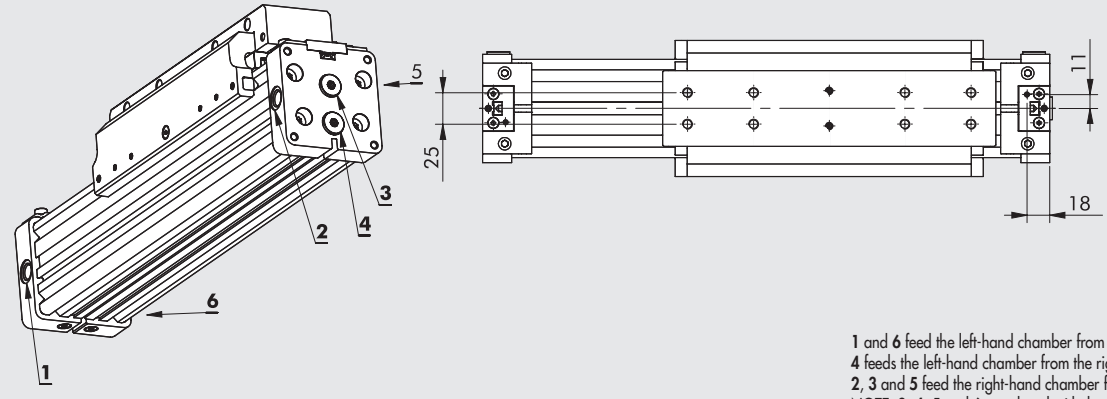
BARREL CROSS SECTION



DIMENSIONS

+ = ADD THE STROKE

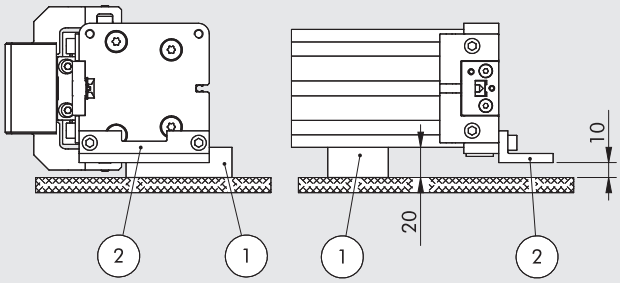




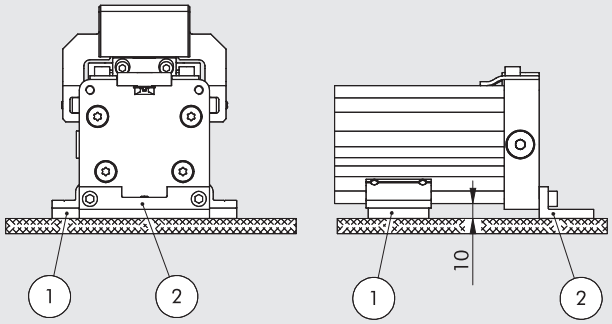
1 and **6** feed the left-hand chamber from the left side
4 feeds the left-hand chamber from the right side
2, **3** and **5** feed the right-hand chamber from the right side
NOTE: **3**, **4**, **5** and **6** are closed with threaded caps

ASSEMBLY DIAGRAMS

277 (horizontal)



277/278 (vertical)

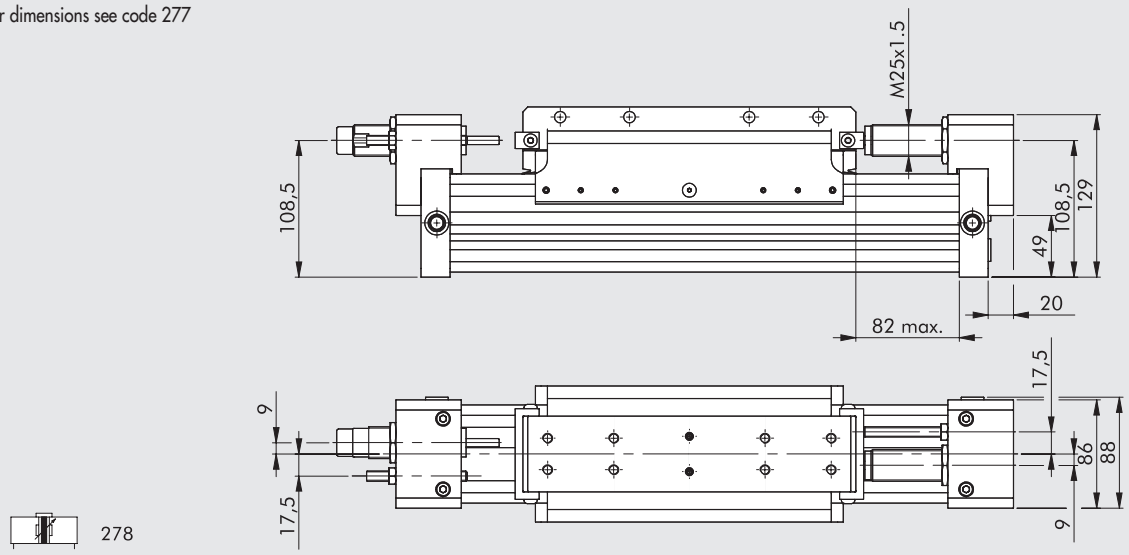


HORIZONTAL LAYOUT	
0950504052	Intermediate support code (1)
0950504041	Leg code (2)

VERTICAL LAYOUT	
W0950507038	Intermediate support code (1)
0950504041	Leg code (2)

DIMENSIONS VERSION WITH ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS

NOTE: For other dimensions see code 277



Ø	Cushioning stroke [mm]	Max. cushioned force For stroke [J]	Max. cushioned force For hour [J]	Max. impact force [N]	Max. thrust force [N]
50	25	65	70000	5550	1500

For graphs to help choose shock absorbers see page **A1**.211

KEY TO CODES

CYL	27	7	3	50	0100	C	P
	TYPE			**BORE**	**STROKE**		**GASKETS**
	27 Rodless cylinder	**7** Double acting cushioned magnetic with "V" guide **8** Double acting cushioned magnetic with "V" guide + adjustable limit switch and shock absorbers	**3** Magnetic ■ **4** No stick-slip **5** Non-magnetic	50	from 100 to 5600 mm		**P** Polyurethane gaskets

■ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only.

RODLESS CYLINDER WITH BALL RECIRCULATING GUIDE 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 of foreign bodies entry, is made of harmonic steel. The anodized 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 page **A1**.62).
A hardened and tempered steel guide is firmly connected to the side of the liner to increase overall performance. This gives the following features:

- very high load capacity with forces acting in any direction and no transmission to the cylinder carriage;
- ball recirculation pads constructed using special technology that makes them very silent during movement of the guide and gives very long maintenance time intervals; lubrication must be performed every 2000 km or once a year, using type 2 grease, preferably with a lithium soap base;
- extra-sturdy carriage support with numerous load fixing holes and centring pin holes;
- stroke range 100-2470 mm with 1mm intervals.

One version has shock absorbers + adjustable limit switches.
These can also be added at a later stage by purchasing the relevant kit.

TECHNICAL DATA		Ø50
Operating pressure	bar	1 to 8
	MPa	0.1 to 0.8
	psi	14.5 to 116
Temperature range	°C	–10 to +80
Design		Double-acting rodless cylinder with direct transmission system
Fluid		50 µm unlubricated filtered air Lubrication, if used, must be continuous
Standard strokes	mm	100 to 2470
Sensor magnet		Available magnetic and non-magnetic versions.
Recommended speed	m/s	<2
Max. speed with decelerators	m/s	<2
Weights		See cylinder "**General technical data**" at the beginning of the chapter
Notes		**For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.**

COMPONENTS

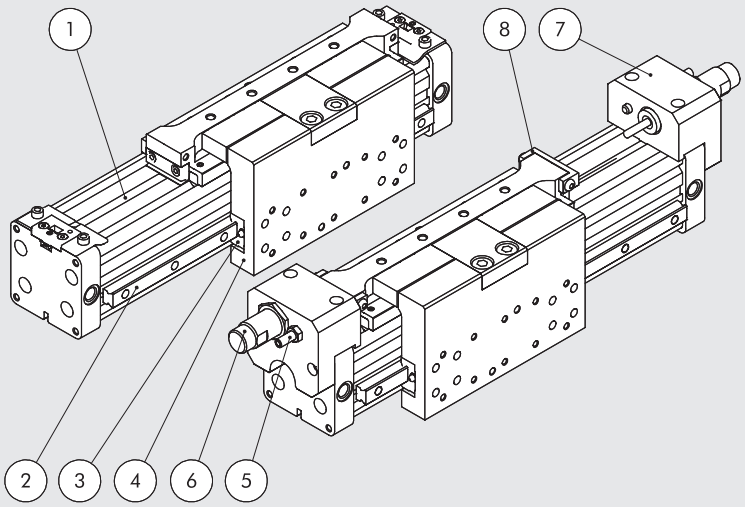
For version 275

① CYLINDER: see components of **rodless cylinders - series PU**
② GUIDE: hardened steel
③ PAD: steel with hardened ball circulation
④ SLIDE SUPPORT: anodized aluminium

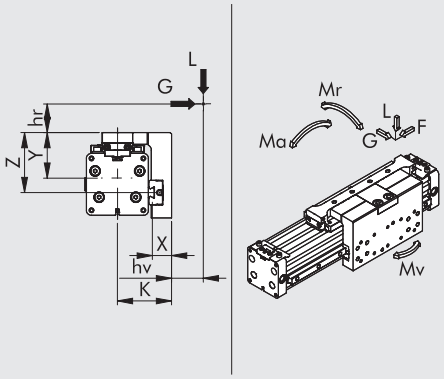
For version 276

Besides the details specified above:

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



DIMENSIONING - FORCES AND MOMENTS



Bore	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]
50	1000	39	75.1	26.6	63.3	83.3	4500	4500	260	140	260

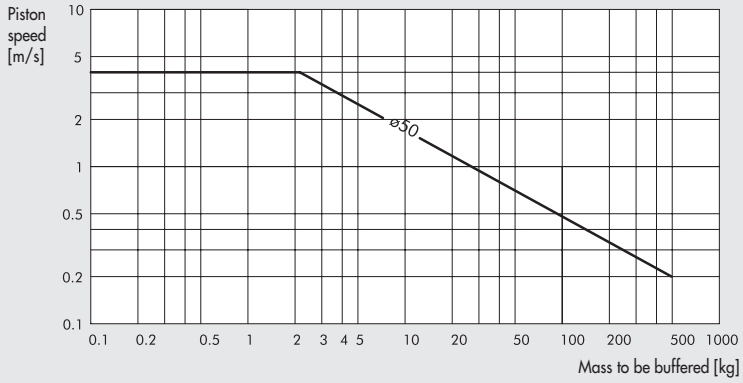
N.B.: When the cylinder is subjected simultaneously to torque and force, keep to the following equations, where the lengths have to be given in metres.

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

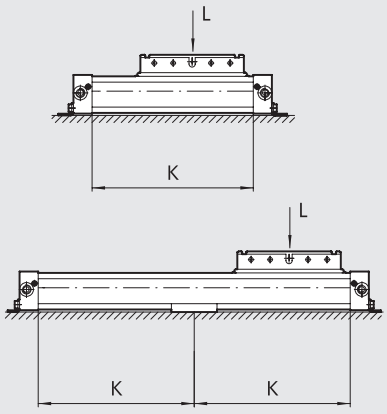
$$\frac{Ma}{Ma_{max}} + \frac{Mr}{Mr_{max}} + \frac{Mv}{Mv_{max}} + \frac{L}{L_{max}} + \frac{G}{G_{max}} \leq 1$$

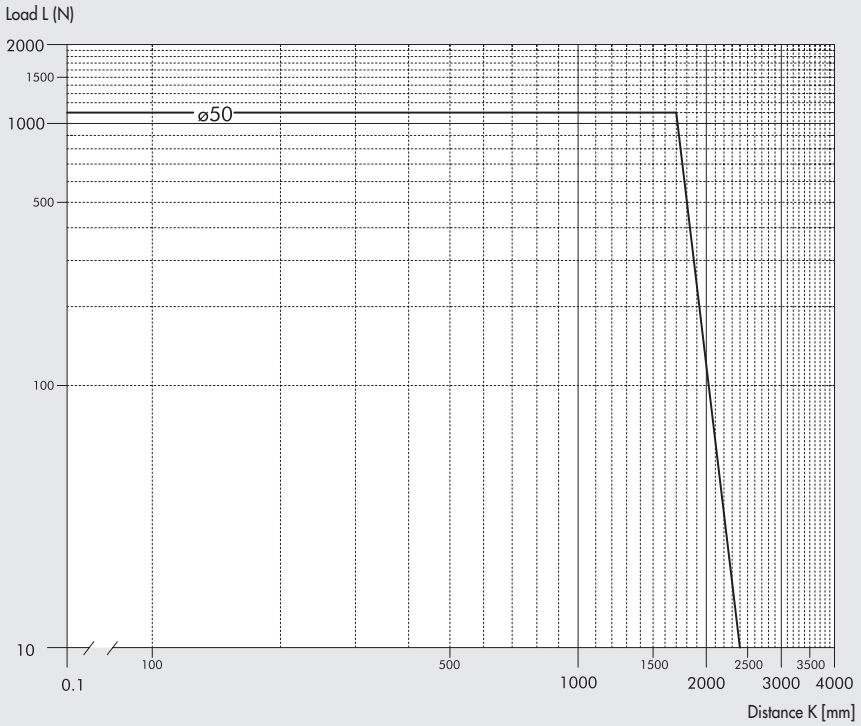
DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

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.



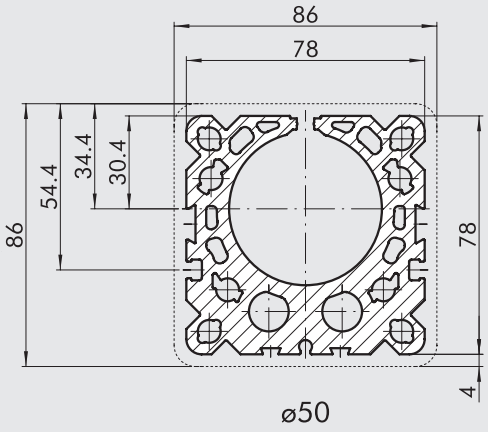
MAXIMUM LOAD ACCORDING TO THE DISTANCE BETWEEN SUPPORTS





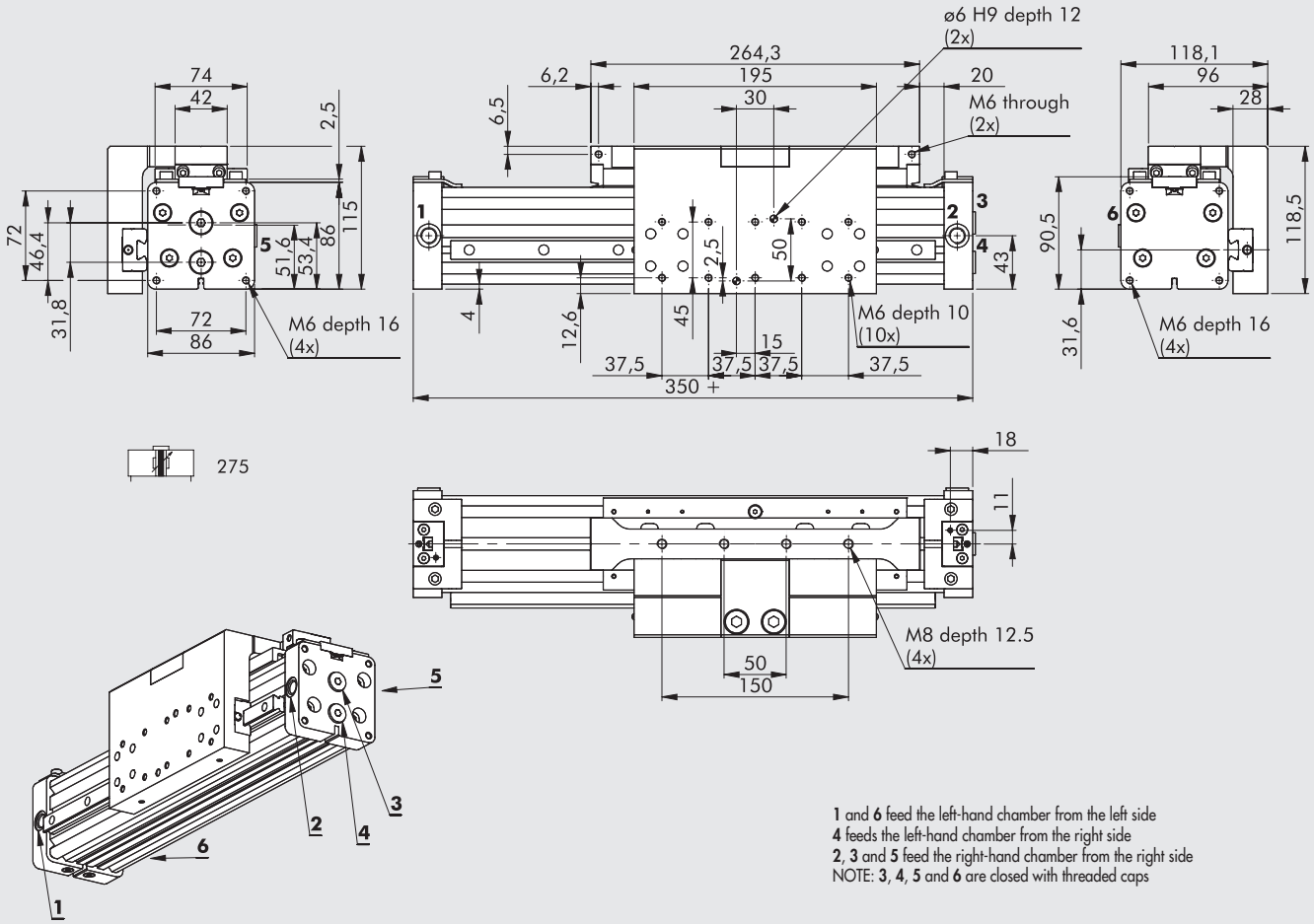
METAL WORK PNEUMATIC

BARREL CROSS SECTION



DIMENSIONS

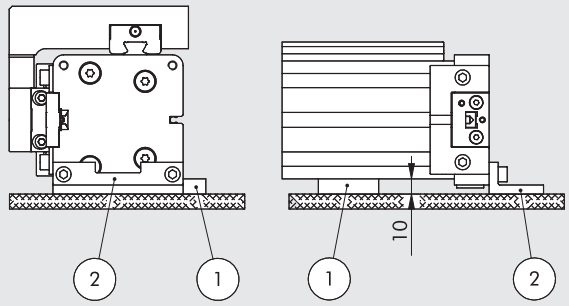
+ = ADD THE STROKE



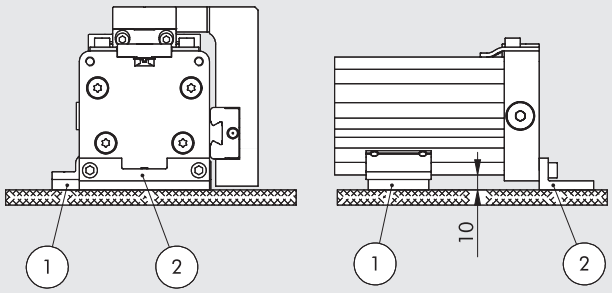
1 and **6** feed the left-hand chamber from the left side
4 feeds the left-hand chamber from the right side
2, **3** and **5** feed the right-hand chamber from the right side
NOTE: **3**, **4**, **5** and **6** are closed with threaded caps

ASSEMBLY DIAGRAMS

275 (horizontal)



275/276 (vertical)

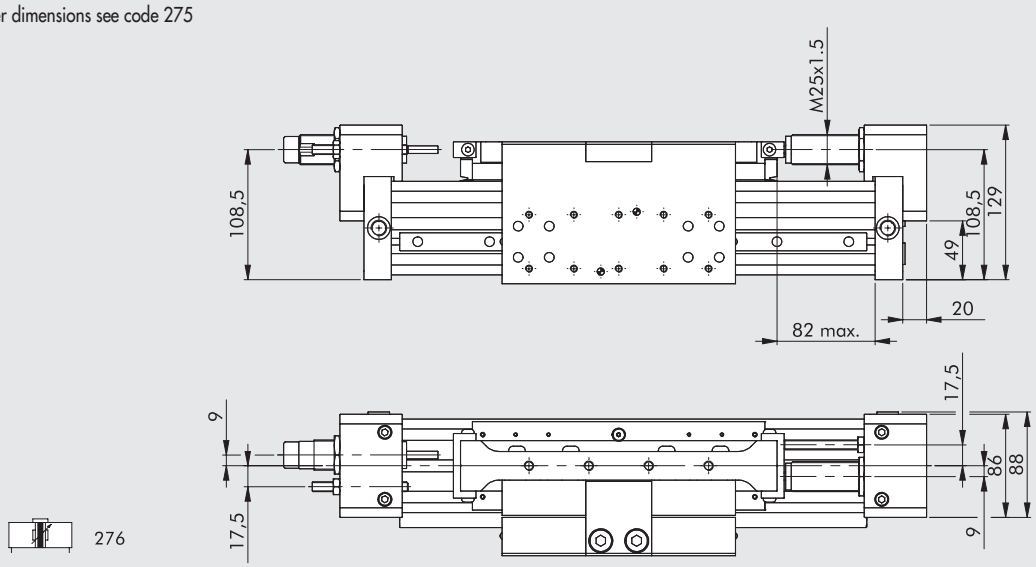


HORIZONTAL LAYOUT	
0950504051	Intermediate support code (1)
0950504041	Leg code (2)

VERTICAL LAYOUT	
0950504053	Intermediate support code (1)
0950504041	Leg code (2)

DIMENSION VERSION WITH ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS

NOTE: For other dimensions see code 275



Ø	Cushioning stroke [mm]	Max. cushioned force Per stroke [J]	Max. cushioned force Per hour [J]	Max. impact force [N]	Max. thrust force [N]
50	25	65	70000	5550	1500

For graphs to help choose shock absorbers see page **A1**.211

KEY TO CODES

CYL	27	5	3	50	0100	C	P
	TYPE			**BORE**	**STROKE**		**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	**3** Magnetic ■ **4** No stick-slip **5** Non-magnetic	50	from 100 to 2470 mm		**P** Polyurethane gaskets

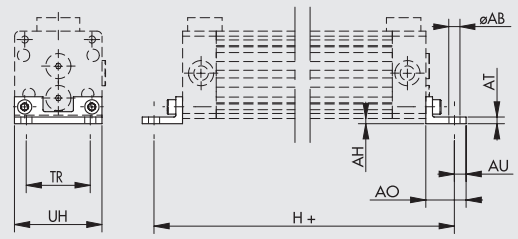
■ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only.

ACCESSORIES AND SPARE PARTS FOR RODLESS CYLINDER SERIES PU

FIXINGS

FOOT

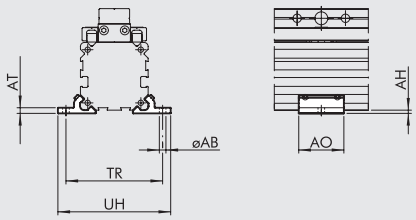
+ = ADD THE STROKE



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
0950404041	40	6.6	3	26	5	8.5	45	63	335	90
0950504041	50	9	6 - 10	36	6	11	65	86	400	203

Note: Individually packed with 2 screws

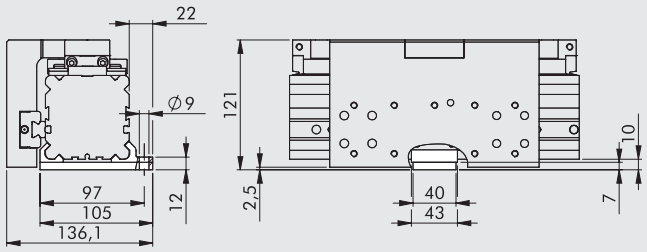
INTERMEDIATE SUPPORT FOR VERSION STD, "V" GUIDE



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
W0950407038	40	9	3	38	4.5	90	105	42
W0950507038	50	9	10	43	12	106	122	121

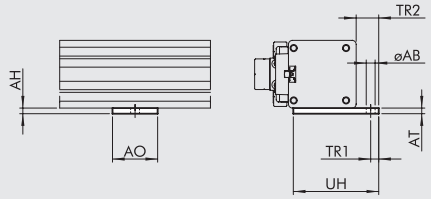
Note: 2 support and 4 grub screws for pack (Ø 25-32-40);
2 support, 4 grub screws and 2 plates for pack (Ø 50)

INTERMEDIATE SUPPORT FOR BALL RECIRCULATING", CODE 0950504053



Weight = 132 g
Note: Individually packed with 4 grub screws, 3 screws, 1 plate, 2 intermediate supports

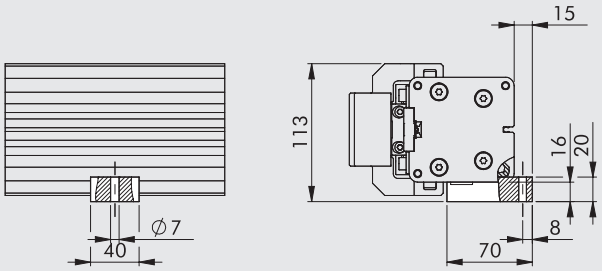
INTERMEDIATE SIDE SUPPORT FOR STD AND BALL RECIRCULATING VERSIONS



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
0950404051	40	7	4	40	4	8	16	75	36
0950504051	50	7	10	40	10	8	19	90	101

Note: Individually packed with 2 screws, 2 plates

INTERMEDIATE SIDE SUPPORT FOR "V" GUIDE VERSION CODE 0950504052

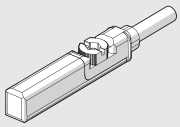


Weight = 162 g
Note: Individually packed with 2 screws, 2 plates

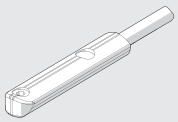
SENSOR

RETRACTABLE SENSOR

SENSOR, SQUARE TYPE
Latest generation, secure fixing



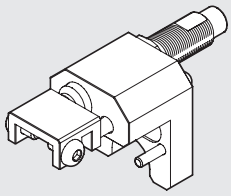
SENSOR, OVAL TYPE
Traditional



For codes and technical data, see **chapter A6**.

SHOCK ABSORBERS

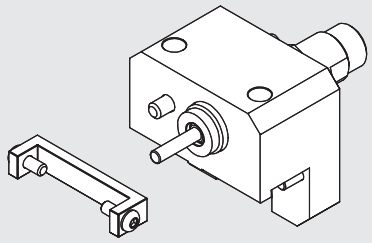
ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS KIT



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
0950404013	**40**	Rodless cylinder limit switch and shock absorbers Ø 40 series PU	675
0950504013	**50**	Rodless cylinder limit switch and shock absorbers Ø 50 series PU	967

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 (nr 4 decelerator bracket screw for Ø 40 and Ø 50)

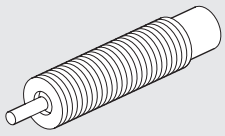
ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS KIT FOR VERSION "V" GUIDE



Code	Ø	Description	Weight [g]
0950504014	**50**	Rodless cylinder limit switch and shock absorbers Ø 50	967

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 4 decelerator bracket screws

SHOCK ABSORBERS

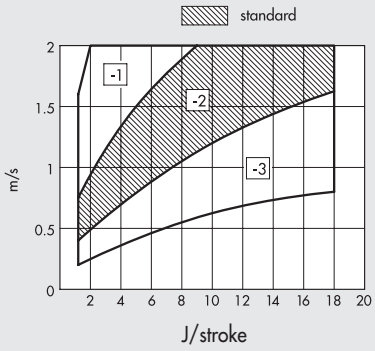


Code	Ø	Description
0950004004	**25**	Shock absorbers ECO 25 MC2 + nut M14x1.5
0950004005	**32**	Shock absorbers ECO 50 MC2 + nut M20x1.5
0950004006	**40-50**	Shock absorbers ECO 100 MF2 + nut M25x1.5

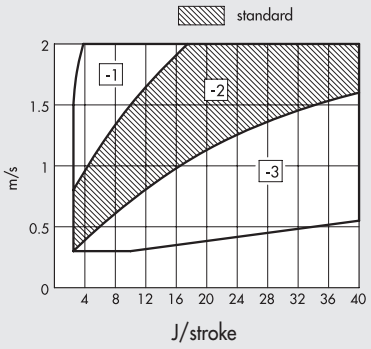
NOTES

GRAPHS TO HELP CHOOSE THE RIGHT SHOCK ABSORBERS

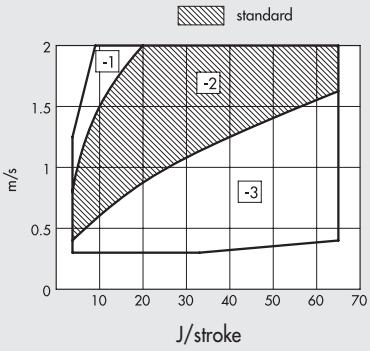
Ø 25



Ø 32

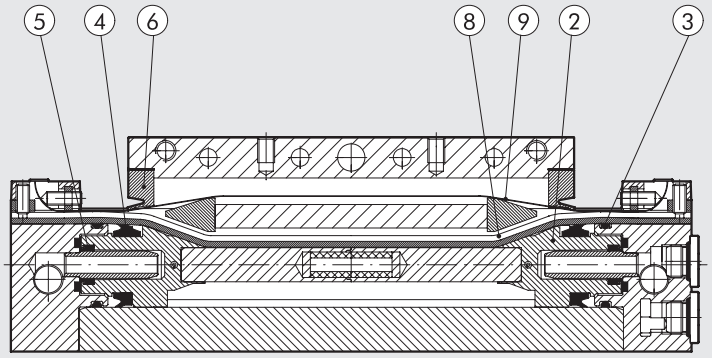


Ø 40-50



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



DUST SCRAPER KIT POS. 6	
Code	**Ø**
0090255025P	25
0090255025P	32
0090405025P	40
0090505025P	50
Note: 2 dust scrapers	

GASKET KIT POS. 3-4-5	
Code	**Ø**
0090255024P	25
0090325024P	32
0090405024P	40
0090505024P	50
Note: 2 gasket for position	

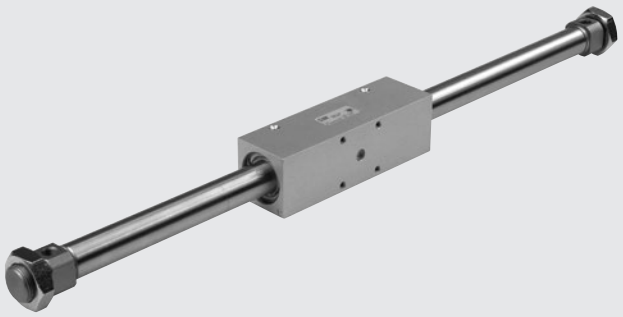
BANDS KIT (inner and outer) POS. 8-9	
Code	**Ø**
0090256____P	25
0090326____P	32
0090406____P	40
0090506____P	50
Complete the code with the 4-figure cylinder stroke	

NOTES

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.

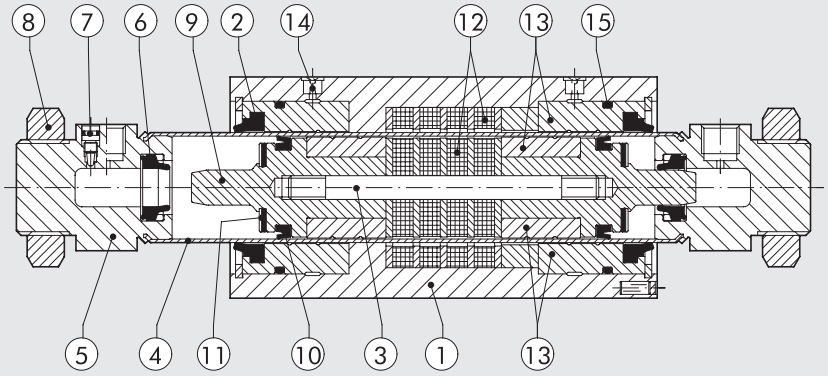
N.B.: We always suggest to use flow microregulators. During the setup of the actuator, start with CLOSE flow microregulators, and open gradually till the achievment of the required speed.



TECHNICAL DATA		Ø16	Ø20	Ø25
Operating pressure	bar	2 to 7		
	MPa	0.2 to 0.7		
	psi	29 to 101		
Temperature range	°C	–10 to +60		
Design		Double-acting rodless cylinder, with magnetic coupling transmission system		
Fluid		50 µm unlubricated filtered air Lubrication, if used, must be continuous		
Standard strokes	mm	10 to 1000		
Versions		Magnetic uncushioned/cushioned		
		Swinging magnet uncushioned/cushioned		
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
Recommended speed	m/s	0.4	0.4	0.4
Weights		See cylinder "**General technical data**" at the beginning of the chapter		
Notes		Lubricate the slide every 2000 km or once a year, through the lubricators		

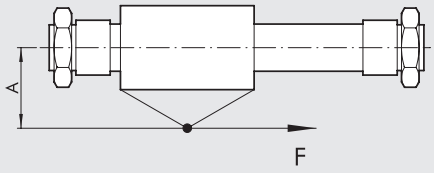
COMPONENTS

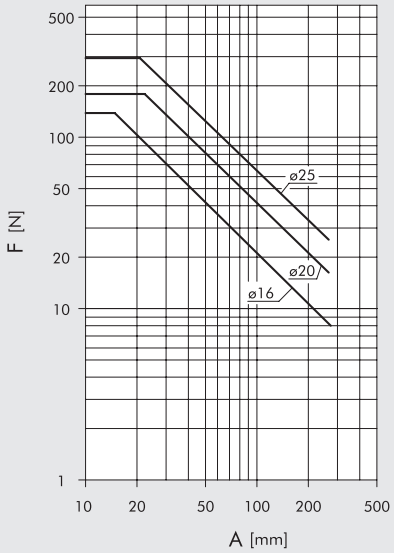
① SLIDE: anodized aluminium alloy
② WIPER RING: polyurethane
③ TIE ROD: stainless steel, thick-chromed
④ BARREL: AISI 304 stainless steel
⑤ HEAD: anodized aluminium alloy
⑥ CUSHIONING GASKET: NBR
⑦ NEEDLE: OT 58 with needle-out movement safety system, even when fully open
⑧ HEAD NUT: OT 58 nickel-plated
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



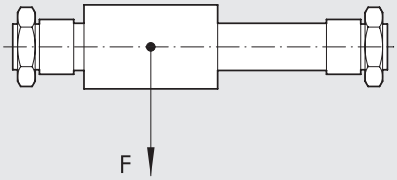
METAL WORK PNEUMATIC

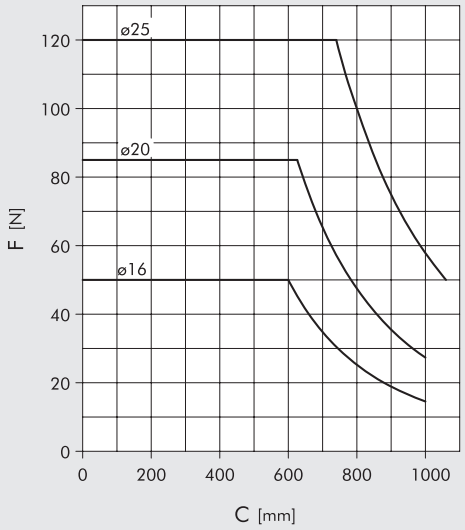
ADMISSIBLE AXIAL FORCE "F" AS A FUNCTION OF THE LEVER ARM "A"





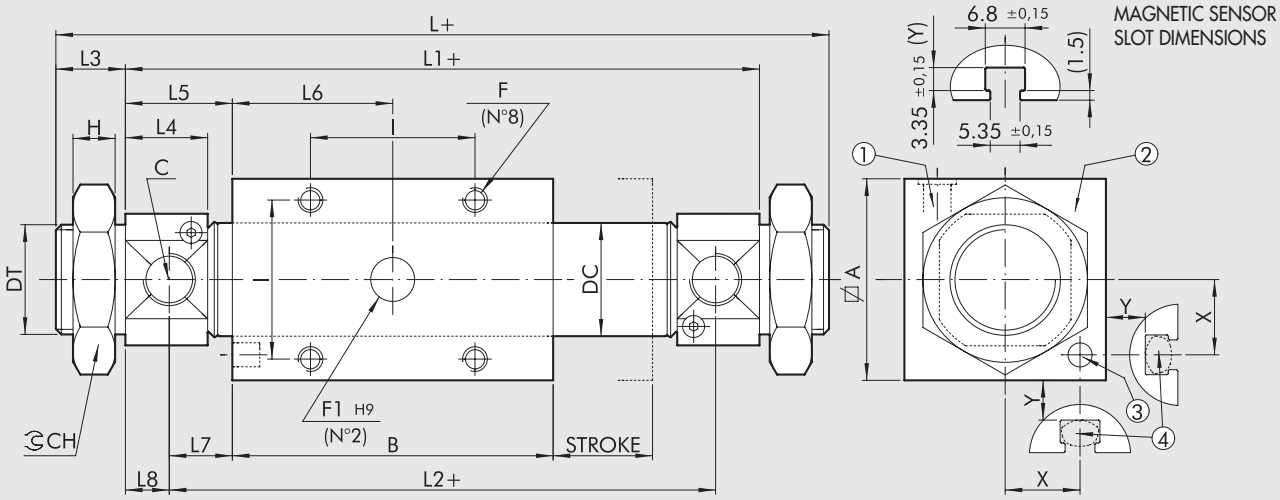
ADMISSIBLE RADIAL FORCE "F" AS A FUNCTION OF THE STROKE "C"





DIMENSIONS

+ = ADD STROKE



27A

27B

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

KEY TO CODES

CYL	27 TYPE	A VERSION	0	16 BORE	0050 STROKE	X MATERIAL	P GASKETS
	27 Rodless cylinder	**A** Magnetic sliding DAM **B** Magnetic sliding DAMC **C** Magnetic sliding swinging DAM **D** Magnetic sliding swinging DAMC	**0** Magnetic	16 20 25	For the maximum suppliable strokes, look at the technical data	**X** Standard	**P** Polyurethane

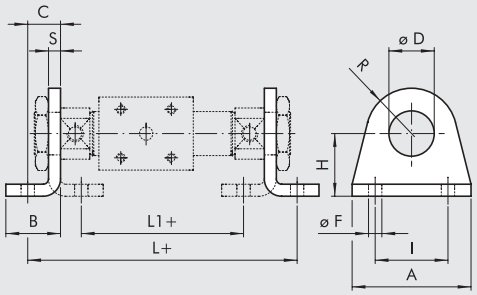
DAM: Magnetic double-acting (non-cushioned)
DAMC: Magnetic double-acting (cushioned)

NOTES

ACCESSORIES FOR RODLESS CYLINDER WITH MAGNETIC SLIDING: FIXING

FOOT

+ = ADD STROKE

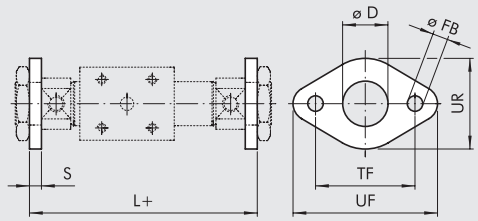


Code	Ø	D	A	B	C	H ±0.3	R	F ±0.2	I Js	L	L1	S	Weight [g]
0950164040	16	16	42	20	14	27	13	5.5	32	209	161	4	50
0950204040	20	22	54	25	17	30	20	6.5	40	219	161	5	105
0950204040	25	22	54	25	17	30	20	6.5	40	240	182	5	105

Note: individually pocket

FLANGE MODEL C

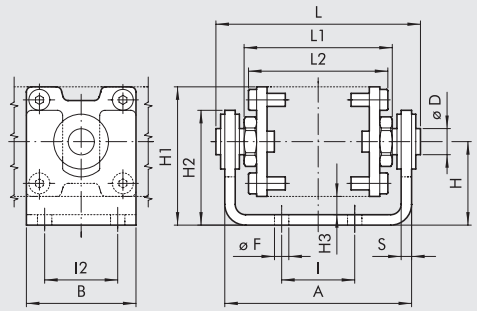
+ = ADD STROKE



Code	Ø	D	FB H13	TF Js14	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

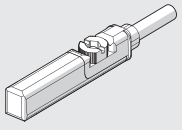
Note: individually pocket. Supplied with 8 screws.

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.

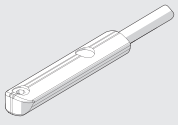
ACCESSORIES: MAGNETIC SENSOR

RETRACTABLE SENSOR

SENSOR, SQUARE TYPE
Latest generation,
secure fixing



SENSOR, OVAL TYPE
Traditional



For codes and technical data, see **chapter A6**.

STAINLESS STEEL ISO 6432 MINI-CYLINDER

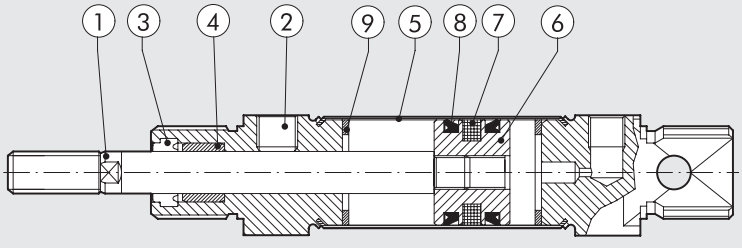
ISO 6432 stainless steel micro-cylinders are available in various versions with a wide range of accessories

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

TECHNICAL DATA			Ø16	Ø20	Ø25
Max operating pressure		bar	10		
		MPa	1		
Temperature range	POLYURETHANE	°C	–20 to +80		
	FKM/FPM	°C	–10 to +150 (non-magnetic cylinders)		
Design			Chamfered heads		
Fluid			Unlubricated air. Lubrication, if used, must be continuous		
Standard strokes ✚		mm	0 to 500		
Versions			Double-acting, Double Through-rod		
Sensor magnet			Available magnetic and non-magnetic versions.		
Weights			See cylinder "**General technical data**" at the beginning of the chapter		
Notes			✚ Maximum recommended strokes. Higher values can create operating problems		

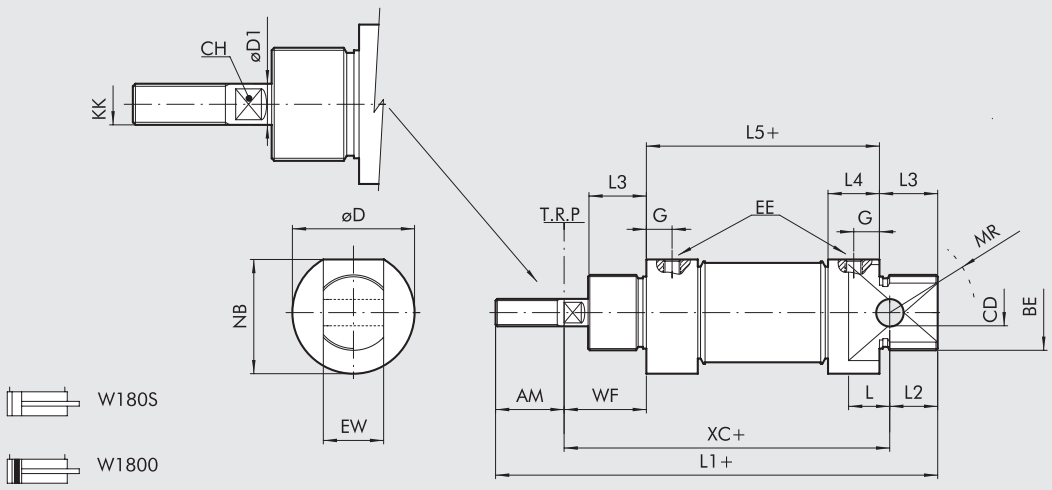
COMPONENTS

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 BARREL: AISI 304 steel
⑥ PISTON: brass
⑦ PISTON GASKET: polyurethane or FKM/FPM
⑧ MAGNET: plastoferrite
⑨ Static O-rings: NBR or FKM/FPM



DIMENSIONS OF DOUBLE-ACTING

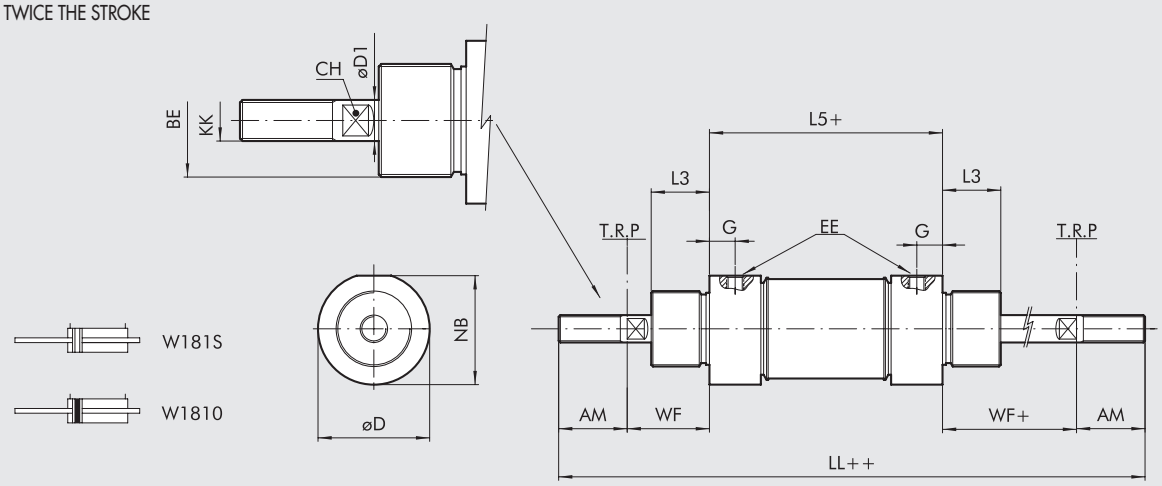
+ = ADD STROKE



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	53	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	18	53	18	22
20	20	M22x1.5	7	27	8	G 1/8	8	M8	155	20	67	25.5	24
25	22	M22x1.5	9	30	10	G 1/8	8	M10x1.25	168	22	68	28.5	28

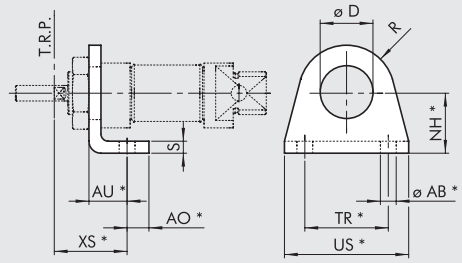
KEY TO CODES

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

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

ACCESSORIES FOR STAINLESS STEEL ISO 6432 MINI-CYLINDER: FIXINGS

STAINLESS STEEL LEG MODEL A

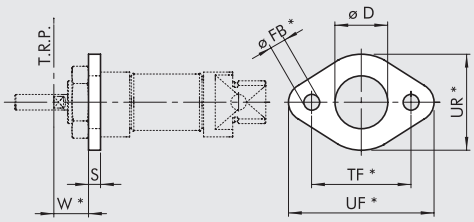


Code	Ø	ØAB	AU	AO	D	NH	XS ±1.4	R	S	TR	US	Weight [g]
W095X120001	**16**	5.5	14	6	16.1	20	22	13	4	32	42	42
W095X200001	**20**	6.6	17	8	22.1	25	36	20	5	40	54	90
W095X200001	**25**	6.6	17	8	22.1	25	40	20	5	40	54	90

*ISO 6432 values

Note: Individually packed

STAINLESS STEEL FLANGE MODEL C

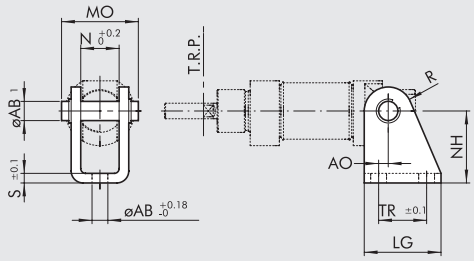


Code	Ø	D	FB	W ±1.4	S	TF	UF	UR	Weight [g]
W095X120002	**16**	16	5.5	18	4	40	52	30	26
W095X200002	**20**	22	6.6	19	5	50	66	40	52
W095X200002	**25**	22	6.6	23	5	50	66	40	52

*ISO 6432 values

Note: Individually packed

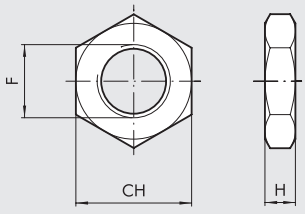
STAINLESS STEEL COUNTER-HINGE MODEL BC



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

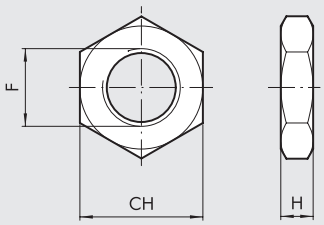
STAINLESS STEEL NUT FOR HEADS



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

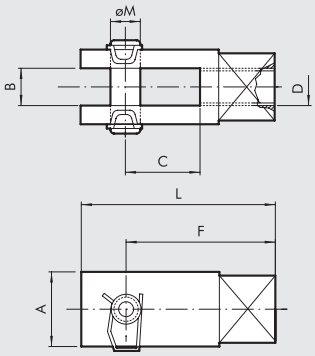
STAINLESS STEEL NUT FOR PISTON RODS



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



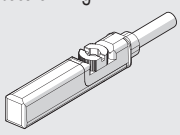
Code	Ø	A	B	C	D	F	L	Ø M
W095X120020	16	12	6	12	M6	24	31	6
W095X200020	20	16	8	16	M8	32	42	8
W095X322020	25	20	10	20	M10x1.25	40	52	10

Note: Individually packed

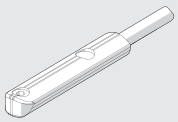
ACCESSORIES: MAGNETIC SENSORS

RETRACTABLE SENSOR

SENSOR, SQUARE TYPE
Latest generation,
secure fixing

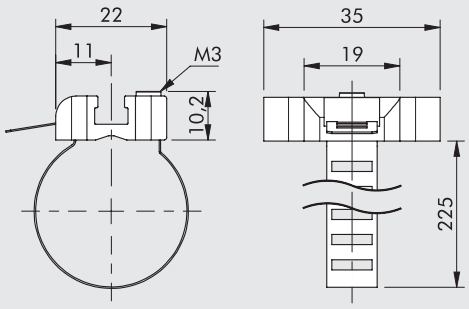


SENSOR, OVAL TYPE
Traditional



For codes and technical data, see **chapter A6**.

SENSOR BRACKET



Code	Bore	Description
W0950001103	16 to 25	Sensor bracket 8 to 63

Note: Individually packed

MATERIAL
Bracket: stainless steel
Sensor holder: zamak

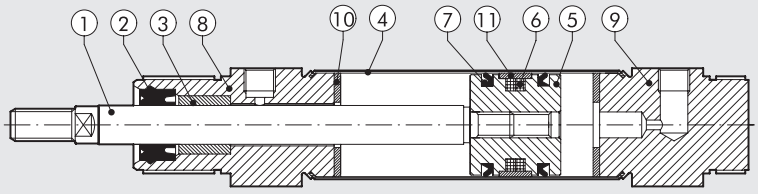
STAINLESS STEEL ROUND CYLINDER RNDC

Stainless steel clean profile cylinders available in different versions:
- with or without magnet execution
- double-acting - single or through-rod
- gaskets: Polyurethane or FKM/FPM (for high temperatures)

TECHNICAL DATA			Ø32	Ø40	Ø50	Ø63
Max operating pressure		bar	10			
		MPa	1			
		psi	145			
Temperature range	POLYURETHANE	°C	–20 to +80			
	FKM/FPM	°C	–10 to +150 (non-magnetic cylinders)			
Design			Chamfered heads			
Fluid			Unlubricated air. Lubrication, if used, must be continuous			
Standard strokes ✚		mm	0 to 500			
Versions			Double-acting, Double Through-rod			
Sensor magnet			Available magnetic and non-magnetic versions.			
Weights			See cylinder "**General technical data**" at the beginning of the chapter			
Notes			✚ Maximum recommended strokes. Higher values can create operating problems			

COMPONENTS

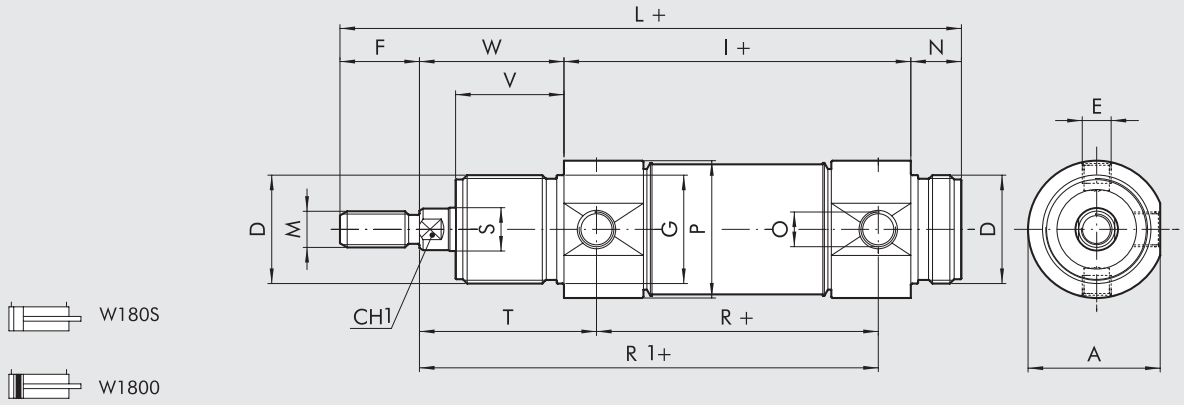
① PISTON ROD: AISI 316 steel
② PISTON ROD GASKET: polyurethane or FKM/FPM
③ GUIDE BUSHING: sintered bronze
④ BARREL: AISI 304 steel
⑤ PISTON: aluminium
⑥ MAGNET: plastoferrite
⑦ PISTON GASKET: polyurethane or FKM/FPM
⑧ ⑨ HEAD:AISI 304 steel
⑩ BUFFER: polyurethane
⑪ GUIDE RING: PTFE



METAL WORK PNEUMATIC

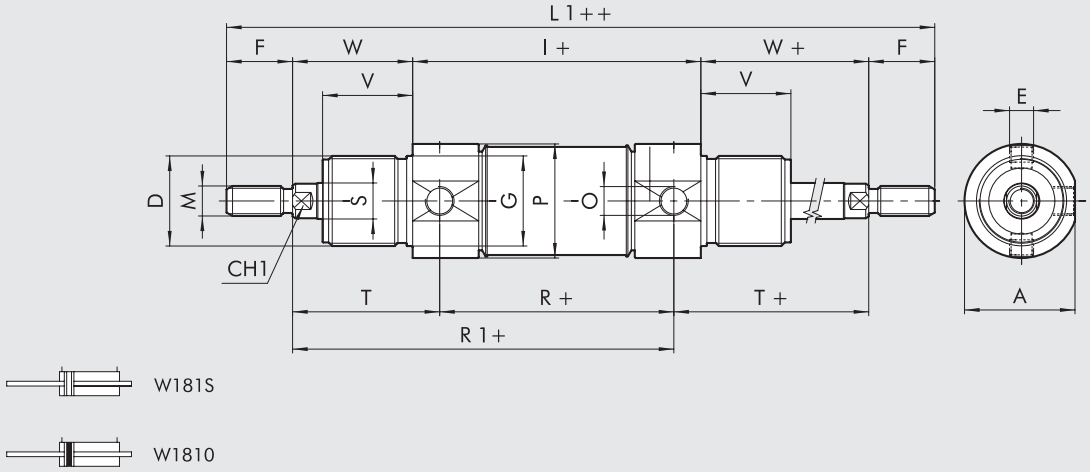
DIMENSIONS OF DOUBLE-ACTING

+ = ADD STROKE



DIMENSIONS DOUBLE-ACTING THROUGH-ROD

+ = ADD STROKE
++ = ADD TWICE THE STROKE



Ø	A	CH1	D	E	F	Ø G	I	L	L1	M	N	O	Ø P	R	Ø S	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

KEY TO CODES

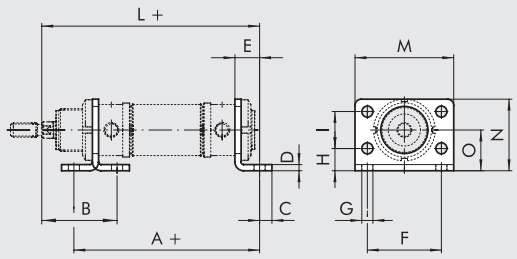
W 1 8	**0**	**0**	**3 2**	**0 0 3 2**
	TYPE	**VERSION**	**DIAMETER**	**STROKE**
Stainless steel cylinder	**0** DAM **1** DAM through-rod	**0** Standard (magnetic) **S** Non-magnetic ● **V** FKM/FPM gasket	32 40 50 63	✚ Ø 32 to 63 stroke 0 to 500 mm

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

ACCESSORIES FOR STAINLESS STEEL ROUND CYLINDER: FIXINGS

STAINLESS STEEL LEG MODEL AC

+ = ADD STROKE

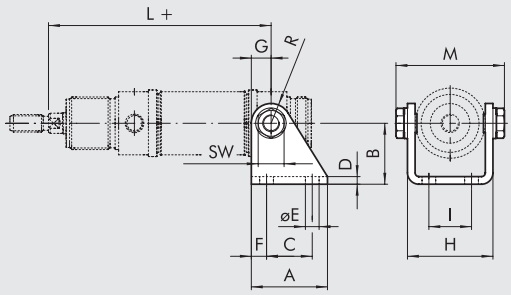


Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	O
W095X320002	**32**	124	48	7	4	14	52	7	14	28	148	66	49	28
W095X400002	**40**	153	60	10	5	20	60	9	18	30	178	80	58	33
W095X500002	**50**	160	64	10	6	20	70	9	20	40	190	90	70	40
W095X630002	**63**	164	64	10	6	20	76	9	20	50	194	96	80	45

Note: Individually packed

STAINLESS STEEL COUNTER-HINGE MODEL BC

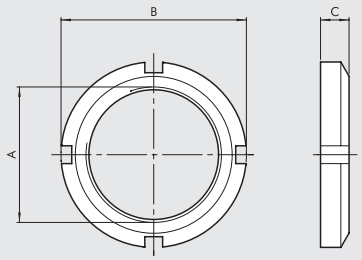
+ = ADD STROKE



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

Nota: Supplied complete with 2 screws

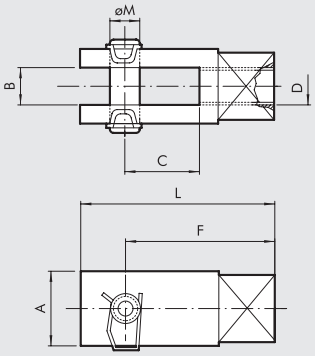
STAINLESS STEEL HEAD RING NUT MODEL G



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

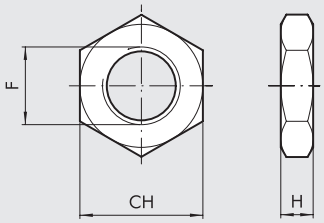
STAINLESS STEEL FORK-MODEL GK-M



Code	Ø	A	B	C	D	F	L	Ø M
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

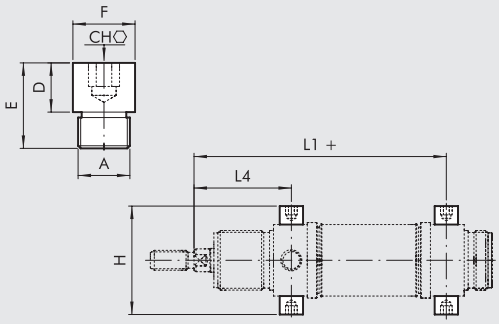


Code	Ø	F	CH	H	Weight [g]
W095X320011	32	M10x1.5	17	6	6
W095X400011	40	M12x1.75	19	7	12
W095X500011	50	M16x2	24	8	20
W095X500011	63	M16x2	24	8	20

Note: Individually packed

STAINLESS STEEL OSCILLATING PIN

+ = ADD STROKE



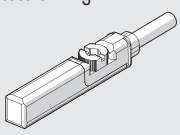
Code	Ø	A	CH	D	E	øF	H	L1	L4
W095X320007	32	M8X1	5	8	14	10	51	125	47
W095X400007	40	M10X1	6	9.5	16.5	12	61	146	57
W095X500007	50	M12X1.5	6	11	20	14	75	158	62
W095X630007	63	M14X1.5	8	13	26	16	92	161	63

Note: 2- piece pack

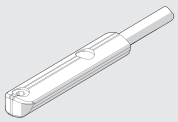
ACCESSORIES: MAGNETIC SENSORS

RETRACTABLE SENSOR

SENSOR, SQUARE TYPE
Latest generation,
secure fixing

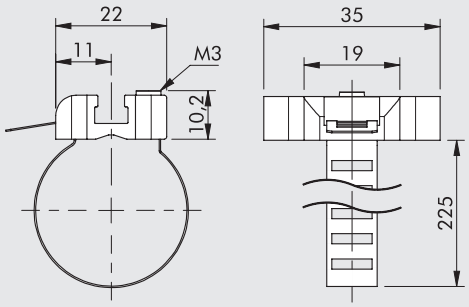


SENSOR, OVAL TYPE
Traditional



For codes and technical data, see **chapter A6**.

SENSOR BRACKET



Code	Bore	Description
W0950001103	32 to 63	Sensor bracket 8 to 63

Note: Individually packed

MATERIAL
Bracket: stainless steel
Sensor holder: zamak

STAINLESS STEEL ISO 15552 CYLINDER

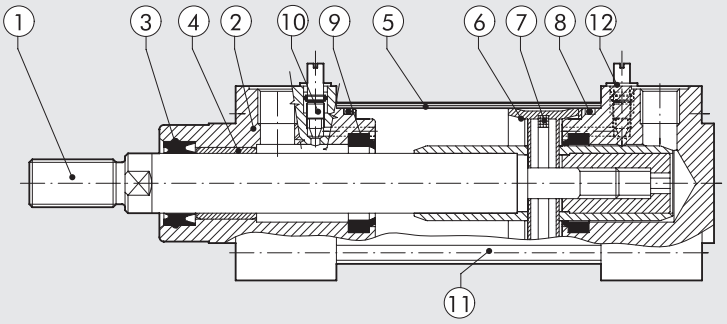
Stainless steel cylinders made to ISO 15552 available in various versions and with a wide range of accessories:

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

TECHNICAL DATA			Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125
Max operating pressure		bar	10						
		MPa	1						
		psi	145						
Temperature range	POLYURETHANE	°C	–20 to +80						
	FKM/FPM	°C	–10 to +150 (non-magnetic cylinders)						
Design			Heads with tie rods						
Fluid			Unlubricated air. Lubrication, if used, must be continuous						
Standard strokes ✚		mm	0 to 1000						
Versions			Double-acting cushioned, Double-acting through-rod cushioned						
Sensor magnet			Available magnetic and non-magnetic versions.						
Weights			See cylinder "**General technical data**" at the beginning of the chapter						
Notes			✚ Maximum recommended strokes. Higher values can create operating problems						
			These cylinder series cannot mount the rod lock, if necessary contact our sales offices.						

COMPONENTS

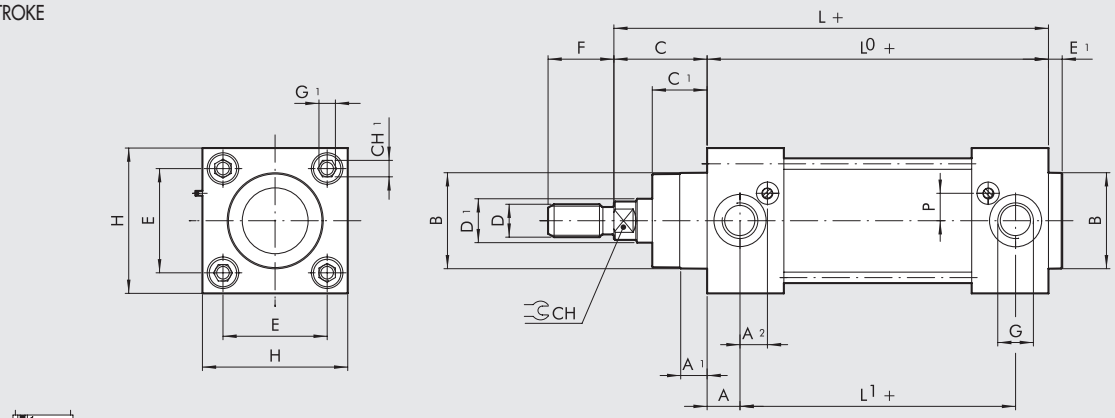
① PISTON ROD: AISI 316 steel
② HEAD: AISI 304 steel
③ PISTON ROD GASKET: polyurethane or FKM/FPM
④ GUIDE BUSHING: sintered bronze
⑤ BARREL: AISI 304 steel
⑥ ENBLOC GASKET: NBR or FKM/FPM
⑦ MAGNET: plastoferrite
⑧ Static O-rings: NBR or FKM/FPM
⑨ CUSHIONING GASKET: polyurethane or FKM/FPM
⑩ CUSHIONING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



METAL WORK PNEUMATIC

DIMENSIONS OF DOUBLE-ACTING

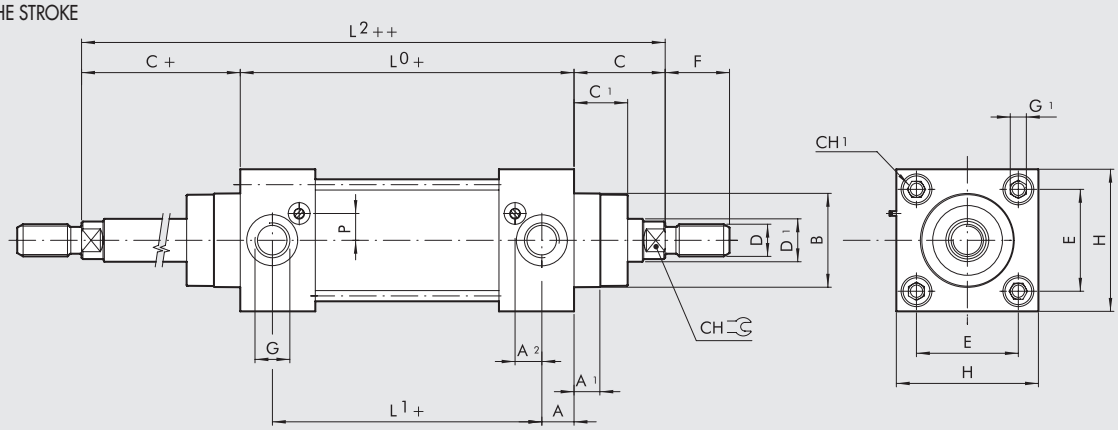
+ = ADD STROKE

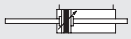


W184

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	13	9	11.3	30	26	18	10	6	M10x1.25	12	32.5	4	22	G1/8	M6	50	120	94	68	146	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	17	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	17	8	M16x1.5	20	56.5	4	32	G3/8	M8	75	158	121	89	195	11.7
80	17	10	16.3	45	46	35	22	-	M20x1.5	25	72	4	40	G3/8	M10	95	174	128	94	220	15.5
100	18	10	15.5	55	51	38	22	-	M20x1.5	25	89	4	40	G1/2	M10	110	189	138	102	240	15.5
125	18	11	20	60	65	46	27	-	M27x2	32	110	6	54	G1/2	M12	140	225	160	124	290	15

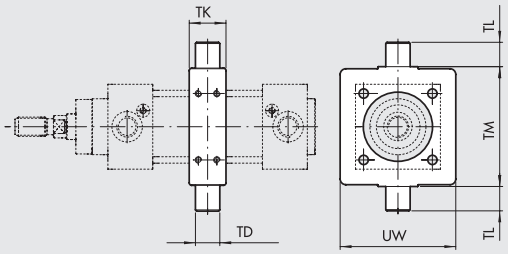
KEY TO CODES

W 1 8	4	0	3 2	0 0 3 2
	TYPE	**VERSION**	**DIAMETER**	**STROKE**
Stainless steel cylinder	**4** DAMC **5** DAMC through-rod	**0** Standard (magnetic) **S** Non-magnetic ● **V** FKM/FPM gasket	32 40 50 63 80 ■ 100 ■ 125	✚ 0 to 1000 mm

DAMC: Magnetic double-acting (cushioned)
✚ Maximum recommended strokes. Higher values can create operating problems
● For this version the cylinder will be not magnetic
■ In the code of cylinder with letter in fifth position Ø 100 becomes A1; Ø 125 becomes A2

ACCESSORIES FOR STAINLESS ISO 15552 CYLINDER: FIXINGS

STAINLESS STEEL INTERMEDIATE HINGE - MODEL EN

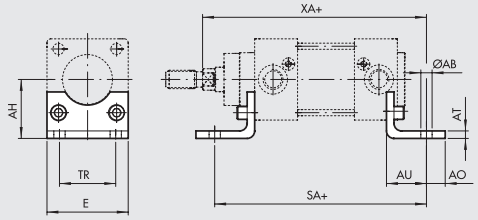


Code	Ø	TM	TL	TD	TK	UW	Weight [g]
W095X322007	32	50	12	12	15	46	140
W095X402007	40	63	16	16	20	59	330
W095X502007	50	75	16	16	20	69	390
W095X632007	63	90	20	20	25	84	730
W095X802007	80	110	20	20	25	102	925
W095XA12007	100	132	25	25	30	125	1700
W095XA22007	125	160	25	25	32	155	2580

Note: Supplied complete with 8 grub screws

STAINLESS STEEL SHORT FOOT MOUNTING

+ = ADD THE STROKE

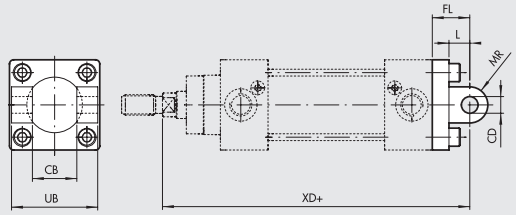


Code	Ø	Ø AB	AH	AO	AT	AU	TR	E	XA	SA	Weight [g]
W095X322001	32	7	32	11	4	24	32	45	145	143	85
W095X402001	40	9	36	8	4	28	36	52	163	161	95
W095X502001	50	9	45	15	5	32	45	65	175	170	200
W095X632001	63	9	50	13	5	32	50	75	190	185	225
W095X802001	80	12	63	14	6	41	63	95	215	210	435
W095XA12001	100	14	71	16	6	41	75	115	230	220	555
W095XA22001	125	16	90	25	8	45	90	140	270	250	1145

Note: Individually packed with 2 screws

STAINLESS STEEL FEMALE HINGE - MODEL B

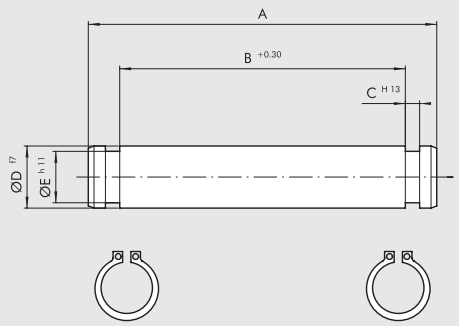
+ = ADD THE STROKE



Code	Ø	UB	CB H14	FL	CD H9	XD	MR	L	Weight [g]
W095X322003	32	45	26	22	10	142	10	13	175
W095X402003	40	52	28	25	12	160	12	16	250
W095X502003	50	60	32	27	12	170	12	16	425
W095X632003	63	70	40	32	16	190	16	21	635
W095X802003	80	90	50	36	16	210	16	22	1270
W095XA12003	100	110	60	41	20	230	20	27	2000
W095XA22003	125	130	70	50	25	275	25	30	3715

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

STAINLESS STEEL FEMALE HINGE PIN



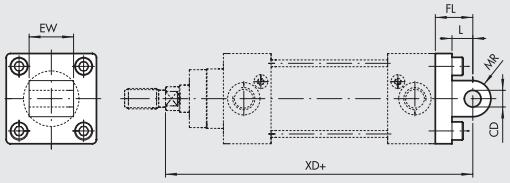
Code	Ø	A	B	C	D	E	Weight [g]
W095X322050	32	53	46	1.1	10	9.6	35
W095X402050	40	60	53	1.1	12	11.5	55
W095X502050	50	68	61	1.1	12	11.5	65
W095X632050	63	78	71	1.1	16	15.2	125
W095X802050	80	98	91	1.1	16	15.2	160
W095XA12050	100	118	111	1.3	20	19	295
W095XA22050	125	139	132	1.3	25	23.9	540

Note: Supplied with 2 snap-rings

METAL WORK PNEUMATIC

STAINLESS STEEL MALE HINGE - MODEL BA

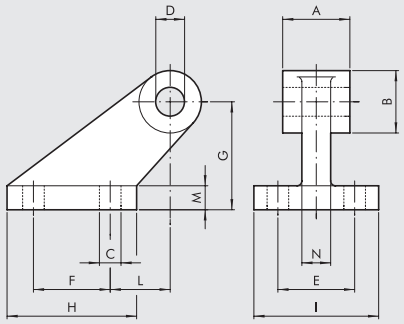
+ = ADD THE STROKE



Code	Ø	EW	FL	MR	CD H9	L	XD	Weight [g]
W095X322004	32	26	22	10	10	13	143	195
W095X402004	40	28	25	12	12	16	160	265
W095X502004	50	32	27	12	12	16	170	445
W095X632004	63	40	32	16	16	21	190	715
W095X802004	80	50	36	16	16	22	210	1375
W095XA12004	100	60	41	20	20	27	230	2165
W095XA22004	125	70	50	25	25	30	275	3800

Note: Supplied with 4 screws

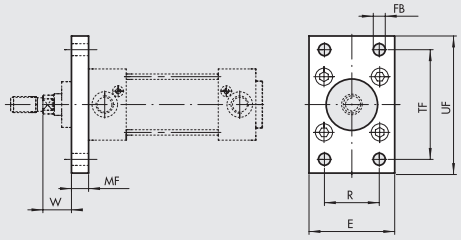
STAINLESS STEEL ISO COUNTER-HINGE FOR MODEL B - MODEL GL



Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	Weight [g]
W095X322008	32	26	20	6.6	10	38	18	32	31	51	3	8	10	165
W095X402008	40	28	22	6.6	12	41	22	36	35	54	2	10	15	235
W095X502008	50	32	26	9	12	50	30	45	45	65	3	12	16	460
W095X632008	63	40	30	9	16	52	35	50	50	67	2	14	16	590
W095X802008	80	50	30	11	16	66	40	63	60	86	7	14	20	1000
W095XA12008	100	60	38	11	20	76	50	71	70	96	5	17	20	1515
W095XA22008	125	70	45	14	25	94	60	90	90	124	10	20	30	3170

Note: Individually packed

STAINLESS STEEL FRONT FLANGE - MODEL C

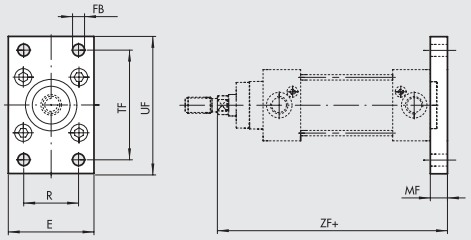


Code	Ø	UF	TF	E	R	MF	FB	W	Weight [g]
W095X322002	32	80	64	45	32	10	7	16	220
W095X402002	40	90	72	52	36	10	9	20	280
W095X502002	50	110	90	65	45	12	9	25	540
W095X632002	63	120	100	75	50	12	9	25	680
W095X802002	80	150	126	95	63	16	12	30	1550
W095XA12002	100	170	150	115	75	16	14	35	2100
W095XA22002	125	205	180	140	90	20	16	45	3950

Note: Supplied with 4 screws

STAINLESS STEEL REAR FLANGE - MODEL C

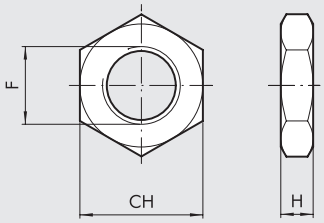
+ = ADD THE STROKE



Code	Ø	UF	TF	E	R	MF	FB	ZF	Weight [g]
W095X322002	32	80	64	45	32	10	7	130	220
W095X402002	40	90	72	52	36	10	9	145	280
W095X502002	50	110	90	65	45	12	9	153	540
W095X632002	63	120	100	75	50	12	9	168	680
W095X802002	80	150	126	95	63	16	12	184	1550
W095XA12002	100	170	150	115	75	16	14	199	2100
W095XA22002	125	205	180	140	90	20	16	235	3950

Note: Supplied with 4 screws

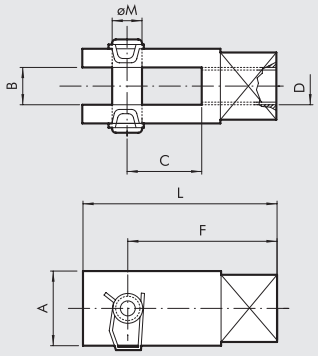
STAINLESS STEEL NUT FOR PISTON RODS



Code	Ø	F	H	CH	Weight [g]
W095X322011	**32**	M10x1.25	6	17	8
W095X402011	**40**	M12x1.25	6	19	11
W095X502011	**50**	M16x1.5	8	24	18
W095X502011	**63**	M16x1.5	8	24	18
W095X802011	**80**	M20x1.5	10	30	31
W095X802011	**100**	M20x1.5	10	30	31
W095XA22011	**125**	M27x2	13.5	41	81

Note: Individually packed

STAINLESS STEEL FORK-MODEL GK-M



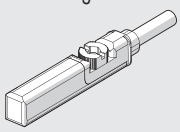
Code	Ø	A	B	C	D	F	L	Ø M	Weight [g]
W095X322020	**32**	20	10	20	M10x1.25	40	52	10	90
W095X402020	**40**	24	12	24	M12x1.25	48	62	12	145
W095X502020	**50**	32	16	32	M16x1.5	64	83	16	325
W095X502020	**63**	32	16	32	M16x1.5	64	83	16	325
W095X802020	**80**	40	20	40	M20x1.5	80	105	20	680
W095X802020	**100**	40	20	40	M20x1.5	80	105	20	680

Note: Individually packed

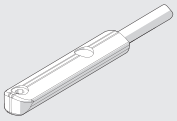
ACCESSORIES: MAGNETIC SENSORS

RETRACTABLE SENSOR

SENSOR, SQUARE TYPE
Latest generation,
secure fixing

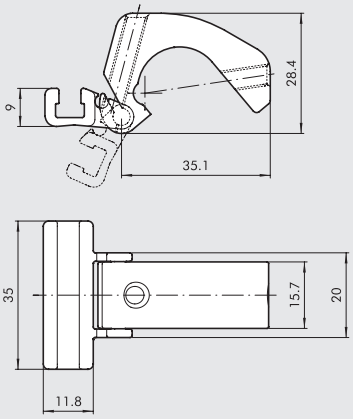


SENSOR, OVAL TYPE
Traditional



For codes and technical data, see **chapter A6**.

SENSOR BRACKET



Code	Bore	Description
W0950001100	32 to 125	Sensor bracket

Note: Individually packed

MATERIAL
Bracket: aluminium
Sensor holder: aluminium
Fixing screw: stainless steel