The rodless cylinders of the S1 series are particularly useful where there is no space for a standard cylinder. The piston rod does not extend from the cylinder. Thanks to their maximum stroke of up to 6 meters, they can also be used in applications where the use of a conventional cylinder would be impossible. This series uses the proven two-strip principle.

Working pressure	0,6 MPa
Min. pressure	0,3 MPa
Max. pressure	1,0 MPa
Temp. range	-20°C to +80°C
Working medium	modified compressed air
Carriage speed	min. 20 $mm.s^{-1}$ max. 3 $m.s^{-1}$

Piston diameter [mm]	16	25	32	40	50
Force at 0,6 MPa [N]	125	250	420	640	1050
Connection	M5	G1/8“	G1/4“	G3/8“	G3/8“
Length of adjustable cushioning [mm]	16,5	25	32,5	41,5	52
Max. stroke [mm]	5000	6000	6000	6000	6000
Stroke tolerance [mm]	+2,5	+2,5	+3,2	+3,2	+3,2

Piston diameter [mm]		16	25	32	40	50
Weight	Carriage					
base - 0 mm of stroke [kg]	standard	0,31	0,75	1,31	2,6	4,79
	medium	-	0,84	1,48	2,91	5,55
	long	-	1,05	1,93	3,8	7,33
100 mm of stroke [kg]		0,104	0,210	0,325	0,555	0,955

Order codes

Piston diameter 16 mm

A S1 0 0 4 16 0500 M

Carriage	
0	standard

Left end-cap supply port	
0	no supply port (both chambers supplied from right end cap)

Right end-cap supply port	
4	rear for both chambers on the right end cap
5	side for both chambers on the right end cap

Piston diameter	
16	16 mm

Stroke	
xxxx	mm of stroke e.g.: 0500 = stroke 500 mm

Options	
M	with magnet

Right supply ports:
4 - rear
5 - side

If you require proximity sensing, please contact our technical department.

Piston diameter 25 to 50 mm

A S1 0 1 1 25 0500 M

Carriage	
0	standard
2	medium
3	long

Left end-cap supply port	
1	side
2	bottom
3	rear
0	no supply port (both chambers supplied from right end cap)

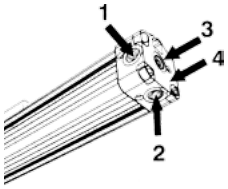
Right end-cap supply port	
1	side
2	bottom
3	rear
4	rear for both chambers on the right end cap

Piston diameter	
25	25 mm
32	32 mm
40	40 mm
50	50 mm

Stroke	
xxxx	mm of stroke e.g.: 0500 = stroke 500 mm

Options	
	standard
M	with magnet

If you require proximity sensing, please contact our technical department.



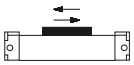
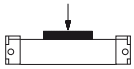
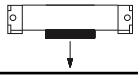
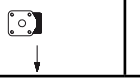
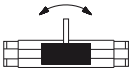
For long-term and trouble-free operation, we recommend:
1) speed maximum 1 $m.s^{-1}$
2) use a hydraulic shock absorber if the efficiency of the internal cushioning approaches the limit value
3) if the cylinder is used vertically, the cushioning capacity is reduced by 40%
4) maintain a correct and constant lubrication

Construction / materials

- caps: ø16: zamak ø25-50: die-cast aluminium
- tube: anodized aluminium
- piston: aluminium
- piston guide slide: acetalic resin
- sealings: NBR
- magnet: neodymium

The pneumatic sealing is achieved through an axial elastomer stripseal reinforced with Kevlar. This system guarantees dimensional stability even with high speeds. The external protection seal consists of a thermoplastic stripseal reinforced with Kevlar.

Permissible static load and stress

Cylinder force F	Static load			Static moment		
	P1	P2	P3	M1	M2	M3
						

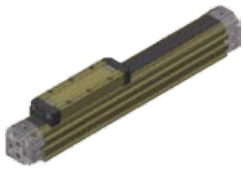
∅	F [N] at 0,6 MPa	P1 [N]	P2 [N]	P3 [N]	Standard carriage [Nm]			Meduim carriage [Nm]			Long carriage [Nm]		
					M1	M2	M3	M1	M2	M3	M1	M2	M3
16	125	100	100	25	5	0,2	0,8	-	-	-	-	-	-
25	250	200	200	50	8	2	3	14	3	5	15	6	9
32	420	250	250	65	9	3	4	15	4	7	28	8	12
40	640	350	350	90	11	9	14	16	14	20	31	27	39
50	1050	500	500	125	19	13	19	29	20	30	52	36	53

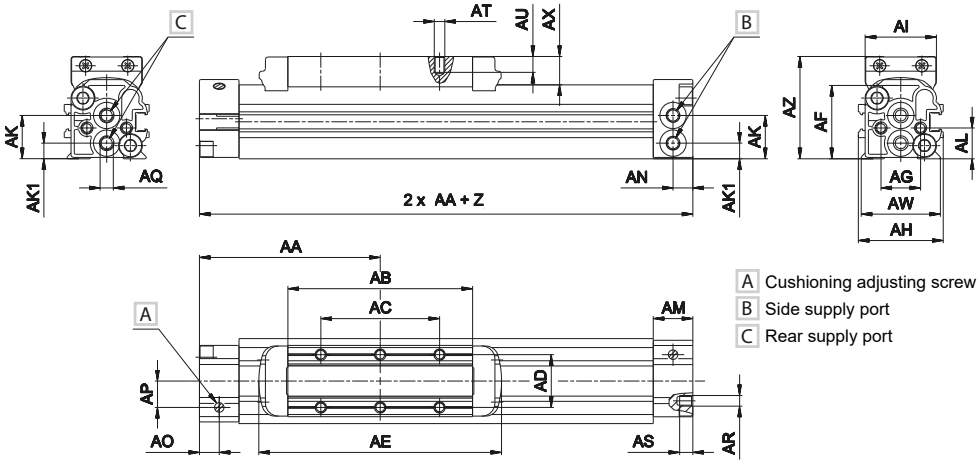
A moment is the product of the load (N) and the arm (m), i.e the distance between the centre of gravity of the load and the longitudinal axis of the piston. Please note that in dynamic conditions, the load must be reduced due to effects associated with the speed. Calculation of permissible dynamic stress and verification of internal damping efficiency can be found on page 1-49.

Dimensions

Standard carriage - 6 fixing holes

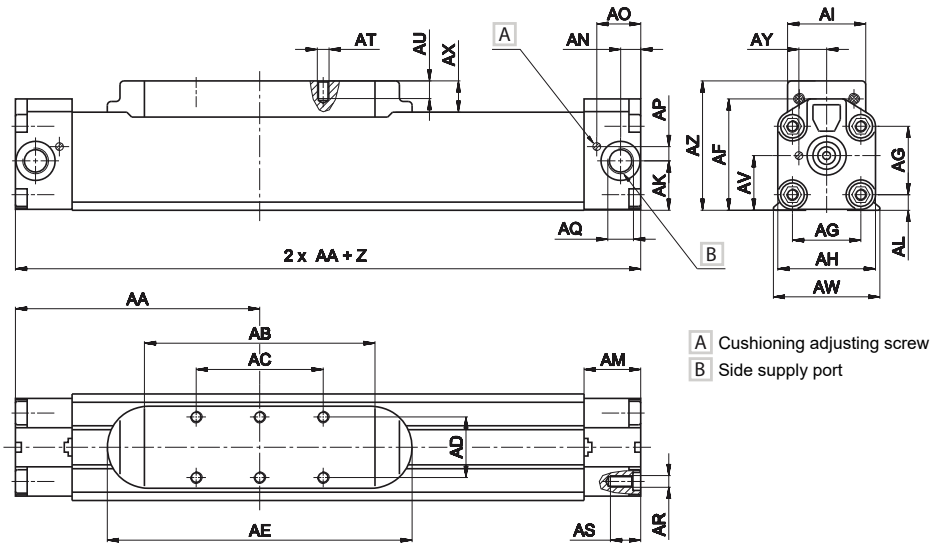
∅ 16 mm





A Cushioning adjusting screw
B Side supply port
C Rear supply port

∅ 25 - 50 mm



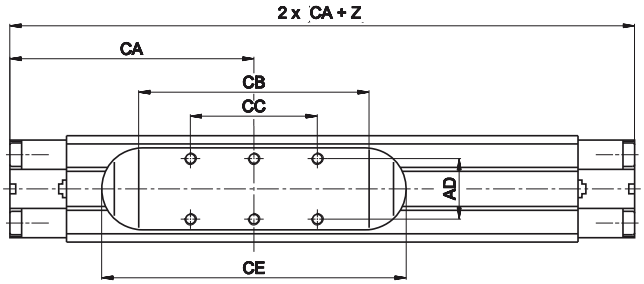
A Cushioning adjusting screw
B Side supply port

Z = stroke

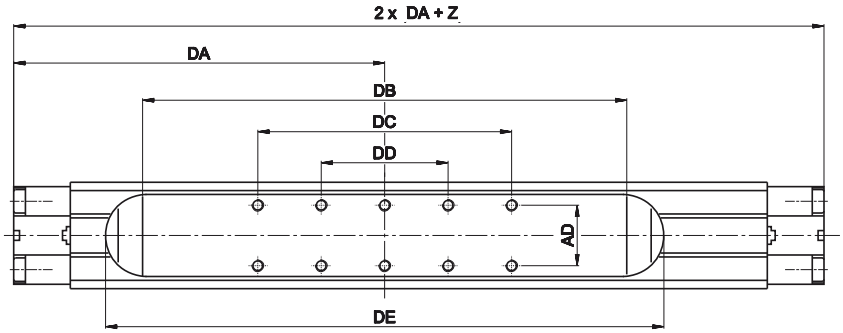
∅	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK	AK1	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
16	68,5	70	45	20	92	30	18	32	27	16,5	6	11,5	15	7,5	7,5	10	M5	M4	5	M4	6	-	30	11	-	39
25	100	95	50	24	130	48,3	28	40,5	33	20,2	-	7	24	7,4	18,2	5,7	G1/8“	M5	12	M5	9	22,8	42,8	16	12,2	57,6
32	125	118	65	31	156	57	35	50	40	25,3	-	8	29	10,3	22,5	7,3	G1/4“	M6	15,5	M6	9	28	54,5	16	14,2	66,2
40	150	134	65	31	177	74	44	64	44	33,8	-	11,8	33	12,5	26,5	8,7	G3/8“	M8	20	M6	11	37	67	19,5	16,5	85,8
50	175	164	105	39	211	90,7	55	80	54	41,4	-	14,7	33	14,2	25,7	11,8	G3/8“	M10	20	M8	12	47,7	86	20,5	19,1	103

1

Medium carriage - 6 fixing holes



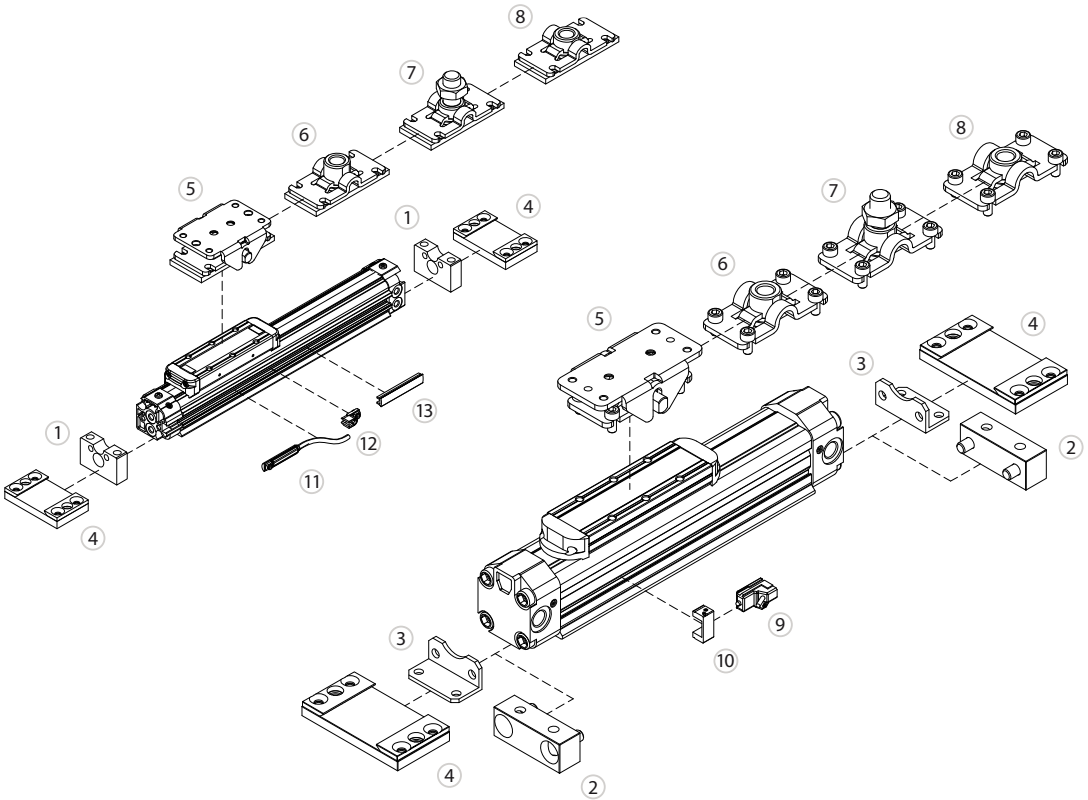
Long carriage - 10 fixing holes



Z = stroke

∅	AD	CA	CB	CC	CE	DA	DB	DC	DD	DE
25	24	114,5	125	50	160	147,5	190	100	50	225
32	31	142,5	153	65	191	190	248	130	65	286
40	31	169	172	65	215	225	284	130	65	327
50	39	205	224	105	271	277	364	315	105	411

Mounting accessories



Mounting accessories	... see page
1 Bracket for ø16	... 4-33
2 Bracket for ø40, 50	... 4-33
3 Bracket for ø25, 32	... 4-33
4 Fixing plate	... 4-31
5 Oscillating bracket	... 4-31
6 Female threaded connection	... 4-32
7 Male threaded pin	... 4-32
8 Female connection w/o thread	... 4-32
9 DH sensor for ø25-50	
10 DH sensor fixing plate	
11 DF sensor for ø16	
12 Cable clamping for DF sensor	
13 DF sensor covering strip	

Examination and verification of internal cushioning

In a system with moving masses, as in the case of rodless cylinders, it is essential to control the dissipation of the system's kinetc energy as it is brought to a stop. First of all, it is necessary to establish and verify the most suitable method for cushioning the system, in order to avoid the moving mass (carriage with load) striking against the end-caps and compromising the life of the cylinder.

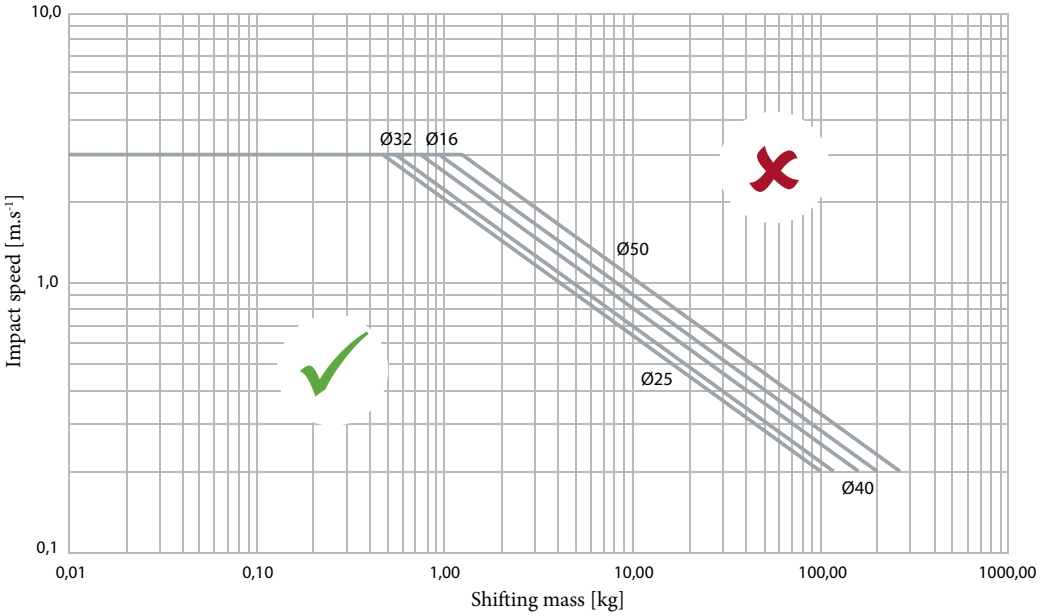
If the point corresponding to a given load and speed lies beneath the appropriate curve, the cushioning is able to absorb the kinetic energy of the system.

Vice versa if the point lies above the curve, the cushioning is not able to absorbe the kinetic energy. In that case you must:

a) decrease the load and mantain the translation speed
b) decrease the speed and mantain the load
c) select a cylinder with a bigger bore or with twin chambers
d) use external hydtŕaulic shock absorber (see page 9-1)

Attention: if the cylinder is mounted vertically, the damping efficiency is reduced by 40%.

Internal cushioning efficiency



Dynamic load capacity

Procedure for determining the permissible values for dynamic stress:

- determine the KRV coefficient according to the speed
- multiply the permissible values for static stress by the KRV coefficient and the value calculated in this way is the maximum permissible value for dynamic stress