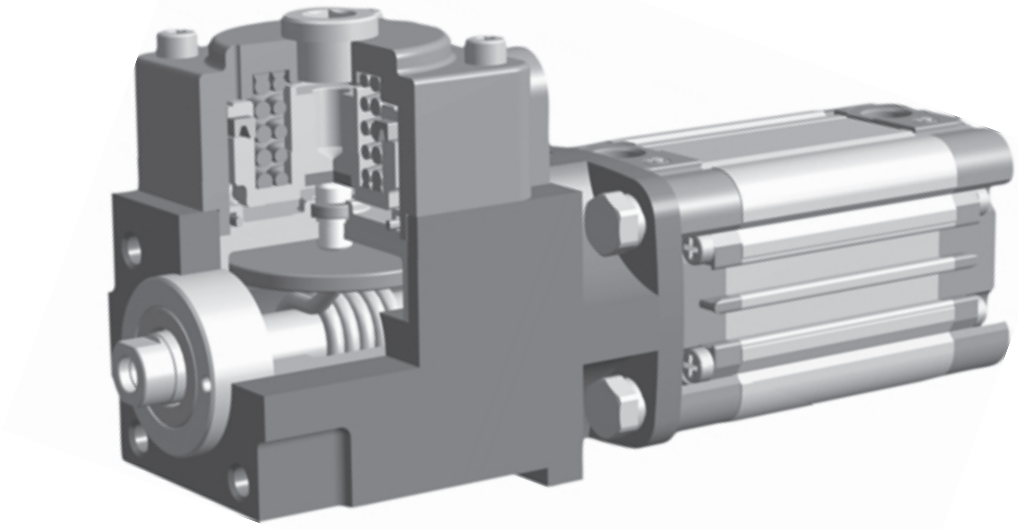
A product which combines the familiar and traditional aspect of the UNIVER locking unit and a new and revolutionary "elastic heart" capable to improve its performances under every point of view. Maximum locking force, excellent response time, high cinetic energy which can be dissipated, excellent locking repeatibility, high resistance to shock and vibrations.

TECHNICAL CHARACTERISTICS



Codification key

L1 - N	-	063	20

- 20 — Shaft diameter
- 063 — Bore (mm)
- L1 - N — Series

TYPE

1 Mechanical lock

BORE SIZES

Ø 16 ÷ 125

SHAFT DIAMETER

Ø 6 ÷ 32

Fluid: filtered air, with or without lubrication
Working pressure: 4,5 ÷ 10 bar
Ambient temperature: -20° ÷ 80 °C

TECHNICAL CHARACTERISTICS

* prearranged only for chromium-plated steel rods
* the new series is completely interchangeable with the old one
* the new locking units tolerate without problems load variations as well as the application of sudden loads.
* the new series of locking units functions without problems also if rods or shafts are dirty with oil or grease.
* Safety standards are perfectly complied with: the air pressure can only be used for releasing the device (4 bar).
* **alternatively it is possible to use the integrated cylinder locking unit as shown on page 59-II.**

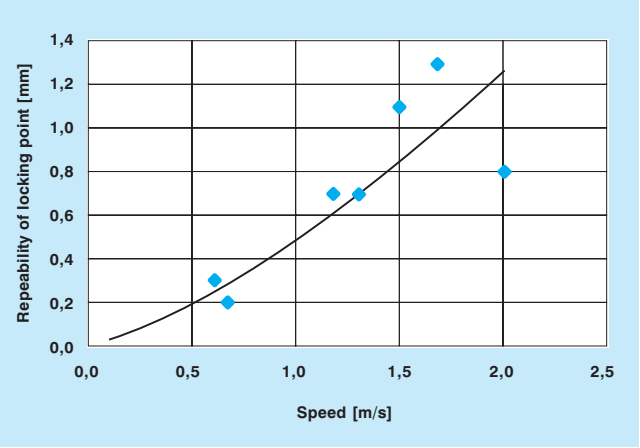
Cylinder bore (mm)	16	20	25	32	40	50	63	80	100	125
Rod diameter (mm)	6	8	10	12	16	20	20	25	25	32
Pneumatic connection	G 1/8									
Mass (kg)	0,43	0,43	0,43	0,78	1	1,50	2,30	4	6,70	10,70

A spring in special steel, developed together with FEA (Finite Element Analysis) and with the assistance of the most advanced CAD technics, constitutes the heart of this new locking unit which, in addition to the excellent locking capacity and repeatibility, enable a soft braking of the moved masses.

Main performances and characteristics:

Size or bore of the equivalent cylinder	16 (shaft 6)	20 (shaft 8)	25 (shaft 10)	32 (shaft 12)	40 (shaft 16)	50 (shaft 20)	63 (shaft 20)	80 (shaft 25)	100 (shaft 25)	125 (shaft 32)
Static locking force [N]	200	314	490	800	1260	2000	3100	5000	7850	12300
Pressure applied to the equivalent cylinder [bar]	10	10	10	10	10	10	10	10	10	10
Dynamic braking force at 1 m/s	40% of the static locking force									
Response time at 6 bar [ms]	12	12	15	20	20	25	25	30	30	40
Repeatibility of locking point	< 1 mm a 1 m/s (see diagram below)									
Resistance to vibration	10 g (10-55 Hz) 30 min. on each axis									
Shock resistance [J]	2	3	4	5	8	11	15	21	29	40
Minimum realease pressure [bar]*	4									

* For release pressure values under 4 bar, the reaction of the locking unit cannot be foreseen.



Braking distance

In some applications, it could be necessary to know the piston rod stroke between the reception of an emergency signal and its stop.
This value (S) depends on the following:

V = speed in emergency in m/s

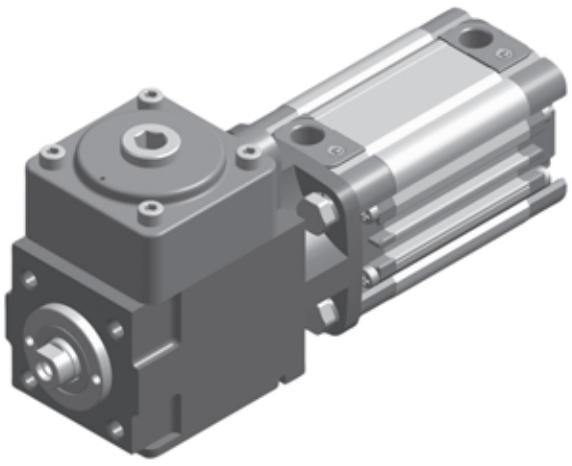
t = locking system response time in seconds (approx. 0,03 sec.)

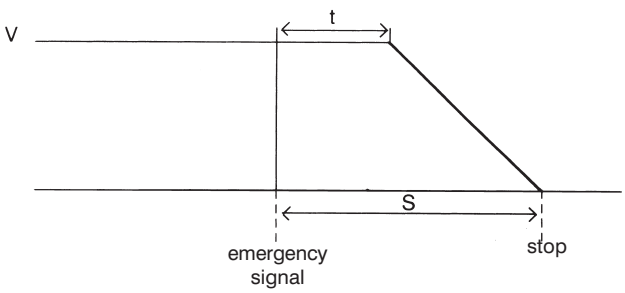
f = braking force under dynamic conditions in N

This displacement (S) is obtained by the following formula:

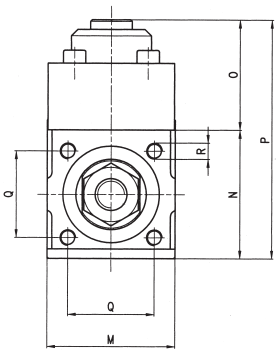
$$S = (V \cdot t) + \frac{m\,V^2}{2\,f}$$

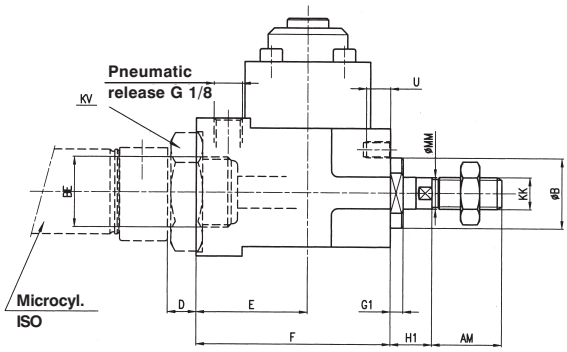
Example:
locking unit size 40 with dynamic load 10 kg at a speed of 0,7 m/s:



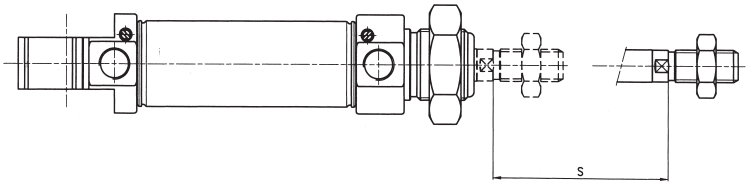


Locking units for Ø 16 - 20 - 25 mm ISO microcylinders



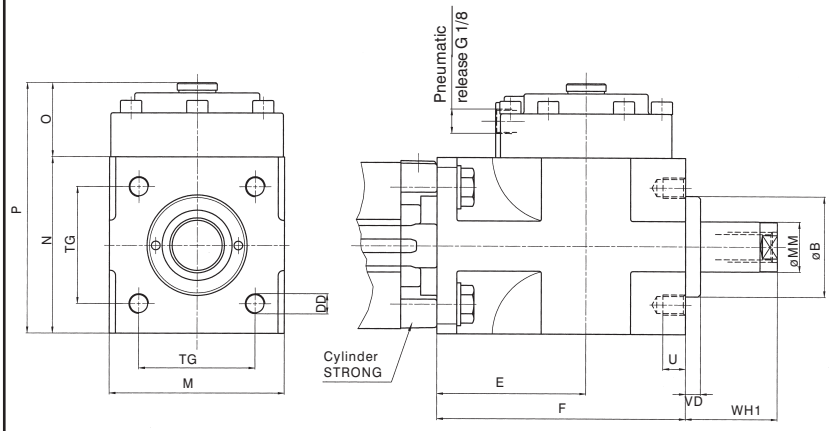


Additional length to the standard rod



Cyl. Ø	AM	B	BE	D	E	F	G1	H1	KK	KV	M	MM	N	O	P	Q	R	S	U
16	16	16	M16 x 1,5	10	35	61	1,5	7	M6 x 1	es. 24	40	6	40	34,5	74,5	27	M5	55	7,5
20	20	22	M22 x 1,5	10	35	61	4	9	M8 x 1,25	es. 32	40	8	40	34,5	74,5	27	M5	55	7,5
25	22	22	M22 x 1,5	10	35	61	4	13	M10 x 1,25	es. 32	40	10	40	34,5	74,5	27	M5	55	7,5

Locking unit for compact cylinders STRONG Ø 32 - 63 mm



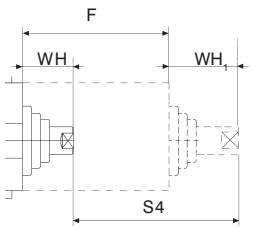
Fixing screws

Grain UNI 5923, washer and nut UNI 5589

Cyl. Ø	Small parts	Q.ty	Dimens.	Part number
32	Grain	4	M 6 x 30	AZ4-VS0630
	washer	4	6,4 x 16	AZ4-SR06,41,6
	nut	4	M 6 x 1	AZ4-SO0064
40	Grain	4	M 6 x 30	AZ4-VS0630
	washer	4	6,4 x 1,6	AZ4-SR06,41,6
	nut	4	M 6 x 1	AZ4-SO0064
50	Grain	4	M 8 x 40	AZ4-VS0840
	washer	4	8,4 x 1,6	AZ4-SR841,6
	nut	4	M 8 x 1,25	AZ4-SH08125
63	Grain	4	M 8 x 40	AZ4-VS0840
	washer	4	8,4 x 1,6	AZ4-SR8,41,6
	nut	4	M 8 x 1,25	AZ4-SH08125

Ø	B	DD	E	F	M	MM	N	O	P	TG	U	VD	WH1
32	30	M6	54,5	84	50	12	50	29,5	79,5	32,5	10	6	26
40	35	M6	58	90	58	16	58	29,5	87,5	38	9	6	30
50	40	M8	60	100	70	20	70	29	99	46,5	10	6	37
63	45	M8	65	110	85	20	85	37	122	56,5	13	6	37

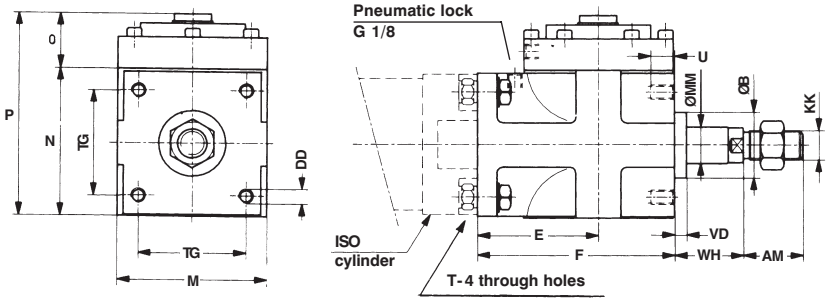
Additional length to standard rod with ISO protrusion



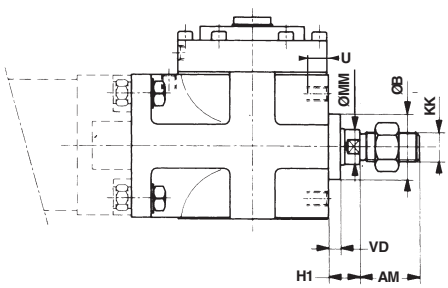
Cyl. Ø	WH	F	WH_1	S4
32	14	84	26	96
40	14	90	30	106
50	18	100	37	119
63	18	110	37	129

Locking units for ISO cylinders Ø 32 ÷ 125

ISO protrusion



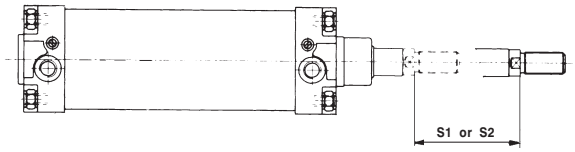
Reduced protrusion



Additional length to the standard rod

S_1 for ISO dimensions

S_2 for reduced dimensions



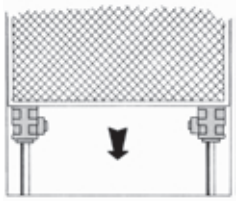
Cyl. Ø	AM	B	DD	E	F	H1	KK	M	MM	N	O	P	S1	S2	TG	U	VD	WH
32	22	30	M6	54,5	84	16	M10 x 1,25	50	12	50	29,5	79,5	85	75	32,5	10	6	26
40	24	35	M6	58	90	15	M12 x 1,25	58	16	58	29,5	87,5	90	75	38	9	6	30
50	32	40	M8	60	100	17	M16 x 1,5	70	20	70	29	99	100	80	46,5	10	6	37
63	32	45	M8	65	110	17	M16 x 1,5	85	20	85	37	122	110	90	56,5	13	6	37
80	40	45	M10	75	125	21	M20 x 1,5	100	25	100	40,5	140,5	125	100	72	16	8	46
100	40	55	M10	90	152	26	M20 x 1,5	116	25	120	59	179	150	125	89	18	8	51
125	54	60	M12	112,5	185	35	M27 x 2	145	32	145	62	207	185	155	110	22	9,5	65

Screw with hexagonal head UNI 5739 and washer UNI 6592 for assembling locking unit to ISO cylinder

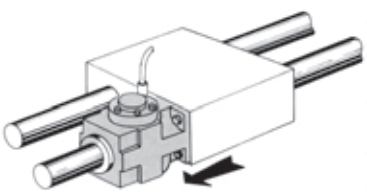
Cyl. Ø		Quantity	Dimensions	Part number
32	screws	4	M6 x 16	**AZ4-VE0616**
	washer	4	6,4 x 1,6	**AZ4-SR06,41,6**
40	screws	4	M6 x 20	**AZ4-VE0620**
	washer	4	6,4 x 1,6	**AZ4-SR06,41,6**
50	screws	4	M8 x 20	**AZ4-VE0820**
	washer	4	8,4 x 1,6	**AZ4-SR08,41,6**
63	screws	4	M8 x 25	**AZ4-VE0825**
	washer	4	8,4 x 1,6	**AZ4-SR08,41,6**
80	screws	4	M10 x 30	**AZ4-VE1030**
	washer	4	10,5 x 2	**AZ4-SR10,52,0**
100	screws	4	M10 x 30	**AZ4-VE1030**
	washer	4	10,5 x 2	**AZ4-SR10,52,0**
125	screws	4	M12 x 35	**AZ4-VE1235**
	washer	4	13 x 2,5	**AZ4-SR13,02,5**

...other examples of locking unit applications...

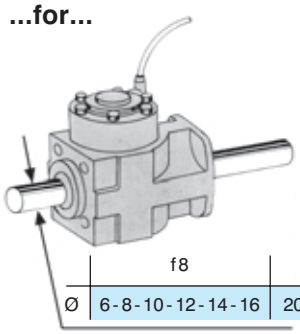
...for gates...



...for slides...



...for...



	f8	f7
Ø	6-8-10-12-14-16	20-25-32

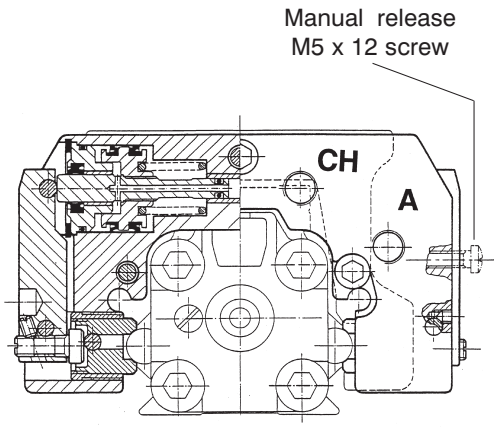
Chromium-plated shaft

Locking unit

The UNIVER locking unit for rodless cylinders has been realized with the aim to stop the carriage in any point of its stroke and it is able to provide a good locking precision.
It is possible to assemble it indifferently on either side of the carriage and its mechanical braking force may be further amplified by means of an additional pneumatic control.

Fluid: filtered air, with or without lubrification
Working pressure: 4,5 ÷ 10 bar
Working temperature: - 20° ÷ 80°C

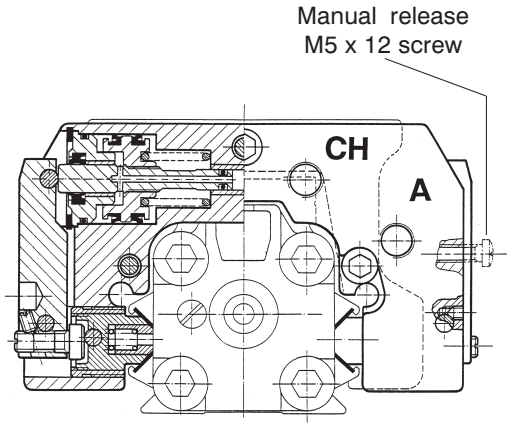
Locking unit for S5 series



Maximum locking force (N)

Cyl. Ø	
25	810
32	1185
40	825
50	1235

Locking unit for VL1 series



Maximum locking force (N)

Cyl. Ø	
25	520
32	745
40	1465
50	2365

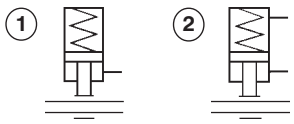
TECHNICAL CHARACTERISTICS

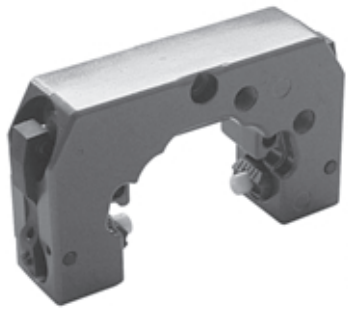
* Min. release pressure 4,5 bar.
* It keeps the carriage in position in both directions
* Easy assembly which may be effected indifferently on both sides of the carriage
* Manual release, permanent, realizable with 2 screws M5

Cyl. Ø	25	32	40	50
A = CH	M5	G 1/8		

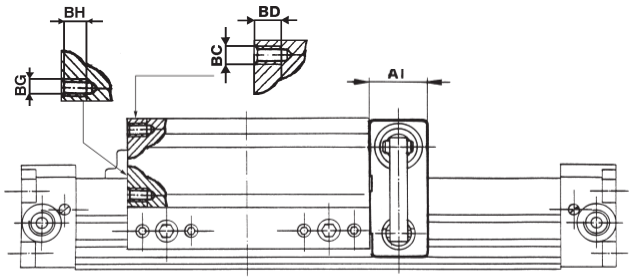
A = Release Ch = Pneumatic locking

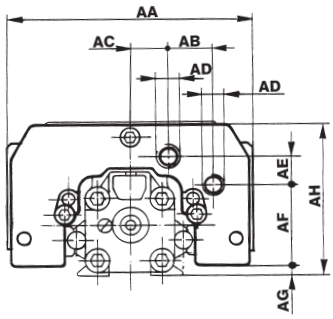
* standard supplied in one only version: locking by means of mechanical springs which lock the carriage in the absence of an air signal ①.
With the aim to increase the locking force this model is already foreseen for the additional pneumatic control ②.





Locking unit for S5 series



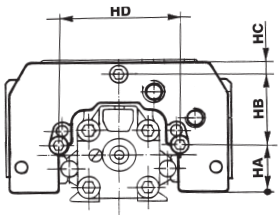


Cyl. Ø	AA	AB	AC	AD	AE	AF	AG	AH	AI	BC	BD	BG	BH	Mass in kg: Stroke "0"	+ Locking units	= Total	Part number
25	120	24,5	12,5	M5	16,5	34,5	5	71,5	32	M6	15	M6	15	1,625	0,35	1,975	L6 - S5025
32	132	25,3	17	G 1/8	16,2	42,3	6,5	81,5	32	M6	15	M6	15	2,775	0,46	3,235	L6 - S5032
40	150	26	17	G 1/8	18,2	58,3	10	106	40	M6	15	M6	15	6,095	0,82	6,915	L6 - S5040
50	164	26	20	G 1/8	19,8	72,5	12,7	125,7	51	M8	16	M6	15	10,03	1,45	11,480	L6 - S5050

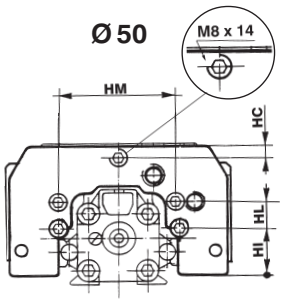
Fixing dimensions

Cyl. Ø	HA	HB	HC	HD	HI	HL	HM
25	24,7	34,8	7	59,5	-	-	-
32	27	41,5	6,5	68	-	-	-
40	45,3	43,8	6,9	81,5	-	-	-
50	-	-	12	-	36,5	22,5	96

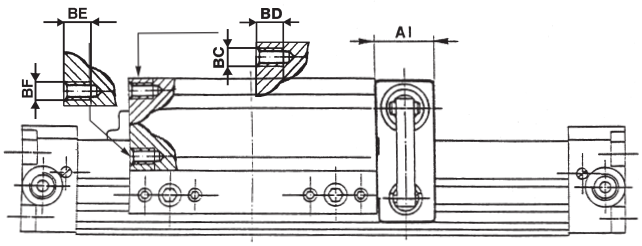
Ø 25 - 32 - 40

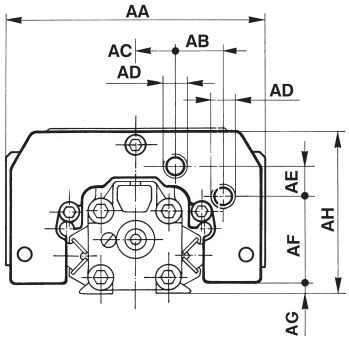


Ø 50



Locking unit for VL1 series



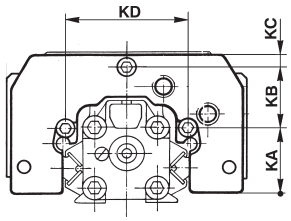


Cyl. Ø	AA	AB	AC	AD	AE	AF	AG	AH	AI	BC	BD	BE	BF	Mass in kg: Stroke "0"	+ Locking unit	= Total	Part number
25	120	24,5	12,5	M5	16,5	34,5	7,1	73,6	32	M6	10	M6	10	2,095	0,35	2,445	L6 - V1025
32	132	25,3	17	G 1/8	16,2	42,3	6,5	81,5	32	M6	10	M6	10	3,125	0,46	3,585	L6 - V1032
40	150	26	17	G 1/8	18,2	58,3	9	105	40	M6	15	M6	15	6,43	0,82	7,25	L6 - V1040
50	164	26	20	G 1/8	19,8	72,5	12,7	125,7	51			M6	12	10,85	1,45	12,3	L6 - V1050

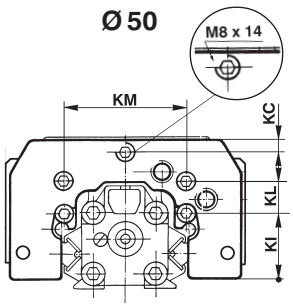
Fixing dimensions

Cyl. Ø	KA	KB	KC	KD	KI	KL	KM
25	31,5	28	7	52	-	-	-
32	35	33,5	6,5	64	-	-	-
40	45,3	43,8	6,9	81,5	-	-	-
50	-	-	12	-	36,5	22,5	96

Ø 25 - 32 - 40

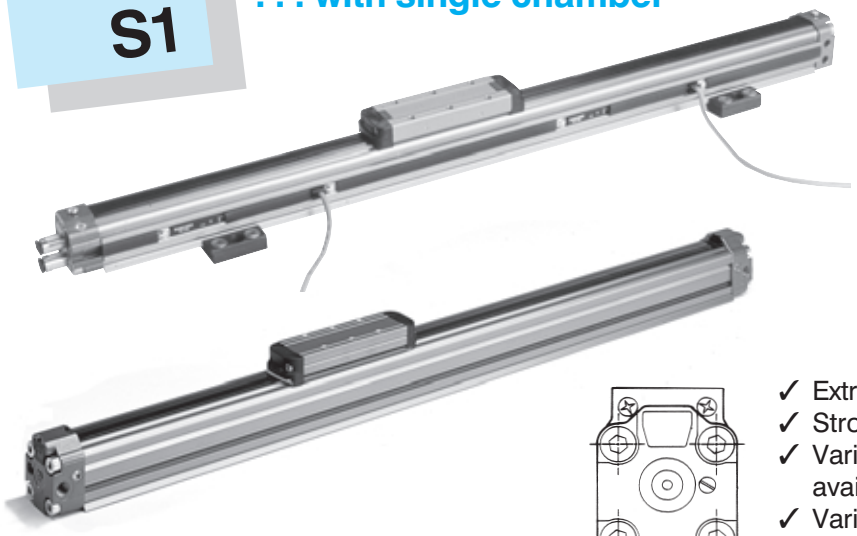


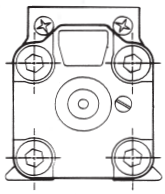
Ø 50



Series **S1**

. . . with single chamber

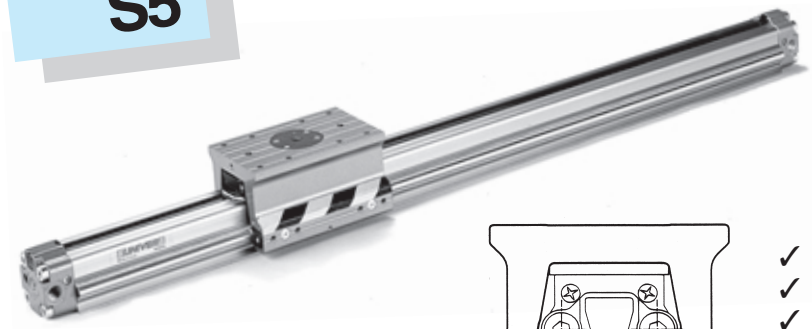


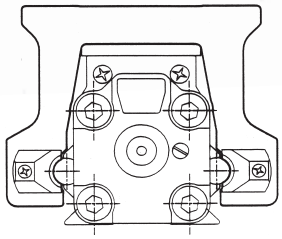


- ✓ Extruded profile in aluminium Ø 16 ÷ 50 mm.
- ✓ Stroke to 5 m.
- ✓ Various supply port configurations available.
- ✓ Various carriage types.
- ✓ High translation speed 1 ÷ 3 m/s.

Series **S5**

. . . with integrated guides

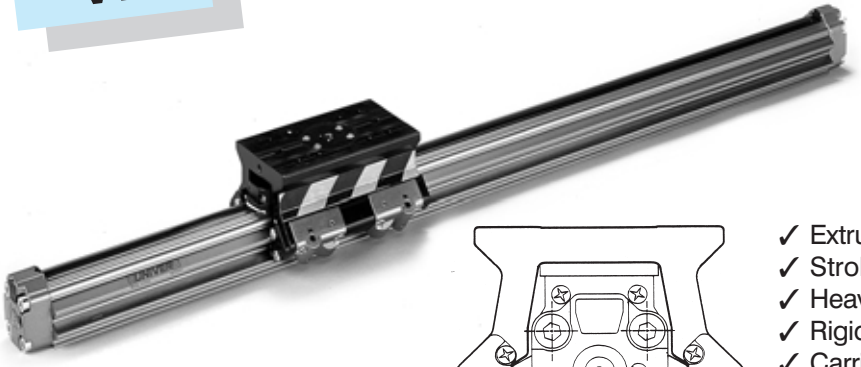


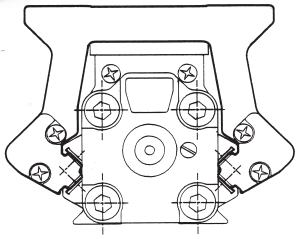


- ✓ Extruded profile in aluminium Ø 25 ÷ 50 mm.
- ✓ Stroke to 6 m.
- ✓ Flexible bearing system.
- ✓ Plastic bearings reduce noise.
- ✓ Translation speed 0,2 ÷ 1,5 m/s.
- ✓ Available with locking unit.

Series **VL1**

. . . with integrated guides 90°





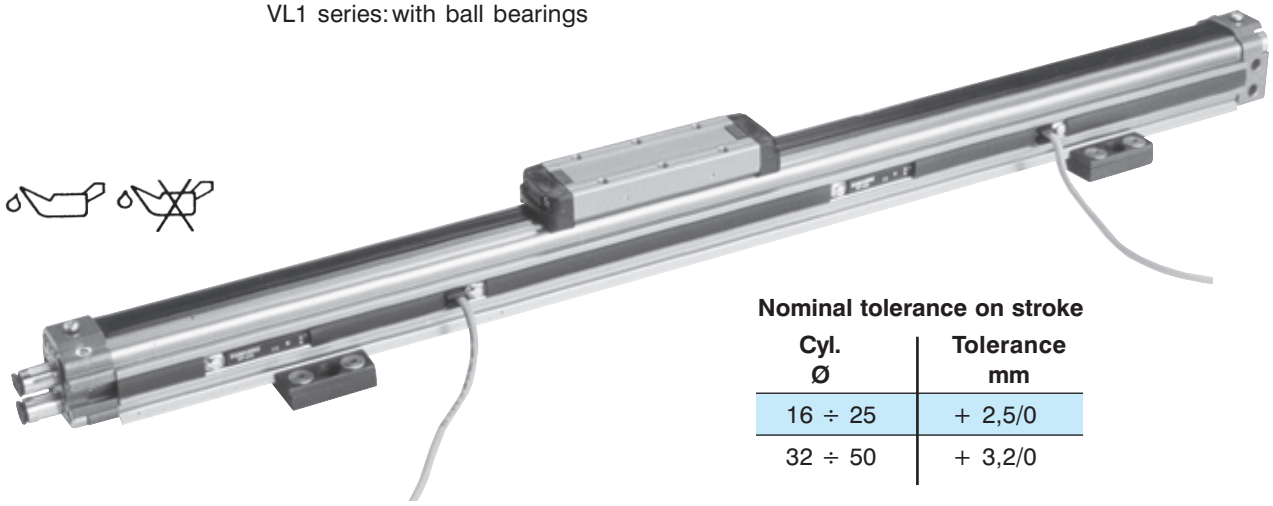
- ✓ Extruded profile in aluminium Ø 25 ÷ 50 mm.
- ✓ Stroke to 6 m.
- ✓ Heavy duty precision series.
- ✓ Rigid ball bearing system.
- ✓ Carriage slide on ball bearings.
- ✓ Translation speed 0,2 ÷ 2 m/s.
- ✓ Available with locking unit.

TECHNICAL CHARACTERISTICS

Working pressure: 3-10 bar
Ambient temperature: -20°C ÷ +80°C
Fluid: filtered air, **with or without lubrication**
up to 500 mm
Bore size: Ø 16-25-32-40-50 mm
Standard strokes: up to 5 meters (Ø 16 mm)
up to 6 meters (Ø 25 ÷ 50 mm)
Min. speed required for regular translation: 7 ÷ 20 mm/s.
Translation speed: 3 m/s max.
Carriage types: standard, medium, long, double medium
Integrated guides: S5 series: round steel shafts
VL1 series: steel foils at 90°
External carriage slide: S5 series: with plastic sliding shoes
VL1 series: with ball bearings

Upon request

- Magnetic version for S1 series (except for Ø 16 magnetic version standard); for S5 series a special magnetic sensor holder extrusion DKS series is foreseen (section accessories page 6-V).
- Magnetic sensor DH-series - DF-series (Ø 16) (section accessories page 2-V).
- Slide units with standard or long carriage for S1 series (J30 - J31 series) page 47.
- Locking unit for S5 - VL1 series (L6 series) page 7.



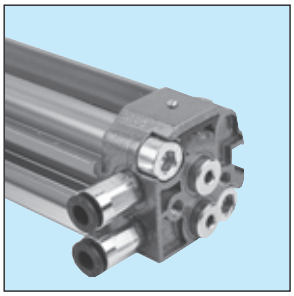
Nominal tolerance on stroke

Cyl. Ø	Tolerance mm
16 ÷ 25	+ 2,5/0
32 ÷ 50	+ 3,2/0

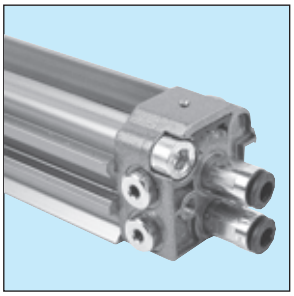
End-caps in die-cast light alloy with various supply port options (see picture below).
The unique method of stripseal attachment permits easy assembly and disassembly, without needing tools or continuous adjustment.

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

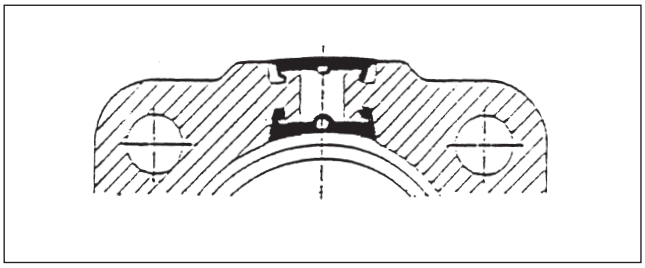
Ø 16 mm



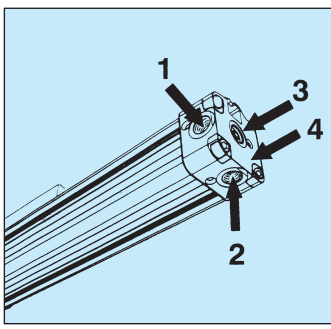
Double side supply



Double rear supply



Ø 25 ÷ 50 mm



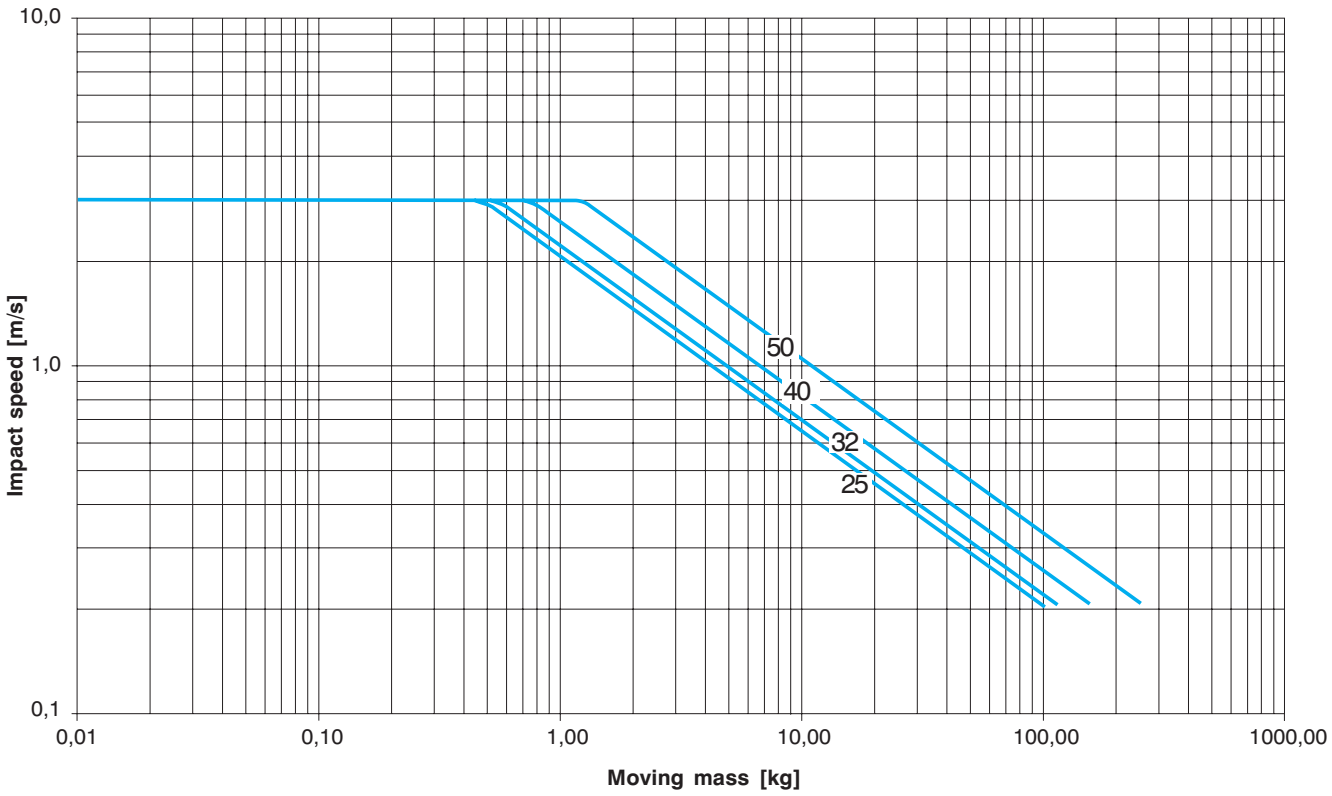
0 = no supply port (left end-cap only, when both chambers are supplied from the right end-cap)
1 = side
2 = dorsal
3 = rear
4 = both chambers supplied from one end-cap

Piston - Carriage assembly in extruded aluminium alloy with thermoplastic guide bearings. The piston is fitted with double lip seals which automatically self-compensate against wear; upon request it is possible to fit it with permanent magnets (S1 series).
Cylinder barrel in extruded aluminium alloy with internal and external anodisation.
Pneumatic adjustable cushions with two regulation screws in each end-cap allow an improved regulation of piston deceleration.
Mechanical rubber shock absorbers avoid mechanical stress and reduce machinery noise (below 50 dB).

Examination and verification of the 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 kinetic energy as it is brought to a stop.
It is necessary, first of all, to establish and verify the most suitable method of 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 which case you must:
a) decrease the load and maintain the translation speed
b) decrease the speed and maintain the load
c) select a cylinder with a bigger bore.

The cushioning capacity is shown in the diagram below, referenced to the final speed as the carriage approaches the end-caps, for S1 - S5 - VL1 series.



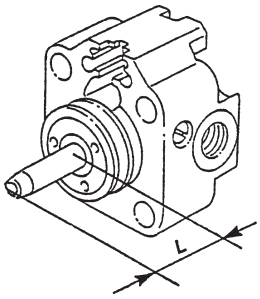
If it is not possible to absorb the kinetic energy with the cushioned end-caps and modify the parameters (a-b-c shown at page 11), an additional cushioning is necessary to reduce the load speed before the cylinder strikes the cushion.
The additional cushion can be:
- a **pneumatic cushion** with electronic control;
- a **hydraulic cushion**, available on the market.

The mass movement generates loads to the cylinder, connected both to the weight forces (load values are constant) and to the inertia forces which originate in the acceleration or deceleration phases of the piston at the beginning and at the end of the stroke.

A typical fatigue stress arises in which the load value affects the life of the structure. The following acceptable loads refer to a life expectancy of 20000 km.

The indicated values (in the corresponding pages of each series) represent the maximum values of the forces and of the torques which can be developed in acceleration phases. Thus, in order to evaluate if an application is correct, the generated inertia forces and the corresponding torque should be calculated.

To calculate the inertia forces, the length L of the deceleration distance must be known. If the pneumatic cushion of the cylinder head is used, the values are:



Ø (mm)	L (mm)
16	16,5
25	25,0
32	32,5
40	41,5
50	52,0

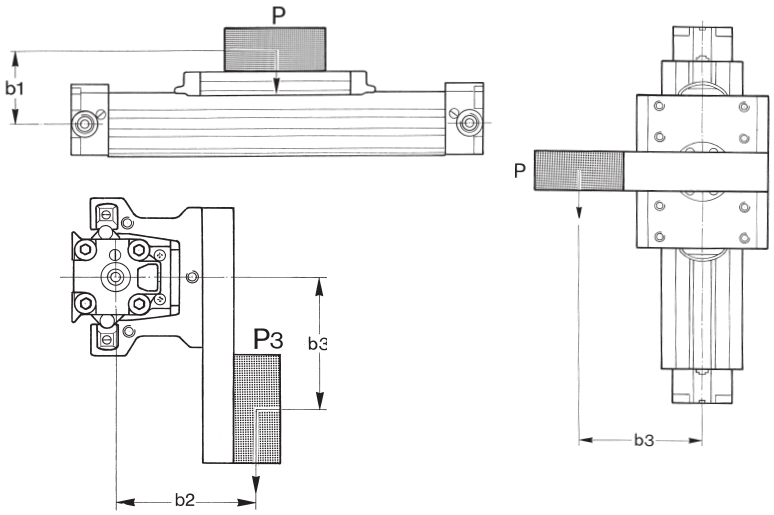
The usual formulas of mechanics are then applied. For instance, when moving a mass M (kg) at an impact speed V (m/s) with b1, b2 and b3 (mm) arms to the longitudinal axis of the piston, the inertia force F, in longitudinal direction and the corresponding torques are calculated as follows:

$$F(N) = M \cdot a = M \cdot \frac{V^2}{2 \cdot (L \cdot 10^{-3})}$$

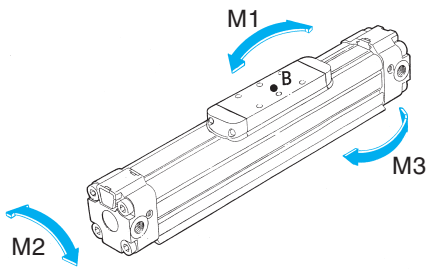
$$M_1 \cdot (Nm) = F \cdot (b_1 \cdot 10^{-3})$$

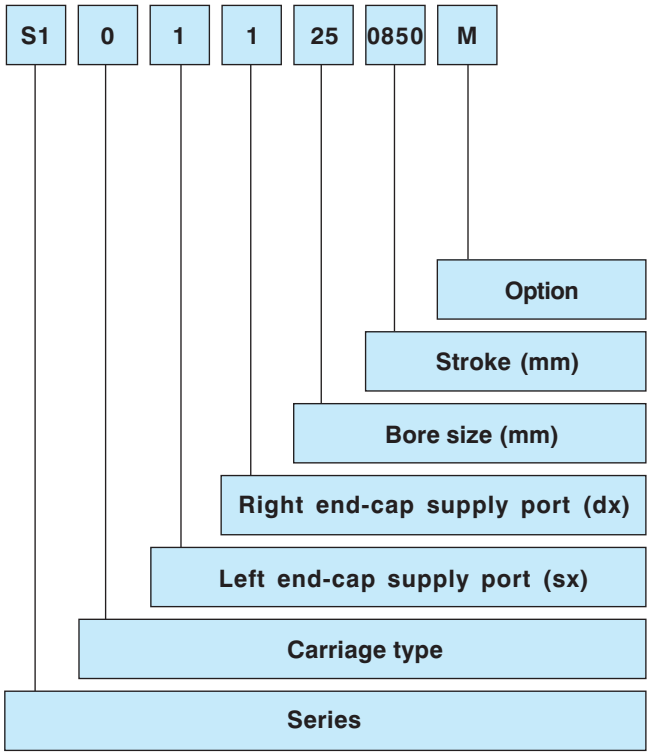
$$M_2 \cdot (Nm) = M \cdot g \cdot (b_2 \cdot 10^{-3})$$

$$M_3 \cdot (Nm) = F \cdot (b_3 \cdot 10^{-3})$$



While F, M_1 and M_3 can have both static and inertia components, M_2 is a static component only.





SERIES

S1 = Single chamber
S5 = Integrated guides/plastic bearings

CARRIAGE TYPE

0 = Standard carriage
(for S5 series except Ø 40 and 50 mm)
2 = Medium carriage *
3 = Long carriage *

LEFT END-CAP SUPPLY PORT

0 = No supply port (when both chambers are supplied from the right end-cap)
1 = Side supply port *
2 = Bottom supply port *
3 = Rear supply port *

RIGHT END-CAP SUPPLY PORT

1 = Side supply port (twin Ø 16 mm)
2 = Bottom supply port *
3 = Rear supply port (twin Ø 16 mm)
4 = Both chambers supplied from the right end-cap

BORE SIZE

16 - 25 - 32 - 40 - 50

STROKE

Up to 5000 mm Ø 16 mm
Up to 6000 mm Ø 25 ÷ 50 mm

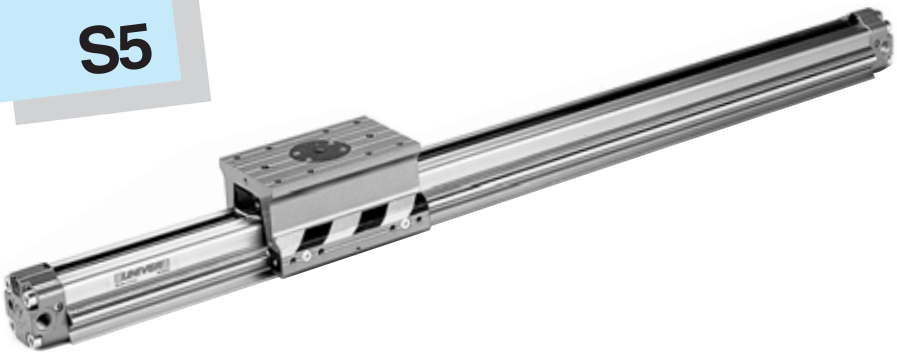
OPTION

M = Magnetic version standard for Ø 16 mm, upon request for Ø 25 ÷ 50 mm (for version S1 only).
For S5 Series, the magnetic option is obtained by means of a magnetic switch mounting rail (DKS Series) which is to be ordered separately (Section accessories page 6).

* = Except Ø 16 mm

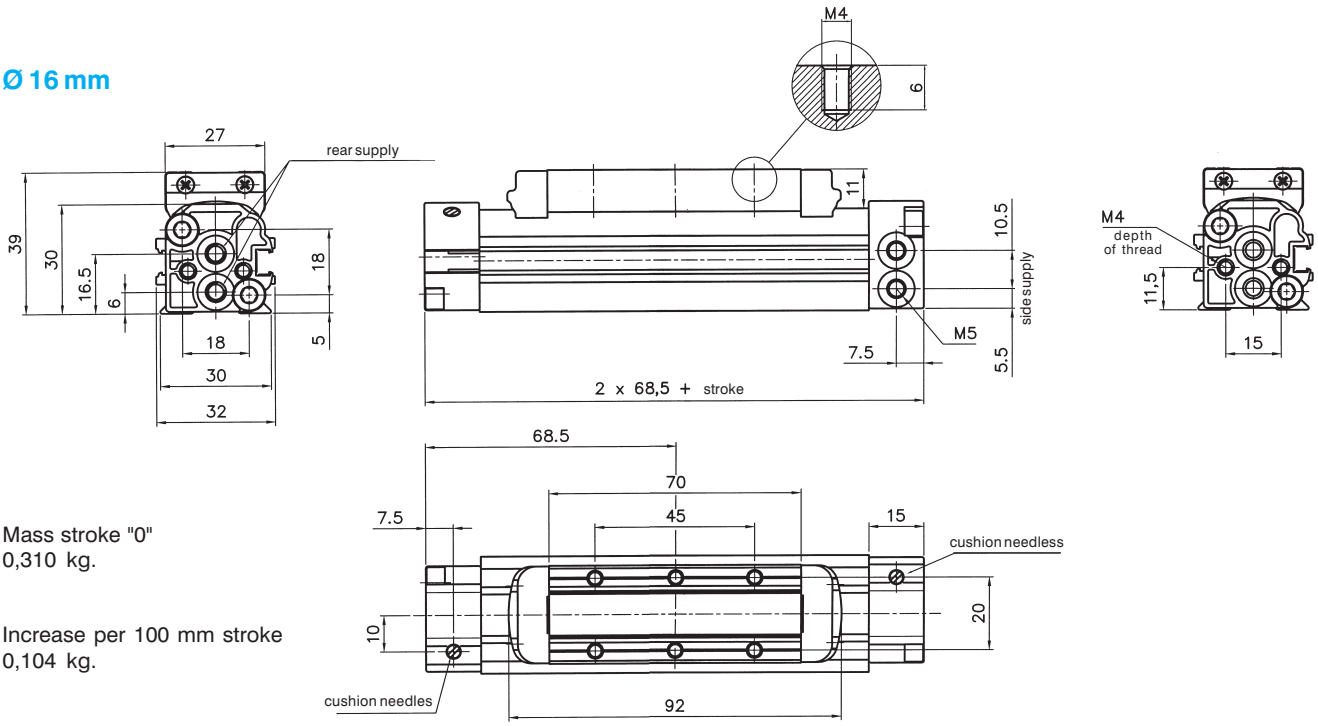
Series **S1**

Series **S5**



Rodless cylinders with standard carriage - 6 fixing holes

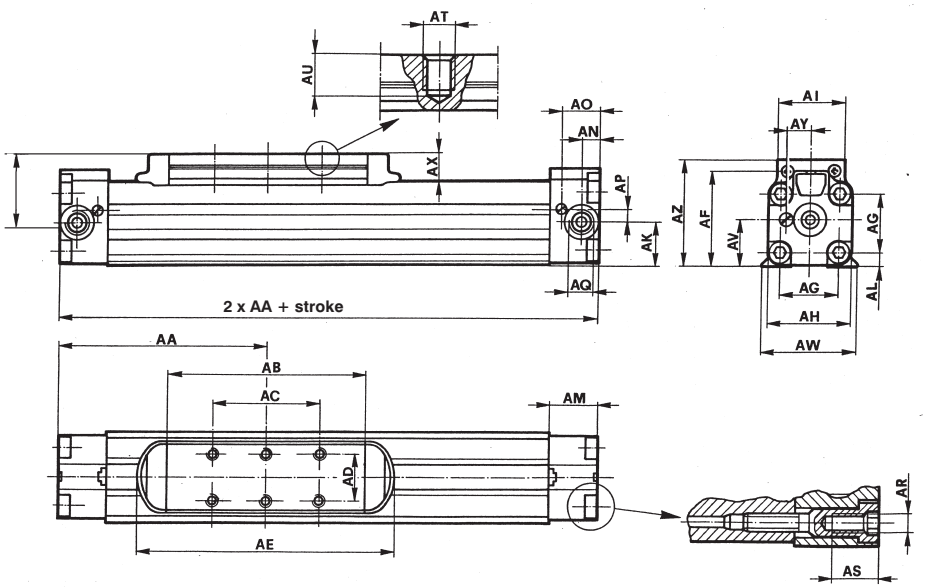
Ø 16 mm



Mass stroke "0"
0,310 kg.

Increase per 100 mm stroke
0,104 kg.

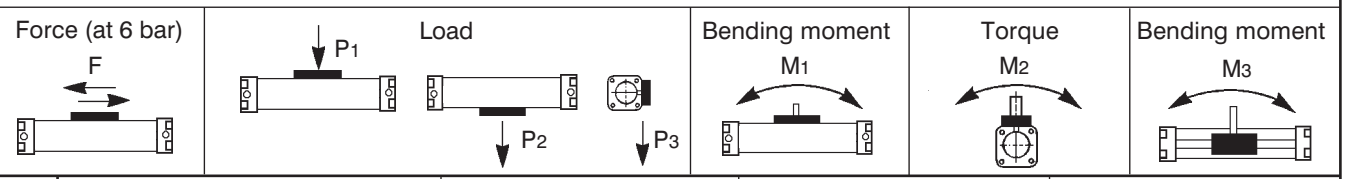
Ø 25 ÷ 50 mm



Cyl Ø	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT
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
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
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
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

Cyl Ø	AU	AV	AW	AX	AY	AZ	Mass (kg) at "0" stroke	Weight increase (kg) per additional 100 mm stroke
25	9	22,8	42,8	16	12,2	57,6	0,750	0,210
32	9	28	54,5	16	14,2	66,2	1,310	0,325
40	11	37	67	19,5	16,5	85,8	2,600	0,555
50	12	47,7	86	20,5	19,1	103	4,785	0,955

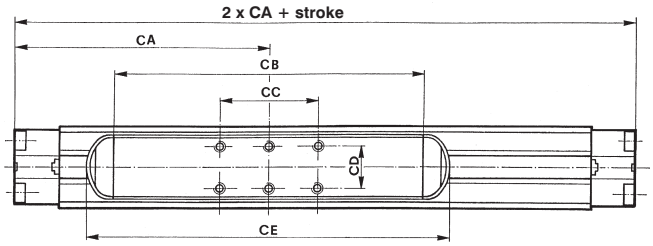
Values of the static load; please note that under dynamic conditions the load must be reduced due to the effects associated with the speed. The torque is the product of load (Newton) per arm (meters), i.e. the distance between the center of gravity of the load and the longitudinal axis of the piston (technical characteristics see page 11-12-II).



Cyl. Ø	F (N)	P1 (N)	P2 (N)	P3 (N)	Standard carriage M1 (Nm)	Standard carriage M2 ◆ (Nm)	Standard carriage M3 (Nm)	Medium carriage M1 (Nm)	Medium carriage M2◆ (Nm)	Medium carriage M3 (Nm)	Long carriage M1 (Nm)	Long carriage M2 (Nm)	Long carriage M3 (Nm)
16	125	100	100	25	5	0,2	0,8	-	-	-	-	-	-
25	250	200	200	50	8	2	3	14	3	5	25	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

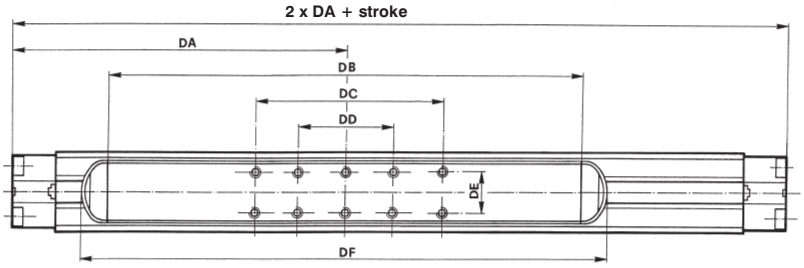
◆ It is not advisable to use the cylinder in applications with high stress .

Medium carriage - 6 fixing holes for cylinders Ø 25 ÷ 50 mm



Cyl. Ø	CA	CB	CC	CD	CE	Mass (kg) at "0" stroke
25	114,5	125	50	24	160	0,84
32	142,5	153	65	31	191	1,48
40	169	172	65	31	215	2,91
50	205	224	105	39	271	5,55

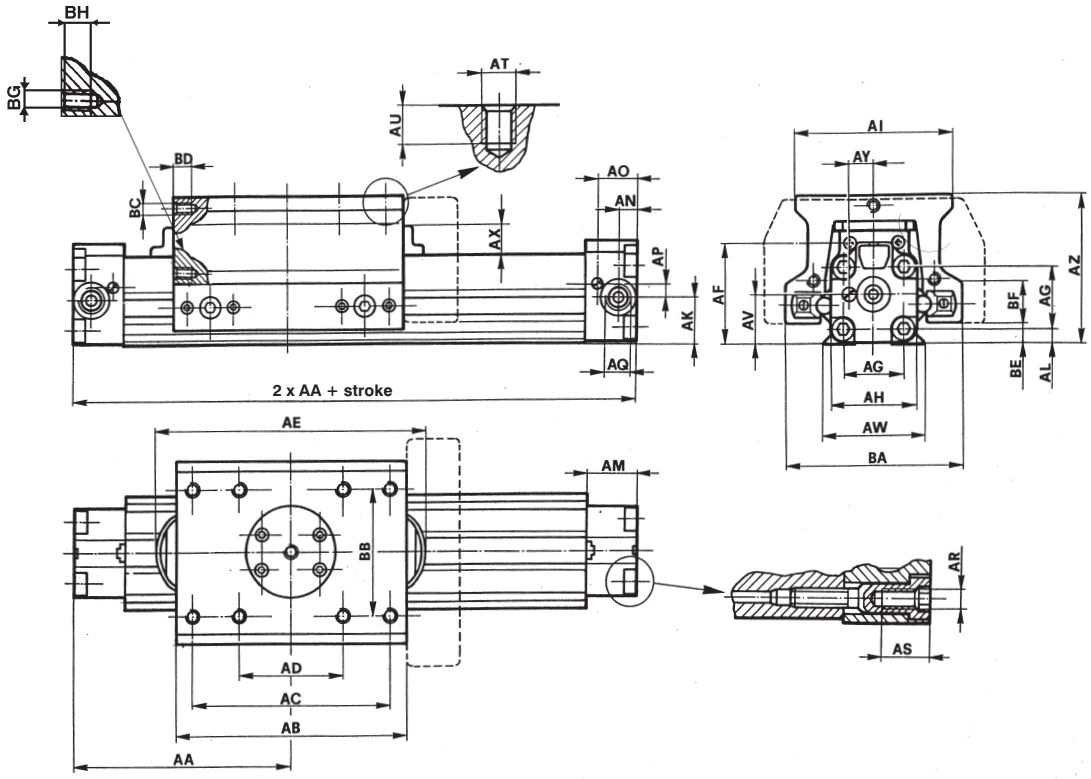
Long carriage - 10 fixing holes for cylinders Ø 25 ÷ 50 mm



Cyl.Ø	DA	DB	DC	DD	DE	DF	Mass (kg) at "0" stroke
25	147,5	190	100	50	24	225	1,05
32	190	248	130	65	31	286	1,93
40	225	284	130	65	31	327	3,80
50	277	364	315	105	39	411	7,33

N.B. in cases where the rodless cylinder is mounted on external rigid guides, **it is necessary** to fit the oscillating mounting bracket onto the carriage (SF- 24 . . . series, see page 23-II), in order to isolate the cylinder from the rigid structure.
Other accessories from page 22-II.

Rodless cylinders with integrated guides and standard carriage - 8 fixing holes

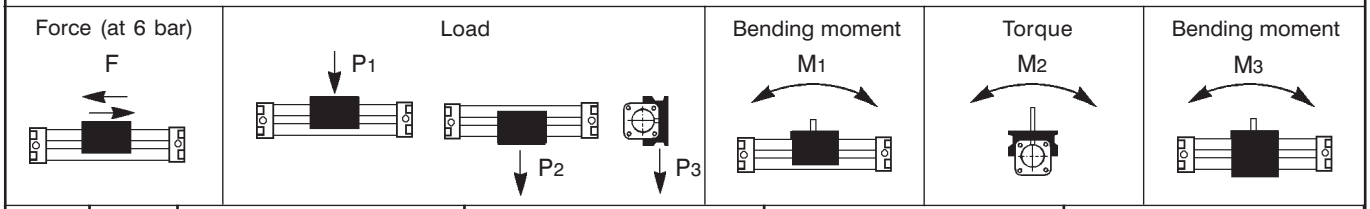


Cyl. Ø	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT
25	100	106	90	50	130	48,3	28	40,5	70	20,2	7	24	7,4	18,2	5,7	G 1/8	M5	12	M6
32	125	140	115	55	156	57,0	35	50	88	25,3	8	29	10,3	22,5	7,3	G 1/4	M6	15,5	M8
40							44	64	90	33,8	11,8	33	12,5	26,5	8,7	G 3/8	M8	20	M8
50							55	80	100	41,4	14,7	33	14,2	25,7	11,8	G 3/8	M10	20	M8

Cyl. Ø	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	Mass (kg) at "0" stroke	Weight increase (kg) per additional 100 mm stroke
25	10	22,8	42,8	16	12,2	71,8	85	50	M6	15	5,7	24	M6	15	1,625	0,365
32	12	28	57	16	14,2	82,5	100	67,5	M6	15	7	24,5	M6	15	2,775	0,495
40	14	37	67	19,5	16,5	106,6	135	65	M6	15	7	39	M6	15		0,92
50	16	47,7	86	20,5	19,1	123,7	149	76,5	M8	16	7,2	41	M6	15		1,28

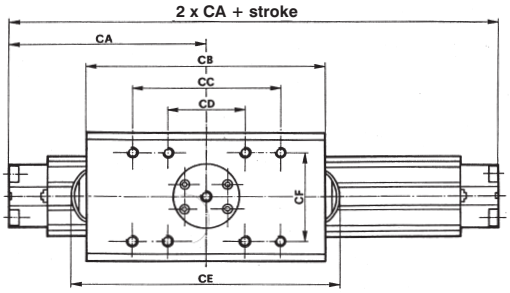
The dotted line indicates the overall dimensions of the locking unit; fixing holes of the locking unit see page 8-II.

Values of the static load; please note that under dynamic conditions the load must be reduced due to the effects associated with the speed. The torque is the product of load (Newton) per arm (meters), i.e. the distance between the center of gravity of the load and the longitudinal axis of the piston.



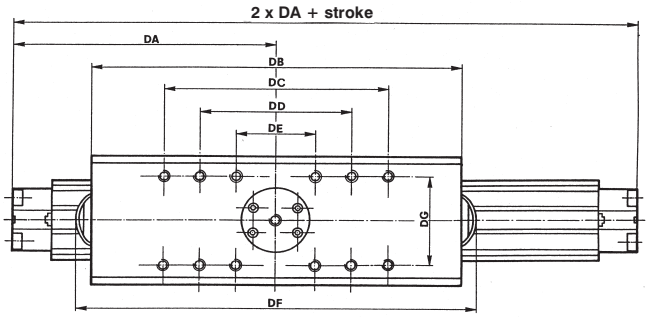
Cyl. Ø					Standard carriage			Medium carriage			Long carriage		
	F	P1	P2	P3	M1	M2	M3	M1	M2	M3	M1	M2	M3
	(N)		(N)		(Nm)	(Nm)	(Nm)	(Nm)	(Nm)	(Nm)	(Nm)	(Nm)	(Nm)
25	250		400		13	8	16	20	10	25	40	15	50
32	420		400		20	9	27	30	12	40	55	18	75
40	640		600		not foreseen			60	30	80	110	45	150
50	1050		800		not foreseen			85	50	110	150	75	210

Medium carriage - 8 fixing holes



Cyl. Ø	CA	CB	CC	CD	CE	CF	Mass (kg) at "0" stroke
25	114,5	136	90	50	160	50	1,93
32	142,5	175	115	55	191	67,5	3,265
40	169	205	180	75	215	65	6,095
50	205	258	190	80	271	76,5	10,03

Long carriage - 12 fixing holes

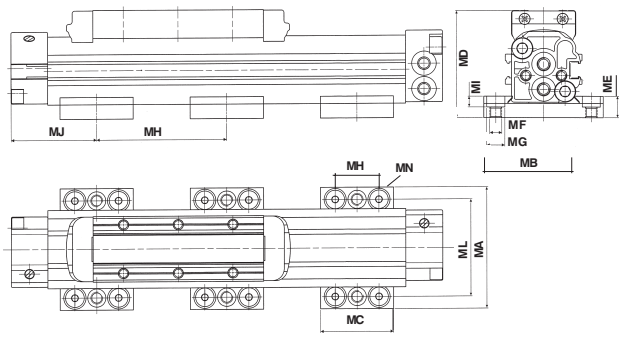


Cyl. Ø	DA	DB	DC	DD	DE	DF	DG	Mass (kg) at "0" stroke
25	147,5	201	130	90	50	225	50	2,64
32	190	270	175	115	55	286	67,5	4,65
40	225	317	280	185	75	327	65	8,60
50	277	398	320	200	80	411	76,5	14,04

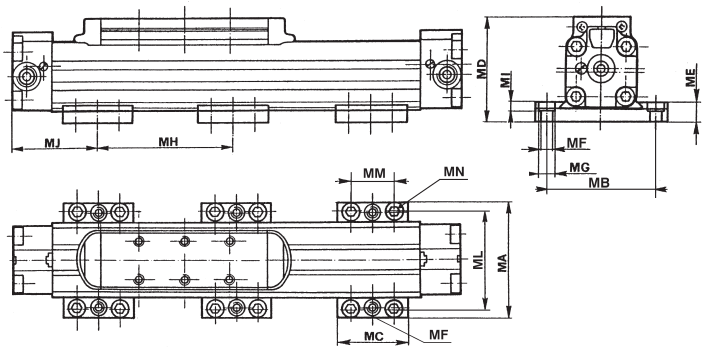
Accessories from page 22.

Mounting plate for S1 series

Ø 16 mm



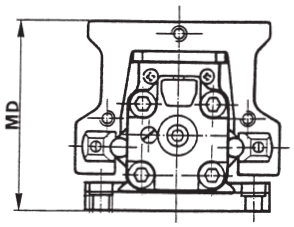
Ø 25 ÷ 50 mm



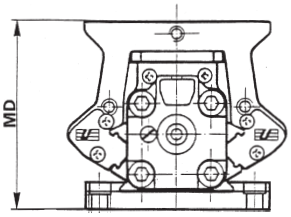
Cyl. Ø	MA	MB	MC	MD S1	MD S5	MD VL1	ME	MF	MG	MH	MI	MJ	ML*	MM	MN	Mass (kg)	Part number
16	50	40	30	44,8	-	-	9	M5	8	400 ✧	4,5	35	40	-	M6	0,083	**SF - 12016**
25	78,5	63,5	50	65,6	79,8	82,3	12	M8	11	500 ✧	6,5	55	65,5	30	M6	0,310	**SF - 12025**
32	92	77,5	50	74,2	90,5	90,5	12	M8	11	600 ✧	5,5	60	79,5	30	M6	0,340	**SF - 12032**
40	117	96	60	95,8	116,6	116	15	M10	14	700 ✧	8	70	96	37,5	M8	0,660	**SF - 12040**
50	136	115	60	113	133,7	136,2	15	M10	14	800 ✧	8	70	115	37,5	M8	0,700	**SF - 12050**

✧ Max. dimensions in order to limit the deflection of the cylinder according to the stroke and in order to ensure a correct fixing.
✱ For Ø 16-40-50 mm, MB and ML have the same value.

Mounting plate for S5 Series

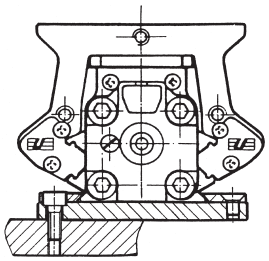


Mounting plate for VL1 Series

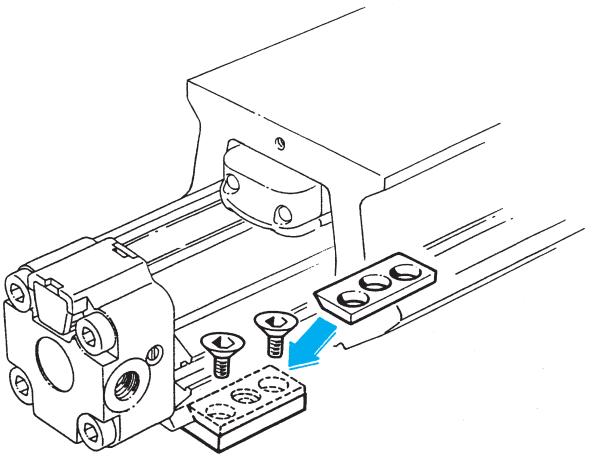


How to mount plates:
Plates are mounted by means of standard screws without disassembling any part of the cylinder (for all series).

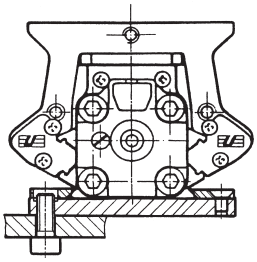
Upper mounting



Cyl. Ø	
25 - 32	M6
40 - 50	M8



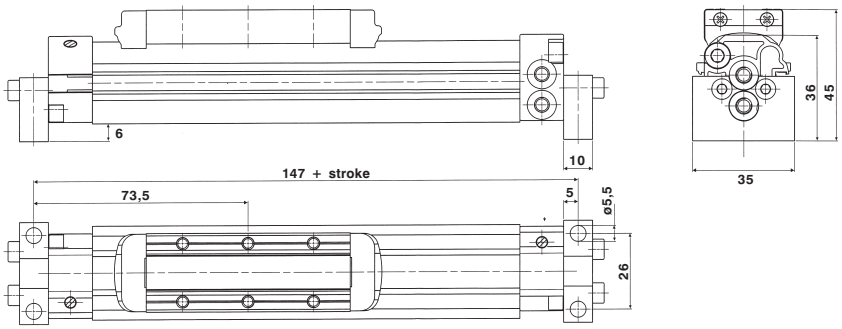
Lower mounting



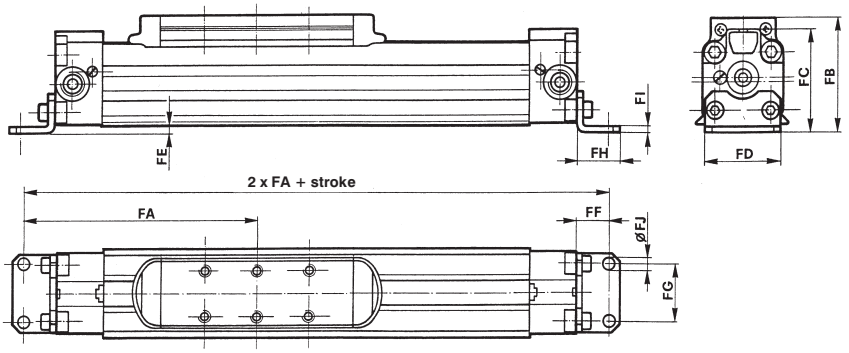
Cyl. Ø	
25 - 32	M8
40 - 50	M10

Mounting bracket for Ø 16 mm rodless cylinder
Part num. SF-13016

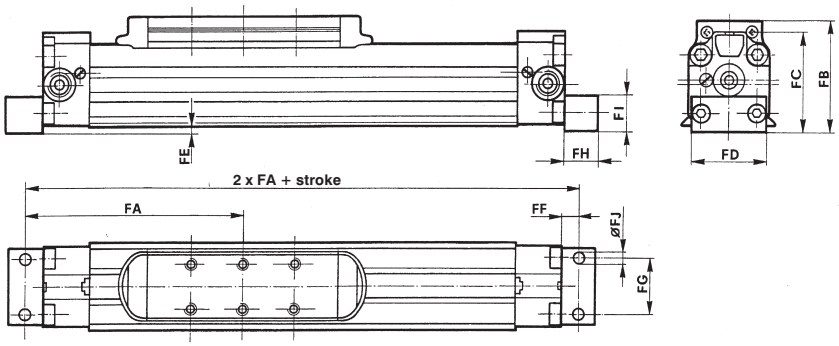
Mass kg 0,015



Mounting bracket for Ø 25 - 32 mm rodless cylinder



Mounting bracket for Ø 40 - 50 mm rodless cylinder



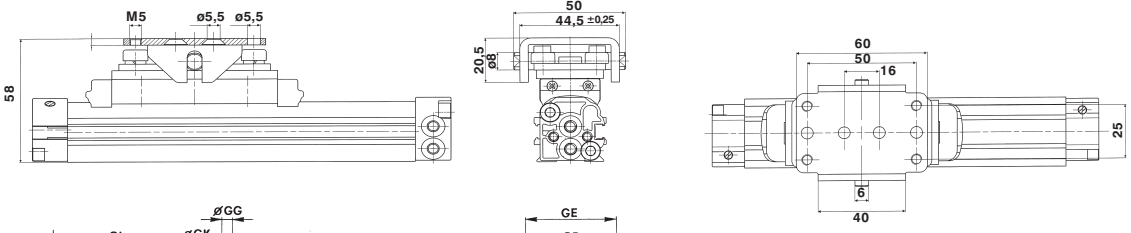
Cyl. Ø	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	Mass (kg)	Part number
25	116	58,1	48,8	40	0,5	16	27	22	2.5	5,5	0,034	**SF - 13025**
32	143,5	68,7	59,2	48	2,5	18,5	36	26	3	6,5	0,053	**SF - 13032**
40	162,5	86,5	74,9	63	0,7	12,5	30	25	25	9	0,116	**SF - 13040**
50	189,5	104,3	92,4	79	1,3	12,5	40	25	30	9,3	0,170	**SF - 13050**

Mounting brackets are ONLY recommended for short strokes i.e. less than 400 mm

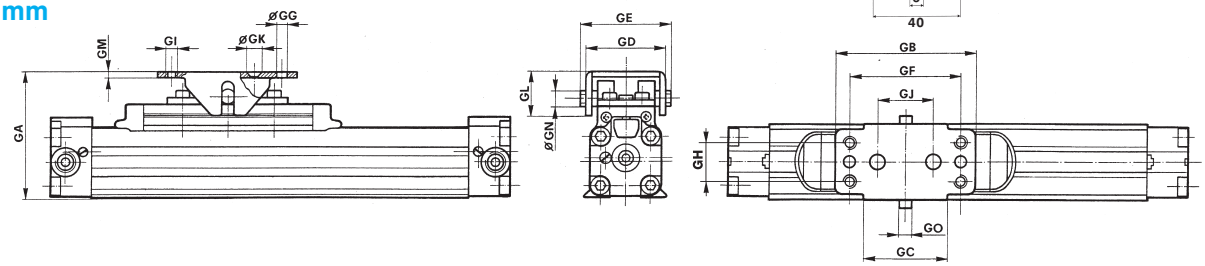
Oscillating mounting bracket

Ø 16 mm
Part numb. SF-24016

Mass Kg 0,195



Ø 25 ÷ 50 mm

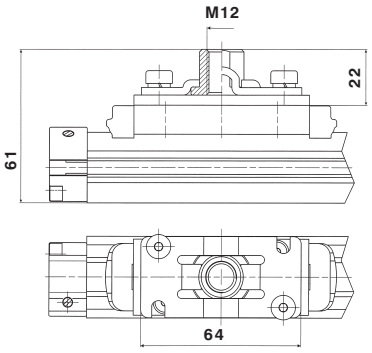


Cyl. Ø	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	Mass (kg)	Part number
25	73,5/±2,5	60	40	44,5/±2,5	50	50	5,5	25	M5	16	5,5	20,5	3	8	6,15	0,142	**SF - 24025**
32	89/±4	100	60	56/±4	64	80	5,5	30	M6	40	6,5	30	4	12	8,2	0,362	**SF - 24032**
40	108,5/±4	100	60	56/±4	64	80	5,5	30	M6	40	6,5	30	4	12	8,2	0,362	**SF - 24032**
50	not forseen																

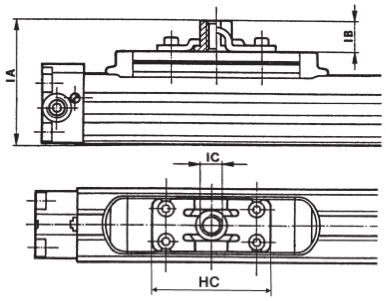
Female threaded connection

Ø 16 mm

Mass
Kg 0,132



Ø 25 ÷ 50 mm

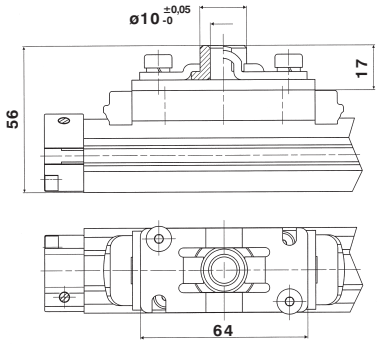


Cyl. Ø	IA	IB	IC	HC	Mass (kg)	Part number
25	75,6	18	M12	64	0,076	SF-26025
32	87,2	21	M14	84	0,157	SF-26032
40	106,8	21	M14	84	0,157	SF-26032
50	not forseen					

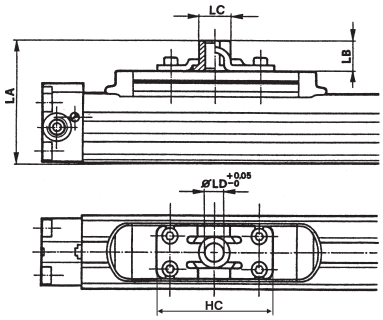
Female connection without thread

Ø 16 mm

Mass
Kg 0,129



Ø 25 ÷ 50 mm

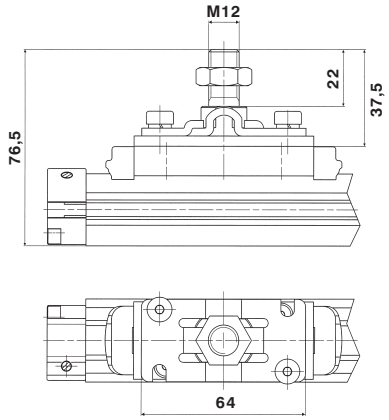


Cyl. Ø	LA	LB	LC	LD	HC	Mass (kg)	Part number
25	70,6	13	18	10	64	0,073	SF-28025
32	83,4	17,2	22	12	84	0,152	SF-28032
40	103	17,2	22	12	84	0,152	SF-28032
50	not forseen						

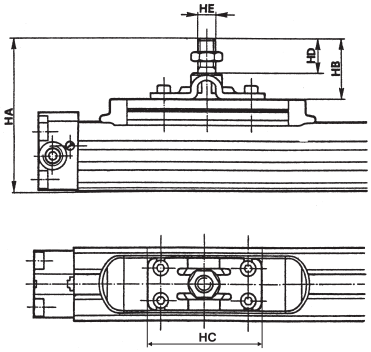
Male threaded pin

Ø 16 mm

Mass
Kg 0,160



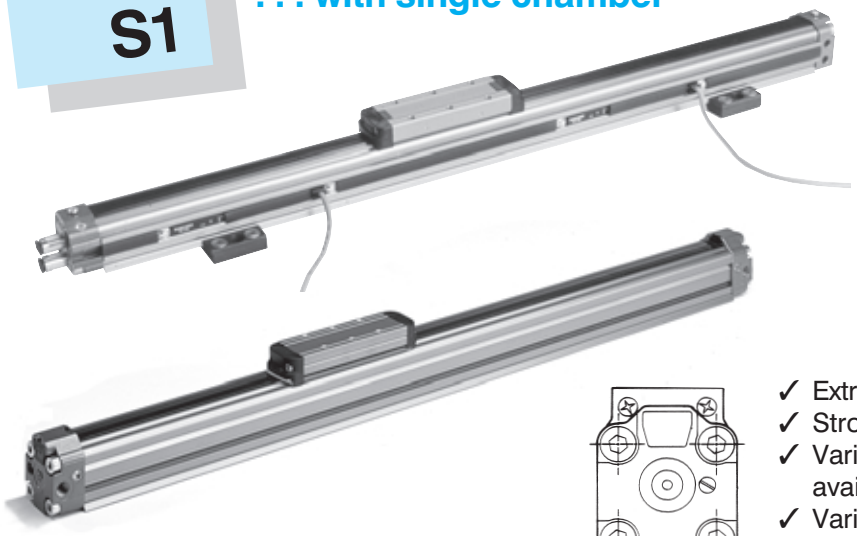
Ø 25 ÷ 50 mm

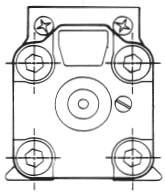


Cyl. Ø	HA	HB	HC	HD	HE	Mass (kg)	Part number
25	91,1	33,5	64	22	M12	0,105	SF-27025
32	107,7	41,5	84	24,3	M14	0,26	SF-27032
40	127,3	41,5	84	24,3	M14	0,26	SF-27032
50	not forseen						

Series **S1**

. . . with single chamber

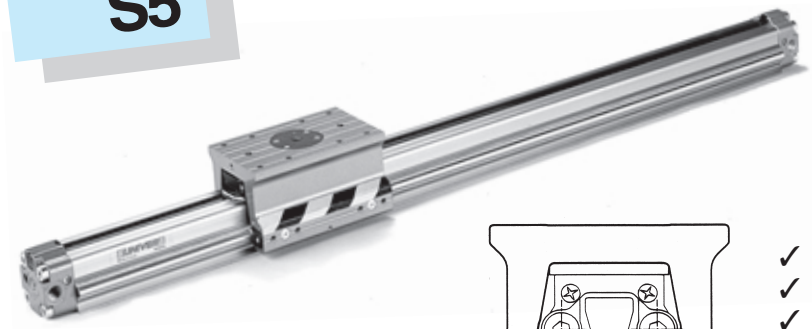


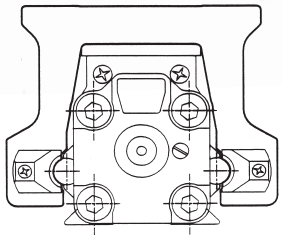


- ✓ Extruded profile in aluminium Ø 16 ÷ 50 mm.
- ✓ Stroke to 5 m.
- ✓ Various supply port configurations available.
- ✓ Various carriage types.
- ✓ High translation speed 1 ÷ 3 m/s.

Series **S5**

. . . with integrated guides

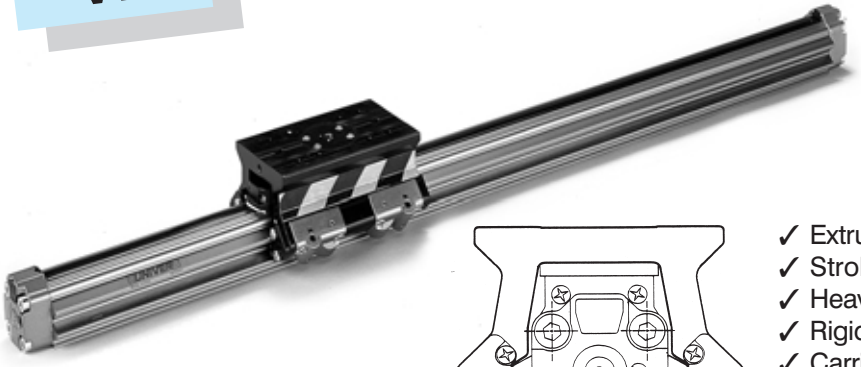


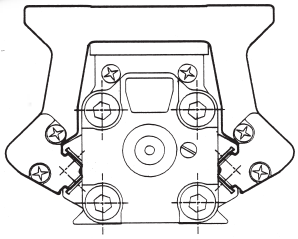


- ✓ Extruded profile in aluminium Ø 25 ÷ 50 mm.
- ✓ Stroke to 6 m.
- ✓ Flexible bearing system.
- ✓ Plastic bearings reduce noise.
- ✓ Translation speed 0,2 ÷ 1,5 m/s.
- ✓ Available with locking unit.

Series **VL1**

. . . with integrated guides 90°





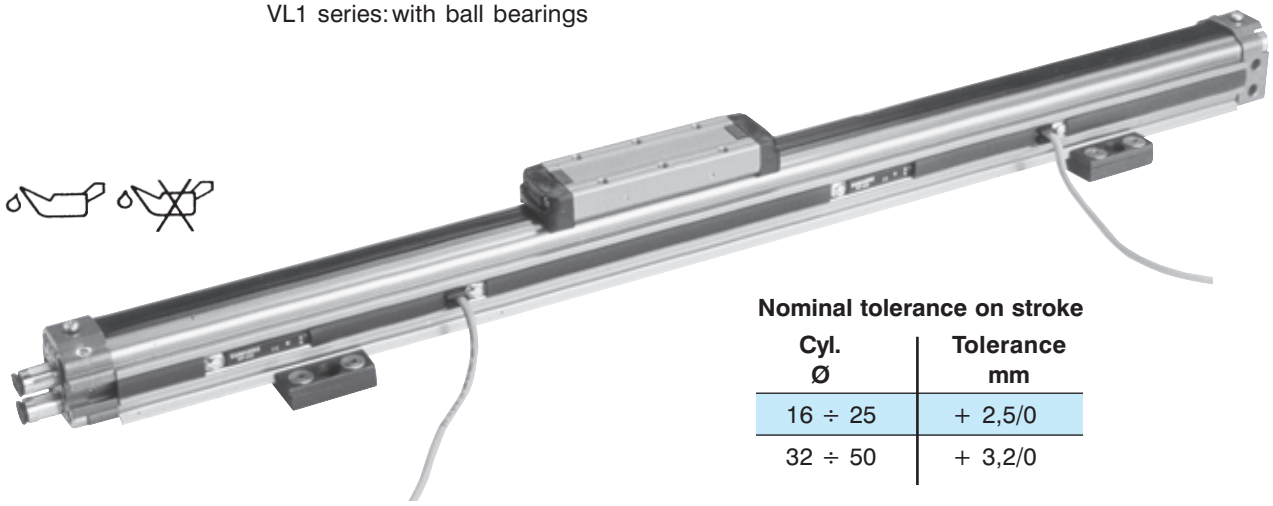
- ✓ Extruded profile in aluminium Ø 25 ÷ 50 mm.
- ✓ Stroke to 6 m.
- ✓ Heavy duty precision series.
- ✓ Rigid ball bearing system.
- ✓ Carriage slide on ball bearings.
- ✓ Translation speed 0,2 ÷ 2 m/s.
- ✓ Available with locking unit.

TECHNICAL CHARACTERISTICS

Working pressure: 3-10 bar
Ambient temperature: -20°C ÷ +80°C
Fluid: filtered air, **with or without lubrication**
up to 500 mm
Bore size: Ø 16-25-32-40-50 mm
Standard strokes: up to 5 meters (Ø 16 mm)
up to 6 meters (Ø 25 ÷ 50 mm)
Min. speed required for regular translation: 7 ÷ 20 mm/s.
Translation speed: 3 m/s max.
Carriage types: standard, medium, long, double medium
Integrated guides: S5 series: round steel shafts
VL1 series: steel foils at 90°
External carriage slide: S5 series: with plastic sliding shoes
VL1 series: with ball bearings

Upon request

- Magnetic version for S1 series (except for Ø 16 magnetic version standard); for S5 series a special magnetic sensor holder extrusion DKS series is foreseen (section accessories page 6-V).
- Magnetic sensor DH-series - DF-series (Ø 16) (section accessories page 2-V).
- Slide units with standard or long carriage for S1 series (J30 - J31 series) page 47.
- Locking unit for S5 - VL1 series (L6 series) page 7.



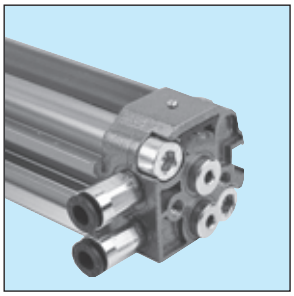
Nominal tolerance on stroke

Cyl. Ø	Tolerance mm
16 ÷ 25	+ 2,5/0
32 ÷ 50	+ 3,2/0

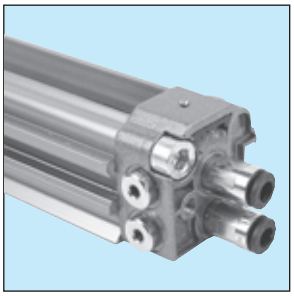
End-caps in die-cast light alloy with various supply port options (see picture below).
The unique method of stripseal attachment permits easy assembly and disassembly, without needing tools or continuous adjustment.

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

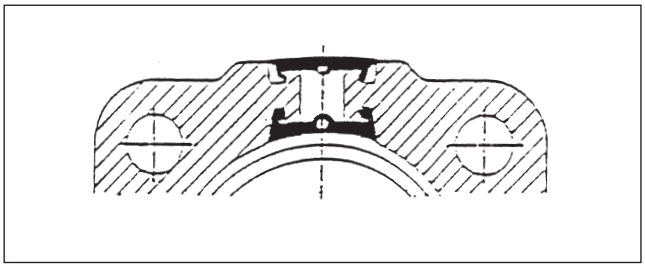
Ø 16 mm



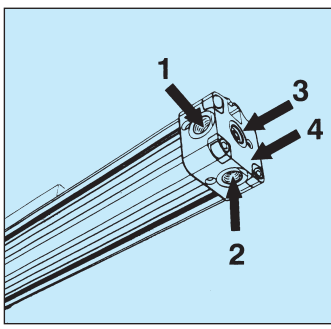
Double side supply



Double rear supply



Ø 25 ÷ 50 mm



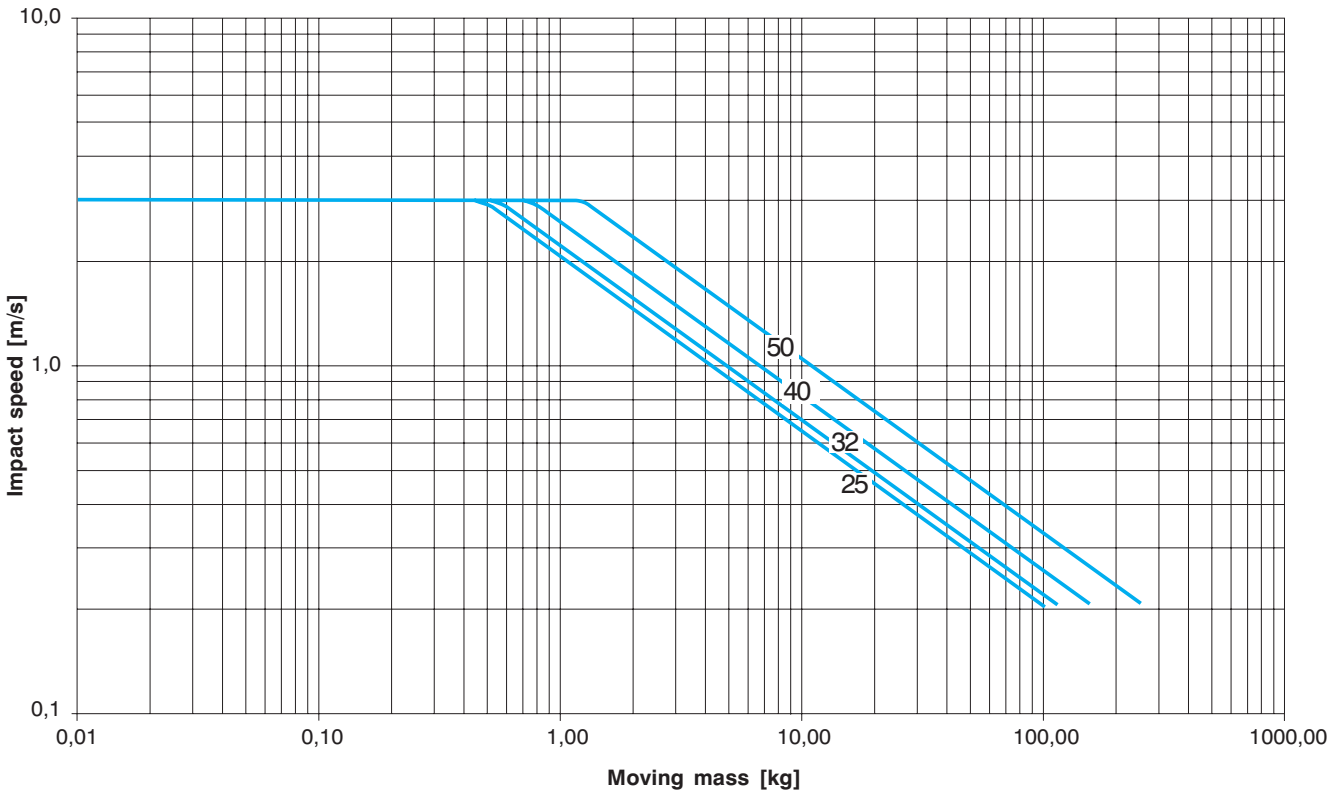
0 = no supply port (left end-cap only, when both chambers are supplied from the right end-cap)
1 = side
2 = dorsal
3 = rear
4 = both chambers supplied from one end-cap

Piston - Carriage assembly in extruded aluminium alloy with thermoplastic guide bearings. The piston is fitted with double lip seals which automatically self-compensate against wear; upon request it is possible to fit it with permanent magnets (S1 series).
Cylinder barrel in extruded aluminium alloy with internal and external anodisation.
Pneumatic adjustable cushions with two regulation screws in each end-cap allow an improved regulation of piston deceleration.
Mechanical rubber shock absorbers avoid mechanical stress and reduce machinery noise (below 50 dB).

Examination and verification of the 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 kinetic energy as it is brought to a stop.
It is necessary, first of all, to establish and verify the most suitable method of 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 which case you must:
a) decrease the load and maintain the translation speed
b) decrease the speed and maintain the load
c) select a cylinder with a bigger bore.

The cushioning capacity is shown in the diagram below, referenced to the final speed as the carriage approaches the end-caps, for S1 - S5 - VL1 series.



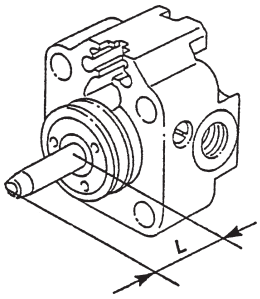
If it is not possible to absorb the kinetic energy with the cushioned end-caps and modify the parameters (a-b-c shown at page 11), an additional cushioning is necessary to reduce the load speed before the cylinder strikes the cushion.
The additional cushion can be:
- a **pneumatic cushion** with electronic control;
- a **hydraulic cushion**, available on the market.

The mass movement generates loads to the cylinder, connected both to the weight forces (load values are constant) and to the inertia forces which originate in the acceleration or deceleration phases of the piston at the beginning and at the end of the stroke.

A typical fatigue stress arises in which the load value affects the life of the structure. The following acceptable loads refer to a life expectancy of 20000 km.

The indicated values (in the corresponding pages of each series) represent the maximum values of the forces and of the torques which can be developed in acceleration phases. Thus, in order to evaluate if an application is correct, the generated inertia forces and the corresponding torque should be calculated.

To calculate the inertia forces, the length L of the deceleration distance must be known. If the pneumatic cushion of the cylinder head is used, the values are:



Ø (mm)	L (mm)
16	16,5
25	25,0
32	32,5
40	41,5
50	52,0

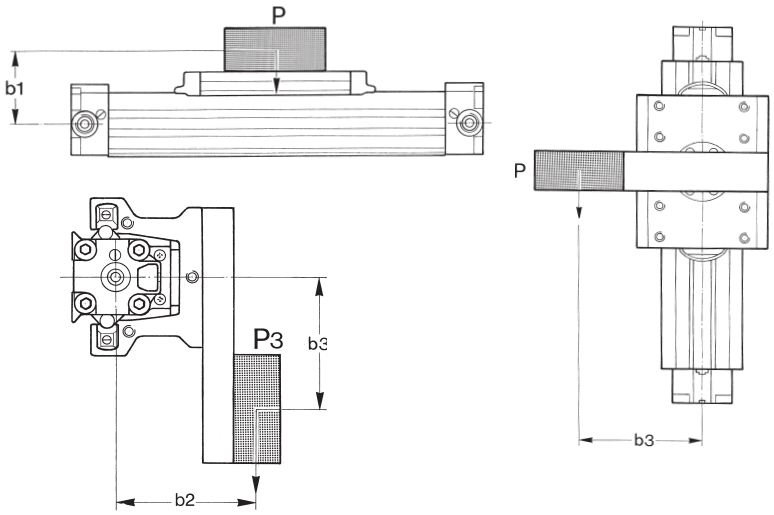
The usual formulas of mechanics are then applied. For instance, when moving a mass M (kg) at an impact speed V (m/s) with b1, b2 and b3 (mm) arms to the longitudinal axis of the piston, the inertia force F, in longitudinal direction and the corresponding torques are calculated as follows:

$$F(N) = M \cdot a = M \cdot \frac{V^2}{2 \cdot (L \cdot 10^{-3})}$$

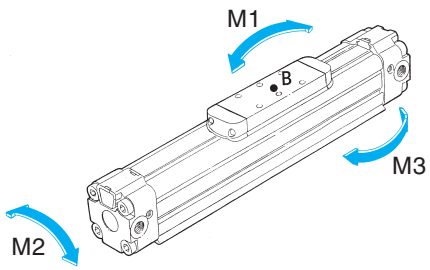
$$M_1 \cdot (Nm) = F \cdot (b_1 \cdot 10^{-3})$$

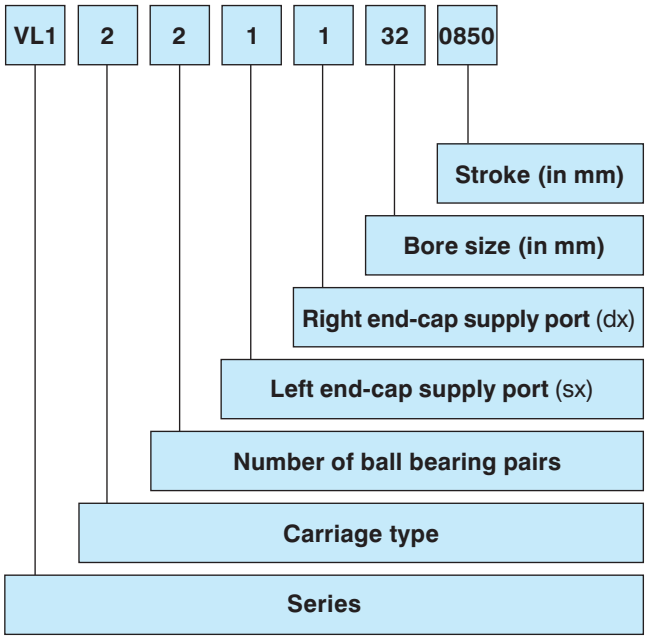
$$M_2 \cdot (Nm) = M \cdot g \cdot (b_2 \cdot 10^{-3})$$

$$M_3 \cdot (Nm) = F \cdot (b_3 \cdot 10^{-3})$$



While F, M_1 and M_3 can have both static and inertia components, M_2 is a static component only.





SERIES

VL1 = Integrated guides 90°, ball bearings standard

CARRIAGE TYPE

2 = Medium carriage
3 = Long carriage
4 = Medium twin carriage

NUMBER OF BALL BEARING PAIRS STANDARD SUPPLIED

Cyl. Ø	Carriage	
	Medium	Long
25	2	3
32	2	3
40	2	3
50	3	4

LEFT END-CAP SUPPLY PORT

0 = No supply port (when both chambers are supplied from the right end-cap)
1 = Side supply port
2 = Bottom supply port
3 = Rear supply port

RIGHT END-CAP SUPPLY PORT

1 = Side supply port
2 = Bottom supply port
3 = Rear supply port
4 = Both chambers supplied from the right end-cap

BORE

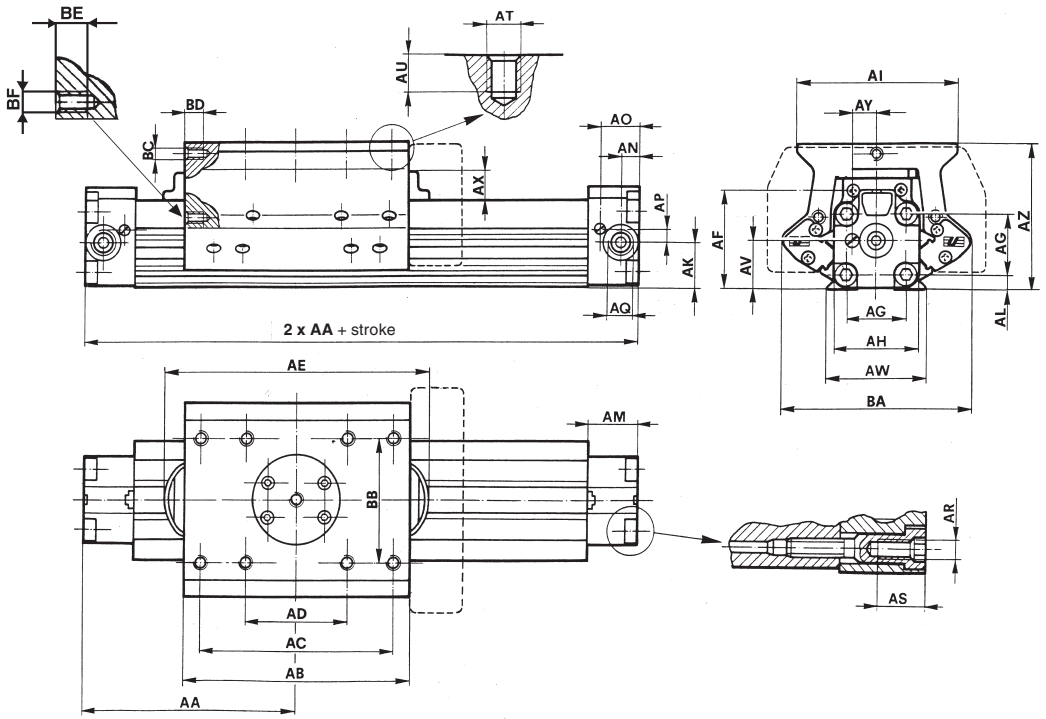
25 - 32 - 40 - 50

STROKE

Length in mm

Magnetic option is obtained by a magnetic switch mounting rail (DKS Series) to be ordered separately (Section Accessories page 6).

Rodless cylinders with integrated guides 90° and medium carriage - 8 fixing holes

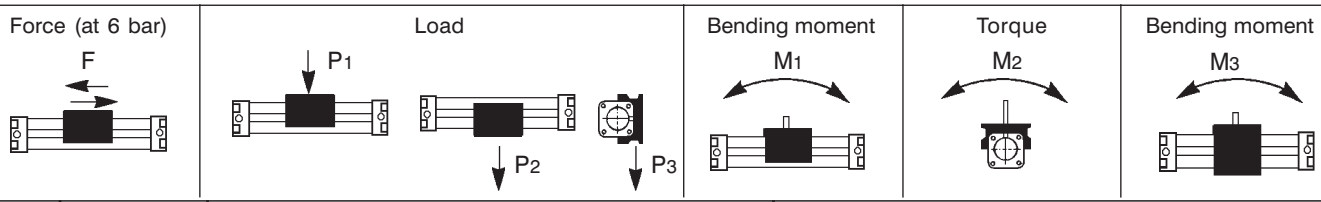


Cyl. Ø	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT
25	114,5	136	90	50	160	48,3	28	40,5	83,5	20,2	7	24	7,4	18,2	5,7	G 1/8	M5	12	M6
32	142,5	175	115	55	191	57	35	50	92	25,3	8	29	10,3	22,5	7,3	G 1/4	M6	15,5	M8
40	169	205	180	75	215	74	44	64	125	33,8	11,8	33	12,5	26,5	8,7	G 3/8	M8	20	M8
50	207	258	190	80	271	90,7	55	80	140	41,4	14,7	33	14,2	25,7	11,8	G 3/8	M10	20	M8

Cyl. Ø	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	Mass (kg) at "0" stroke	Weight increase (kg) per additional 100 mm stroke
25	12	22,8	42,8	16	12,2	74,3	111	50	M6	10	M6	10	2,095	0,3
32	12	28	57	16	14,2	82,5	118	67,5	M6	10	M6	10	3,125	0,415
40	14	37	67	19,5	16,5	106	158	65	M6	15	M6	15	6,34	0,67
50	15	47,7	86	20,5	19,1	126,2	173	100	-	-	M6	12	10,85	1,02

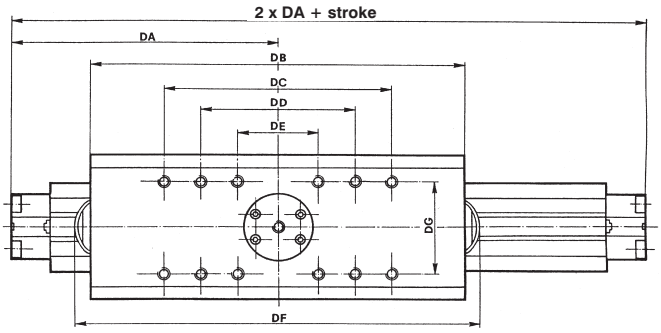
The dotted line indicates the overall dimensions of the locking unit; fixing holes of the locking unit see page 8-II.

Values of the static load; please note that under dynamic conditions the load must be reduced due to the effects associated with the speed. The torque is the product of load (Newton) per arm (meters), i.e. the distance between the center of gravity of the load and the longitudinal axis of the piston (technical characteristics see page 11-12-II).



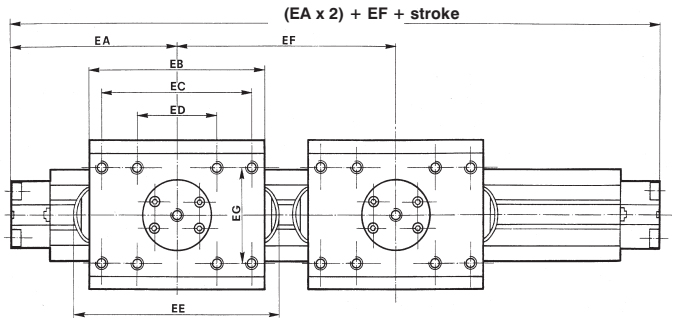
Cyl. Ø		Medium carriage					Long carriage				
	F (N)	P1 (N)	P2 (N)	P3 (N)	M1 (Nm)	M2 (Nm)	M3 (Nm)	P1 (N)	P2 (N)	P3 (N)	M1 (Nm)	M2 (Nm)	M3 (Nm)
25	250	700			34	17	34	1000			63	25	63
32	420	700			51	20	51	1000			93	30	93
40	640	1100			120	46	120	1600			230	69	230
50	1050	1500			170	85	170	2000			310	110	310

Long carriage - 12 fixing holes



Cyl. Ø	DA	DB	DC	DD	DE	DF	DG	Mass (kg) at "0" stroke
25	147,5	201	130	90	50	225	50	2,855
32	67,5	270	175	115	55	286	67,5	4,41
40	67,5	317	280	185	75	327	65	8,955
50	277	398	320	200	80	411	100	15,365

Twin medium carriage - 8 fixing holes for each carriage



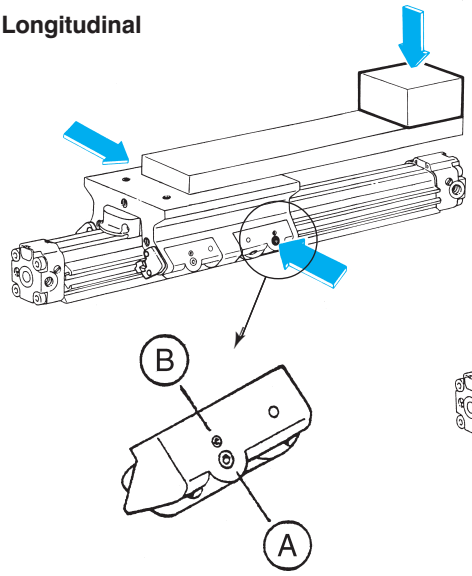
Cyl. Ø	EA	EB	EC	ED	EE	EF	EG	Mass (kg) at "0" stroke
25	114,5	136	90	50	160	164	50	3,88
32	142,5	175	115	55	191	206	67,5	5,75
40	169	205	180	75	215	243	65	11,65
50	207	258	190	80	271	316	100	20,15

The surface of the carriages is ground. It is advisable to prepare accordingly the mounting surfaces of all plates in order not to jeopardize the the correct functioning of the system.
Accessories from page 22-II.

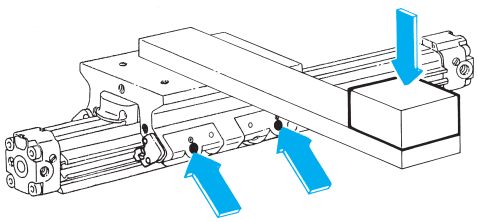
Adjustment of the carriage

In case of off-centred loads it is necessary to adjust the screws (A) as shown below:

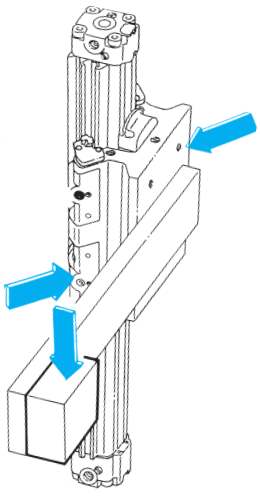
Longitudinal



Lateral



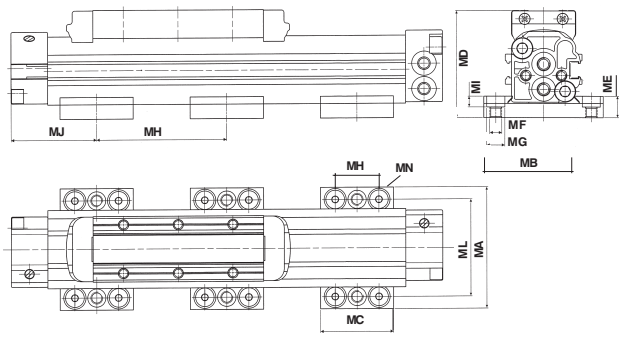
Laterally vertical



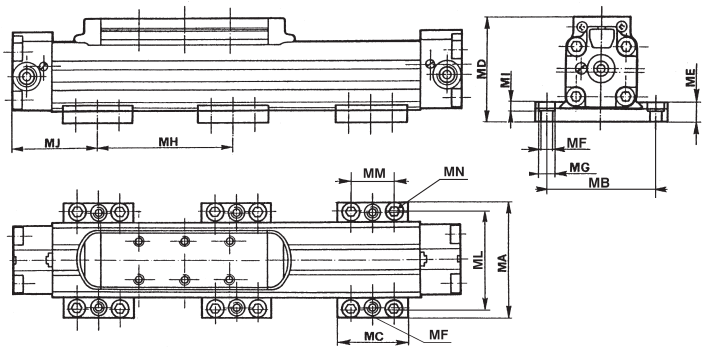
The arrows indicate the screws to be adjusted, in accordance with the position of the load P. Adjust the screw **A** by one turn or more depending on the load. Put a drop of Loctite 242 on the screw **B** and tighten it thoroughly. Finally *loosen* both screws by 90°.

Mounting plate for S1 series

Ø 16 mm



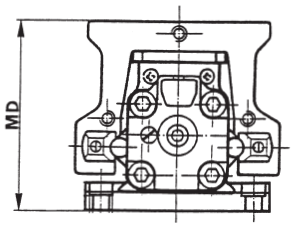
Ø 25 ÷ 50 mm



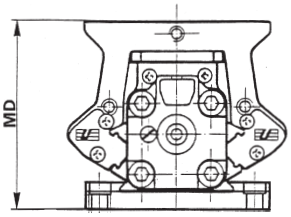
Cyl. Ø	MA	MB	MC	MD S1	MD S5	MD VL1	ME	MF	MG	MH	MI	MJ	ML*	MM	MN	Mass (kg)	Part number
16	50	40	30	44,8	-	-	9	M5	8	400 ✧	4,5	35	40	-	M6	0,083	**SF - 12016**
25	78,5	63,5	50	65,6	79,8	82,3	12	M8	11	500 ✧	6,5	55	65,5	30	M6	0,310	**SF - 12025**
32	92	77,5	50	74,2	90,5	90,5	12	M8	11	600 ✧	5,5	60	79,5	30	M6	0,340	**SF - 12032**
40	117	96	60	95,8	116,6	116	15	M10	14	700 ✧	8	70	96	37,5	M8	0,660	**SF - 12040**
50	136	115	60	113	133,7	136,2	15	M10	14	800 ✧	8	70	115	37,5	M8	0,700	**SF - 12050**

✧ Max. dimensions in order to limit the deflection of the cylinder according to the stroke and in order to ensure a correct fixing.
✱ For Ø 16-40-50 mm, MB and ML have the same value.

Mounting plate for S5 Series

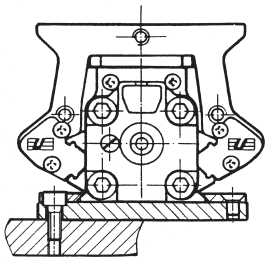


Mounting plate for VL1 Series

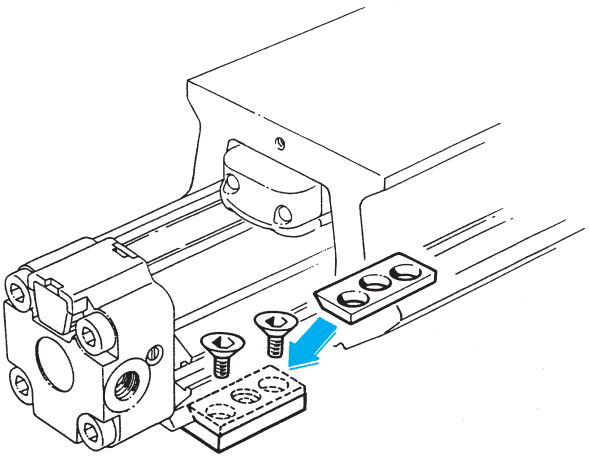


How to mount plates:
Plates are mounted by means of standard screws without disassembling any part of the cylinder (for all series).

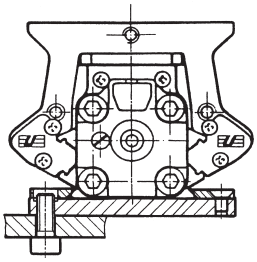
Upper mounting



Cyl. Ø	
25 - 32	M6
40 - 50	M8



Lower mounting

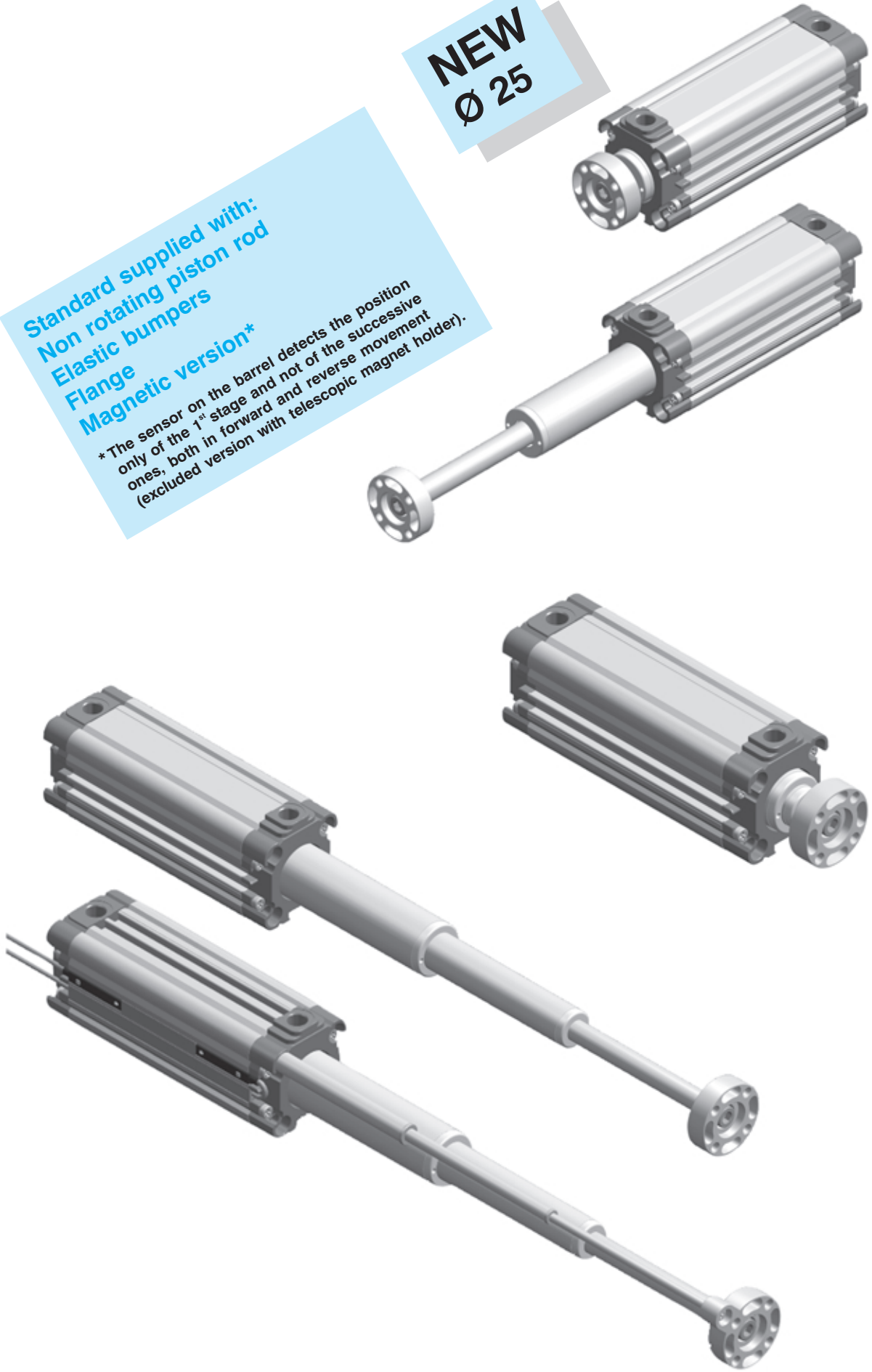


Cyl. Ø	
25 - 32	M8
40 - 50	M10

NEW
Ø 25

Standard supplied with:
Non rotating piston rod
Elastic bumpers
Flange
Magnetic version*

*The sensor on the barrel detects the position only of the 1st stage and not of the successive ones, both in forward and reverse movement (excluded version with telescopic magnet holder).



Considering its high technological contents, this cylinder series represents without doubt the product with the highest degree of technical research and evolution accomplished by the technicians of the company.
The overall dimensions are one of the most imporant aspects: in comparison with a traditional ISO cylinder of the same stroke a reduction in size of approx. 45% (with a 3-stage telescopic cylinder) is obtained thus permitting the customer to foresee a considerable reduction of the project and construction of his equipment. The cylinder can be supplied in magnetic version and with slide unit (only for 2-stage version).

TECHNICAL CHARACTERISTICS

Working pressure: 1,5 ÷ 10 bar
Ambient temperature: -20C° ÷ 80°C
Fluid: filtered air, lubricated or not.
Barrel: in aluminium, internally/externally anodized.
Non-rotating rod in chromium-plated steel with standard supplied flange except for version with male rod.
Elastic bumpers.
Magnetic version with detection of position of the 1st stage only.

Upon request

- Magnetic sensor DF-... (page 2-V).
- Wire protection strap for magnetic sensor.
- Magnetic version 2-3 stages with telescopic magnet holder prearranged only for end-stroke reading (except for Ø 25 mm).
- Slide unit only for 2-stage telescopic cylinder. (page 55-II).

Table summarizing bore combinations

Telescopic cylinder	Ø I° stage	Ø II° stage	Ø III° stage
25	25	16	-
32	32	20	-
40	40	25	16
50	50	32	20
63	63	40	25

Codification key

RT	2	2	0	032	0600	L

- L — Option
- 0600 — Standard stroke (mm)
- 032 — Bore
- 0 — Type
- 2 — Stages
- 2 — Rod
- RT — Series

SERIES

Telescopic pneumatic cylinder in magnetic version with non-rotating piston rod, elastic bumpers and flange, Ø 025 ÷ 063 mm

ROD

2___ chromium-plated steel
1___ stainless steel

STAGES

2___ 2 stages
3___ 3 stages

TYPE

0 = D.A. inter-axes female rod
3 = D.A. inter-axes male rod

BORE

2 stages: Ø 025-032-040-050-063 mm
3 stages: Ø 040-050-063 mm

STANDARD STROKE

2 Stages
0100-0120-0160-0180-0200-0300-0400-0500-0600-0700
0800-0900-1000-1100-1200
Max stroke: Ø 25 **0300 mm**
Ø 32 **0400 mm**
Ø 40 **0600 mm**
Ø 50 **0900 mm**
Ø 63 **1200 mm**

3 Stages
0150-0180-0210-0240-0270-0300-0360-0450-0600-0750
0900-1050-1200-1500-1800
Max stroke: Ø 40 **1200 mm**
Ø 50 **1500 mm**
Ø 63 **1800 mm**

OPTION

I = Without flange (only for female piston rod).
L = Freely rotating rod.
M = With telescopic magnetic holder for 2nd-3rd stage (except for Ø 25 mm).

2-stage telescopic cylinders
Theoretical forces in N (0,102 Kg)

2-stage telescopic cylinder	Useful surface (mm^2)		Working pressure (bar) 2	4	6	8	10
25	thrust	201	41	82	123	164	205
	traction	111	22	43	65	87	108
32	thrust	314	64	128	192	256	320
	traction	201	41	82	123	164	205
40	thrust	490	100	200	300	400	500
	traction	377	77	154	231	308	384
50	thrust	804	164	328	492	656	820
	traction	603	123	246	369	492	615
63	thrust	1256	256	512	769	1025	1281
	traction	1055	215	430	646	861	1076

3-stage telescopic cylinders
Theoretical forces in N (0,102 Kg)

3-stage telescopic cylinder	Useful surface (mm^2)		Working pressure (bar) 2	4	6	8	10
40	thrust	201	41	82	123	164	205
	traction	111	22	43	65	87	108
50	thrust	314	64	128	192	256	320
	traction	201	41	82	123	164	205
63	thrust	490	100	200	300	400	500
	traction	377	77	154	231	308	384

Maximum applicable torque [Nm] for non-rotating rod

Cyl. Ø	Torque 2 stages	3 stages
25	0,5	-
32	0,8	-
40	1	0,5
50	2	0,8
63	3	1

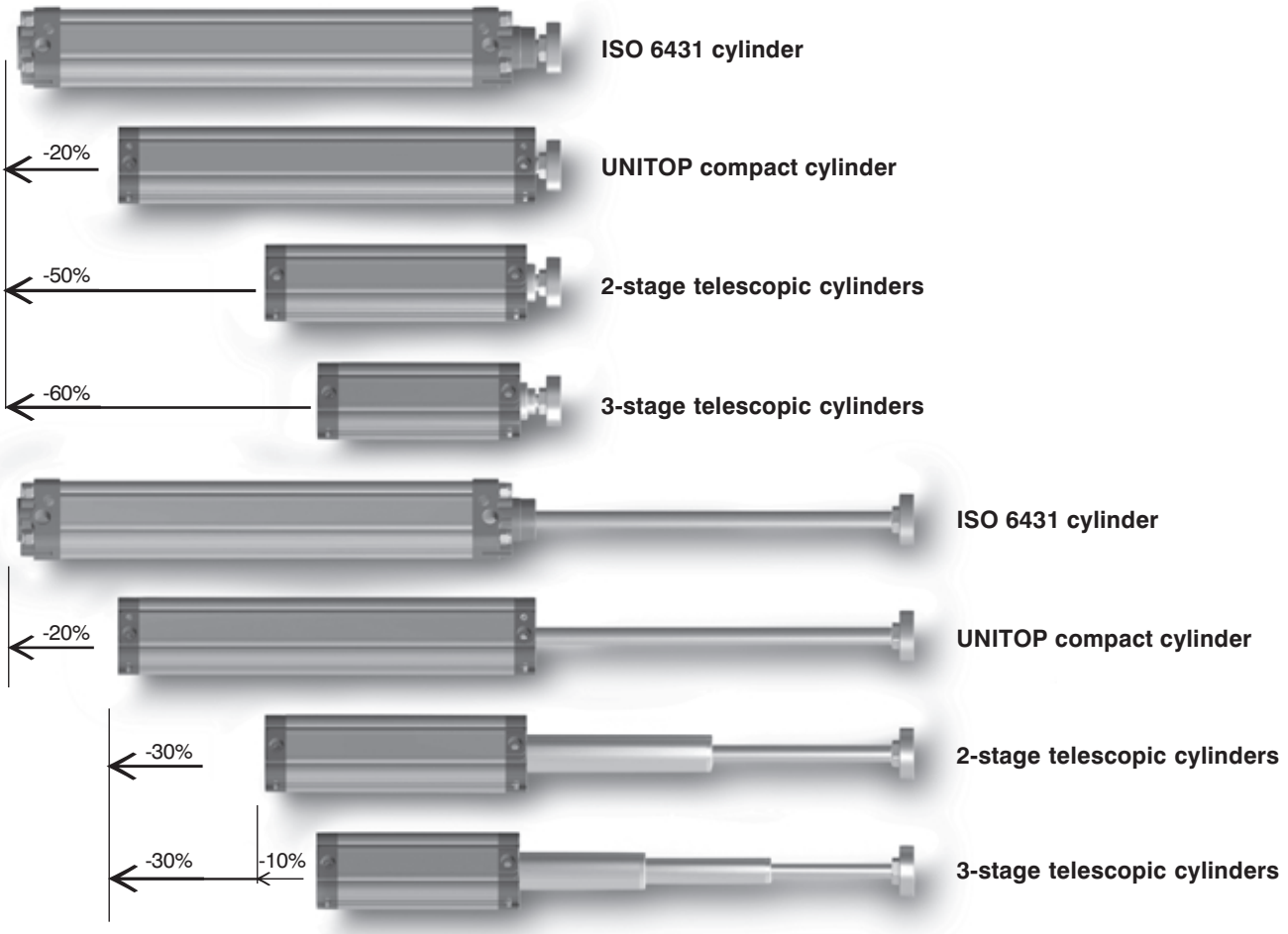
Nominal tolerances on stroke (mm)

Cyl. Ø	Tolerance 2 stages	3 stages
25	+ 2/0	
32		
40	+ 3,2/0	+ 4/0
50		
63		

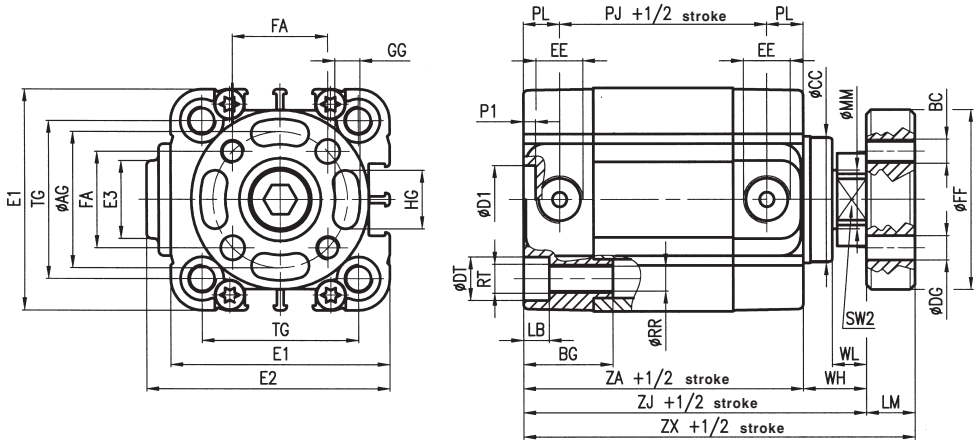
The telescopic cylinder works in optimal conditions when the load is axial, i.e. with the cylinder placed vertically, upwards or downwards.
Naturally it can also work horizontaly and cantilevered. However in this case:

- the maximum strokes have to be reduced by 50% as compared to the maximum rated ones.
- request cylinders with slide units.
- the radial load has to be supported by other systems (carriage, slides, sliding guides).

The following example shows the relation of dimensions between the cylinder types having the same stroke of 300 mm.

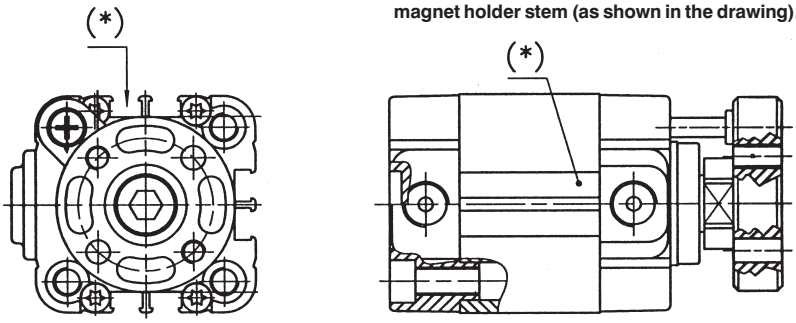


2- stage telescopic cylinder with flange RT220...

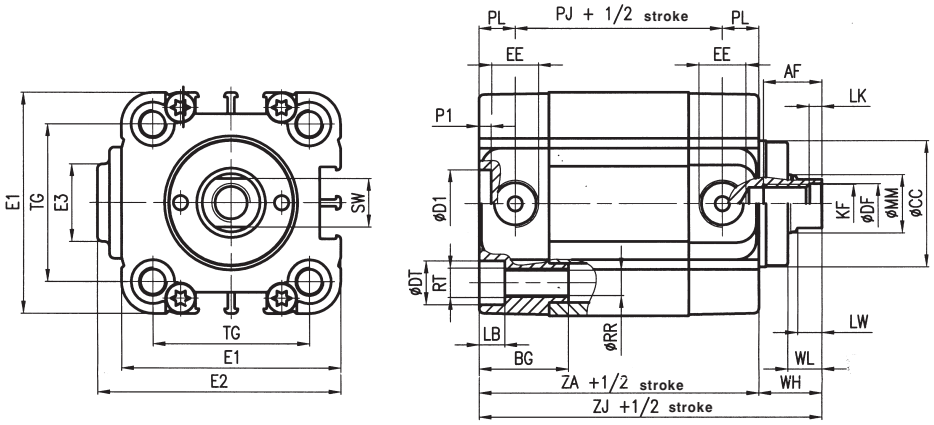


2- stage telescopic cylinder magnetic version RT220...M

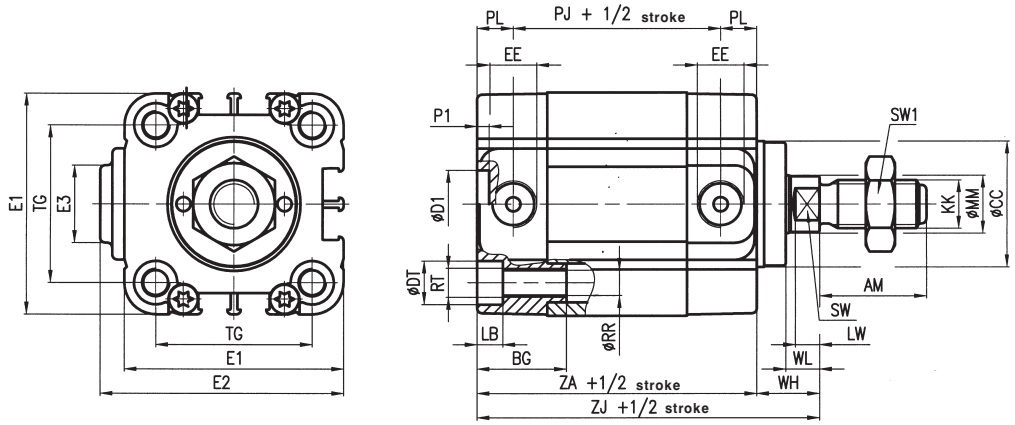
(8) Note: the magnetic sensor DF... may only be placed near the telescopic magnet holder stem (as shown in the drawing).



2- stage telescopic cylinder without flange RT220...I



2- stage telescopic cylinder with male rod RT223...



Cyl. Ø	AF	Ø AG	AM	BC	BG	Ø CC	ØD1 H11	Ø DF	Ø DG	Ø DT	E1	E2	E3	EE	FA	Ø FF	GG	HG	KF
25	10	22	22	M5	16	22	2	6,1	5	8	37	39	18	M5	15,6	30	5	9	M6
32	12	28	22	M5	18	26	14	8,2	5	9	46	50,5	16	G1/8	19,8	37	5,2	11	M8
40	12	33	22	M5	18	32	14	8,2	5	9	56	60,5	16	G1/8	23,3	42	5,2	15	M8
50	16	42	24	M6	24	40	18	10,2	6	11	66	70,5	16	G1/8	29,7	52	6,2	19	M10
63	16	50	24	M6	24	48	18	10,2	6	11	79	83,5	38	G1/8	35,4	64	6,2	25	M10

Cyl. Ø	KK	LB	LK	LM	LW	Ø MM	P1	PJ	PL	Ø RR	RT	SW	SW1	SW2	TG	WH	WL	ZA	ZJ	ZX
25	M10X1,25	4,5	1	8	4,5	10	2	32	8	4,2	M5	8	17	-	26	17	7	48	65	73
32	M10X1,25	5,3	2	10	5	12	2,5	43	7,5	5,2	M6	10	17	17	32,5	13	7	58	71	81
40	M10X1,25	5,3	2	10	5	12	2,5	45	7,5	5,2	M6	10	17	19	38	12	7	60	72	82
50	M12X1,25	6,5	2	12	6	16	2,5	46	7,5	6,6	M8	13	19	24	46,5	15	8	61	76	88
63	M12X1,25	6,5	2	12	6	16	2,5	50	7,5	6,6	M8	13	19	24	56,5	15	8	65	80	92

Mass

RT220...

Cyl. Ø	Cylinder "0" stroke (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
25	200	2,45	74,2	1,2
32	270	3,02	124,6	1,4
40	419	3,77	182	1,6
50	640	5,28	314	2,6
63	1005	6,33	480	2,72

RT220...M

Cyl. Ø	Cylinder "0" stroke (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
32	245	3,02	137,6	1,5
40	380	3,77	188,5	1,7
50	572	5,28	318	2,7
63	910	6,33	487	2,8

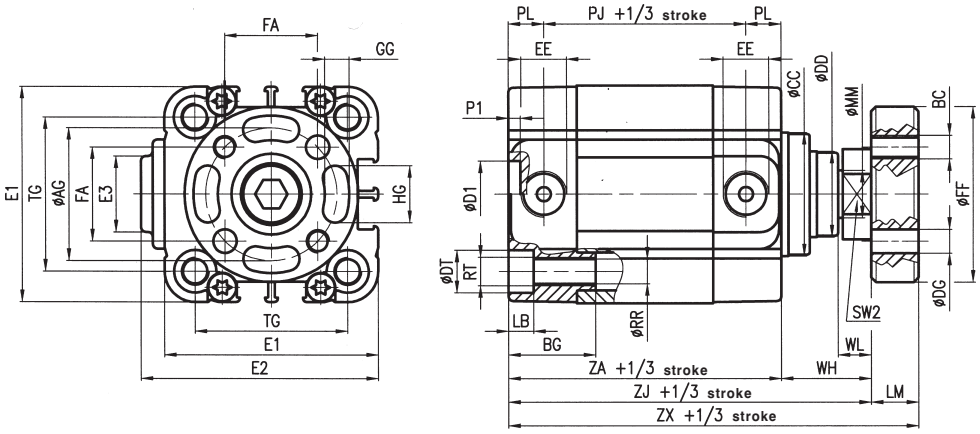
RT220...I

Cyl. Ø	Cylinder "0" stroke (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
25	238	2,45	67,2	1,2
32	245	3,02	99,6	1,4
40	380	3,77	142,5	1,6
50	572	5,28	246	2,6
63	910	6,33	385	2,72

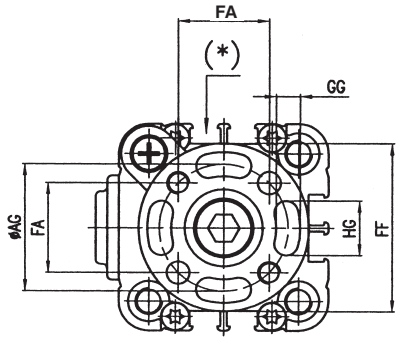
RT223...

Cyl. Ø	Cylinder "0" stroke (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
25	270	2,45	79,2	1,2
32	275	3,02	129,6	1,4
40	410	3,77	172,5	1,6
50	617	5,28	291	2,6
63	955	6,33	430	2,72

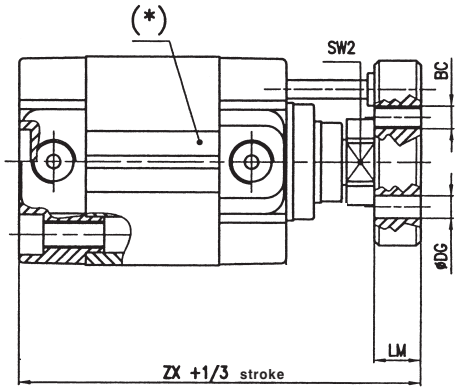
3-stage telescopic cylinder with flange RT230...



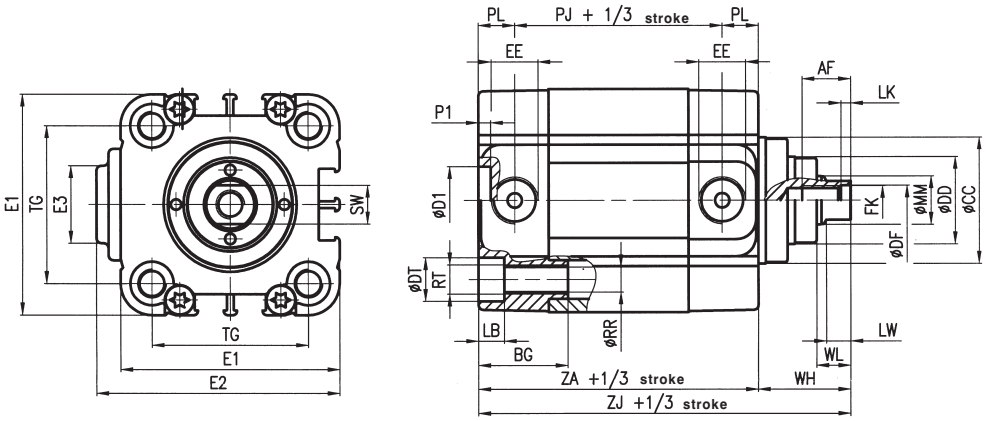
3-stage telescopic cylinder magnetic version RT230...M



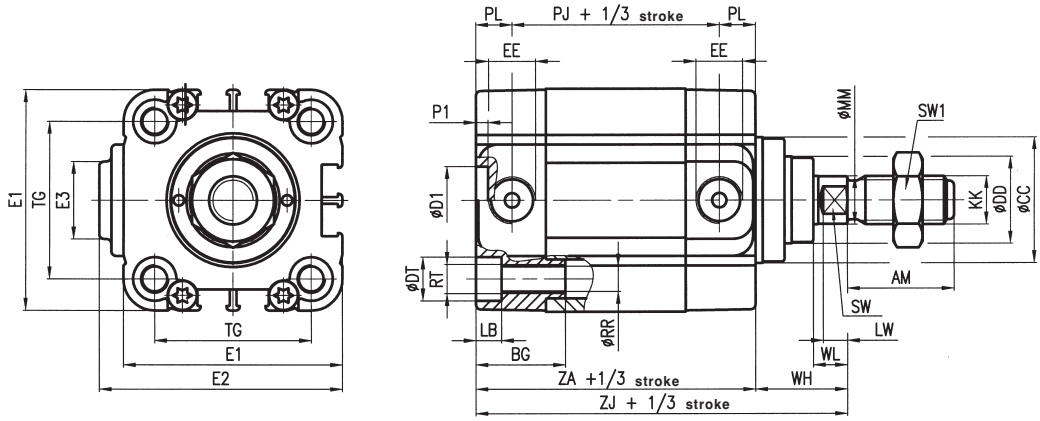
(8) Note: the magnetic sensor DF.... may only be placed near the telescopic magnet holder stem (as shown in the drawing).



3-stage telescopic cylinder without flange RT230...I



3-stage telescopic cylinder with male rod RT233...



Cyl. Ø	AF	Ø AG	AM	BC	BG	Ø CC	ØD1 H11	Ø DD	Ø DF	Ø DG	Ø DT	E1	E2	E3	EE	FA	Ø FF	GG	HG	KF
40	10	28	22	M5	18	32	14	22	6,2	5	9	56	60,5	16	G1/8	19,8	37	5,2	11	M6
50	12	28	22	M5	24	40	18	26	8,2	5	11	66	70,5	16	G1/8	19,8	37	5,2	11	M8
63	12	33	22	M5	24	48	18	32	8,2	5	11	79	83,5	38	G1/8	23,3	42	5,2	15	M8

Cyl. Ø	KK	LB	LK	LM	LW	Ø MM	P1	PJ	PL	Ø RR	RT	SW	SW1	SW2	TG	WH	WL	ZA	ZJ	ZX
40	M10X1,25	5,3	2	10	5	10	2,5	45	7,5	5,2	M6	8	17	17	38	22	7	60	82	92
50	M10X1,25	6,5	2	10	5	12	2,5	46	7,5	6,6	M8	10	17	17	46,5	24	7	61	85	95
63	M10X1,25	6,5	2	10	5	12	2,5	50	7,5	6,6	M8	10	17	19	56,5	25	7	65	90	100

Dimensional variations for RT230...M series

Cyl. Ø	Ø AG	BC	Ø DG	FA	Ø FF	GG	HG	LM	SW2	ZX
40	33	M5	5	23,3	42	5,2	15	10	19	92
50	42	M6	6	29,7	52	6,2	19	12	24	97
63	50	M6	6	35,4	64	6,2	25	12	24	102

Mass

RT230...

Cyl. Ø	Cylinder "0" stroke (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
40	399	3,9	162	1,75
50	591	5,07	265	2,37
63	939	6,34	417	2,75

RT230...M

Cyl. Ø	Cylinder "0" stroke (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
40	374	3,9	191	2
50	553	5,07	306,5	2,62
63	871	6,34	459	3

RT230...I

Cyl. Ø	Cylinder "0" stroke (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
40	374	3,9	137	1,75
50	552	5,07	225,5	2,37
63	871	6,34	349	2,75

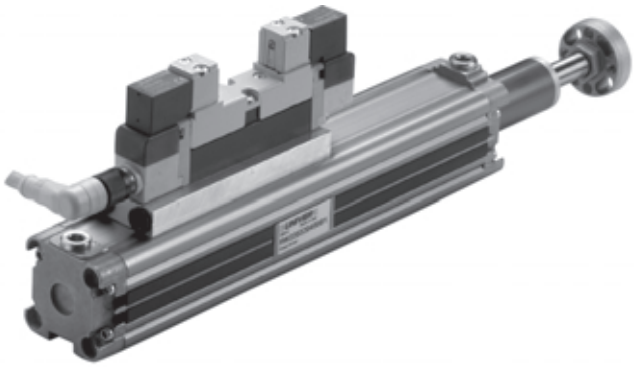
RT233...

Cyl. Ø	Cylinder "0" stroke (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
40	405	3,9	168	1,75
50	583	5,07	256,5	2,37
63	902	6,34	380	2,75

Cylinders with the same technical characteristics as those of the respective RT series with integrated 5/2-5/3 solenoid valve of VDMA series side 18 or 26 mm. Pressure and exhaust take place directly from the connection plate between valve and cylinder with the possibility to regulate the exhausts. These new cylinder types make it possible to obtain the desired application in one only solution.
It is possible to operate the electrical connection M12 also from a PLC.

TECHNICAL CHARACTERISTICS

As far as the technical and functional characteristics of the cylinders and the valves are concerned, please refer to the respective series on page 26-II. (Section High-Tech) and page 72-III (section valves).



Codification key

RW	120	32	-	A	1

- 1 → Valve size
- A → Valve type
- - → Stroke
- 32 → Bore (mm)
- 120 → Cylinder type
- RW → Series

SERIES

RW = Telescopic cylinder magnetic version only 1st stage with integrated valve

CYLINDER TYPE

RW series
120 2 stages stainless steel
130 3 stages stainless steel
220 2 stages chromium-plated steel
230 3 stages chromium-plated steel

BORE

32 - 40 - 50 - 63 mm

STROKE

Minimum stroke 2 stages 300 mm
Minimum stroke 3 stages 360 mm

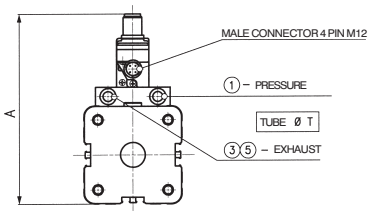
VALVE TYPE

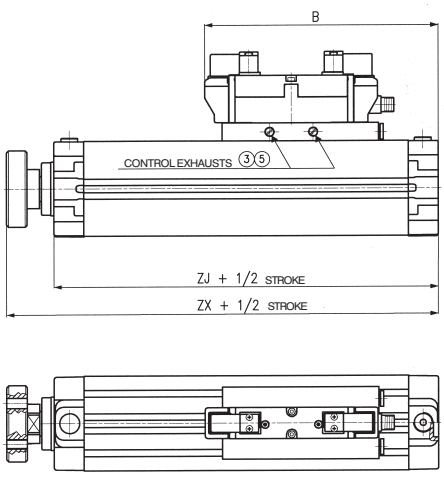
A = VDMA valve 24 Vd.c. M12 connector 5/2 monostable electric/pneumatic spring
B = VDMA valve 24 Vd.c. M12 connector 5/2 bistable electric/electric
C = VDMA valve 24 Vd.c. M12 connector 5/3 closed centres electric/electric
D = VDMA valve 24 Vd.c. M12 connector 5/3 open centres electric/electric
E = VDMA valve 24 Vd.c. M12 connector 5/3 pressurized centres electric/electric

VALVE SIZE

1 = VDMA 18 mm for ø 32-40-50 mm
2 = VDMA 26 mm for ø 63 mm

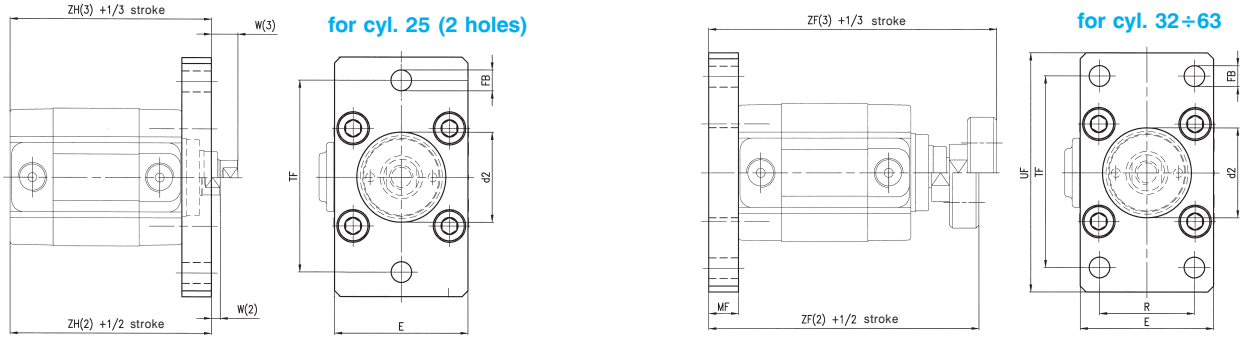
Overall dimensions





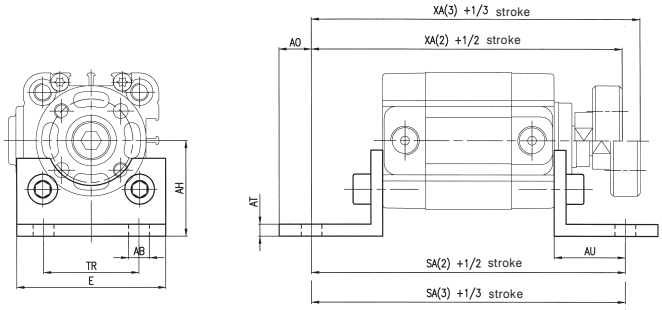
Cyl. Ø	A	B	T	Minimum stroke telescopic cylinder 2 stages	ZJ	ZX	3 stages	ZJ	ZX
32	107,5	169	6	225	269	289	-	-	-
40	117,5	169	6	220	264	283	330	374	403
50	127,5	169	6	220	264	287	330	374	405
63	153	184	8	240	288,5	311,5	360	408,5	440,5

Front or rear flange in zinc-plated steel



Cyl. Ø	Ød2 H11	E	Ø FB H13	W(2)	W(3)	MF	R JS14	TF JS14	UF	ZF(2)	ZF(3)	ZH(2)	ZH(3)	Mass Kg	Part number
25	24	40	6,6	7	-	10	-	60	76	83	-	58	-	0,18	**RTF-12025**
32	30	45	7	3	-	10	32	64	80	91	-	68	-	0,20	**KF-12032**
40	35	52	9	2	12	10	36	72	90	92	102	70	70	0,25	**KF-12040**
50	44	65	9	3	12	12	45	90	110	100	109	73	73	0,50	**RTF-12050**
63	52	75	9	3	13	12	50	100	120	104	114	77	77	0,65	**RTF-12063**

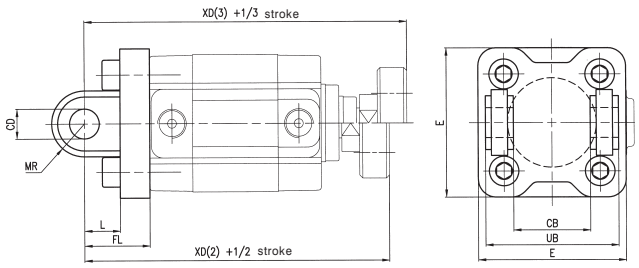
Angle brackets in zinc-plated steel



Fixing screws see page 51-I
(for cylinders Ø 25, page 35-I)

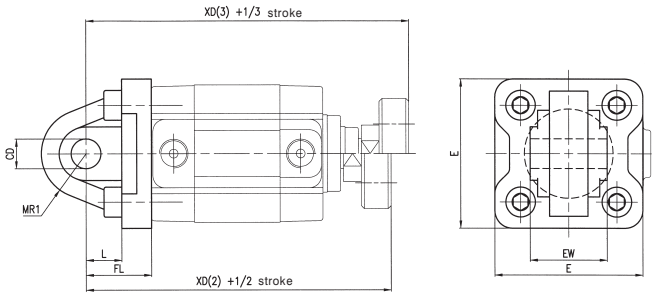
Cyl. Ø	ØAB H13	AH JS15	AO max	AT	AU ±0,2	E max	SA(2)	SA(3)	TR	XA(2)	XA(3)	Mass Kg	Part number
25	6,6	30	6	4	16	40	80	-	26	89	-	0,04	**RTF-13025**
32	7	32	11	4	24	50	106	-	32	105	-	0,07	**KF-13032**
40	9	36	15	4	28	58	116	116	36	110	120	0,09	**KF-13040**
50	9	45	15	5	32	70	125	125	45	120	129	0,20	**RTF-13050**
63	9	50	15	5	32	85	129	129	50	124	134	0,20	**RTF-13063**

Female rear hinge in die-cast aluminium with pin in zinc-plated steel



Cyl. Ø	CB H14	ØCD H9	E	FL	L	MR	UB h14	XD(2)	XD(3)	Mass Kg	Part number
32	26	10	48	22	12	11	45	103	-	0,06	**KF-10032A**
40	28	12	54	25	15	13	52	107	117	0,08	**KF-10040A**
50	32	12	65	27	15	13	60	115	124	0,15	**KF-10050A**
63	40	16	75	32	20	17	70	124	134	0,25	**KF-10063A**

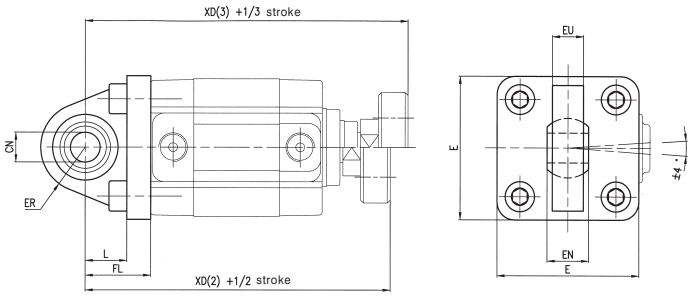
Male rear hinge in die-cast aluminium



For cyl. ø 25 it is possible to use the male hinge together with the female hinge MF-21025 of microcylinders ISO 6432

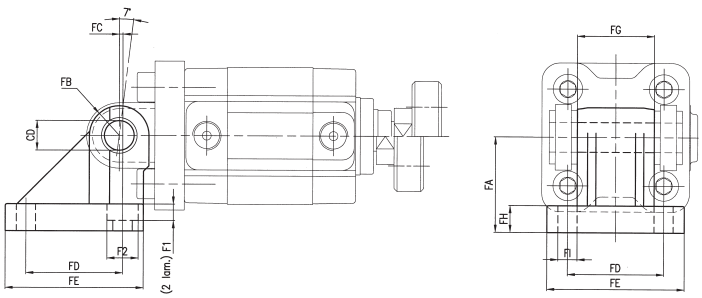
Cyl. Ø	ØCD H9	E	EW tol. ±0,2	FL	L	MR1	XD(2)	XD(3)	Mass Kg	Part number
25	8	38	16	20	14	8	93	-	0,027	RPF-11025
32	10	48	26	22	12	15	103	-	0,08	KF-11032
40	12	54	28	25	15	18	107	117	0,10	KF-11040
50	12	65	32	27	15	20	115	124	0,17	KF-11050
63	16	75	40	32	20	23	124	134	0,25	KF-11063

Articulated male rear hinge in die-cast aluminium



Cyl. Ø	ØCN H9	E	EN	ER	EU	FL	L	XD(2)	XD(3)	Mass kg	Part number
32	10	48	14	15	10,5	22	14	103	-	0,10	KF-11032S
40	12	54	16	18	12	25	16,5	107	117	0,20	KF-11040S
50	12	65	16	20	12	27	17,5	115	124	0,30	KF-11050S
63	16	75	21	23	15	32	21,5	124	134	0,35	KF-11063S

Counter-hinge 90° in die-cast aluminium



Fixing screws refer to page 51-I (for cyl. Ø 25, page 35-I)

Cil. Ø	ØCD H9	FA Js15	FB	FC	FD	FE	FG ±0,2	FH	Ø FI	F1	Ø F2	Mass kg	Part number
32	10	32	10	1,2	32,5	46,5	26	9	6,4	5,5	10,5	0,10	KF-19032
40	12	36	12	2,6	38	51,5	28	9	6,4	5,5	10,5	0,20	KF-19040
50	12	45	12	0,3	46,5	63,5	32	9	8,4	5	13,5	0,30	KF-19050
63	16	50	16	3,3	56,5	73,5	40	10,5	8,4	5	13,5	0,35	KF-19063

Slide units for pneumatic cylinder suitable for:

ISO 6431 - 6432 cylinders M series Ø 16 ÷ 25 K/KD series Ø 32 ÷ 100	Slide units for rodless cylinders S1 series Ø 25 ÷ 50	Short-stroke cylinders W series Ø 25 ÷ 100	Compact cylinders STRONG RS series Ø 32 ÷ 63	2-stage telescopic cylinders RT2 series Ø 32 ÷ 63

CONSTRUCTION CHARACTERISTICS

Enlarged chromium-plated hollow guides provide robustness and reliability

An economical solution thanks to the components used which ensure long life (7000 – 10000 km)

Special metallic self-lubricating bearings, minimizing noise and abrasion

Customized slide units available upon request

High resistance to peak loads.
Scraper bearings standard supplied for J10-___/J31-___ series

All models available with safety distance 25 mm for accident prevention according to EC rules EN 349

TECHNICAL CHARACTERISTICS

Working pressure:

2 ÷ 10 bar	3 ÷ 10 bar	2 ÷ 10 bar	2 ÷ 10 bar	2 ÷ 10 bar

Ambient temperature:

- 20°C ÷ 80°C

SIZES

16 ÷ 100	40 ÷ 80	25 ÷ 100	32 ÷ 63	32 ÷ 63

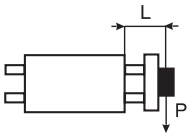
STANDARD STROKES (mm)

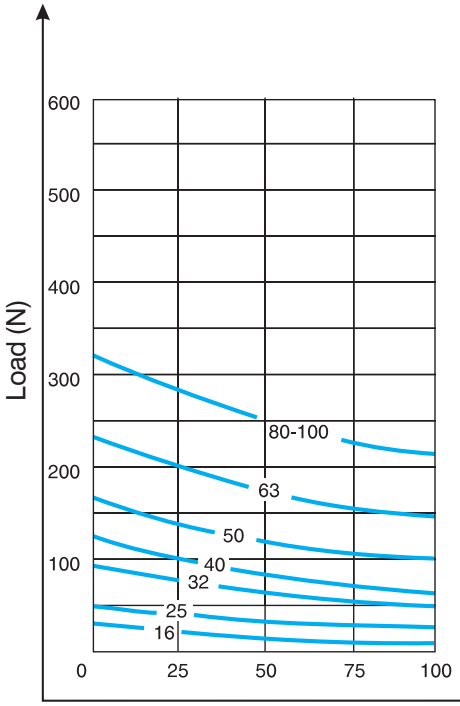
25 ÷ 1000	up to 800 mm max	5 ÷ 75	15 ÷ 800	120 ÷ 1200

For min. and max. strokes refer to respective codification key.

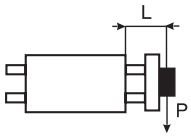
In case there are protruding loads generating torque, the load and maximum torque values have to be reduced to 75%.

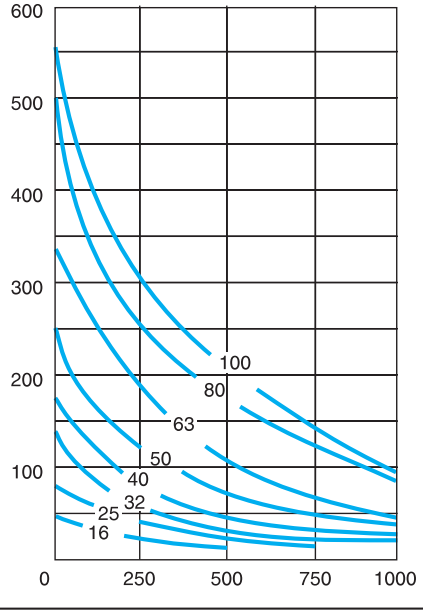
Mod. J10



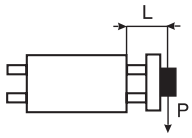


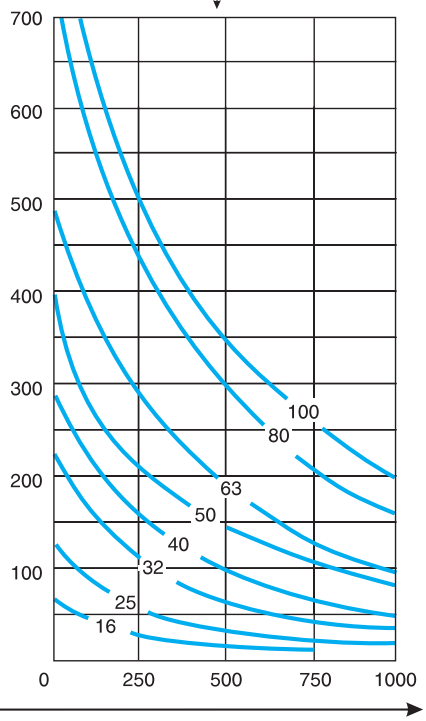
Mod. J11



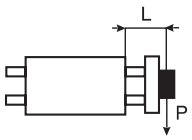


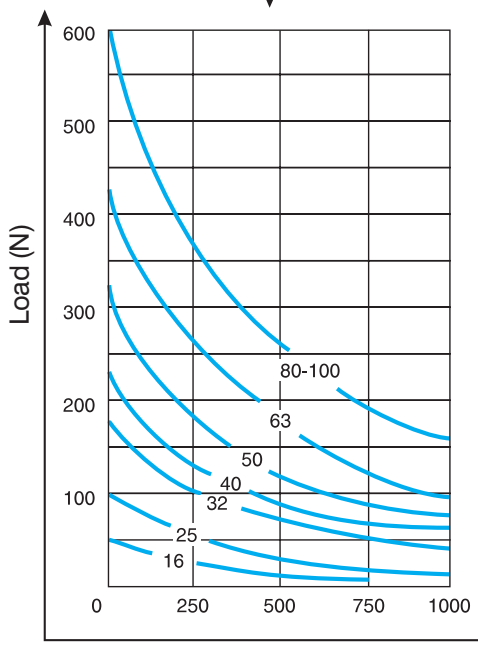
Mod. J12/J16/J17/J67



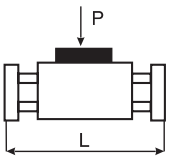


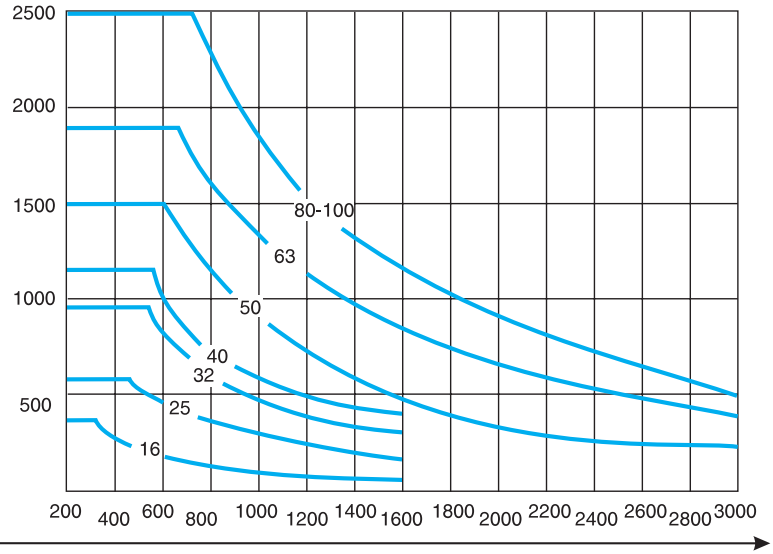
Mod. J14/J64





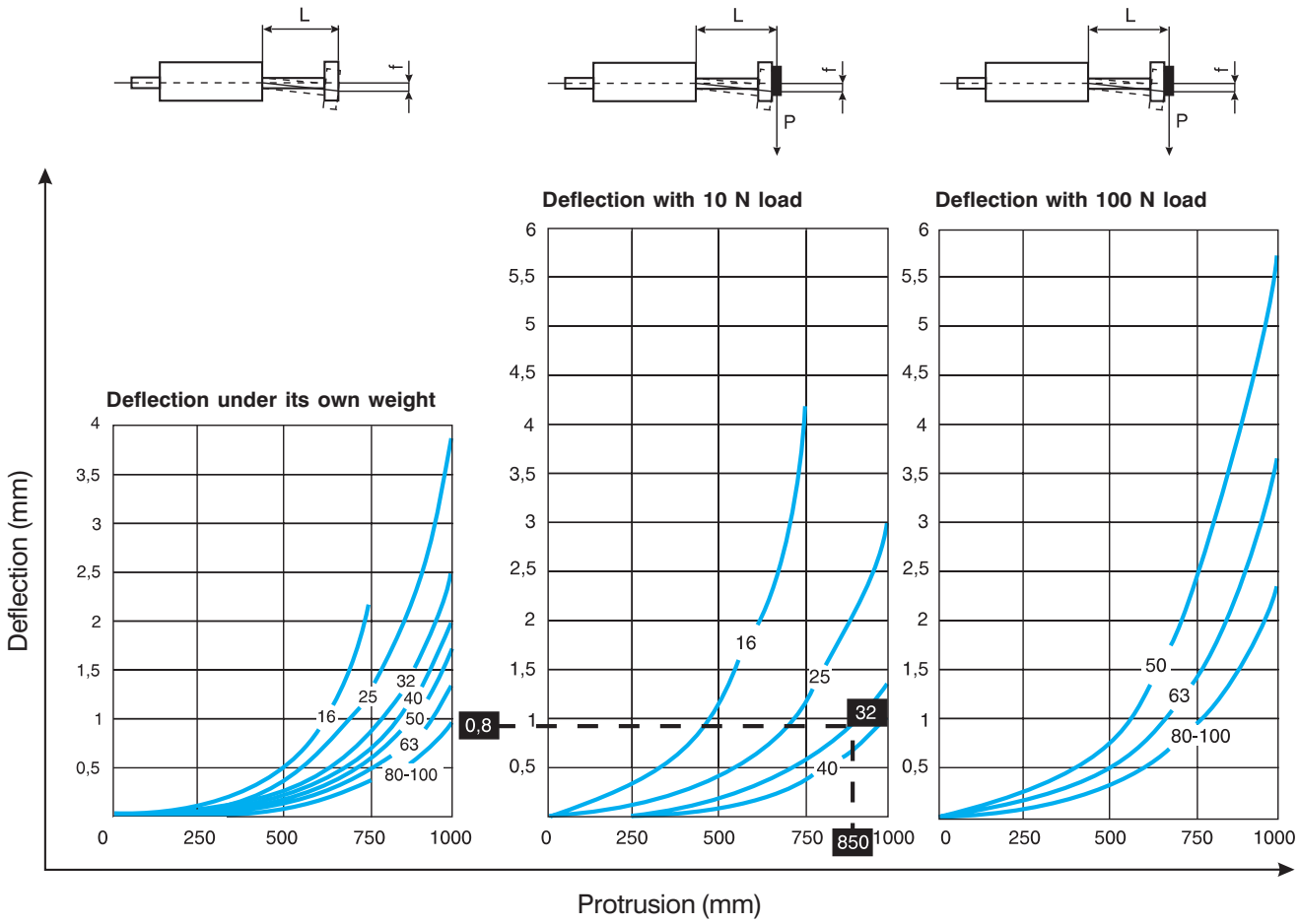
Mod. J16/J18/J19/J67





P = centre of application of the load

Mod. J10/J11/J12/J14/J16/J17/J64



Examples of application

How to calculate deflection

The total deflection of the slide units is calculated by summing deflection under its own weight to deflection caused by the load.

For loads other than 10 or 100 N (as stated in the charts) deflection is calculated by multiplying the figure of chart (K) by the following formula:

$$f = K \cdot \frac{Q \text{ (applied load)}}{10 \text{ N or } 100 \text{ N}}$$

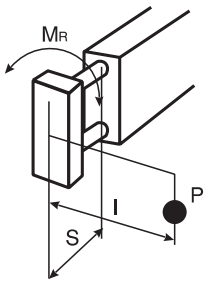
Example: slide unit size **32**, length **850** mm and load Q of 25 N. On chart showing deflection with 10 N load, we get coefficient **0,8** (marked with negative print), then:

$$f = 0{,}8 \cdot \frac{25}{10} = 2 \text{ mm}$$

The figure obtained must be added to the corresponding figure of the slide unit deflection under the unit's own weight.

Example:
slide unit Ø 63 J11
S = 500 mm (load protrusion)
Max allowed load = 100 · 0,75 = 75 N
Max allowed torque = 61,7 · 0,75 = 46,3 Nm

Max moment of resistance MR



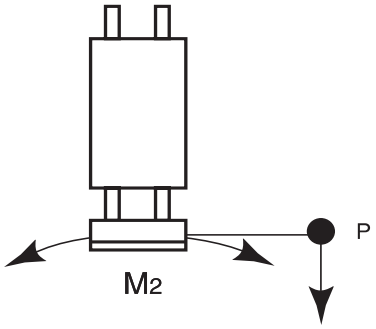
Size	MR
16	4.7 Nm
25	10.2 Nm
32	19.9 Nm
40	26.9 Nm
50	42.8 Nm
63	61.7 Nm
80	93 Nm
100	101.6 Nm

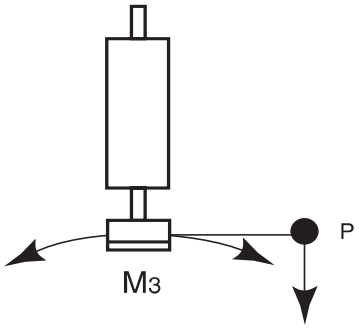
How to calculate torque

To calculate torque M1 the load P(N) must be multiplied by the arm I (mm):

$$M1 = P \cdot I$$

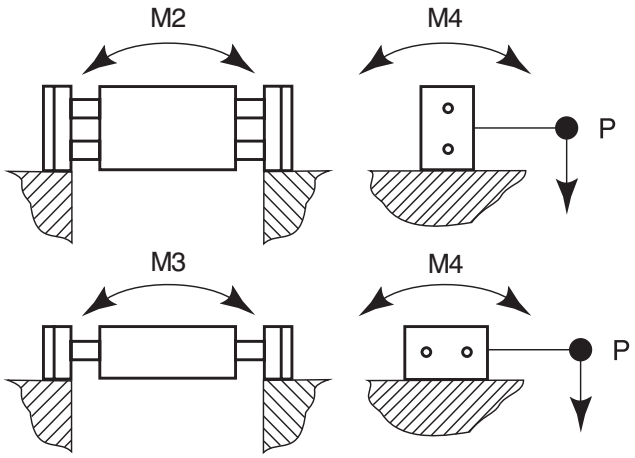
The figure obtained must be within MR values, as stated above: should it exceed these values, a slide unit of a bigger size must be used.





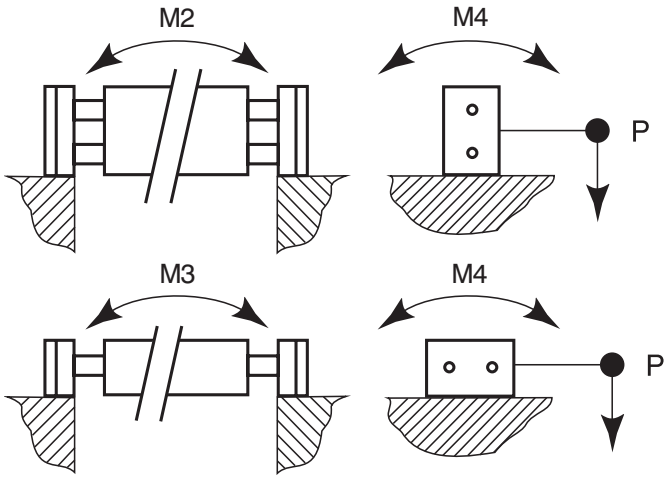
Slide units for...

Size slide unit	ISO 6431 - 6432 cylinders					Short-stroke cylinders			
	J10 M2=M3 (Nm)	J11 M2=M3 (Nm)	J12=J12B M2=M3 (Nm)	J14=J14B M2=M3 (Nm)	J16=J16B M2=M3 (Nm)	J51 M2=M3 (Nm)	J52 M2=M3 (Nm)	J53 M2=M3 (Nm)	J54 M2=M3 (Nm)
16	3,2	6,4	11	7,4	11	-	-	-	-
25	6	13,2	23,6	17,8	23,6	6	8,2	6	8,2
32	12,2	27,2	49	37,4	49	12,2	15	12,2	15
40	17,8	36,8	73,6	51	73,6	17,8	19,8	17,8	19,8
50	24,8	56	107,8	78	107,8	24,8	29,8	24,8	29,8
63	35,2	85,6	156,8	114	156,8	35,2	42,8	35,2	42,8
80	52	136	248	173,2	248	52	64,4	52	64,4
100	52	160	298	173,2	298	52	64,4	52	64,4



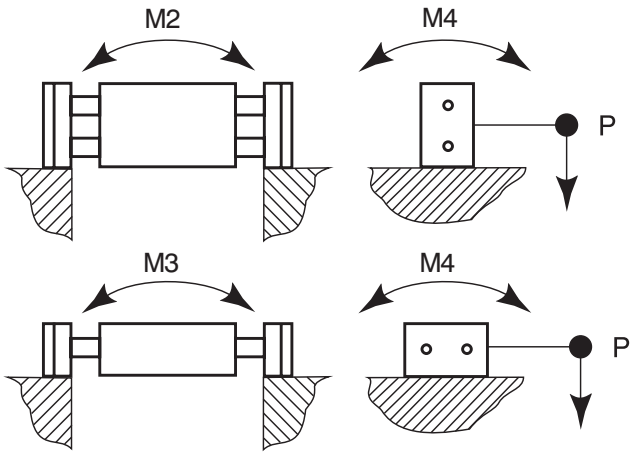
Slide units for...

Size slide unit	ISO 6431- 6432 cylinders			Short-stroke cylinders	
	J16=J16B M2/M3 (Nm)	J18 M2/M3 (Nm)	J19 M2/M3 (Nm)	J56 M2/M3 (Nm)	M4 (Nm)
16	12,8/8,8	10,4/4,4	12,8/8,8	-	9,4
25	28/19	22,2/8,6	28/19	22/7,6	20,4
32	55,6/38,8	45,2/17	55,6/38,8	42,6/15	39,8
40	80/59,4	58,5/22,6	80/59,4	57,4/19,8	53,8
50	121/75,2	92/33,4	121/75,2	90,4/29,8	85,6
63	173,6/122,6	135,2/52	173,6/122,6	130/42,4	123,4
80	270,2/196	204,2/84	270,2/196	196,6/64,4	186
100	318,6/245,6	230,8/109,2	318,6/245,6	213,2/64,4	203,2



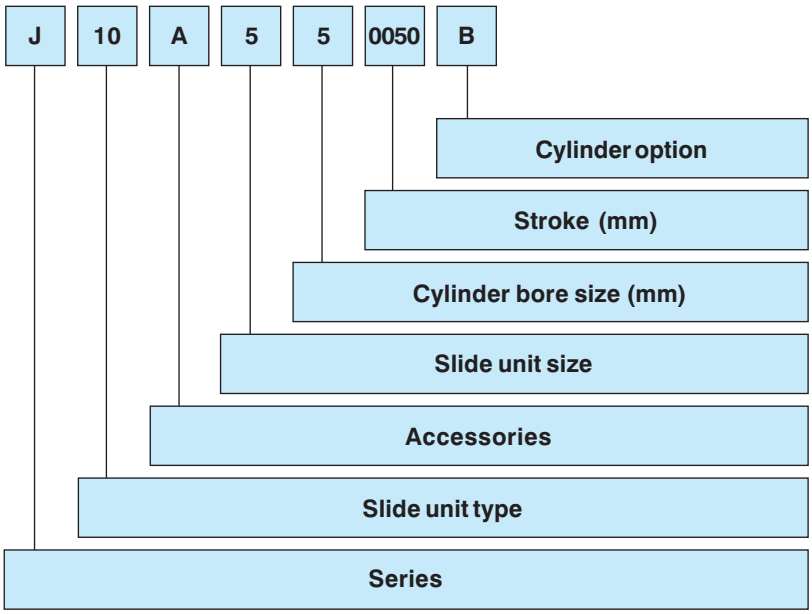
Slide units for ISO 6431 - 6432 cylinder

Size slide unit	J17=J17B M2 (Nm)							J17=J17B M3 (Nm)							M4 (Nm)
	Stroke (m/m)														
	100	200	300	400	500	750	1000	100	200	300	400	500	750	1000	
16	30,4	48,4	58	84,8	103	148,8	194,8	29	47,4	70	84.2	102,6	148,6	194,6	9,4
25	56,8	114	114	143,2	172,4	246	320	53	82,6	112	141,8	171,4	245,4	320	20,4
32	89,4	133	178	222	270	386	502	80	126,8	173,6	220	267,2	384	500	39,8
40	117	169,2	223,6	279	334,4	474,8	616	104	160,6	217,4	274	330	472	614	53,8
50	161,4	230	301,4	373,2	446	630	816	138	212,8	287,2	361,6	436	622	808	85,6
63	228	312	402	493	586	818	1102	192,8	288	383	478	573	810	1048	123,4
80	328,6	434	550,4	668	788,8	1091,2	1398	270	394	518	642	766	1076	1386	186
100	349,6	456	570	687	806	1108,6	1414	284	408	532	656	780	1090	1400	203,2



Slide units for rodless cylinder

Size slide unit	Cylinder bore (mm)	Standard carriage J30		Long carriage J31		M4 (Nm)
		M2 (Nm)	M3 (Nm)	M2 (Nm)	M3 (Nm)	
40	25	68,4	42,4	110,2	96,2	53,8
50	32	118,4	81,8	198	178,6	85,6
63	40	192,2	147,2	315	289,8	123,4
80	50	298,2	233,2	516	481,2	186



The slide units are supplied with safety distance (+ 25 mm) for accident prevention according to the European EN 349 specifications.

For obtaining the total weigth it is necessary to add to the weight of the slide unit and the cylinder stroke "0" the product between the dimensions corresponding to the weight increase per mm shaft, cylinder, slide units and stroke.

Example: how to determine the mass of J11, size 32, 100 mm stroke:

	Total mass (kg)
Slide unit at zero stroke	**1,3**
Cylinder at zero stroke	**0,504**
Hollow shaft 1,17 x 100	**0,117**
Cylinder weight 2,35 x 100	**0,235**
Total	**2,156**

SERIES

J = Slide unit series

SLIDE UNIT TYPE

10 = Slide unit protruding shafts, with short housing (recommended for strokes up to 50 mm)
11 = Slide unit protruding shafts, with medium housing
12 = Slide unit protruding shafts, with long housing
14 = Slide unit with fully protected cylinder
16 = Slide unit central mounting (semi-external cylinder)
17 = Slide unit central mounting (fully protected cylinder)
18 = Slide unit medium moving carriage (external cylinder)
19 = Slide unit long moving carriage (external cylinder)

ACCESSORIES

A = With scraper bearings

SLIDE UNIT SIZE

0 = 16 only for Ø 16 cylinder
2 = 25 only for Ø 25 cylinder
3 = 32 only for Ø 32 cylinder
4 = 40 only for Ø 40 cylinder
5 = 50 only for Ø 50 cylinder
6 = 63 only for Ø 63 cylinder
7 = 80 only for Ø 80 cylinder
8 = 100 only for Ø 100 cylinder

CYLINDER BORE SIZE

0 = 16
2 = 25
3 = 32
4 = 40
5 = 50
6 = 63
7 = 80
8 = 100

STROKE mm

Standard stroke in mm:
M series microcylinders
25 - 30 - 40 - 50 - 75 -100 - 125 - 150 - 160 - 175 200 - 250 - 300 - 400 - 500.
K-KD series ISO cylinders
25 - 50 - 75 - 80 - 100 - 125 - 150 - 160 - 175 200 - 250 - 300 - 320 - 400 - 450 - 500.

CYLINDER OPTION

For microcylinders M series and cylinders K series:

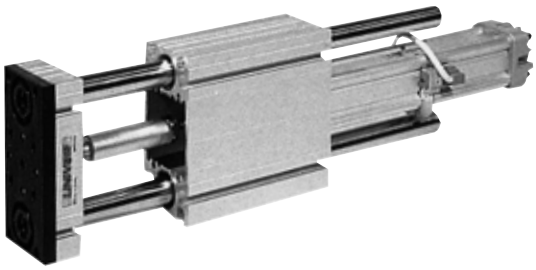
A = Ø 16-25 microcylinders M150 series
Ø 32-100 ISO cylinders K200 series
B = Ø 16-25 microcylinders M250 series with locking unit
Ø 32-100 ISO cylinders K200 series with locking unit

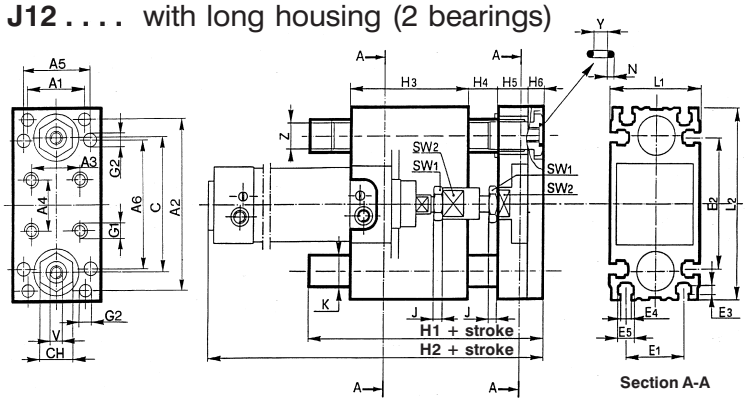
For cylinders KD series:

E = Ø 32-100 ISO cylinders KD200 series for the following types: J10-J11-J12-J16-J18-J19
F = Ø 32-100 ISO cylinders KD200 series with locking unit only J1

N.B. : slide units are supplied with cushioned cylinders, which in the case of J10/J11/J12/J18/J19 are magnetic.
For the other series a magnetic version is foreseen by adding a DKJ Series reed switch mounting rail which is to be ordered separately (Section Accessories page 6).

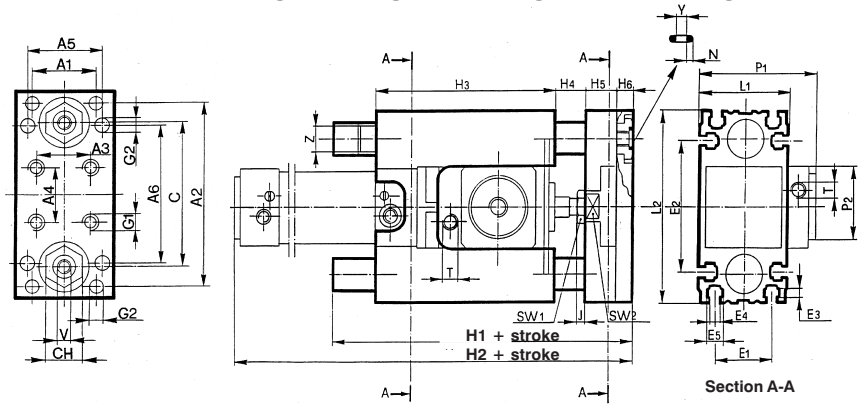
J10 . . . . with short housing (recommended for strokes up to 50 mm - 1 bearing)
J11 . . . . with medium housing (2 bearings)
J12 . . . . with long housing (2 bearings)





Size of slide unit	Cyl. Ø	J10....							J11....							J12....						
		+ STROKE		H3	H4	H5	H6	Mass (kg) stroke (0)	+ STROKE		H3	H4	H5	H6	Mass (kg) stroke (0)	+ STROKE		H3	H4	H5	H6	Mass (kg) stroke (0)
		H1	H2						H1	H2						H1	H2					
16	16	124	141	32	25	18	8	0,428	147	168	55	25	18	8	0,52	172	193	80	25	18	8	0,585
25	25	130	164	38	25	18	8	0,62	157	192	65	25	18	8	0,75	192	227	100	25	18	8	0,9
32	32	141	168	43	25	20	10	1,06	176	203	78	25	20	10	1,3	223	250	125	25	20	10	1,602
40	40	149	184	51	25	20	10	1,5	183	218,5	85	25	20	10	1,84	248	283,5	150	25	20	10	2,33
50	50	165	196	57	25	25	10	2,46	203	234,5	95	25	25	10	3,01	273	304,5	165	25	25	10	3,775
63*	63	171,5	213	62,5	25	25	12	3,61	219,5	260,5	110	25	25	12	4,89	294,5	329,5	185	25	25	12	6,48
80*	80	198,5	242	78,5	25	30	12	5,4	249,5	293,5	130	25	30	12	6,68	339,5	383,5	220	25	30	12	8,27
100*	100	205,5	246	85	25	30	12	6,22	269,5	321	150	25	30	12	7,52	379,5	431	260	25	30	12	9,11

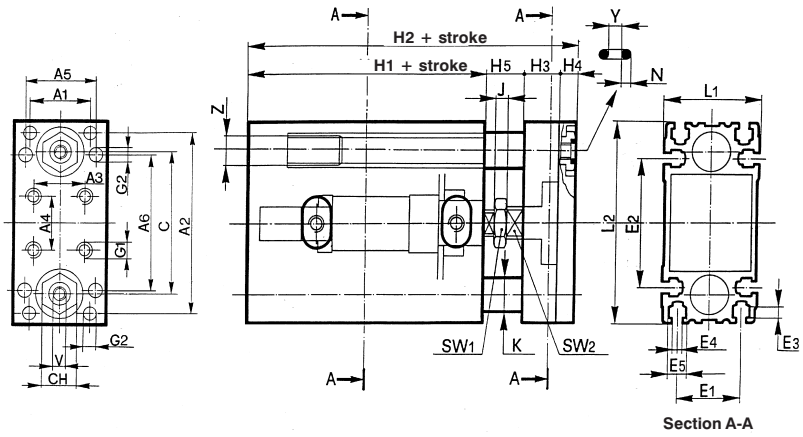
J12 . . . . B with long housing, 2 bearings, with locking unit



Size of slide unit	Cyl. Ø	J12....B										
		+ STROKE		H3	H4	H5	H6	P1	P2	T	Mass (kg) at "0" stroke	
		H1	H2								Slide unit	Locking unit
25	25	186	220	94	25	18	8	77,5	40	G 1/8	0,874	0,43
32	32	220	247	122	25	20	10	83,5	50	G 1/8	1,592	0,73
40	40	229	265	131	25	20	10	91,5	58	G 1/8	2,18	0,9
50	50	252	283	144	25	25	10	106,5	70	G 1/8	3,555	1,4
63*	63	271,5	313,5	163	25	25	12	129	85	G 1/8	5,748	2,31
80*	80	299,5	343	180	25	30	12	150	100	G 1/8	7,56	3,7
100*	100	339,5	385	220	25	30	12	185,5	116	G 1/8	8,385	7,3

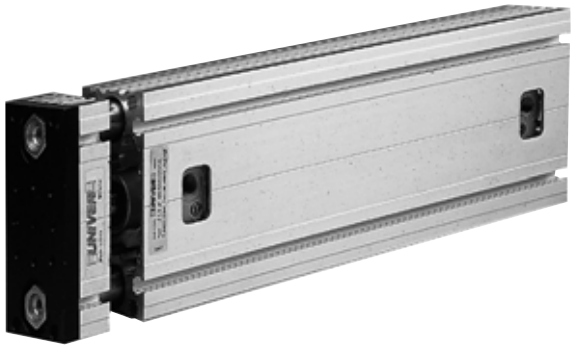
* For dimensions not indicated and note regarding sizes 63 - 80 - 100 refer to page 45.

J14 . . . ., 2 bearings

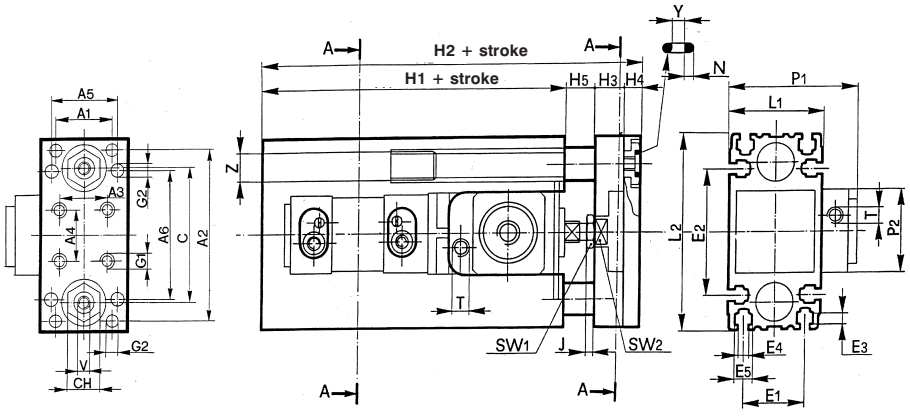


Section A-A

Size of slide unit	Cyl. Ø	J14....					
		+ STROKE		H3	H4	H5	Mass (kg) at "0" stroke
		H1	H2				
16	16	100	151	18	8	25	0,62
25	25	120	171	18	8	25	0,947
32	32	130	185	20	10	25	1,58
40	40	140	195	20	10	25	2,17
50	50	150	210	25	10	25	3,48
63*	63	165	227	25	12	25	5,08
80*	80	180	247	30	12	25	6,87
100*	100	195	262	30	12	25	7,74

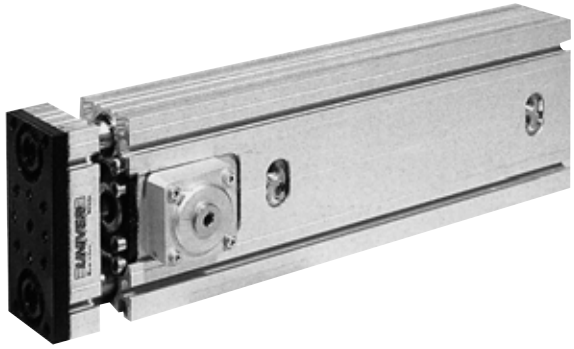


J14 . . . . B, 2 bearings with locking unit



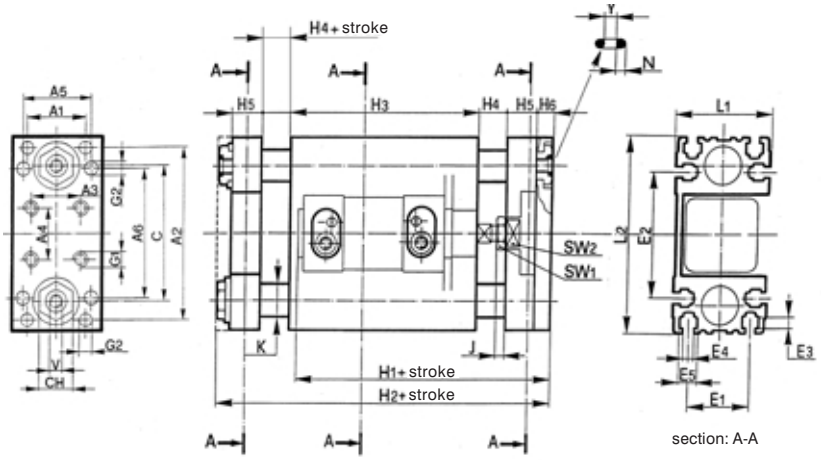
Section A-A

Size of slide unit	Cyl. Ø	J14....B									
		+ stroke		H3	H4	H5	P1	P2	T	Mass (kg) at "0" stroke	
		H1	H2							Slide unit	Locking units
25	25	179	230	18	8	25	77,5	40	G 1/8	1,183	0,43
32	32	209	264	20	10	25	83,5	50	G 1/8	2,055	0,73
40	40	222	277	20	10	25	91,5	58	G 1/8	2,805	0,9
50	50	236	296	25	10	25	106,5	70	G 1/8	3,526	1,4
63*	63	250	312	25	12	25	129	85	G 1/8	6,71	2,31
80*	80	285	352	30	12	25	150	100	G 1/8	8,5	3,7
100*	100	335	402	30	12	25	185,5	116	G 1/8	9,32	7,3

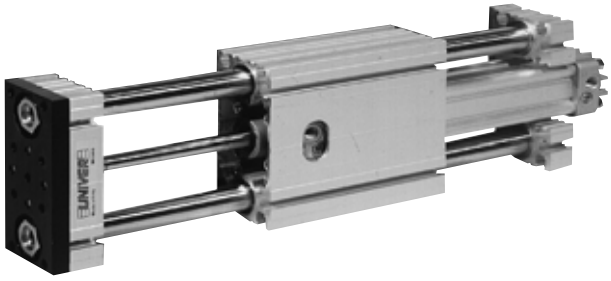


*** For dimensions not indicated and note regarding sizes 63 - 80 - 100 refer to page 45.**

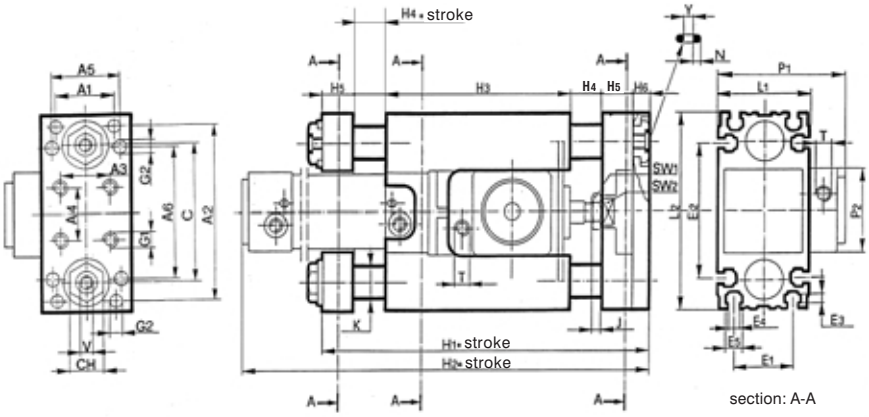
J16 . . . . , 2 bearings



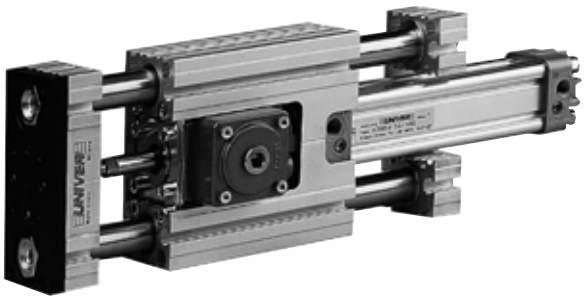
Size of slide unit	Cyl. Ø	J16....						
		+ STROKE		H3	H4	H5	H6	Mass (kg) at "0" stroke
		H1	H2					
16	16	137	182	80	25	18	8	0,685
25	25	156	202	100	25	18	8	1,022
32	32	168	235	125	25	20	10	1,985
40	40	184	260	150	25	20	10	2,452
50	50	195	285	165	25	25	10	3,82
63*	63	213	309	185	25	25	12	6,77
80*	80	244	354	220	25	30	12	8,56
100*	100	256	394	260	25	30	12	9,39



J16 . . . . B, 2 bearings with locking unit

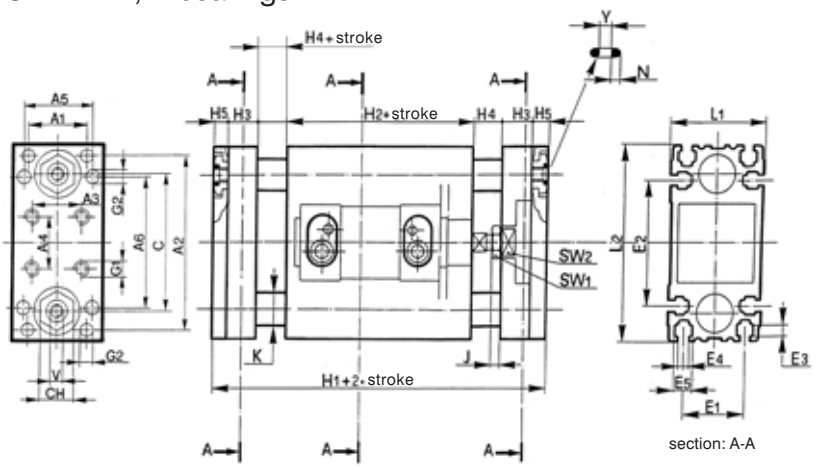


Size of slide unit	Cyl. Ø	J16....B										
		+ STROKE		H3	H4	H5	H6	P1	P2	T	Mass (kg) at "0" stroke	
		H1	H2								Slide unit	Locking unit
25	25	188	220	94	25	18	8	77,5	40	G 1/8	0,94	0,43
32	32	222	247	122	25	20	10	83,5	50	G 1/8	1,965	0,73
40	40	231	265	131	25	20	10	91,5	58	G 1/8	2,3	0,9
50	50	254	283	144	25	25	10	106,5	70	G 1/8	3,59	1,4
63	63	275	313,5	163	25	25	12	129	85	G 1/8	6,4	2,31
80	80	302	343	180	25	30	12	150	100	G 1/8	8,19	3,7
100	100	342	385	220	25	30	12	185,5	116	G 1/8	9,02	7,3



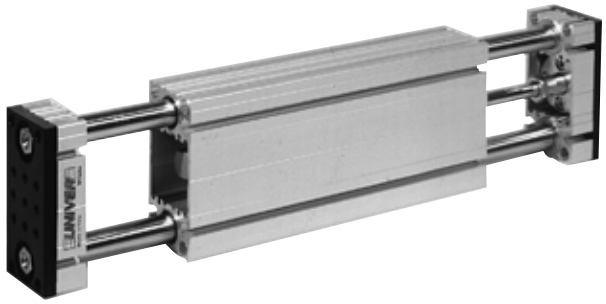
***For dimensions not indicated and note regarding sizes 63 - 80 - 100 refer to page 45.**

J17 . . . . , 2 bearings

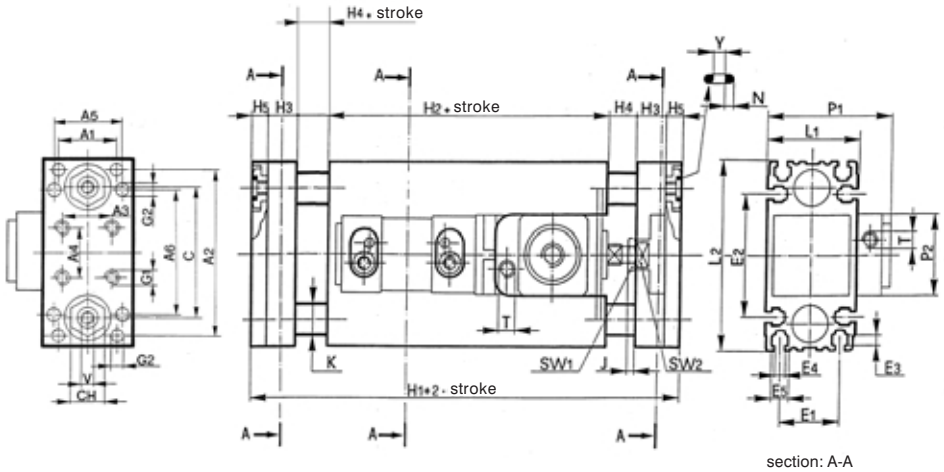


section: A-A

Size of slide unit	Cyl. Ø	J17.... + 2 • STROKE H1	J17.... + STROKE H2	H3	H4	H5	Mass (kg) at "0" stroke
16	16	202	100	18	25	8	0,715
25	25	222	120	18	25	8	1,243
32	32	240	130	20	25	10	1,925
40	40	250	140	20	25	10	2,234
50	50	270	150	25	25	10	3,39
63*	63	289	165	25	25	12	6,19
80*	80	314	180	30	25	12	7,985
100*	100	329	195	30	25	12	8,935



J17 . . . . B, 2 bearings with locking unit

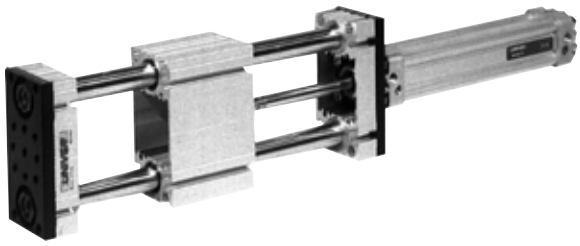


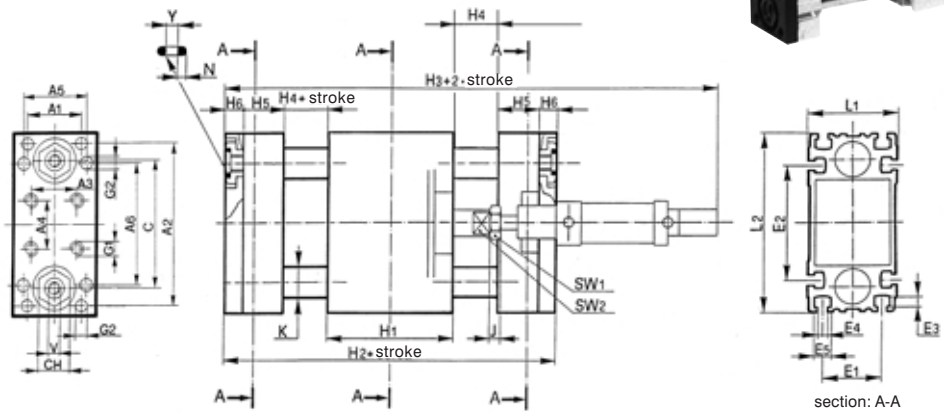
section: A-A

Size of slide unit	Cyl. Ø	J17....B + 2 • STROKE H1	J17....B + STROKE H2	H3	H4	H5	P1	P2	T	Mass (kg) at "0" stroke Slide unit	Mass (kg) at "0" stroke Locking unit
25	25	281	179	18	25	8	77,5	40	G 1/8	1,386	0,43
32	32	319	209	20	25	10	83,5	50	G 1/8	2,59	0,73
40	40	332	222	20	25	10	91,5	58	G 1/8	3,145	0,9
50	50	356	236	25	25	10	106,5	70	G 1/8	4,55	1,4
63*	63	374	250	25	25	12	129	85	G 1/8	5,99	2,31
80*	80	419	285	30	25	12	150	100	G 1/8	7,79	3,7
100*	100	469	335	30	25	12	185,5	116	G 1/8	8,64	7,3

***For dimensions not indicated and note regarding sizes 63 - 80 - 100 refer to page 45.**

J18 . . . . , slide unit with medium carriage (2 bearings)
J19 . . . . , slide unit with long carriage (2 bearings)





section: A-A

Size of slide unit	Cyl. Ø	J18.... H1	+ STROKE H2	+ 2 • STROKE H3	H4	H5	H6	Mass (kg) at "0" stroke	J19.... H1	+ STROKE H2	+ 2 • STROKE H3	H4	H5	H6	Mass (kg) at "0" stroke
16	16	55	157	230	25	18	8	0,636	80	182	255	25	18	8	0,7
25	25	65	167	258	25	18	8	0,904	100	202	293	25	18	8	1,044
32	32	78	188	285	25	20	10	1,685	125	235	332	25	20	10	1,968
40	40	85	195	304	25	20	10	2,15	150	260	369	25	20	10	2,645
50	50	95	215	325	25	25	10	3,44	165	285	395	25	25	10	4,205
63*	63	110	234	359	25	25	12	5,33	185	309	434	25	25	12	6,82
80*	80	130	264	397	25	30	12	7,225	220	354	487	25	30	12	8,61
100*	100	150	284	428	25	30	12	8,05	260	394	538	25	30	12	9,435

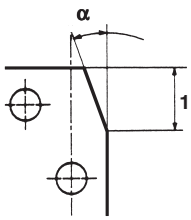
Common dimensions of slide units with ISO 6431-6432 cylinders

Size of slide unit	Cyl. Ø	A1	A2	A3	A4	A5	A6	C	CH	E1	E2	E3	E4	E5	G1	G2*	J	K	L1	L2	N
16	16	19,9	70,6	24	30	-	-	51	13	20	46	3,5	4,4	7,4	M4	Ø 4H8	4	12	32	77	1,78
25	25	32	85	27	27	36	62	69	14	32	62	5	5,4	8,4	M5	Ø 6H8	6	16	47	96	1,78
32	32	38	108	32,5	32,5	46	82	85	22	38	82	5	6,4	10,4	M6	Ø 6H8	6	20	58	120	2,62
40	40	42	118	38	38	54	90	95	22	42	90	5	6,4	10,4	M6	Ø 8H8	7	22	66	130	2,62
50	50	48,1	140	46,5	46,5	69	110	115	27	48	110	6,5	8,4	13,4	M8	Ø 8H8	8	25	84	155	2,62
63	63	56	157,5	56,5	56,5	79,5	120	130	30	56	120	7,5	10,5	17,5	M8	Ø 8H8	8	28	98	176	2,62
80	80	65	178	72	72	95	142	150	32	65	142	8,5	10,5	18	M10	Ø 8H8	9	32	117	200	2,62
100	100	72	194	89	89	113	156	164	32	72	156	8,5	10,5	18	M10	Ø 8H8	9	32	133	214	2,62

* For use with locating pin tolerance m 6.

Size of slide unit	Cyl. Ø	SW1	SW2	V	Y	Z	Mass (kg) at "0" stroke	Mass increase (g) per mm stroke		
							Cylinder	Cylinder	Shaft	Locking unit J14/J17 Series
16	16	10	9	M5	5,28	M10	0,073	0,55	0,98	2,6
25	25	17	12	M5	5,28	M12	0,208	1,15	1,92	4
32	32	17	17	G 1/8	10,78	M16x1,5	0,504	2,35	2,51	6
40	40	19	17	G 1/8	10,78	M18x1,5	0,764	3,24	2,81	7,6
50	50	24	22	G 1/8	10,78	M20x1,5	1,207	4,75	3,71	11
63	63	24	22	G 1/8	10,78	M22x1,5	1,74	5,78	4,7	13,6
80	80	30	30	G 1/8	10,78	M27x2	2,74	8,64	5,52	18
100	100	30	30	G 1/8	10,78	M27x2	3,78	10,4	5,52	20

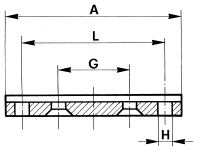
N.B.: on the 4 sides the plates for sizes 63 - 80 - 100 have chamfers as indicated in the following table:

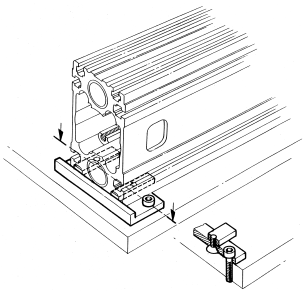


Size	α
63	20°
80	35°
100	40°

Aluminium foot brackets

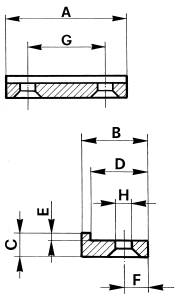
SIZE	A	B	C	D	E	F	G	H	L	Part number
16	52	30	10	26	4	9	20	Ø 4,5	43	JF-13016
25	70	30	10	26	4	9	32	Ø 5,5	57	JF-13025
32	85	35	10	30	5	10	38	Ø 6,5	72	JF-13032
40	92	35	10	30	5	10	42	Ø 6,5	79	JF-13040
50	11	40	15	35	5	12,5	48	Ø 8,5	102	JF-13050
63	13	45	15	40	5	15	56	Ø 10,5	112	JF-13063
80	16	45	15	40	5	15	65	Ø 10,5	135	JF-13080
100	17	45	15	40	5	15	72	Ø 10,5	151	JF-13100

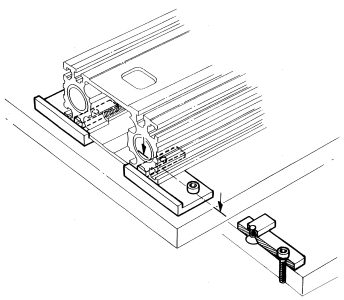




Package consists of 2 pcs. including mounting accessories.

SIZE	A	B	C	D	E	F	G	H	Part number
16	50	30	10	26	3	9	31	Ø 4,5	JF-14016
25	55	30	10	26	3	9	34	Ø 5,5	JF-14025
32	60	35	10	30	4	10	38	Ø 6,5	JF-14032
40	65	35	10	30	4	10	40	Ø 6,5	JF-14040
50	70	40	15	35	4	12,5	45	Ø 8,5	JF-14050
63	85	45	15	40	4	15	56	Ø 10,5	JF-14063
80 - 100	90	45	15	40	4	15	58	Ø 10,5	JF-14100

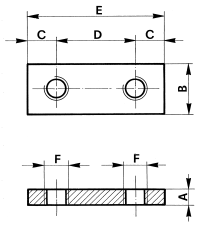




Package consists of 4 pcs. including mounting accessories.

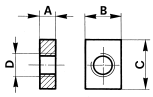
Fixing plates in steel

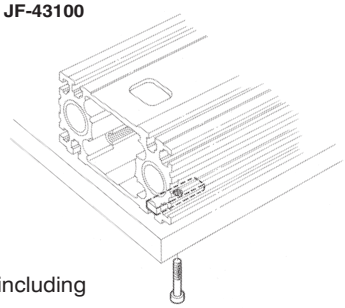
SIZE	A	B	C	D	E	F	Part number
16	3	7	7,5	15	30	M4	JF-42016
25	4	8	10	15	35	M5	JF-42025
32 - 40	4	10	10	20	40	M6	JF-42040
50	6	13	10	30	50	M8	JF-42050
63	6	16	12,5	35	60	M10	JF-42063
80 - 100	8	16	15	40	70	M10	JF-42100



Package consists of 2 pcs. including mounting accessories.

SIZE	A	B	C	D	Part number
16	3	7	16	M4	JF-43016
25	4	8	16	M5	JF-43025
32 - 40	4	10	18	M6	JF-43040
50	6	13	18	M8	JF-43050
63	6	16	22	M10	JF-43063
80 - 100	8	16	25	M10	JF-43100

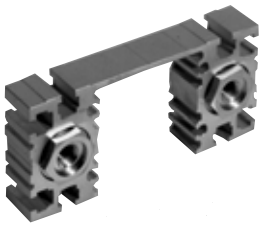


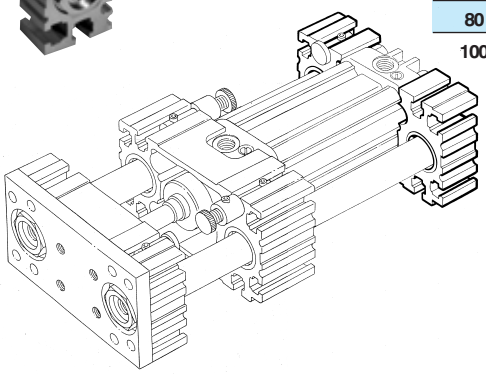


Package consists of 2 pcs. including mounting accessories.

Shaft support for slide units J10/J11/J12 Series

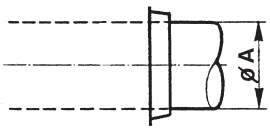
SIZE	Part number
16	JF-601016
25	JF-601025
32	JF-601032
40	JF-601040
50	JF-601050
63	JF-601063
80	JF-601080
100	JF-601100

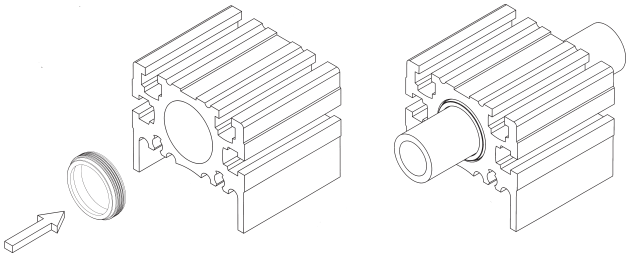




Scraper bearings

SIZE	Ø A	Part number
16	12	JF-19016
25	16	JF-19025
32	20	JF-19032
40	22	JF-19040
50	25	JF-19050
63	28	JF-19063
80 - 100	32	JF-19100





Package comprises 4 pcs.

Slide units for pneumatic cylinder suitable for:

ISO 6431 - 6432 cylinders M series Ø 16 ÷ 25 K/KD series Ø 32 ÷ 100	Slide units for rodless cylinders S1 series Ø 25 ÷ 50	Short-stroke cylinders W series Ø 25 ÷ 100	Compact cylinders STRONG RS series Ø 32 ÷ 63	2-stage telescopic cylinders RT2 series Ø 32 ÷ 63

CONSTRUCTION CHARACTERISTICS

Enlarged chromium-plated hollow guides provide robustness and reliability

An economical solution thanks to the components used which ensure long life (7000 – 10000 km)

Special metallic self-lubricating bearings, minimizing noise and abrasion

Customized slide units available upon request

High resistance to peak loads.
Scraper bearings standard supplied for J10-___/J31-___ series

All models available with safety distance 25 mm for accident prevention according to EC rules EN 349

TECHNICAL CHARACTERISTICS

Working pressure:

2 ÷ 10 bar	3 ÷ 10 bar	2 ÷ 10 bar	2 ÷ 10 bar	2 ÷ 10 bar

Ambient temperature:

- 20°C ÷ 80°C

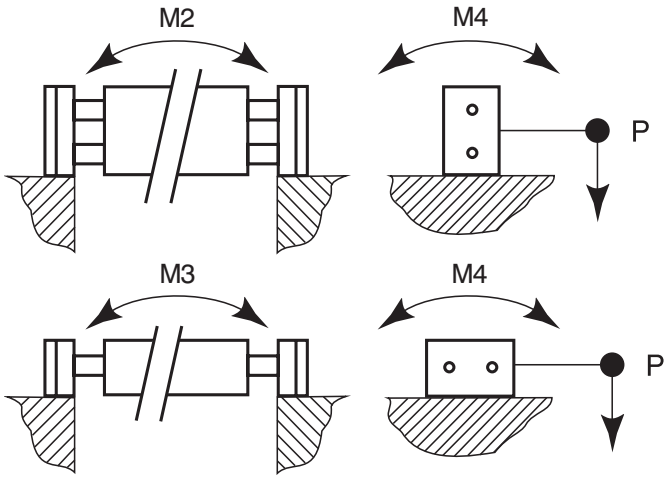
SIZES

16 ÷ 100	40 ÷ 80	25 ÷ 100	32 ÷ 63	32 ÷ 63

STANDARD STROKES (mm)

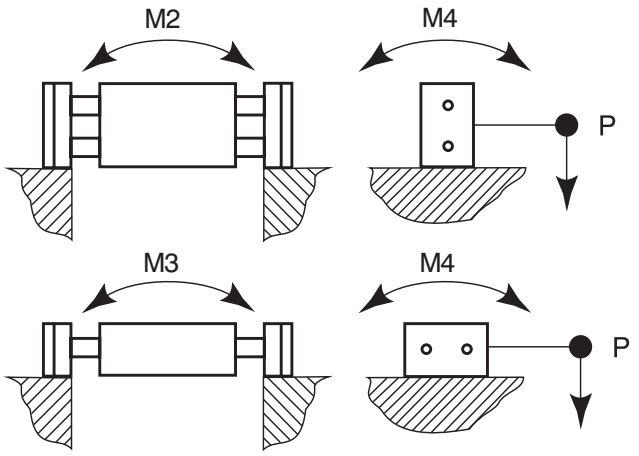
25 ÷ 1000	up to 800 mm max	5 ÷ 75	15 ÷ 800	120 ÷ 1200

For min. and max. strokes refer to respective codification key.



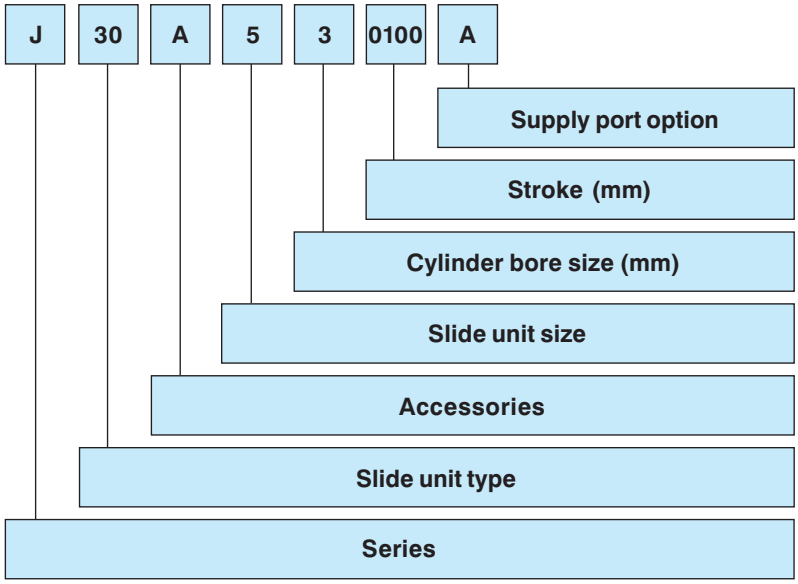
Slide units for ISO 6431 - 6432 cylinder

Size slide unit	J17=J17B M2 (Nm)							J17=J17B M3 (Nm)							M4 (Nm)
	Stroke (m/m)														
	100	200	300	400	500	750	1000	100	200	300	400	500	750	1000	
16	30,4	48,4	58	84,8	103	148,8	194,8	29	47,4	70	84.2	102,6	148,6	194,6	9,4
25	56,8	114	114	143,2	172,4	246	320	53	82,6	112	141,8	171,4	245,4	320	20,4
32	89,4	133	178	222	270	386	502	80	126,8	173,6	220	267,2	384	500	39,8
40	117	169,2	223,6	279	334,4	474,8	616	104	160,6	217,4	274	330	472	614	53,8
50	161,4	230	301,4	373,2	446	630	816	138	212,8	287,2	361,6	436	622	808	85,6
63	228	312	402	493	586	818	1102	192,8	288	383	478	573	810	1048	123,4
80	328,6	434	550,4	668	788,8	1091,2	1398	270	394	518	642	766	1076	1386	186
100	349,6	456	570	687	806	1108,6	1414	284	408	532	656	780	1090	1400	203,2

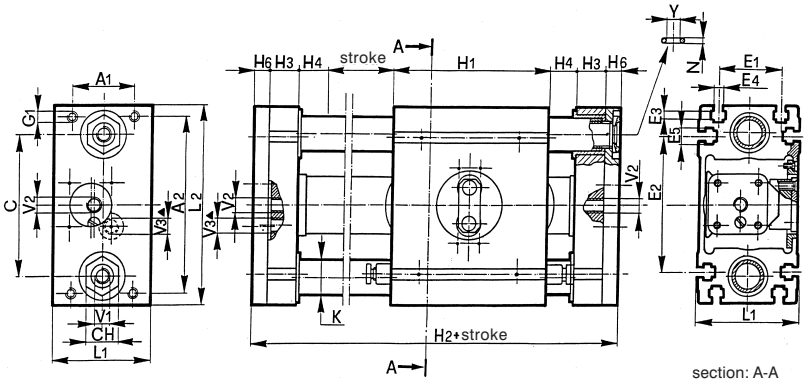


Slide units for rodless cylinder

Size slide unit	Cylinder bore (mm)	Standard carriage J30		Long carriage J31		M4 (Nm)
		M2 (Nm)	M3 (Nm)	M2 (Nm)	M3 (Nm)	
40	25	68,4	42,4	110,2	96,2	53,8
50	32	118,4	81,8	198	178,6	85,6
63	40	192,2	147,2	315	289,8	123,4
80	50	298,2	233,2	516	481,2	186



The slide units are supplied with safety distance (+ 25 mm) for accident prevention according to the European EN 349 specifications.



SERIES

J = Slide unit Series

SLIDE UNIT TYPE

30 = Slide unit with fully protected cylinder (2 bearings - standard carriage)

31 = Slide unit with fully protected cylinder (2 bearings - long carriage)

ACCESSORIES

A = scraper bearings

SLIDE UNIT SIZE

4 = 40 only for Ø 25 cylinder
5 = 50 only for Ø 32 cylinder
6 = 63 only for Ø 40 cylinder
7 = 80 only for Ø 50 cylinder

CYLINDER BORE SIZE

2 = 25
3 = 32
4 = 40
5 = 50

SLIDE UNIT STROKE

Length in mm up to 800 mm max.

SUPPLY PORT OPTIONS

A = Supply ports on both end-caps
B = Supply ports on right end-cap only (DX)

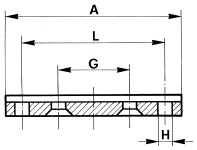
N.B.: on the 4 sides the plates for sizes 63 - 80 - 100 have chamfers as indicated in the following table:

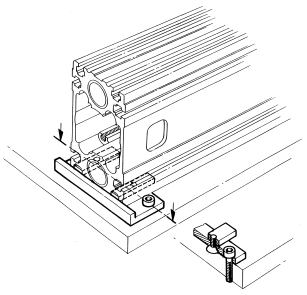
Bore size Slide unit	Cylinder	A1	A2	C	CH	E1	E2	E3	E4	E5	G1	K	Carriage type H1 Standard	Carriage type H1 Long	Carriage type H2 + stroke Standard	Carriage type H2 + stroke Long
40	25	42	118	95	22	42	90	5	6,4	10,4	M6	22	110	205	220+stroke	315+stroke
50	32	48,1	140	115	27	48	110	6,5	8,4	13,4	M8	25	150	280	270+stroke	400+stroke
63	40	56	157,5	130	30	56	120	7,5	10,5	17,5	M8	28	200	350	324+stroke	474+stroke
80	50	65	178	150	32	65	142	8,5	10,5	18	M10	32	240	440	374+stroke	574+stroke

H3	H4	H6	L1	L2	N	Y	V1	V2	V3	Mass (kg) "0" stroke Slide unit Standard carriage	Mass (kg) "0" stroke Slide unit Long carriage	Mass (kg) "0" stroke Cylinder Standard carriage	Mass (kg) "0" stroke Cylinder Long carriage	Mass increase (g) per mm stroke Shafts	Mass increase (g) per mm stroke Standard carriage	Mass increase (g) per mm stroke Long carriage
20	25	10	66	130	2,62	10,78	M5	G 1/8	G 1/8	2,89	3,61	0,707	1,02	2,81	2,14	2,14
25	25	10	84	155	2,62	10,78	G 1/8	G 1/4	G 1/4	4,813	6,243	1,298	1,914	3,71	3,28	3,28
25	25	12	98	176	2,62	10,78	G 1/8	G 3/8	G 3/8	6,54	8,02	2,489	3,685	4,7	5,54	5,54
30	25	12	117	200	2,62	10,78	G 1/8	G 3/8	G 3/8	11,04	14,32	2,489	3,685	5,52	5,54	5,54

Aluminium foot brackets

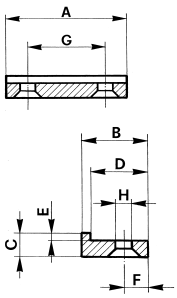
SIZE	A	B	C	D	E	F	G	H	L	Part number
16	52	30	10	26	4	9	20	Ø 4,5	43	JF-13016
25	70	30	10	26	4	9	32	Ø 5,5	57	JF-13025
32	85	35	10	30	5	10	38	Ø 6,5	72	JF-13032
40	92	35	10	30	5	10	42	Ø 6,5	79	JF-13040
50	11	40	15	35	5	12,5	48	Ø 8,5	102	JF-13050
63	13	45	15	40	5	15	56	Ø 10,5	112	JF-13063
80	16	45	15	40	5	15	65	Ø 10,5	135	JF-13080
100	17	45	15	40	5	15	72	Ø 10,5	151	JF-13100

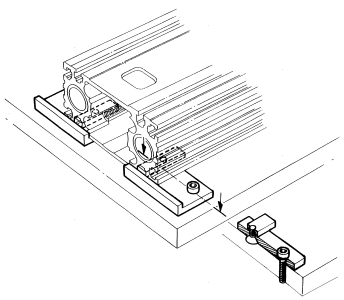




Package consists of 2 pcs. including mounting accessories.

SIZE	A	B	C	D	E	F	G	H	Part number
16	50	30	10	26	3	9	31	Ø 4,5	JF-14016
25	55	30	10	26	3	9	34	Ø 5,5	JF-14025
32	60	35	10	30	4	10	38	Ø 6,5	JF-14032
40	65	35	10	30	4	10	40	Ø 6,5	JF-14040
50	70	40	15	35	4	12,5	45	Ø 8,5	JF-14050
63	85	45	15	40	4	15	56	Ø 10,5	JF-14063
80 - 100	90	45	15	40	4	15	58	Ø 10,5	JF-14100

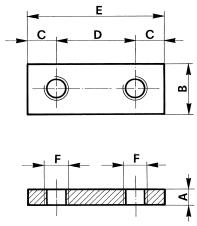




Package consists of 4 pcs. including mounting accessories.

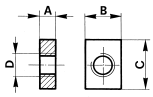
Fixing plates in steel

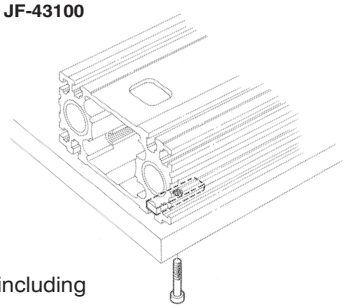
SIZE	A	B	C	D	E	F	Part number
16	3	7	7,5	15	30	M4	JF-42016
25	4	8	10	15	35	M5	JF-42025
32 - 40	4	10	10	20	40	M6	JF-42040
50	6	13	10	30	50	M8	JF-42050
63	6	16	12,5	35	60	M10	JF-42063
80 - 100	8	16	15	40	70	M10	JF-42100



Package consists of 2 pcs. including mounting accessories.

SIZE	A	B	C	D	Part number
16	3	7	16	M4	JF-43016
25	4	8	16	M5	JF-43025
32 - 40	4	10	18	M6	JF-43040
50	6	13	18	M8	JF-43050
63	6	16	22	M10	JF-43063
80 - 100	8	16	25	M10	JF-43100

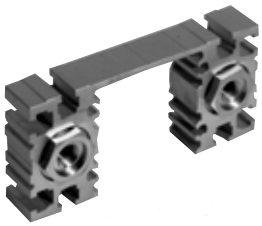


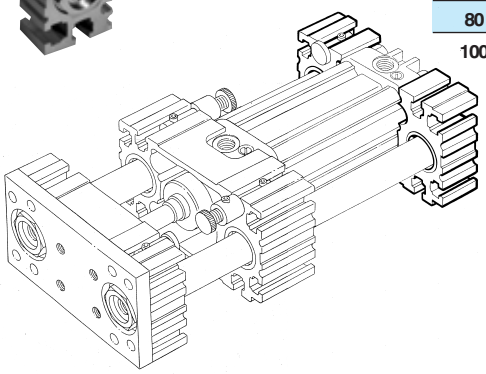


Package consists of 2 pcs. including mounting accessories.

Shaft support for slide units J10/J11/J12 Series

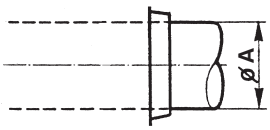
SIZE	Part number
16	JF-601016
25	JF-601025
32	JF-601032
40	JF-601040
50	JF-601050
63	JF-601063
80	JF-601080
100	JF-601100

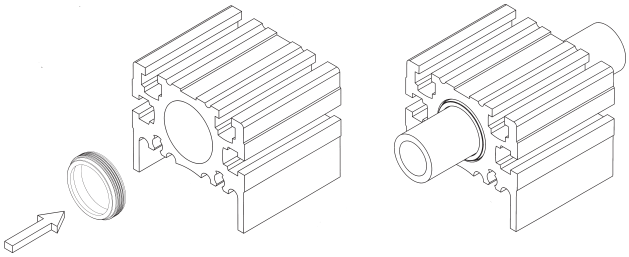




Scraper bearings

SIZE	Ø A	Part number
16	12	JF-19016
25	16	JF-19025
32	20	JF-19032
40	22	JF-19040
50	25	JF-19050
63	28	JF-19063
80 - 100	32	JF-19100





Package comprises 4 pcs.

Slide units for pneumatic cylinder suitable for:

ISO 6431 - 6432 cylinders M series Ø 16 ÷ 25 K/KD series Ø 32 ÷ 100	Slide units for rodless cylinders S1 series Ø 25 ÷ 50	Short-stroke cylinders W series Ø 25 ÷ 100	Compact cylinders STRONG RS series Ø 32 ÷ 63	2-stage telescopic cylinders RT2 series Ø 32 ÷ 63

CONSTRUCTION CHARACTERISTICS

Enlarged chromium-plated hollow guides provide robustness and reliability

An economical solution thanks to the components used which ensure long life (7000 – 10000 km)

Special metallic self-lubricating bearings, minimizing noise and abrasion

Customized slide units available upon request

High resistance to peak loads.
Scraper bearings standard supplied for J10-___/J31-___ series

All models available with safety distance 25 mm for accident prevention according to EC rules EN 349

TECHNICAL CHARACTERISTICS

Working pressure:

2 ÷ 10 bar	3 ÷ 10 bar	2 ÷ 10 bar	2 ÷ 10 bar	2 ÷ 10 bar

Ambient temperature:

- 20°C ÷ 80°C

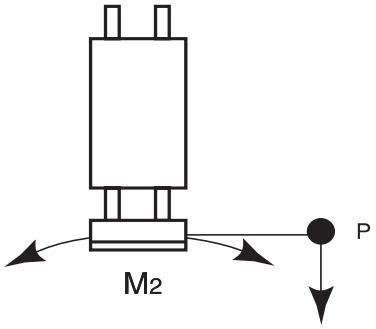
SIZES

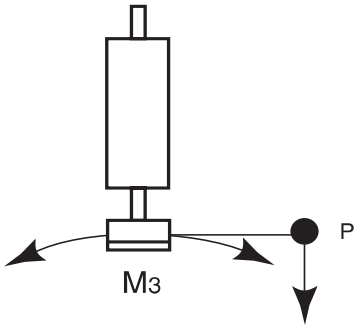
16 ÷ 100	40 ÷ 80	25 ÷ 100	32 ÷ 63	32 ÷ 63

STANDARD STROKES (mm)

25 ÷ 1000	up to 800 mm max	5 ÷ 75	15 ÷ 800	120 ÷ 1200

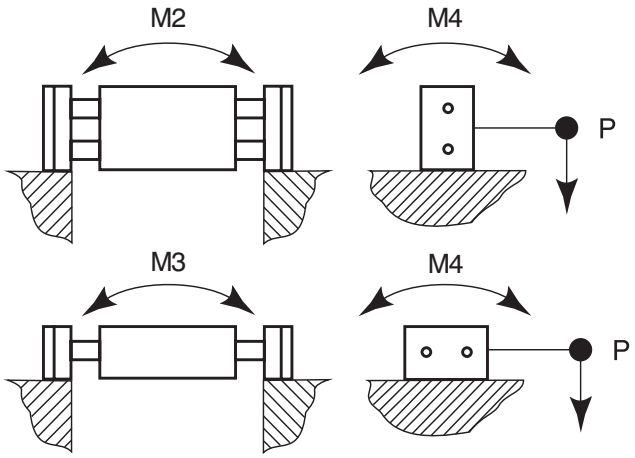
For min. and max. strokes refer to respective codification key.





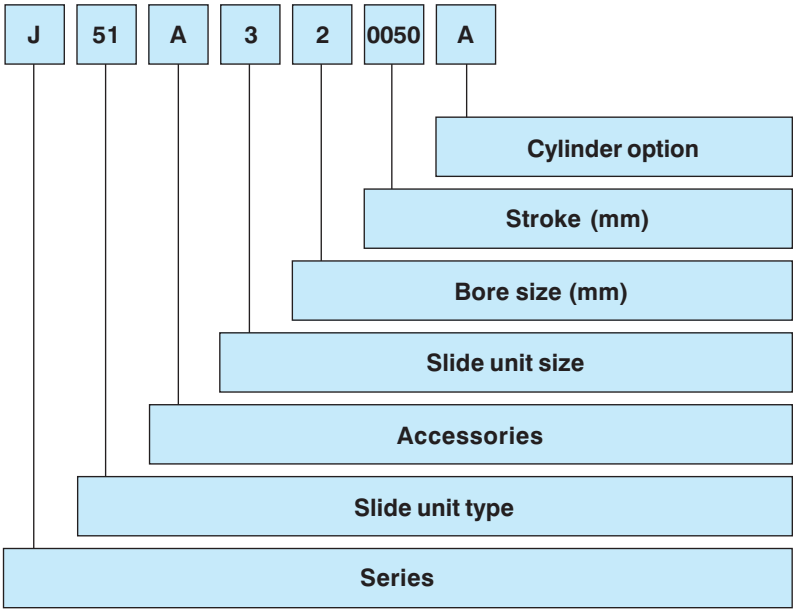
Slide units for...

Size slide unit	ISO 6431 - 6432 cylinders					Short-stroke cylinders			
	J10 M2=M3 (Nm)	J11 M2=M3 (Nm)	J12=J12B M2=M3 (Nm)	J14=J14B M2=M3 (Nm)	J16=J16B M2=M3 (Nm)	J51 M2=M3 (Nm)	J52 M2=M3 (Nm)	J53 M2=M3 (Nm)	J54 M2=M3 (Nm)
16	3,2	6,4	11	7,4	11	-	-	-	-
25	6	13,2	23,6	17,8	23,6	6	8,2	6	8,2
32	12,2	27,2	49	37,4	49	12,2	15	12,2	15
40	17,8	36,8	73,6	51	73,6	17,8	19,8	17,8	19,8
50	24,8	56	107,8	78	107,8	24,8	29,8	24,8	29,8
63	35,2	85,6	156,8	114	156,8	35,2	42,8	35,2	42,8
80	52	136	248	173,2	248	52	64,4	52	64,4
100	52	160	298	173,2	298	52	64,4	52	64,4



Slide units for...

Size slide unit	ISO 6431- 6432 cylinders			Short-stroke cylinders	
	J16=J16B M2/M3 (Nm)	J18 M2/M3 (Nm)	J19 M2/M3 (Nm)	J56 M2/M3 (Nm)	M4 (Nm)
16	12,8/8,8	10,4/4,4	12,8/8,8	-	9,4
25	28/19	22,2/8,6	28/19	22/7,6	20,4
32	55,6/38,8	45,2/17	55,6/38,8	42,6/15	39,8
40	80/59,4	58,5/22,6	80/59,4	57,4/19,8	53,8
50	121/75,2	92/33,4	121/75,2	90,4/29,8	85,6
63	173,6/122,6	135,2/52	173,6/122,6	130/42,4	123,4
80	270,2/196	204,2/84	270,2/196	196,6/64,4	186
100	318,6/245,6	230,8/109,2	318,6/245,6	213,2/64,4	203,2



The slide units are supplied with safety distance (+ 25 mm) for accident prevention according to the European EN 349 specifications.

SERIES

J = Slide unit series

SLIDE UNIT TYPE

51 = Slide unit with protruding shafts (1 bearing).
52 = Slide unit with protruding shafts (2 bearings).
53 = Slide unit with fully protected cylinder (1 bearing).
54 = Slide unit with fully protected cylinder (2 bearings).
56 = Slide unit with fully protected cylinder (2 bearings + 2 plates).

ACCESSORIES

A = Scraper bearings

SLIDE UNIT SIZE

2 = 25 only for Ø 20 cylinder
3 = 32 only for Ø 25 cylinder
4 = 40 only for Ø 32 cylinder
5 = 50 only for Ø 40 cylinder
6 = 63 only for Ø 50 cylinder
7 = 80 only for Ø 63 cylinder
8 = 100 only for Ø 80 cylinder

CYLINDER BORE SIZE

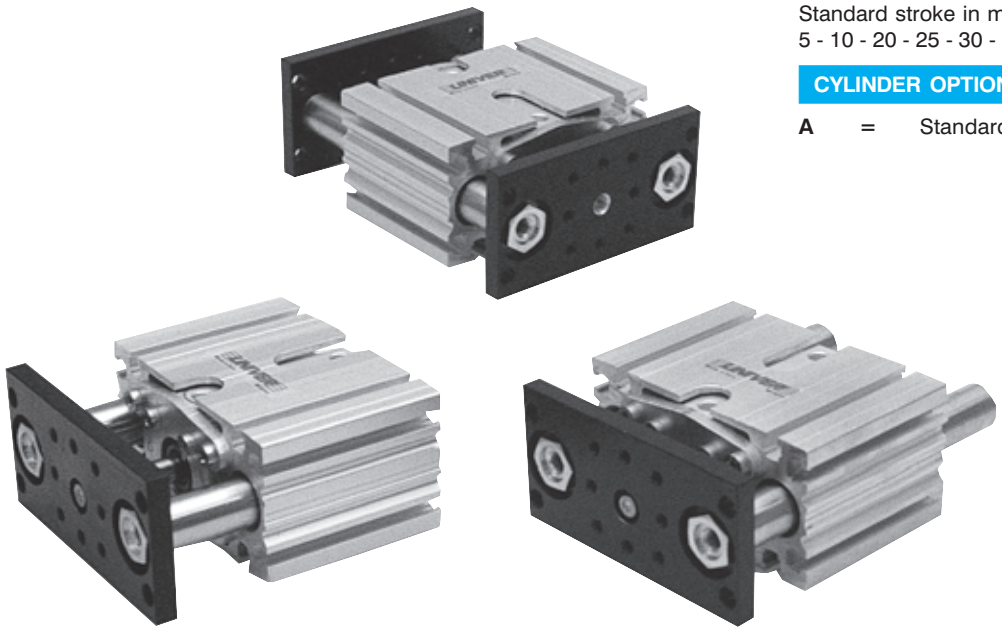
1 = 20
2 = 25
3 = 32
4 = 40
5 = 50
6 = 63
7 = 80

SLIDE UNIT STROKE

Standard stroke in mm
5 - 10 - 20 - 25 - 30 - 50 - 75

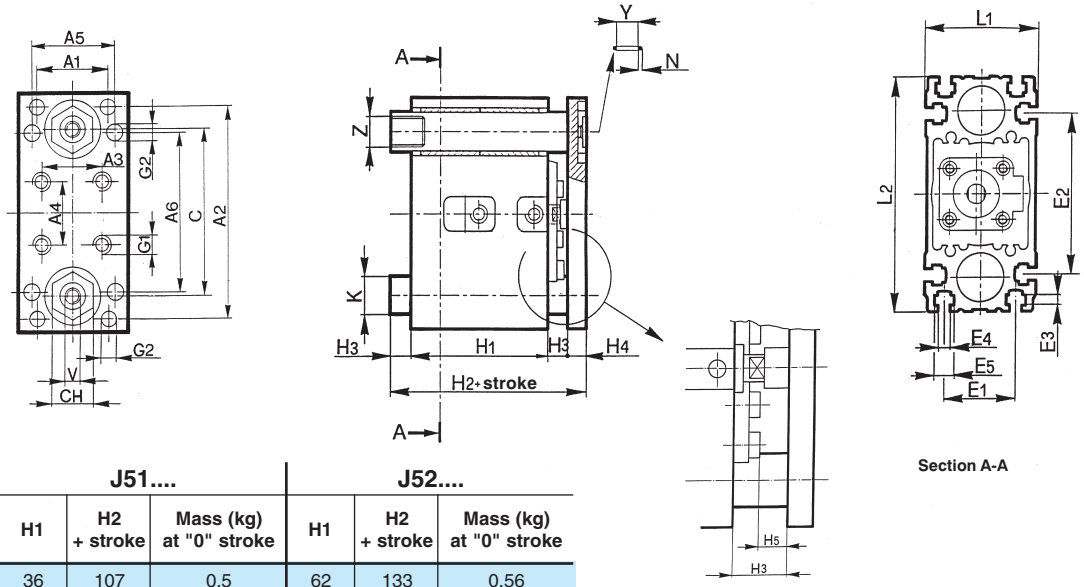
CYLINDER OPTION

A = Standard cylinder



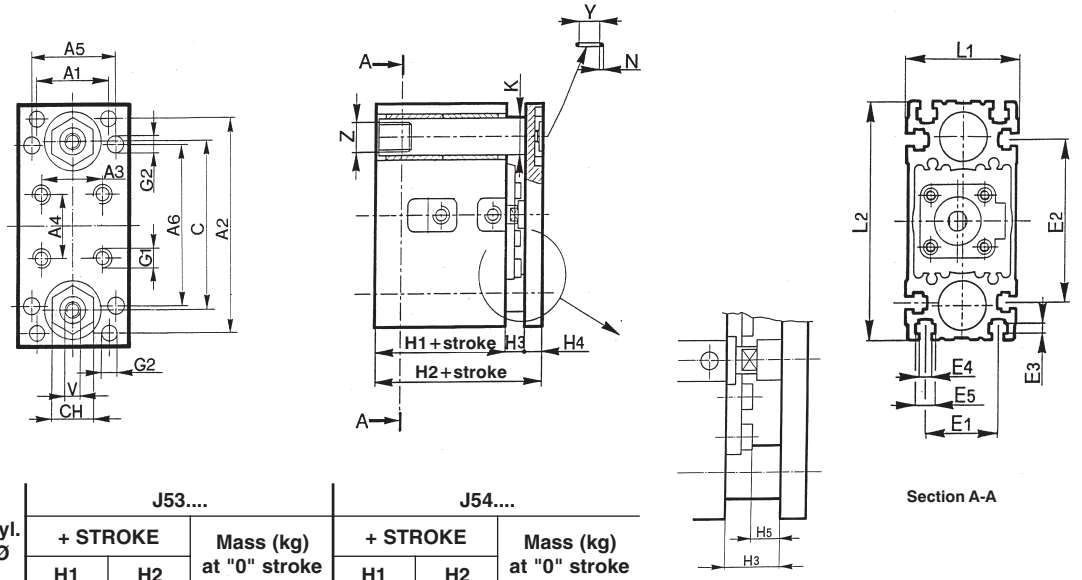
NOTE: slide units are supplied complete with a non-magnetic cylinder.
Magnetic version require a DKJ Series reed switches mounting rail which is to be ordered separately (see section accessories page 6)

J51 . . . . , 1 bearing with protruding shafts
J52 . . . . , 2 bearings with protruding shafts



Size of slide unit	Cyl. Ø	J51....			J52....		
		H1	H2 + stroke	Mass (kg) at "0" stroke	H1	H2 + stroke	Mass (kg) at "0" stroke
25	20	36	107	0,5	62	133	0,56
32	25	42	120	0,875	74	152	0,955
40	32	45	125	1,225	80	160	1,34
50	40	50	132	2,17	90	172	2,36
63*	50	55	139	3,2	100	184	3,46
80*	63	62	152	5,04	114	204	6,125
100*	80	62	152	5,92	114	204	7,040

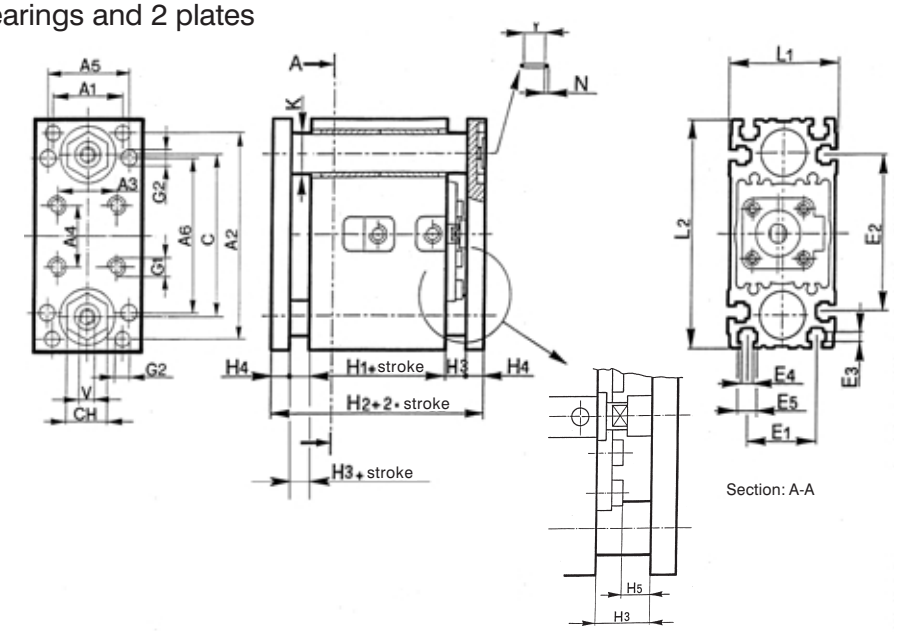
J53 . . . . , 1 bearing with fully protected cylinder
J54 . . . . , 2 bearings with fully protected cylinder



Size of slide unit	Cyl. Ø	J53....			J54....		
		+ STROKE		Mass (kg) at "0" stroke	+ STROKE		Mass (kg) at "0" stroke
		H1	H2		H1	H2	
25	20	36	75,5	0,475	62	101,5	0,54
32	25	42	86	0,845	74	118	0,925
40	32	45	90	1,18	80	125	1,3
50	40	50	96	2,1	90	136	2,3
63*	50	55	103	3,13	100	148	3,39
80*	63	62	113	4,99	114	165	6,02
100*	80	62	113	5,82	114	165	6,93

***For dimensions not indicated and note regarding sizes 63 - 80 - 100 refer to page 49.**

J56 . . . . , 2 bearings and 2 plates



Size of slide unit	Cyl. Ø	J56....		
		+ STROKE	+ 2 • STROKE	Mass (kg) at "0" stroke
		H1	H2	
25	20	62	141	0,63
32	25	74	162	1,04
40	32	80	170	1,48
50	40	90	182	2,54
63*	50	100	196	3,68
80*	63	114	216	6,34
100*	80	114	216	7,19

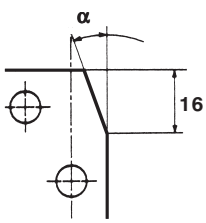
Common dimensions of slide units with short stroke cylinder

Size	Cyl. Ø	A1	A2	A3	A4	A5	A6	C	CH	E1	E2	E3	E4	E5	G1	G2*	H3	H4	H5	K	L1	L2
25	20	32	85	27	27	36	62	69	14	32	62	5	5,4	8,4	M5	Ø6H8	31,5	8	25	16	47	96
32	25	38	108	32,5	32,5	46	82	85	22	38	82	5	6,4	10,4	M6	Ø6H8	34	10	25	20	58	120
40	32	42	118	38	38	54	90	95	22	42	90	5	6,4	10,4	M6	Ø8H8	35	10	25	22	66	130
50	40	48,1	140	46,5	46,5	69	110	115	27	48	110	6,5	8,4	13,4	M8	Ø8H8	36	10	25	25	84	155
63	50	56	157,5	56,5	56,5	79,5	120	130	30	56	120	7,5	10,5	17,5	M8	Ø8H8	36	12	25	28	98	176
80	63	65	178	72	72	95	142	150	32	65	142	8,5	10,5	18	M10	Ø8H8	39	12	25	32	117	200
100	80	72	194	89	89	113	156	164	32	72	156	8,5	10,5	18	M10	Ø8H8	39	12	25	32	133	214

* For use with locking pin tolerance m 6.

Size	Cyl. Ø	N	V	Y	Z	Mass (kg) at "0" stroke	Mass increase (g) per mm stroke		
						Cylinder	Shafts	Cylinder	Slide unit
25	20	1,78	M5	5,28	M12	0,155	1,92	3,25	4
32	25	2,62	G 1/8	10,78	M16x1,5	0,292	2,51	4,45	6
40	32	2,62	G 1/8	10,78	M18x1,5	0,43	2,81	5,3	7
50	40	2,62	G 1/8	10,78	M20x1,5	0,446	3,71	6,4	11
63	50	2,62	G 1/8	10,78	M22x1,5	0,772	4,7	7,9	13,6
80	63	2,62	G 1/8	10,78	M27x2	1,275	5,52	14,5	18
100	80	2,62	G 1/8	10,78	M27x2	1,92	5,52	19,7	20

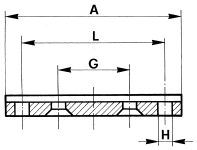
N.B.: on the 4 sides the plates for sizes 63 - 80 - 100 have chamfers as indicated in the following table:

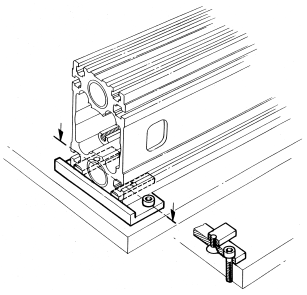


Size	α
63	20°
80	35°
100	40°

Aluminium foot brackets

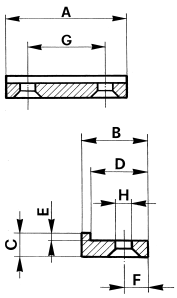
SIZE	A	B	C	D	E	F	G	H	L	Part number
16	52	30	10	26	4	9	20	Ø 4,5	43	JF-13016
25	70	30	10	26	4	9	32	Ø 5,5	57	JF-13025
32	85	35	10	30	5	10	38	Ø 6,5	72	JF-13032
40	92	35	10	30	5	10	42	Ø 6,5	79	JF-13040
50	11	40	15	35	5	12,5	48	Ø 8,5	102	JF-13050
63	13	45	15	40	5	15	56	Ø 10,5	112	JF-13063
80	16	45	15	40	5	15	65	Ø 10,5	135	JF-13080
100	17	45	15	40	5	15	72	Ø 10,5	151	JF-13100

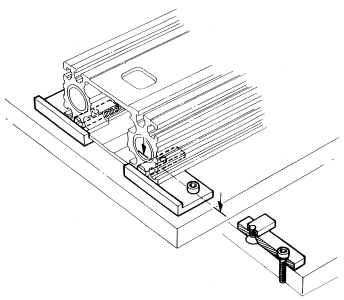




Package consists of 2 pcs. including mounting accessories.

SIZE	A	B	C	D	E	F	G	H	Part number
16	50	30	10	26	3	9	31	Ø 4,5	JF-14016
25	55	30	10	26	3	9	34	Ø 5,5	JF-14025
32	60	35	10	30	4	10	38	Ø 6,5	JF-14032
40	65	35	10	30	4	10	40	Ø 6,5	JF-14040
50	70	40	15	35	4	12,5	45	Ø 8,5	JF-14050
63	85	45	15	40	4	15	56	Ø 10,5	JF-14063
80 - 100	90	45	15	40	4	15	58	Ø 10,5	JF-14100

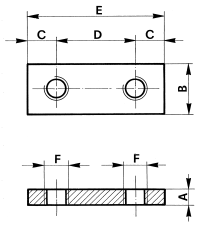




Package consists of 4 pcs. including mounting accessories.

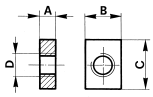
Fixing plates in steel

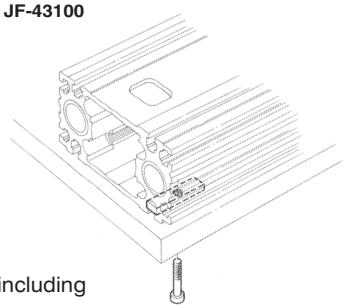
SIZE	A	B	C	D	E	F	Part number
16	3	7	7,5	15	30	M4	JF-42016
25	4	8	10	15	35	M5	JF-42025
32 - 40	4	10	10	20	40	M6	JF-42040
50	6	13	10	30	50	M8	JF-42050
63	6	16	12,5	35	60	M10	JF-42063
80 - 100	8	16	15	40	70	M10	JF-42100



Package consists of 2 pcs. including mounting accessories.

SIZE	A	B	C	D	Part number
16	3	7	16	M4	JF-43016
25	4	8	16	M5	JF-43025
32 - 40	4	10	18	M6	JF-43040
50	6	13	18	M8	JF-43050
63	6	16	22	M10	JF-43063
80 - 100	8	16	25	M10	JF-43100

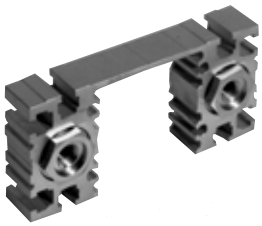


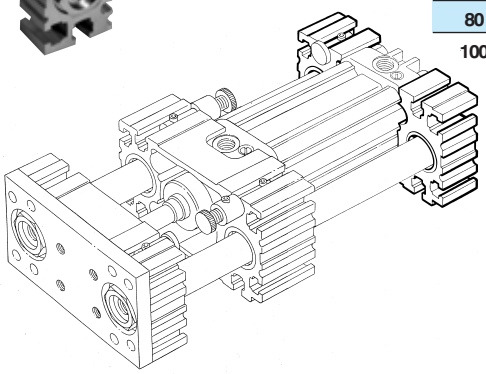


Package consists of 2 pcs. including mounting accessories.

Shaft support for slide units J10/J11/J12 Series

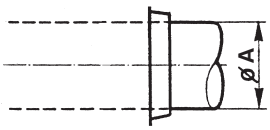
SIZE	Part number
16	JF-601016
25	JF-601025
32	JF-601032
40	JF-601040
50	JF-601050
63	JF-601063
80	JF-601080
100	JF-601100

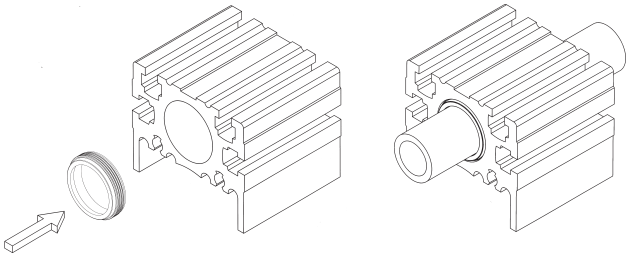




Scraper bearings

SIZE	Ø A	Part number
16	12	JF-19016
25	16	JF-19025
32	20	JF-19032
40	22	JF-19040
50	25	JF-19050
63	28	JF-19063
80 - 100	32	JF-19100





Package comprises 4 pcs.

Slide units for pneumatic cylinder suitable for:

ISO 6431 - 6432 cylinders M series Ø 16 ÷ 25 K/KD series Ø 32 ÷ 100	Slide units for rodless cylinders S1 series Ø 25 ÷ 50	Short-stroke cylinders W series Ø 25 ÷ 100	Compact cylinders STRONG RS series Ø 32 ÷ 63	2-stage telescopic cylinders RT2 series Ø 32 ÷ 63

CONSTRUCTION CHARACTERISTICS

Enlarged chromium-plated hollow guides provide robustness and reliability

An economical solution thanks to the components used which ensure long life (7000 – 10000 km)

Special metallic self-lubricating bearings, minimizing noise and abrasion

Customized slide units available upon request

High resistance to peak loads.
Scraper bearings standard supplied for J10-___/J31-___ series

All models available with safety distance 25 mm for accident prevention according to EC rules EN 349

TECHNICAL CHARACTERISTICS

Working pressure:

2 ÷ 10 bar	3 ÷ 10 bar	2 ÷ 10 bar	2 ÷ 10 bar	2 ÷ 10 bar

Ambient temperature:

- 20°C ÷ 80°C

SIZES

16 ÷ 100	40 ÷ 80	25 ÷ 100	32 ÷ 63	32 ÷ 63

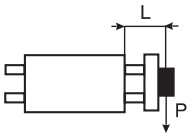
STANDARD STROKES (mm)

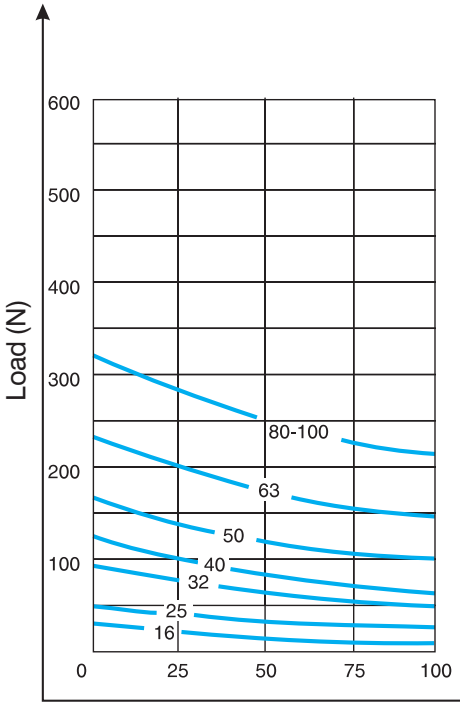
25 ÷ 1000	up to 800 mm max	5 ÷ 75	15 ÷ 800	120 ÷ 1200

For min. and max. strokes refer to respective codification key.

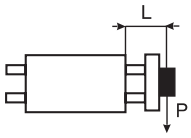
In case there are protruding loads generating torque, the load and maximum torque values have to be reduced to 75%.

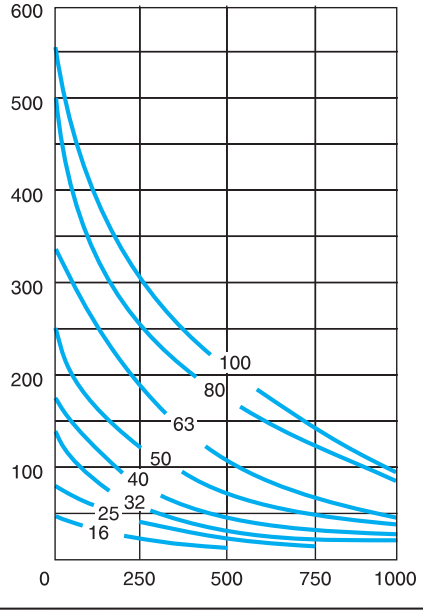
Mod. J10



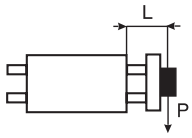


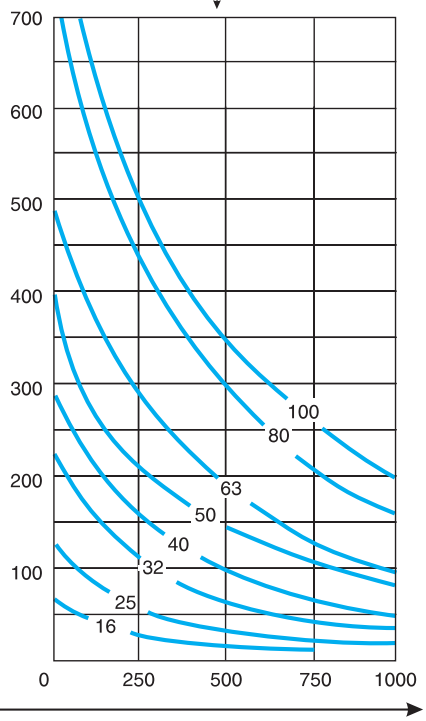
Mod. J11



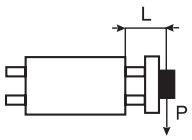


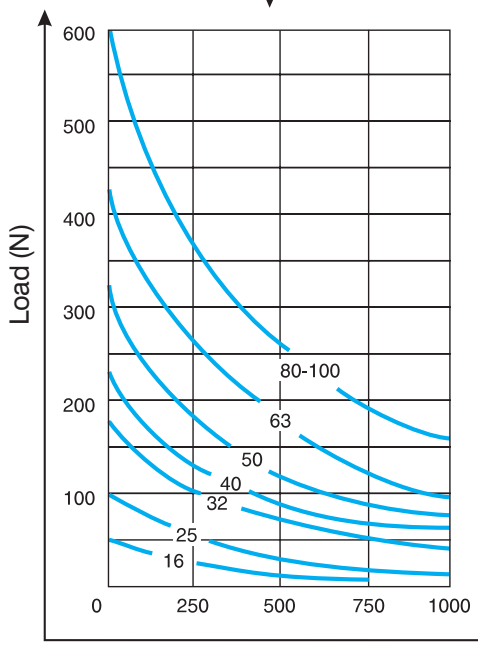
Mod. J12/J16/J17/J67



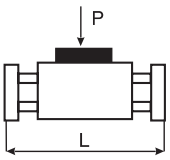


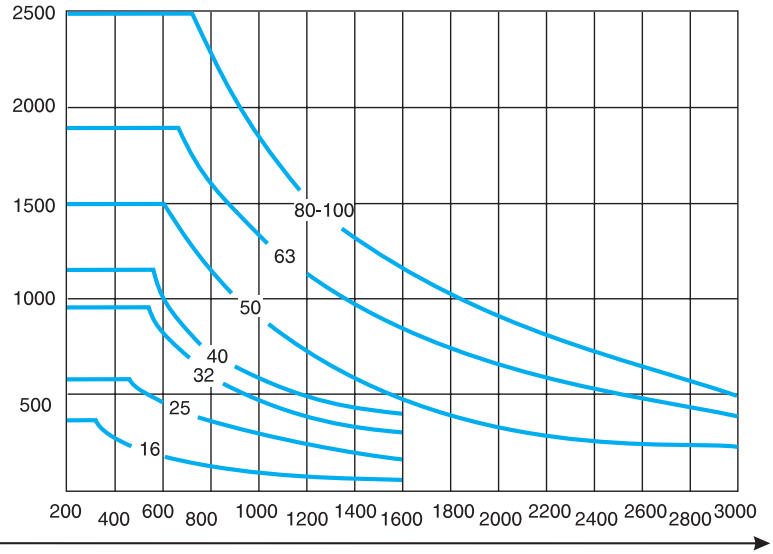
Mod. J14/J64



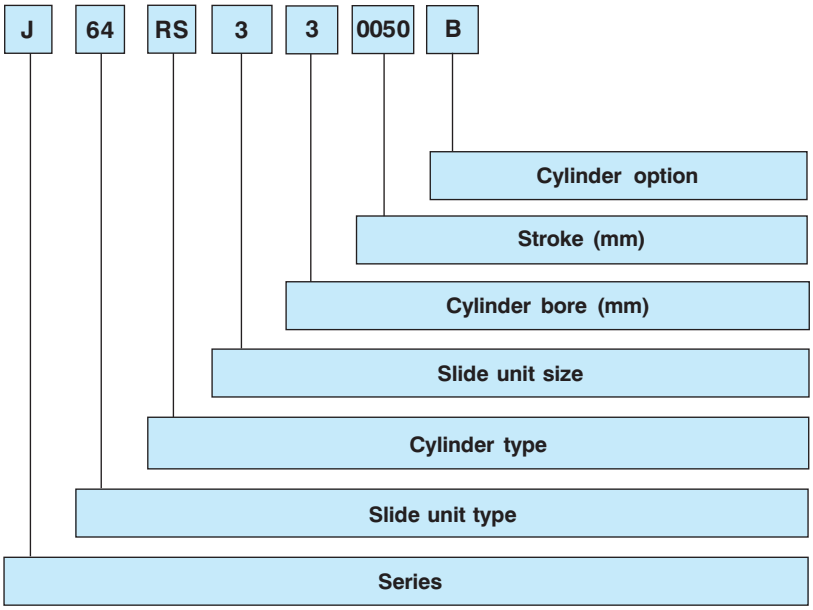


Mod. J16/J18/J19/J67





P = centre of application of the load



The slide units are supplied with safety distance (+ 25 mm) for accident prevention according to the European EN 349 specifications.

SERIES

J46RS = Slide units for STRONG Compact Cylinders Ø 32 ÷ 63 mm

SLIDE UNIT TYPE

64 = Fully protected.
65 = Fully protected with through opening.
66 = Fully protected with through opening, two plates
67 = Fully protected, two plates
All types with scraper bearings.

CYLINDER TYPE

RS = Cylinder Strong with long piston (RS22J--- upon request) the barrel of the supplied cylinder is turned by 180° compared with supply ports.*

SLIDE UNIT SIZE

3 = 32
4 = 40
5 = 50
6 = 63

CYLINDER BORE SIZE

3 = 32
4 = 40
5 = 50
6 = 63

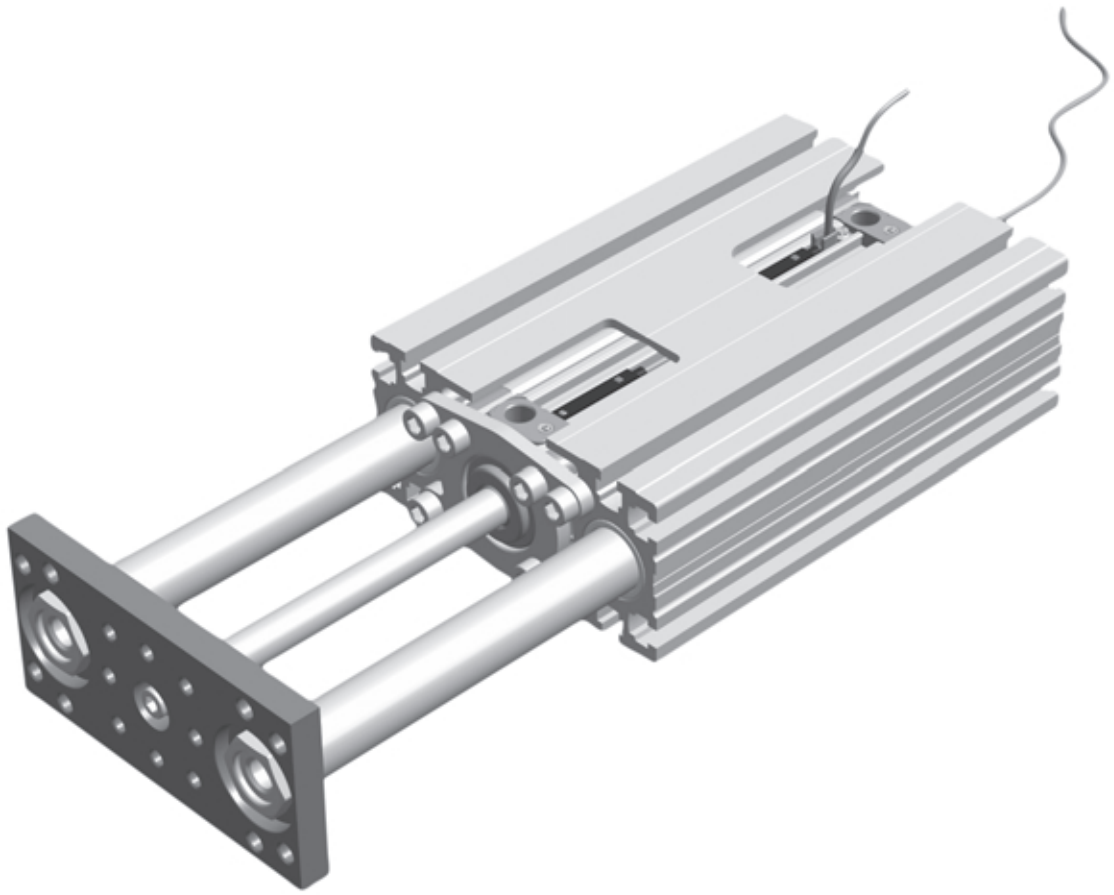
STANDARD STROKES SLIDE UNITS

0015 ÷ 0800 mm

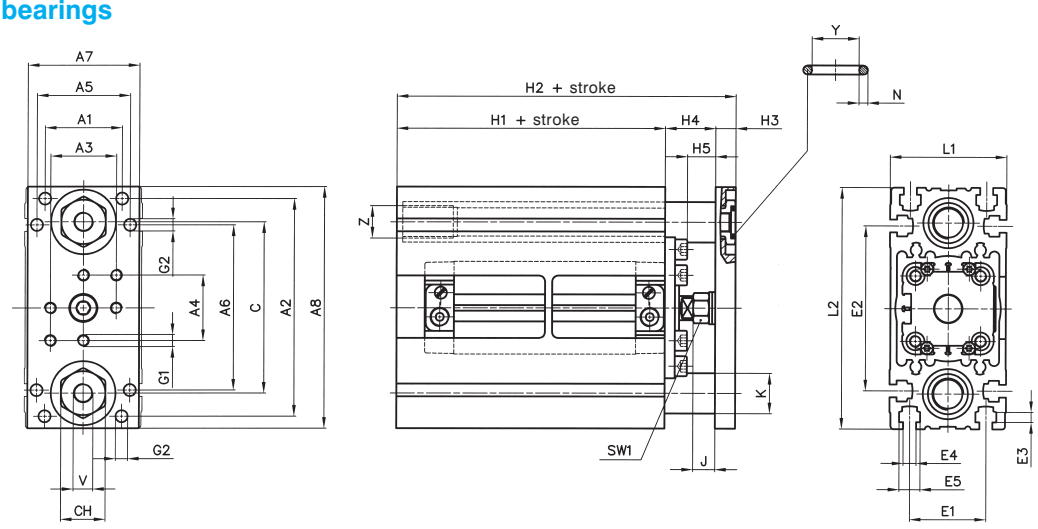
CYLINDER OPTIONS

A = Cylinder with long piston.
B = Cylinder with long piston and locking unit.

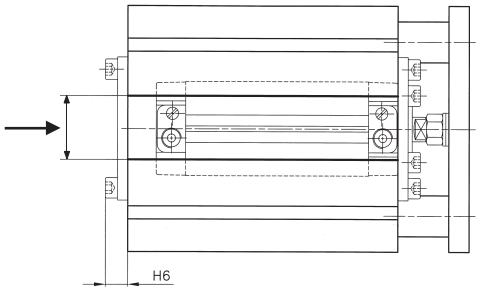
*** to fit magnetic sensor**



J64___, 2 bearings



J65__ upon request for strokes exceeding 50 mm slide units with through opening for placing the magnetic sensor in intermediate positions



This version implies the increase of "H2" by the value "H6" indicated in the table.

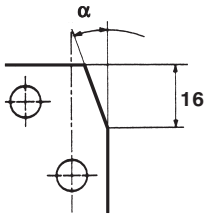
Cyl. Ø	H6
32	11
40	12
50	14
63	14

Size of slide unit	Cyl. Ø	A1	A2	A3	A4	A5	A6	A7	A8	C	CH	E1	E2	E3	E4	E5	G1
32	32	38	108	32,5	32,5	46	82	55	120	85	22	38	82	5	6,4	10,4	M6
40	40	42	118	38	38	54	90	65	130	95	22	42	90	5	6,4	10,4	M6
50	50	48,1	140	46,5	46,5	69	110	80	155	115	27	48	110	6,5	8,4	13,4	M8
63	63	56	157,5	56,5	56,5	79,5	120	95	175	130	30	56	120	7,5	10,5	17,5	M8

Size of slide unit	Cyl. Ø	G2(*)	H1 + stroke (**)	H2+ stroke (**)	H3	H4	H5	J	K	L1	L2	N	SW1	V	Y	Z
32	32	Ø6 H8	78 + stroke (**)	113 + stroke (**)	10	25	14	11	20	58	120	2,62	13	1/8"	10,78	M16x1,5
40	40	Ø8 H8	82 + stroke (**)	117 + stroke (**)	10	25	13	11	22	66	130	2,62	16	1/8"	10,78	M18x1,5
50	50	Ø8 H8	91 + stroke (**)	128 + stroke (**)	12	25	11	7	25	84	155	2,62	18	1/8"	10,78	M20x1,5
63	63	Ø8 H8	98 + stroke (**)	135 + stroke (**)	12	25	11	7	28	98	176	2,62	18	1/8"	10,78	M22x1,5

Size of slide unit	Cyl. Ø	Mass "0" stroke (gr.)			Mass increase (gr.) per mm stroke		
		Slide unit	Cylinder	Locking units	Locking units	Shafts	Cylinder
32	32	1024	303	-	6	2,5	2,65
40	40	1325	483	-	7	2,8	4
50	50	2159	739	-	11	3,7	5,6
63	63	3025	1127	-	13,6	4,7	6,55

N.B.: on the 4 sides the plates for size 63 have chamfers as indicated in the following table:

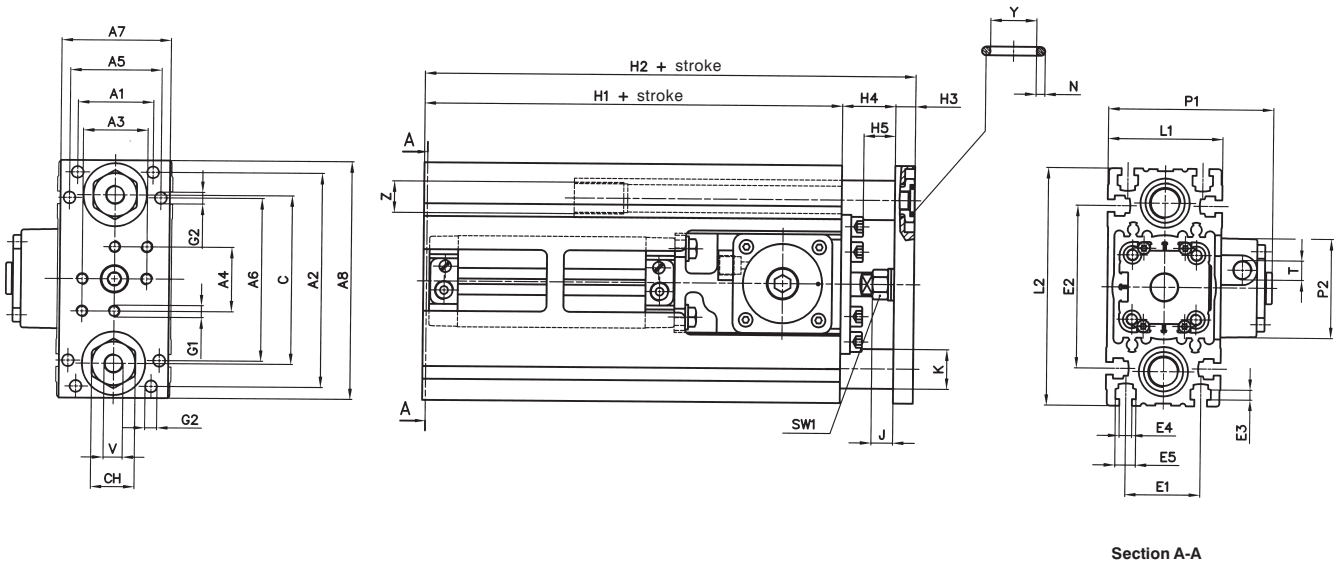


Size	α
63	20°

* For use with locating pin tolerance m6.
** Minimum stroke MAGNETIC CYLINDER for sizes 32 and 40 = 20 mm. / for sizes 50 and 63 = 15 mm.

NOTE: for all sizes up to 50 mm stroke the opening of the extrusion in accordance with the supply ports is of the through type.

J64___B, 2 bearings with locking unit



Section A-A

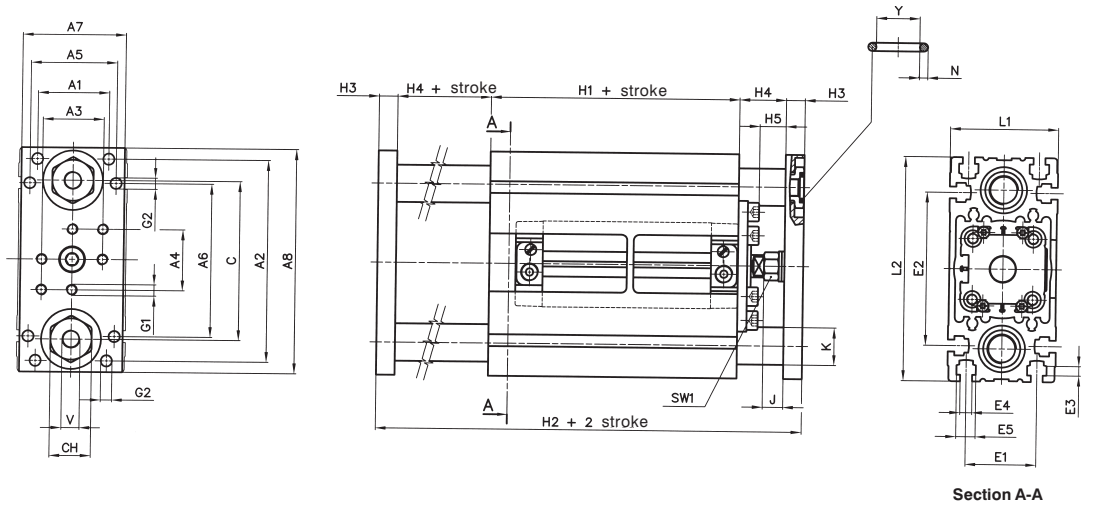
Slide unit size	Cyl. Ø	H1 + stroke (**)	H2+ stroke (**)	H4	H5	P1	P2
32	32	151 + stroke (**)	188 + stroke (**)	27	16	83,5	50
40	40	158 + stroke (**)	194 + stroke (**)	26	14	91,5	58
50	50	173 + stroke (**)	209 + stroke (**)	24	10	106,5	70
63	63	187 + stroke (**)	223 + stroke (**)	24	10	129	85

* For dimensions not indicated refer to page 51.
** Minimum stroke MAGNETIC CYLINDER for sizes 32 and 40 = 20 mm. / for sizes 50 and 63 = 15 mm.

Size	Cyl. Ø	Mass "0" stroke (gr.)			Mass increase (gr.) per mm stroke		
		Slide unit	Cylinder	Locking unit	Slide unit	Shafts	Cylinder
32	32	2241	303	779	6	2,5	2,65
40	40	2876	483	992	7	2,8	4
50	50	4590	739	1528,5	11	3,7	5,6
63	63	6606	1127	2370	13,6	4,7	6,55

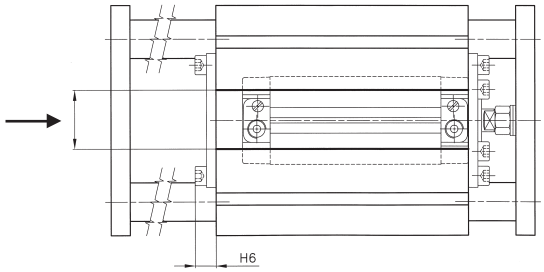
For fixing elements refer to page 58.

J67___, 2 bearings



Section A-A

J66__B upon request for strokes exceeding 50 mm slide units with through opening for placing the magnetic sensor in intermediate positions



This version implies the increase of "H2" by the value "H6" indicated in the table.

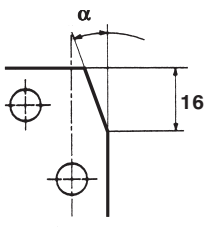
Cyl. Ø	H6
32	11
40	12
50	14
63	14

Slide unit size	Cyl. Ø	A1	A2	A3	A4	A5	A6	A7	A8	C	CH	E1	E2	E3	E4	E5	G1
32	32	38	108	32,5	32,5	46	82	55	120	85	22	38	82	5	6,4	10,4	M6
40	40	42	118	38	38	54	90	65	130	95	22	42	90	5	6,4	10,4	M6
50	50	48,1	140	46,5	46,5	69	110	80	155	115	27	48	110	6,5	8,4	13,4	M8
63	63	56	157,5	56,5	56,5	79,5	120	95	175	130	30	56	120	7,5	10,5	17,5	M8

Slide unit size	Cyl. Ø	G2(*)	H1 + stroke (**)	H2+ 2 stroke (**)	H3	H4	H5	J	K	L1	L2	N	SW1	V	Y
32	32	Ø6 H8	78 + stroke (**)	148 + 2 stroke (**)	10	25	14	11	20	58	120	2,62	13	1/8"	10,78
40	40	Ø8 H8	82 + stroke (**)	152 + 2 stroke (**)	10	25	13	11	22	66	130	2,62	16	1/8"	10,78
50	50	Ø8 H8	91 + stroke (**)	165 + 2 stroke (**)	12	25	11	7	25	84	155	2,62	18	1/8"	10,78
63	63	Ø8 H8	98 + stroke (**)	172 + 2 stroke (**)	12	25	11	7	28	98	176	2,62	18	1/8"	10,78

Slide unit size	Cyl. Ø	Mass "0" stroke (gr.)			Mass increase (g) per mm stroke		
		Slide unit	Cylinder	Locking unit	Slide unit	Shafts	Cylinder
32	32	1092	330	-	6	2,5	2,65
40	40	1428	483	-	7	2,8	4
50	50	2264	739	-	11	3,7	5,6
63	63	3159	1127	-	13,6	4,7	6,55

N.B.: on the 4 sides the plates for sizes 63 have chamfers as indicated in the following table:

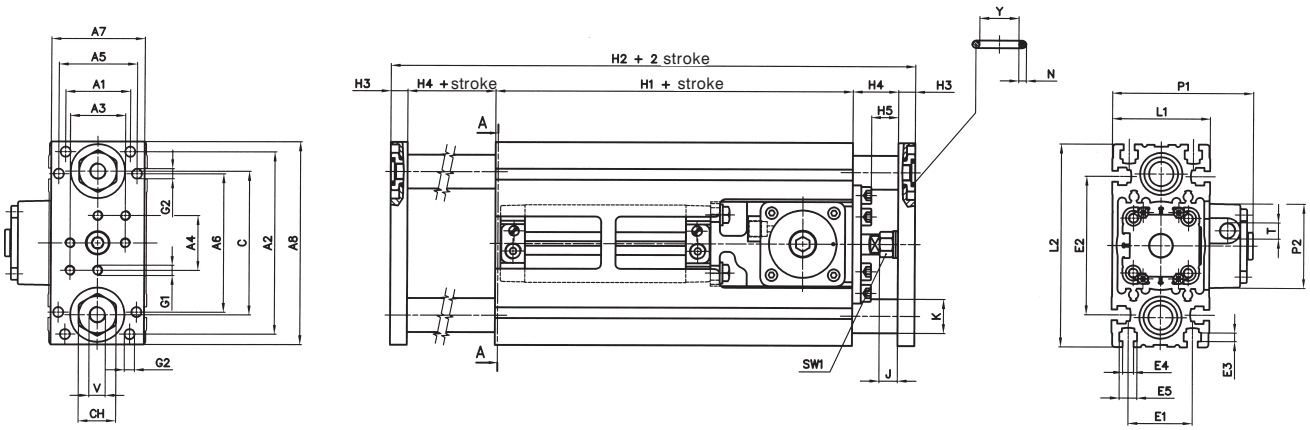


Size	α
63	20°

* For use with locating pin tolerance m6.
** Minimum stroke MAGNETIC CYLINDER for sizes 32 and 40 = 20 mm. / for sizes 50 and 63 = 15 mm.

NOTE: for all sizes up to 50 mm stroke the opening of the extrusion in accordance with the supply ports is of the through type.

J67___B, 2 bearings with locking unit



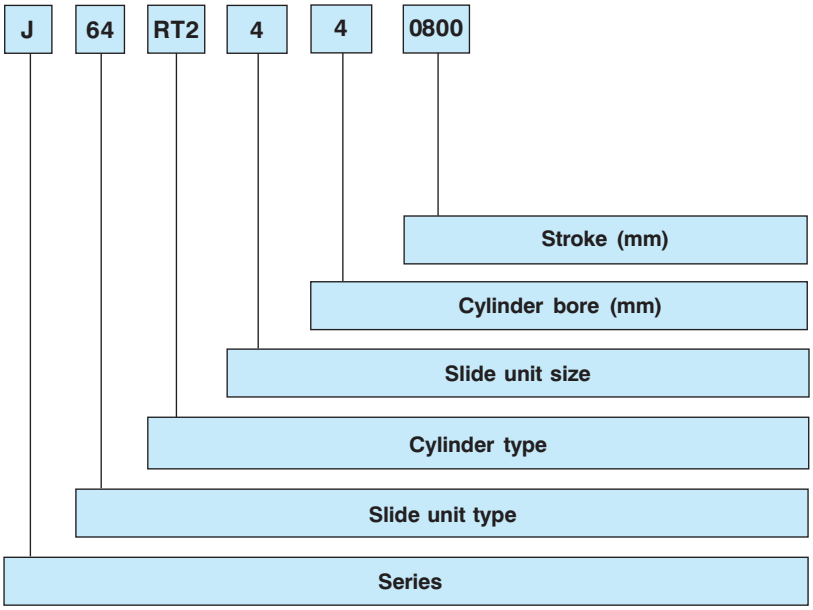
Section A-A

Slide unit size	Cyl. Ø	H1 + stroke (**)	H2+ stroke (**)	H4	H5	P1	P2
32	32	151 + stroke (**)	225 + stroke (**)	27	16	83,5	50
40	40	158+ stroke (**)	230 + stroke (**)	26	14	91,5	58
50	50	173 + stroke (**)	245 + stroke (**)	24	10	106,5	70
63	63	187 + stroke (**)	259 + stroke (**)	24	10	129	85

* For dimensions not indicated refer to page 53.
** Minimum stroke MAGNETIC CYLINDER for size 32 and 40 = 20 mm. / for size 50 and 63 = 15 mm.

Slide unit size	Cyl. Ø	Mass "0" stroke (gr.)			Mass increase (gr.) per mm stroke		
		Slide unit	Cylinder	Locking unit	Slide unit	Shafts	Cylinder
32	32	2492	303	779	6	2,5	2,65
40	40	3165	483	992	7	2,8	4
50	50	4998	739	1528,5	11	3,7	5,6
63	63	7153	1127	2370	13,6	4,7	6,55

For mounting accessories refer to section High-Tech page 58-II.



The slide units are supplied with safety distance (+ 25 mm) for accident prevention according to the European EN 349 specifications.

SERIES

J = Slide unit series

SLIDE UNIT TYPE

64 = slide unit for fully protected telescopic cylinder with scraper bearings.

CYLINDER TYPE

RT2 = 2-stage telescopic cylinder

SLIDE UNIT SIZE

3 = 32 only for cylinder Ø 32
4 = 40 only for cylinder Ø 40
5 = 50 only for cylinder Ø 50
6 = 63 only for cylinder Ø 63

CYLINDER BORE

3 = 32
4 = 40
5 = 50
6 = 63

SLIDE UNIT STROKE

Standard strokes in mm:
0120-0160-0180-0200-0300-0400-0500-0600-0700-0800-0900-1000-1100-1200
Min-max stroke:
Ø 32 0160 ÷ 0400 mm
Ø 40 0160 ÷ 0600 mm
Ø 50 0120 ÷ 0900 mm
Ø 63 0120 ÷ 1200 mm

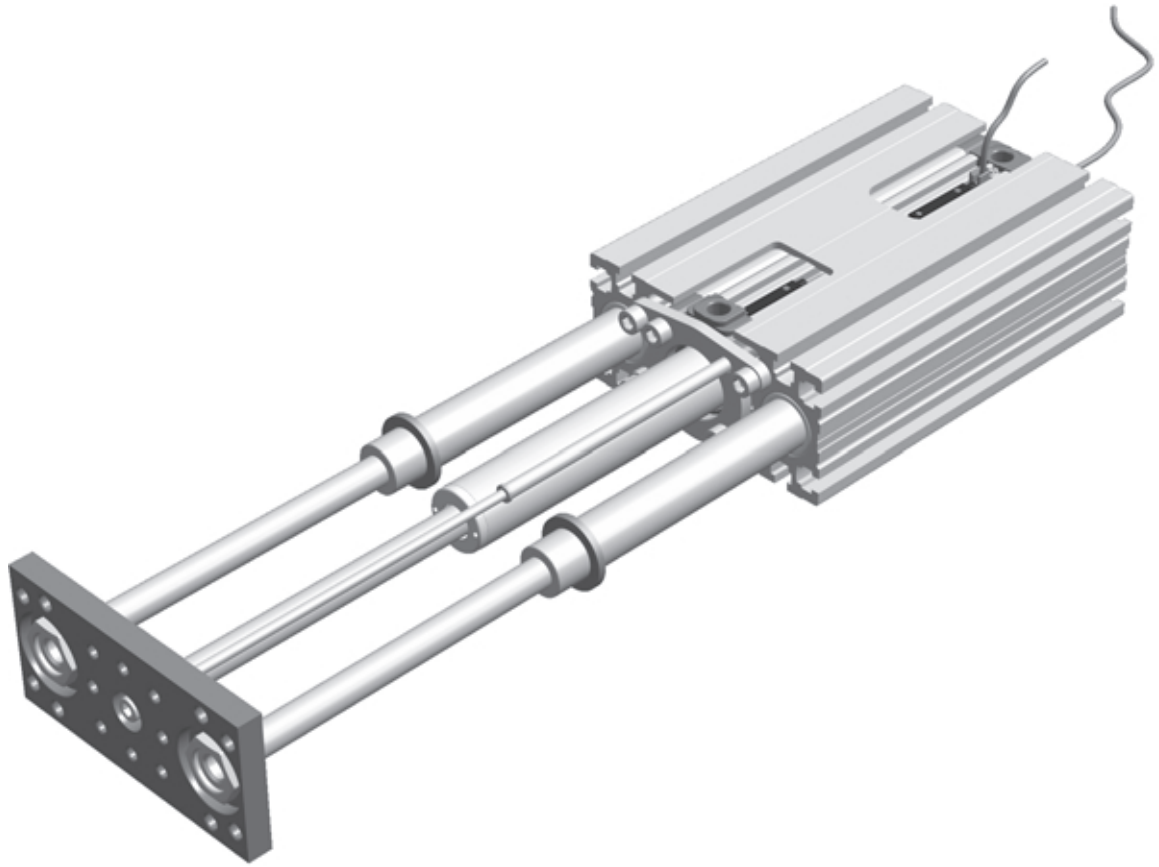
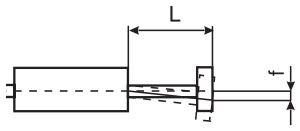
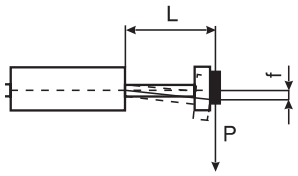
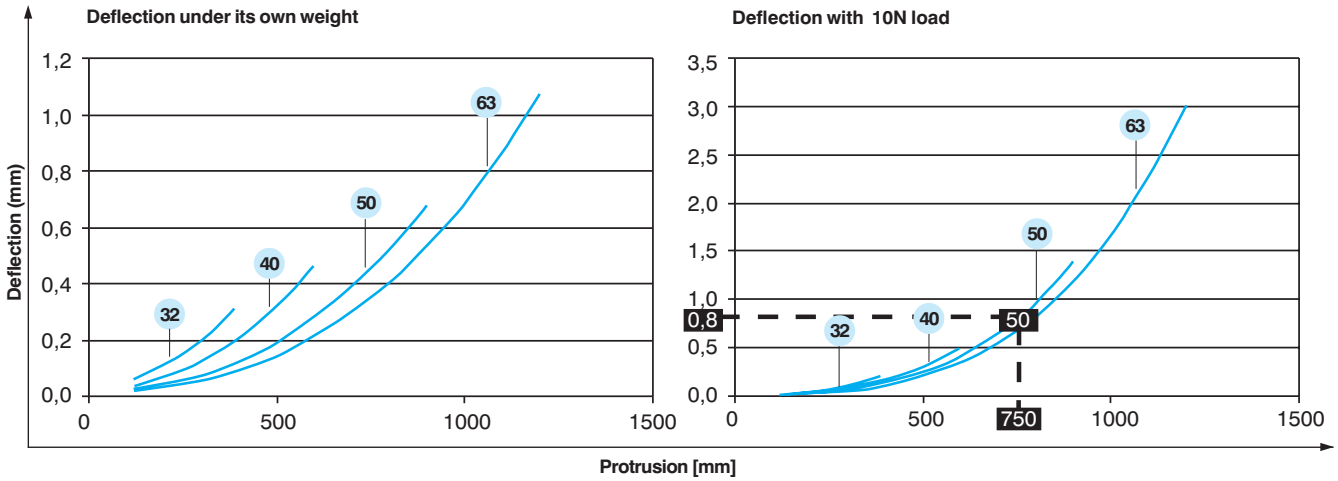


Diagram deflection per slide unit length







Example of application:

How to calculate deflection

The total deflection of the slide unit is calculated by summing deflection under its own weight to deflection caused by the load.

For loads other than 10N (as stated in the charts) deflection is calculated by multiplying the figure of chart (K) by the following formula:

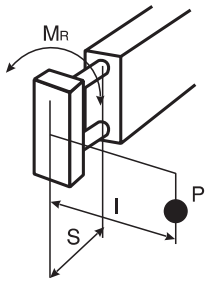
$$f = K \cdot \frac{Q \text{ (applied load)}}{10 \text{ N}}$$

Ex: slide unit size 50 , length 750 mm and load Q of 25 N. On chart showing deflection with 10 N load, we get coefficient 0,8 (marked with negative print), then:

$$f = 0{,}8 \cdot \frac{25}{10} = 2 \text{ mm}$$

The figure obtained must be added to the corresponding figure of the slide unit deflection under the unit's own weight.

Max. moment of resistance MR



Size	MR
32	4,7
40	7,8
50	10,2
63	10,2

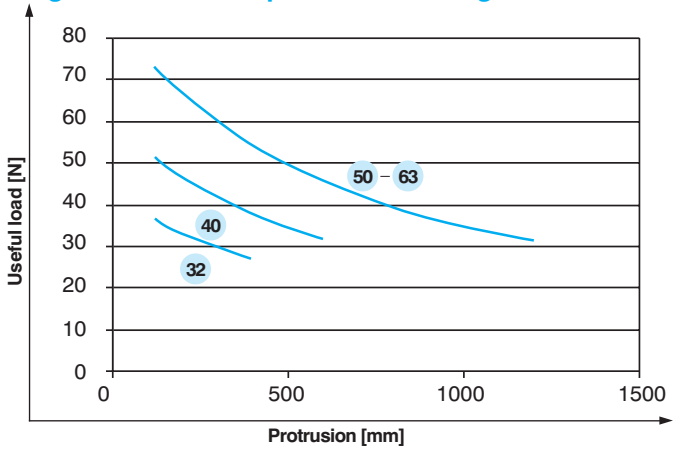
How to calculate torque

To calculate torque M1 the load P(N) must be multiplied by the arm l (mm).

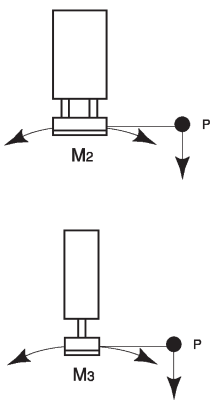
$$M1 = P \cdot l$$

The figure obtained must be within MR values, as stated above: should it exceed these values, a slide unit of a bigger size must be used.

Diagram useful load per slide unit length

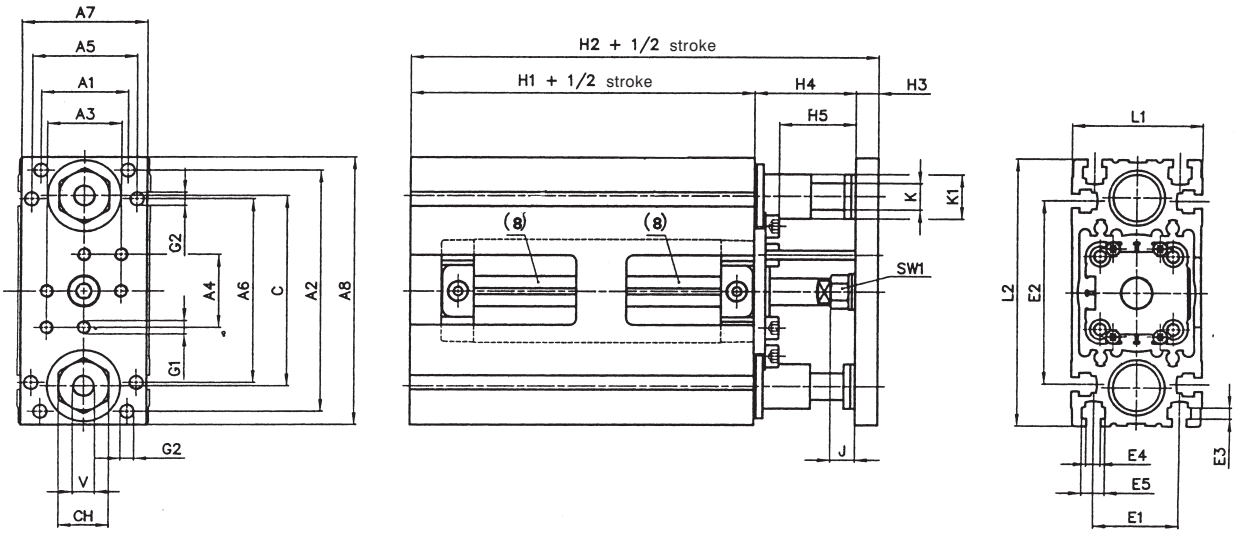


Maximum moments of resistance (Nm)



Size	M2 = M3 Nm
32	7,4
40	12
50	17,8
63	17,8

Telescopic slide-unit, magnetic version J64RT2...



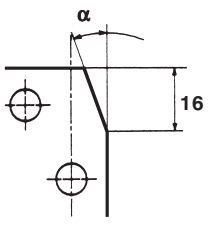
(♦) Attention: the magnetic sensors DF series must be placed near the telescopic stem of the magnet holder (as shown on the drawing).

Slide unit size	Cyl. Ø	A1	A2	A3	A4	A5	A6	A7	A8	C	CH	E1	E2	E3	E4	E5	G1
32	32	38	108	32,5	32,5	46	82	55	120	85	22	38	82	5	6,4	10,4	M6
40	40	42	118	38	38	54	90	65	130	95	22	42	90	5	6,4	10,4	M6
50	50	48,1	140	46,5	46,5	69	110	80	155	115	27	48	110	6,5	8,4	13,4	M8
63	63	56	157,5	56,5	56,5	79,5	120	95	175	130	30	56	120	7,5	10,5	17,5	M8

Slide unit size	Cyl. Ø	G2(*)	H1+1/2 stroke (**)	H2+1/2 stroke (**)	H3	H4	H5	J	K	K1	L1	L2	N	SW1	V	Y
32	32	Ø6 H8	72 + 1/2 stroke (**)	107+ 1/2 stroke (**)	10	25	16	12	12	20	58	120	2,62	13	G 1/8	10,78
40	40	Ø8 H8	78 + 1/2 stroke (**)	113 + 1/2 stroke (**)	10	25	15	13	14	22	66	130	2,62	16	G 1/8	10,78
50	50	Ø8 H8	92 + 1/2 stroke (**)	129 + 1/2 stroke (**)	12	25	14	10	16	25	84	155	2,62	18	G 1/8	10,78
63	63	Ø8 H8	95 + 1/2 stroke (**)	132 + 1/2 stroke (**)	12	25	14	10	16	28	98	176	2,62	18	G 1/8	10,78

Slide unit size	Cyl. Ø	Mass "0" stroke (gr.)			Mass increase (gr.) per mm stroke		
		Slide unit	Cylinder	Locking unit	Slide unit	Shafts	Cylinder
32	32	1092	330	-	6	2,5	2,65
40	40	1428	483	-	7	2,8	4
50	50	4590	739	-	11	3,7	5,6
63	63	3159	1127	-	13,6	4,7	6,55

N.B.: on the 4 sides the plates for sizes 63 have chamfers as indicated in the following table:

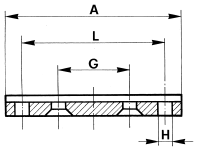


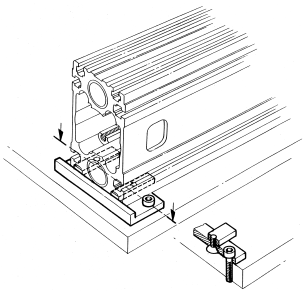
Size	α
63	20°

* For use with locating pin tolerance m6.
** Minimum stroke MAGNETIC CYLINDER for sizes 32 and 40 = 160 mm. (80+80) for sizes 50 and 63 = 120 mm. (60+60)

Aluminium foot brackets

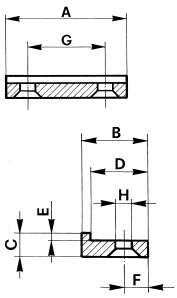
SIZE	A	B	C	D	E	F	G	H	L	Part number
16	52	30	10	26	4	9	20	Ø 4,5	43	JF-13016
25	70	30	10	26	4	9	32	Ø 5,5	57	JF-13025
32	85	35	10	30	5	10	38	Ø 6,5	72	JF-13032
40	92	35	10	30	5	10	42	Ø 6,5	79	JF-13040
50	11	40	15	35	5	12,5	48	Ø 8,5	102	JF-13050
63	13	45	15	40	5	15	56	Ø 10,5	112	JF-13063
80	16	45	15	40	5	15	65	Ø 10,5	135	JF-13080
100	17	45	15	40	5	15	72	Ø 10,5	151	JF-13100

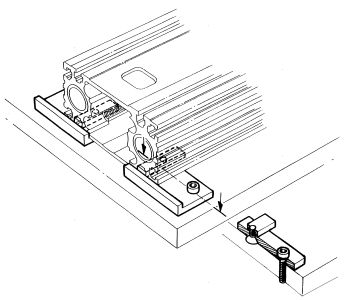




Package consists of 2 pcs. including mounting accessories.

SIZE	A	B	C	D	E	F	G	H	Part number
16	50	30	10	26	3	9	31	Ø 4,5	JF-14016
25	55	30	10	26	3	9	34	Ø 5,5	JF-14025
32	60	35	10	30	4	10	38	Ø 6,5	JF-14032
40	65	35	10	30	4	10	40	Ø 6,5	JF-14040
50	70	40	15	35	4	12,5	45	Ø 8,5	JF-14050
63	85	45	15	40	4	15	56	Ø 10,5	JF-14063
80 - 100	90	45	15	40	4	15	58	Ø 10,5	JF-14100

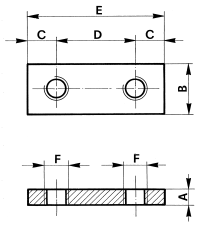




Package consists of 4 pcs. including mounting accessories.

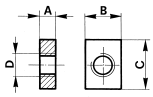
Fixing plates in steel

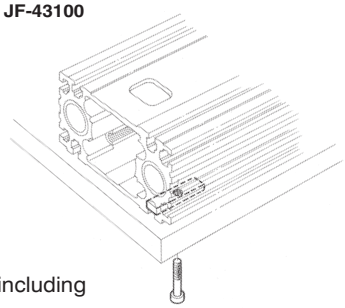
SIZE	A	B	C	D	E	F	Part number
16	3	7	7,5	15	30	M4	JF-42016
25	4	8	10	15	35	M5	JF-42025
32 - 40	4	10	10	20	40	M6	JF-42040
50	6	13	10	30	50	M8	JF-42050
63	6	16	12,5	35	60	M10	JF-42063
80 - 100	8	16	15	40	70	M10	JF-42100



Package consists of 2 pcs. including mounting accessories.

SIZE	A	B	C	D	Part number
16	3	7	16	M4	JF-43016
25	4	8	16	M5	JF-43025
32 - 40	4	10	18	M6	JF-43040
50	6	13	18	M8	JF-43050
63	6	16	22	M10	JF-43063
80 - 100	8	16	25	M10	JF-43100

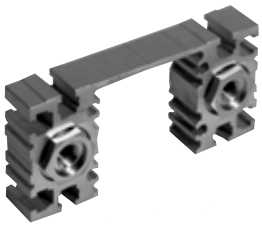


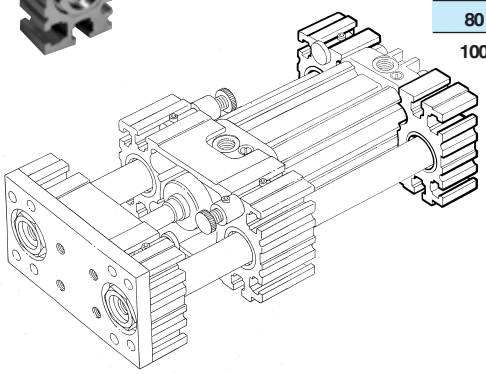


Package consists of 2 pcs. including mounting accessories.

Shaft support for slide units J10/J11/J12 Series

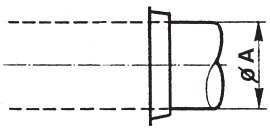
SIZE	Part number
16	JF-601016
25	JF-601025
32	JF-601032
40	JF-601040
50	JF-601050
63	JF-601063
80	JF-601080
100	JF-601100

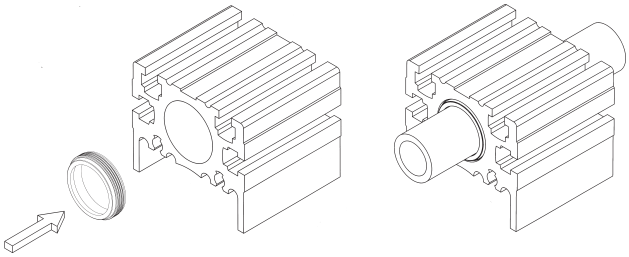




Scraper bearings

SIZE	Ø A	Part number
16	12	JF-19016
25	16	JF-19025
32	20	JF-19032
40	22	JF-19040
50	25	JF-19050
63	28	JF-19063
80 - 100	32	JF-19100

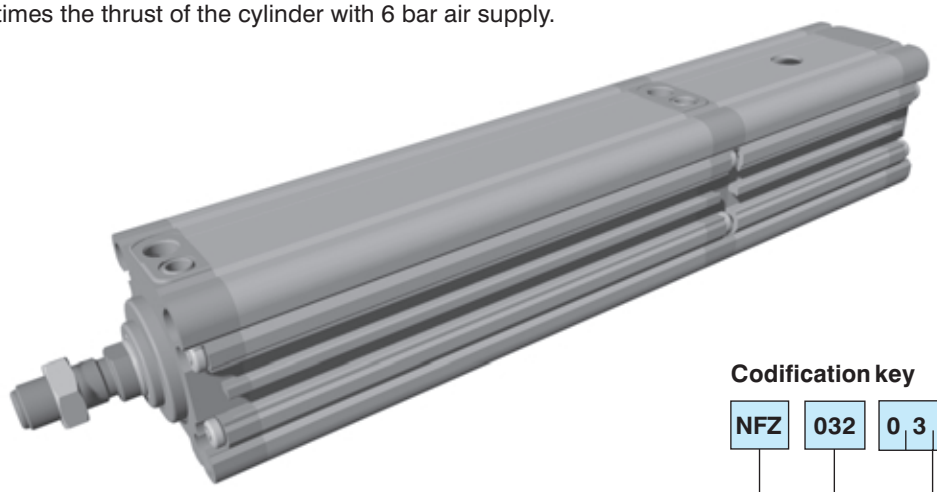




Package comprises 4 pcs.

TECHNICAL CHARACTERISTICS

- Locking system axially placed to the cylinder and integrated in its interior in the rear part.
- High repeatability and intervention speed (16 m/s).
- Recomended use: emergency braking intervention at allowed cylinder speed; for repeated functioning, as locking unit or emergency braking ≤ 50 mm/s.
- Holding force of the rod, without axial backlash ≥ 3 times the thrust of the cylinder with 6 bar air supply.
- The locking force does not depend on ambient conditions or maintenance of the rod.



Working pressure: 3 ÷ 10 bar
Ambient temperature: -10°C ÷ 70°C
Fluid: filtered air 30 µm
Barrel profile of extruded aluminium alloy with groove for flush-mounted sensors (section accessories page 2-V)
Piston rod in chromium-plated steel
The locking unit blocks if there is no signal and/or air supply
Minimum pressure: ≥ 3 bar
Mounting elements: (section cyinders page 49-I)

Codification key

NFZ	032	0 3 5 0

- 0 3 5 0 → **Stroke**
- 032 → **Bore**
- NFZ → **Series**

SERIES

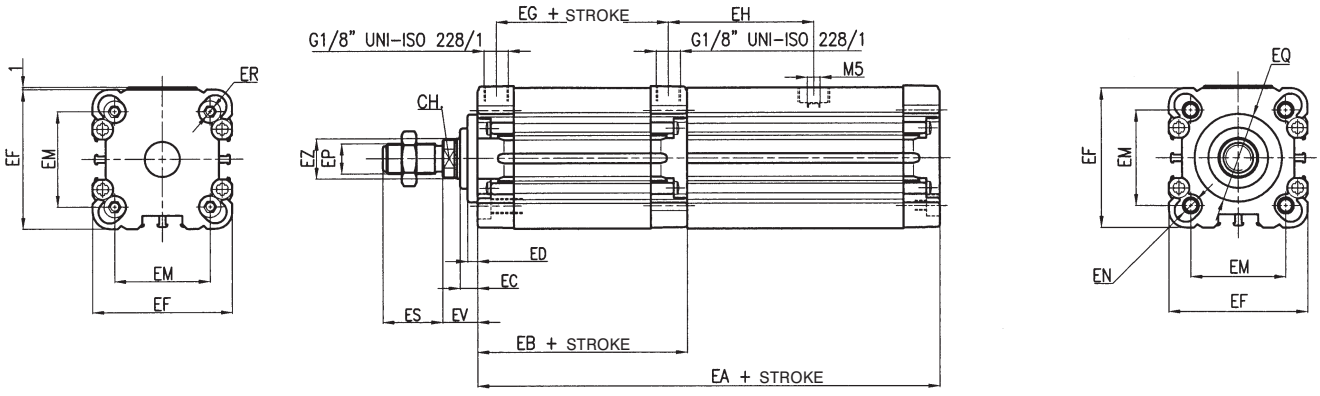
Pneumatic actuator with integrated safety locking system

BORE

032-040-050-063 mm

STROKE MAX

350 mm for ø 32
450 mm for ø 40
600 mm per ø 50
750 mm for ø 63



Ø	EA	EB	EC	ED	EF	EG	EH	EM	EN	EP	EQ	ER	ES	EV	EZ	CH
32	177	84	7	4	46	68,5	55,5	32,5	M6 x 13	M10 x 1,25	ø 30	M4 x 10	22	14	12	10
40	185	89	7	4	56	74	58	38	M6 x13	M12 x 1,25	ø 35	M6 x 10	24	14	16	13
50	194	94	10	5	66	76	63	46,5	M8 x 17,5	M16 x 1,25	ø 40	M6 x 10	32	18	20	17
63	214	114	10	5	79	99	63	56,5	M8 x 18	M16 x 1,25	ø 45	M6 x 10	32	18	20	17

The pneumatic cylinders with digital measuring of the position derive from the respective fluidic axes with numerical control and are particularly suitable for:

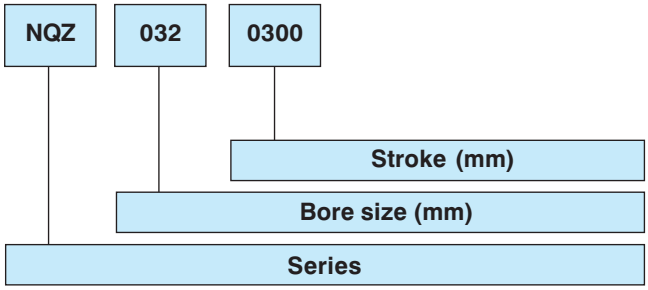
- ✓ **Control of the locking position**
- ✓ **Anticollision control for cycles with critical sequence**
- ✓ **Level control relating to the palletization and/or depalletization of objects placed one onto the other**
- ✓ **Identification, classification and dimensional choice of objects (tolerances and rejects)**
- ✓ **Certification stations of machined pieces or breaking of tools on machines due to chip removal.**

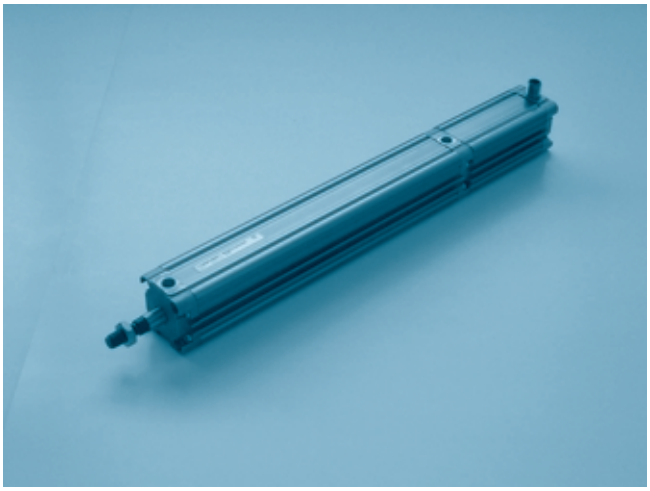
The device can be used in two different ways:

- **as digital measuring detector**
- **as pneumatic actuator with digital detection of the position.**

In the first case the system does not need to be connected to the moving part of the mechanism as it generates by itself the movement by means of an internal pusher with bidirectional pneumatic function at low pressure. This pusher, operated by a 5-way microvalve, moves autonomously until it meets the obstacle and measures the position by means of the encoder whose indication may be visualized on a digital display with centesimal resolution. The precision repeatibility is **± 0,02 mm.**
The speed of the impact against the obstacle is limited by appropriate calibrated reducers which are built into the detector, whilst it is possible to adequately regulate the translation speed by means of a normal pressure regulator. In order to guarantee a reading with the indicated repeatibility, the translation speed must be as constant as possible.
In the second case the air supply of the device is effected by means of the network pressure adequately regulated according to the necessity; it depends on the load to be moved or is prearranged to exert the desired thrust once reached the object to be detected.

Codification key





SERIES

NQZ = Pneumatic actuator with digital detector of the position.

BORE SIZE

032 - 040 - 050 - 063 mm

MAX. STROKE

350 mm for Ø 32
450 mm for Ø 40
650 mm for Ø 50
700 mm for Ø 63

N.B. When the detector is used in environments with electromagnetic disturbances exceeding those allowed by the EN50081-2 standard, also request the adapter TAE011A10305 (our production) or suppressors of electromagnetic interferences available on the market.

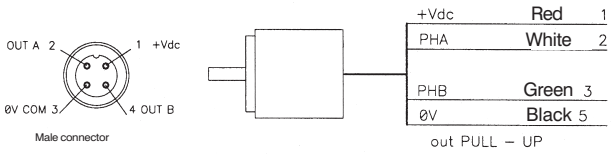
Technical characteristics

Working pressure	2 ÷ 10 bar
Ambient temperature:	-10 ÷ 70°C
Fluid	filtered air 30 µm
Bore size	032 - 040 - 050 - 063 mm
Standard stroke	depending on bore size (refer to codification key)
Barrel	extruded barrel in aluminium alloy with groove for flush-mounted sensors
Piston rod	chromium-plated steel
Thread of the screw	Ø 32 40 50 63 mm/turn 12 16 20,5
Max. speed	0,2 m/s (detector) 0,8 m/s (actuator)
Precision of repeatibility	± 0,02 mm

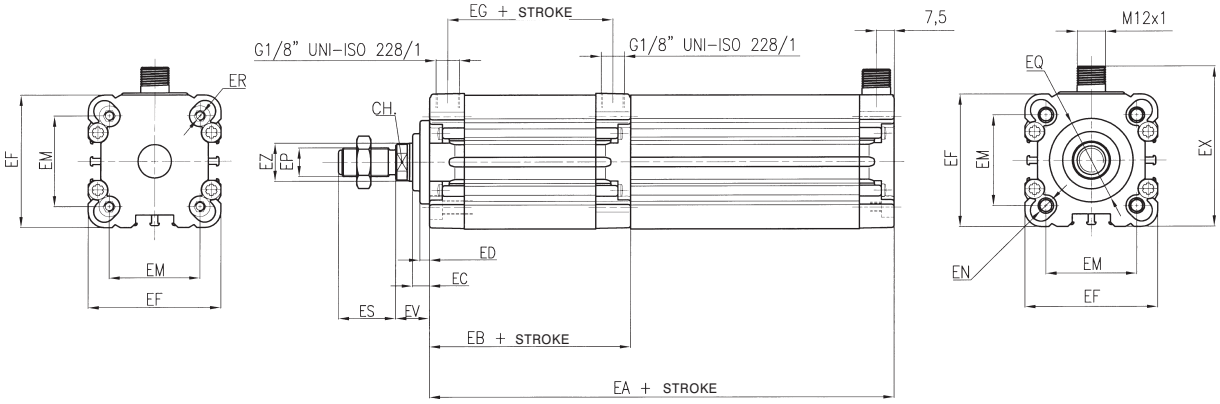
Electrical characteristics

Power supply	5 V dc
Output	Level "L" < 0,5V Level "H" Vdc
Limit frequency	60 Khz
Impedance	2 Kohm
Consumption of current	40 mA max
Time of upstroke/downstroke	< 1µS
Pulse rate	500
Resolution	± 0,01 pulses/turn
Working temperature	- 10° ÷ +70

Scheme of encoder



Overall dimensions



Ø	EA	EB	EC	ED	EF	EG	EM	EN	EP	EQ	ER	ES	EV	EX	EZ	CH
32	186	84	7	4	46	68,5	32,5	M6 x 13	M10 x 1,25	ø 30	M4 x 10	22	14	57	12	10
40	194	89	7	4	56	74	38	M6 x 13	M12 x 1,25	ø 35	M4 x 10	24	14	67	16	13
50	204	94	10	5	66	79	46,5	M8 x 17,5	M16 x 1,25	ø 40	M6 x 10	32	18	77	20	17
63	223	114	10	5	79	99	56,5	M8 x 18	M16 x 1,25	ø 45	M6 x 10	32	18	90	20	17

Accessories

- **Mounting accessories:** same as for cylinders STRONG series (Sect. Cylinders page 49-I)
- **Flush-mounted magnetic sensor DF-___series** (Sect. Accessories page 2-V)
- **Strap for covering wires of magnetic sensor DHF-002100**

This product is the result of having linked to a pneumatic actuator both the digital position detector and the integrated safety locking system.
The system does not need to be connected to the moving part of the mechanism as it generates by itself the movement by means of an internal pusher with bidirectional pneumatic function. This pusher, operated by a 5-way microvalve, moves autonomously until it meets the obstacle and measures the position.
The detection of the position is obtained by transforming the translation movement of the piston rod in a rotation movement of the screw (fig. 2) by means of the coupling of screw-female screw (fig.1); the encoder transforms the rotation (mechanical size) in sequences of electric pulses and establishes the relation between number of turns and number of pulses.
The piston and the body of the encoder of the actuator must necessarily be fixed, i.e. must not move as regards to the rotation of the screw and for this reason has been used the cylinder with octagonal piston and non-rotating piston rod adequately modified.

Fig. 1

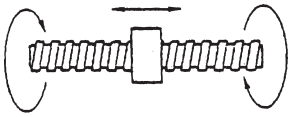
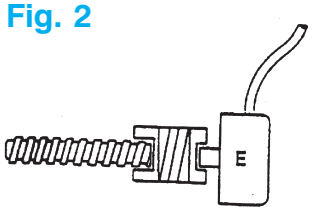


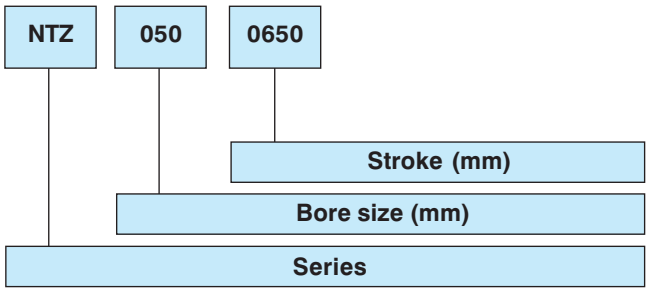
Fig. 2

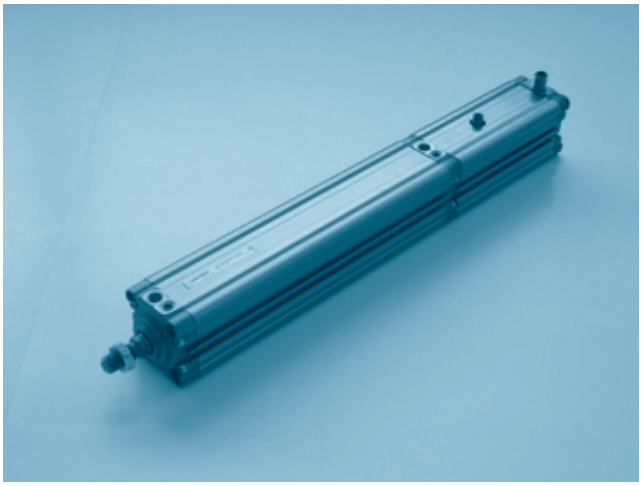


The speed of the impact against the obstacle is limited by appropriate calibrated reducers which are built into the detector, whilst it is possible to adequately regulate the translation speed by means of a normal pressure regulator. In order to guarantee a reading with the indicated repeatibility, the translation speed must be as constant as possible.

The main sectors of application are:
Mechanization, palletization, automation of operating machines.

Codification key





SERIES

NTZ= Programmable pneumatic actuator with integrated safety locking system.

BORE SIZE

032 - 040 - 050 - 063 mm

MAX. STROKE

350 mm for Ø 32
450 mm for Ø 40
650 mm for Ø 50
700 mm for Ø 63

N.B. When the detector is used in environments with electromagnetic disturbances exceeding those allowed by the EN50081-2 standard, also request the adapter TAE011A10305 (our production) or suppressors of electromagnetic interferences available on the market.

Technical characteristics

Working pressure	2 ÷ 10 bar
Ambient temperature	-10 ÷ 70°C
Fluid	filtered air 30 μm
Bore size	032 - 040 - 050 - 063 mm
Standard stroke	depending on bore size (refer to codification key)
Barrel	extruded barrel in aluminium alloy with groove for flush-mounted sensors
Piston rod	chromium-plated steel
Functioning of the locking unit	passive, in the absence of signal and/or air supply
Min. pressure	> 3 bar
Holding force of the piston-rod	> 3 times the thrust of the cylinder with air supply 6 bar
Max. speed	1 m/s
Precision of repeatibility	± 0,3 mm

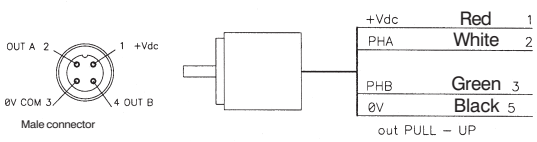
Electrical characteristics

Air supply	5 Vdc
Output	Level "L" < 0,5V Level "H" Vdc
Limit frequency	60 Khz
Impedance	2 Kohm
Consumption of current	40 mA max
Time of upstroke/downstroke	< 1μS
Pulse rate	500
Resolution	± 0,01 Pulses/turn
Working temperature	- 10° ÷ +70

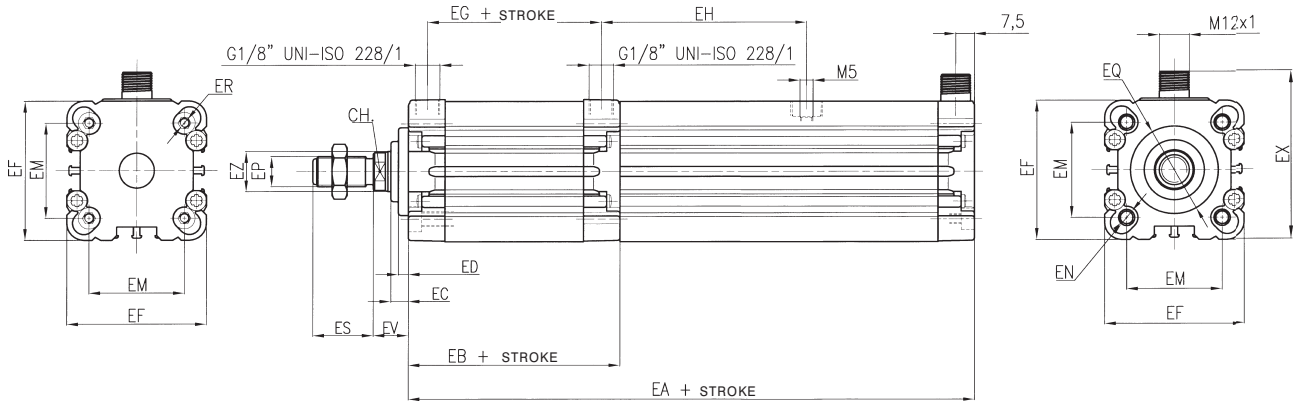
Theoretical forces

Cyl. Ø	Theoretical force N (thrust with air supply 6 bar)
32	400
40	600
50	960
63	1600

Scheme of encoder



Overall dimensions



Ø	EA	EB	EC	ED	EF	EG	EH	EM	EN	EP	EQ	ER	ES	EV	EX	EZ	CH
32	217,5	84	7	4	46	68,5	55,5	32,5	M6 x 13	M10 x 1,25	ø 30	M4 x 10	22	14	57	12	10
40	225	89	7	4	56	74	58	38	M6 x 13	M12 x 1,25	ø 35	M4 x 10	24	14	67	16	13
50	234	94	10	5	66	79	63	46,5	M8 x 17,5	M16 x 1,25	ø 40	M6 x 10	32	18	77	20	17
63	253	114	10	5	79	99	63	56,5	M8 x 18	M16 x 1,25	ø 45	M6 x 10	32	18	90	20	17

Accessories

Mounting accessories: same as for cylinders STRONG series (Sect. Cylinders page 49-I)
Flush-mounted magnetic sensor DF-___series (Sect. Accessories page 2-V)
Strap for covering wires of magnetic sensor DHF-002100