Info

Info

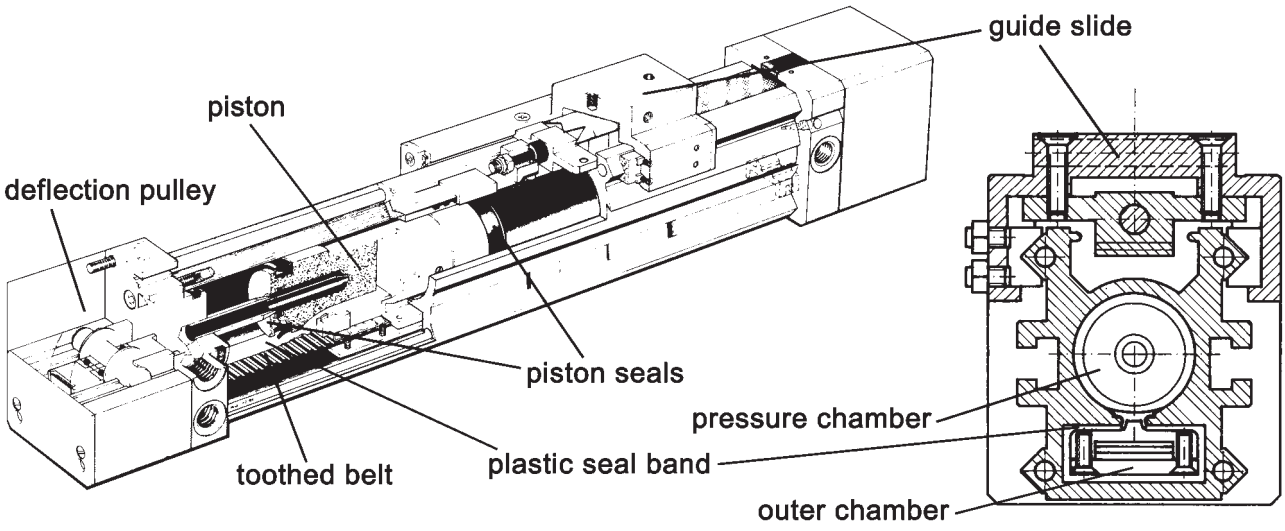
● Patented method for synchronization of several cylinders

The patented toothed belt cylinder consists of an extruded cylinder tube with two chambers. They are connected to each other over the entire length of the cylinder. The pressure chamber is sealed towards the outside by a soft plastic band. Between the two piston seals a pressure-free space is created. In this space the seal band is lifted to the inside and is passed through the piston.

Simultaneously a driver (piston bracket) grasps through the slot into the outer chamber.

Since the outer chamber encloses the longitudinal slot, it does not expand under pressure. This results in minimal leakage and better flexural and torsional stiffness.

● High operational safety through closed profile



● Contamination insensitive also in harsh environments

In the outer chamber the piston bracket grips the toothed belt, which leads to a tension lock at the opposite side via the deflection pulley. Inside the slide, the cover belt is lifted from the slot, and the slide is connected to the tension lock.

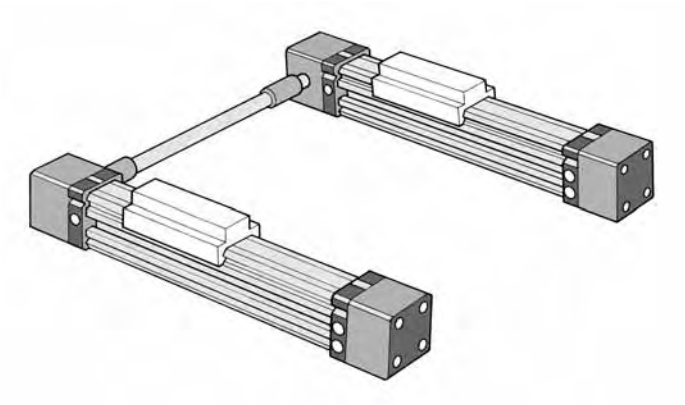
By this principle, dirt is kept away from the sealing strip enabling use under rough operating conditions.

The force is transmitted, free of slip, to a shaft via the toothed belt pulley. As a result, several cylinders can be linked and operated synchronously, enabling torques from the off-center application forces.

The cylinder can also be supplied with a brake mounted on the driven shaft without the use of an additional energy transmission chain. A cylinder supplied with a **brake** and encoder results in an inexpensive **positioning system**.

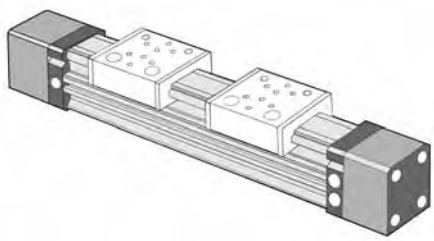
Since the slide or roller guide is already integrated into the slide, a complete linear drive is available with this cylinder.

Synchronous running



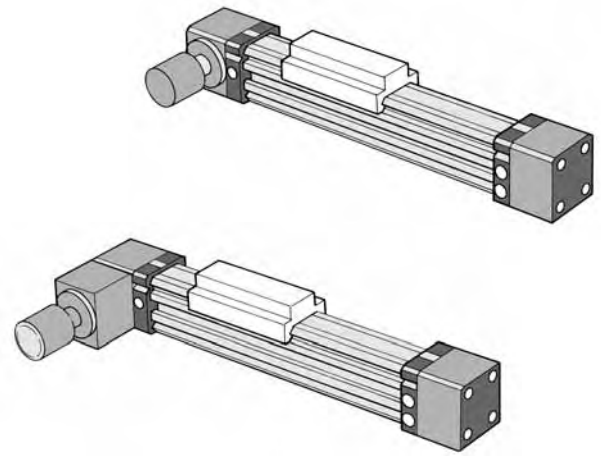
The connection of the driven shafts permits the synchronization of any number of cylinders.

With 2 slides



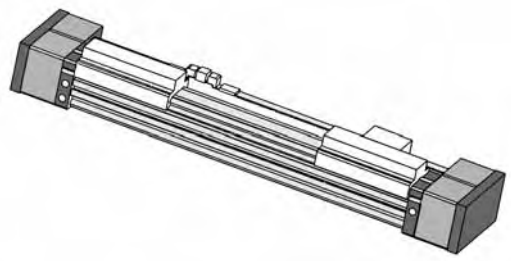
For higher loads or to drive components parallelly it is possible to connect two slides with the toothed belt.

With brake



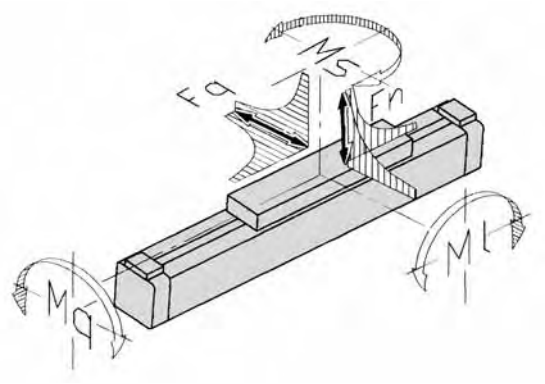
Since the force is transmitted to the shaft free of slip, a positioning system can be set up with the aid of an encoder.

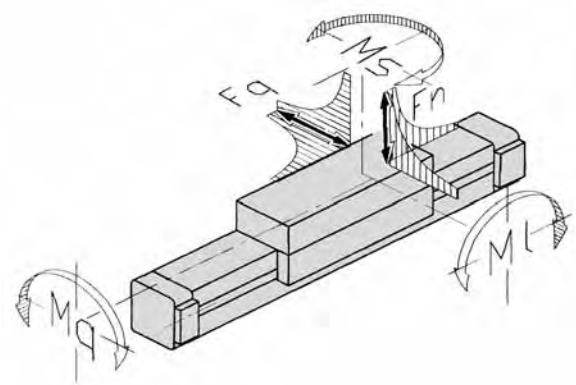
As a gripping cylinder



By mounting a second toothed belt and using a slide in tangential feed, a central clamping long stroke gripper is created.

Rodless toothed belt cylinders
Loads, forces and torques





Order number	Operating force*	Braking force*	Fn + Fq	Ml	Mq	Ms
ZR-25	250 N (56.2 lbf)	–	400 N (89.9 lbf)	40 Nm (29.5 ft. lbf.)	20 Nm (14.7 ft. lbf.)	30 Nm (22.1 ft. lbf.)
ZR-25-BR	250 N (56.2 lbf)	380 N (85.4 lbf)	400 N (89.9 lbf)	40 Nm (29.5 ft. lbf.)	20 Nm (14.7 ft. lbf.)	30 Nm (22.1 ft. lbf.)
ZR-25S	250 N (56.2 lbf)	–	400 N (89.9 lbf)	80 Nm (58.9 ft. lbf.)	40 Nm (29.4 ft. lbf.)	60 Nm (44.2 ft. lbf.)
ZR-25S-BR	250 N (56.2 lbf)	380 N (85.4 lbf)	400 N (89.9 lbf)	80 Nm (58.9 ft. lbf.)	40 Nm (29.4 ft. lbf.)	60 Nm (44.2 ft. lbf.)
ZR-25R	250 N (56.2 lbf)	–	600 N (134.9 lbf)	27 Nm (19.9 ft. lbf.)	35 Nm (25.8 ft. lbf.)	23 Nm (16.9 ft. lbf.)
ZR-25R-BR	250 N (56.2 lbf)	380 N (85.4 lbf)	600 N (134.9 lbf)	27 Nm (19.9 ft. lbf.)	35 Nm (25.8 ft. lbf.)	23 Nm (16.9 ft. lbf.)
ZR-40	640 N (143.9 lbf)	–	800 N (179.8 lbf)	75 Nm (55.2 ft. lbf.)	30 Nm (22.1 ft. lbf.)	50 Nm (36.8 ft. lbf.)
ZR-40-BR	640 N (143.9 lbf)	750 N (168.6 lbf)	800 N (179.8 lbf)	75 Nm (55.2 ft. lbf.)	30 Nm (22.1 ft. lbf.)	50 Nm (36.8 ft. lbf.)
ZR-40S	640 N (143.9 lbf)	–	800 N (179.8 lbf)	150 Nm (110.4 ft. lbf.)	60 Nm (44.2 ft. lbf.)	100 Nm (73.6 ft. lbf.)
ZR-40S-BR	640 N (143.9 lbf)	750 N (168.6 lbf)	800 N (179.8 lbf)	150 Nm (110.4 ft. lbf.)	60 Nm (44.2 ft. lbf.)	100 Nm (73.6 ft. lbf.)
ZR-40L	640 N (143.9 lbf)	–	1200 N (269.8 lbf)	95 Nm (69.9 ft. lbf.)	45 Nm (33.1 ft. lbf.)	95 Nm (69.9 ft. lbf.)
ZR-40L-BR	640 N (143.9 lbf)	750 N (168.6 lbf)	1200 N (269.8 lbf)	95 Nm (69.9 ft. lbf.)	45 Nm (33.1 ft. lbf.)	95 Nm (69.9 ft. lbf.)

* Operating force at 6 bar (87 psi), braking force at 6 bar (87 psi) static.

Force and torque data are based on the speed of the slide guideways of ≤ 0.2 m/s (0.656 ft./s), in case of roller guides of ≤ 2 m/s (6.562 ft./s).

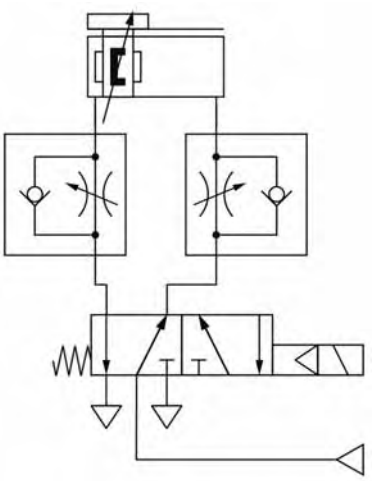
If speed exceeds 0.2 m/s (0.656 ft./s), the permissible values of the slide guideways must be multiplied by the factors from the table below. For roller or ball guide types is no factor required.

Load coefficient

V in m/s	V in ft./s	Factor
0.2	0.656	1
0.3	0.984	0.75
0.4	1.312	0.5
0.5	1.640	0.4
0.75	2.460	0.27
1	3.281	0.2

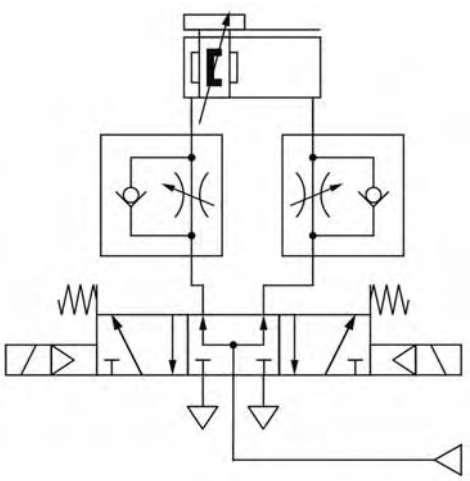
Control 1

Simple system for controlling the slide from end to end. A flow control valve can be used to adjust the cylinder speed.



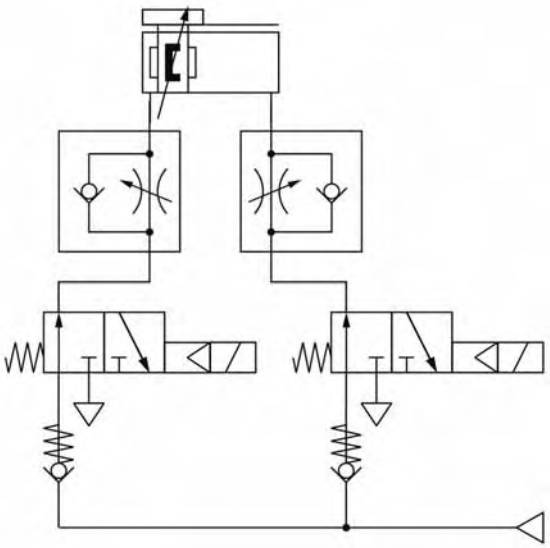
Control 2

System to stop the cylinder on intermediate position with higher tolerances.



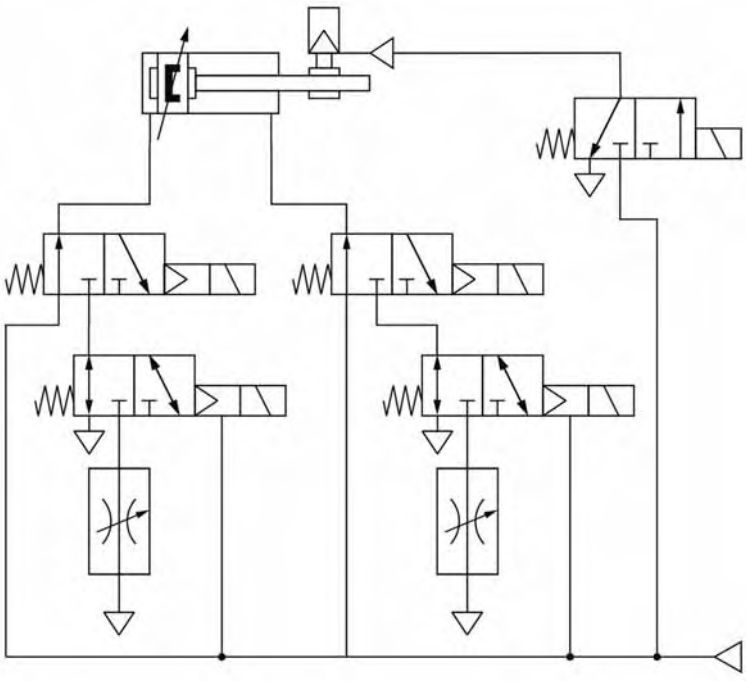
Control 3

This control circuit improves the positioning accuracy. The use of check valves reduces the stopping distance and also increases the load stiffness.



Control 4

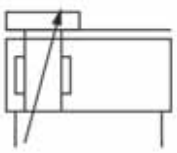
This circuit example permits the selection of different speeds (rapid or inching) for either forward or reverse motion. The brake is activated by a 3/2 solenoid valve.



For longer strokes a safety start-up valve is recommended.

Technical data for series

ZR-25, ZR-40



Order code

ZR-25-0250-2-D3F1

Series	Piston-Ø (mm)	Stroke length (mm)	Air connection see page 9.101	Options see page 9.101

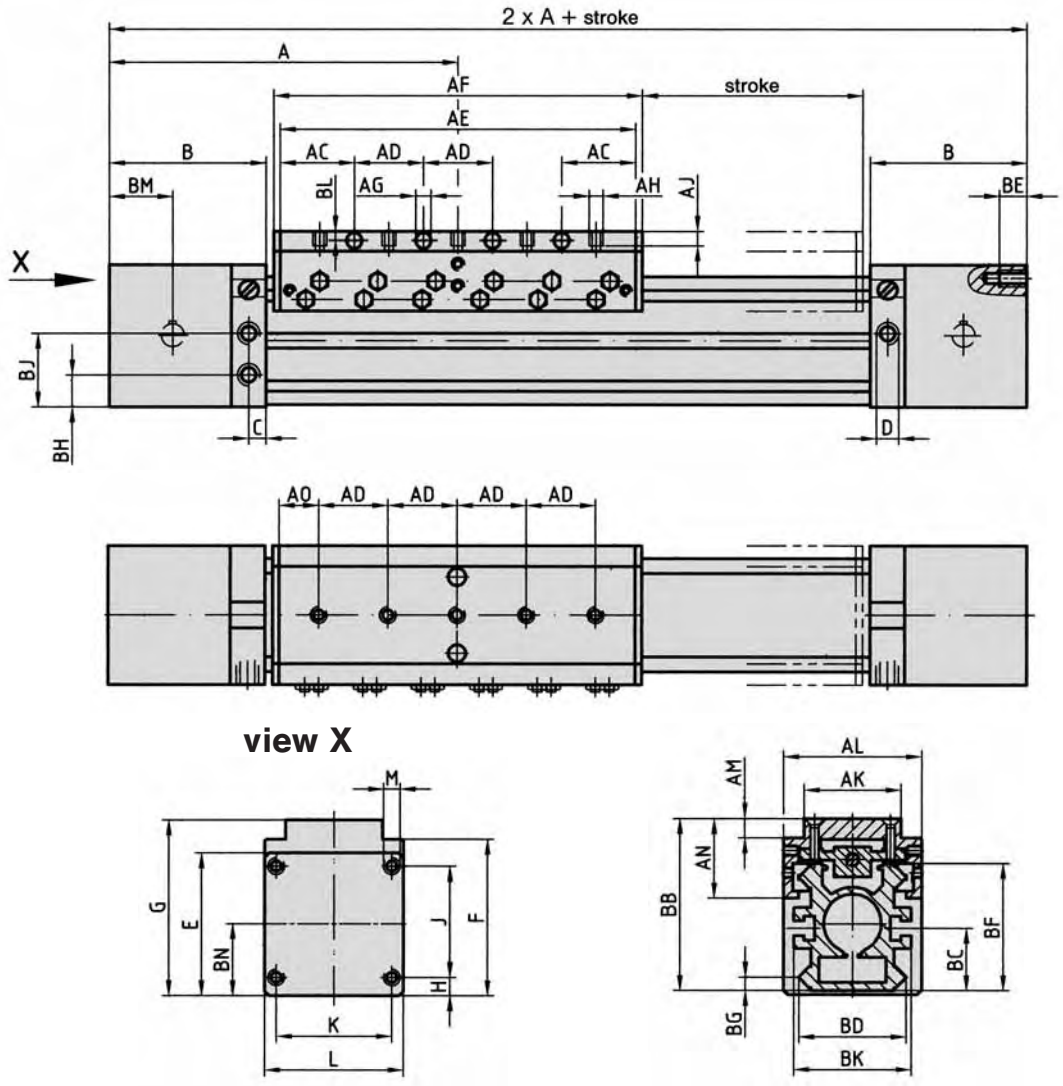
Design and function

Double acting rod less toothed belt cylinder with adjustable cushions. The toothed belt is driven by the piston in a closed profile tube. The piston actuates a slide with an adjustable slide guideway.

Order number Please complete according to order code.	**ZR-25-**…	**ZR-40-**…
Piston-Ø	25 mm	40 mm
Connection	G 1/8	G 1/4
Cushioning length	25 mm (1 in)	32 mm (1 1/4 in)
Operating pressure	1 … 8 bar (14.5 … 116 psi)	
Temperature range	– 15 °C … + 70 °C (+ 5 °F … + 158 °F)	
Medium	filtered and slightly lubricated or filtered non-lubricated air. If speeds exceed 1 m/s (3.3 ft/s) lubricated air is recommended.	
Stroke length	arbitrary up to 4500 mm (177 in)	
Materials	Outer parts: Al-profile (anodized) Seals: NBR, PA, PDF	

Dimensions for series

ZR-25, ZR-40



view X

	Ø 25	Ø 40
Mass at 0 mm stroke	2.18 kg (4.806 lbs.)	3.19 kg (7.033 lbs.)
Mass for 100 mm (4 in) stroke extension	0.40 kg (0.882 lb.)	0.50 kg (1.102 lbs.)

Max. stroke length 4.500 mm (177 in).

BM and BN dimensions used for extended shaft only.

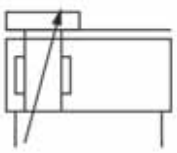
Cyl.-Ø	A	B	C	D	E	F	G	H	J	K	L	M
25	150	68	7.5	G 1/8	62	67.5	76	8	48	50	60	M5 (10/32 UNF)
40	150	75	10	G 1/4	76.8	80.5	97.5	9	54	54	72	M6

Cyl.-Ø	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	AN
25	33	30	156	160	5.5	M5	7	42	60	8.5	34.5
40	25	30	140	148	5.5	M5	8.5	40	72	16.5	43

Cyl.-Ø	BB	BC	BD	BE	BF	BG	BH	BJ	BK	BL	BM	BN
25	75	28	47	10	55.5	6	14	32	49	4	27.5	31.2
40	96.5	35.6	56	12	70.8	6.7	16	39.5	66	6	34.7	39.4

Technical data for series

ZR-25S, ZR-40S



Order code

ZR-25S-0250-2-D3F1

Series	Piston-Ø (mm)	Type	Stroke length (mm)	Air connection see page 9.101	Options see page 9.101

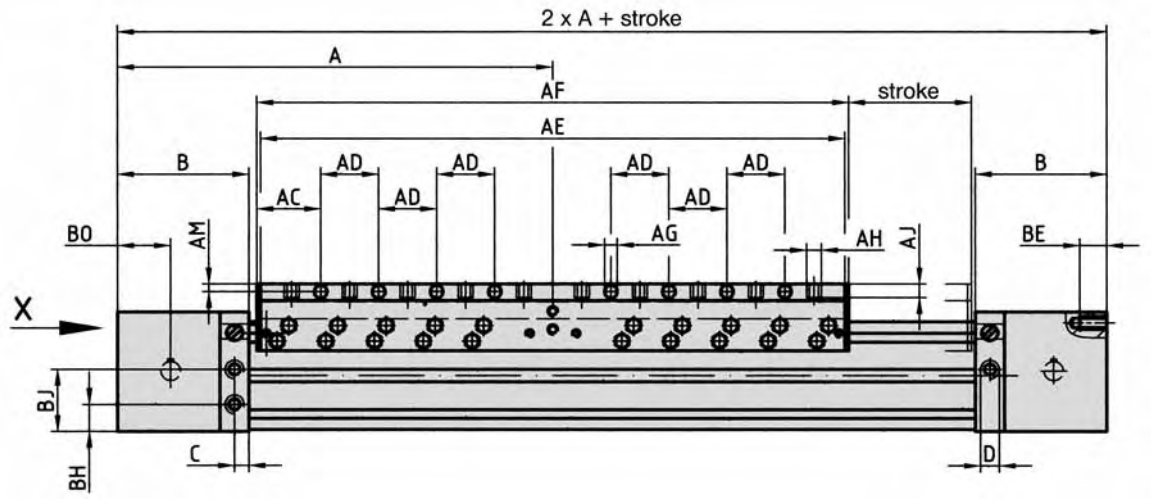
Design and function

Double acting rod less toothed belt cylinder with adjustable cushions. The toothed belt is driven by the piston in a closed profile tube. The piston actuates a slide with an adjustable heavy-duty slide guideway.

Order number Please complete according to order code.	**ZR-25S-**...	**ZR-40S-**...
Piston-Ø	25 mm	40 mm
Connection	G 1/8	G 1/4
Cushioning length	25 mm (1 in)	32 mm (1 1/4 in)
Operating pressure	1 … 8 bar (14.5 … 116 psi)	
Temperature range	– 15 °C … + 70 °C (+ 5 °F … + 158 °F)	
Medium	filtered and slightly lubricated or filtered non-lubricated air. If speeds exceed 1 m/s (3.3 ft/s) lubricated air is recommended.	
Stroke length	arbitrary up to 4300 mm (169 in)	
Materials	Outer parts: Al-profile (anodized) Seals: NBR, PA, PDF	

Dimensions for series

ZR-25S, ZR-40S



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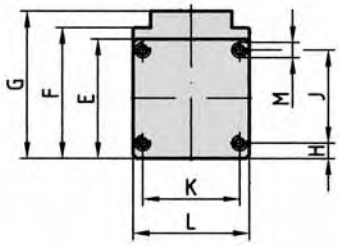
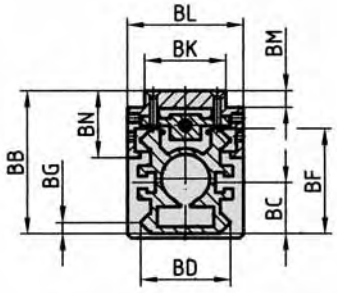




	Ø 25	Ø 40
Mass at 0 mm stroke	2.58 kg (5.688 lbs.)	3.59 kg (7.914 lbs.)
Mass for 100 mm (4 in) stroke extension	0.40 kg (0.882 lb.)	0.50 kg (1.102 lbs.)

Max. stroke length 4.300 mm (169 in).

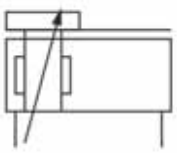
Cyl.-Ø	A	B	C	D	E	F	G	H	J	K	L	M
25	225	68	7.5	G 1/8	62	67.5	76	8	48	50	60	M 5 (10/32 UNF)
40	225	75	10	G 1/4	76.8	80.5	97.5	9	54	54	72	M 6

Cyl.-Ø	AC	AD	AE	AF	AG	AH	AJ	AO	AM
25	35	30	306	310	5.5	M 5	7	18	4
40	29	30	290	298	5.5	M 5	8.5	10	6

Cyl.-Ø	BB	BC	BD	BE	BF	BG	BH	BJ	BK	BL	BM	BN	BO
25	75	28	47	10	55.5	6	14	32	42	60	8.5	34.5	27.5
40	96.5	35.6	56	12	70.8	6.7	16	39.5	40	72	16.5	43	34.7

Technical data for series

ZR-25R



Order code

ZR-25R-0250-2-D3F1

Series	Piston-Ø (mm)	Type	Stroke length (mm)	Air connection see page 9.101	Options see page 9.101

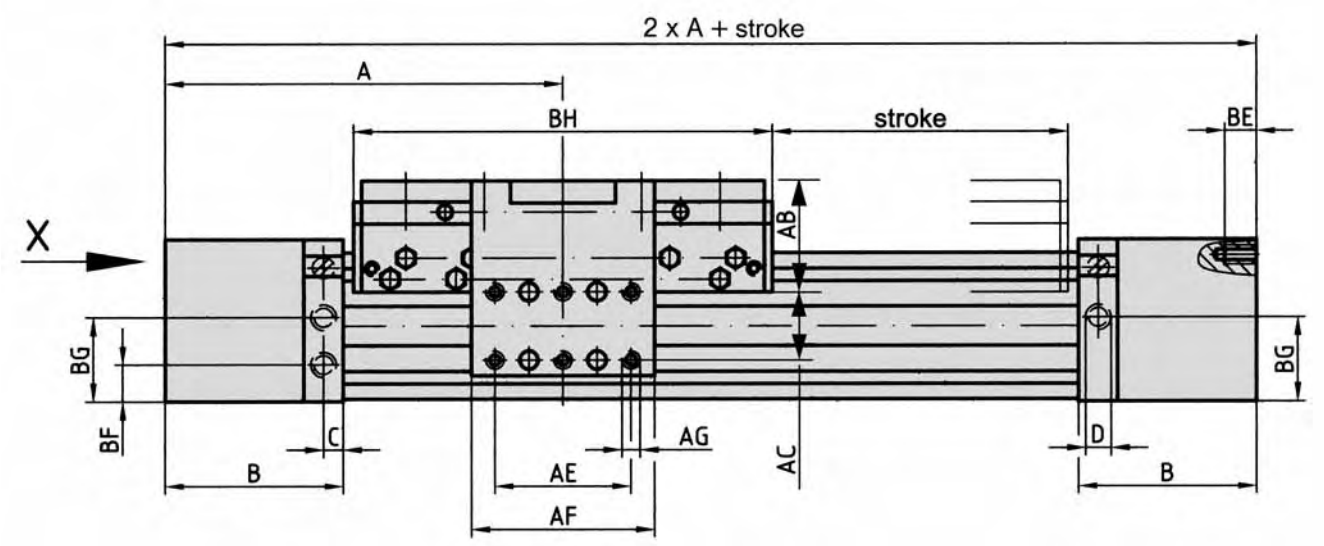
Design and function

Double acting rod less toothed belt cylinder with adjustable cushion. The toothed belt is driven by the piston in a closed profile tube. The piston actuates a slide with ball guide.

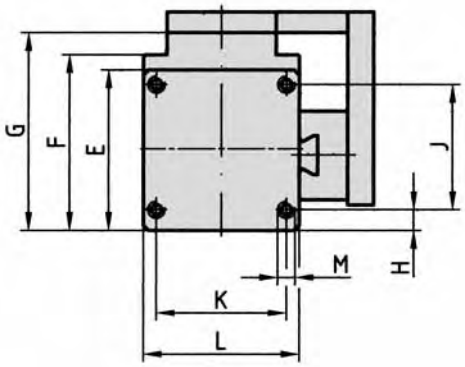
Order number Please complete according to order code.	**ZR-25R-**…
Piston-Ø	25 mm
Connection	G 1/8
Cushioning length	25 mm (1 in)
Operating pressure	1 … 8 bar (14.5 … 116 psi)
Temperature range	– 15 °C … + 70 °C (+ 5 °F … + 158 °F)
Medium	filtered and slightly lubricated or filtered non-lubricated air. If speeds exceed 1 m/s (3.3 ft/s) lubricated air is recommended.
Stroke length	arbitrary up to 1450 mm (57 in)
Materials	Outer parts: hardened steel, Al-profile (anodized), plastic Seals: NBR, PA, PDF

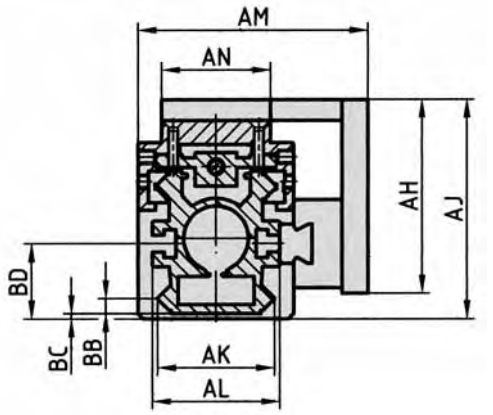
Dimensions for series

ZR-25R



view X





	ZR-25R
Mass at 0 mm stroke	2.83 kg (6.239 lbs.)
Mass for 100 mm (4 in) stroke extension	0.47 kg (1.036 lbs.)

Max. stroke length 1.450 mm (57 in).

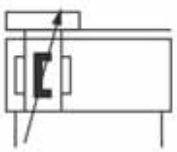
Cyl.-Ø	A	B	C	D	E	F	G	H	J	K	L	M
25	150	68	7.5	G 1/8	62	67.5	76	8	48	50	60	M 5 (10/32 UNF)

Cyl.-Ø	AB	AC	AE	AF	AG	AH	AJ	AK	AL	AM
25	42	26	52	70	M 5	74	84	47	49	88.5

Cyl.-Ø	BB	BC	BD	BE	BF	BG	BH
25	6	1	28	10	14	32	160

Technical data for series

ZR-40L



Order code

ZR-40L-0250-2-D3F1

Series	Piston-Ø (mm)	Type	Stroke length (mm)	Air connection see page 9.101	Options see page 9.101

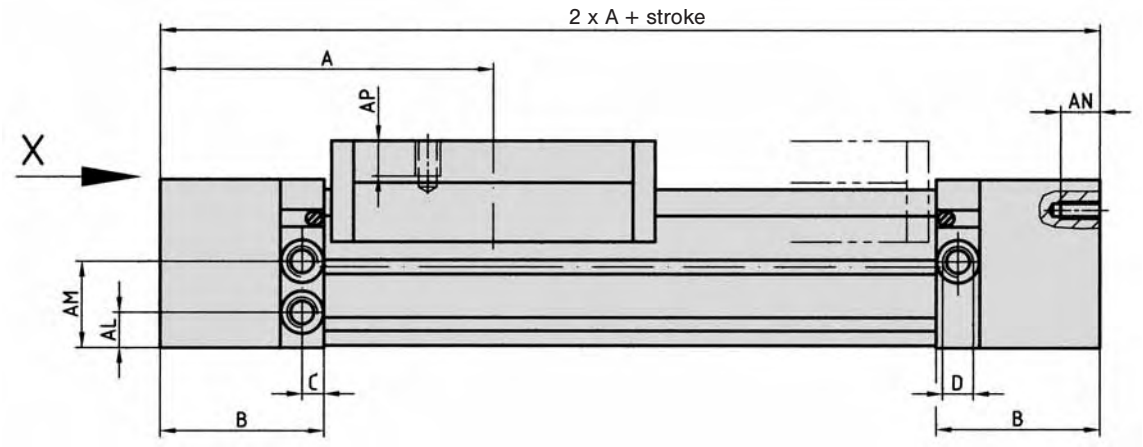
Design and function

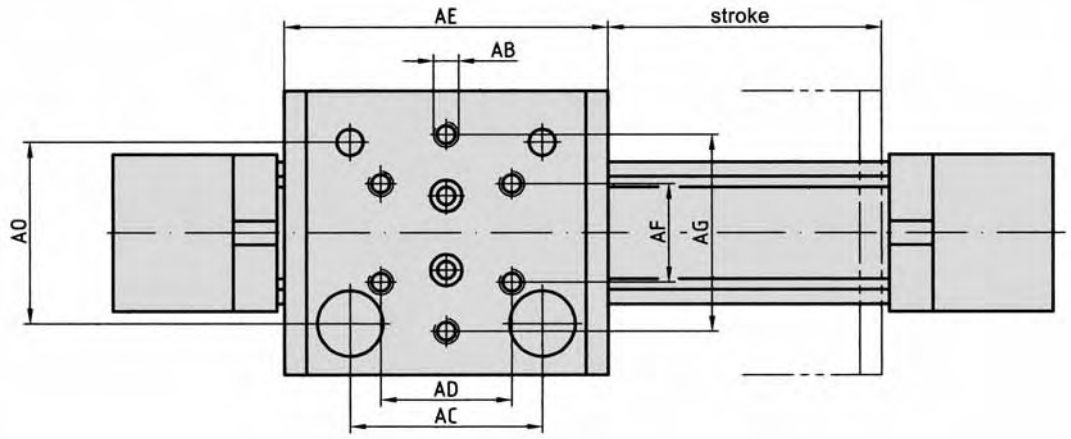
Double acting rod less toothed belt cylinder with adjustable cushions and magnet for proximity sensors. The toothed belt is driven by the piston in a closed profile tube. The piston actuates a slide with a pre-set roller guide.

Order number Please complete according to order code.	**ZR-40L-**…
Piston-Ø	40 mm
Connection	G 1/4
Cushioning length	32 mm (1 1/4 in)
Operating pressure	1 … 8 bar (14.5 … 116 psi)
Temperature range	– 15 °C … + 70 °C (+ 5 °F … + 158 °F)
Medium	filtered and slightly lubricated or filtered non-lubricated air. If speeds exceed 1 m/s (3.3 ft/s) lubricated air is recommended.
Stroke length	arbitrary up to 4500 mm (177 in)
Materials	Outer parts: hardened steel, Al-profile (anodized), plastic Seals: NBR, PA, PDF

Dimensions for series

ZR-40L





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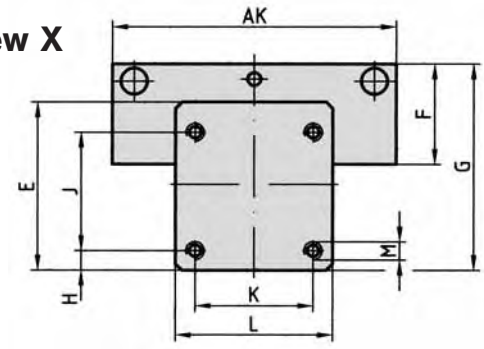
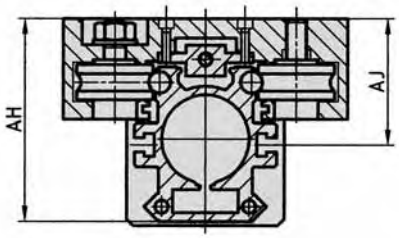




Magnetic piston is a standard feature.

Mass at 0 mm stroke . . . . . 4.84 kg (10.670 lbs.)
Mass for 100 mm (4 in) stroke extension . . . . . 0.70 kg (1.543 lbs.)

Max. stroke length 4.500 mm (177 in).

Cyl.-Ø	A	B	C	D	E	F	G	H	J	K	L	M
40	150	75	10	G 1/4	76,8	46,1	94,4	9	54	54	72	M 6

Cyl.-Ø	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	AN	AP
40	M 8	88	60	148	45	90	93,4	57,7	130	16	39,5	12	15

Cylinder mountings

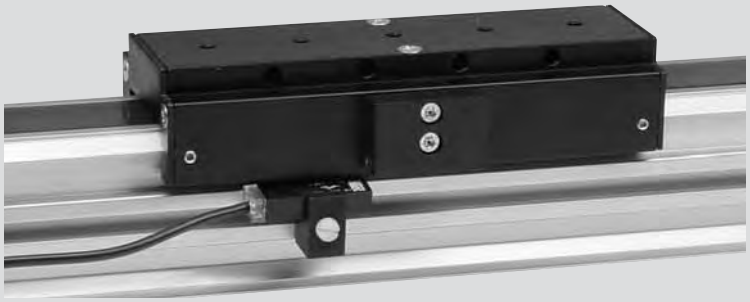
Head mounting
ZK-252, ZK-402
page 9.103

Head mounting tall
ZK-253, ZK-403
page 9.103

Center mounting
ZK-251, ZK-401
page 9.103

Nut M4
ZRM

Reed switch



Switch
ZS-100.1
page 9.105

Bracket
ZR-4007
page 9.104

Magnet
ZR-4006
page 9.104

Adapter for encoder

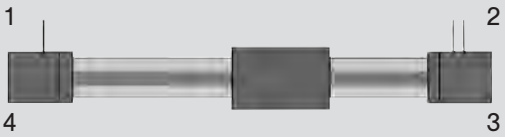
Direct attachment to housing
ZA-37
page 9.106

Attachment to brake
ZA-36
page 9.106

Air connections

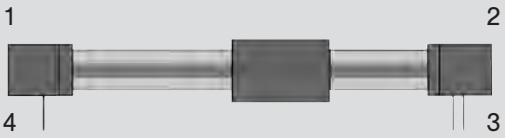
The cylinder is supplied with three air connections. Two connections are necessary for operation, while the third is closed by a plug (included in the scope of delivery). The desired position of the double connection has to be specified in the order code after the stroke length by choosing the adequate number.

Option – 1



Option – 2

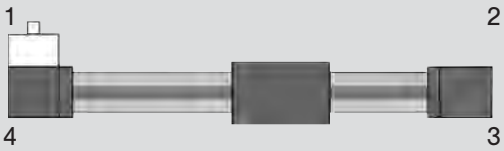
Option – 4



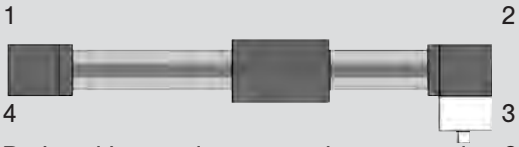
Option – 3

Brakes

Dimensions of brakes see page 9.107

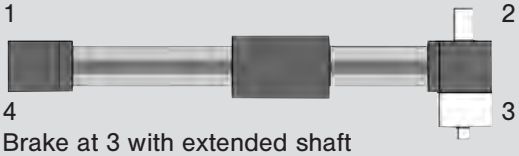


Brake with encoder connection mounted at 1
Option: A1 (BR-25-1, BR-40-1)

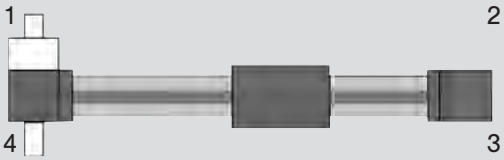


Brake with encoder connection mounted at 3
Option: A3 (BR-25-3, BR-40-3)

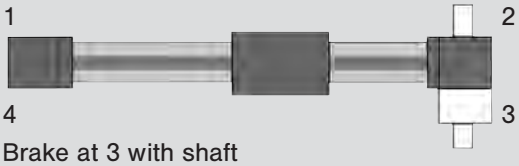
Brake at 1 with extended shaft
for synchronization at 4
Option: B1 (BR-251-1, BR-401-1)



Brake at 3 with extended shaft
for synchronization at 2
Option: B3 (BR-251-3, BR-401-3)

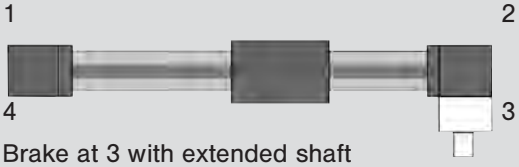


Brake at 1 with shaft
for synchronization at 1 and 4
Option: C1 (BR-252-1, BR-402-1)



Brake at 3 with shaft
for synchronization at 2 and 3
Option: C3 (BR-252-3, BR-402-3)

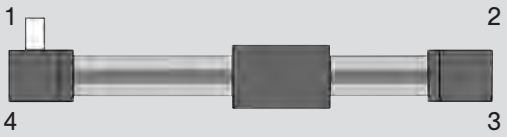
Brake at 1 with extended shaft
for synchronization at 1
Option: D1 (BR-253-1, BR-403-1)



Brake at 3 with extended shaft
for synchronization at 3
Option: D3 (BR-253-3, BR-403-3)

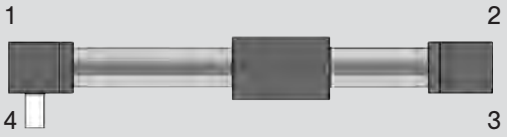
Driven shafts

Dimensions of driven shafts see page 9.108



Shaft for synchronization at 1
Option: F1 (ZK-254-1 ⌀ 25, ZK-404-1 ⌀ 40)

Shaft for synchronization at 2
Option: F2 (ZK-254-2 ⌀ 25, ZK-404-2 ⌀ 40)



Shaft for synchronization at 4
Option: F4 (ZK-254-4 ⌀ 25, ZK-404-4 ⌀ 40)

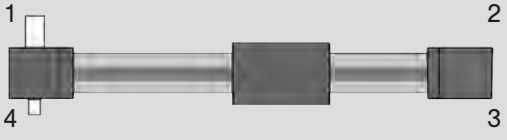
Shaft for synchronization at 3
Option: F3 (ZK-254-3 ⌀ 25, ZK-404-3 ⌀ 40)

Shaft for encoder connection at 1
Option: G1 (ZK-255-1 ⌀ 25, ZK-405-1 ⌀ 40)

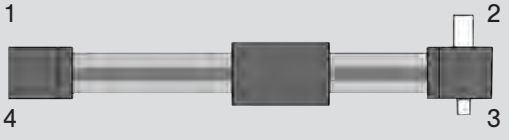
Shaft for encoder connection at 2
Option: G2 (ZK-255-2 ⌀ 25, ZK-405-2 ⌀ 40)

Shaft for encoder connection at 4
Option: G4 (ZK-255-4 ⌀ 25, ZK-405-4 ⌀ 40)

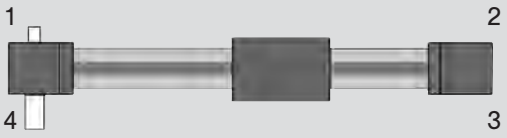
Shaft for encoder connection at 3
Option: G3 (ZK-255-3 ⌀ 25, ZK-405-3 ⌀ 40)



Shaft for encoder connection at 4
and synchronization at 1
Option: H1 (ZK-256-1 ⌀ 25, ZK-406-1 ⌀ 40)

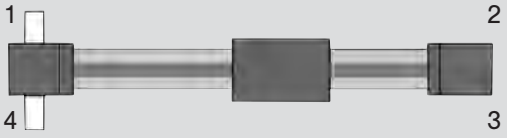


Shaft for encoder connection at 3
and synchronization at 2
Option: H2 (ZK-256-2 ⌀ 25, ZK-406-2 ⌀ 40)



Shaft for encoder connection at 1
and synchronization at 4
Option: H4 (ZK-256-4 ⌀ 25, ZK-406-4 ⌀ 40)

Shaft for encoder connection at 2
and synchronization at 3
Option: H3 (ZK-256-3 ⌀ 25, ZK-406-3 ⌀ 40)



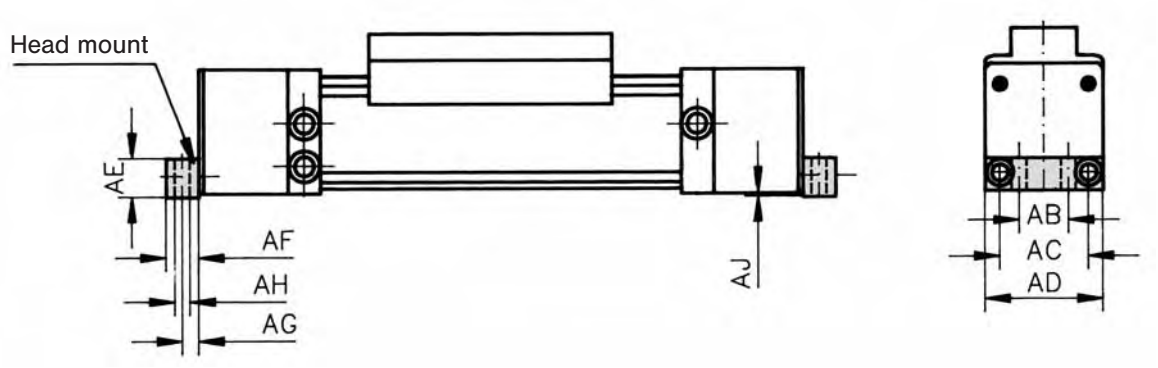
Shaft for synchronization on two sides
Option: J1 (ZK-257-1 ⌀ 25, ZK-407-1 ⌀ 40)

Shaft for synchronization on two sides
Option: J2 (ZK-257-2 ⌀ 25, ZK-407-2 ⌀ 40)

Mounting parts for series

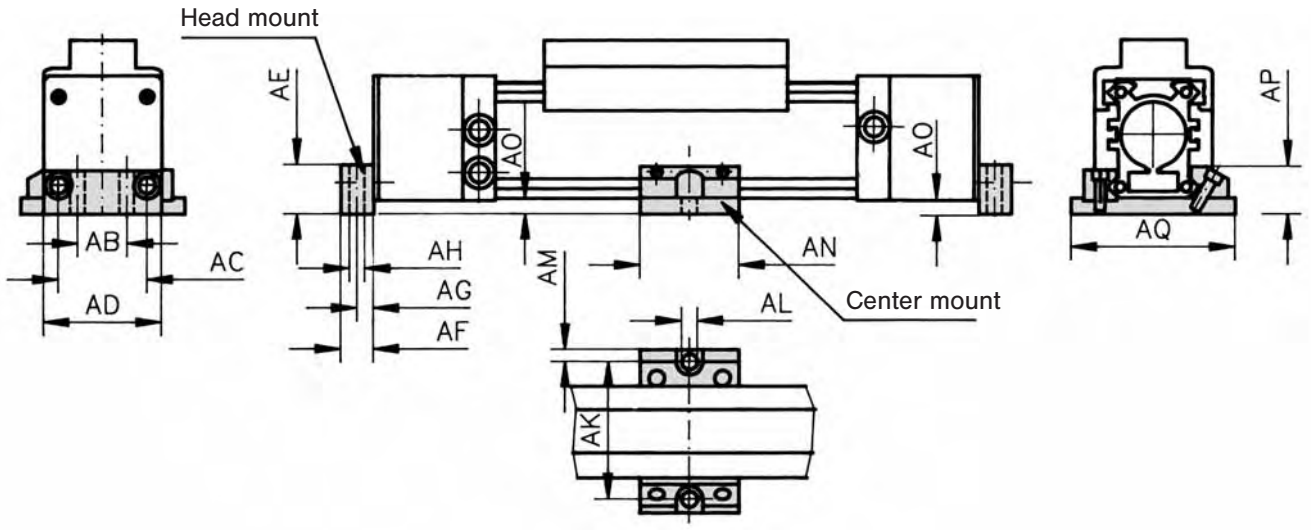
ZR

Head mount



Head mount									
Order number	**Cyl.-Ø**	**AB**	**AC**	**AD**	**AE**	**AF**	**AG**	**AH**	**AJ**
ZK-252	25	30	50	60	20	20	10	9	1
ZK-402	40	30	54	71	20	20	10	9	1

Center mount with tall head mount



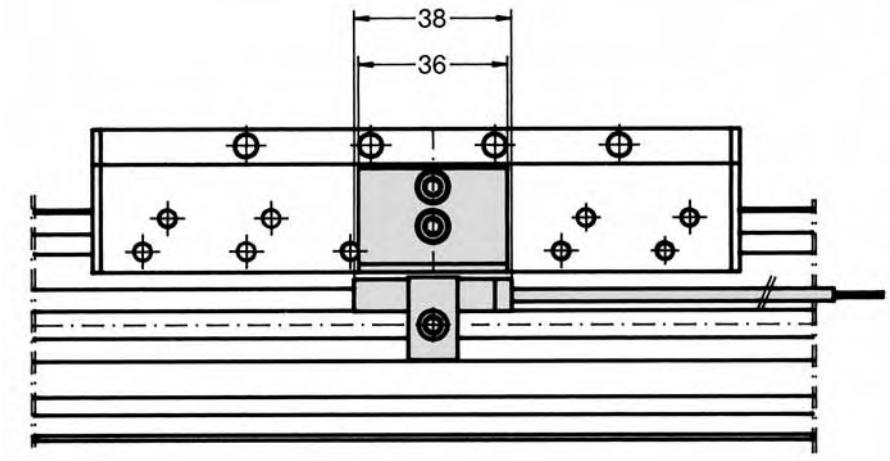
Head mount tall	Center mount															
Order number	**Order number**	**Cyl.-Ø**	**AB**	**AC**	**AD**	**AE**	**AF**	**AG**	**AH**	**AK**	**AL**	**AM**	**AN**	**AO**	**AP**	**AQ**
ZK-253	**ZK-251**	25	30	50	60	30	20	10	9	75	9	7.5	60	9	25	90
ZK-403	**ZK-401**	40	30	54	71	30	20	10	9	84	9	8	60	9	30	100

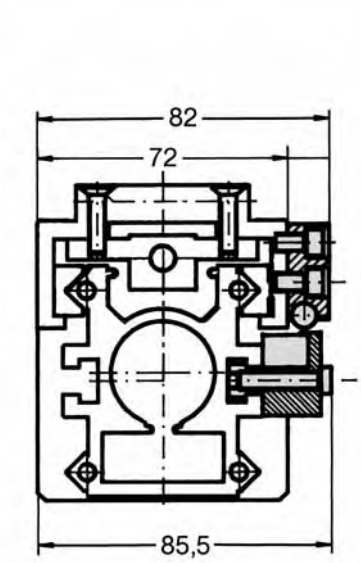
Reed switch for series

ZR

For series ZR-25 / ZR-40 / ZR-25S / ZR-40S / ZR-25R

Magnet is not included.
Order number for magnet **ZR-4006.**
Order number for sensor mounting bracket **ZR-4007.**

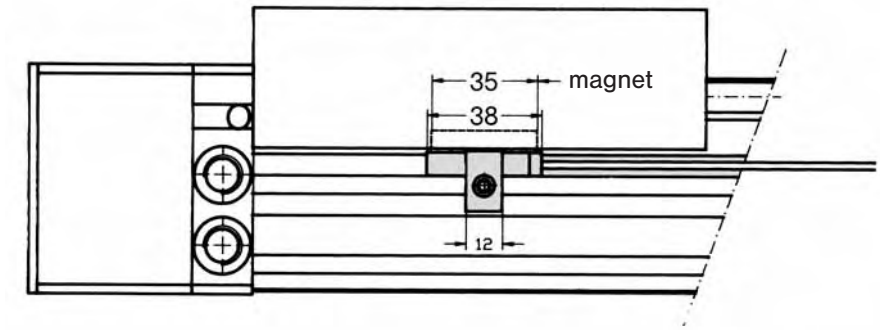


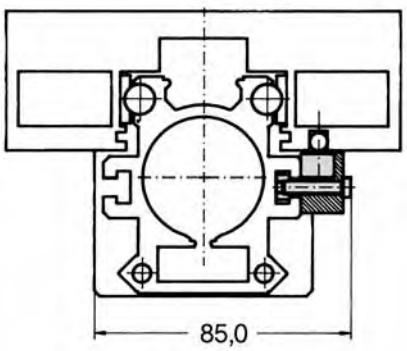


Sensors see page 9.105.

For series ZR-40L

Magnetic slide is a standard feature.
Order number for sensor mounting bracket **ZR-4007.**

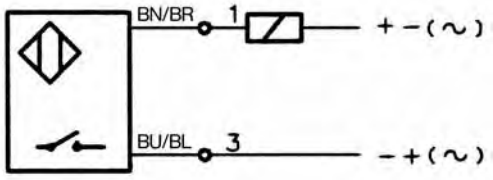


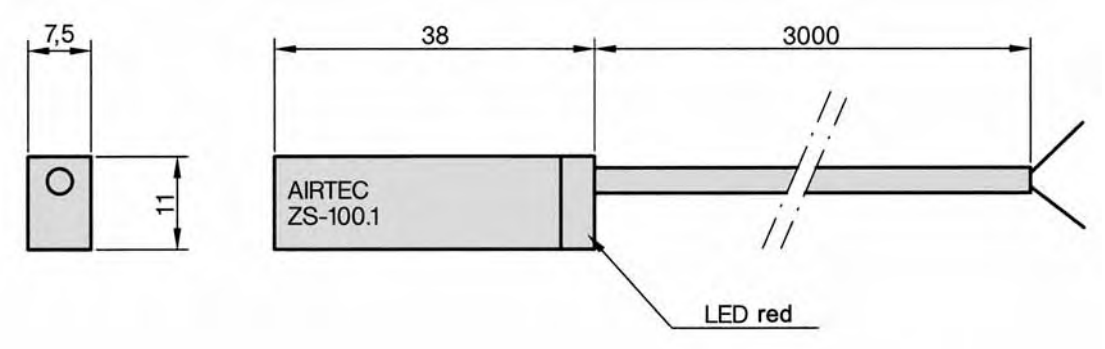


Sensors see page 9.105.

Reed switch for series

ZR

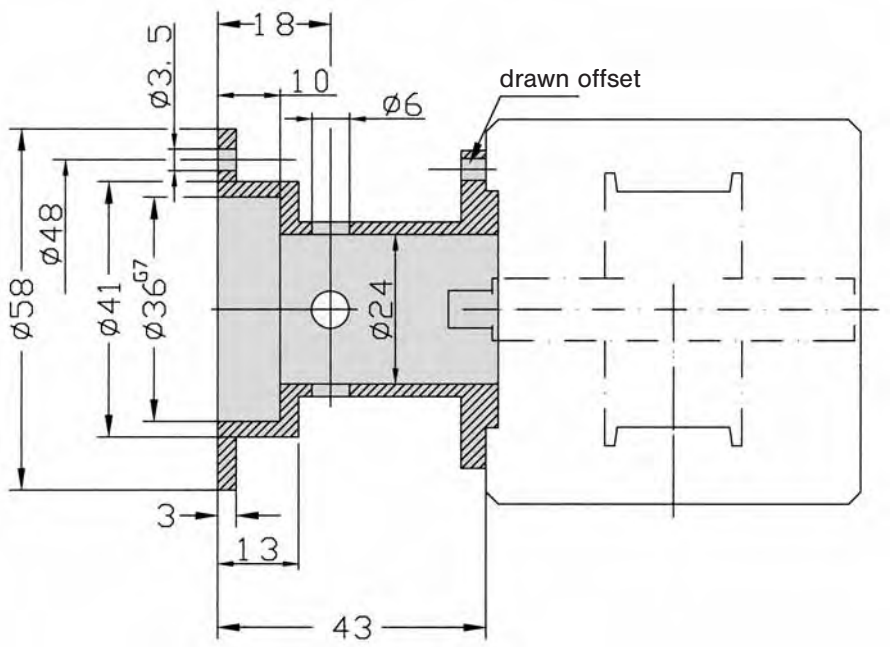




Order number	ZS 100.1
Weight	30 g
Length of cable	3 m
Temperature range	– 30 … + 80 °C (– 22 °F … + 176 °F)
Degree of protection	IP 67
Response time	≤ 0.1 ms
Switching time	≤ 2 ms
Electrical life (resistive load)	10^7
Repeatability	± 0.1 mm
Contact function	NO
Shock resistance	50 g
Vibration resistance	50 … 1000 Hz
Max. current at 25 °C (resistive load)	1 A
Max. Power DC/AC	50 W / 50 VA
Operating voltages (DC or AC)	3 … 250 V
Max. voltage drop	3 ΔV
Wire gauge	0.34 mm²

Adapter for encoder of series

ZR



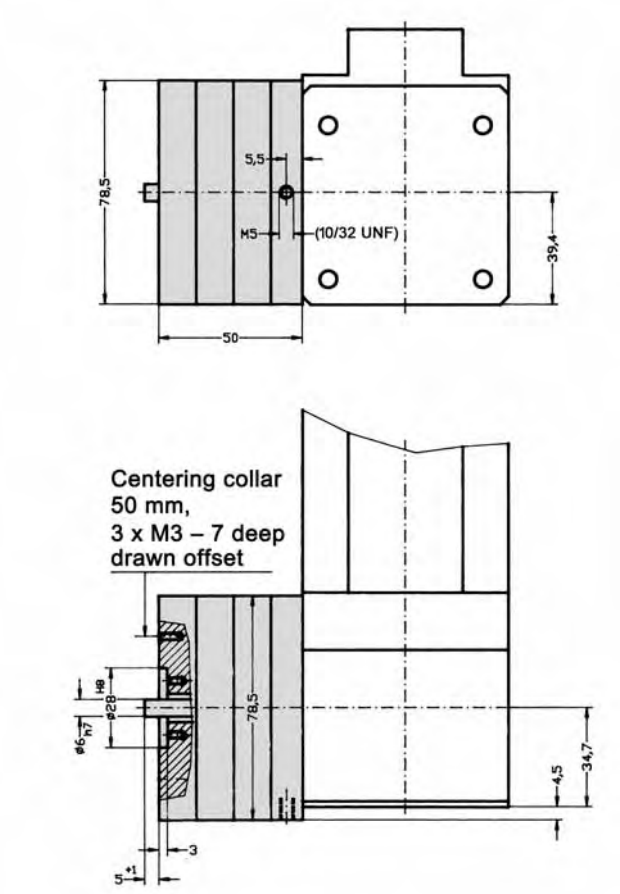
The adapters can be mounted on all cylinders of series ZR and will fit all encoders with a 36 mm centering collar.

Order number	ZA-36	ZA-37
Description	Attachment to brake	Direct attachment to housing

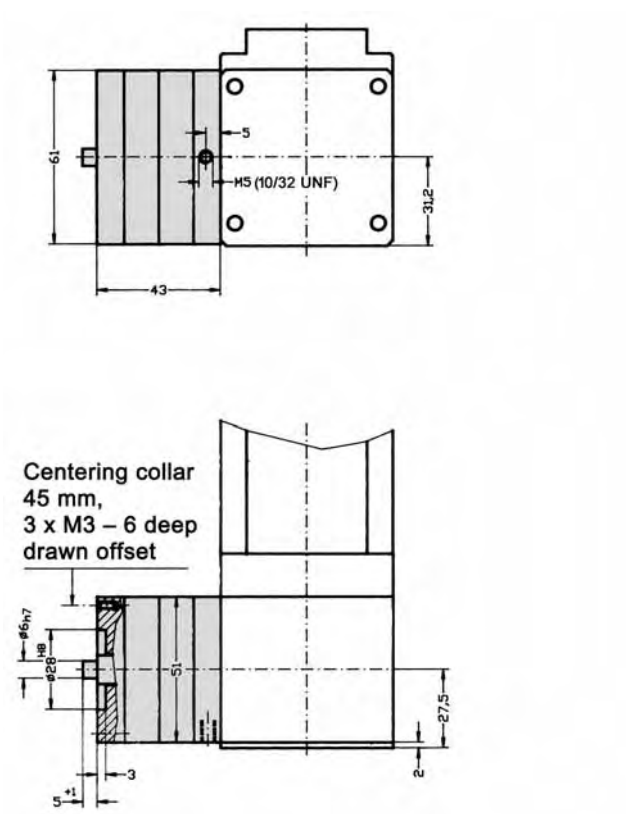
Brakes for series

ZR

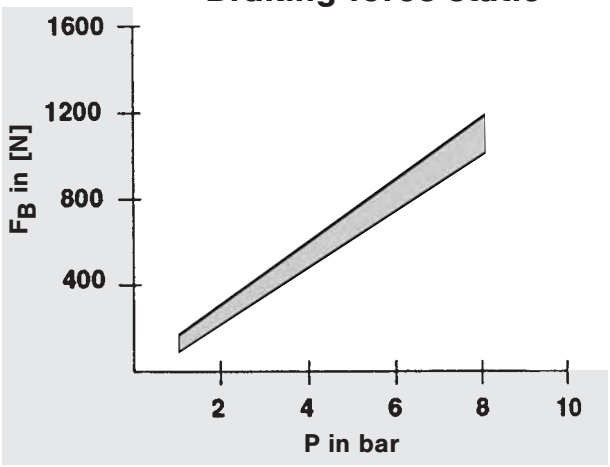
Option A for Ø 40



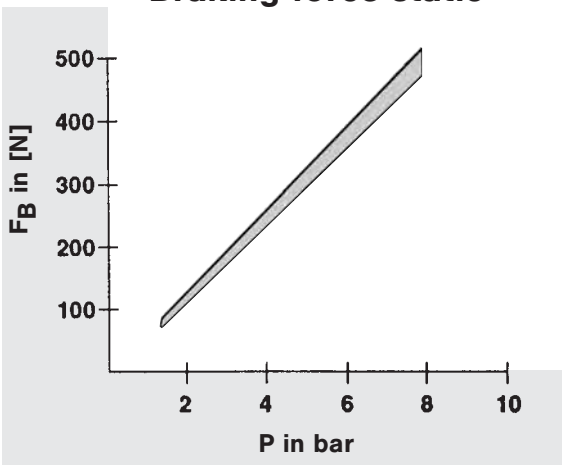
Option A for Ø 25



Braking force static



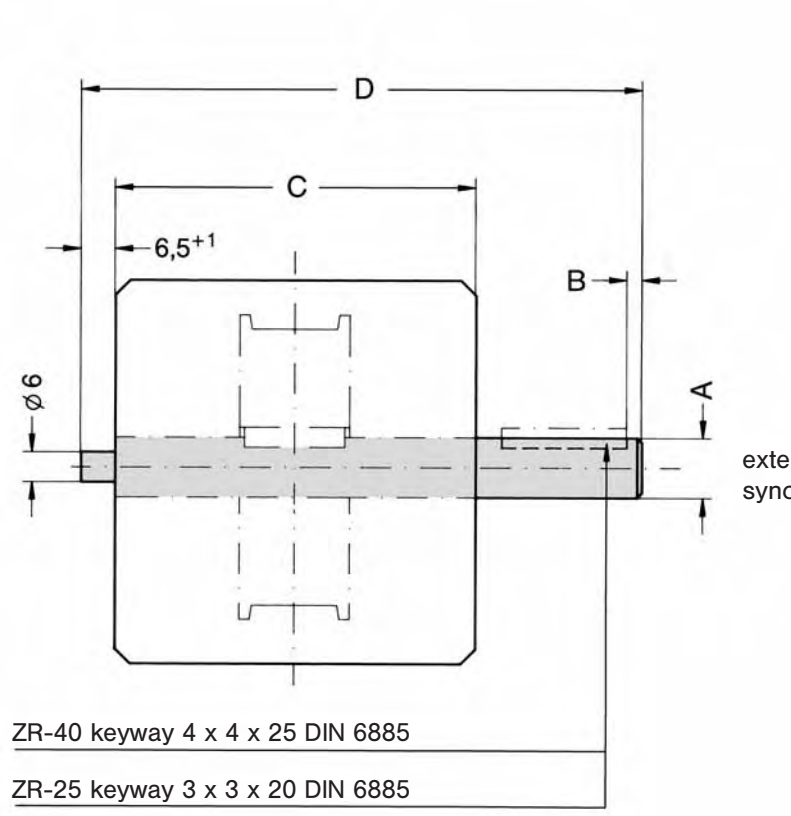
Braking force static



The brake is designed to hold the position. Do not use to stop the cylinder.

Extended shaft for series

ZR

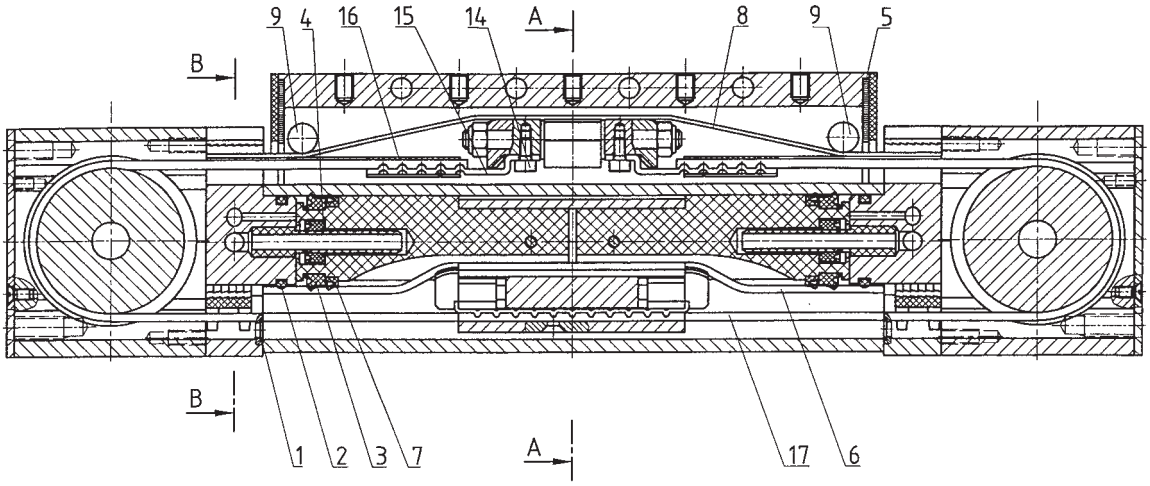


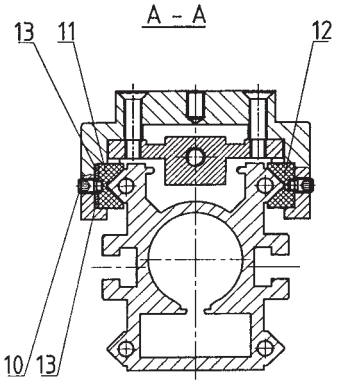
The slide travels 135 mm (ø 25) per one rotation of the shaft.
The slide travels 185 mm (ø 40) per one rotation of the shaft.

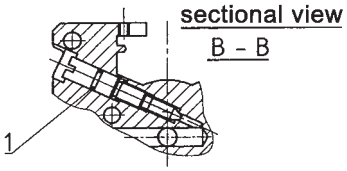
Cylinder-Ø	A	B	C	D
25	10_{h7}	2	60	93
40	12_{h7}	3	72	112

Seal kits for series

ZR-25, ZR-25R







Seal kit for ZR-25/ZR-25R

Order number: **VS-ZR-25-stroke (e.g. 0500)**

0500 = stroke lengths from 0 to 500 mm
1000 = stroke lengths from 501 to 1000 mm
1500 = stroke lengths from 1001 to 1500 mm
2000 = stroke lengths from 1501 to 2000 mm
3000 = stroke lengths from 2001 to 3000 mm
4500 = stroke lengths from 3001 to 4500 mm

Pos.	Description	Quantity
1	O-ring	4
2	O-ring	2
3	Piston seal	2
4	Cushion seal	2
5	Wiper	2
6	Sealing band	400 mm + stroke
7	Piston seal	2
8	Cover band	200 mm + stroke
9	Roller	2
	Grease	30 ml

Seal kit slide guideway for ZR-25

Order number: **VS-ZR-25-GL**

Pos.	Description	Quantity
10	Set screw	4
11	Slide 1	1
12	Slide 2	1
13	Support plate	2
	Screw M 4 x10	4
	Screw M 4 x16	2
5	Wiper	2
9	Roller	2
	Grease	30 ml

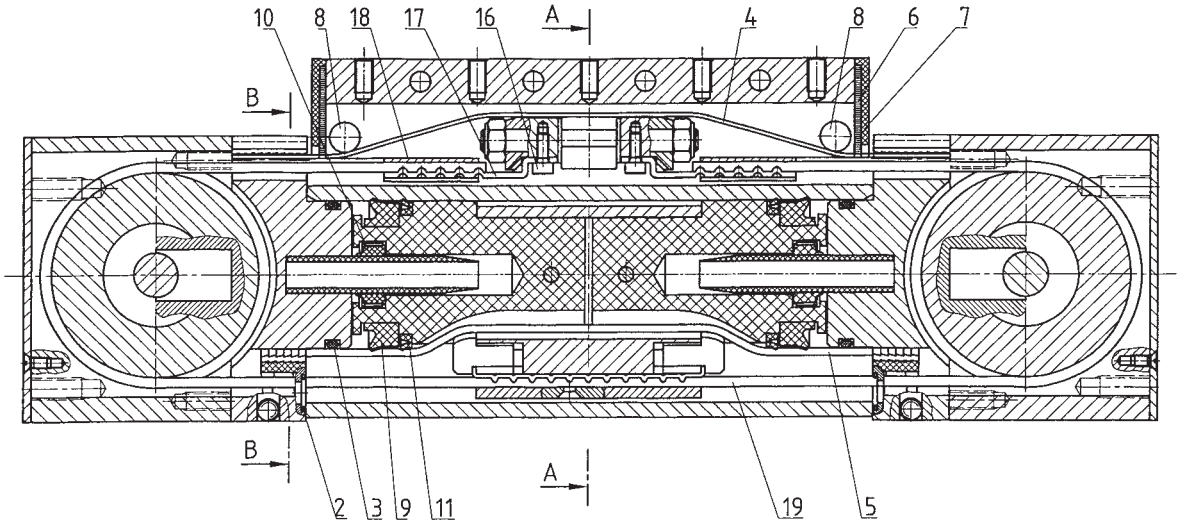
Toothed belt for ZR-25 and ZR-25R

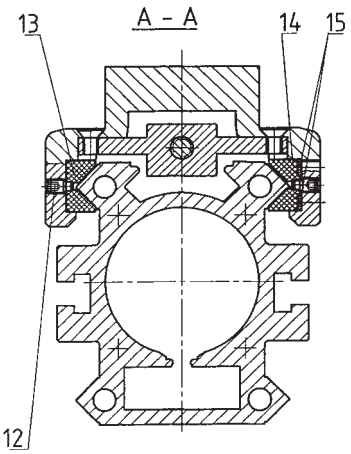
Order number: **VS-ZR-25-ZR-stroke**

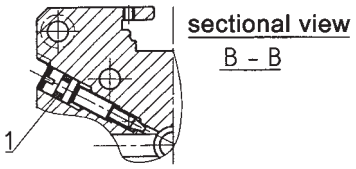
Pos.	Description	Quantity
14	Cylinder screw	4
15	Toothed plate	2
16	Clamp	2
17	Toothed belt	2 x (280 mm + stroke)

Seal kits for series

ZR-40







Seal kit for ZR40

Order number: **VS-ZR-40-stroke (e.g. 0500)**

0500 = stroke lengths from 0 to 500 mm
1000 = stroke lengths from 501 to 1000 mm
1500 = stroke lengths from 1001 to 1500 mm
2000 = stroke lengths from 1501 to 2000 mm
3000 = stroke lengths from 2001 to 3000 mm
4500 = stroke lengths from 3001 to 4500 mm

Pos.	Description	Quantity
1	O-Ring	2
2	O-Ring	2
3	O-Ring	2
4	Cover band	200 mm + stroke
5	Sealing band	400 mm + stroke
6	Wiper	2
7	Cover for wiper	2
8	Roller	2
9	Piston seal	2
10	Cushion seal	2
11	Piston seal	2
	Grease	30 ml

Seal kit slide guideway for ZR-40

Order number: **VS-ZR-40-GL**

Pos.	Description	Quantity
12	Set screw	4
13	Slide 1	1
14	Slide 2	1
15	Support plate	2
	Screw M 4 x 6	2
	Screw M 4 x10	4
6	Wiper	2
7	Cover for wiper	2
8	Roller	2
	Grease	30 ml

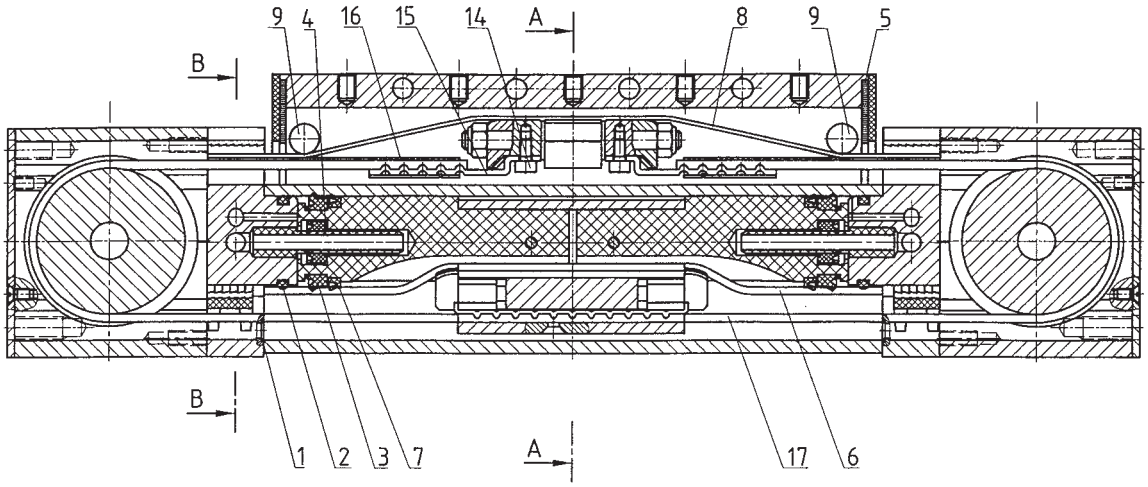
Toothed belt for ZR-40

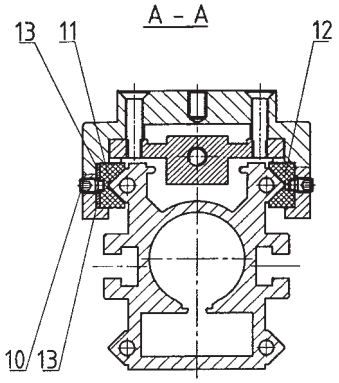
Order number: **VS-ZR-40-ZR-stroke**

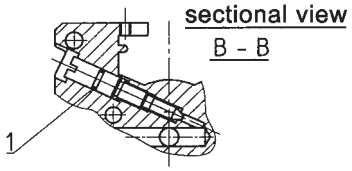
Pos.	Description	Quantity
16	Cylinder screw	4
17	Toothed plate	2
18	Clamp	2
19	Toothed belt	2 x (290 mm + stroke)

Seal kits for series

ZR-25S







Seal kit for ZR-25S

Order number: **VS-ZR-25S-stroke (e.g. 0500)**

0500 = stroke lengths from 0 to 500 mm
1000 = stroke lengths from 501 to 1000 mm
1500 = stroke lengths from 1001 to 1500 mm
2000 = stroke lengths from 1501 to 2000 mm
3000 = stroke lengths from 2001 to 3000 mm
4500 = stroke lengths from 3001 to 4500 mm

Pos.	Description	Quantity
1	O-Ring	4
2	O-Ring	2
3	Piston seal	2
4	Cushion seal	2
5	Wiper	2
6	Sealing band	550 mm + stroke
7	Piston seal	2
8	Cover band	350 mm + stroke
9	Roller	2
	Grease	30 ml

Seal kit slide guideway for ZR-25S

Order number: **VS-ZR-25S-GL**

Pos.	Description	Quantity
10	Set screw	8
11	Slide 3	2
12	Slide 4	2
13	Support plate	4
	Screw M 4 x 6	4
	Screw M 4 x 10	2
5	Wiper	2
9	Roller	2
	Grease	30 ml

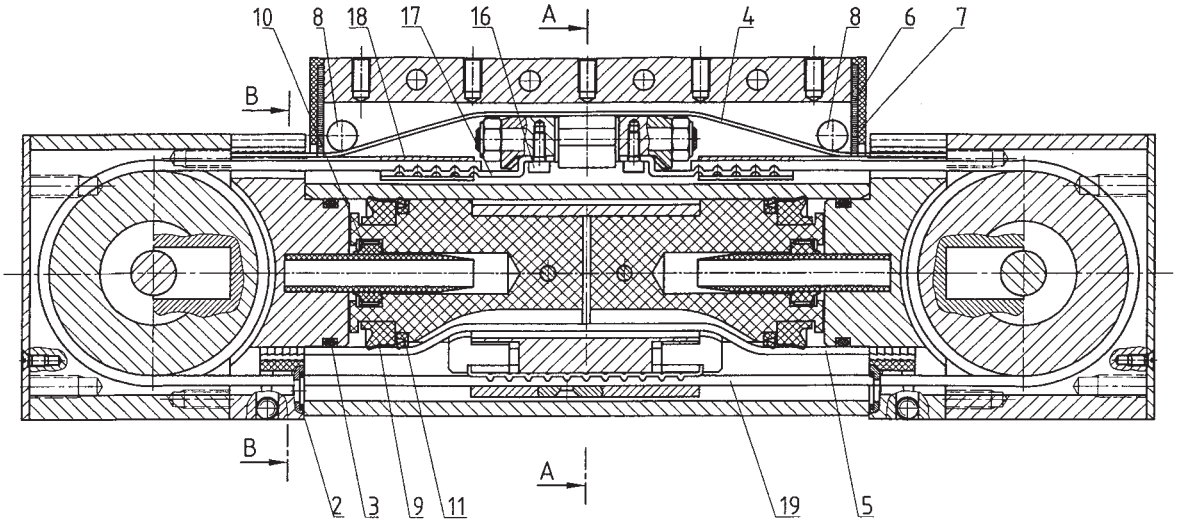
Toothed belt for ZR-25S

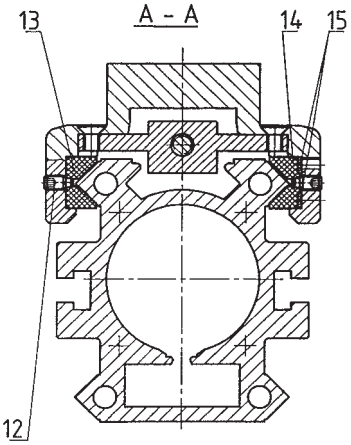
Order number: **VS-ZR-25S-ZR-stroke**

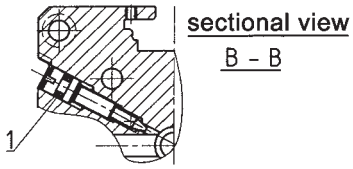
Pos.	Description	Quantity
14	Cylinder screw	4
15	Toothed plate	2
16	Clamp	2
17	Toothed belt	2 x (385 mm + stroke)

Seal kits for series

ZR-40S







Seal kit for ZR40S

Order number: **VS-ZR-40S-stroke (e.g. 0500)**

0500 = stroke lengths from 0 to 500 mm
1000 = stroke lengths from 501 to 1000 mm
1500 = stroke lengths from 1001 to 1500 mm
2000 = stroke lengths from 1501 to 2000 mm
3000 = stroke lengths from 2001 to 3000 mm
4500 = stroke lengths from 3001 to 4500 mm

Pos.	Description	Quantity
1	O-Ring	2
2	O-Ring	2
3	O-Ring	2
4	Cover band	350 mm + stroke
5	Sealing band	550 mm + stroke
6	Wiper	2
7	Cover for wiper	2
8	Roller	2
9	Piston seal	2
10	Cushion seal	2
11	Piston seal	2
	Grease	30 ml

Seal kit slide guideway for ZR-40S

Order number: **VS-ZR-40S-GL**

Pos.	Description	Quantity
12	Set screw	8
13	Slide 1	2
14	Slide 2	2
15	Support plate	4
	Screw M 4 x 6	2
	Screw M 4 x 10	4
6	Wiper	2
7	Cover	2
8	Roller	2
	Grease	30 ml

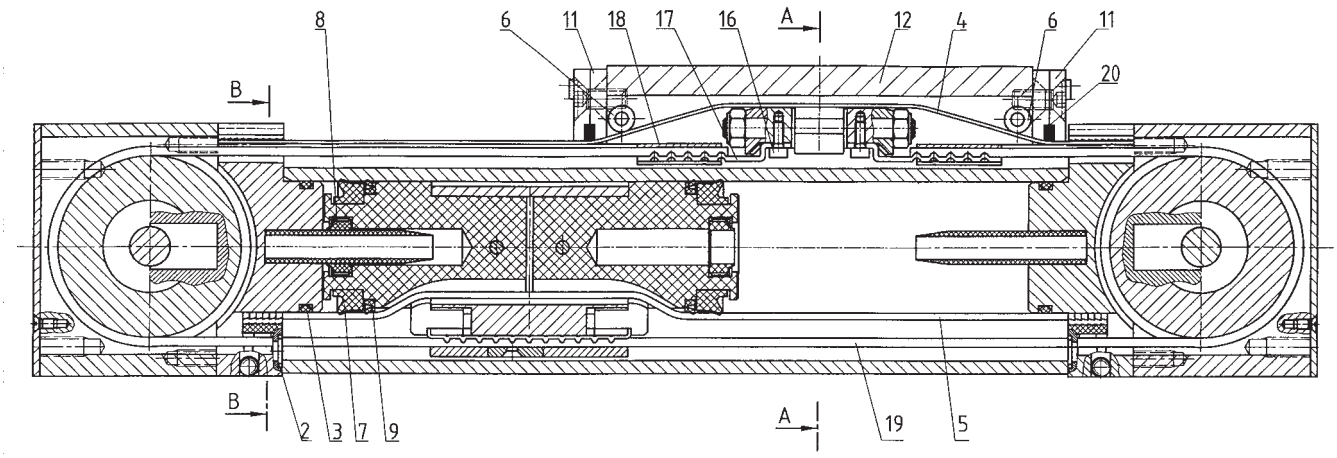
Toothed belt for ZR-40S

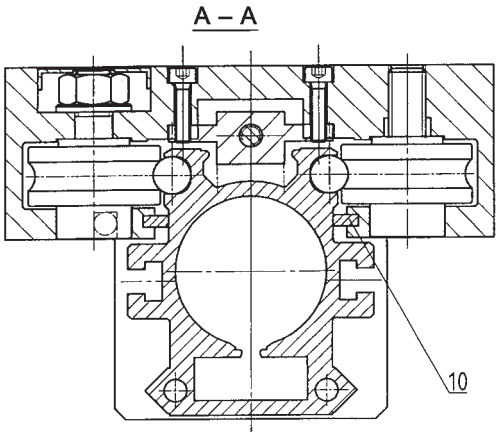
Order number: **VS-ZR-40S-ZR-stroke**

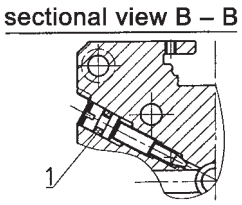
Pos.	Description	Quantity
16	Cylinder screw	4
17	Toothed plate	2
18	Clamp	2
19	Toothed belt	2 x (395 mm + stroke)

Seal kits for series

ZR-40L







Seal kit for ZR40L

Order number: **VS-ZR-40L-stroke (e.g. 0500)**

0500 = stroke lengths from 0 to 500 mm
1000 = stroke lengths from 501 to 1000 mm
1500 = stroke lengths from 1001 to 1500 mm
2000 = stroke lengths from 1501 to 2000 mm
3000 = stroke lengths from 2001 to 3000 mm
4500 = stroke lengths from 3001 to 4500 mm

Pos.	Description	Quantity
1	O-Ring	2
2	O-Ring	2
3	O-Ring	2
4	Cover band	200 mm + stroke
5	Sealing band	400 mm + stroke
6	Roller	2
7	Piston seal	2
8	Cushion seal	2
9	Piston seal	2
10	Wiper	2
20	Wiper	2
	Grease	30 ml

Cover for ZR-40L

Order number: **VS-ZR-40L-AD**

Pos.	Description	Quantity
11	Cover for wiper	2
10	Wiper	2
	Flat-head screw M 6	4

Roller slide complete for ZR40L

Order number: **31-40-115-52**

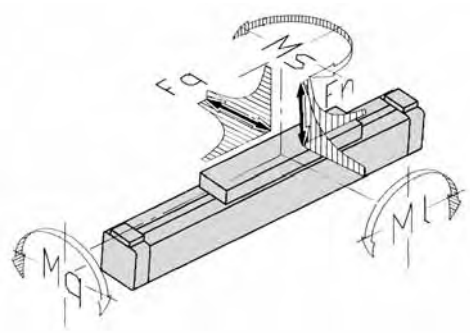
Toothed belt for ZR-40L

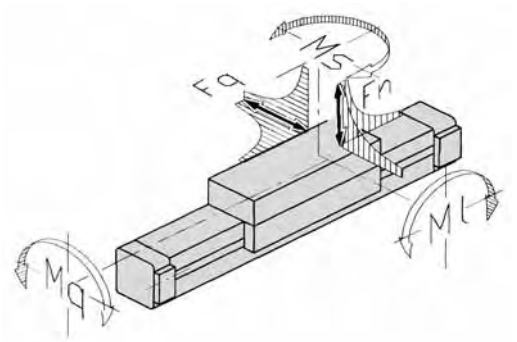
Order number: **VS-ZR-40-ZR-stroke**

Pos.	Description	Quantity
16	Screw	4
17	Toothed plate	2
18	Clamp	2
19	Toothed belt	2 x (290 mm + stroke)

Definition of forces and torques

ZX





Maximum Force and Torque Data

Type	Operating force*	Fn max.	Fq max.	Ml max.	Mq max.	Ms max.
ZX-25-S	255 N (57 lbf)	270 N (61 lbf)	–	13 Nm (9.59 ft. lbf.)	2.5 Nm (1.84 ft. lbf.)	11 Nm (8.11 ft. lbf.)
ZX-25-K	255 N (57 lbf)	270 N (61 lbf)	–	8 Nm (5.90 ft. lbf.)	2.0 Nm (1.47 ft. lbf.)	7 Nm (5.16 ft. lbf.)
ZX-25-SG	250 N (56 lbf)	580 N (130 lbf)	580 N (130 lbf)	23 Nm (17.0 ft. lbf.)	10.0 Nm (7.37 ft. lbf.)	23 Nm (17.0 ft. lbf.)
ZX-25-KG	250 N (56 lbf)	340 N (76 lbf)	340 N (76 lbf)	9 Nm (6.64 ft. lbf.)	5.0 Nm (3.69 ft. lbf.)	9 Nm (6.64 ft. lbf.)
ZX-25-SR	250 N (56 lbf)	850 N (191 lbf)	1300 N (292 lbf)	65 Nm (47.9 ft. lbf.)	35.0 Nm (25.8 ft. lbf.)	105 Nm (77.4 ft. lbf.)
ZX-25-KR	250 N (56 lbf)	850 N (191 lbf)	1300 N (292 lbf)	29 Nm (21.4 ft. lbf.)	35.0 Nm (25.8 ft. lbf.)	64 Nm (47.2 ft. lbf.)
ZX-32-S	420 N (94 lbf)	300 N (67 lbf)	–	30 Nm (22.1 ft. lbf.)	3.0 Nm (2.21 ft. lbf.)	24 Nm (17.7 ft. lbf.)
ZX-32-K	420 N (94 lbf)	300 N (67 lbf)	–	15 Nm (11.1 ft. lbf.)	3.0 Nm (2.21 ft. lbf.)	12 Nm (8.85 ft. lbf.)
ZX-32-SG	410 N (92 lbf)	850 N (191 lbf)	850 N (191 lbf)	33 Nm (24.3 ft. lbf.)	15.0 Nm (11.1 ft. lbf.)	33 Nm (24.3 ft. lbf.)
ZX-32-KG	410 N (92 lbf)	460 N (103 lbf)	460 N (103 lbf)	14 Nm (10.3 ft. lbf.)	6.5 Nm (4.79 ft. lbf.)	14 Nm (10.3 ft. lbf.)
ZX-32-SR	410 N (92 lbf)	900 N (202 lbf)	1500 N (337 lbf)	79 Nm (58.3 ft. lbf.)	40.0 Nm (29.5 ft. lbf.)	125 Nm (92.2 ft. lbf.)
ZX-32-KR	410 N (92 lbf)	900 N (202 lbf)	1500 N (337 lbf)	36 Nm (26.5 ft. lbf.)	40.0 Nm (29.5 ft. lbf.)	76 Nm (56.1 ft. lbf.)
ZX-40-S	655 N (147 lbf)	650 N (146 lbf)	–	60 Nm (44.2 ft. lbf.)	4.0 Nm (2.95 ft. lbf.)	54 Nm (39.8 ft. lbf.)
ZX-40-K	655 N (147 lbf)	650 N (146 lbf)	–	30 Nm (22.1 ft. lbf.)	4.0 Nm (2.95 ft. lbf.)	27 Nm (19.9 ft. lbf.)
ZX-40-SG	640 N (144 lbf)	1120 N (252 lbf)	1120 N (252 lbf)	60 Nm (44.2 ft. lbf.)	25.0 Nm (18.4 ft. lbf.)	60 Nm (44.2 ft. lbf.)
ZX-40-KG	640 N (144 lbf)	600 N (135 lbf)	600 N (135 lbf)	25 Nm (18.4 ft. lbf.)	11.0 Nm (8.11 ft. lbf.)	25 Nm (18.4 ft. lbf.)
ZX-40-SR	640 N (144 lbf)	1200 N (270 lbf)	2000 N (450 lbf)	190 Nm (140 ft. lbf.)	67.0 Nm (49.4 ft. lbf.)	118 Nm (87.0 ft. lbf.)
ZX-40-KR	640 N (144 lbf)	1200 N (270 lbf)	2000 N (450 lbf)	85 Nm (62.7 ft. lbf.)	67.0 Nm (49.4 ft. lbf.)	72 Nm (53.1 ft. lbf.)
ZX-50-S	1000 N (225 lbf)	800 N (180 lbf)	–	80 Nm (59.0 ft. lbf.)	17.0 Nm (12.5 ft. lbf.)	74 Nm (54.6 ft. lbf.)
ZX-50-K	1000 N (225 lbf)	800 N (180 lbf)	–	38 Nm (28.0 ft. lbf.)	17.0 Nm (12.5 ft. lbf.)	32 Nm (23.6 ft. lbf.)
ZX-50-SG	1000 N (225 lbf)	1550 N (348 lbf)	1500 N (337 lbf)	200 Nm (147.5 ft. lbf.)	70.0 Nm (51.6 ft. lbf.)	200 Nm (147.5 ft. lbf.)
ZX-50-KG	1000 N (225 lbf)	820 N (184 lbf)	800 N (180 lbf)	60 Nm (44.2 ft. lbf.)	40.0 Nm (29.5 ft. lbf.)	60 Nm (44.2 ft. lbf.)
ZX-50-SR	1000 N (225 lbf)	4100 N (922 lbf)	2000 N (450 lbf)	157 Nm (115.6 ft. lbf.)	45.0 Nm (33.1 ft. lbf.)	170 Nm (125.2 ft. lbf.)
ZX-50-KR	1000 N (225 lbf)	1800 N (405 lbf)	2000 N (450 lbf)	67 Nm (49.4 ft. lbf.)	45.0 Nm (33.1 ft. lbf.)	106 Nm (78.1 ft. lbf.)
ZX-63-S	1600 N (360 lbf)	1400 N (315 lbf)	–	110 Nm (81.0 ft. lbf.)	17.0 Nm (12.5 ft. lbf.)	100 Nm (73.7 ft. lbf.)
ZX-63-K	1600 N (360 lbf)	1400 N (315 lbf)	–	50 Nm (36.8 ft. lbf.)	17.0 Nm (12.5 ft. lbf.)	48 Nm (35.4 ft. lbf.)
ZX-63-SG	1600 N (360 lbf)	2000 N (450 lbf)	2000 N (450 lbf)	300 Nm (221.2 ft. lbf.)	102.0 Nm (75.2 ft. lbf.)	300 Nm (221.2 ft. lbf.)
ZX-63-KG	1600 N (360 lbf)	1100 N (247 lbf)	1100 N (247 lbf)	105 Nm (77.4 ft. lbf.)	56.0 Nm (41.3 ft. lbf.)	105 Nm (77.4 ft. lbf.)
ZX-63-SR	1600 N (360 lbf)	5000 N (1124 lbf)	2000 N (450 lbf)	196 Nm (144.4 ft. lbf.)	52.0 Nm (38.3 ft. lbf.)	208 Nm (153.2 ft. lbf.)
ZX-63-KR	1600 N (360 lbf)	2500 N (562 lbf)	2000 N (450 lbf)	99 Nm (72.9 ft. lbf.)	52.0 Nm (38.3 ft. lbf.)	134 Nm (98.7 ft. lbf.)

The mounting surface of the assembled mass should not exceed a straightness tolerance of 0.1 mm to avoid additional tension or clearance in the guiding system.

Complex loads

If more than one force and torque appear simultaneously, they have to be calculated by the formula:

$$\frac{Fn}{Fn_{max.}} + \frac{Fq}{Fq_{max.}} + \frac{Ml}{Ml_{max.}} + \frac{Mq}{Mq_{max.}} + \frac{Ms}{Ms_{max.}} \leq 1$$

Information on forces and torques refers to speeds for slide guides (series S, K, SG and KG) of ≤ 0.2 m/s (0.656 ft/s) and speeds for roller guides (series SR and KR) of ≤ 2 m/s (6.562 ft/s).

Where speeds exceed 0.2 m/s (0.656 ft/s) the permissible values of the slide guides are to be multiplied by the loading coefficient (see table on the right).

The information on torques refers to the center point of the slide which, in the case of the ZX-S and ZX-K cylinders, is the center of the tube. In versions with slide guides, the center point of the guide is in the slide.

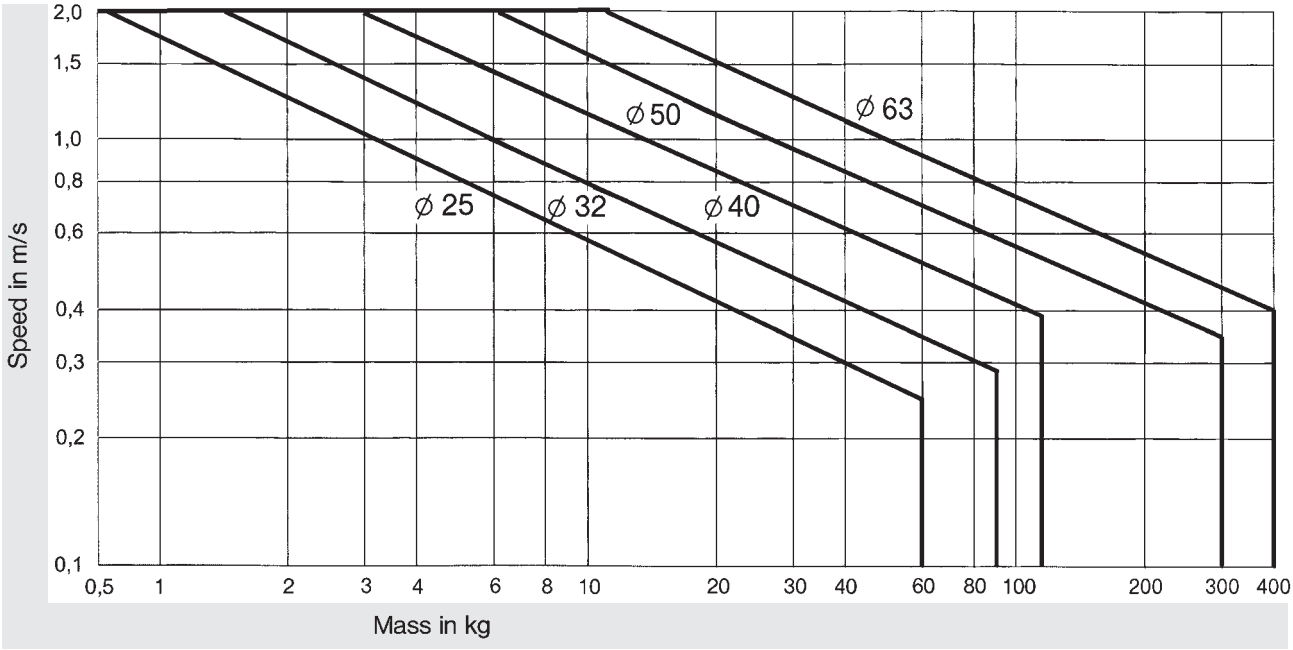
* Operating force at 6 bar (87 psi). The internal friction is considered.

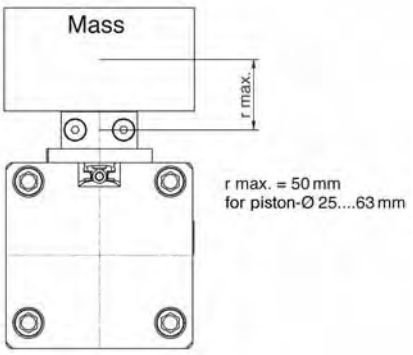
Loading coefficient

V in m/s	V in ft/s	Factor
0.2	0.656	1
0.3	0.984	0.75
0.4	1.312	0.5
0.5	1.640	0.4
0.75	2.460	0.27
1	3.281	0.2

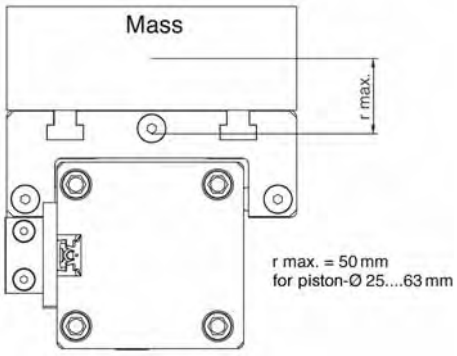
Cushioning diagram

The stroke end cushion must be adjusted to hitchless driving. If the application is out of the diagram range, an external shock absorber is required. The mounting position of shock absorbers must be close to the center of the mass. The data applies to a horizontal mounting position.

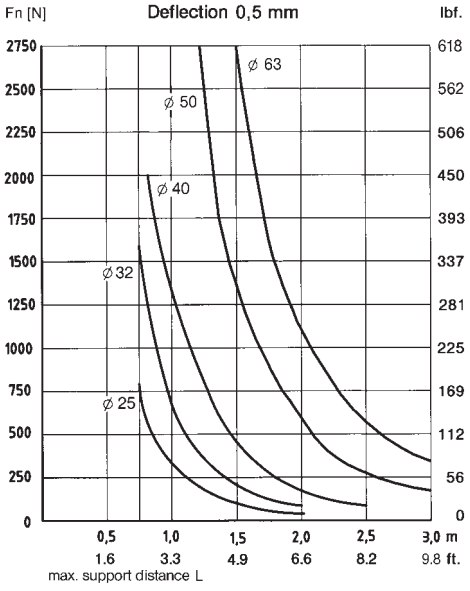


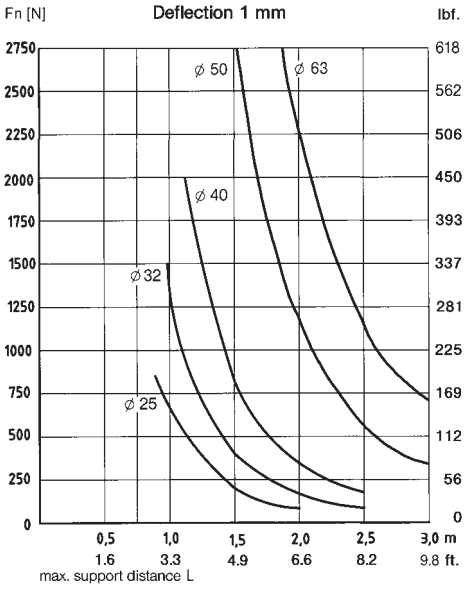


Please abide by the information given for the maximum Force and Torque Data as seen on page 9.140 this also applies with additional weight.



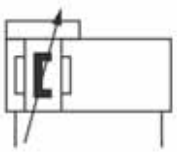
Deflection





Technical data for series

ZX-Ø-S



Order code

ZX-25-S-0500-01

Series | **Piston-Ø** (mm) | **Type** | **Stroke length** (mm) | **Air connection** details see page 9.156

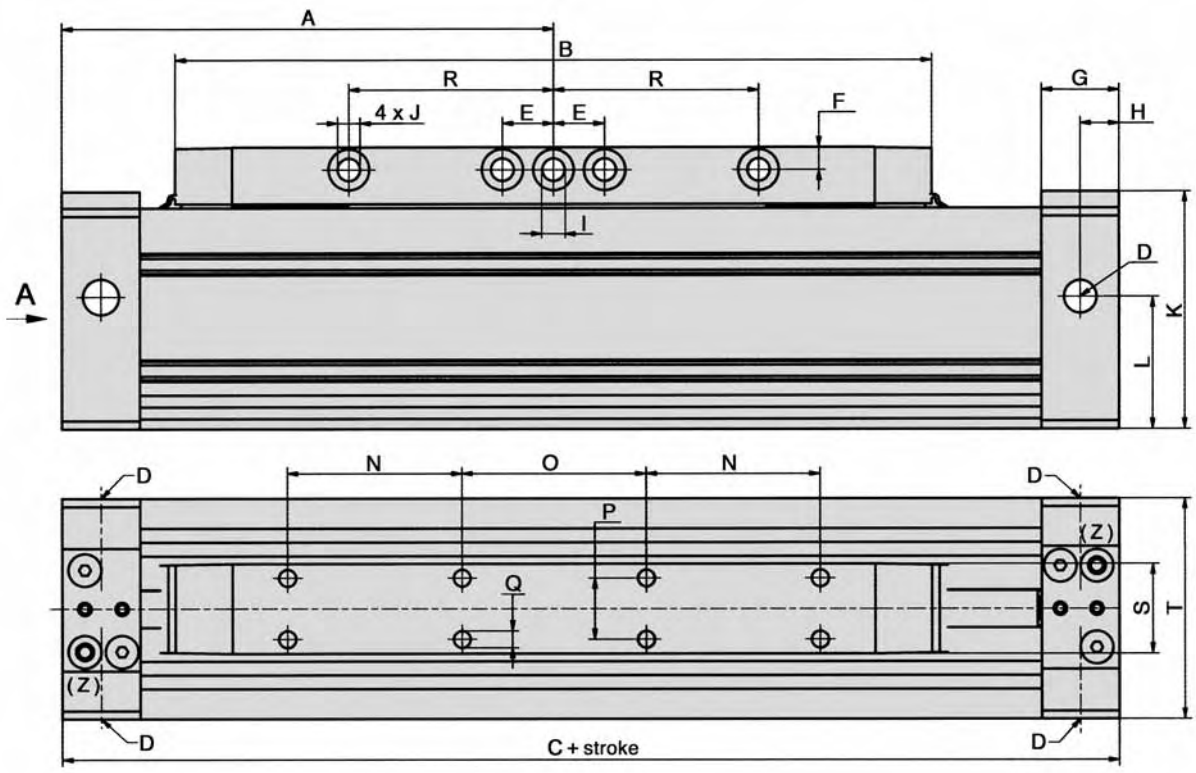
Design and function

Double acting rodless cylinder with adjustable cushion and permanent magnet. The non-rotating piston guides the moving mass.
The sensors can be installed directly into the grooves of the aluminum profile.
Cylinders of this series are available in explosion proof design in accordance with 94/9/EG (ATEX). For further details see chapter 12 of this catalogue.

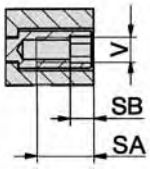
Order number Please complete according to order code.	**ZX-25-S-**…	**ZX-32-S-**…	**ZX-40-S-**…	**ZX-50-S-**…	**ZX-63-S-**…
Piston-Ø (mm)	25	32	40	50	63
Connection	G 1/8	G 1/8	G 1/4	G 3/8	G 3/8
Cushioning length (mm)	24	28	36	45	59
Mass at 0 mm stroke	0.88 kg (1.940 lbs.)	1.40 kg (3.086 lbs.)	2.41 kg (5.313 lbs.)	5.3 kg (11.684 lbs.)	8.1 kg (17.857 lbs.)
additional mass per 100 mm	0.30 kg (0.661 lb.)	0.39 kg (0.860 lb.)	0.52 kg (1.168 lbs.)	0.96 kg (2.116 lbs.)	1.32 kg (2.91 lbs.)
Operating pressure	1 … 8 bar (14.5 … 116 psi)				
Temperature range	– 10 °C … + 70 °C (+ 14 °F … + 158 °F)				
Medium	filtered and slightly lubricated or filtered non-lubricated air. If speeds exceed 1 m/s (3.3 ft/s) lubricated air is recommended.				
Stroke length	arbitrary up to 6000 mm (arbitrary up to 236 in)		max. 5950 mm (max. 234 in)	max. 5910 mm (max. 232 in)	max. 5860 mm (max. 230 in)
Materials	Al (anodized), plastic Seals: NBR, PU				

Dimensions for series

ZX-Ø-S

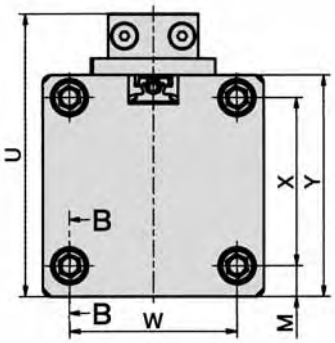


cross section B-B



SA = Depth of thread
SB = Length of hex.

view A



(Z) = Cushion set screw.

Drawing shows pressure supply type -01 for air connection on both ends.

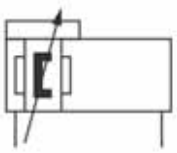
Other types see page 9.156.

Piston-Ø	A	B	C	D	E	F	G	H	I	J	K	L	M	N
25	100	149.6	200	G 1/8	12.5	5	19	9.5	6 H7	4.5	49	25	4.5	20
32	120	184.5	240	G 1/8	12.5	5.5	19	9.5	6 H7	5.5	58	32.3	7.5	42.5
40	150	222.6	300	G 1/4	12.5	7	23	11.5	7 H7	6.5	68	38.2	7.5	35
50	175	262	350	G 3/8	17.5	9	30	17	10	8.5	94	59	12.5	45
63	200	300	400	G 3/8	25	9.5	30	17	10	8.5	110	68.4	14.0	80

Piston-Ø	O	P	Q	R	S	T	U	V	W	X	Y	SA	SB
25	50	15	M5 x 7 mm deep	35	22	45	60	M4	36	36	45	11	3
32	45	15	M5 x 7 mm deep	50	22	54	69	M5	41	41	54	11	4
40	90	15	M5 x 9 mm deep	65	22	64	82	M6	49	49	64	12	4
50	60	34	M8 x 16 mm deep	90	46	90	115	M8	65	65	90	17	5
63	80	34	M8 x 16 mm deep	90	46	106	131	M8	78	78	106	17	5

Technical data for series

ZX-Ø-K



Order code

ZX-25-K-0500-01

Series | **Piston-Ø** (mm) | **Type** | **Stroke length** (mm) | **Air connection** details see page 9.156

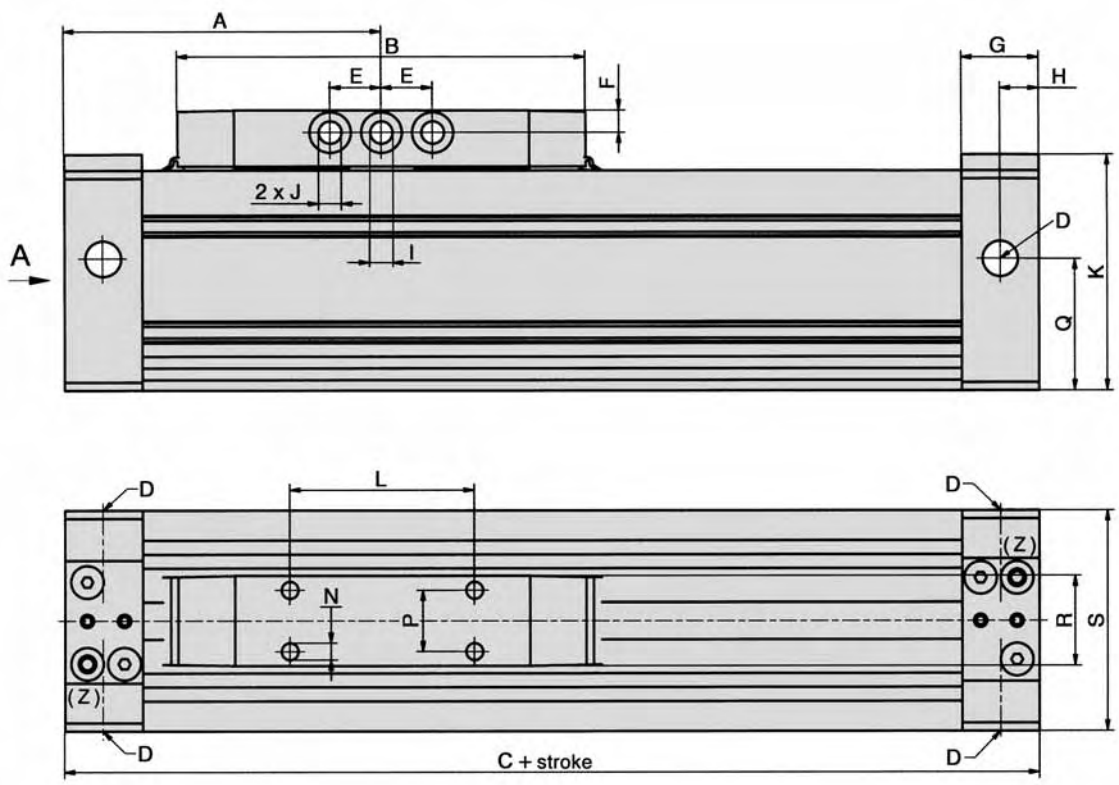
Design and function

Double acting rodless cylinder with adjustable cushion and permanent magnet. The non-rotating piston guides the moving mass.
The design of the K series significantly reduces the overall length of the cylinder (by as much as 30 %).
The sensors can be installed directly into the grooves of the aluminum profile.
Cylinders of this series are available in explosion proof design in accordance with 94/9/EG (ATEX). For further details see chapter 12 of this catalogue.

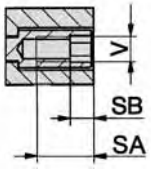
Order number Please complete according to order code.	**ZX-25-K-**…	**ZX-32-K-**…	**ZX-40-K-**…	**ZX-50-K-**…	**ZX-63-K-**…
Piston-Ø (mm)	25	32	40	50	63
Connection	G 1/8	G 1/8	G 1/4	G 3/8	G 3/8
Cushioning length (mm)	24	28	36	45	59
Mass at 0 mm stroke	0.62 kg (1.367 lbs.)	0.96 kg (2.116 lbs.)	1.65 kg (3.637 lbs.)	3.5 kg (7.716 lbs.)	5.4 kg (11.905 lbs.)
additional mass per 100 mm	0.30 kg (0.661 lb.)	0.39 kg (0.860 lb.)	0.52 kg (1.168 lbs.)	0.96 kg (2.116 lbs.)	1.32 kg (2.91 lbs.)
Operating pressure	1 … 8 bar (14.5 … 116 psi)				
Temperature range	– 10 °C … + 70 °C (+ 14 °F … + 158 °F)				
Medium	filtered and slightly lubricated or filtered non-lubricated air. If speeds exceed 1 m/s (3.3 ft/s) lubricated air is recommended.				
Stroke length	arbitrary up to 6000 mm (236 in)				
Materials	Al (anodized), plastic Seals: NBR, PU				

Dimensions for series

ZX-Ø-K

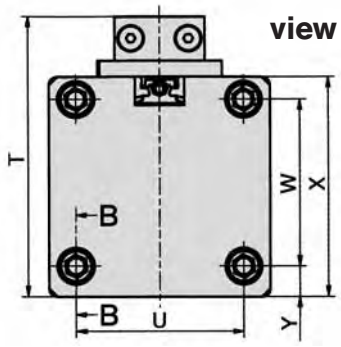


cross section B-B



SA = Depth of thread
SB = Length of hex.

view A



(Z) = Cushion set screw.

Drawing shows pressure supply type -01 for air connection on both ends.

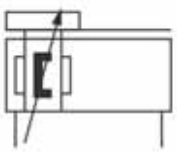
Other types see page 9.156.

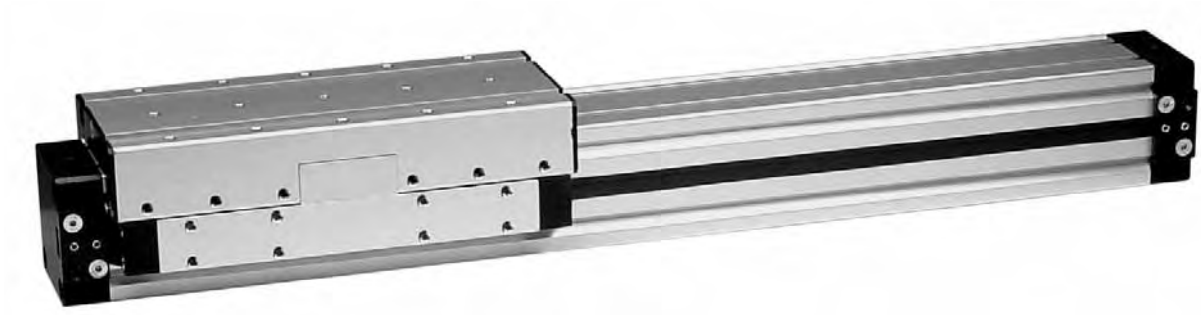
Piston-Ø	A	B	C	D	E	F	G	H	I	J	K	L
25	67.5	84.6	135	G 1/8	12.5	5	19	9.5	6 H7	4.5	49	35
32	77.5	99.6	155	G 1/8	12.5	5.5	19	9.5	6 H7	5.5	58	45
40	95	112.6	190	G 1/4	12.5	7	23	11.5	7 H7	6.5	68	50
50	105	122	210	G 3/8	17,5	9	30	17	10 H7	8,5	94	64
63	125	150	250	G 3/8	25	9,5	30	17	10 H7	8,5	110	80

Piston-Ø	N	P	Q	R	S	T	U	V	W	X	Y	SA	SB
25	M5 x 7 mm deep	15	25	22	45	60	36	M4	36	45	4.5	11	3
32	M5 x 7 mm deep	15	32.3	22	54	69	41	M5	41	54	7.5	11	4
40	M5 x 9 mm deep	15	38.3	22	64	82	49	M6	49	64	7.5	12	4
50	M8 x 16 mm deep	34	59	46	90	115	65	M8	65	90	12.5	17	5
63	M8 x 16 mm deep	34	68.4	46	106	131	78	M8	78	106	14	17	5

Technical data for series

ZX-Ø-SG





Order code

ZX-25-SG-0500-01

Series	Piston-Ø (mm)	Type	Stroke length (mm)	Air connection
				details see page 9.156

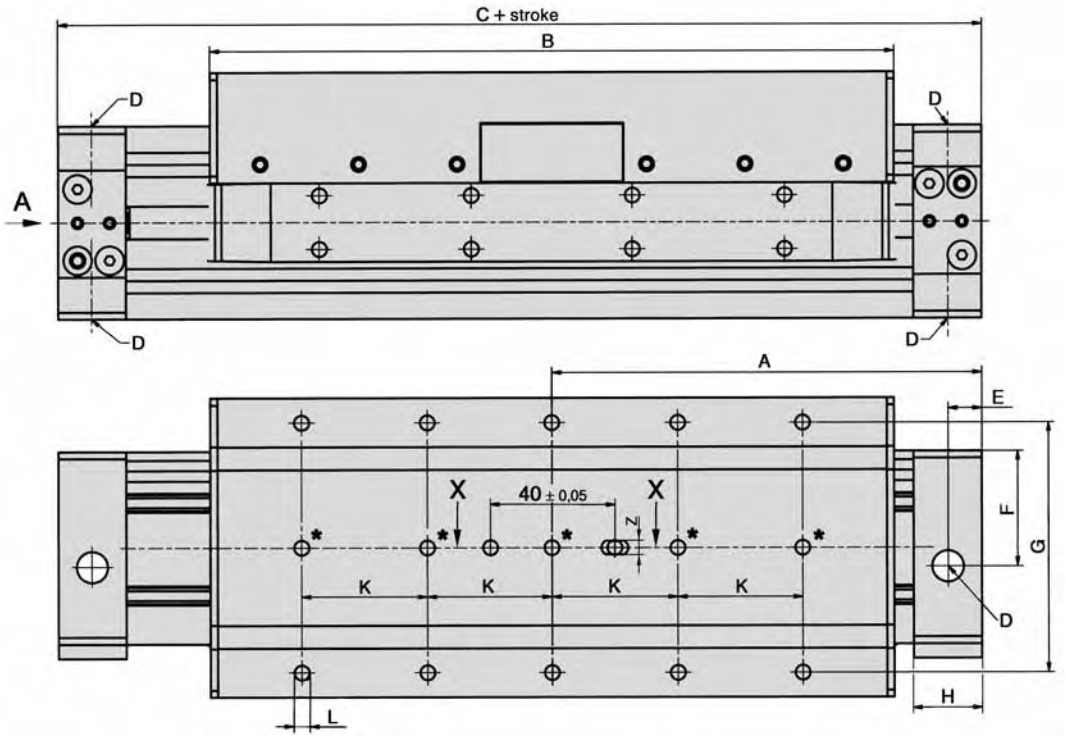
Design and function

Double acting rodless cylinder with adjustable cushion and permanent magnet. Series SG incorporates an adjustable guide system for medium loads.
The sensors can be installed directly into the grooves of the aluminum profile.
Cylinders of this series are available in explosion proof design in accordance with 94/9/EG (ATEX). For further details see chapter 12 of this catalogue.

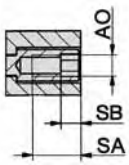
Order number Please complete according to order code.	**ZX-25-SG-…**	**ZX-32-SG-…**	**ZX-40-SG-…**	**ZX-50-SG-…**	**ZX-63-SG-…**
Piston-Ø (mm)	25	32	40	50	63
Connection	G 1/8	G 1/8	G 1/4	G 3/8	G 3/8
Cushioning length (mm)	24	28	36	45	59
Mass at 0 mm stroke	1.31 kg (2.888 lbs.)	2.09 kg (4.608 lbs.)	3.58 kg (7.892 lbs.)	7.28 kg (16.049 lbs.)	11.02 kg (24.294 lbs.)
additional mass per 100 mm	0.30 kg (0.661 lb.)	0.39 kg (0.860 lb.)	0.52 kg (1.168 lbs.)	0.96 kg (2.116 lbs.)	1.32 kg (2.91 lbs.)
Operating pressure	1 … 8 bar (14.5 … 116 psi)				
Temperature range	– 10 °C … + 70 °C (+ 14 °F … + 158 °F)				
Medium	filtered and slightly lubricated or filtered non-lubricated air. If speeds exceed 1 m/s (3.3 ft/s) lubricated air is recommended.				
Stroke length	arbitrary up to 6000 mm (arbitrary up to 236 in)		max. 5950 mm (max. 234 in)	max. 5910 mm (max. 232 in)	max. 5860 mm (max. 230 in)
Materials	Al (anodized), plastic Seals: NBR, PU				

Dimensions for series

ZX-Ø-SG

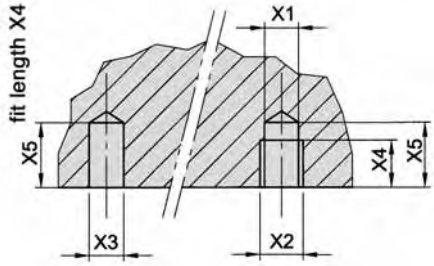


cross section B-B

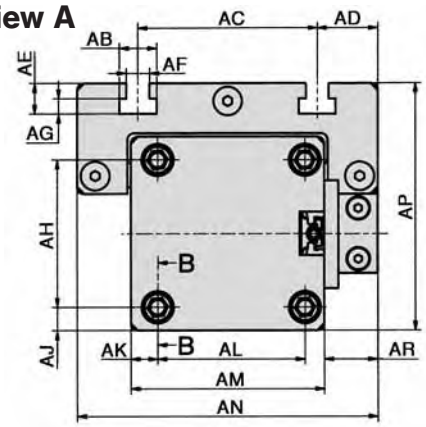


SA = Depth of thread
SB = Length of hex.

cross section X-X



view A



* = Thread only in cylinder ⌀ 32 mm (depth of thread 9 mm).
(Z) = Cushion set screw.

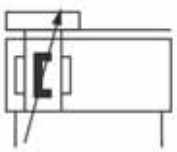
Drawing shows pressure supply type -01 for air connection on both ends.
Other types see page 9.156.

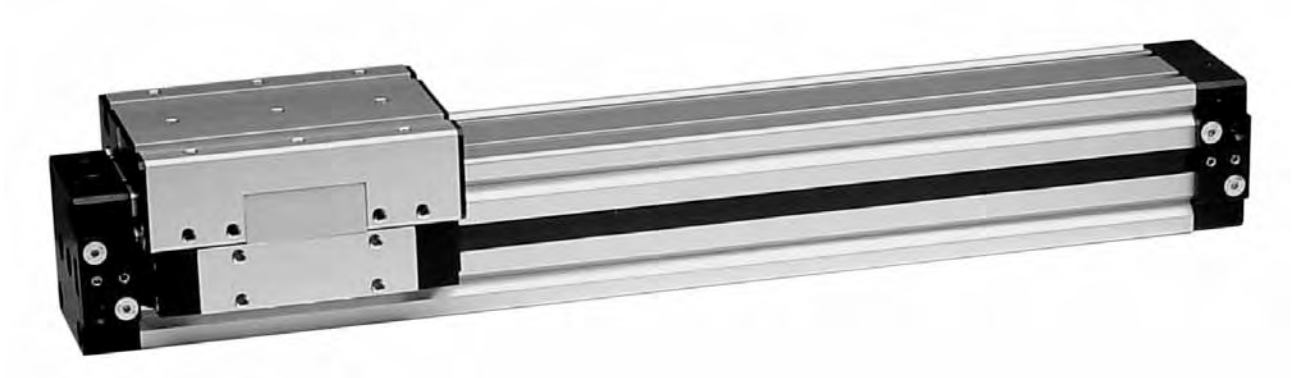
Piston-Ø	A	B	C	D	E	F	G	H	K	L	AB	AC	AD	AE	AF	AG
25	100	159	200	G 1/8	9.5	25	30	19	30	M5 x 8 mm deep	10.4	50	12.5	8.6	6.4	4.3
32	120	191	240	G 1/8	9.5	32.3	70	19	35	M5 x 11mm deep*	10.4	50	16.9	8.6	6.4	4.3
40	150	246	300	G 1/4	11.5	38.2	55	23	55	M6 x 12 mm deep	10.4	80	10	8.6	6.4	4.3
50	175	270	350	G 3/8	17	59	42	30	50	M8 x 16 mm deep	10.4	94	23	8.6	6.4	4.3
63	200	320	400	G 3/8	17	68.4	60	30	60	M8 x 16 mm deep	10.4	110	24	8.6	6.4	4.3

Piston-Ø	AH	AJ	AK	AL	AM	AN	AO	AP	AR	SA	SB	Ø X1	X2	Ø X3	X4	X5	Z
25	36	4.5	4.5	36	45	75	M4	59	15	11	3	4	4.4 + 0.2	4 H7	4.5	5.5	4 + 0.02
32	41	6.5	7.5	41	54	83.8	M5	69	15	11	4	4	4.4 + 0.2	4 H7	7	8	4 + 0.02
40	49	7.5	7.5	49	64	100	M6	79	18	12	4	6	6.4 + 0.2	6 H7	7	8	6 + 0.02
50	65	12.5	12.5	65	90	133	M8	112.5	25	17	5	–	6.4 + 0.2	6 H7	3	3	6 + 0.02
63	78	14	14	78	106	150	M8	134.5	26	17	5	–	6.4 + 0.2	6 H7	6.5	6.5	6 + 0.02

Technical data for series

ZX-Ø-KG





Order code

ZX-25-KG-0500-01

Series	Piston-Ø (mm)	Type	Stroke length (mm)	Air connection
				details see page 9.156

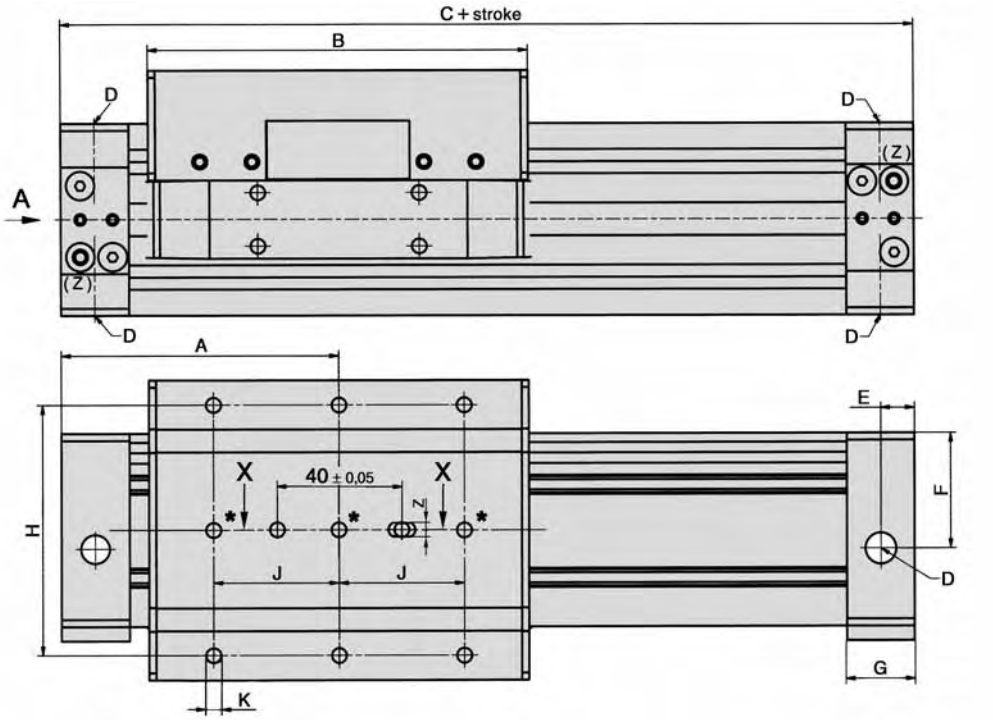
Design and function

Double acting rodless cylinder with adjustable cushion and permanent magnet. Series KG incorporates an adjustable guide system for medium loads.
The design of the KG series cylinder significantly reduces the overall length of the cylinder (by as much as 30 %).
The sensors can be installed directly into the grooves of the aluminum profile.
Cylinders of this series are available in explosion proof design in accordance with 94/9/EG (ATEX). For further details see chapter 12 of this catalogue.

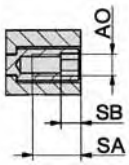
Order number Please complete according to order code.	**ZX-25-KG-…**	**ZX-32-KG-…**	**ZX-40-KG-…**	**ZX-50-KG-…**	**ZX-63-KG-…**
Piston-Ø (mm)	25	32	40	50	63
Connection	G 1/8	G 1/8	G 1/4	G 3/8	G 3/8
Cushioning length (mm)	24	28	36	45	59
Mass at 0 mm stroke	0.88 kg (1.940 lbs.)	1.35 kg (2.976 lbs.)	2.30 kg (5.070 lbs.)	4.63 kg (10.207 lbs.)	7.1 kg (15.652 lbs.)
additional mass per 100 mm	0.30 kg (0.661 lb.)	0.39 kg (0.860 lb.)	0.52 kg (1.168 lbs.)	0.96 kg (2.116 lbs.)	1.32 kg (2.91 lbs.)
Operating pressure	1 … 8 bar (14.5 … 116 psi)				
Temperature range	– 10 °C … + 70 °C (+ 14 °F … + 158 °F)				
Medium	filtered and slightly lubricated or filtered non-lubricated air. If speeds exceed 1 m/s (3.3 ft/s) lubricated air is recommended.				
Stroke length	arbitrary up to 6000 mm (236 in)				
Materials	Al (anodized), plastic Seals: NBR, PU				

Dimensions for series

ZX-Ø-KG

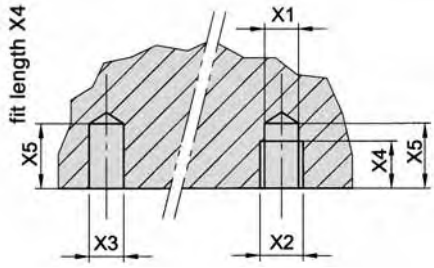


cross section B-B

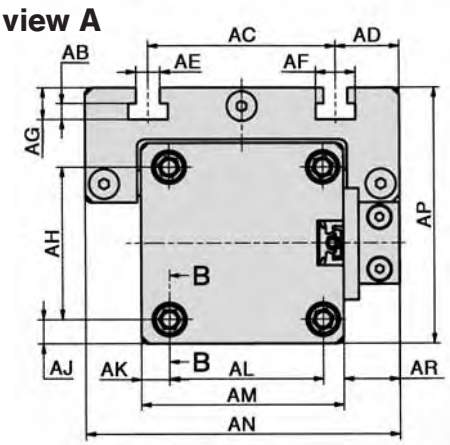


SA = Depth of thread
SB = Length of hex.

cross section X-X



view A



* = Thread only in cylinder ø 32 mm (depth of thread 9 mm).
(Z) = Cushion set screw.

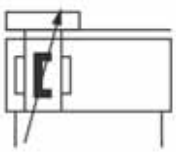
Drawing shows pressure supply type -01 for air connection on both ends.
Other types see page 9.156.

Piston-Ø	A	B	C	D	E	F	G	H	J	K	AB	AC	AD	AE	AF	AG
25	67.5	94	135	G 1/8	9.5	25	19	30	30	M5 x 8 mm deep	4.3	50	12.5	6.4	10.4	8.6
32	77.5	106	155	G 1/8	9.5	32.3	19	70	35	M5 x 11 mm deep*	4.3	50	16.9	6.4	10.4	8.6
40	95	136	190	G 1/4	11.5	38.2	23	55	55	M6 x 12 mm deep	4.3	80	10	6.4	10.4	8.6
50	105	148	210	G 3/8	17	59	30	42	50	M8 x 16 mm deep	4.3	94	23	6.4	10.4	8.4
63	125	180	250	G 3/8	17	68.4	30	60	60	M8 x 16 mm deep	4.3	110	24	6.4	10.4	8.4

Piston-Ø	AH	AJ	AK	AL	AM	AN	AO	AP	AR	SA	SB	Ø X1	X2	Ø X3	X4	X5	Z
25	36	4.5	4.5	36	45	75	M4	59	15	11	3	4	4.4 + 0.2	4 H7	4.5	5.5	4 + 0.02
32	41	6.5	7.5	41	54	83.8	M5	69	15	11	4	4	4.4 + 0.2	4 H7	7	8	4 + 0.02
40	49	7.5	7.5	49	64	100	M6	79	18	12	4	6	6.4 + 0.2	6 H7	7	8	6 + 0.02
50	65	12.5	12.5	65	90	133	M8	112.5	25	17	5	–	6.4 + 0.2	6 H7	3	3	6 + 0.02
63	78	14	14	78	106	150	M8	134.5	26	17	5	–	6.4 + 0.2	6 H7	6.5	6.5	6 + 0.02

Technical data for series

ZX-Ø-SR



Order code

ZX-25-SR-0500-01

Series	Piston-Ø (mm)	Type	Stroke length (mm)	Air connection
				details see page 9.156

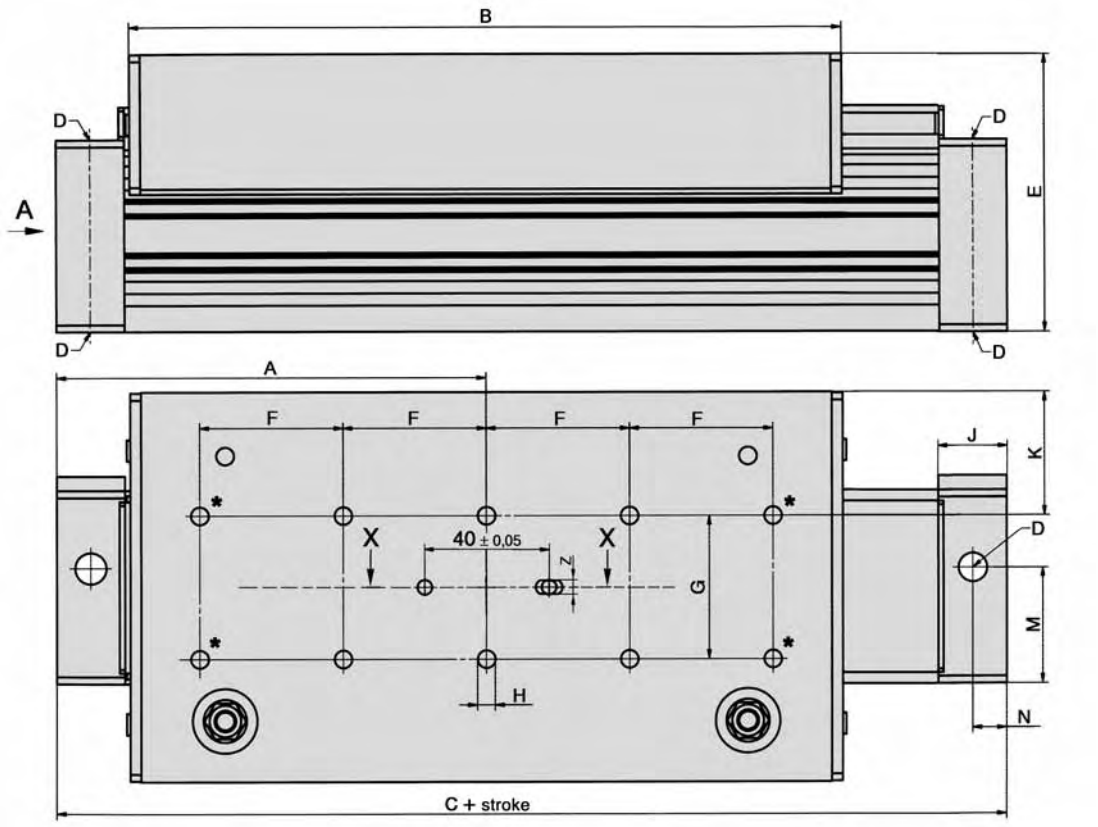
Design and function

Double acting rodless cylinder with adjustable cushion and permanent magnet. The SR series rodless cylinders includes integrated hardened steel shafts and hardened rollers for smooth and precise movement under high force and torque.
The sensors can be installed directly into the grooves of the aluminum profile.
Cylinders of this series are available in explosion proof design in accordance with 94/9/EG (ATEX). For further details see chapter 12 of this catalogue.

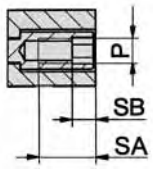
Order number Please complete according to order code.	**ZX-25-SR-**…	**ZX-32-SR-**…	**ZX-40-SR-**…	**ZX-50-SR-**…	**ZX-63-SR-**…
Piston-Ø (mm)	25	32	40	50	63
Connection	G 1/8	G 1/8	G 1/4	G 3/8	G 3/8
Cushioning length (mm)	24	28	36	45	59
Mass at 0 mm stroke	1.97 kg (4.343 lbs.)	2.96 kg (6.525 lbs.)	5.89 kg (12.985 lbs.)	9.10 kg (20.062 lbs.)	13.17 kg (29.035 lbs.)
additional mass per 100 mm	0.42 kg (0.926 lb.)	0.48 kg (1.058 lbs.)	0.74 kg (1.631 lbs.)	1.08 kg (2.381 lbs.)	1.42 kg (3.130 lbs.)
Operating pressure	1.5 … 8 bar (21.75 …116 psi)	1 … 8 bar (14.5 … 116 psi)			
Temperature range	– 10 °C … + 70 °C (+ 14 °F … + 158 °F)				
Medium	filtered and slightly lubricated or filtered non-lubricated air. If speeds exceed 1 m/s (3.3 ft/s) lubricated air is recommended.				
Stroke length	arbitrary up to 6000 mm (236 in)		max. 5950 mm (234 in)	max. 5910 mm (233 in)	max. 5860 mm (231 in)
Materials	Al (anodized), plastic, hardened steel Seals: NBR, PU				

Dimensions for series

ZX-Ø-SR

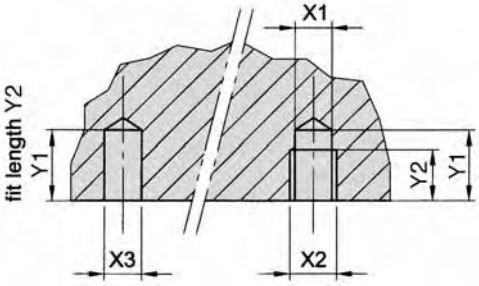


cross section B-B

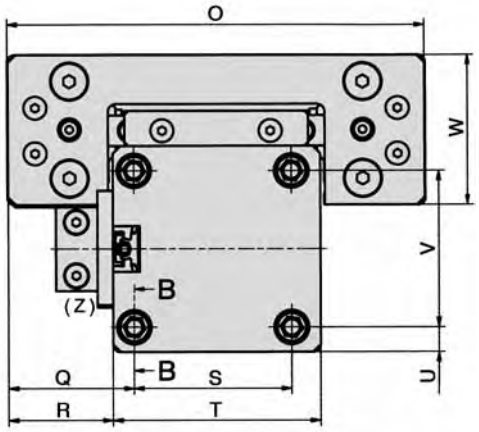


SA = Depth of thread
SB = Length of hex.

cross section X-X



view A



* = not for ∅ 25 mm cylinder.
(Z) = Cushion set screw.

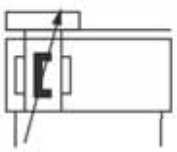
Drawing shows pressure supply type -01 for air connection on both ends.
Other types see page 9.156.

Piston-Ø	A	B	C	D	E	F	G	H	J	K	M	N	O	P
25	100	160	200	G 1/8	68.2	40	40	M5-7.5 mm deep	19	28.5	25	9.5	97	M4
32	120	201	240	G 1/8	78	40	40	M6-9 mm deep	19	34.5	32.3	9.5	108.8	M5
40	150	252	300	G 1/4	90.5	55	55	M6-12 mm deep	23	45	38.2	11.5	145	M6
50	175	270	350	G 3/8	120	55	55	M8-15 mm deep	30	54.5	59	17	164	M8
63	200	320	400	G 3/8	137	70	70	M8-17 mm deep	30	55	68.4	17	180	M8

Piston-Ø	Q	R	S	T	U	V	W	SA	SB	Ø X1	X2	Ø X3	Y1	Y2	Z
25	30.5	26	36	45	4.5	36	34.2	11	3	4	4.4 + 0.2	4 H7	8	7	4 + 0.02
32	32.9	27.4	41	54	6.5	41	39.5	11	4	4	4.4 + 0.2	4 H7	8	7	4 + 0.02
40	48	40.5	49	64	7.5	49	47	12	4	6	6.4 + 0.2	6 H7	8	7	6 + 0.02
50	49	36.5	65	90	12.5	65	51.5	17	5	6	6.4 + 0.2	6 H7	3.5	3	6 + 0.02
63	51	37	78	106	14	78	60.5	17	5	6	6.4 + 0.2	6 H7	7	6.5	6 + 0.02

Technical data for series

ZX-Ø-KR



Order code

ZX-25-KR-0500-01

Series	Piston-Ø (mm)	Type	Stroke length (mm)	Air connection details see page 9.156

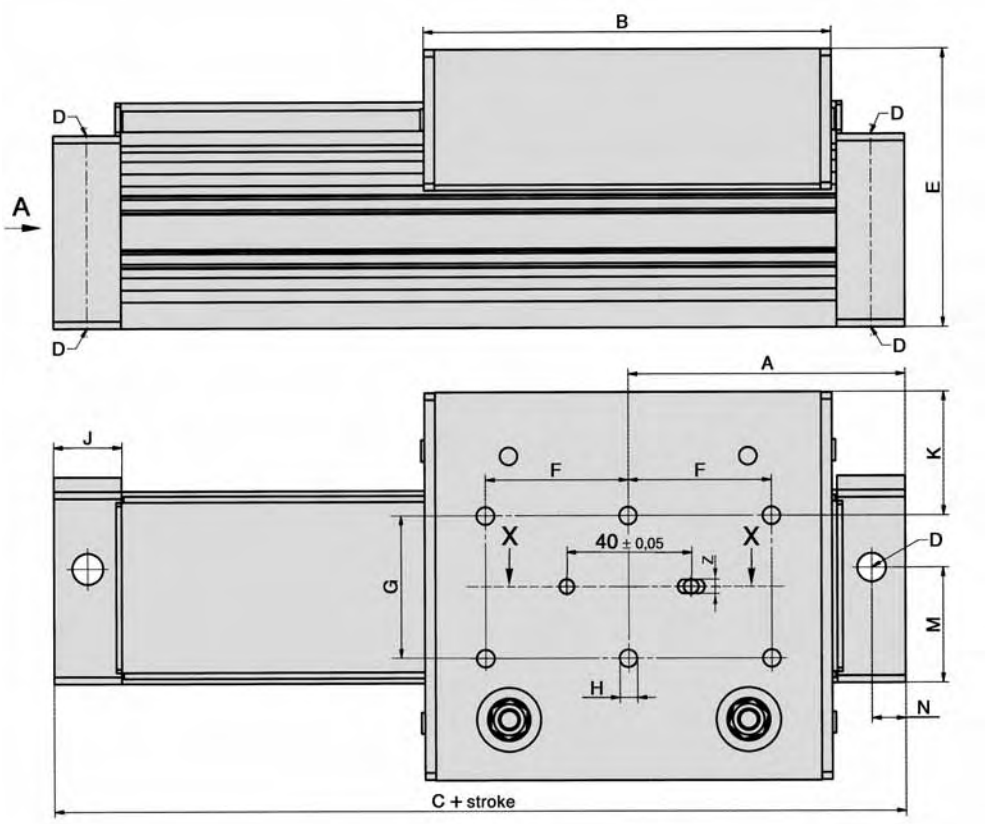
Design and function

Double acting rodless cylinder with adjustable cushion and permanent magnet. The KR series rodless cylinders includes integrated hardened steel shafts and hardened rollers for smooth and precise movement under high force and torque.
The design of the KR series cylinder significantly reduces the overall length of the cylinder (by as much as 30 %).
The sensors can be installed directly into the grooves of the aluminum profile.
Cylinders of this series are available in explosion proof design in accordance with 94/9/EG (ATEX). For further details see chapter 12 of this catalogue.

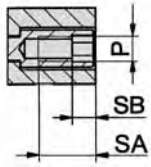
Order number Please complete according to order code.	**ZX-25-KR-**…	**ZX-32-KR-**…	**ZX-40-KR-**…	**ZX-50-KR-**…	**ZX-63-KR-**…
Piston-Ø (mm)	25	32	40	50	63
Connection	G 1/8	G 1/8	G 1/4	G 3/8	G 3/8
Cushioning length (mm)	24	28	36	45	59
Mass at 0 mm stroke	1.33 kg (2.932 lbs.)	1.91 kg (4.211 lbs.)	3.84 kg (8.465 lbs.)	5.82 kg (12.831 lbs.)	8.66 kg (19.092 lbs.)
additional mass per 100 mm	0.42 kg (0.926 lb.)	0.48 kg (1.058 lbs.)	0.74 kg (1.631 lbs.)	1.08 kg (2.381 lbs.)	1.42 kg (3.130 lbs.)
Operating pressure	1.5 … 8 bar (21.75 … 116 psi)	1 … 8 bar (14.5 … 116 psi)			
Temperature range	– 10 °C … + 70 °C (+ 14 °F … + 158 °F)				
Medium	filtered and slightly lubricated or filtered non-lubricated air. If speeds exceed 1 m/s (3.3 ft/s) lubricated air is recommended.				
Stroke length	arbitrary up to 6000 mm (236 in)				
Materials	Al (anodized), plastic, hardened steel Seals: NBR, PU				

Dimensions for series

ZX-Ø-KR

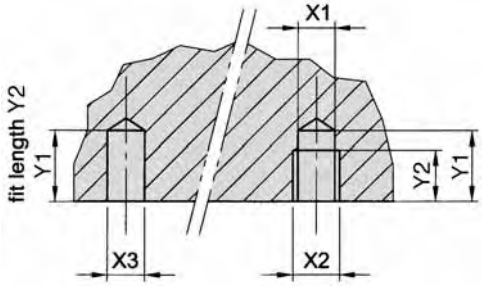


cross section B-B

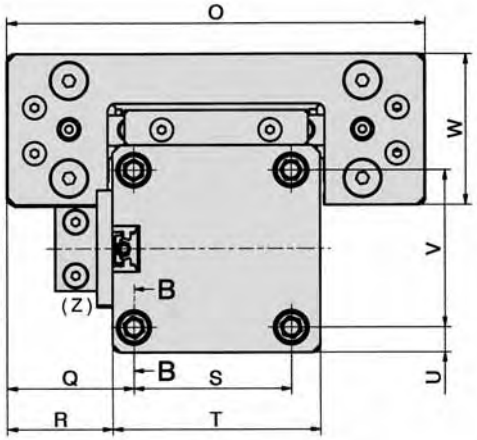


SA = Depth of thread
SB = Length of hex.

cross section X-X



view A



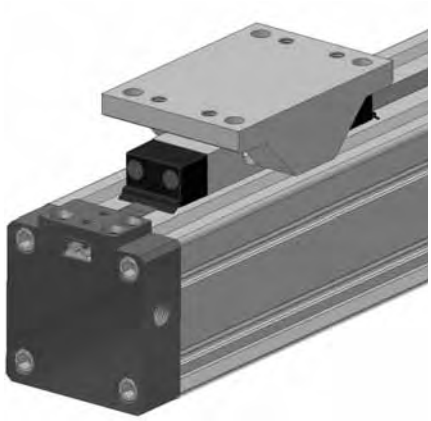
(Z) = Cushion set screw.

Drawing shows pressure supply type -01 for air connection on both ends.
Other types see page 9.156.

Piston-Ø	A	B	C	D	E	F	G	H	J	K	M	N	O	P
25	67.5	95	135	G 1/8	68.2	20	40	M5-7.5 mm deep	19	28.5	25	9.5	97	M4
32	77.5	115	155	G 1/8	78	40	40	M6-9 mm deep	19	34.4	32.3	9.5	108.8	M5
40	95	143.5	190	G 1/4	90.5	55	55	M6-12 mm deep	23	45	38.2	11.5	145	M6
50	105	148	210	G 3/8	120	27.5	55	M8-15 mm deep	30	54.5	59	17	164	M8
63	125	188	250	G 3/8	137	70	70	M8-17 mm deep	30	55	68.4	17	180	M8

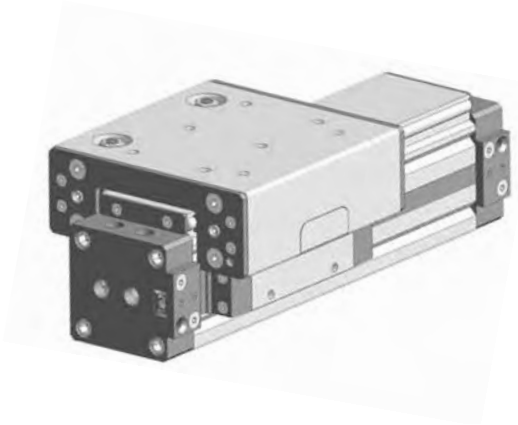
Piston-Ø	Q	R	S	T	U	V	W	SA	SB	Ø X1	X2	Ø X3	Y1	Y2	Z
25	30.5	26	36	45	4.5	36	34.2	11	3	4	4.4 + 0.2	4 H7	8	7	4 + 0.02
32	32.9	27.4	41	54	6.5	41	39.5	11	4	4	4.4 + 0.2	4 H7	8	7	4 + 0.02
40	48	40.5	49	64	7.5	49	47	12	4	6	6.4 + 0.2	6 H7	8	7	6 + 0.02
50	49	36.5	65	90	12.5	65	51.5	17	5	6	6.4 + 0.2	6 H7	3.5	3	6 + 0.02
63	51	37	78	106	14	78	60.5	17	5	6	6.4 + 0.2	6 H7	7	6.5	6 + 0.02

Info

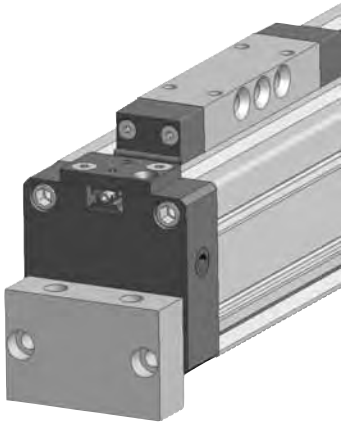


Seal kits
Page 9.157

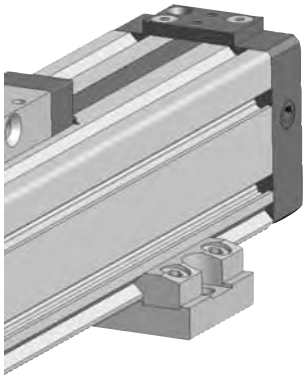
Alignment coupler
Page 9.155



Air connection options
Page 9.156



Head mount
Page 9.160



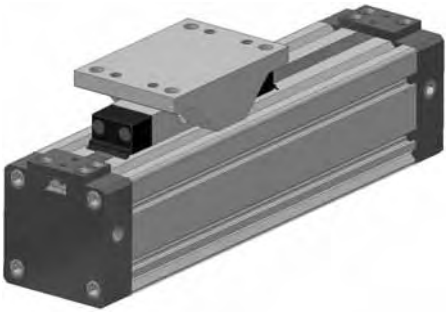
Center mount
Page 9.161

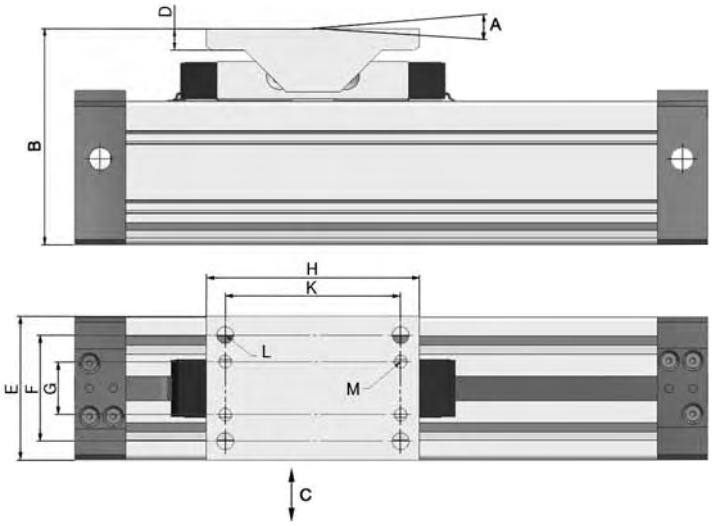
Proximity sensor
Page 8.220

Mounting parts for series

ZX

Alignment coupler ZXB-Ø-20





Materials: Al (anodized)
hardened steel
brass

The alignment coupler is designed to be used with external guide systems. This coupler compensates for the mis-alignment between the rodless cylinder and the external guide system (supplied by customer). For use with cylinder series ZX-ø-K and ZX-ø-S.

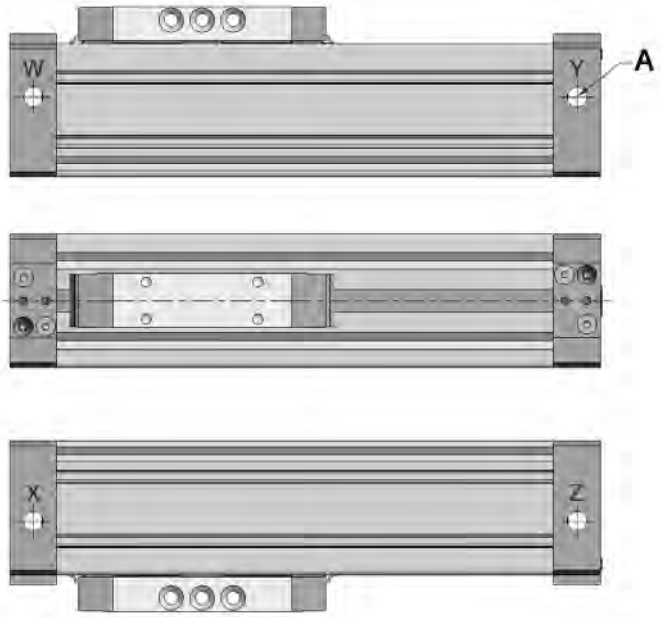
Order number	Cyl.-Ø	A	B	Radial clearance C
ZXB-25-20	25	16° (± 8°)	73 ... 75	± 0.8
	32	12° (± 6°)	81.4 ... 82.4	
ZXB-40-20	40	9° (± 4.5°)	93 ... 95	
		12° (± 6°)	94 ... 95	
ZXB-50-20	50	7° (± 3,5°)	129 ... 130	
		10° (± 5°)	130 ... 131	
	63	5° (± 2,5°)	144.5 ... 145.5	
		9° (± 4,5°)	145.5 ... 146.5	

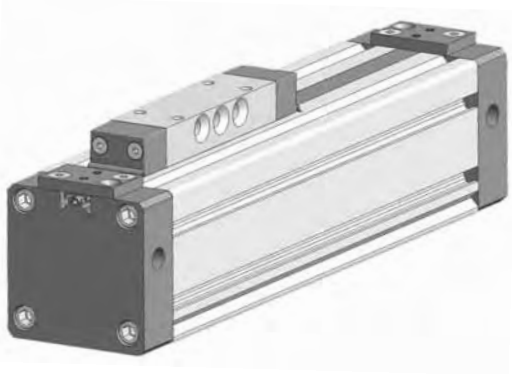
Order number	Cyl.-Ø	D	E	F	G	H	K	L	M
ZXB-25-20	25	8	54	40	20	80	66	4 x ø 6.5	4 x M6
	32								
ZXB-40-20	40								
ZXB-50-20	50	11	80	51	23	122	102	4 x ø 9	4 x M8
	63								

Air connection options for series

ZX-Ø-S, ZX-Ø-K

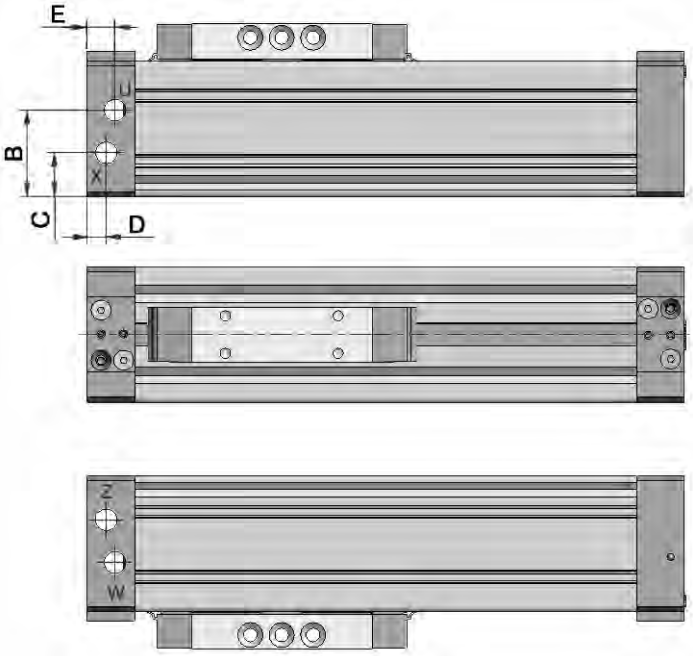
Option -01

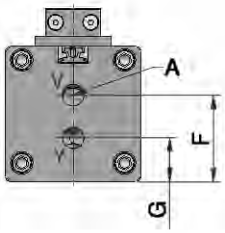


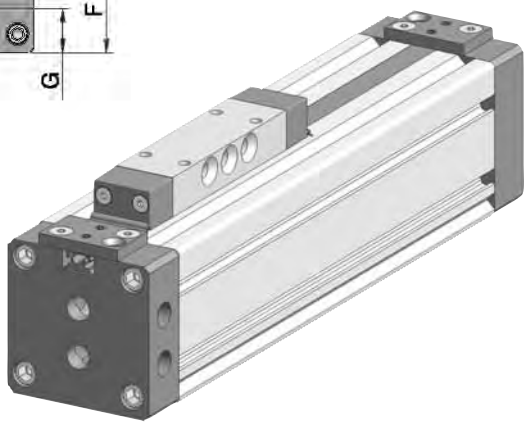


Option -01 cylinder comes with two pressure connections (W-X and Y-Z respectively) on each end. User is required to select one of two pressure connections on each end. Second port will require the installation of a sealing plug (2 plugs are supplied).

Option -02







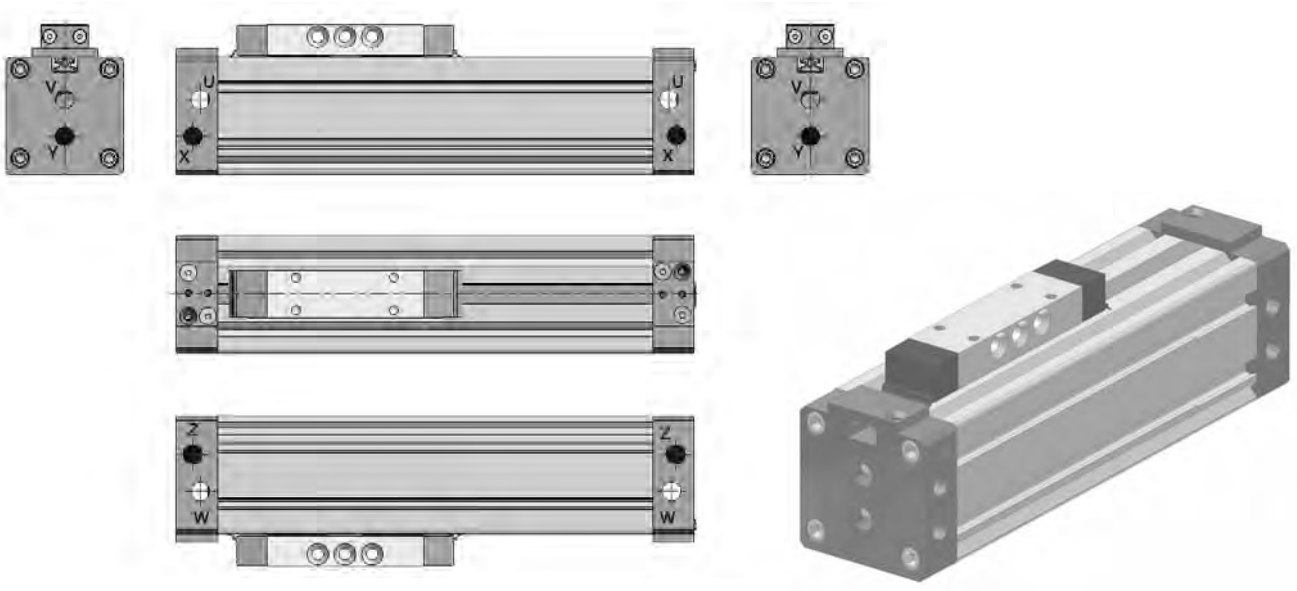
Cyl.-Ø	A	B	C	D	E	F	G
25	G 1/8	28.5	13.5	8	11	29.5	13.5
32	G 1/8	34.5	17.5	9.5	9.5	34.5	17.5
40	G 1/4	42.5	20.5	11.5	11.5	38.2	15.5
50	G 3/8	59	29	17	17	59	29.6
63	G 3/8	68.4	34	17	17	68.4	34

One cylinder head is supplied with 6 ports (3 for each direction, U-V-W are for travel in one direction and X-Y-Z are for travel in the opposite direction). User is required to select one of three pressure connections for each direction. The second and third ports will require the installation of a sealing plug (4 plugs are supplied).
Ports V and Y must be plugged when using a head mount.

Air connection options for series

ZX-Ø-S, ZX-Ø-K

Option -04



Option -04 enable to connect pressure at both face ends or one face and one side port.
Therefor the head with 6 ports from option -02 is used at both ends. Now it is possible to use the upper ports (U-V-W). The lower ports (X-Y-Z) are plugged.
This option is for using ports at both cylinder heads only.
The dimensions are identical to option -02.

Seal kit for series ZX

Order code

ZXV-32-0500

Series

Piston-Ø
(mm)

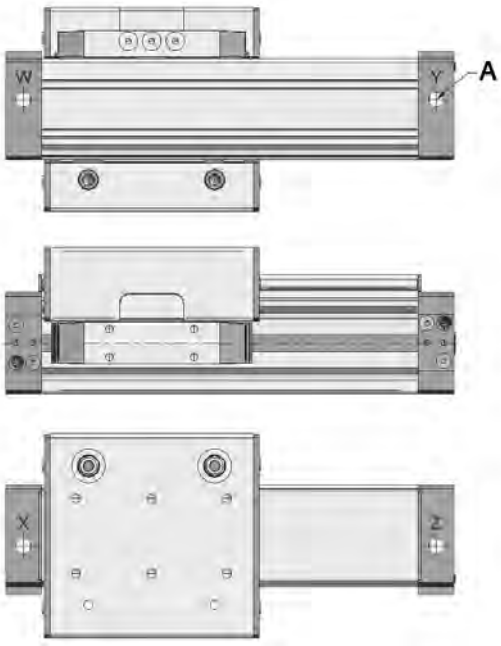
Stroke length

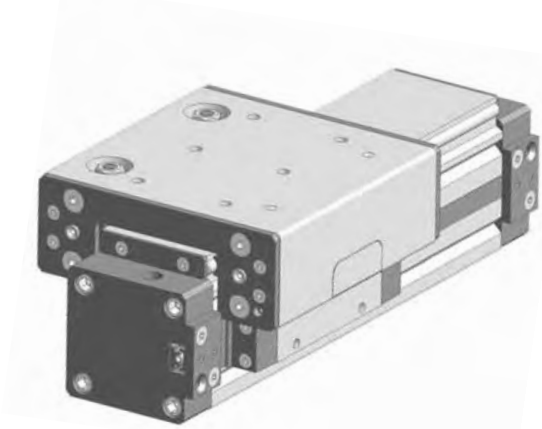
0500 = stroke lengths from 0 to 500 mm
1000 = stroke lengths from 501 to 1000 mm
1500 = stroke lengths from 1001 to 1500 mm
2000 = stroke lengths from 1501 to 2000 mm
3000 = stroke lengths from 2001 to 3000 mm
4000 = stroke lengths from 3001 to 4000 mm
5000 = stroke lengths from 4001 to 5000 mm
6000 = stroke lengths from 5001 to 6000 mm

Air connection options for series

ZX-Ø-SG, ZX-Ø-KG, ZX-Ø-SR, ZX-Ø-KR

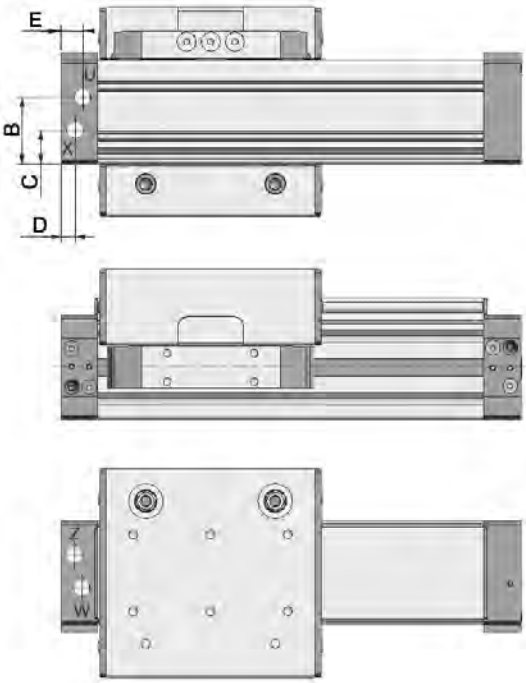
Option -01

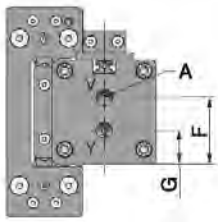




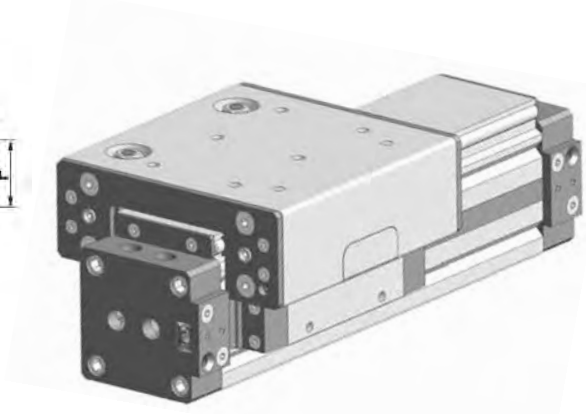
Option -01 cylinder comes with two pressure connections (W-X and Y-Z respectively) on each end. User is required to select one of two pressure connections on each end. Second port will require the installation of a sealing plug (2 plugs are supplied).

Option -02





view A



One cylinder head is supplied with 6 ports (3 for each direction, U-V-W are for travel in one direction and X-Y-Z are for travel in the opposite direction). User is required to select one of three pressure connections for each direction. The second and third ports will require the installation of a sealing plug (4 plugs are supplied).

With this option the slide guide is mounted on the left side of the piston driver (see view A).

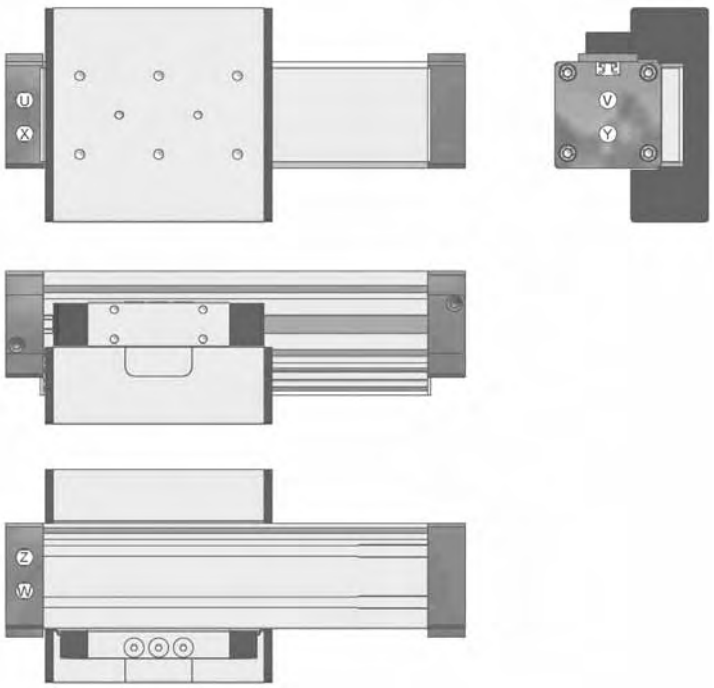
Ports V and Y must be plugged when using a head mount.

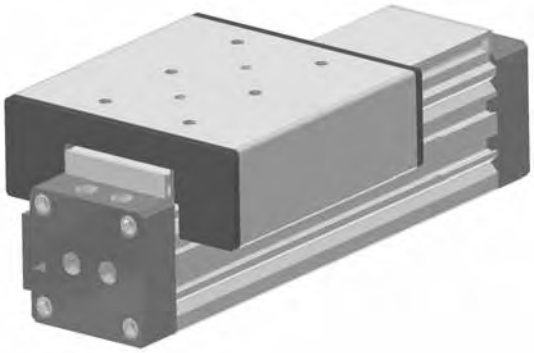
Cyl.-Ø	A	B	C	D	E	F	G
25	G 1/8	28.5	13.5	8	11	29.5	13.5
32	G 1/8	34.5	17.5	9.5	9.5	34.5	17.5
40	G 1/4	42.5	20.5	11.5	11.5	38.2	15.5
50	G 3/8	59	29	17	17	59	29.6
63	G 3/8	68.4	34	17	17	68.4	34

Air connection options for series

ZX-Ø-SG, ZX-Ø-KG, ZX-Ø-SR, ZX-Ø-KR

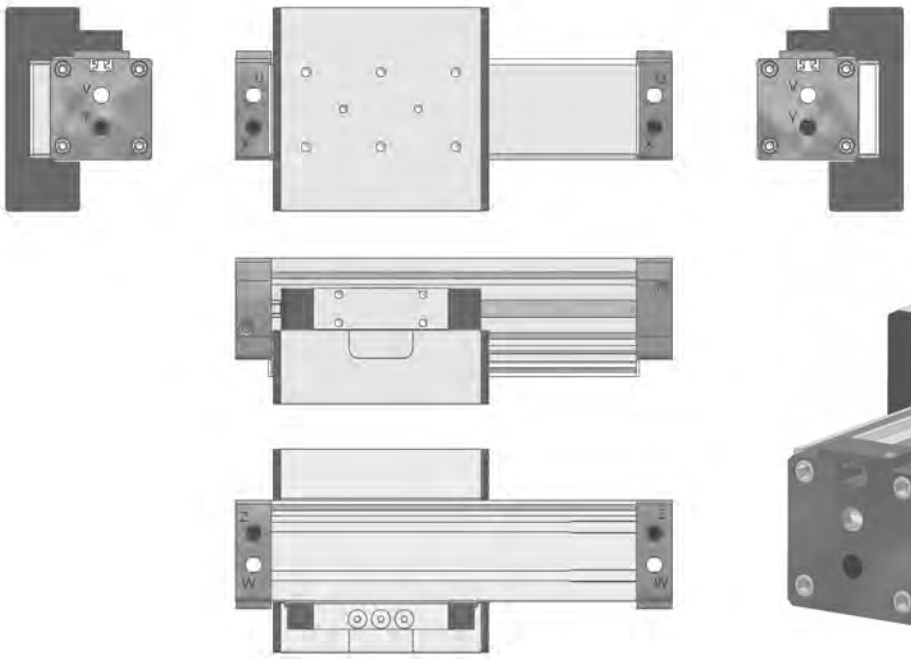
Option -03

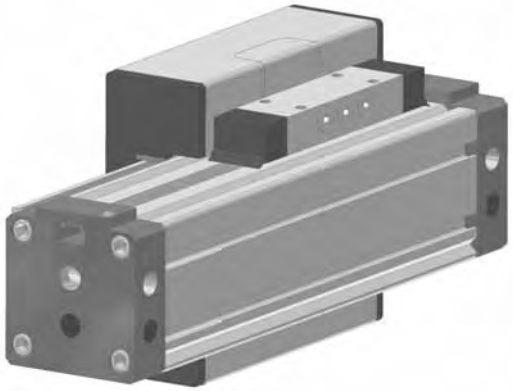




Same as option -02 but with this option the slide guide is mounted on the **right** side of the piston driver.

Option -04



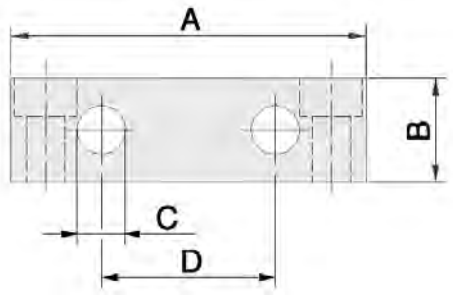


Option -04 enable to connect pressure at both face ends or one face and one side port.
Therefor the head with 6 ports from option -02 is used at both ends. Now it is possible to use the upper ports (U-V-W). The lower ports (X-Y-Z) are plugged.
This option is for using ports at both cylinder heads only.
The dimensions are identical to option -02.

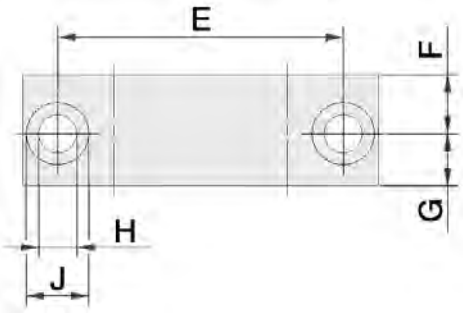
Mounting parts for series

ZX

Head mount ZXB-Ø-01

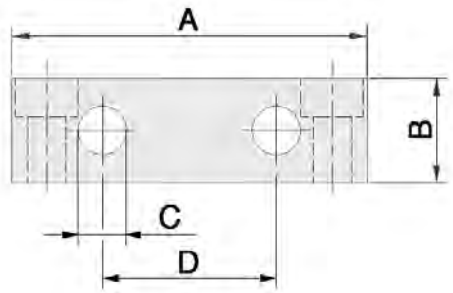


Materials: Al (anodized)
Screws to mount the head mount to the cylinder are included.
The face ports must be plugged when using a head mount.

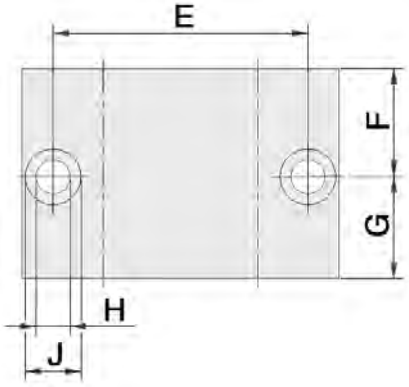


Cyl.-Ø	A	B	C	D	E	F	G	H	J
25	45	10	5.5	22	36	4.5	5.5	4.5	7.4
32	51	15	7	25	41	7.5	8.5	5.5	9
40	64	15	9	25	49	7.5	8.5	6.5	11
50	89	15	8.5	40	65	12.5	13.5	8.5	15
63	105	15	8.5	50	78	14	15	8.5	15

Head mount tall ZXB-Ø-02



Materials: Al (anodized)
Screws to mount the head mount to the cylinder are included.
The face ports must be plugged when using a head mount.

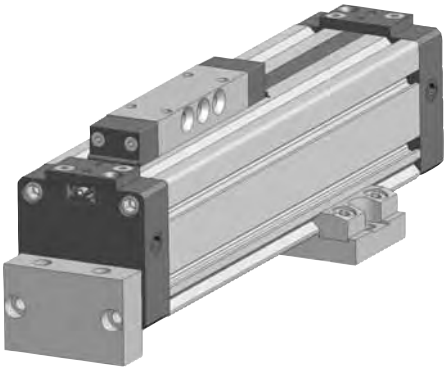


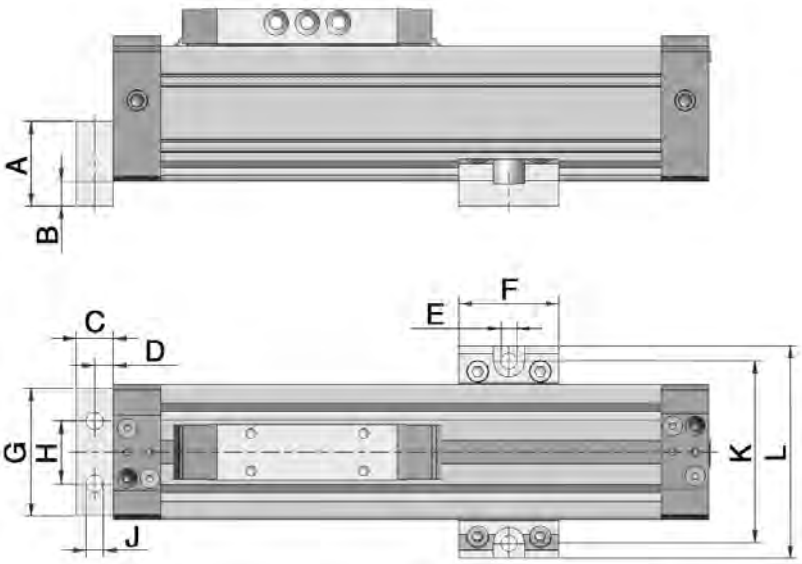
Cyl.-Ø	A	B	C	D	E	F	G	H	J
25	45	15	5.5	22	36	12.5	5.5	4.5	8
32	51	15	7	25	41	16.5	17.5	5.5	9
40	64	15	9	25	49	17.5	8.5	6.5	11
50	89	15	8.5	40	65	27.5	12.5	8.5	15
63	105	15	8.5	50	78	29	11	8.5	15

Mounting parts for series

ZX

Center mount ZXB-Ø-10 with ZXB-Ø-02



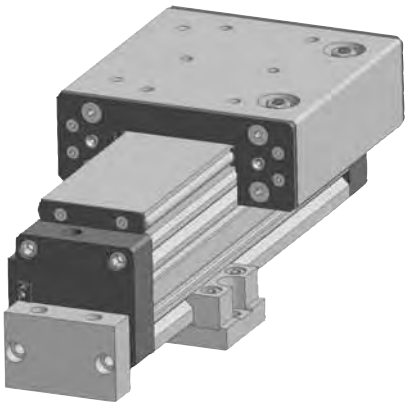


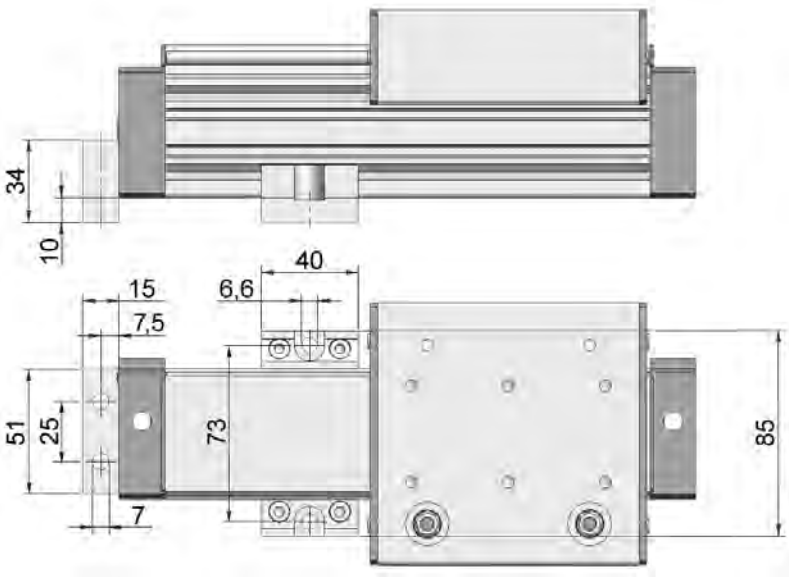
Materials: Al (anodized)
Screws to mount the head mount to the cylinder are included.
The cylinder can be securely mounted by using two center mounts without the need for head mounts.

Due to the symmetric profile of the cylinder-ø 25, 40, 50 and 63, the center mounts can be used on three sides of the profile. For ø 32 the center mount ZXB-32-10 is for use opposite of the carriage only. If mounting is required on the other two sides center mount ZXB-32-11 is required.

Cyl.-Ø	A	B	C	D	E	F	G	H	J	K	L
25	18	8	15	7.5	5.5	35	45	22	5.5	60	70
32	34	10	15	7.5	6.6	40	51	25	7	73	85
40	26	10	15	7.5	9	40	64	25	9	90.5	105
50	40	15	15	7.5	11	70	89	40	8.5	120	138
63	40	15	15	7.5	11	70	105	50	8.5	136	154

Center mount tall ZXB-32-11 with ZXB-32-02



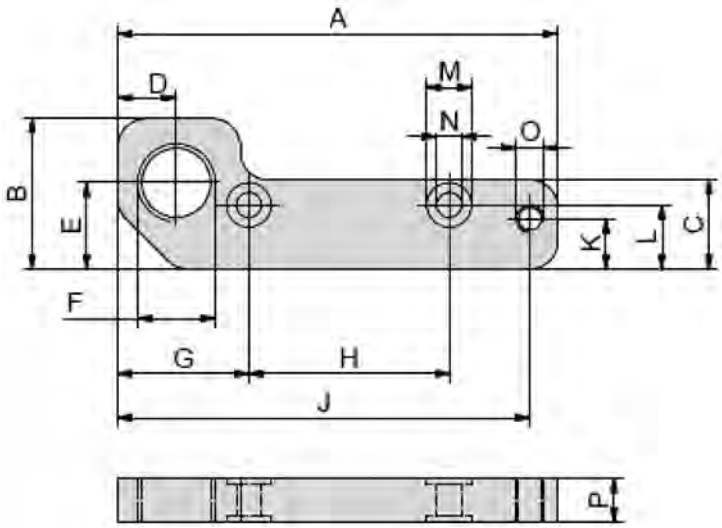


Materials: Al (anodized)
Screws to mount the head mount to the cylinder are included.
The cylinder can be securely mounted by using two center mounts without the need for head mounts.

Mounting parts for series

ZX

Bracket for shock absorber ZXB-Ø-30 and ZXB-Ø-40



Materials: Al (anodized)
The fixing screws are included.

Brackets for slide guides ZXB-Ø-30

Cyl.-Ø	A	B	C	D	E	F	G	H	J	K	L	Ø M	Ø N	O	P
25	79	27	16	10.5	15.5	M14 x 1.5	23.5	36	74	9	11.5	8	4.5	M5	8
32	88	31	19.5	10.5	19.6	M14 x 1.5	26.5	41	82.5	8.65	13	9	5.5	M5	8
40	108	33	27	14.5	18	M20 x 1.5	33.5	49	102	18	13.5	10.5	6.5	M5	10
50	140	40	26	20	24	M25 x 1.5	47.5	65	132	24	13.5	13.5	8.5	M6	12
63	157	40	26	18.2	22	M25 x 1.5	47.2	78	150	22	12	13.5	8.5	M6	12

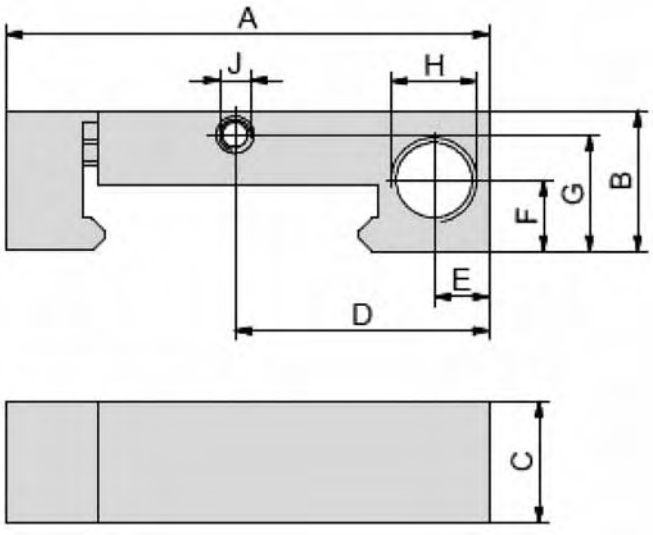
Brackets for roller guides ZXB-Ø-40

Cyl.-Ø	A	B	C	D	E	F	G	H	J	K	L	Ø M	Ø N	O	P
25	78	32	16	11	21	M14 x 1.5	25.5	36	72.5	9.5	11.5	8	4.5	M5	8
32	92	35	19.5	10	23.8	M14 x 1.5	26.5	41	86.3	11	13	9	5.5	M5	10
40	110.5	39	20.5	15	24	M20 x 1.5	37.5	49	104.7	7.5	13	10.5	6.5	M5	10
50	150	52	26	18.3	34.3	M25 x 1.5	49.5	65	142	10	13.5	13.5	8.5	M6	12
63	165.5	53	29	18.2	34.5	M25 x 1.5	50.9	78	154.9	8.5	15	13.5	8.5	M6	12

Mounting parts for series

ZX

Bracket for stroke adjuster/shock absorber ZXB-Ø-31 and ZXB-Ø-41



Materials: Al (anodized)
The fixing screws are included.

Brackets for slide guides ZXB-Ø-31

Cyl.-Ø	A	B	C	D	E	F	G	H	J
25	78.8	23.3	20	41.5	9	11.8	19.3	M14 x 1.5	M5
32	87.9	28.6	25	46	10	18.6	23.9	M14 x 1.5	M5
40	106.9	31	30	60	14	14	26	M20 x 1.5	M5
50	145	40	50	59	17	21	31	M25 x 1.5	M6
63	158.5	47.5	60	56	18	30	38.5	M25 x 1.5	M6

Brackets for roller guides ZXB-Ø-41

Cyl.-Ø	A	B	C	D	E	F	G	H	J
25	80.9	31.8	20	43.5	11	15.8	27.8	M14 x 1.5	M5
32	89.9	37	25	10	10	18.4	31.1	M14 x 1.5	M5
40	108.6	35	30	61	14	14.5	30	M20 x 1.5	M5

Static forces for slide and roller guides

Cyl.-Ø	Order code	max. static force in N	fixing screws	max. torque in Nm (fixing screws)
25	ZXB-25-31	300	M4	3.1
25	ZXB-25-41	750	M4	3.1
32	ZXB-32-31	900	M5	6.1
32	ZXB-32-41	1000	M5	6.1
40	ZXB-40-31	1490	M6	15.5
40	ZXB-40-41	1760	M6	15.5
50	ZXB-50-31	6900	M8	26
63	ZXB-63-31	6900	M8	26