

EFFBE



DIAPHRAGM PRESSURE CYLINDERS

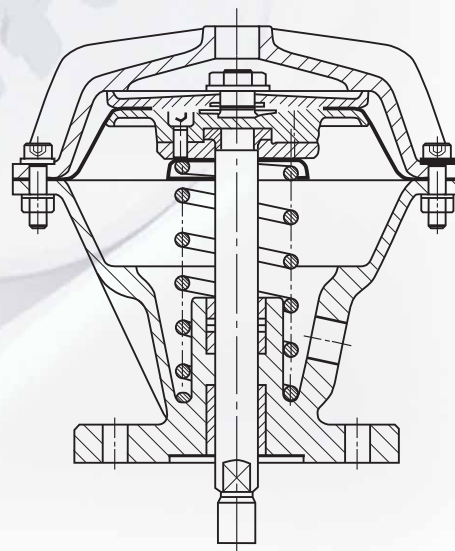
Diaphragm pressure cylinders

EFFBE diaphragm pressure cylinders: sensitive and robust

By using **EFFBE diaphragm pressure cylinders**, sensitive control processes can be realised (control cylinders), which are not possible with piston cylinders. They operate precisely, reliably and without stick-slip effect at pressure differences of 0.01 to 10 bars.

Cylinder construction is simple, they work fully oil- and grease-free and are maintenance-free. Even harshest environmental conditions do not affect performance and they work in places where, for instance, protection for use in hazardous locations is required.

This robust construction is an ideal precondition for utilisation as force supply (pressure cylinders) for various application in cycle processes for positioning, clamping, chucking or pressing – in all situations where force must be built up hydraulically or pneumatically.

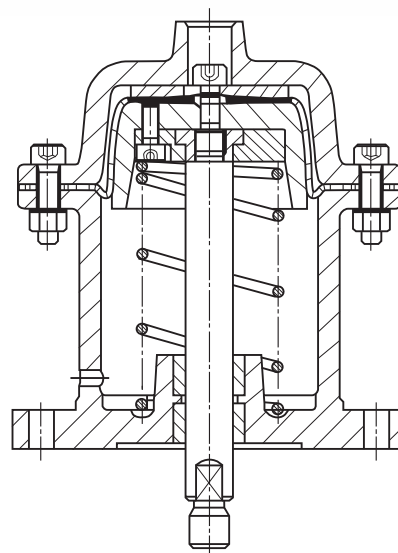


Short-stroke device

Most important advantage: the diaphragm

The heart of the EFFBE diaphragm pressure cylinder is a highly flexible elastomer diaphragm with relatively thin walls, compression-proof and tear-resistant. It guarantees several million switching actions without failures due to wear. The hermetically tight clamping of the diaphragm impermeable to air prevents any loss, even after long-time continuous operation. The pressure cylinders differ in functionally and working performance due to their different shapes and designs. These differences are expressed by the type designations KH and MH. With the short-stroke device (KH) you will obtain strokes of < 80 mm and with the medium-stroke device (MH) < 110 mm. The KH elements, from a pressure performance of 500 daN may be used double-acting or single-acting by media pressurisation; the MH elements with the larger stroke are single-acting.

The housing are castings or made of steel sheets, depending in the type. The version with beaded sheets is particularly low priced. Spare parts for the screw-connected versions are delivered by us.



Medium-stroke device

Content

2	Diaphragm pressure cylinders
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12-14	MH 100/250/500 A/B/C
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Short-stroke device type KH 50

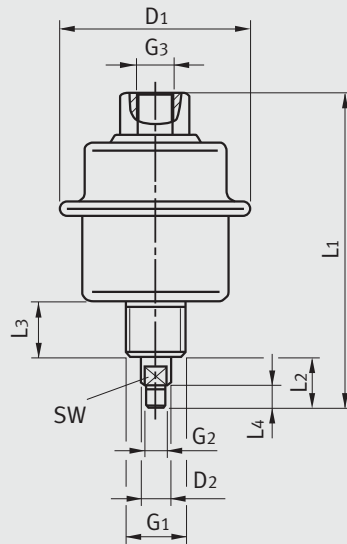
Weight 0.13 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 8 mm
 Air consumption per stroke/6 bar = 0.01 – 0.05 l
 Ambient temperature = -20 °C – +80 °C

Medium-stroke device type MH 50

Weight 0.13 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 20 mm
 Air consumption per stroke/6 bar = 0,01 – 0,12 l
 Ambient temperature = -20 °C – +80 °C



KH 50 (AL)



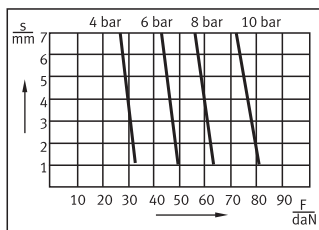
MH 50

Design:

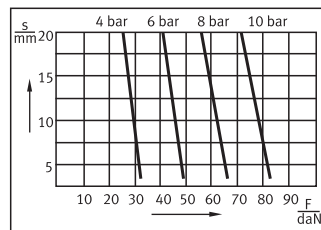
Housing: special deep-drawing sheet steel, galvanised respectively KH50 Aluminium turning work piece. Piston rod made of stainless steel. Guide bushing with self-lubrication. Piston rod not rotating, due to riveting with diaphragm

Properties

Type KH 50



Type MH 50



Dimensions										
Type	D1	D2	L1	L2	L3	L4	G1	G2	G3	SW
KH 50	51,5	8	73	12,5	15	6	M16 x 1,5	M6	G 1/8	6
MH 50	51	8	80	13,5	15	6	M16 x 1,5	M6	G 1/8	6



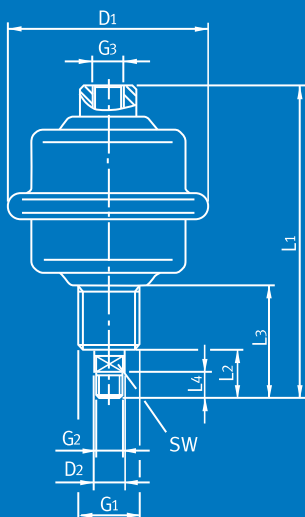
KH 100

Short-stroke device type KH 100

Weight 0.6 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 20 mm
 Air consumption per stroke/6 bar = 0.1–0.35 l
 Ambient temperature = -20 °C – +80 °C

Medium-stroke device type MH 100

Weight 0.9 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 50 mm
 Air consumption per stroke/6 bar = 0.1–0.6 l
 Ambient temperature = -20 °C – +80 °C



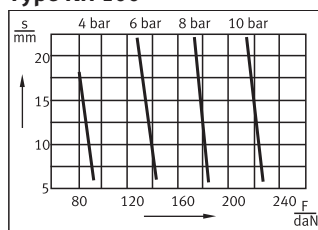
MH 100

Design:

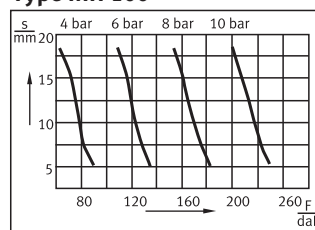
Housing: special deep-drawing sheet steel, galvanised. Piston rod made of stainless steel. Guide bushing with self-lubrication. Piston rod not rotating, due to riveting with diaphragm

Properties

Type KH 100



Type MH 100



Dimensions

Type	D1	D2	L1	L2	L3	L4	G1	G2	G3	SW
KH 100	78	12	120	18,5	43,5	10	M24 x 1,5	M10	G 1/4	10
MH 100	78	12	144,5	18,5	43,5	10	M24 x 1,5	M10	G 1/4	10

Short-stroke device type KH 250

Weight 2.4 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 35 mm
 Air consumption per stroke/6 bar = 0.2 – 1.5 l
 Ambient temperature = -20 °C – +80 °C

Medium-stroke device type MH 250

Weight 3 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 70 mm
 Air consumption per stroke/6 bar = 0.2 – 2.5 l
 Ambient temperature = -20 °C – +80 °C



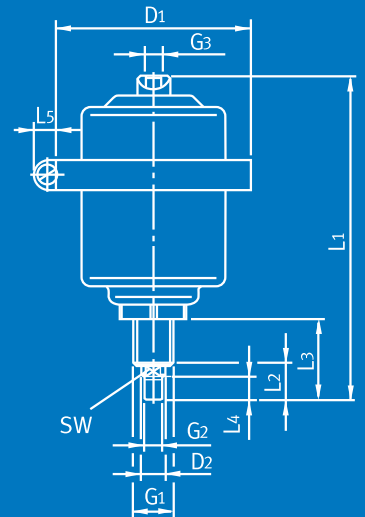
KH 250



MH 250

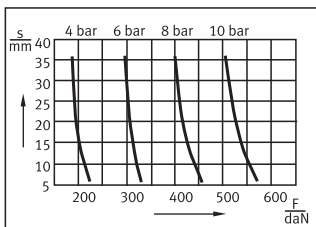
Design:

Housing: special deep-drawing sheet steel, galvanised. Piston rod made of stainless steel. Guide bushing with self-lubrication. Piston rod not rotating, due to riveting with diaphragm.

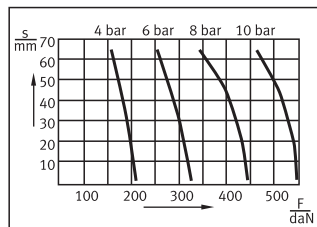


Properties

Type KH 250

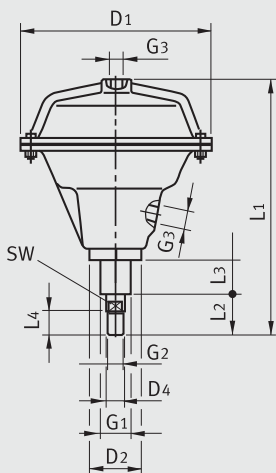


Type MH 250



Dimensions

Type	D1	D2	L1	L2	L3	L4	L5	G1	G2	G3	SW
KH 250	131,5	16	180	25,5	54	16	16	M26 x 1,5	M12	G 1/4	12
MH 250	131,5	16	218,5	25,5	54	16	16	M26 x 1,5	M12	G 1/4	12



KH GS 500

Short-stroke device type KH GS 500

Weight 2.6 kg
 Single-/double-acting
 Max. pressurisation = 10 bar
 Max. stroke = 50 mm
 Air consumption per stroke/6 bar = 0.6 – 2.5 l
 Max. stroke frequency = 50/min. (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C

Short-stroke device type KH GS 1000

Weight 5.2 kg
 Single-/double-acting
 Max. pressurisation = 10 bar
 Max. stroke = 60 mm
 Air consumption per stroke/6 bar = 2 – 7.3 l
 Max. stroke frequency = 25/min. (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C



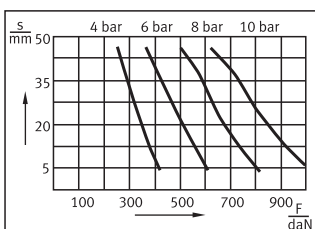
KH GS 1000

Design:

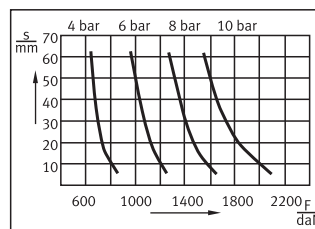
Housing: Al-alloy spray painted.
 Piston rod made of stainless steel.
 Guide bushing with self-lubrication.
 Piston rod rotating.

Properties

Type KH GS 500



Type KH GS 1000



Dimensions

Type	D1	D2	D4	L1	L2	L3	L4	G1	G2	G3	SW
KH GS 500	166	45	16	222	35	30	20	M26 x 1.5	M14 x 1.5	G 3/8	12
KH GS 1000	215	55	20	312	56	53	24	M35 x 1.5	M16 x 1.5	G 1/2	17

Short-stroke device type KH F 500

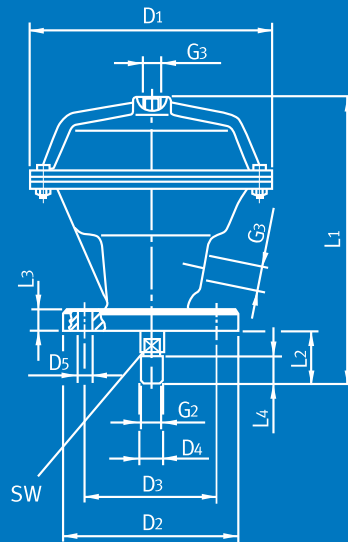
Weight 2.6 kg
 Single-/double-acting
 Max. pressurisation = 10 bar
 Max. stroke = 50 mm
 Air consumption per stroke/6 bar = 0.6–2.5 l
 Max. strokefrequency = 50/min. (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C

Short-stroke device type KH F 1000

Weight 5.0 kg
 Single-/double-acting
 Max. pressurisation = 10 bar
 Max. stroke = 60 mm
 Air consumption per stroke/6 bar = 2–7.3 l
 Max. strokefrequency = 25/min. (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C



KH F 500



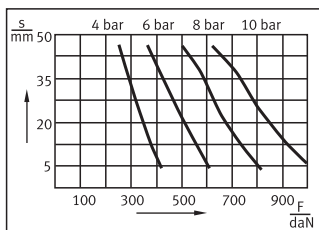
KH F 1000

Design:

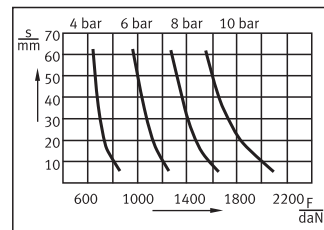
Housing: Al-alloy spray painted.
 Piston rod made of stainless steel.
 Guide bushing with self-lubrication.
 Piston rod rotating.

Properties

Type KH F 500



Type KH F 1000

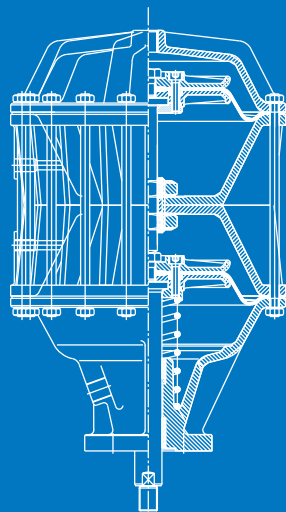


Dimensions

Type	D1	D2	D3	D4	D5	L1	L2	L3	L4	G2	G3	SW
KH F 500	166	120	90	16	9	190	29	14	20	M14 x 1.5	G 3/8	12
KH F 1000	215	120	90	20	11	271	53	14	24	M16 x 1.5	G 1/2	17



KH F 2000

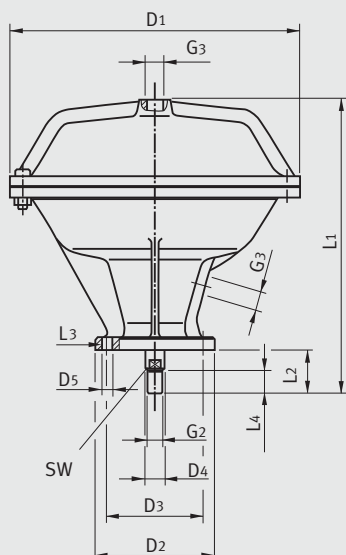


Short-stroke device type KH F 2000

Weight 10.6 kg
 Single-/double-acting
 Max. pressurisation = 10 bar
 Max. stroke = 80 mm
 Air consumption per stroke/6 bar = 4.5 – 20.3 l
 Max. strokefrequency = 10/min. (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C

Short-stroke device type KH F 4000

Weight 26.3 kg
 Single-/double-acting
 Max. pressurisation = 10 bar
 Max. stroke = 80 mm
 Air consumption per stroke/6 bar = 10.5 – 42 l
 Max. strokefrequency = 12/min. (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C



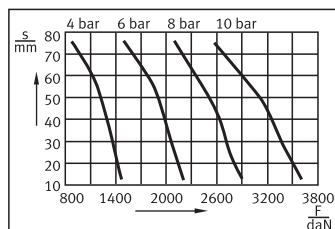
KH F 4000

Design:

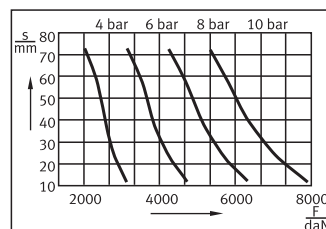
Housing: Al-alloy spray painted.
 Piston rod made of stainless steel.
 Guide bushing with self-lubrication.
 Piston rod rotating.

Properties

Type KH F 2000



Type KH F 4000



Dimensions

Type	D1	D2	D3	D4	D5	L1	L2	L3	L4	G2	G3	SW
KH F 2000	303	125	100	20	11	305	45	14	24	M16 x 1.5	G 1/2	17
KH F 4000	303	140	110	30	13	513	50	16	25	M20 x 1.5	G 1/2	27

Medium-stroke device type MH F 100

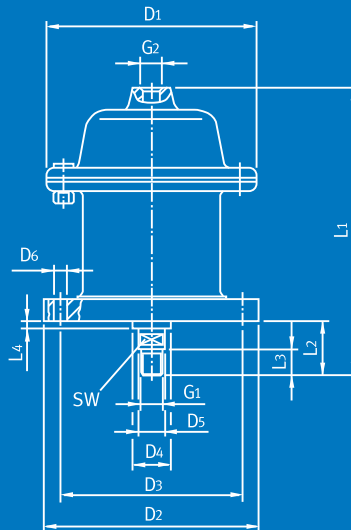
Weight 0.9 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 50 mm
 Air consumption per stroke/6 bar = 0.1–0.6 l
 Max. strokefrequency = 100/min.
 (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C

Medium-stroke device type MH F 250

Weight 2.5 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 70 mm
 Air consumption per stroke/6 bar = 0.5–2.5 l
 Max. strokefrequency = 75/min.
 (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C



MH F 100



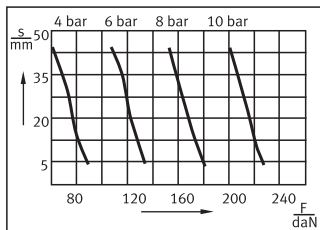
MH F 250

Design:

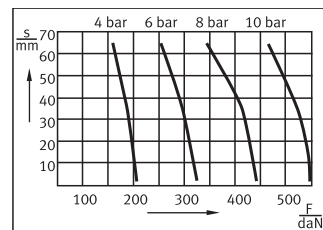
Housing: Al-alloy spray painted.
 Piston rod made of stainless steel.
 Guide bushing with self-lubrication.
 Piston rod rotating.

Properties

Type MH F 100



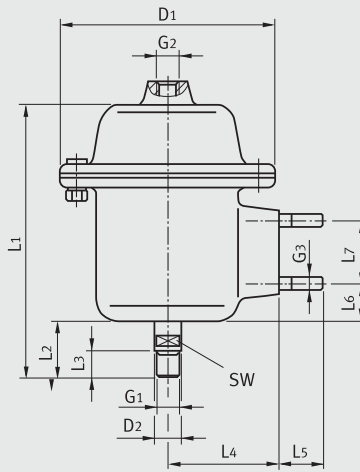
Type MH F 250



Dimensions													
Type	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	G1	G2	SW
MH F 100	97	100	85	18	12	6.4	133	25	12	3.5	M10	G 1/4	10
MH F 250	135	150	130	26	20	9	183	33	17	3	M16 x 1.5	G 3/8	17



MH S 100



Medium-stroke device type MH S 100

Weight 0.85 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 50 mm
 Air consumption per stroke/6 bar = 0.1–0.6 l
 Max. strokefrequency = 100/min. (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C

Medium-stroke device type MH S 250

Weight 2.3 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 70 mm
 Air consumption per stroke/6 bar = 0.5–2.5 l
 Max. strokefrequency = 75/min. (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C



MH S 250

Design:

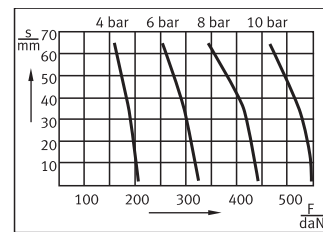
Housing: Al-alloy spray painted.
 Guide bushing with self-lubrication.
 Piston rod rotating.
 Piston rod made of stainless steel.

Properties

Type MH S 100



Type MH S 250



Dimensions

Type	D1	D2	L1	L2	L3	L4	L5	L6	L7	G1	G2	G3	SW
MH S 100	97	12	133	25	12	50	20	17	28	M10	G 1/4	M6	10
MH S 250	135	20	183	33	17	70	20	19	44	M16 x 1.5	G 3/8	M10	17

Medium-stroke device type MH 100 A

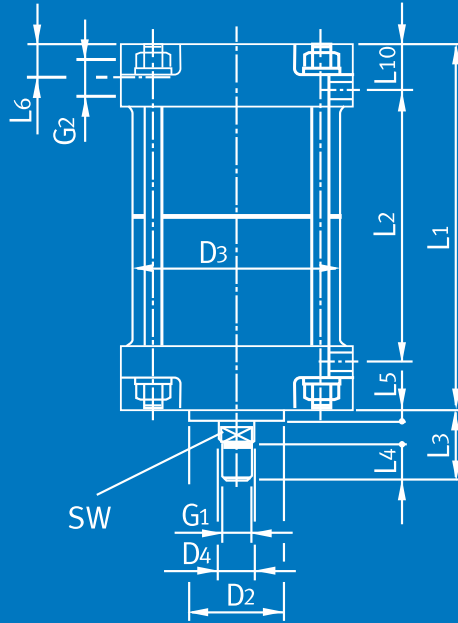
Weight 1.3 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 50 mm
 Air consumption per stroke/6 bar = 0.1–0.6 l
 Max. strokefrequency = 100/min. (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C

Medium-stroke device type MH 250 A

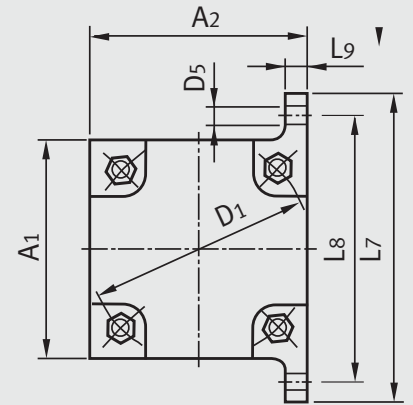
Weight 3.4 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 70 mm
 Air consumption per stroke/6 bar = 0.5–2.5 l
 Max. strokefrequency = 75/min. (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C

Design:

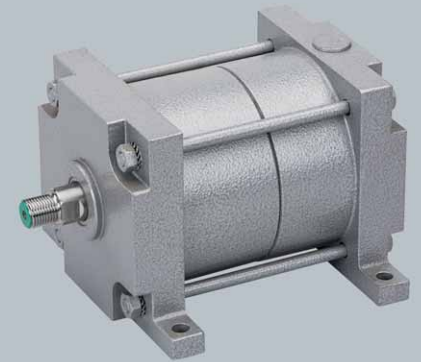
Housing: Al-alloy spray painted.
 Guide bushing with self-lubrication.
 Piston rod rotating.
 Piston rod made of stainless steel.



Side view

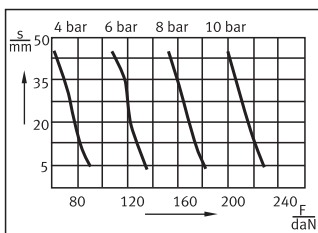


Top view



Properties

Type MH 100 A/B/C

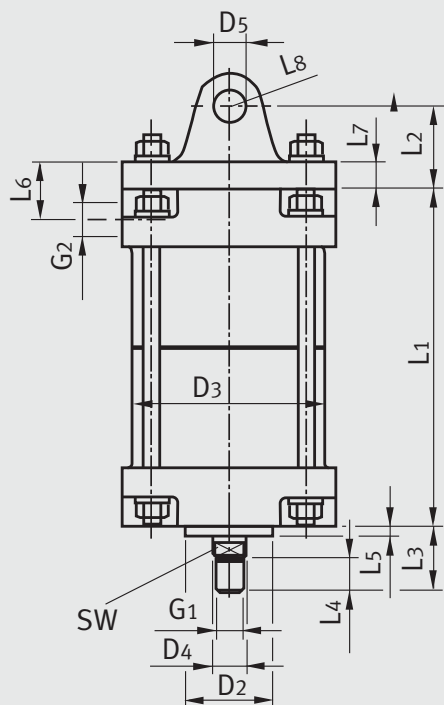


Medium-stroke device type MH 500 A

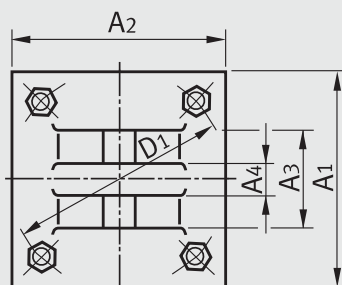
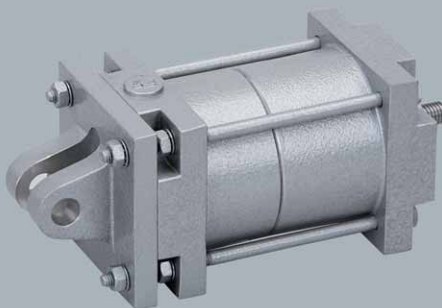
Weight 7.5 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 110 mm
 Air consumption per stroke/6 bar = 1.0–7.0 l
 Max. strokefrequency = 18/min. (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C

Dimensions

Type	A1	A2	D1	D2	D3	D4	D5	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	G1	G2	SW
MH 100 A	78	78	80	32	70	12	6.5	124	92	24	12	4	11	110	95	8	16	M10	G 1/4	10
MH 250 A	115	115	118	42	105	20	9	158	120	33	17	4	14	160	140	12	21	M16 x 1.5	G 3/8	17
MH 500 A	145	145	150	55	135	20	9	248	206	60	24	5	14	196	170	15	21	M16 x 1.5	G 3/8	17



Side view



Top view

Medium-stroke device type MH 100 B

Weight 1.5 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 50 mm
 Air consumption per stroke/6 bar = 0.1–0.6 l
 Max. strokefrequency = 100/min. (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C

Medium-stroke device type MH 250 B

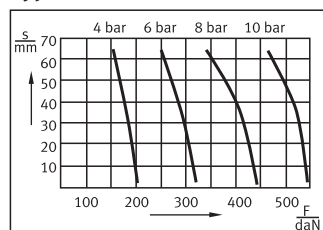
Weight 3.9 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 70 mm
 Air consumption per stroke/6 bar = 0.5–2.5 l
 Max. strokefrequency = 75/min. (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C

Design:

Housing: Al-alloy spray painted.
 Guide bushing with self-lubrication.
 Piston rod rotating.
 Piston rod made of stainless steel.

Properties

Type MH 250 A/B/C



Medium-stroke device type MH 500 B

Weight 8.5 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 110 mm
 Air consumption per stroke/6 bar = 1.0–7.0 l
 Max. strokefrequency = 18/min. (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C

Dimensions

Type	A1	A2	A3	A4	D1	D2	D3	D4	D5	L1	L2	L3	L4	L5	L6	L7	L8	G1	G2	SW
MH 100 B	78	78	36	12	80	32	70	12	12	124	30	24	12	4	11	10	12	M10	G 1/4	10
MH 250 B	115	115	45	16	118	42	105	20	16	158	38	33	17	4	14	12	16	M16 x 1.5	G 3/8	17
MH 500 B	145	145	54	24	150	55	135	20	20	248	45	60	24	5	14	15	20	M16 x 1.5	G 3/8	17

Medium-stroke device type MH 100 C

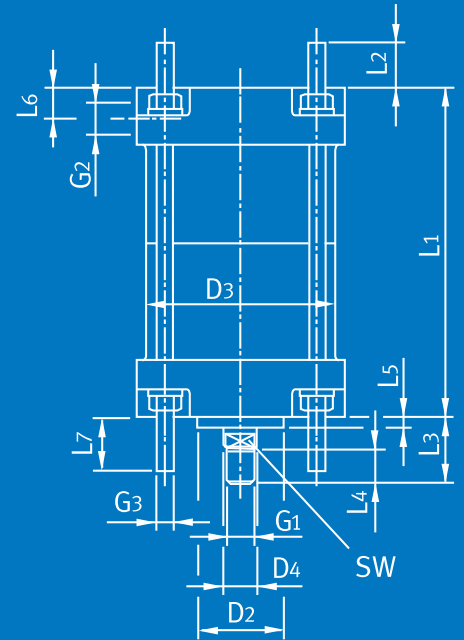
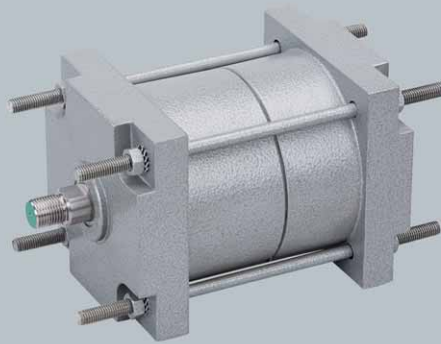
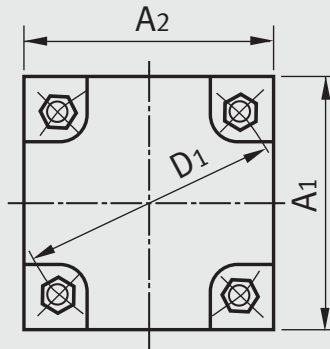
Weight 1.3 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 50 mm
 Air consumption per stroke/6 bar = 0.1–0.6 l
 Max. strokefrequency = 100/min. (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C

Medium-stroke device type MH 250 C

Weight 3.4 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 70 mm
 Air consumption per stroke/6 bar = 0.5–2.5 l
 Max. strokefrequency = 75/min. (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C

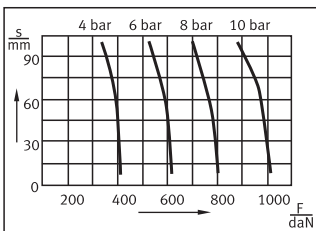
Design:

Housing: Al-alloy spray painted.
 Guide bushing with self-lubrication.
 Piston rod rotating.
 Piston rod made of stainless steel.



Properties

Type MH 500 A/B/C

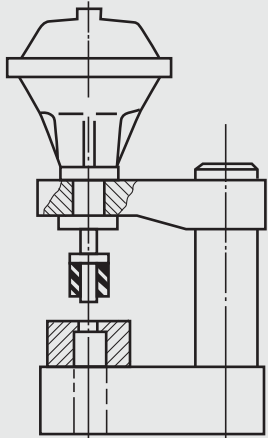


Medium-stroke device type MH 500 C

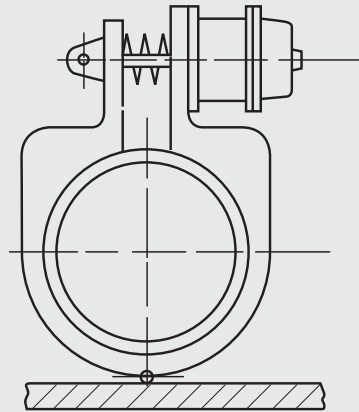
Weight 7.5 kg
 Single-acting
 Max. pressurisation = 10 bar
 Max. stroke = 110 mm
 Air consumption per stroke/6 bar = 1.0–7.0 l
 Max. strokefrequency = 18/min. (at effective valve cross section of 50 mm²)
 Ambient temperature = -20 °C – +80 °C

Dimensions

Type	A1	A2	D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	L7	G1	G2	G3	SW
MH 100 C	78	78	80	32	70	12	124	17	24	12	4	11	20	M10	G 1/4	M6	10
MH 250 C	115	115	118	42	105	20	158	25	33	17	4	14	27	M16 x 1.5	G 3/8	M8	17
MH 500 C	145	145	150	55	135	20	248	32	60	24	5	14	30	M16 x 1.5	G 3/8	M10	17



1



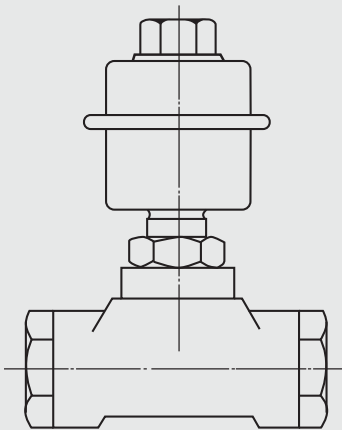
2

Diaphragm-cylinders manifold applicable

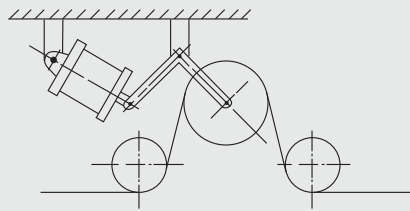
- 1 = Diaphragm-cylinders KH GS 1000
- 2 = Diaphragm-cylinders MH F 100
as brake element

Case studies

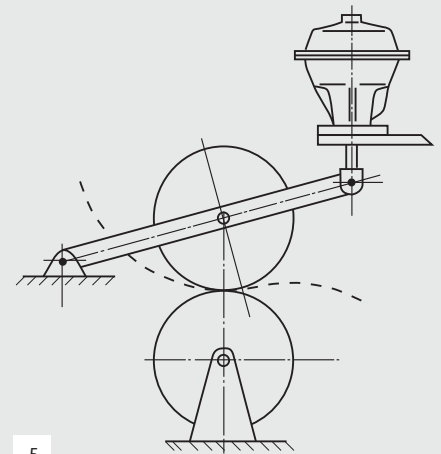
- 3 = Control systems
- 4 = Textile industry
- 5 = Paper converting (printing)



3



4



5

EFFBE diaphragm-cylinders are manifold applicable

EFFBE diaphragm-cylinders can with advantage be used all-about where until now hydraulic or pneumatic cylinders were used. In combination with adequate designed fittings the EFFBE diaphragm-cylinders can be used as fastening device for receiver and as feed unit for work pierce-transport. Further possible applications are the use as actuator for the operation of control units and valves. A great advantage is, that the cylinders can be delivered with various mounting possibilities.

EFFBE diaphragm-cylinders can be used by advantage in every usage of hydraulic pneumatic cylinders.