



CYLINDERS

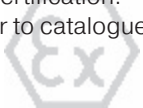
1

Moving more than air



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Selected products are available for explosion hazardous environment with ATEX certification. Please refer to catalogue number 8.



Cylinders of the Knorr product range are displayed in catalogue number 3.

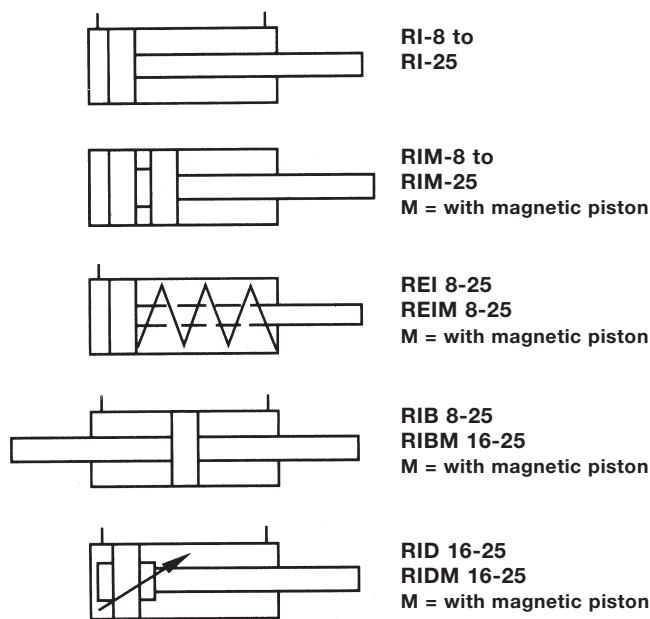


Measures without dimensions are in mm.



The JOYNER company policy is one of a continuous improvement process. We therefore reserve the right to amend, enhance and change specifications of the products presented in this document without notice.

Round cylinders single and double acting according to ISO 6432



Technical characteristics

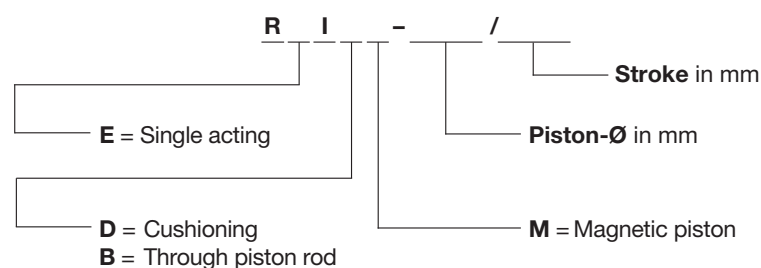
General characteristics	
Piston-Ø	8 ... 25 mm
Stroke	10 ... 320 mm
Port size	M5, G 1/8"
Fixing	according to ISO 6432
Mounting position	any
Temperature range	dried air below 0 °C
Ø 8–10–12	–20 °C ... +80 °C
Ø 16–20–25	–35 °C ... +80 °C
Materials used	Body and head: aluminum anodized, Piston rod and tube: stainless steel Seals: Ø 8–10–12: NBR-PUR Ø 16–20–25: PUR
Pneumatic characteristics	
Medium	compressed air, filtered max. 50 µm
Operating pressure	1 ... 10 bar

Piston-Ø	Standard strokes [mm]
8–10 mm	10, 25, 50, 80, 100, 125
12–16 mm	10, 25, 50, 80, 100, 125, 160, 200
20–25 mm	10, 25, 50, 80, 100, 125, 160, 200, 250, 320



Cylinders Ø 16–Ø 25 are also available in stainless steel.

Numbering system



Round cylinders single and double acting according to ISO 6432

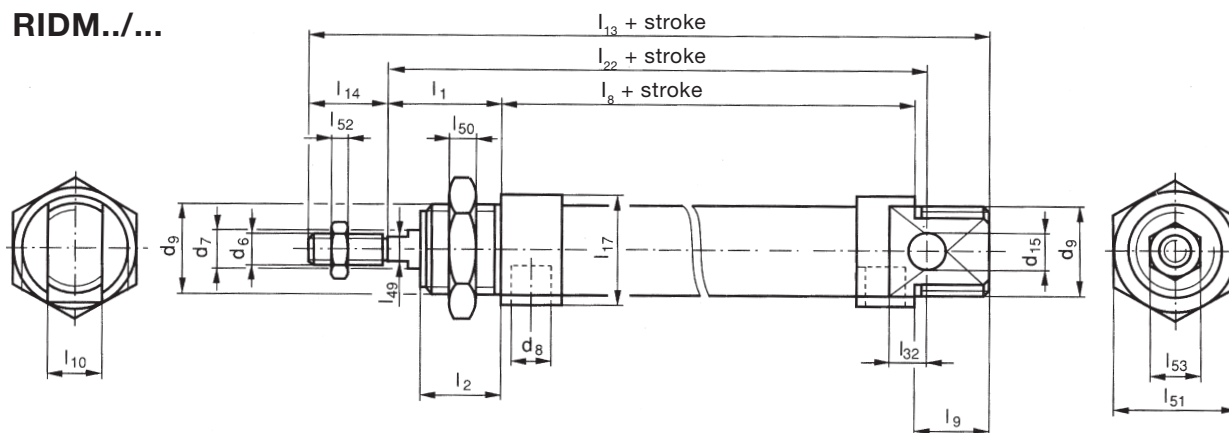
RI../...

RIM../...

REI../...

REIM../...

RIDM../...



Dimensions

Piston-Ø	l_1	l_2	l_8	l_9	l_{10}	l_{13}	l_{14}	l_{17}	l_{22}	l_{32}
8 mm	16	12	46	12	8	86	12	16	64	6
10 mm	16	12	46	12	8	86	12	16	64	6
12 mm	22	18	48	18	12	104	16	19	75	9
16 mm	22	18	53	18	12	109	16	19	82	9
20 mm	24	20	67	20	16	131	20	27	95	12
25 mm	28	22	68	22	16	140	22	30	104	12

Dimensions

Piston-Ø	l_{49}	l_{50}	l_{51}	l_{52}	l_{53}	d_6	d_7	d_8	d_9	d_{15}
8 mm	–	6	19	3.2	7	M4	4	M5	M12 x 1.25	4
10 mm	–	6	19	3.2	7	M4	4	M5	M12 x 1.25	4
12 mm	5	8	22	5.0	10	M6	6	M5	M16 x 1.5	6
16 mm	5	8	22	5.0	10	M6	6	M5	M16 x 1.5	6
20 mm	7	8	27	6.5	13	M8	8	G1/8	M22 x 1.5	8
25 mm	9	8	27	8.0	17	M10 x 1.25	10	G1/8	M22 x 1.5	8

Single acting cylinders up to 50 mm stroke.

Retraction force for REI-cylinders

Piston-Ø	Stroke					
	10 mm		25 mm		50 mm	
	F1	F2	F1	F2	F1	F2
8, 10 mm	4.5 N	5.2 N	3.9 N	5.2 N	2.5 N	5.2 N
12 mm	5.7 N	6.0 N	5.1 N	6.0 N	4.1 N	6.0 N
16 mm	15.0 N	17.5 N	11.5 N	17.5 N	5.3 N	17.5 N
20 mm	21.3 N	23.5 N	18.0 N	23.5 N	12.5 N	23.5 N
25 mm	18.2 N	19.5 N	16.2 N	19.5 N	12.9 N	19.5 N

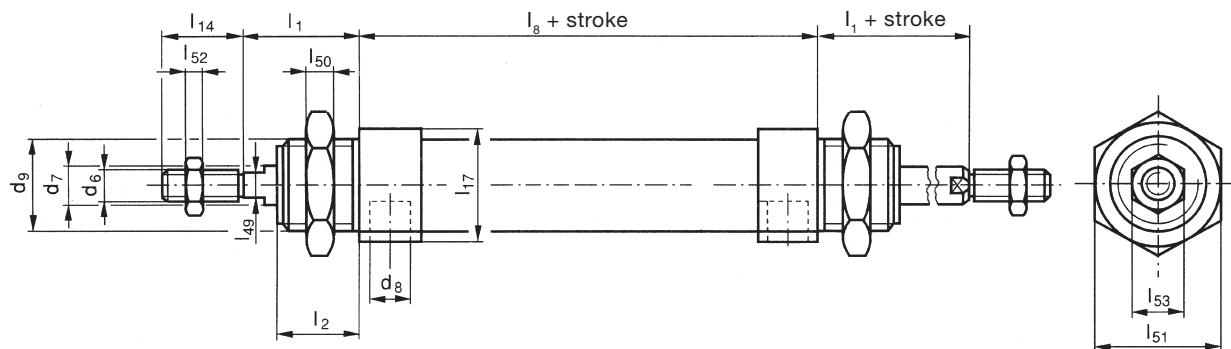
F1 = Force in initial position F2 = Force piston-rod extended



Round cylinders single and double acting according to ISO 6432

Type: RIB double acting
Please order: RIB-piston-Ø/stroke

Type: RIBM double acting with magnetic piston
Please order: RIBM-piston-Ø/stroke



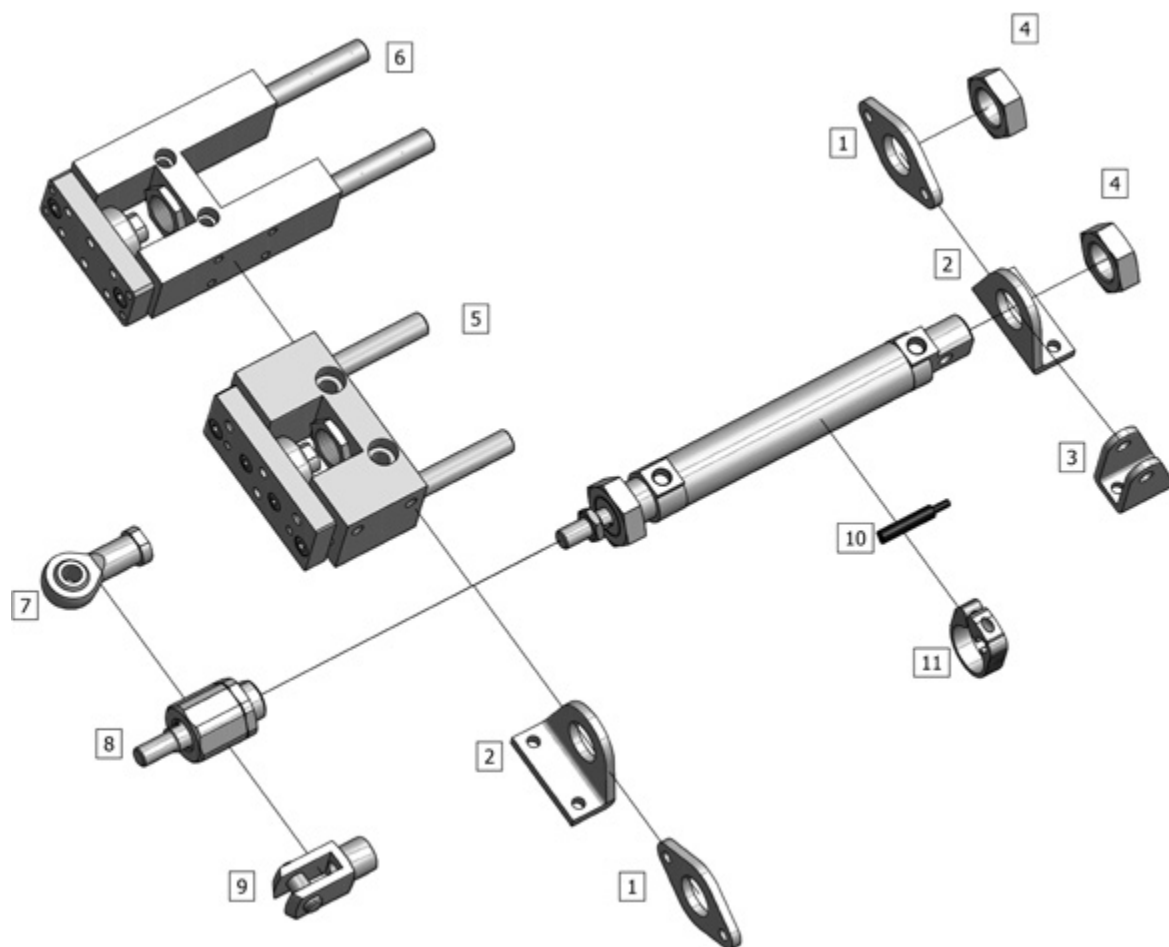
Dimensions for cylinders with through piston rod

Piston-Ø	l_1	$22l_2$	l_8	l_{14}	l_{17}	l_{49}	l_{50}	l_{51}	l_{52}
8 mm	16	12	46	12	16	–	6	19	3.2
10 mm	16	12	46	12	16	–	6	19	3.2
12 mm	22	18	48	16	19	5	8	22	5.0
16 mm	22	18	53	16	19	5	8	22	5.0
20 mm	24	20	67	20	27	7	8	27	6.5
25 mm	28	22	68	22	30	9	8	27	8.0

Piston-Ø	l_{53}	d_6	d_7	d_8	d_9
8 mm	7	M4	4	M5	M12 x 1.25
10 mm	7	M4	4	M5	M12 x 1.25
12 mm	10	M6	6	M5	M16 x 1.5
16 mm	10	M6	6	M5	M16 x 1.5
20 mm	13	M8	8	G1/8	M22 x 1.5
25 mm	17	M10 x 1.25	10	G1/8	M22 x 1.5



Accessories for round cylinders according to ISO 6432

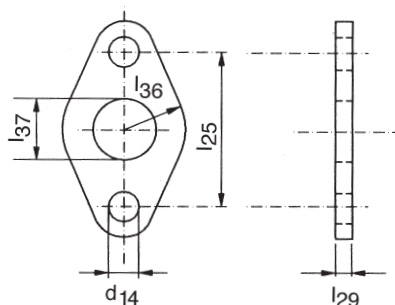


Pos.	Fixing element	Type	
1	Flange	MF 8	refer to page 7
2	Foot	MS 3	refer to page 7
3	Clevis foot mounting	LB	refer to page 7
4	Fixing nut	GT	refer to page 7
5	Linear guide	LFAC	refer to chapter 1.4.3
6	Linear guide	LFAH	refer to chapter 1.4.3
7	Universal rod eye for piston rod	GS	refer to chapter 1.4.1
8	Flexible joint	FK	refer to chapter 1.4.1
9	Rod clevis	GF	refer to chapter 1.4.1
10	Proximity switch	M/60	refer to chapter 1.4.2
11	Fastener for proximity switch	BR	refer to chapter 1.4.2



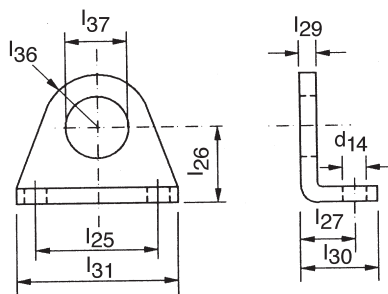
Accessories for round cylinders according to ISO 6432

Accessory flange – MF 8



Type	Piston-Ø	l_{37}	l_{29}	l_{25}	l_{36}	d_{14}
MF8-08/10	8 – 10 mm	12	3	30	9	4.5
MF8-12/16	12 – 16 mm	16	4	40	13	5.5
MF8-20/25	20 – 25 mm	22	5	50	19	6.6

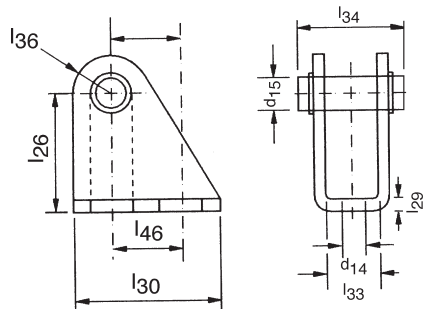
Accessory foot – MS 3



Type	Piston-Ø	l_{37}	d_{14}	l_{31}	l_{25}	l_{27}	l_{26}	l_{30}	l_{36}	l_{29}
MS3-08/10	8 – 10 mm	12	4.5	35	25	11	16	16	10.0	3
MS3-12/16	12 – 16 mm	16	5.5	42	32	14	20	20	13.5	4
MS3-20/25	20 – 25 mm	22	6.6	54	40	17	25	25	18.0	5

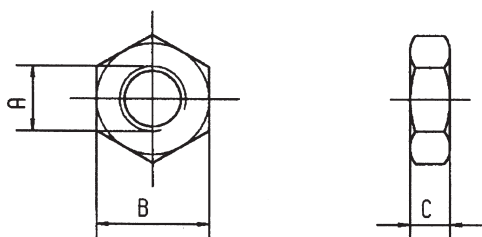
Delivery: 1 piece

Accessory clevis foot mounting – LB



Type	Piston-Ø	d_{14}	d_{15}	l_{46}	l_{30}	l_{26}	l_{33}	l_{34}	l_{36}	l_{29}
LB-08/10	8 – 10 mm	4.5	4	12.5	20	24	8.1	18	5	2.5
LB-12/16	12 – 16 mm	5.5	6	15.0	25	27	12.1	25	7	3.0
LB-20/25	20 – 25 mm	6.6	8	20.0	32	30	16.1	32	10	4.0

Accessory fixing nut – GT



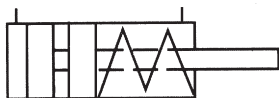
Type	Piston-Ø	A	B	C
GT-M12x1,25	8 – 10 mm	M12 x 1.25	19	6
GT-M16x1,5	12 – 16 mm	M16 x 1.5	22	8
GT-M22x1,5	20 – 25 mm	M22 x 1.5	27	8



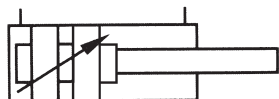
Round cylinders 32 to 63 mm single and double acting with magnetic piston



RIM 32-63



REIM 32-63



RIDM 32-63



Technical characteristics

General characteristics	
Piston-Ø	32 ... 63 mm
Stroke	10 ... 500 mm
Port size	G 1/8", G 1/4", G 3/8"
Mounting position	any
Temperature range	dried air below 0 °C -35 °C ... +80 °C
Materials used	Body and head: aluminum anodized Piston rod and tube: stainless steel Seals: PUR
Pneumatic characteristics	
Medium	compressed air, filtered max. 50 µm
Operating pressure	1 ... 10 bar

Standard strokes [mm]	
Single acting	10, 25, 50
Double acting	10, 25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500

Retraction force for REI-cylinders

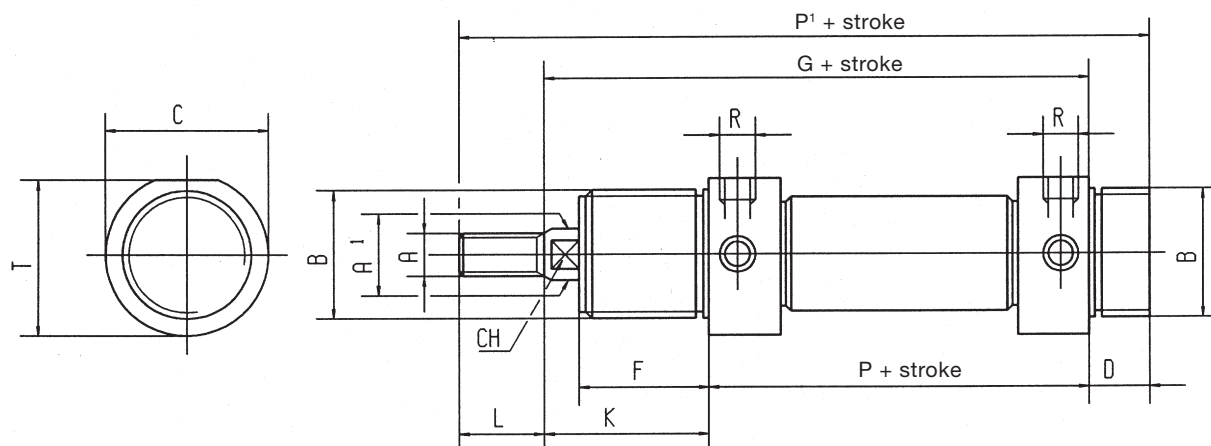
Piston-Ø	Stroke					
	10 mm		25 mm		50 mm	
	F1	F2	F1	F2	F1	F2
32 mm	57 N	62 N	51 N	62 N	40 N	62 N
40 mm	96 N	105 N	84 N	105 N	63 N	105 N
50 mm	107 N	114 N	96 N	114 N	78 N	114 N
63 mm	107 N	114 N	96 N	114 N	78 N	114 N

F1 = Force in initial position F2 = Force piston-rod extended



Round cylinders 32 to 63 mm single and double acting with magnetic piston

Type: REIM single acting with magnetic piston
Please order: REIM-piston-Ø/stroke

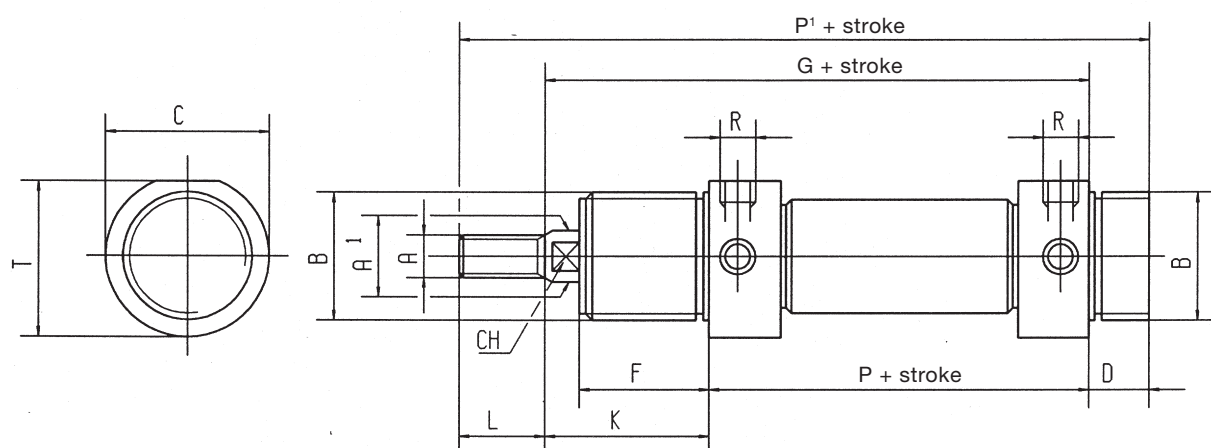


Dimensions

Piston-Ø*	A	A'	B	T	C	D	F	G	K	L	P	P'	CH	R
32 mm	M10	12	M30 x 1.5	36.5	38	14	30	134	38	20	96	168	10	1/8"
40 mm	M12	16	M38 x 1.5	44.0	46	16	35	158	45	24	113	198	12	1/4"
50 mm	M16	20	M45 x 1.5	55.0	57	18	38	170	50	32	120	220	16	1/4"
63 mm	M16	20	M45 x 1.5	67.5	70	18	38	174	50	31	124	224	16	3/8"

Type: RIM double acting with magnetic piston
Please order: RIM-piston-Ø/stroke

Type: RIDM double acting with adjustable cushioning and magnetic piston
Please order: RIDM-piston-Ø/stroke



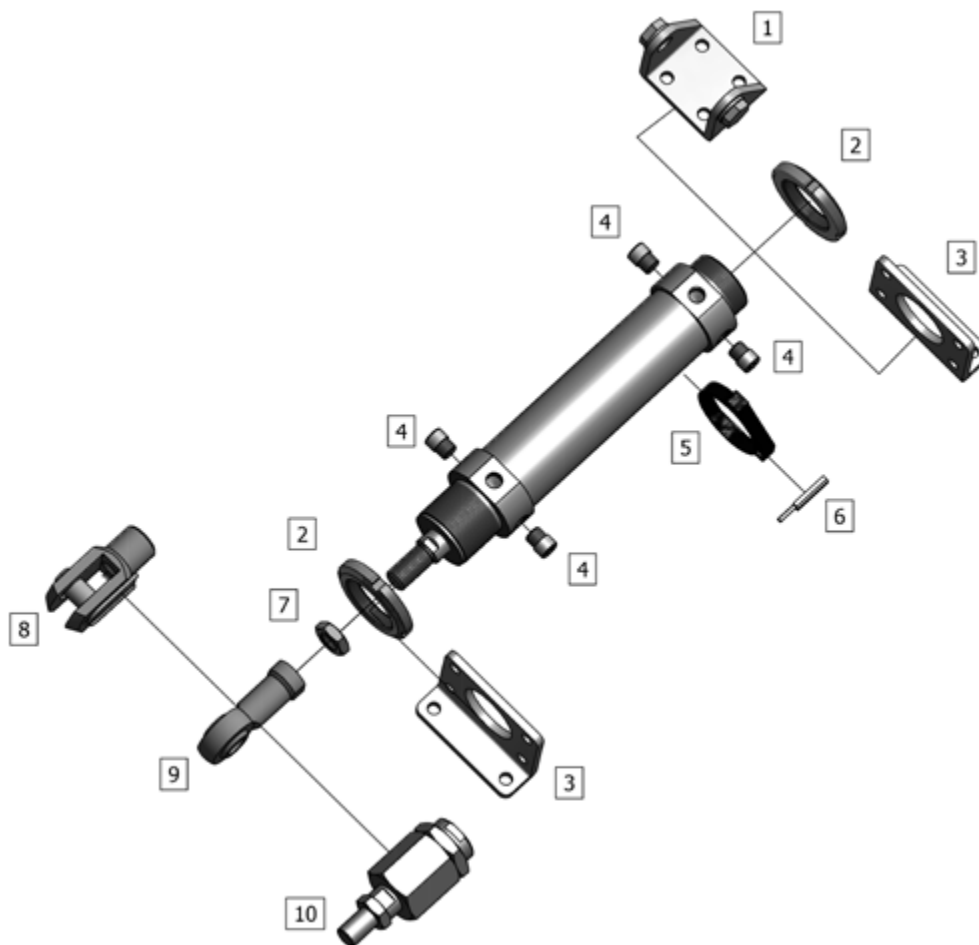
Dimensions

Piston-Ø*	A	A'	B	T	C	D	F	G	K	L	P	P'	CH	R
32 mm	M10	12	M30 x 1.5	36.5	38	14	30	134	38	20	96	168	10	1/8"
40 mm	M12	16	M38 x 1.5	44.0	46	16	35	158	45	24	113	198	12	1/4"
50 mm	M16	20	M45 x 1.5	55.0	57	18	38	170	50	32	120	220	16	1/4"
63 mm	M16	20	M45 x 1.5	67.5	70	18	38	175	51	31	124	224	16	3/8"

* Single acting cylinders up to 50 mm stroke.



Accessories for round cylinders Ø 32 – 63

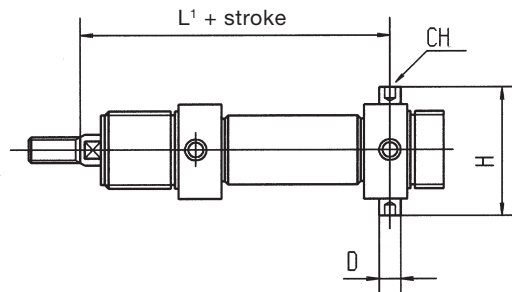
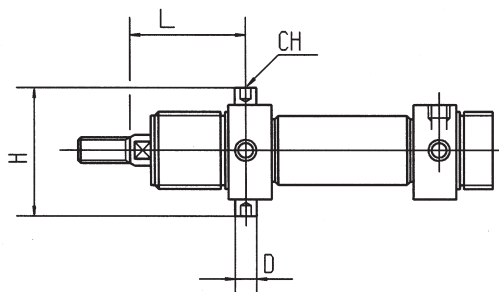


Pos.	Fixing element	Type	
1	Clevis foot mounting	LB	refer to page 12
2	Fixing nut	GT	refer to page 12
3	Foot	MS 3	refer to page 12
4	Trunnion (1 pair)	CPE	refer to page 11
5	Fastener for proximity switch	BR	refer to chapter 1.4.2
6	Proximity switch	M60	refer to chapter 1.4.2
7	Nut for piston rod	DS	refer to page 11
8	Rod clevis	GF	refer to chapter 1.4.1
9	Universal rod eye for piston rod	GS	refer to chapter 1.4.1
10	Flexible joint	FK	refer to chapter 1.4.1



Accessory trunnion – CPE

Please order: CPE-piston-Ø

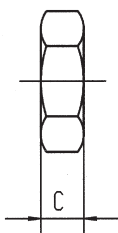
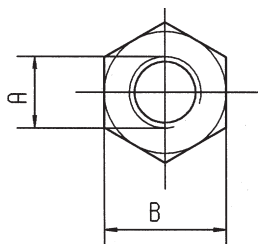


Piston-Ø	D	H	L'	L	CH
32 mm	10	51	125	47	5
40 mm	12	61	146	57	6
50 mm	14	75	158	62	6
63 mm	16	92	162	64	8

1 pair

Accessory nut for piston rod – DS

Please order: DS-„dimension A“

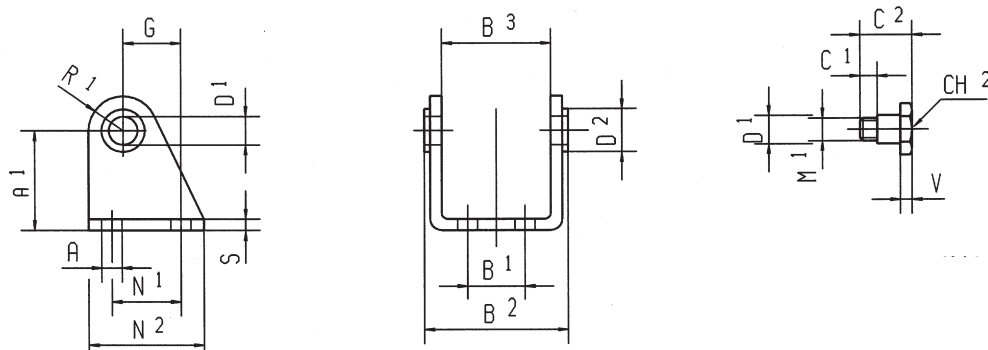


Piston-Ø	A	B	C
32 mm	M10	17	6
40 mm	M12	22	7
50 mm	M16	24	8
63 mm	M16	24	8



Accessory clevis foot mounting – LB

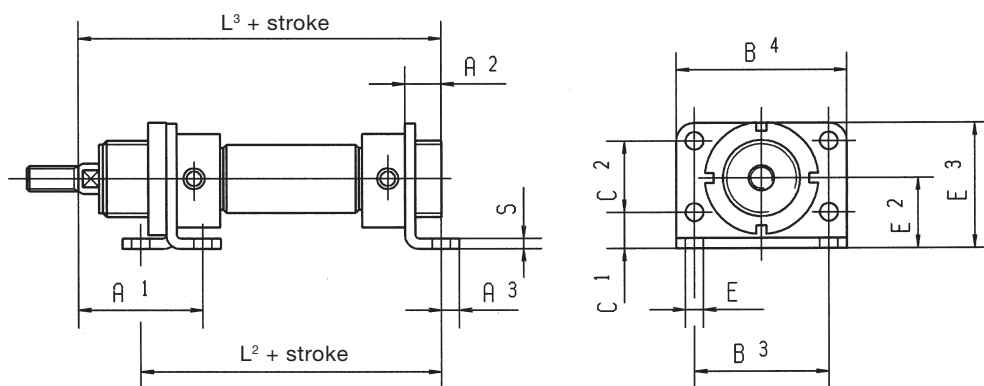
Please order: LB-piston-Ø



Piston-Ø	D ¹	D ²	A	A ¹	G	M ¹	N ¹	N ²	R ¹	S	CH ²	B ¹	B ²	B ³	V	C ¹	C ²
32 mm	10	15	7	35	20	M8 x 1.0	24	40	12	4	13	20	50.1	38.1	4	6	18.0
40 mm	12	20	9	40	27	M10 x 1.0	30	50	13	5	17	28	60.1	46.1	5	7	21.6
50 mm	14	23	9	45	30	M12 x 1.5	34	54	14	6	19	36	74.1	57.1	6	9	26.4
63 mm	16	23	9	50	34	M14 x 1.5	35	65	16	6	19	42	88.1	70.1	6	15	34.0

Accessory foot – MS3

Please order: MS3-piston-Ø

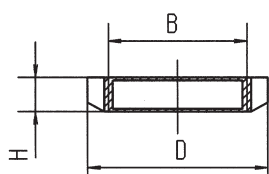


Piston-Ø	E	E ²	E ³	C ¹	C ²	L ²	L ³	B ³	B ⁴	S	A ¹	A ²	A ³
32 mm	7	28	49	14	28	124	148	52	66	4	48	14	7
40 mm	9	33	58	18	30	153	178	60	80	5	60	20	10
50 mm	9	40	70	20	40	160	190	70	90	6	64	20	10
63 mm	9	45	80	20	50	164	195	76	96	6	65	20	10

Delivery: 1 piece

Accessory fixing nut – GT

Please order: GT-„dimension B“



Piston-Ø	B	D	H
32 mm	M30 x 1.5	45	7
40 mm	M38 x 1.5	50	8
50 mm	M45 x 1.5	58	9
63 mm	M45 x 1.5	58	9



According to ISO 21287, single acting, piston-Ø 20 to 100 mm



KPEM
Spring in head



KPEMZ
Spring in cap



- Fixing elements in accordance to ISO 15552 can be used
- Compact design to save space
- Proximity switches type M60 can be assembled into cylinder profile

Standard models

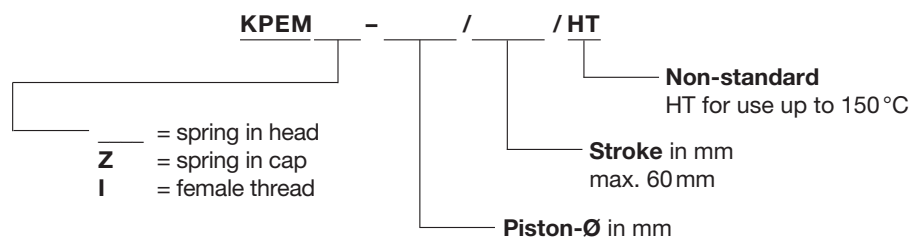
Piston-Ø	Rod-Ø	Port size	Spare-part kit
20 mm	10	M5	ET-KPEM-20
25 mm	10	M5	ET-KPEM-25
32 mm	12	G1/8	ET-KPEM-32
40 mm	16	G1/8	ET-KPEM-40
50 mm	16	G1/8	ET-KPEM-50
63 mm	16	G1/8	ET-KPEM-63
80 mm	20	G1/8	ET-KPEM-80
100 mm	25	G1/8	ET-KPEM-100

Piston-Ø	KPEM Force at 6 bar [N]		KPEMZ Force at 6 bar [N]	
	extending	spring	retracting	spring
20 mm	150	38	104	38
25 mm	253	42	206	42
32 mm	429	53	362	53
40 mm	684	70	617	70
50 mm	1103	75	983	75
63 mm	1769	100	1650	100
80 mm	2864	150	2679	150
100 mm	4500	210	4210	210

Technical characteristics

General characteristics	
Medium	compressed air, filtered, particels max. 50 µm
Function	single acting with magnetic piston spring in head KPEMI – female thread on piston rod, KPEM – male thread on piston rod, including fixing nut spring in cap KPEMIZ – female thread on piston rod, KPEMZ – male thread on piston rod, including fixing nut
Operating pressure	2 ... 10 bar
Temperature range	–20 °C * ... +80 °C * below 0°C dried air only
Standard strokes	5 mm, 10 mm, 15 mm, 20 mm, 25 mm, 30 mm, 35 mm, 40 mm, 50 mm, 60 mm, others on request
Materials used	Endcaps aluminum painted, Tube: aluminum anodized, Piston rod: stainless steel (AISI 303), Seals: NBR and PUR

Numbering system



Compact cylinders KPEM / KPEMZ

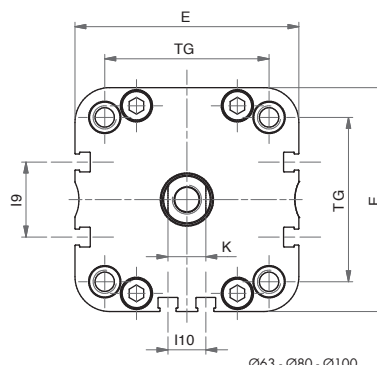
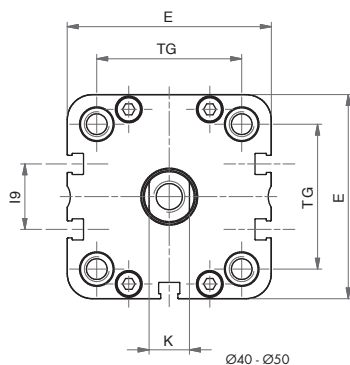
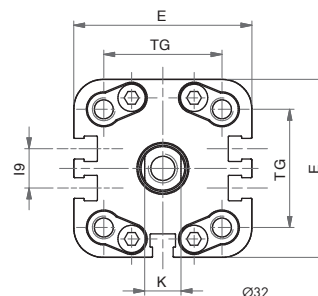
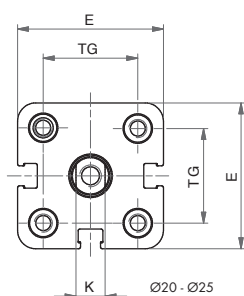
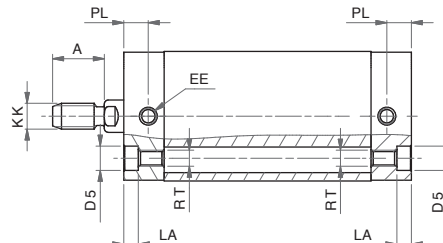
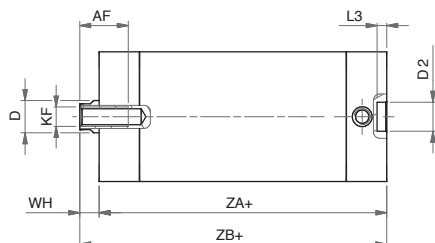
According to ISO 21287.

KPEM... Ø 20 to 100 mm



KPEMI Cylinder with spring in head
piston rod with female thread

KPEM Cylinder with spring in head
piston rod male thread



Dimensions

Piston-Ø	20 mm	25 mm	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm
A	16	16	19	19	22	22	28	28
AF	15	15	16	16	17	17	20	20
Ø D	10	10	12	12	16	16	20	25
Ø D2	9	9	9	9	12	12	12	12
Ø D5	7.5	7.5	9	9	10.5	10.5	13.5	13.5
E	36	40	49	54.5	65.5	77	95.5	113.5
EE	M5	M5	G1/8	G1/8	G1/8	G1/8	G1/8	G1/8
I9	—	—	10.8	12.8	21	25.8	30	50
I 10	—	—	—	—	—	13	18	35
K	8	8	10	10	13	13	17	22
KF	M6	M6	M8	M8	M10	M10	M12	M12
KK	M8	M8	M10 x 1.25	M10 x 1.25	M12 x 1.25	M12 x 1.25	M16 x 1.5	M16 x 1.5
LA	4.5	4.5	5	5	5	5	3	3
L3	3	3	3	3	4	4	4	4
PL	7.5	7.5	7.5	8	8	7.5	8	10.5
RT	M5	M5	M6	M6	M8	M8	M10	M10
TG	22	26	32.5	38	46.5	56.5	72	89
WH	6.5	6	6.5	7	8	8	9	10
ZA+	37*	39*	44*	45*	45*	49*	54*	67*
ZB+	43.5*	45*	50.5*	52*	53*	57*	63*	77*

+ plus stroke (mm)

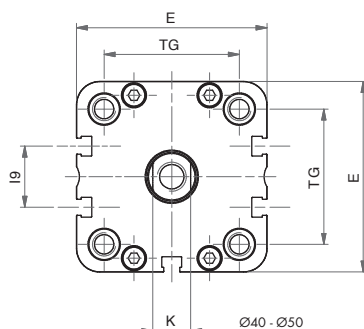
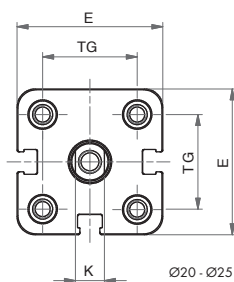
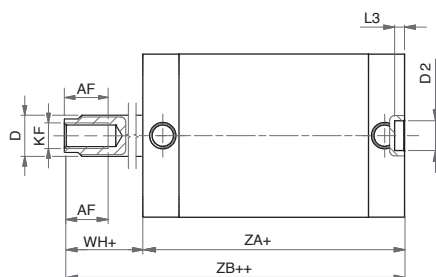
* for stroke 35, 40, 50, 60 mm / for Ø 20 mm plus 10 mm / for Ø 25, 32, 40, 50, 63 mm plus 20 mm / for Ø 80 to 100 mm plus 30 mm



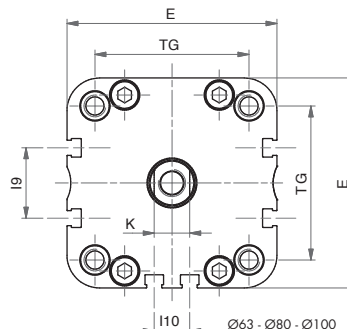
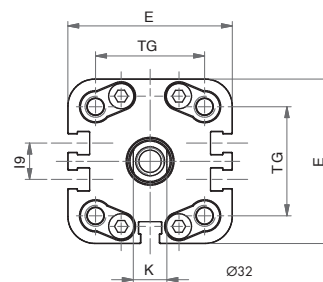
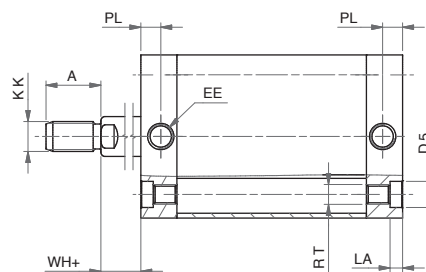
According to ISO 21287.

KPEMIZ... Ø 20 to 100 mm

KPEMIZ Cylinder with spring in cap
piston rod with female thread



KPEMZ Cylinder with spring in cap
piston rod male thread



Dimensions

Piston-Ø	20 mm	25 mm	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm
A	16	16	19	19	22	22	28	28
AF	15	15	16	16	17	17	20	20
Ø D	10	10	12	12	16	16	20	25
Ø D2	9	9	9	9	12	12	12	12
Ø D5	7.5	7.5	9	9	10.5	10.5	13.5	13.5
E	36	40	49	54.5	65.5	77	95.5	113.5
EE	M5	M5	G1/8	G1/8	G1/8	G1/8	G1/8	G1/8
I9	—	—	10.8	12.8	21	25.8	30	50
I10	—	—	—	—	—	13	18	35
K	8	8	10	10	13	13	17	22
KF	M6	M6	M8	M8	M10	M10	M12	M12
KK	M8	M8	M10 x 1.25	M10 x 1.25	M12 x 1.25	M12 x 1.25	M16 x 1.5	M16 x 1.5
LA	4.5	4.5	5	5	5	5	3	3
L3	3	3	3	3	4	4	4	4
PL	7.5	7.5	7.5	8	8	7.5	8	10.5
RT	M5	M5	M6	M6	M8	M8	M10	M10
TG	22	26	32.5	38	46.5	56.5	72	89
WH+	6.5	6	6.5	7	8	8	9	10
ZA+	37*	39*	44*	45*	45*	49*	54*	67*
ZB++	43.5*	45*	50.5*	52*	53*	57*	63*	77*

+ plus stroke (mm) / ++ plus 2 x stroke (mm)

* for stroke 35, 40, 50, 60 mm / for Ø 25, 32, 40, 50, 63 mm plus 20 mm / for Ø 80 to 100 mm plus 20 mm



Compact cylinders KPDM / KPDMI

**According to ISO 21287, double acting,
piston-Ø 20 to 100 mm**

KPDM Ø 20 to 100 mm



- Fixing elements in accordance to ISO 15552 can be used
- Compact design to save space
- Proximity switches type M60 can be assembled into cylinder profile



Standard models

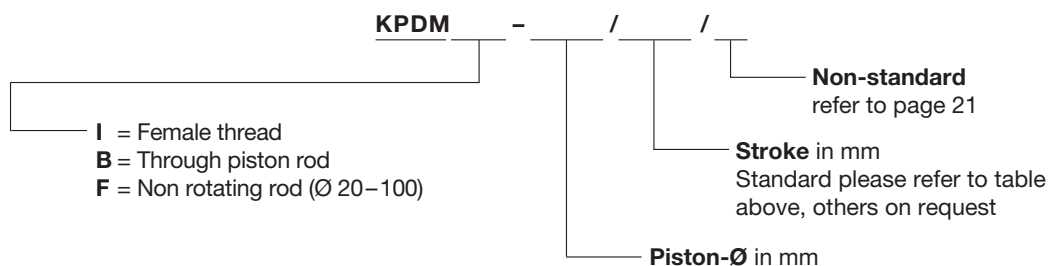
Piston-Ø	Rod-Ø	Port size	Spare-part kit
20 mm	10	M5	ET-KPDM-20
25 mm	10	M5	ET-KPDM-25
32 mm	12	G1/8	ET-KPDM-32
40 mm	16	G1/8	ET-KPDM-40
50 mm	16	G1/8	ET-KPDM-50
63 mm	16	G1/8	ET-KPDM-63
80 mm	20	G1/8	ET-KPDM-80
100 mm	25	G1/8	ET-KPDM-100

Piston-Ø	KPDM Force at 6 bar [N]	
	extending	retracting
20 mm	188	142
25 mm	295	248
32 mm	482	415
40 mm	754	687
50 mm	1178	1058
63 mm	1869	1750
80 mm	3014	2829
100 mm	4710	4420

Technical characteristics

General characteristics	
Medium	compressed air, filtered max. 50 µm
Function	double acting with magnetic piston KPDMI female thread on piston rod, KPDM – male thread on piston rod, including fixing nut
Operating pressure	1 ... 10 bar
Temperature range	–20 °C * ... +80 °C * below 0 °C dried air only.
Standard strokes	5 mm, 10 mm, 15 mm, 20 mm, 25 mm, 30 mm, 40 mm, 50 mm, 60 mm, 70 mm, 75 mm, 80 mm, 90 mm, 100 mm, 125 mm, 160 mm, 200 mm, 250 mm; starting Ø 32: 300 mm, 350 mm, 400 mm; others on request. For strokes larger 100 mm we recommend the use of guide units.
Materials used	Endcaps aluminum painted, Tube: aluminum anodized, Piston rod: stainless steel (AISI 303), Seals: NBR and PUR

Numbering system

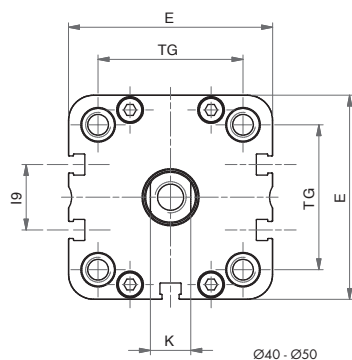
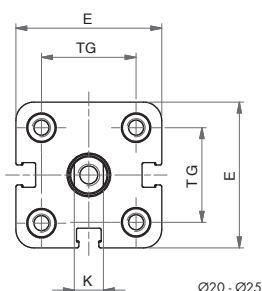
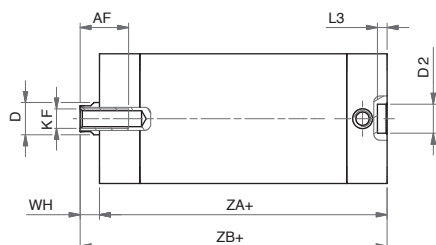


According to ISO 21287.

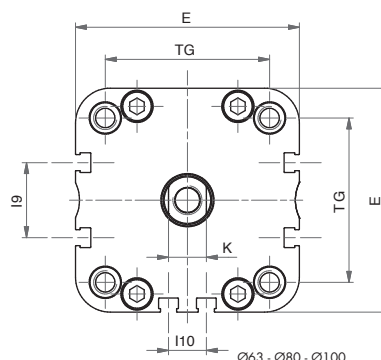
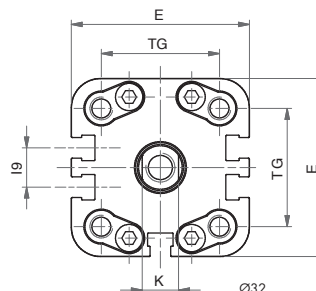
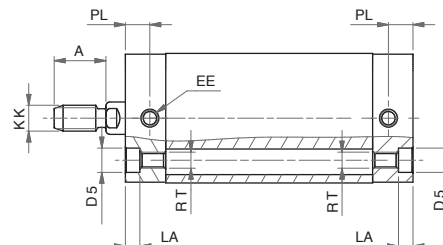
KPDM... Ø 20 to 100 mm



KPDMI Piston rod with female tread



KPDM Piston rod with male tread



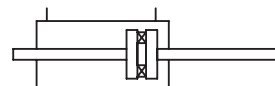
Dimensions

Piston-Ø	20 mm	25 mm	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm
A	16	16	19	19	22	22	28	28
AF	15	15	16	16	17	17	20	20
Ø D	10	10	12	12	16	16	20	25
Ø D2	9	9	9	9	12	12	12	12
Ø D5	7.5	7.5	9	9	10.5	10.5	13.5	13.5
E	36	40	49	54.5	65.5	77	95.5	113.5
EE	M5	M5	G1/8	G1/8	G1/8	G1/8	G1/8	G1/8
I9	–	–	10.8	12.8	21	25.8	30	50
I10	–	–	–	–	–	13	18	35
K	8	8	10	10	13	13	17	22
KF	M6	M6	M8	M8	M10	M10	M12	M12
KK	M8	M8	M10 x 1.25	M10 x 1.25	M12 x 1.25	M12 x 1.25	M16 x 1.5	M16 x 1.5
LA	4.5	4.5	5	5	5	5	3	3
L3	3	3	3	3	4	4	4	4
PL	7.5	7.5	7.5	8	8	7.5	8	10.5
RT	M5	M5	M6	M6	M8	M8	M10	M10
TG	22	26	32.5	38	46.5	56.5	72	89
WH	6.5	6	6.5	7	8	8	9	10
ZA+	37	39	44	45	45	49	54	67
ZB+	43.5	45	50.5	52	53	57	63	77

+ plus stroke (mm)

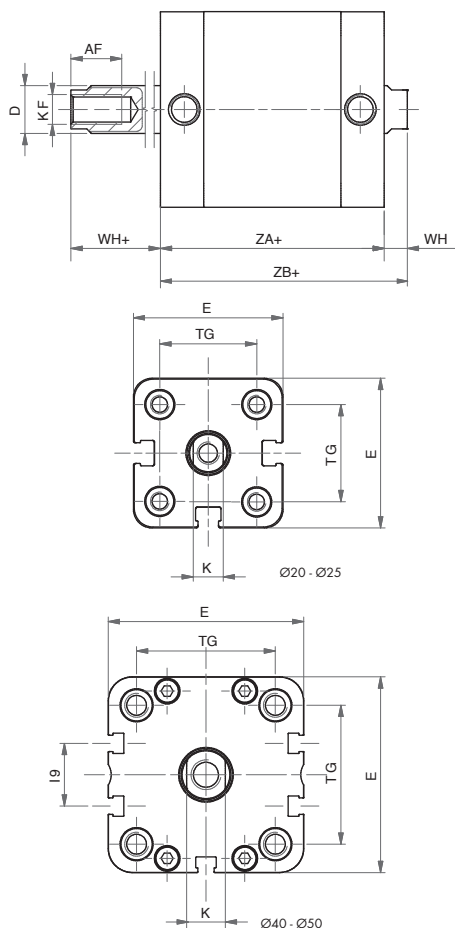


According to ISO 21287, double acting with through piston rod

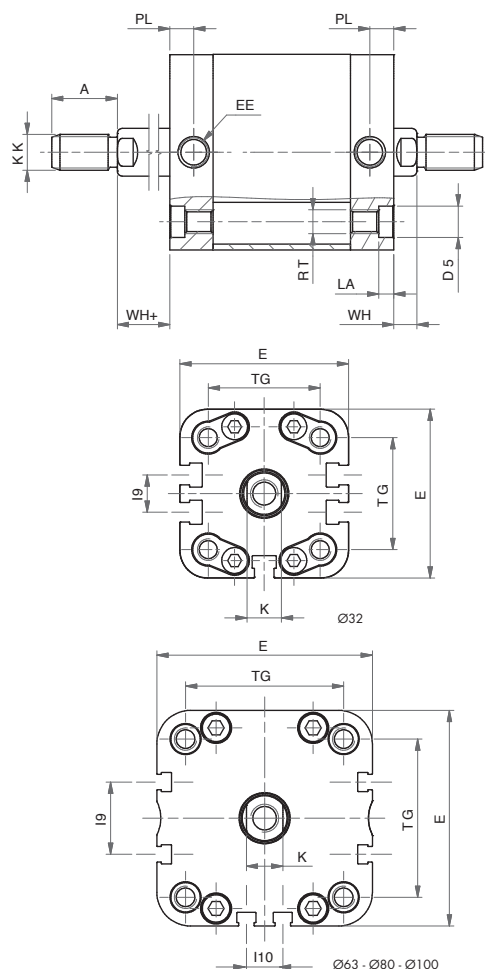


KPDM_B... Ø 20 to 100 mm

KPDMIB Piston rod with female thread



KPDMB Piston rod with male thread



Dimensions

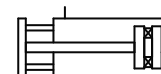
Piston-Ø	20 mm	25 mm	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm
A	16	16	19	19	22	22	28	28
AF	15	15	16	16	17	17	20	20
Ø D	10	10	12	12	16	16	20	25
Ø D5	7.5	7.5	9	9	10.5	10.5	13.5	13.5
E	36	40	49	54.5	65.5	77	95.5	113.5
EE	M5	M5	G1/8	G1/8	G1/8	G1/8	G1/8	G1/8
I9	–	–	10.8	12.8	21	25.8	30	50
I10	–	–	–	–	–	13	18	35
K	8	8	10	10	13	13	17	22
KF	M6	M6	M8	M8	M10	M10	M12	M12
KK	M8	M8	M10x1.25	M10x1.25	M12x1.25	M12x1.25	M16x1.5	M16x1.5
LA	4.5	4.5	5	5	5	5	3	3
PL	7.5	7.5	7.5	8	8	7.5	8	10.5
RT	M5	M5	M6	M6	M8	M8	M10	M10
TG	22	26	32.5	38	46.5	56.5	72	89
WH	6.5	6	6.5	7	8	8	9	10
WH+	6.5	6	6.5	7	8	8	9	10
ZA+	37	39	44	45	45	49	54	67
ZB+	43.5	45	50.5	52	53	57	63	77

+ plus stroke (mm)

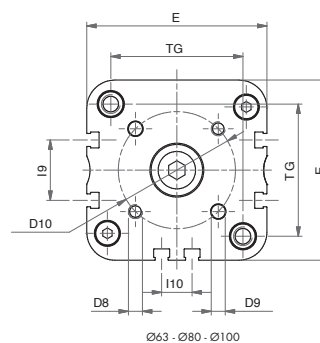
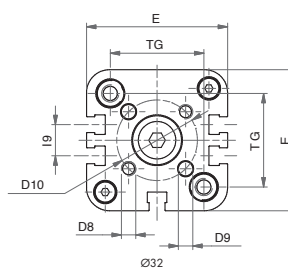
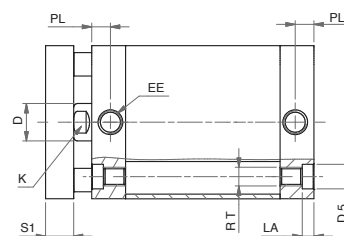
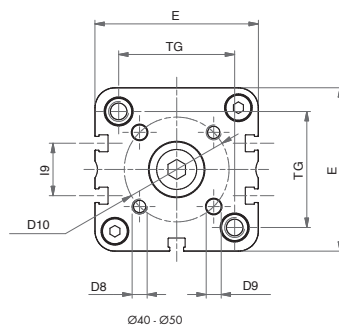
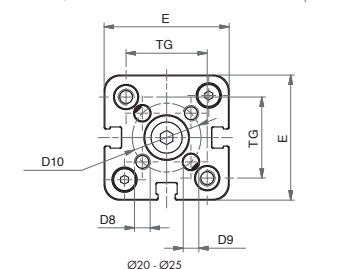
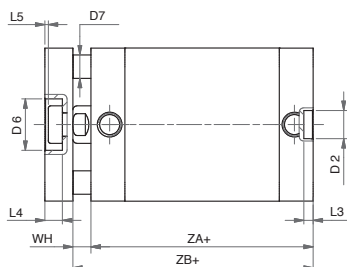


According to ISO 21287, double acting,
non rotating piston rod

KPDMIF... Ø 20 to 100 mm



KPDMIF Piston rod with female thread



Dimensions

Piston-Ø	20 mm	25 mm	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm
Ø D	10	10	12	12	16	16	20	25
Ø D2	9	9	9	9	12	12	12	12
Ø D5	7.5	7.5	9	9	10.5	10.5	13.5	13.5
Ø D6	11	14	17	17	22	22	28	30
Ø D7	5	6	6	8	10	10	14	14
D8	M4	M5	M5	M5	M6	M6	M8	M10
Ø D9	4	5	5	5	6	6	8	10
Ø D10	17	22	28	33	42	50	65	80
E	36	40	49	54.5	65.5	77	95.5	113.5
EE	M5	M5	G1/8	G1/8	G1/8	G1/8	G1/8	G1/8
I9	–	–	10.8	12.8	21	25.8	30	50
I10	–	–	–	–	–	13	18	35
K	8	8	10	10	13	13	17	22
LA	4.5	4.5	5	5	5	5	3	3
L3	3	3	3	3	4	4	4	4
L4	5	5	6.5	6.5	7.5	7.5	9	10
L5	1	1	1.5	1.5	1.5	1.5	2	3
PL	7.5	7.5	7.5	8	8	7.5	8	10.5
RT	M5	M5	M6	M6	M8	M8	M10	M10
S1	8	8	10	10	12	12	14	14
TG	22	26	32.5	38	46.5	56.5	72	89
WH	6.5	6	6.5	7	8	8	9	10
ZA+	37	39	44	45	45	49	54	67
ZB+	43.5	45	50.5	52	53	57	63	77

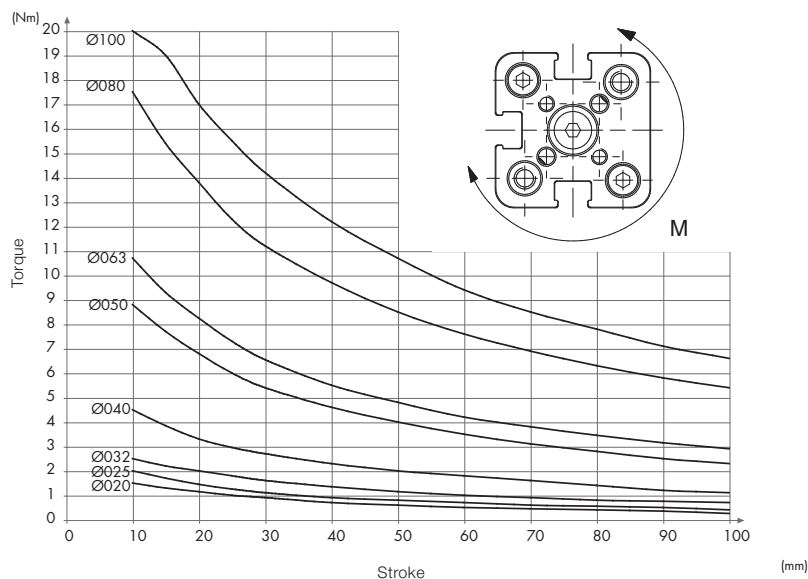
+ plus stroke (mm)



**According to ISO 21287, double acting,
non rotating piston rod**

KPDMIF... Ø20 to 100 mm

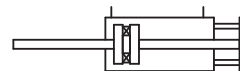
Maximum torsion



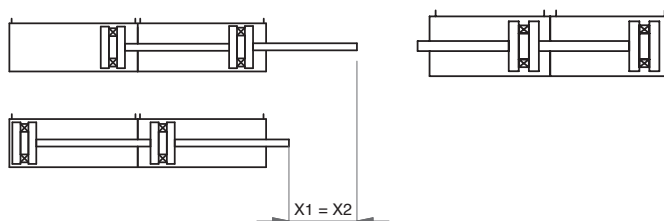
Compact cylinders according to ISO 21287

Non-standard, delivery on request

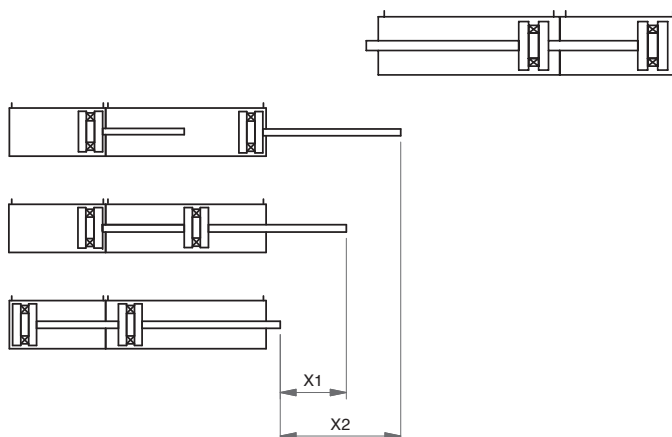
■ Double acting with non-rotating through piston rod



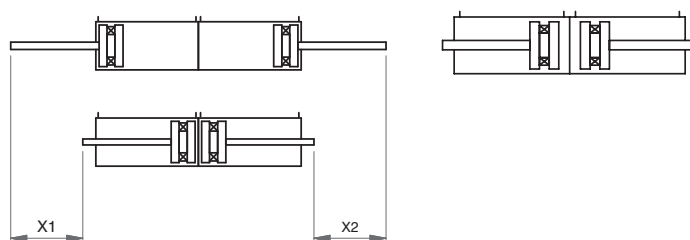
■ Tandem cylinder, double force – TM



■ Tandem cylinder, three positions – PM



■ Tandem cylinder – four positions – CM



■ Cylinders made from stainless steel – VES

■ Cylinders for low temperature application – TT

Medium and environment to -30°C

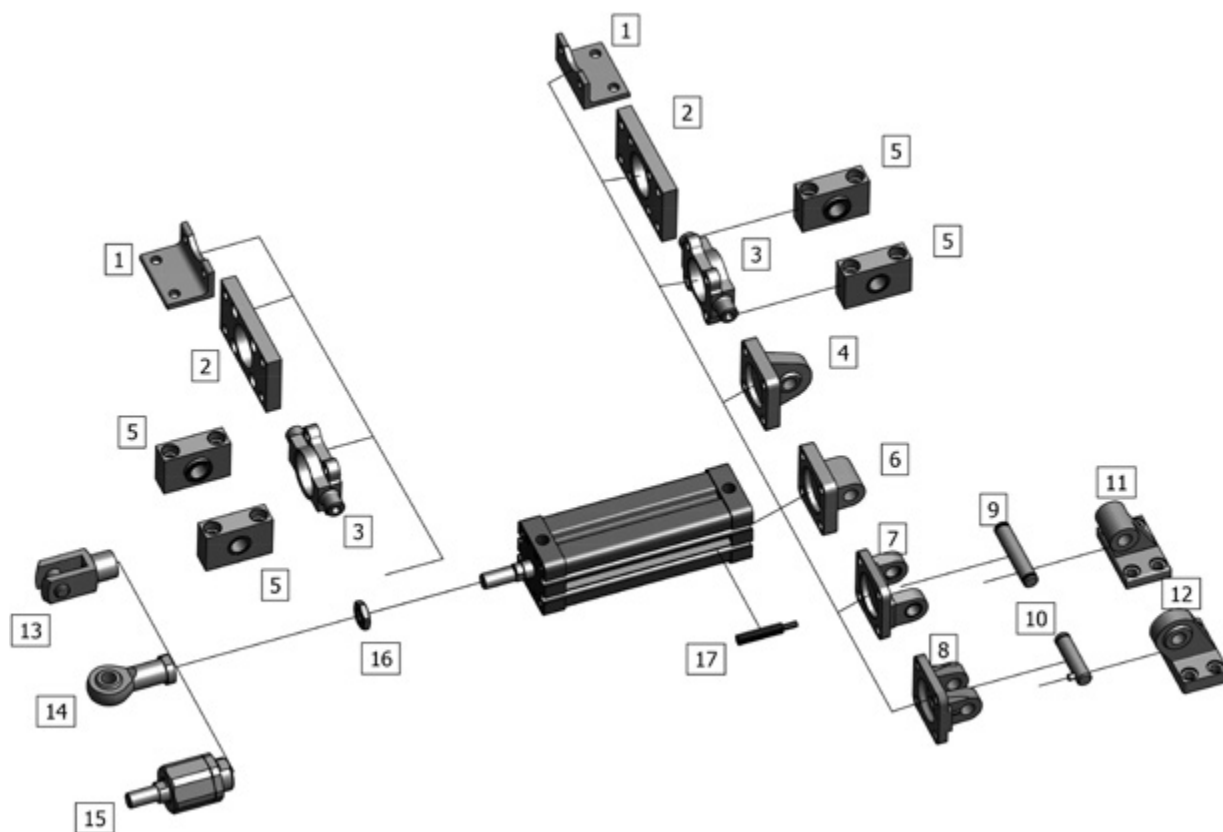
■ Cylinders for high temperature application – HT

Medium and environment to $+150^{\circ}\text{C}$

■ Compact cylinders according to UNITOP standard



Accessories for compact cylinders according to ISO 21287

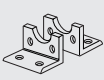
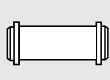


Pos.	Fixing element	Type	
1	Foot (one pair)	MS1	refer to page 24
2	Flange	MF1–MF2	refer to page 24
3	Trunnion mounting	MT4N	refer to page 27
4	Clevis flange with spherical bearing	MP6	refer to page 26
5	Trunnion foot mounting (one pair)	AT4	refer to page 27
6	Male hinge	MP4	refer to page 24
7	Female hinge	MP2	refer to page 25
8	Female hinge	AB6	refer to page 25
9	Pin with seeger	AA4	refer to page 25
10	Pin with seeger non rotating	AA6	refer to page 25
11	Clevis foot mounting 90°	AB7	refer to page 25
12	Clevis foot mounting with spherical bearing	US	refer to page 25
13	Rod clevis	GF	refer to page 27
14	Universal rod eye for piston rod	GS	refer to page 27
15	Flexible joint	FK	refer to page 27
16	Nut for piston rod	DS	refer to page 23
17	Proximity switch	M60	refer to chapter 1.4.2



Accessories for compact cylinders according to ISO 21287

Overview fixing elements

Piston-Ø	Type MF1 and 2	Type MS1	Type MP4	Type AB6	Type MP2	Type AA4
						
20 mm	MF1/2-20	MS1-20	MP4-20	–	–	–
25 mm	MF1/2-25	MS1-25	MP4-25	–	–	–
32 mm	MF1/2-32	MS1-32	MP4-32	AB6-32	MP2-32	AA4-32
40 mm	MF1/2-40	MS1-40	MP4-40	AB6-40	MP2-40	AA4-40
50 mm	MF1/2-50	MS1-50	MP4-50	AB6-50	MP2-50	AA4-50
63 mm	MF1/2-63	MS1-63	MP4-63	AB6-63	MP2-63	AA4-63
80 mm	MF1/2-80	MS1-80	MP4-80	AB6-80	MP2-80	AA4-80
100 mm	MF1/2-100	MS1-100	MP4-100	AB6-100	MP2-100	AA4-100

Piston-Ø	Type AA6	Type MP6	Type AB7	Type US	Type MT4N	Type AT4
						
20 mm	–	–	–	–	–	–
25 mm	–	–	–	–	–	–
32 mm	AA6-32	MP6-32	AB7-32	US-32	MT4N-32	L-32
40 mm	AA6-40	MP6-40	AB7-40	US-40	MT4N-40	L-40
50 mm	AA6-50	MP6-50	AB7-50	US-50	MT4N-50	L-50
63 mm	AA6-63	MP6-63	AB7-63	US-63	MT4N-63	L-63
80 mm	AA6-80	MP6-80	AB7-80	US-80	MT4N-80	L-80
100 mm	AA6-100	MP6-100	AB7-100	US-100	MT4N-100	L-100

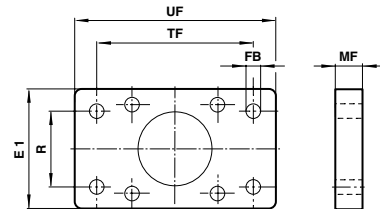
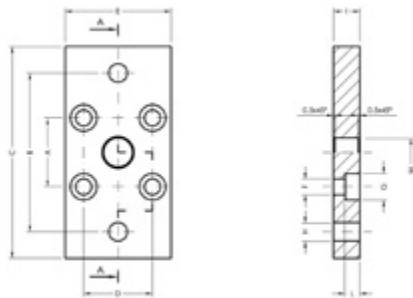
Overview fixing elements for piston rod

Piston-Ø	Type GS	Type GF	Type FK	Type Nut		
						
20 mm	GS-M8	GF-M8	FK-M8	DS-M8		
25 mm	GS-M8	GF-M8	FK-M8	DS-M8		
32 mm	GS-M10 x 1.25	GF-M10 x 1.25	FK-M10 x 1.25	DS-M10 x 1.25		
40 mm	GS-M10 x 1.25	GF-M10 x 1.25	FK-M10 x 1.25	DS-M10 x 1.25		
50 mm	GS-M12 x 1.25	GF-M12 x 1.25	FK-M12 x 1.25	DS-M12 x 1.25		
63 mm	GS-M12 x 1.25	GF-M12 x 1.25	FK-M12 x 1.25	DS-M12 x 1.25		
80 mm	GS-M16 x 1.5	GF-M16 x 1.5	FK-M16 x 1.5	DS-M16 x 1.5		
100 mm	GS-M16 x 1.5	GF-M16 x 1.5	FK-M16 x 1.5	DS-M16 x 1.5		



Accessories for compact cylinders according to ISO 21287

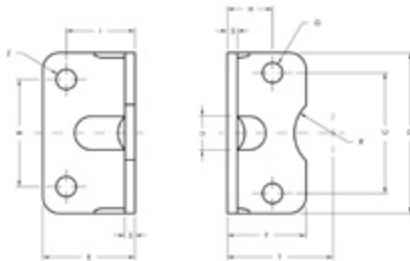
Accessory flange cap-side – MF1
Accessory flange head-side – MF2
Aluminium, steel on request



Type	Piston-Ø	A ±0.2	B ±0.2	C ±0.2	D ±0.2	E ±0.2	F H13	G H13	H H13	I ±0.2	L ±0.2	M H11	kg
MF1/2-20	20mm	22	55	70	22	36	5.5	10	6.6	10	5.4	12	0.06
MF1/2-25	25mm	26	60	76	26	40	5.5	10	6.6	10	5.4	12	0.07

Type	Piston-Ø	E1	Ø FB	MF	R	TF	UF	kg
MF1/2-32	32mm	50	7	10	32	64	80	0.25
MF1/2-40	40mm	55	9	10	36	72	90	0.35
MF1/2-50	50mm	65	9	12	45	90	110	0.70
MF1/2-63	63mm	75	9	12	50	100	125	0.80
MF1/2-80	80mm	100	12	16	63	126	154	1.35
MF1/2-100	100mm	120	14	16	75	150	186	2.20

Accessory foot, steel, zinc plated – MS1

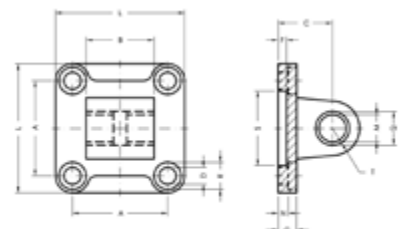


Type	Piston-Ø	C ±0.2	B ±0.2	D 0 -0.3	E ±1	F ±1	G H13	H ±0.2	I ±0.2	S ±0.5	T ±0.3	R H15	U	Z H13	kg
MS1-20	20mm	22.0	22	36	22	22	5.4	16.0	16	4	17	10.0	2	6.6	0.03
MS1-25	25mm	26.0	26	40	22	23	5.4	17.0	16	4	19	11.0	2	6.6	0.04
MS1-32	32mm	32.5	32	45	35	30	7.0	15.75	24	4	32	15.0	11	7.0	0.07
MS1-40	40mm	38.0	36	52	36	30	7.0	17.0	28	4	36	17.5	15	9.0	0.08
MS1-50	50mm	46.5	45	65	47	36	9.0	21.75	32	5	45	20.0	16	9.0	0.17
MS1-63	63mm	56.5	50	75	45	35	9.0	21.75	32	5	50	22.5	18	9.0	0.19
MS1-80	80mm	72.0	63	95	55	47	11.0	27.0	41	6	63	22.5	17	12.0	0.38
MS1-100	100mm	89.0	75	115	57	53	11.0	26.5	41	6	71	27.5	24	14.0	0.45

Dimensions according to ISO 15552, delivery: 1 pair

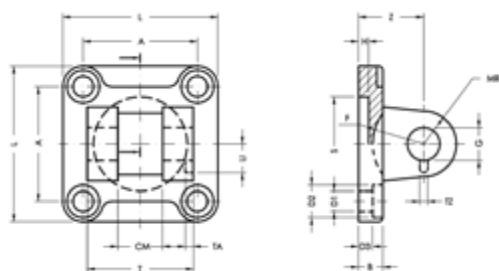
Accessory male hinge with bushing – MP4

Type	Piston-Ø	A ±0.2	L	D H13	R H15	N ±0.5	G	S H11	F	C ±0.2	Q F7	M H9	T max	B	kg
MP4-20	20mm	22.0	34	5.0	11	2.6	6	12	3	20	10	8	8	16	0.02
MP4-25	25mm	26.0	38	5.0	11	2.6	6	12	3	20	10	8	8	16	0.03
MP4-32	32mm	32.5	45	6.6	11	5.5	9	30	5	22	12	10	10	26	0.05
MP4-40	40mm	38.0	52	6.6	11	5.5	9	35	5	25	14	12	12	28	0.08
MP4-50	50mm	46.5	65	9.0	15	6.5	11	40	5	27	14	12	12	32	0.12
MP4-63	63mm	56.5	75	9.0	15	6.5	11	45	5	32	18	16	16	40	0.21
MP4-80	80mm	72.0	95	11.0	18	10.0	14	45	5	36	18	16	12	50	0.42
MP4-100	100mm	89.0	115	11.0	18	10.0	14	55	5	41	23	20	20	60	0.67



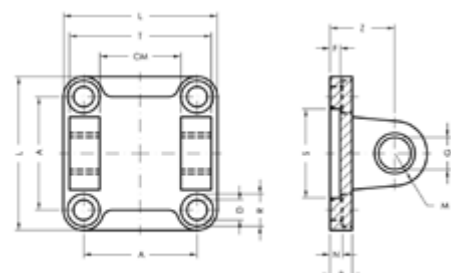
Accessories for compact cylinders according to ISO 21287

Accessory female hinge – AB6



Type	Piston-Ø	L ±0.5	T d12	CM H14	A ±0.2	Z ±0.2	H +1 0	B	D3 ±0.5	S H12	G F7	MR +1 0	D1 +0.4 -0.2	D2	TA +0.2 0	TZ +0.2 0	LI +0.3 0	F min	kg
AB6-32	32mm	45	34	14	32.5	22	5	9	5.5	30	10	10	6.6	11	3	3.3	11.5	17	0.04
AB6-40	40mm	52	40	16	38.0	25	5	9	5.5	35	12	12	6.6	11	4	4.3	12.0	20	0.07
AB6-50	50mm	65	45	21	46.5	27	5	11	6.5	40	16	14	9.0	15	4	4.3	14.0	22	0.11
AB6-63	63mm	75	51	21	56.5	32	5	11	6.5	45	16	18	9.0	15	4	4.3	14.0	25	0.19
AB6-80	80mm	95	65	25	72.0	26	5	14	10.0	45	20	20	11.0	18	4	4.3	16.0	30	0.38
AB6-100	100mm	115	75	25	89.0	41	5	14	10.0	55	20	22	11.0	18	4	6.3	16.0	32	0.61

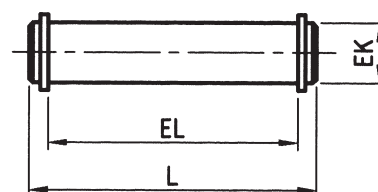
Accessory female hinge with bushings – MP2



Type	Piston-Ø	A ±0.2	L	D H13	R H13	N ±0.5	B	S H11	F	Z ±0.2	G H9	M max	CM H14	T h14	kg
MP2-32	32mm	32.5	45	6.6	11	5.5	9	30	5	22	10	10	26	45	0.05
MP2-40	40mm	38.0	52	6.6	11	5.5	9	35	5	25	12	12	28	52	0.07
MP2-50	50mm	46.5	65	9.0	15	6.5	11	40	5	27	12	12	32	60	0.12
MP2-63	63mm	56.5	75	9.0	15	6.5	11	45	5	32	16	16	40	70	0.19
MP2-80	80mm	72.0	95	11.0	18	10.0	14	45	5	36	16	16	50	90	0.38
MP2-100	100mm	89.0	115	11.0	18	10.0	14	55	5	41	20	20	60	110	0.62

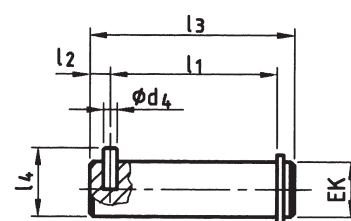
Accessory pin with seeger for hinge MP2 – AA4

Type	Piston-Ø	EK ₁₇	EL +0.3 0	L	kg
AA4-32	32mm	10	46	53	0.03
AA4-40	40mm	12	53	60	0.05
AA4-50	50mm	12	61	68	0.06
AA4-63	63mm	16	71	78	0.12
AA4-80	80mm	16	91	98	0.15
AA4-100	100mm	20	111	118	0.29

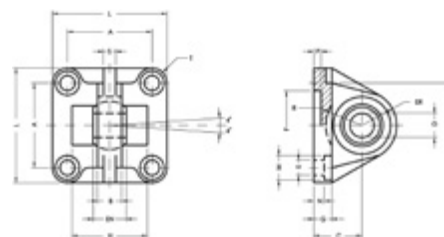


Accessory pin with seeger non rotating for hinge AB6 – AA6

Type	Piston-Ø	EK ₁₇	d ₄ H12	l ₁ +0.5 -0.3	l ₂ 0 -1	l ₃	l ₄ 0 -0.5	kg
AA6-32	32mm	10	3	32.5	4.5	41	14	0.03
AA6-40	40mm	12	4	38.0	6.0	48	16	0.04
AA6-50	50mm	16	4	43.0	6.0	54	20	0.08
AA6-63	63mm	16	4	49.0	6.0	60	20	0.10
AA6-80	80mm	20	4	63.0	6.0	75	24	0.19
AA6-100	100mm	20	4	73.0	6.0	85	24	0.20

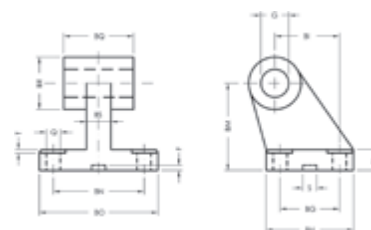


Accessories for compact cylinders according to ISO 21287



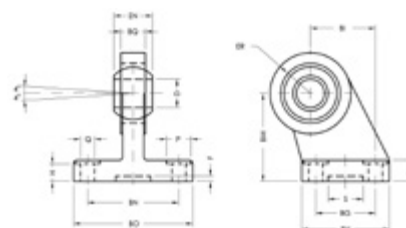
Accessory clevis flange with spherical bearing, aluminum – MP6

Type	Piston- Ø	A ±0.2	B max	C JS 15	D H 7	EN - 8.1	ER max	F H 11	G	E H 13	L	M H 13	N ±0.5	P	H ±0.5	R ±0.2	S	Z	T	Kg
MP6-32	32mm	32.5	10.5	22	10	14	16.0	30	9	6.6	45	11	5.5	5	–	–	4	32.5	6.25	0.06
MP6-40	40mm	38.0	12.0	25	12	16	19.0	35	9	6.6	52	11	5.5	5	–	–	6	39.0	7.00	0.10
MP6-50	50mm	46.5	15.0	27	16	21	21.0	40	11	9.0	65	15	6.5	5	51	18	8	47.0	9.25	0.18
MP6-63	63mm	56.5	15.0	32	16	21	24.0	45	11	9.0	75	15	6.5	5	–	–	8	52.0	9.25	0.24
MP6-80	80mm	72.0	18.0	36	20	25	28.5	45	14	11.0	95	18	10.0	5	72	24	10	67.0	11.50	0.47
MP6-100	100mm	89.0	18.0	41	20	25	30.0	55	14	11.0	115	18	10.0	5	–	–	10	77.0	13.00	0.65



Accessory clevis foot mounting 90°, aluminum – AB7

Type	Piston- Ø	Q H 13	M H 13	BG JS 14	BH max	BI JS 14	BL	BM JS 15	BN JS 14	BO max	BS max	BR max	T max	G H 9	S +0.5 0	F +0.5 0	BQ	Kg
AB7-32	32mm	6.6	11	18	31	21	8	32	38	51	10	20	1.6	10	10.5	3	26	0.06
AB7-40	40mm	6.6	11	22	35	24	10	36	41	54	15	22	1.6	12	10.5	3	28	0.14
AB7-50	50mm	9.0	15	30	45	33	12	45	50	65	16	26	1.6	12	10.5	3	32	0.14
AB7-63	63mm	9.0	15	35	50	37	14	50	52	67	16	30	1.6	16	10.5	3	40	0.20
AB7-80	80mm	11.0	18	40	60	47	14	63	66	86	20	30	2.5	16	10.5	3	50	0.31
AB7-100	100mm	11.0	18	50	70	55	17	71	76	96	20	38	2.5	20	10.5	3	60	0.66



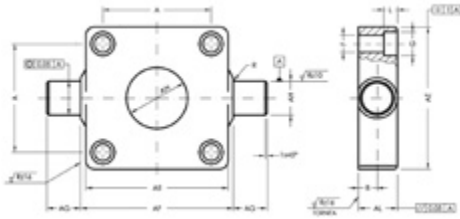
Clevis foot mounting with spherical bearing, steel – US

Type	Piston- Ø	Q H 13	P H 13	BG JS 14	BH max	BI JS 15	BL	BM JS 15	BN JS 14	BO max	EN - 8.1	ER max	BQ max	D H 7	H +0.5 0	S H 13	F	Kg
US-32	32mm	6.6	11	18	31	21	10	32	38	51	14	15	10.5	10	8.5	20	3	0.18
US-40	40mm	6.6	11	22	35	24	10	36	41	54	16	18	12.0	12	8.5	20	3	0.27
US-50	50mm	9.0	15	30	45	33	12	45	50	65	21	20	15.0	16	10.5	20	3	0.46
US-63	63mm	9.0	15	35	50	37	12	50	52	67	21	23	15.0	16	10.5	20	3	0.55
US-80	80mm	11.0	18	40	60	47	14	63	66	86	25	27	18.0	20	11.5	20	3	0.97
US-100	100mm	11.0	18	50	70	55	15	71	76	96	25	30	18.0	20	12.5	20	3	1.33



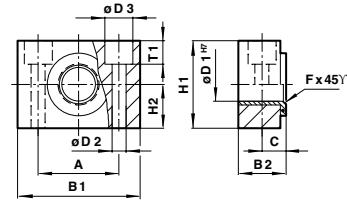
Accessories for compact cylinders according to ISO 21287

Accessory trunnion mounting (cap- and head-side), steel – MT4N



Type	Piston- Ø	AE max	AL max	AH e9	AG h14	AF H11	AN H11	A ±0.2	B +0.2 0	F H13	G H13	L +0.5 0	B 0 -0.3	kg
MT4N-32	32mm	46	14	12	12	50	30	32.5	6.5	6.5	—	6	1.0	0.14
MT4N-40	40mm	59	19	16	16	63	35	38.0	9.0	6.5	10.5	6	1.6	0.38
MT4N-50	50mm	69	19	16	16	75	40	46.5	9.0	8.5	13.5	8	1.6	0.51
MT4N-63	63mm	84	24	20	20	90	45	56.5	11.5	8.5	13.5	8	1.6	1.04
MT4N-80	80mm	102	24	20	20	110	45	72.0	11.5	10.5	16.5	10	1.6	1.57
MT4N-100	100mm	125	29	25	25	132	55	89.0	14.0	10.5	16.5	10	2.0	3.00

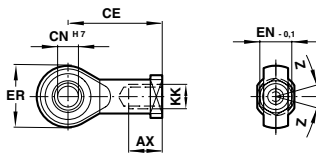
Accessory trunnion foot mounting, aluminum – AT4



Type	Piston- Ø	A	B1	B2	C	Ø D1	Ø D2	Ø D3	fx45°	H1	H2	T1	kg
L-32	32mm	32	46	18.0	10.5	12	6.6	11	1.0	30	15	6.6	0.11
L-40	40mm	36	55	21.0	12.0	16	9.0	15	1.6	36	18	9.0	0.16
L-50	50mm	36	55	21.0	12.0	16	9.0	15	1.6	36	18	9.0	0.16
L-63	63mm	42	65	23.0	13.0	20	11.0	18	1.6	40	20	11.0	0.23
L-80	80mm	42	65	23.0	13.0	20	11.0	18	1.6	40	20	11.0	0.23
L-100	100mm	50	75	28.5	16.0	25	14.0	20	2.0	50	25	13.0	0.42

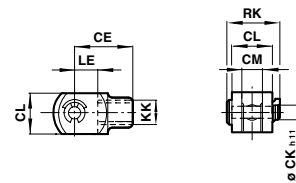
Delivery: 1 pair

Accessory universal rod eye for piston rod – GS



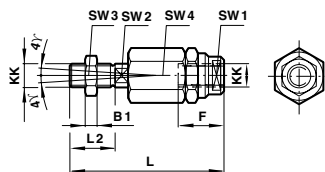
Type	Piston- Ø	KK	AX	CE	Ø CN	EN -0.1	ER	Z	kg
GS-M8	20mm	M8	16	36	8	12	24	5°	0.05
GS-M8	25mm	M8	16	36	8	12	24	5°	0.05
GS-M10x1.25	32mm	M10x1.25	20	43	10	14	28	13°	0.09
GS-M10x1.25	40mm	M10x1.25	20	43	10	14	28	13°	0.09
GS-M12x1.25	50mm	M12x1.25	22	50	12	16	32	13°	0.12
GS-M12x1.25	63mm	M12x1.25	22	50	12	16	32	13°	0.12
GS-M16x1.5	80mm	M16x1.5	28	64	16	21	42	15°	0.23
GS-M16x1.5	100mm	M16x1.5	28	64	16	21	42	15°	0.23

Accessory rod clevis – GF



Type	Piston- Ø	KK	CE	Ø CK h11	CL	CM	LE	RK	kg
GF-M8	20mm	M8	32	8	16	8	16	21.6	0.06
GF-M8	25mm	M8	32	8	16	8	16	21.6	0.06
GF-M10x1.25	32mm	M10x1.25	40	10	20	10	20	26.0	0.09
GF-M10x1.25	40mm	M10x1.25	40	10	20	10	20	26.0	0.09
GF-M12x1.25	50mm	M12x1.25	48	12	24	12	24	31.0	0.15
GF-M12x1.25	63mm	M12x1.25	48	12	24	12	24	31.0	0.15
GF-M16x1.5	80mm	M16x1.5	64	16	32	16	32	39.5	0.35
GF-M16x1.5	100mm	M16x1.5	64	16	32	16	32	39.5	0.35

Accessory flexible joint – FK



Type	Piston- Ø	KK	B1	F	L ±2	L2	SW1	SW2	SW3	SW4	kg
FK-M8	20mm	M8	4	14	55	16	10	7	13	17	0.06
FK-M8	25mm	M8	4	14	55	16	10	7	13	17	0.06
FK-M10x1.25	32mm	M10x1.25	5	23	70	20	19	12	17	30	0.23
FK-M10x1.25	40mm	M10x1.25	5	23	70	20	19	12	17	30	0.23
FK-M12x1.25	50mm	M12x1.25	6	30	77	24	19	12	19	30	0.23
FK-M12x1.25	63mm	M12x1.25	6	30	77	24	19	12	19	30	0.23
FK-M16x1.5	80mm	M16x1.5	8	32	108	32	30	19	24	41	0.65
FK-M16x1.5	100mm	M16x1.5	8	32	108	32	30	19	24	41	0.65

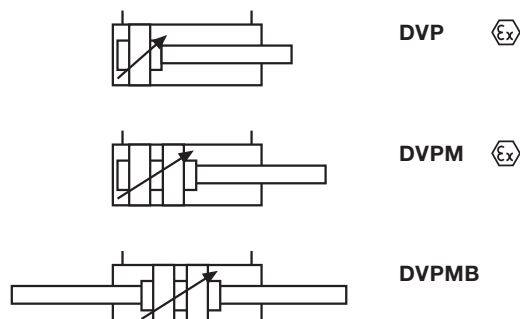


Cylinders according to ISO 15552

DVP(M)/DVPMB

Standard cylinders according to ISO 15552, profiled tube. Extra-low friction design also available

Universal use due to execution in accordance to ISO 15552.
Proximity switches type M60 can be assembled into cylinder profile.



DVP / DVPM



Technical characteristics

General characteristics	
Design	profile cylinder
Function	Standard: double acting with magnetic piston and cushioning* Low friction: single acting without cushioning**
Piston-Ø	32 ... 100 mm
Stroke	1 ... 2.500 mm
Ports	refer to "dimensions", dimension EE
Fixing	according to ISO 15552
Mounting position	any
Temperature range	-20°C ... +80°C, below 0°C dried air only 0°C ... +150°C (high temperature version) Seals made from FKM in type DVPH only
Materials used	Endcaps: aluminum painted Tube: aluminum anodized Piston rod: stainless steel Seals: NBR
Pneumatic characteristics	
Medium	compressed air, filtered max. 50 µm
Operating pressure	Standard: 1 ... 10 bar Low friction: 0,1 ... 10 bar



Selected models are available in stainless steel. Please refer to JOYNER catalogue number 6.

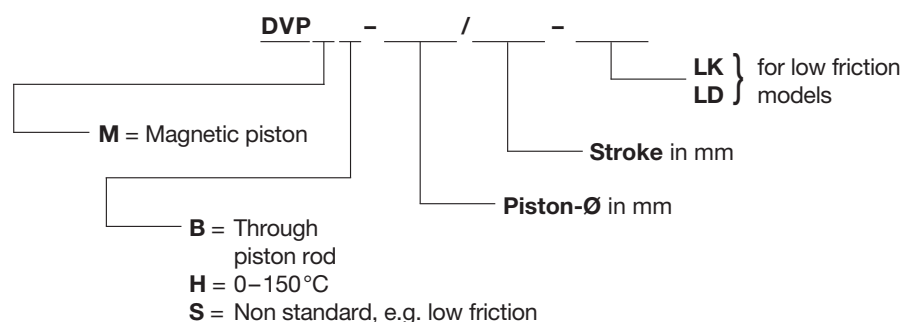
Standard strokes [mm]

25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500

* Single acting cylinders and ones without cushioning on request.

** Low friction cylinders are generally single acting, we offer two versions:
Type LK = pressure port in head and LD = pressure port in cap.

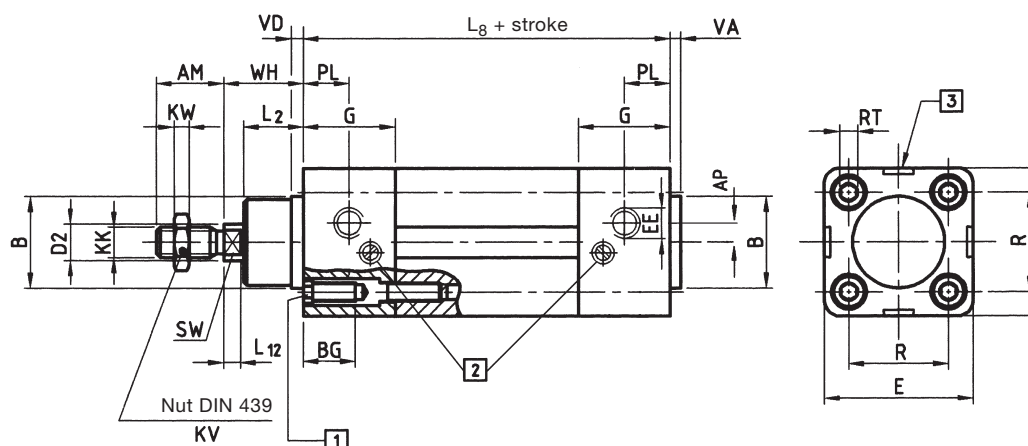
Numbering system



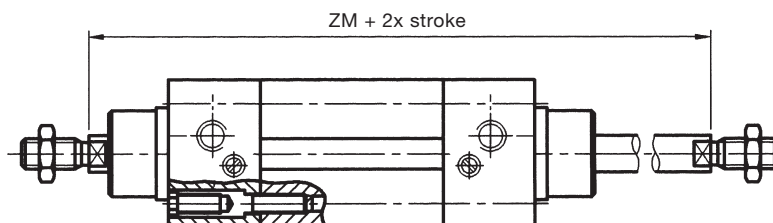
Cylinders according to ISO 15552

DVP(M)/DVPMB

Type DVP / DVPM



Type DVPB / DVPMB with trough piston rod



Dimensions

Piston-Ø	AM	AP	B _{e11}	BG	D2	E	EE	G	KK	KV	KW	L ₂
32mm	22	5.0	30	16	12	47	G 1/8	31	M10x1.25	17	5	16
40mm	24	5.0	35	16	16	55	G 1/4	34	M12x1.25	19	6	20
50mm	32	7.5	40	16	20	65	G 1/4	36	M16x1.5	24	8	25
63mm	32	8.0	45	16	20	78	G 3/8	40	M16x1.5	24	8	25
80mm	40	9.0	45	16	25	95	G 3/8	42	M20x1.5	30	10	32
100mm	40	11.0	55	16	25	115	G 1/2	45	M20x1.5	30	10	35

Piston-Ø	L ₈	L ₁₂	PL	R	RT	SW	VA	VD	WH	ZM	Grundgewicht	Gewicht/10mm Hub
32mm	94	6.0	11	32.5	M6	10	4	5	26	146	0.460	0.023
40mm	105	6.5	13	38.0	M6	13	4	5	30	165	0.730	0.032
50mm	106	8.0	14	46.5	M8	16	4	5	37	180	1.130	0.047
63mm	121	8.0	16	56.5	M8	16	4	5	37	195	1.560	0.051
80mm	128	10.0	16	72.0	M10	21	4	5	46	220	2.430	0.075
100mm	138	10.0	18	89.0	M10	21	4	5	51	240	3.560	0.088

- 1 Hexagon index screw with female tapping for fixing elements included
- 2 Flow control for adjustable cushioning
- 3 Groove for proximity switch

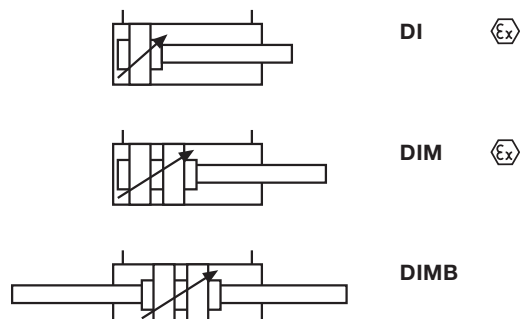


Cylinders according to ISO 15552

DI(M)/DIMB

Standard cylinders according to ISO 15552, profiled tube. Extra-low friction design also available

Universal use due to execution in accordance to ISO 15552.



DI / DIM



Technical characteristics

General characteristics		
Design		tie-rod cylinder
Function	Standard	double acting with magnetic piston and cushioning*
	Low friction	single acting without cushioning**
Piston-Ø		Standard: 125 ... 320 mm Low friction: 125 ... 250 mm
Stroke		1 ... 2.500 mm
Ports		refer to “dimensions”, dimension EE
Fixing		according to ISO 15552
Mounting position		any
Temperature range		-20°C ... +80°C below 0°C dried air only 0°C ... +150°C high temperature version
Materials used		Endcaps: aluminum painted Tube: aluminum anodized Piston rod: stainless steel Seals: NBR Seals made from FKM in type DIH only
Pneumatic characteristics		
Medium		compressed air, filtered max. 50 µm
Operating pressure		Standard: 1 ... 10 bar Low friction: 0,1 ... 10 bar

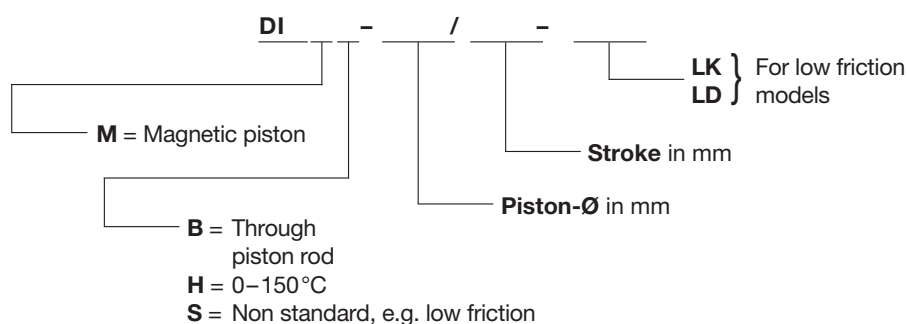
Standard strokes

25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800, 900, 1.000

* single acting cylinders and ones without cushioning on request.

** Low friction cylinders are generally single acting, we offer two versions: Type LK = pressure port in head and LD = pressure port in cap.

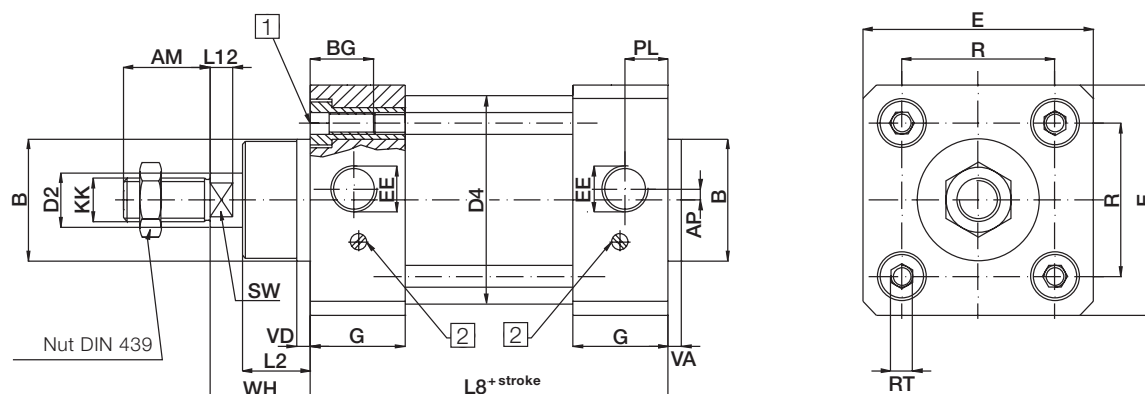
Numbering system



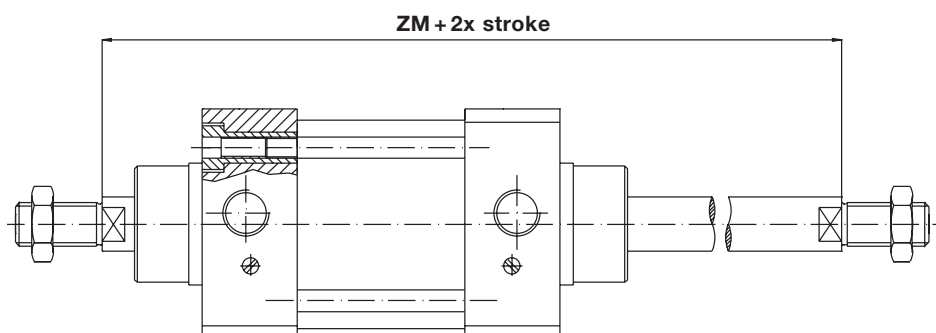
Cylinders according to ISO 15552

DI(M)/DIMB

Type DI / DIM



Type DIB / DIMB with through piston rod



Dimensions

Piston-Ø	AM _{-0,2} ⁰	AP	B _{e11}	BG	D2	D4	E	EE	G	KK	L ₂	L ₈
125 mm	54	0	60	20	30	134	142	G 1/2	53	M27x2	40	160 ± 1
160 mm	72	7.5	65	24	40	170	182	G 3/4	59	M36x2	38	180 ± 1.1
200 mm	72	0	75	24	40	210	222	G 3/4	61	M36x2	55	180 ± 1.6
250 mm	84	0	90	25	50	264	274	G 1	61	M42x2	65	200 ± 1.6
320 mm	96	0	110	28	60	336	352	G 1	63	M48x2	75	220 ± 2.2

Piston-Ø	L ₁₂	PL	R	RT	SW	VA	VD	WH	ZM	Basic weight	Weight/10mm stroke
125 mm	10	20	110 ± 1.1	M12	27	6	6	65	290	6.24	0.10
160 mm	12	27	140 ± 1.1	M16	38	6	6	80	340	10.5	0.17
200 mm	12	35	175 ± 1.1	M16	38	6	6	95	370	14.6	0.19
250 mm	20	31	220 ± 1.5	M20	46	10	10	105	410	24.8	0.28
320 mm	20	34	270 ± 1.5	M24	55	10	10	120	460	43.4	0.45

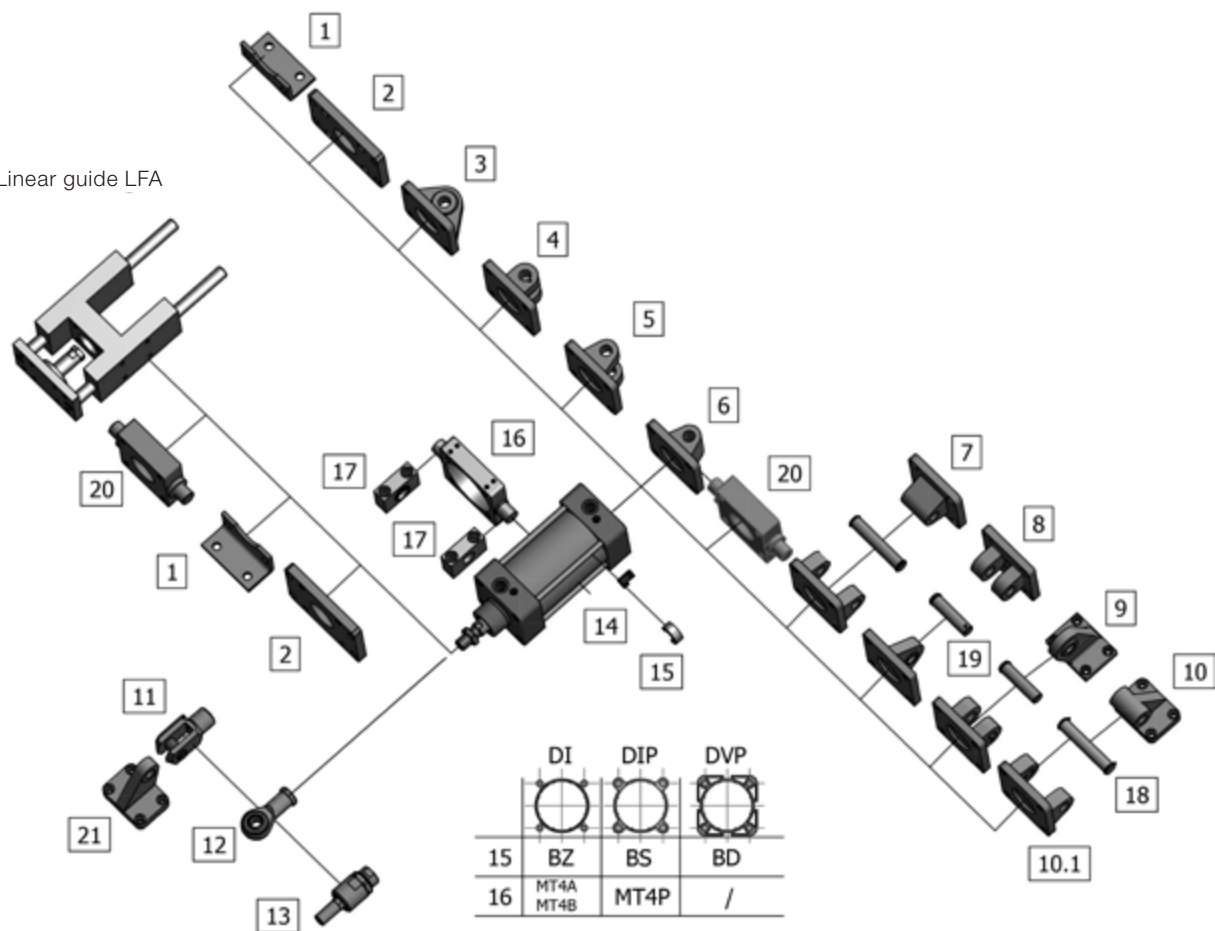
1 Hexagon index screw with female tapping for fixing elements included

2 Flow control for adjustable cushioning



Accessories for cylinders according to ISO 15552

Linear guide_LFA



Accessories for cylinders according to ISO 15552

Pos.	Fixing element	Type	32 ... 100 mm	125 ... 320 mm
1	Foot (one pair)	MS1	refer to page 38	refer to page 44
2	Flange	MF1 - MF2	refer to page 38	refer to page 44
3	Clevis flange with spherical bearing	MP6	refer to page 35	refer to page 41
4	Female hinge	AB6	refer to page 25	refer to page 41
5	Female hinge	MP2	refer to page 35	refer to page 42
6	Male hinge	MP4	refer to page 36	refer to page 42
7	Two-piece joint, hinge and back support	MP2/4	refer to page 37	refer to page 43
8	Two-piece joint, hinge and back support	AB/MP6	refer to page 37	refer to page 43
9	Female hinge wide with back support	UL	refer to page 39	refer to page 45
10	Female hinge wide with back support	MZ	refer to page 39	refer to page 45
10.1	Back support with fixed bearing	AB7	refer to page 39	refer to page 45
11	Rod clevis	GF	refer to chapter 1.4.1	refer to chapter 1.4.1*
12	Universal rod eye for piston rod	GS	refer to chapter 1.4.1	refer to chapter 1.4.1*
13	Flexible joint	FK	refer to chapter 1.4.1	refer to chapter 1.4.1*
14	Proximity switch	M60	refer to chapter 1.4.2	refer to chapter 1.4.2
15	Fastener for proximity switch	BZ / BD	refer to chapter 1.4.2	refer to chapter 1.4.2
16	Intermediate hinge	MT4B / MT4A / MT4P	refer to page 34	refer to page 40
17	Trunnion foot mounting (one pair)	AT4	refer to page 34	refer to page 40
18	Pin with seeger	AA4	refer to page 37	refer to page 43
19	Pin with seeger non rotating	AA6	refer to page 37	refer to page 43
20	Trunnion mounting	MT5	on request	on request
21	Clevis foot mounting, fixed, thin	AB 20	on request	on request

*) For piston-Ø up to 125 mm.



Refer to page 54 f.



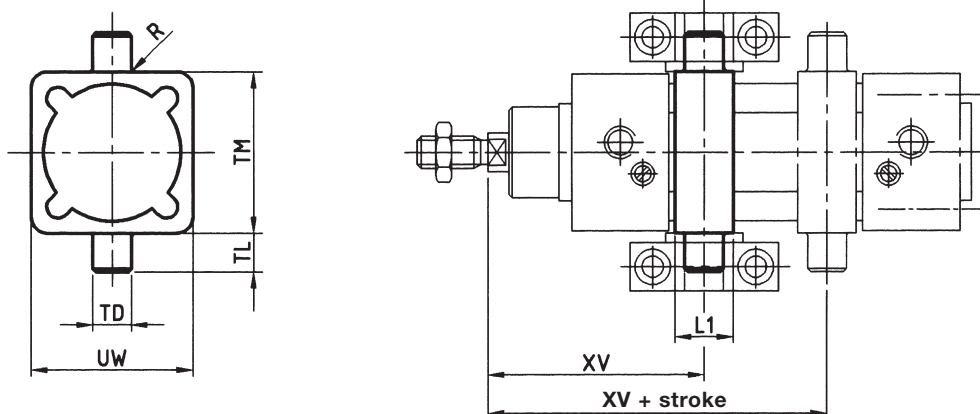
Refer to page 51 ff.



Accessories for cylinders according to ISO 15552

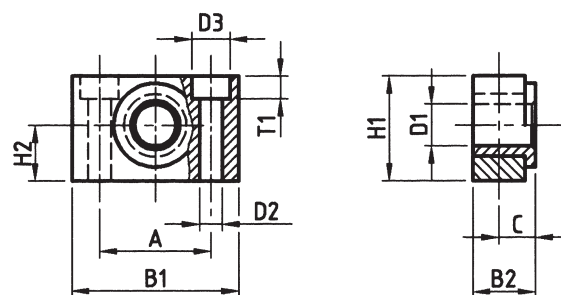
Accessory intermediate hinge – MT4 P

(in combination with cylinder type DIP/DIPM)



Type	Piston-Ø	L1	TD _{e9}	TL _{h14}	TM _{h14}	UW	R _{max.}	XV	Weight kg
MT4 P-032	32mm	20	12	12	50	65	1.0	73.0	0.13
MT4 P-040	40mm	25	16	16	63	75	1.5	82.5	0.24
MT4 P-050	50mm	25	16	16	73	95	1.6	90.0	0.32
MT4 P-063	63mm	30	20	20	90	105	1.6	97.5	0.60
MT4 P-080	80mm	30	20	20	108	130	1.6	110.0	0.92
MT4 P-100	100mm	35	25	25	131	145	2.0	120.0	1.50

Accessory trunnion foot mounting – AT4



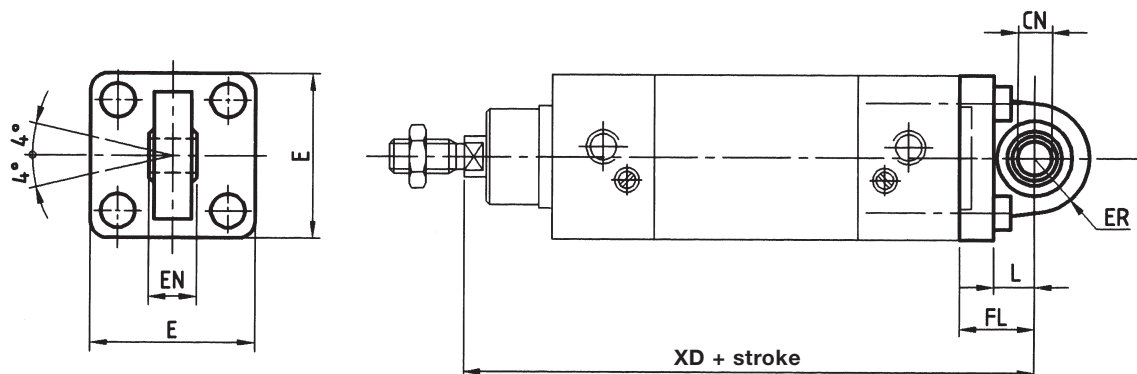
Type	Piston-Ø	A ^{+0.2} _{-0.2}	B1	B2	C	D1 ^{F7}	D2 ^{H13}	D3	H1	H2 ^{+0.1} _{-0.1}	T1	Weight kg
AT4-032	32mm	32	46	18.0	10.5	12	6.6	11	30	15	7	0.10
AT4-040	40mm	36	55	21.0	12.0	16	9.0	15	36	18	9	0.15
AT4-050	50mm	36	55	21.0	12.0	16	9.0	15	36	18	9	0.15
AT4-063	63mm	42	65	23.0	13.0	20	11.0	18	40	20	11	0.23
AT4-080	80mm	42	65	23.0	13.0	20	11.0	18	40	20	11	0.23
AT4-100	100mm	50	75	28.5	16.0	25	14.0	20	50	25	13	0.44

Delivery: 1 pair



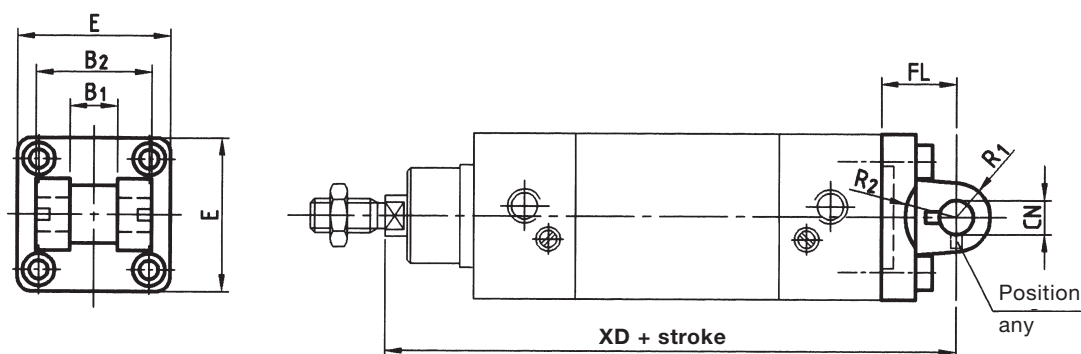
Accessories for cylinders according to ISO 15552

Accessory clevis flange with spherical bearing – MP6



Type	Piston-Ø	CN _{H7}	E	ER	EN _{-0.1}	FL	H _{-0.5} ^{+0.5}	L	R _{-0.5} ^{+0.5}	XD	Weight kg
MP6-032	32mm	10	45	16.0	14	22	—	13	—	142	0.08
MP6-040	40mm	12	52	19.0	16	25	—	16	—	160	0.11
MP6-050	50mm	16	65	21.0	21	27	51	16	18	170	0.20
MP6-063	63mm	16	75	24.0	21	32	—	21	—	190	0.26
MP6-080	80mm	20	95	28.0	25	36	72	22	24	210	0.50
MP6-100	100mm	20	115	30.0	25	41	—	27	—	230	0.70

Accessory female hinge for MP6 – AB6



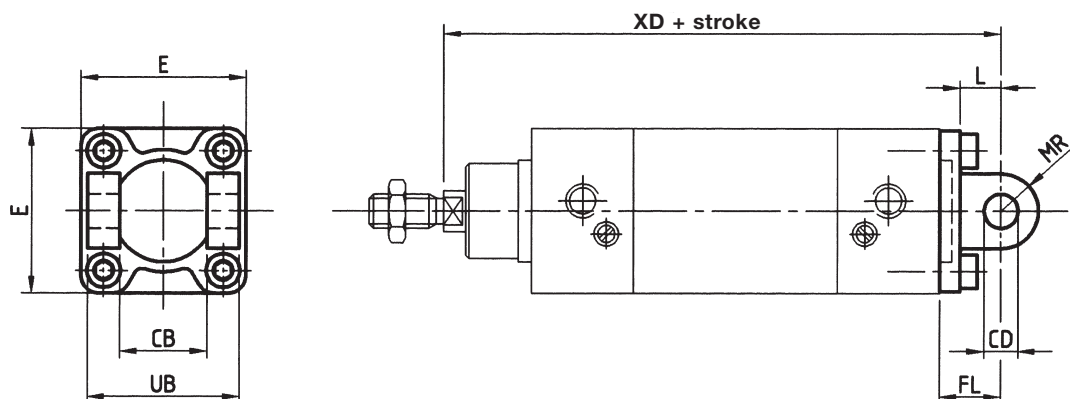
Type	Piston-Ø	B ₁ H14	B ₂ d12	CN _{F7}	E _{-0.5} ^{+0.5}	FL _{-0.2} ^{+0.2}	R ₁ ⁺¹	R ₂ min.	XD	Weight kg
AB6-032	32mm	14	34	10	45	22	10	17	142	0.040
AB6-040	40mm	16	40	12	52	25	12	20	160	0.070
AB6-050	50mm	21	45	16	65	27	14	22	170	0.115
AB6-063	63mm	21	51	16	75	32	18	25	190	0.200
AB6-080	80mm	25	65	20	95	36	20	30	210	0.385
AB6-100	100mm	25	75	20	115	41	22	32	230	0.600

Appropriate pin AA6, please refer to page 1-37



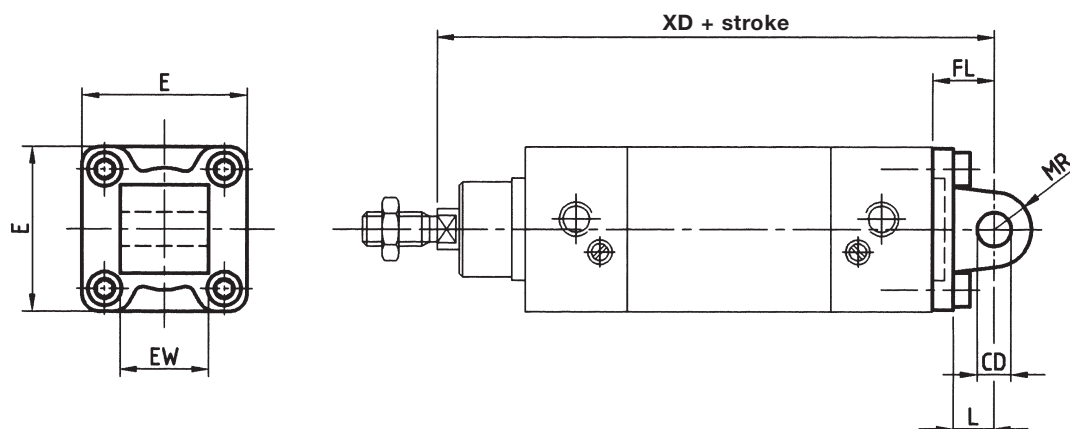
Accessories for cylinders according to ISO 15552

Accessory female hinge – MP2



Appropriate pin AA4, please refer to page 1-37

Accessory male hinge – MP4

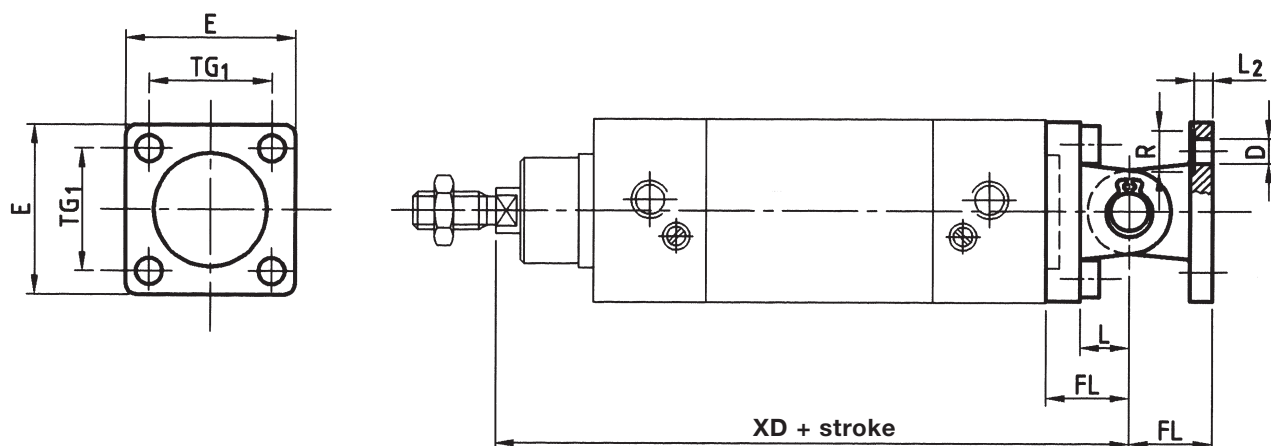


Type	Piston-Ø	CB ^{H14}	CD ^{H9}	E	EW ^{-0.2 -0.6}	FL ^{+0.2 -0.2}	L	MR	UB _{H14}	XD	Weight kg	Type	Weight kg
MP2-032	32mm	26	10	45	26	22	13	10	45	142	0.10	MP4-032	0.10
MP2-040	40mm	28	12	52	28	25	16	12	52	160	0.12	MP4-040	0.12
MP2-050	50mm	32	12	65	32	27	16	12	60	170	0.15	MP4-050	0.15
MP2-063	63mm	40	16	75	40	32	21	16	70	190	0.22	MP4-063	0.25
MP2-080	80mm	50	16	95	50	36	22	16	90	210	0.40	MP4-080	0.50
MP2-100	100mm	60	20	115	60	41	27	20	110	230	0.65	MP4-100	0.70



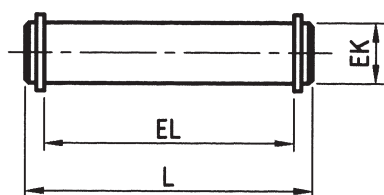
Accessories for cylinders according to ISO 15552

Accessory two-piece joint, hinge and back support – MP2/4, alternatively with spherical bearing AB/MP6



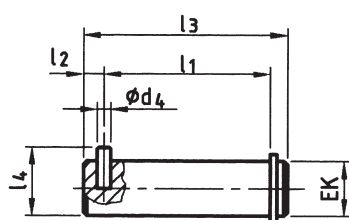
Type	Piston-Ø	D _{H13}	E	FL ^{+0,2 -0,2}	L	L2 ^{+0,5 -0,5}	R _{H13}	TG ^{+0,2 -1-0,2}	XD	Weight kg	Type	Weight kg
MP2/4-032	32mm	6.6	45	22	13	5.5	11	32.5	142	0.140	AB/MP6-032	0.150
MP2/4-040	40mm	6.6	52	25	16	5.5	11	38.5	160	0.210	AB/MP6-040	0.220
MP2/4-050	50mm	9.0	65	27	16	6.5	15	46.5	170	0.310	AB/MP6-050	0.400
MP2/4-063	63mm	9.0	75	32	21	6.5	15	56.5	190	0.530	AB/MP6-063	0.570
MP2/4-080	80mm	11.0	95	36	22	10.0	18	72.0	210	1.000	AB/MP6-080	1.100
MP2/4-100	100mm	11.0	115	41	27	10.0	18	89.0	230	1.600	AB/MP6-100	1.500

Accessory pin with seeger for MP2 – AA4



Type	Piston-Ø	EK ₁₇	EL ^{+0,3 0}	L	Weight kg
AA4-032	32mm	10	46	53	0.032
AA4-040	40mm	12	53	60	0.052
AA4-050	50mm	12	61	68	0.060
AA4-063	63mm	16	71	78	0.122
AA4-080	80mm	16	91	98	0.152
AA4-100	100mm	20	111	118	0.290

Accessory pin with seeger non rotating for AB6 – AA6

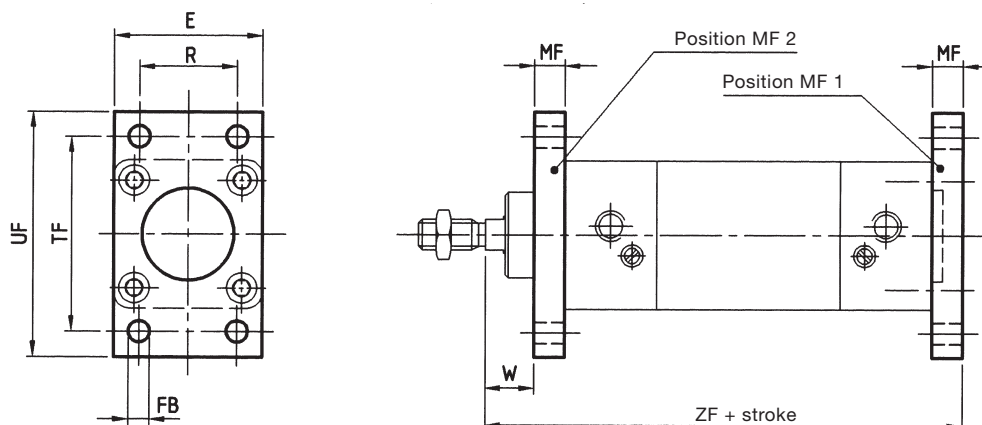


Type	Piston-Ø	EK ₁₇	d _{4 H12}	I _{1-0.3} ^{+0.5}	I ₂₋₁ ⁰	I ₃	I _{4-0.5} ⁰	Weight kg
AA6-032	32mm	10	3	32.5	4.5	41	14	0.025
AA6-040	40mm	12	4	38.0	6.0	48	16	0.040
AA6-050	50mm	16	4	43.0	6.0	54	20	0.080
AA6-063	63mm	16	4	49.0	6.0	60	20	0.095
AA6-080	80mm	20	4	63.0	6.0	75	24	0.185
AA6-100	100mm	20	4	73.0	6.0	85	24	0.200



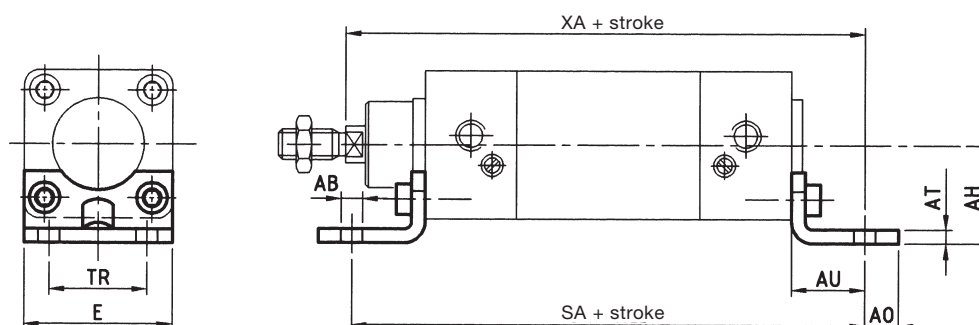
Accessories for cylinders according to ISO 15552

Accessory flange cap-side – MF1
Accessory flange head-side – MF2



Type	Piston-Ø	E	FB _{h13}	MF ^{+0.2} _{-0.2}	UF	R	TF	W	ZF	Weight kg
MF1-032 / MF2-032	32mm	45	7	10	80	32	64	16	130	0.20
MF1-040 / MF2-040	40mm	52	9	10	90	36	72	20	145	0.25
MF1-050 / MF2-050	50mm	65	9	12	110	45	90	25	155	0.50
MF1-063 / MF2-063	63mm	75	9	12	120	50	100	25	170	0.65
MF1-080 / MF2-080	80mm	95	12	16	150	63	126	30	190	1.50
MF1-100 / MF2-100	100mm	115	14	16	170	75	150	35	205	2.00

Accessory foot – MS1



Type	Piston-Ø	AB _{H14}	AH	AO	AT ^{+0.5} _{-0.5}	AU ^{+0.2} _{-0.2}	E	SA	TR	XA	Weight kg
MS1-032	32mm	7.0	32	11	4.5	24	45	142	32	144	0.15
MS1-040	40mm	9.0	36	8	4.5	28	52	161	36	163	0.18
MS1-050	50mm	9.0	45	15	5.5	32	65	170	45	175	0.35
MS1-063	63mm	9.0	50	15	5.5	32	75	185	50	190	0.40
MS1-080	80mm	12.0	63	14	6.5	41	95	210	63	215	0.80
MS1-100	100mm	14.0	71	16	6.5	41	115	220	75	230	0.95

Delivery: 1 pair

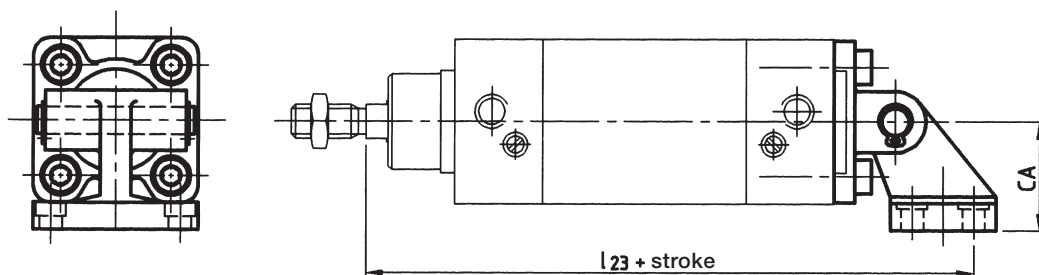


Accessories for cylinders according to ISO 15552

Accessory female hinge wide with back support – MZ alternatively with spherical bearing UL

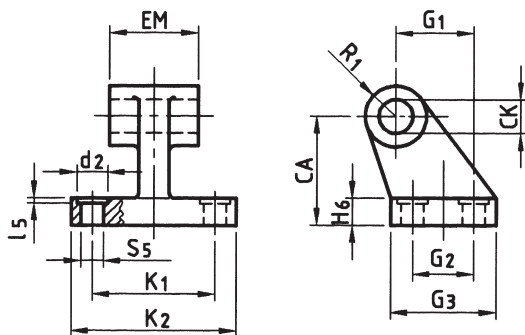
Type MZ = MP2 + AB7 + AA4

Type UL = AB6 + US + AA6



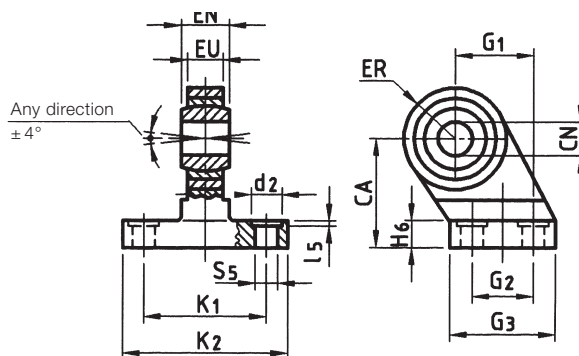
Piston-Ø	l_{23}	CA	Weight kg	Type Accessory with fixed bearing	Weight kg	Type Accessory with spherical bearing
32mm	163	32	0.14	MZ-032	0.25	UL-032
40mm	184	36	0.27	MZ-040	0.38	UL-040
50mm	203	45	0.34	MZ-050	0.66	UL-050
63mm	227	50	0.52	MZ-063	0.85	UL-063
80mm	257	63	0.90	MZ-080	1.50	UL-080
100mm	285	71	1.60	MZ-100	2.15	UL-100

Accessory back support with fixed bearing – AB7



Please order: AB7 – piston-Ø

Accessory back support with spherical bearing – US



Please order: US – piston-Ø

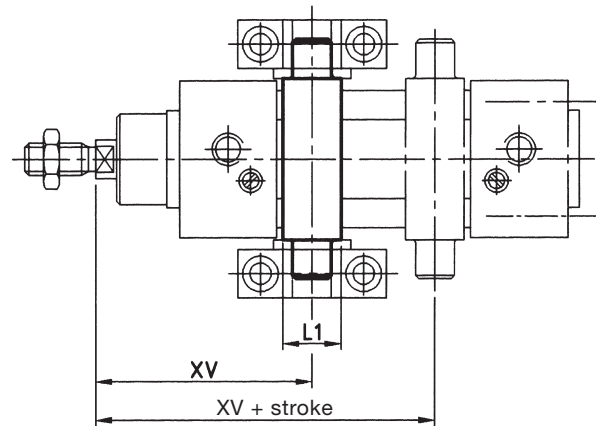
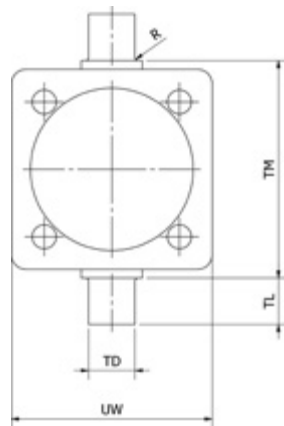
Kolben Ø	CK_{H9}	CN_{H7}	d_2	$EM_{-0.2/-0.6}$	$EN_{-0.1}$	ER	EU	G_1	G_2	G_3	H_6	K_1	K_2	l_5	R_1	$S_5 H_{13}$
32mm	10	10	11	26	14	15	10.5	21	18	31	10	38	51	1.6	10	6.6
40mm	12	12	11	28	16	18	12.0	24	22	35	10	41	54	1.6	11	6.6
50mm	12	16	15	32	21	20	15.0	33	30	45	12	50	65	1.6	13	9.0
63mm	16	16	15	40	21	23	15.0	37	35	50	12	52	67	1.6	15	9.0
80mm	16	20	18	50	25	27	18.0	47	40	60	14	66	86	2.5	15	11.0
100mm	20	20	18	60	25	30	18.0	55	50	70	15	76	96	2.5	19	11.0



Accessories for cylinders according to ISO 15552

Accessory intermediate hinge – MT4

In combination with cylinder type DI/DIM for clamping (type B) or screwing (type A)

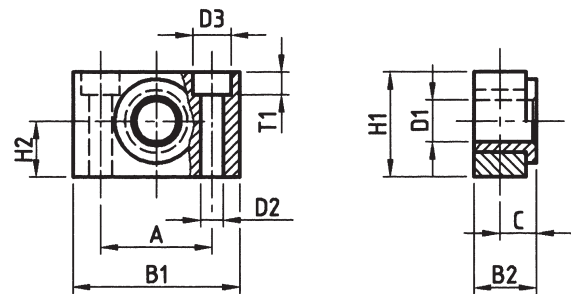


For type A (screw version) please communicate dimension XV.

Type	Piston-Ø	L1	TD _{e9}	TL _{h14}	TM _{h14}	UW	R _{max.}	XV	Weight kg
MT4 A-125 / MT4 B-125	125mm	32	25	25	160	155	2.0	143	2.6
MT4 A-160 / MT4 B-160	160mm	40	32	32	200	190	2.5	164	4.3
MT4 A-200 / MT4 B-200	200mm	40	32	32	250	240	2.5	181	7.5
MT4 A-250 / –	250mm	50	40	40	320	296	3.2	196	13.0
MT4 A-320 / –	320mm	70	50	50	400	400	3.2	218	30.0

MT4 Ø 125 for cylinder type DIP(M) also available.

Accessory trunnion foot mounting – AT4



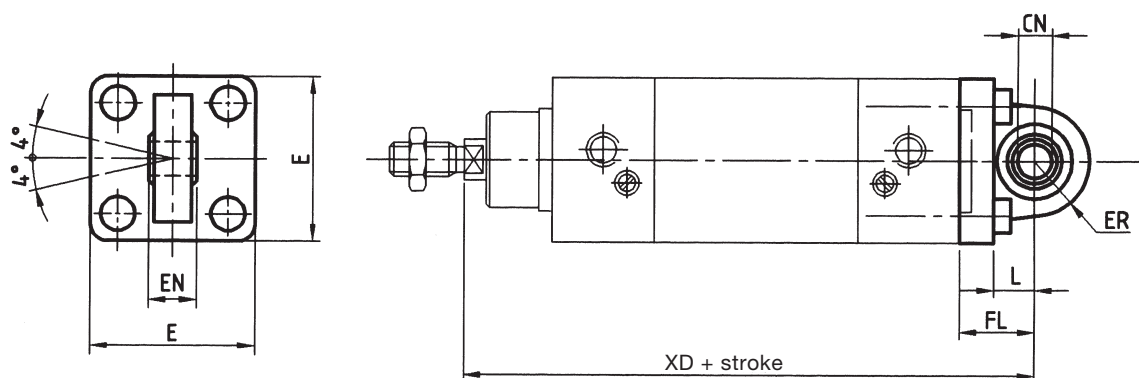
Type	Piston-Ø	A _{+0.2/-0.2}	B1	B2	C	D1 ^{F7}	D2 ^{H13}	D3 ^{H13}	H1	H2 _{+0.1/-0.1}	T1 _{+0.5/-0.5}	Weight kg
AT4-125	125mm	50	75	28.2	16.0	25	14	20	50	25	13	0.45
AT4-160	160mm	60	92	40.0	22.5	32	18	26	60	30	17	0.85
AT4-200	200mm	60	92	40.0	22.5	32	18	26	60	30	17	0.85
AT4-250	250mm	90	140	56.0	31.0	40	22	33	70	35	20	2.75

Delivery: 1 pair



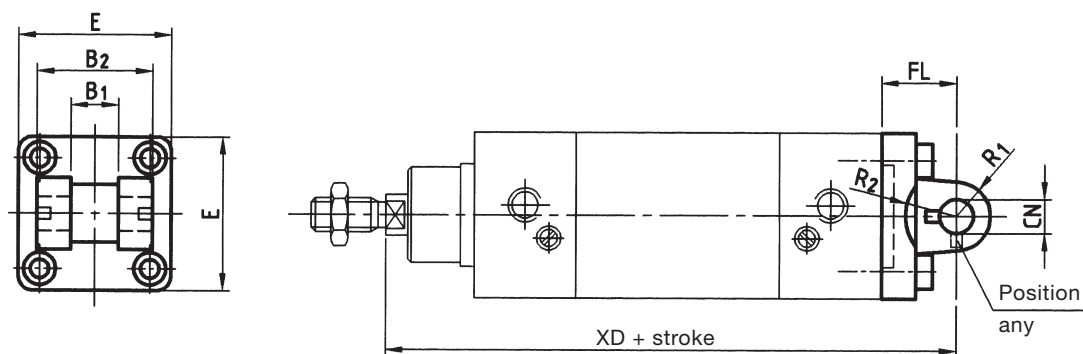
Accessories for cylinders according to ISO 15552

Accessory clevis flange with spherical bearing – MP6



Type	Piston-Ø	CN _{H7}	E	ER	EN _{-0.1}	FL	L	XD	Weight kg
MP6-125	125 mm	30	140	40	37	50	30	275	1.4
MP6-160	160 mm	35	180	45	43	55	35	315	2.4
MP6-200	200 mm	35	220	48	43	60	35	335	3.8
MP6-250	250 mm	40	270	52	49	70	45	375	5.9

Accessory female hinge for MP6 – AB6

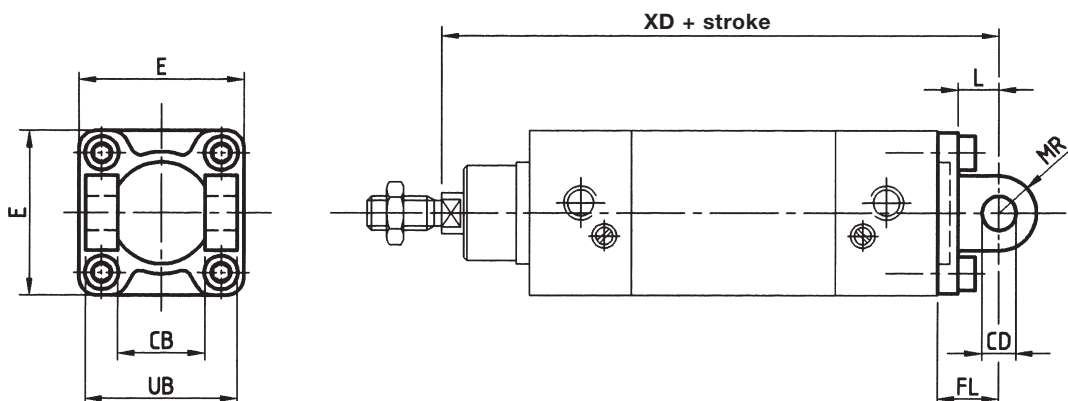


Type	Piston-Ø	B ₁ H14	B ₂ d12	CN _{F7}	E _{+0.5/-0.5}	FL _{+0.2/-0.2}	R ₁ ⁺¹	R ₂ min.	XD	Weight kg
AB6-125	125 mm	37	97	30	140	50	25	42	275	1.1
AB6-160	160 mm	43	122	35	180	55	30	46	315	2.0
AB6-200	200 mm	43	122	35	220	60	30	49	335	3.4
AB6-250	250 mm	49	125	40	270	70	40	55	375	5.4

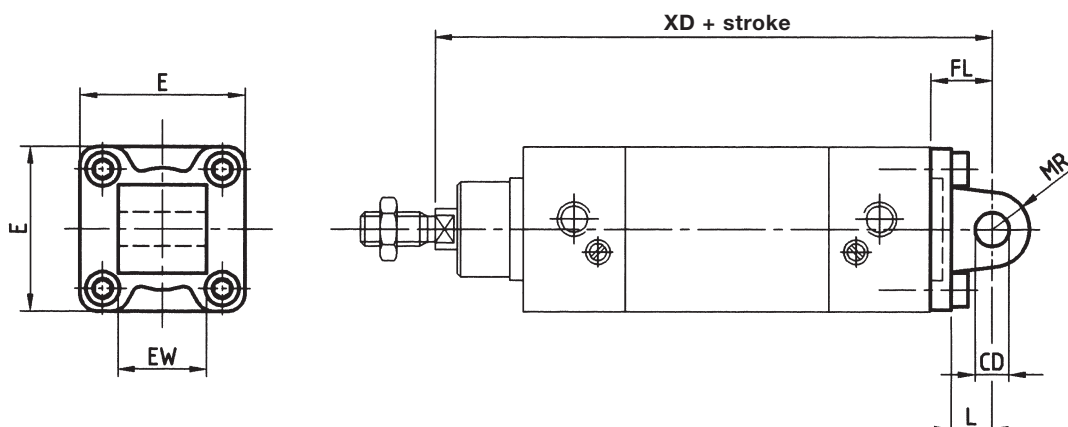


Accessories for cylinders according to ISO 15552

Accessory female hinge – MP2



Accessory male hinge – MP4

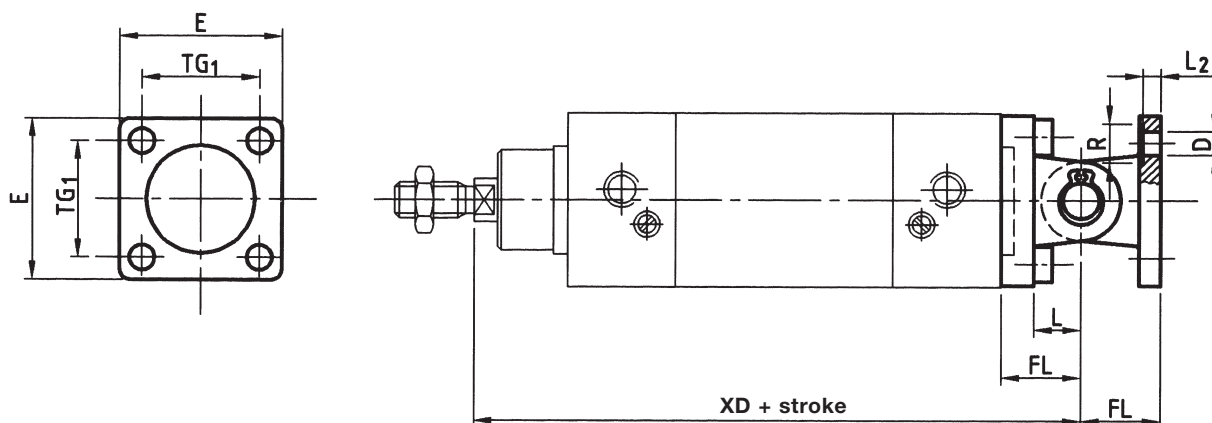


Type	Piston-Ø	CB ^{H14}	CD ^{H9}	E	EW ^{-0.2 -0.6}	FL ^{+0.2 -0.2}	L	MR	UB _{h14}	XD	Weight kg	Type	Weight kg
MP2-125	125mm	70	25	140	70	50	30	26	130	275	1.2	MP4-125	1.3
MP2-160	160mm	90	30	180	90	55	35	31	170	315	1.8	MP4-160	1.9
MP2-200	200mm	90	30	220	90	60	35	31	170	335	2.9	MP4-200	3.0
MP2-250	250mm	110	40	270	110	70	45	41	200	375	5.8	MP4-250	6.2
MP2-320	320mm	120	45	353	120	80	50	46	220	420	30.0	MP4-320	30.0



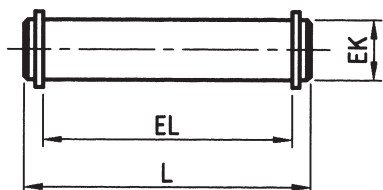
Accessories for cylinders according to ISO 15552

Accessory two-piece joint, hinge and back support – MP2/4, alternatively with spherical bearing AB/MP6



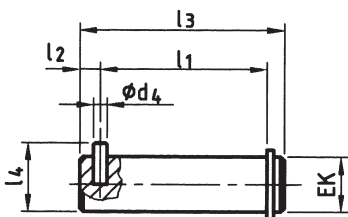
Type	Piston-Ø	D _{H13}	E	FL ^{+0.2 -0.2}	L	L2 ^{+0.5 -0.5}	R _{H13}	TG ₁ ^{+0.3}	XD	Weight kg	Type	Weight kg
MP2/4-125	125mm	14	140	50	30	10	20	110	275	3	AB/MP6-125	3
MP2/4-160	160mm	18	180	55	35	10	26	140	315	5	AB/MP6-160	5
MP2/4-200	200mm	18	220	60	35	11	26	175	335	7	AB/MP6-200	7
MP2/4-250	250mm	22	270	70	45	11	33	220	375	14	AB/MP6-250	13

Accessory pin with seeger for MP2 – AA4



Type	Piston-Ø	EK _{e8}	EL	L	Weight kg
AA4-125	125mm	25	132 + 3	139	0.5
AA4-160	160mm	30	172 + 3	178	1.0
AA4-200	200mm	30	172 + 3	178	1.0
AA4-250	250mm	40	202 + 3	211	2.0
AA4-320	320mm	45	222 + 3	238	3.0

Accessory pin with seeger
non rotating for AB6 – AA6

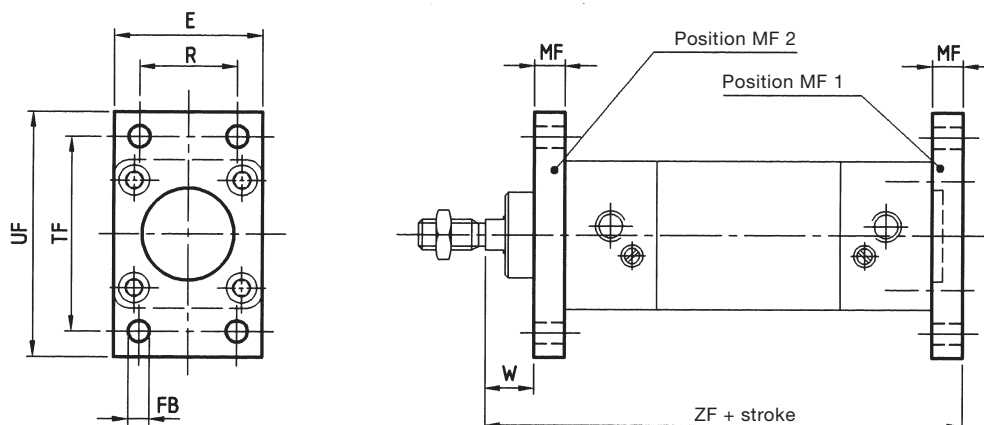


Type	Piston-Ø	EK ₁₇	d _{4 H12}	I _{1-0.3} ^{+0.5}	I ₂₋₁ ⁰	I ₃	I _{4-0.5} ⁰	Weight kg
AA6-125	125mm	30	6	94	9	110	36	0.6
AA6-160	160mm	35	6	119	9	135	41	1.0
AA6-200	200mm	35	6	119	9	135	41	1.0
AA6-250	250mm	40	81	121	12	140	48	1.4



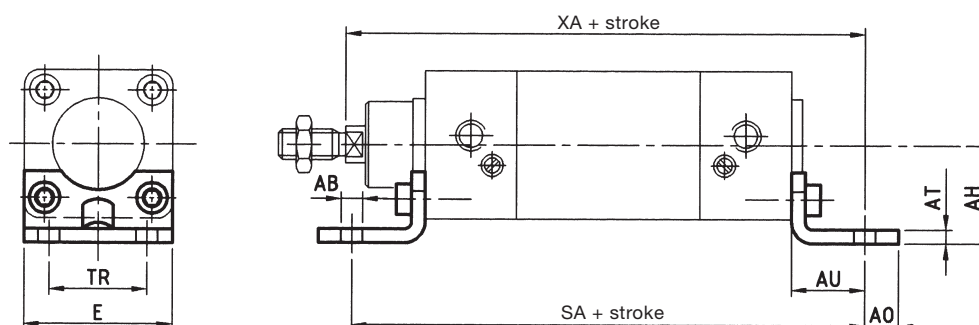
Accessories for cylinders according to ISO 15552

Accessory flange cap-side – MF1 Accessory flange head-side – MF2



Type	Piston-Ø	E	FB _{h13}	MF _{JS14}	UF	R	TF	W	370ZF	Weight kg
MF1-125 / MF2-125	125mm	140	16	20	205	90	180	45	245	3.8
MF1-160 / MF2-160	160mm	180	18	20	260	115	230	60	280	6.4
MF1-200 / MF2-200	200mm	220	22	25	300	135	270	70	300	11.4
MF1-250 / MF2-250	250mm	285	26	25	400	165	330	80	330	20.0
MF1-320 / MF2-320	320mm	350	33	30	475	200	400	90	370	38.0

Accessory foot – MS1



Type	Piston-Ø	AB _{H14}	AH _{JS15}	AO	AT ^{+0.5 -0.5}	AU ^{+0.2 -0.2}	E	SA	TR _{JS14}	XA	Weight kg
MS1-125	125mm	16.5	90	25	8	45	140	250	90	270	1.1
MS1-160	160mm	18.5	115	15	9	60	180	300	115	320	1.2
MS1-200	200mm	24.0	135	30	12	70	220	320	135	345	3.5
MS1-250	250mm	28.0	165	25	14	75	270	350	165	380	6.6
MS1-320	320mm	35.0	200	45	16	85	350	390	200	425	13.6

Delivery: 1 pair

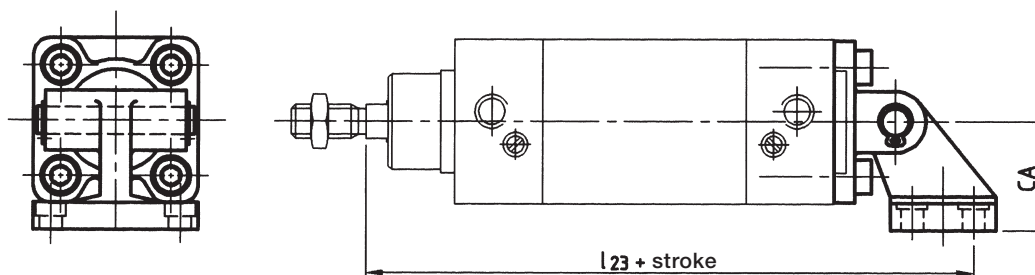


Accessories for cylinders according to ISO 15552

Accessory female hinge wide with back support – MZ alternatively with spherical bearing UL

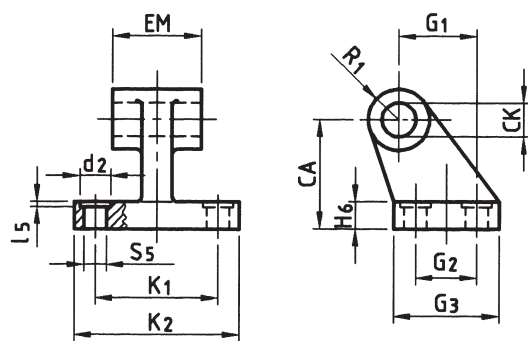
Type MZ = MP2 + AB7 + AA4

Type UL = AB6 + US + AA6

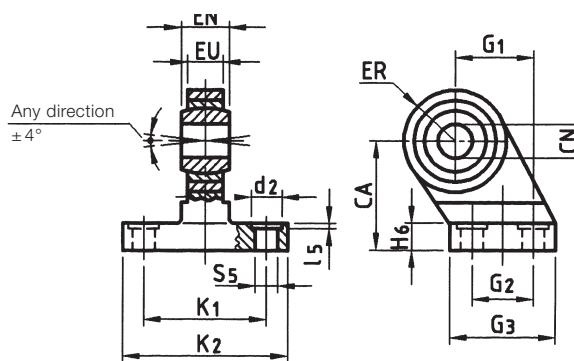


Piston-Ø	l_{23}	CA_{JS15}	Weight kg	Type Accessory with fixed bearing	Weight kg	Type Accessory with spherical bearing
125mm	345	90	5.0	MZ-125	5.5	UL-125
160mm	412	115	10.0	MZ-160	10.0	UL-160
200mm	440	135	14.0	MZ-200	15.0	UL-200
250mm	503	165	32.4	MZ-250	–	–
320mm	570	200	52.5	MZ-320	–	–

Accessory back support with fixed bearing – AB7



Accessory back support with spherical bearing – US



Please order: AB7 – piston-Ø

Please order: US – piston-Ø

Piston-Ø	CK_{H9}	CN_{H7}	d_2	$EM_{-0.5/-1.5}$	$EN_{-0.1}$	ER	EU_{max}	G_{1JS15}	G_{2JS15}	G_3	H_6	K_{1JS14}	K_2	l_{5max}	R_{1max}	S_{5H13}
125mm	25	30	20	70	37	40	25	70	60	90	20	94	124	3.2	22.5	14
160mm	30	35	20	90	43	44	28	97	88	126	25	118	156	4.0	31.5	14
200mm	30	35	26	90	43	47	28	105	90	130	30	122	162	4.0	31.5	18
250mm	40	–	33	110	–	–	–	128	110	160	35	150	200	4.5	40.0	22
320mm	45	–	40	120	–	–	–	150	122	186	40	170	234	4.5	45.0	26



Additional accessories for cylinders

**Fixing elements for the piston rod
flexible joint,
rod clevis, universal rod eye,
nuts**

Type GF



Rod clevis

Type GS



Universal
rod eye

Type FK



Flexible
joint

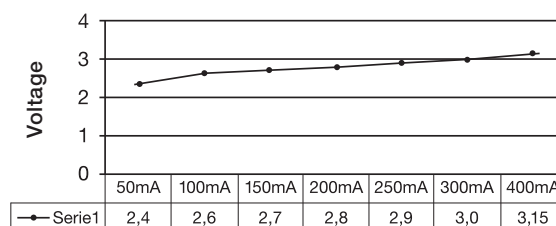
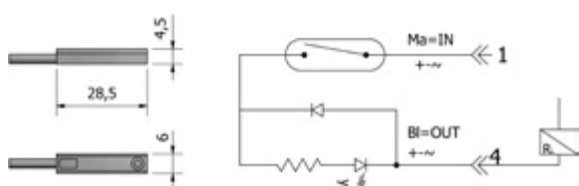
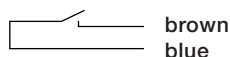
Cylinder	Piston-Ø	Thread	Item number			
			Rod clevis	Universal rod eye	Nut	Flexible joint
RI..	8/10	M4	E080040000	–	E140000000	990000
	12/16	M6	E080040001	E080060001	E140000001	990001
	20	M8	E080040002	E080060002	E140030000	990002
	25	M10 x 1.25	E080050000	E080070000	E140030020	990003
KPDM...	20 + 25	M8	E080040002	E080060002	E140030000	990002
	32 + 40	M10 x 1.25	E080050000	E080070000	E140030020	990003
	50 + 63	M12 x 1.25	E080050001	E080070001	E140030021	990004
	80 + 100	M16 x 1.5	E080050002	E080070002	E140030022	990005
DVP..	32	M10 x 1.25	E080050000	E080070000	E140030020	990003
	40	M12 x 1.25	E080050001	E080070001	E140030021	990004
	50/63	M16 x 1.5	E080050002	E080070002	E140030022	990005
	80/100	M20 x 1.5	E080050003	E080070003	E140030023	990006
DI..	125	M27 x 2	E080080005*	E080070004	E140030024	990007
	160/200	M36 x 2	E080080006*	E080070005	E140030025	990008
	250	M42 x 2	E080080008*	E080070006	E140030026	–
	320	M48 x 2	E080080009*	E080070007	E140030027	–
SDJ	20	M8	E080040002	E080060002	E140030000	990002
	30/40	M10	E080040003	E080060003	E140030001	990009
DUJ	30/40	M10	E080040003	E080060003	E140030001	990009
DUDJ	50/60	M12	E080040004	E080060004	E140030002	990010
	80	M16	E080040005	E080060005	E140030003	990011
	100	M20	E080040006	E080060006	E140030004	990012
	125	M24	E080000004*	E080060007	E140030005	–
DUVJ	160	M30	E080000005*	E080060008	E140030006	–
	200	M36	E080000006*	E080060009	E140030007	–
	40	M12	E080040004	E080060004	E140030002	–
	50/60	M16	E080040005	E080060005	E140030003	–
	80	M20	E080040006	E080060006	E140030004	–
	100	M24	E080000004*	E080060007	E140030005	–
	125	M30	E080000005*	E080060008	E140030006	–



Proximity switch, REED-switch – 2 lines

M60RV2

- Direct assembly into groove of cylinder
- Compact design

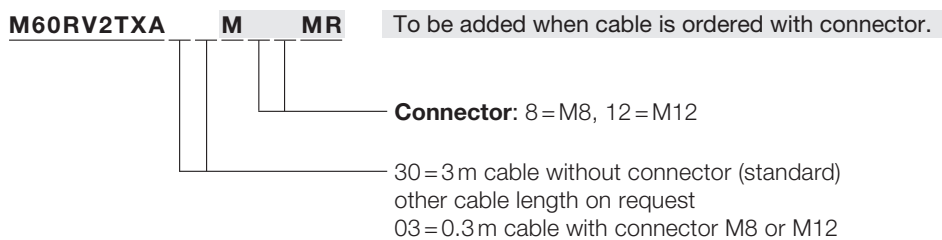


Technical characteristics

General characteristics	
Design	PNP Out with LED (yellow)
Voltage	10 ... 240 V AC/DC
I	400 mA at 25 °C
Max. power	10 W/8 VA
Temperature range	–25 °C ... +90 °C
Protection	IP 67 (DIN 40050)
Cable	3 m
Material	Body: PA, cable: PVC, PUR on request

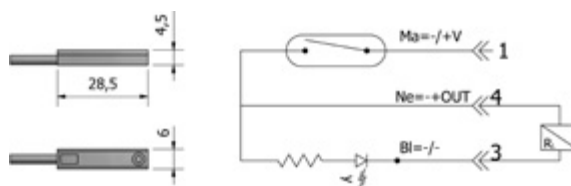
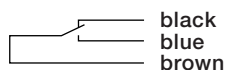
Attention: Applying higher voltage, flow or power to the switch will reduce life-time.

Numbering system proximity switch M60



**Proximity switch,
REED-switch – 3 lines****M60RS3**

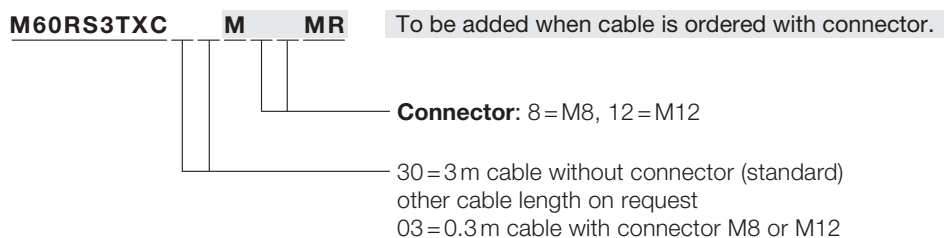
- Direct assembly into groove of cylinder
- Compact design



Technical characteristics

General characteristics	
Design	PNP Out with LED (yellow)
Voltage	5 ... 30 V DC
I	400 mA at 25 °C
Max. power	10 W
Temperature range	-25 °C ... +90 °C
Protection	IP 67 (DIN 40050)
Cable	3 m
Material	Body: PA, cable: PVC, PUR on request

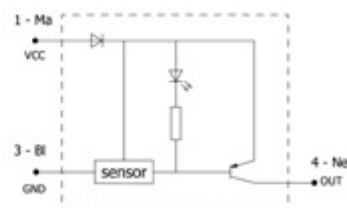
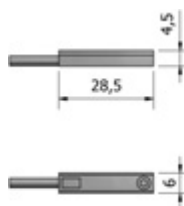
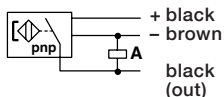
Attention: Applying higher voltage, flow or power to the switch will reduce life-time.

Numbering system proximity switch M60

Electronic proximity switch

M60GMP

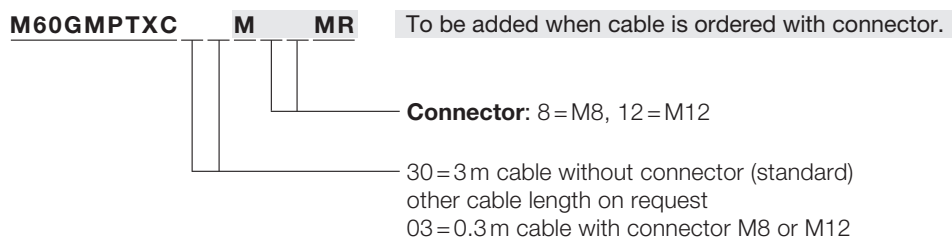
- Direct assembly into groove of cylinder
- Reliable short reaction time
- Wear-free
- Resistant against shake and shock
- LED



Technical characteristics

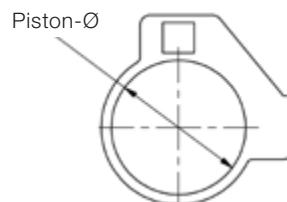
General characteristics	
Design	PNP Out with LED (yellow)
Voltage	5 ... 30V DC
I	150 mA max.
Switching time	<0,5 ms
Temperature range	-25 °C ... +90 °C
Protection	IP 67 (DIN 40050)
Cable	5 m
Material	Body: PA, cable: PVC, PUR on request

Numbering system proximity switch M60



Fasteners for proximity switch Type M60**Fastener – BR
for round cylinders type RIM**

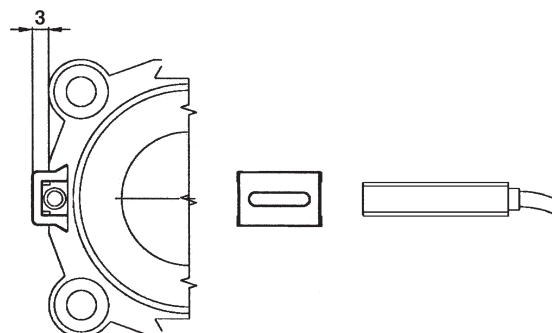
Type	Piston-Ø
BR-08-M60	8 mm
BR-10-M60	10 mm
BR-12-M60	12 mm
BR-16-M60	16 mm
BR-20-M60	20 mm
BR-25-M60	25 mm
BR-32-M60	32 mm
BR-40-M60	40 mm
BR-50-M60	50 mm
BR-63-M60	63 mm

**Fastener – BZ
for tie-rod cylinder type DIM**

Type	Piston-Ø	Ø max.
BZ-3263-M60	32 – 63 mm	7
BZ-80100-M60	80 – 100 mm	10
BZ-125-M60	125 mm	12
BZ-160200-M60	160 – 200 mm	16
BZ-250-M60	250 mm	20.5
BZ-320-M60	320 mm	25.5

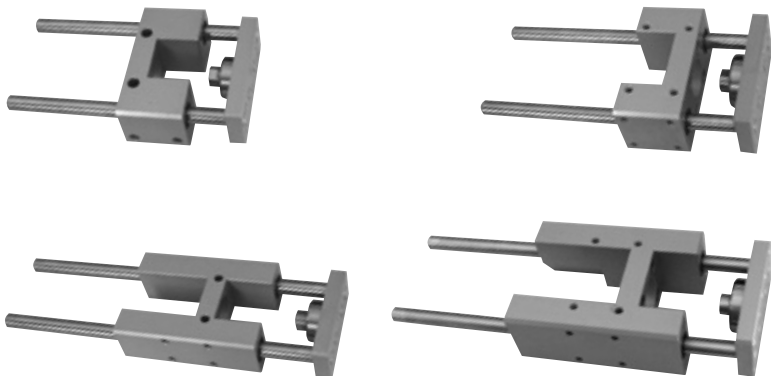
**Fastener – BD
for profile-cylinder type DVPM**

Type	Piston-Ø
BD-32-100	32 – 100 mm



Linear guide unit LFA

Fits cylinders
ISO 6432 piston-Ø 16 ... 25 mm
ISO 15552 piston-Ø 32 ... 100 mm



Technical characteristics

General characteristics	
Design	linear guide unit, 2 versions H = long, C = short (on request)
Bearing	G = sliding bearing, brass K = ball bearing
Materials	Body and plate aluminum anodized, rods and coupling steel
Temperature range	-20 °C ... +80 °C
Standard strokes	
25, 50, 80, 100, 160, 200, 250, 300, 400, 500 mm	

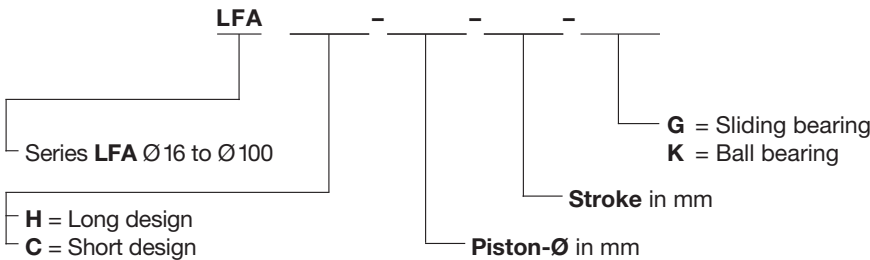
Numbering system guide & actuator type LFA

The linear guide unit is used to avoid rotation of standard cylinders according to ISO 6432 and ISO 15552 as well as to take-on larger torque and force applied to the piston-rod.

It offers a higher precision in handling equipment.

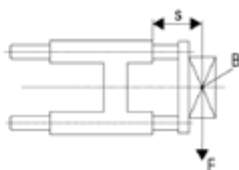
To evaluate maximum load in relation to stroke, please refer to the diagrams on page 52.

Numbering system linear guide unit LFA

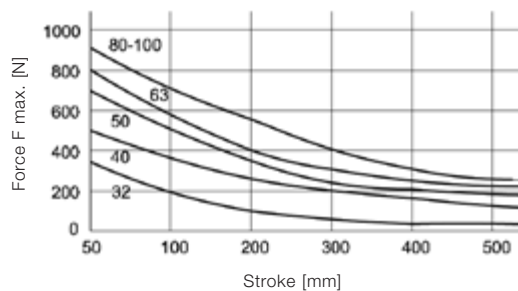
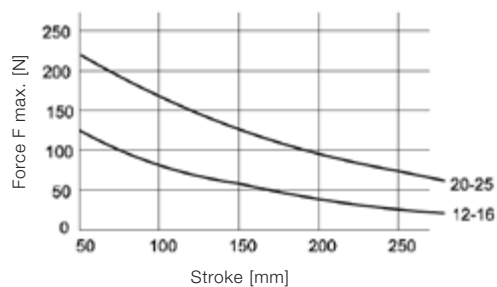


Additional accessories for cylinders

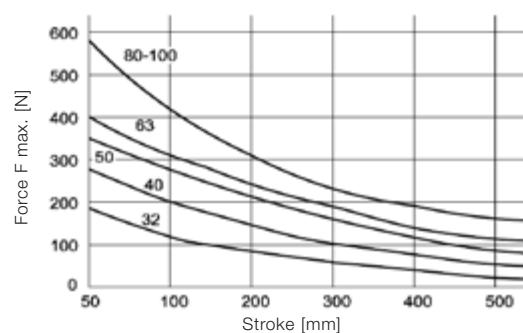
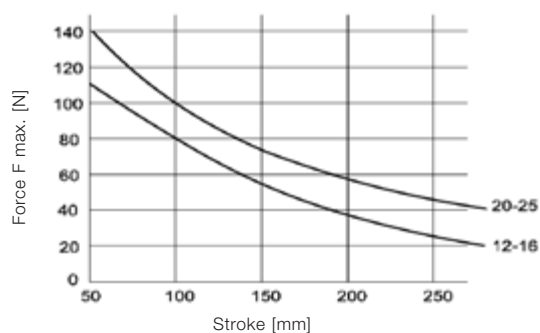
Maximum burden for linear guide units type LFA H (long)
Maximum load in relationship to stroke



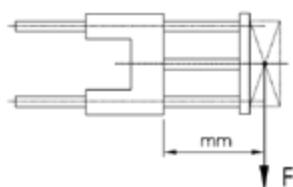
Type G with sliding bearing



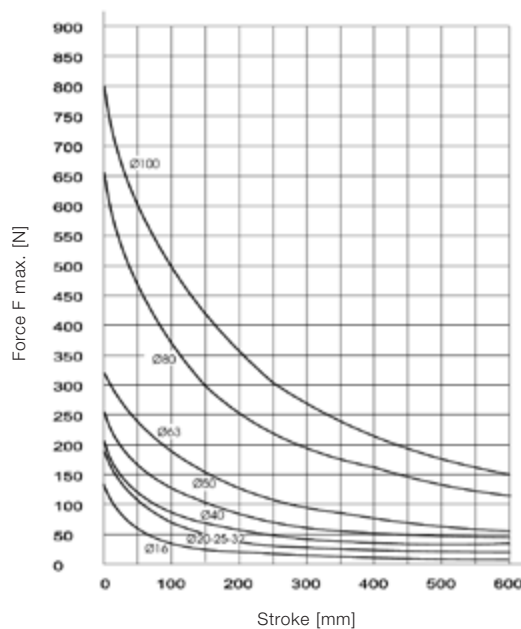
Type K with ball bearing



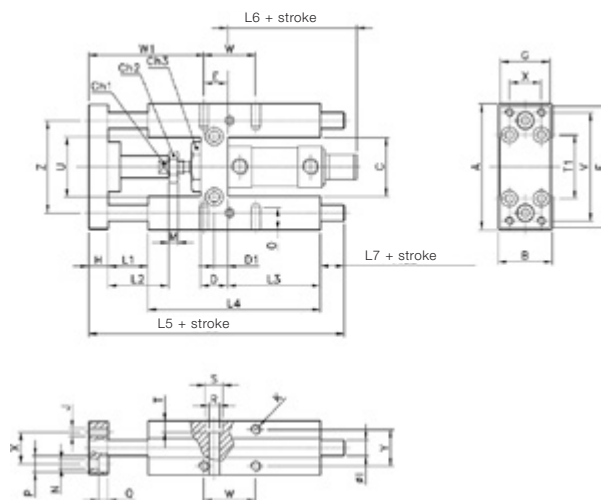
Maximum burden for linear guide units type LFAC – G (short with slide bearings)
Maximum load in relationship to stroke



On request



Linear guide unit Type LFAH for cylinders ISO 6432 Ø 16 – 25



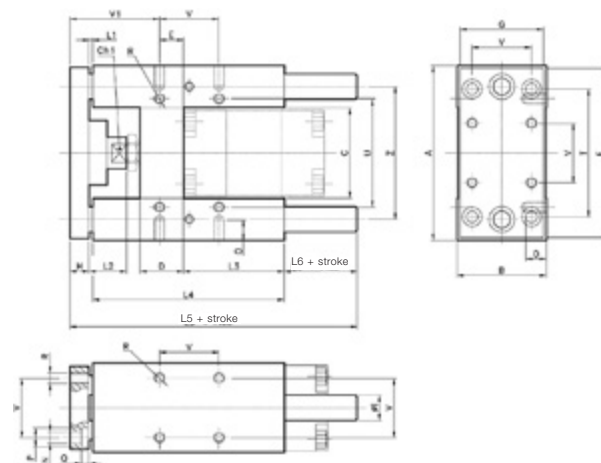
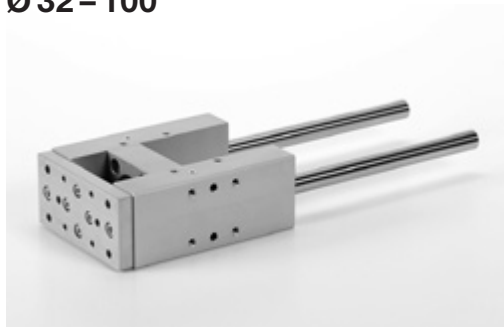
Dimensions

Piston-Ø	A	B	C	Ch1	Ch2	Ch3	D	D1	E	F	G	H	ØI1	ØI2	J	K	L1	L2	L3	L4	L5	L6
16mm	69	30	30	8	10	24	12	6.0	8	66	29	10	10	8	M4	M4	25	18	46	68	123.5	73
20mm	79	34	37	12	13	27	17	8.5	15	78	32	12	12	10	M5	M6	25	40	58	108	166.0	87
25mm	79	34	37	12	17	27	17	8.5	15	78	32	12	12	10	M5	M6	25	40	58	108	166.0	91

Version C

Piston-Ø	L7	M	N	O	P	Q	R	S	T	T1	U	V	W	W1	X	Y	Z	Piston-Ø	L1	L2	L6	W1
16mm	20.5	4	4.5	6	8	4.5	5.5	9	5.5	32	24	58	18.0	49	18	22	49.5	20mm	3	18	43	50
20mm	21.0	5	5.5	9	10	7.5	6.5	11	6.5	38	38	68	32.5	20	72	23	58.0	25mm	3	18	43	50
25mm	21.0	6	5.0	9	10	7.5	6.5	11	6.5	38	38	68	32.5	20	72	23	58.0					

Linear guide unit Type LFAH for cylinders ISO 15552 Ø 32 – 100



Dimensions

Piston-Ø	A	B	C	Ch	D	E	F	G	H	ØI	L1	L2	L3	L4	L5	L6
32mm	97	49	51.0	15	24	4.3	93	45	12	12	25	42	75	125	187	25
40mm	115	58	58.2	15	28	11.0	112	55	12	16	25	42	80	140	207	30
50mm	137	70	70.2	20	34	18.8	134	65	15	20	25	50	78	148	223	35
63mm	152	85	85.2	20	34	15.3	147	80	15	20	25	50	105	178	243	25
80mm	189	105	105.5	26	50	25.0	180	100	20	25	25	50	111	195	267	27
100mm	213	130	130.5	26	55	30.0	206	120	20	25	25	50	128	218	290	27

Version C

Piston-Ø	N	O	P	Q	R	T	U	V	V1	Z	Piston-Ø	L1	L2	L6	V1
32mm	6.6	12	11	6.5	M6	78	61	32.5	82.7	74	32mm	3	19	47	60.7
40mm	6.6	12	11	6.5	M6	84	69	38.0	86.0	87	40mm	3	24	52	64.0
50mm	9.0	16	15	8.5	M8	100	85	46.5	91.2	104	50mm	3	27	57	69.2
63mm	9.0	16	15	9.0	M8	105	100	56.5	96.7	119	63mm	3	27	47	74.7
80mm	11.0	20	18	11.0	M10	130	130	72.0	104.0	148	80mm	3	27	49	82.0
100mm	11.0	20	18	11.0	M10	150	150	89.0	105.0	173	100mm	3	27	49	83.0



Integrated guide and actuator Type AMCCG

Double acting
Piston-Ø 16 ... 100 mm
Proximity switches can be used

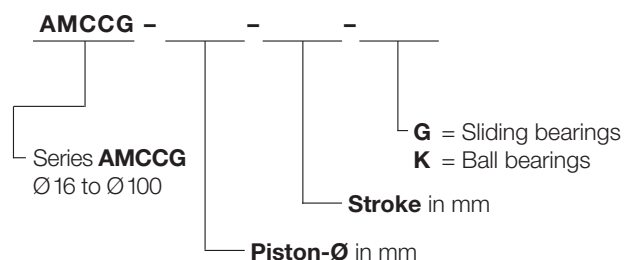


Technical characteristics

General characteristics	
Design	linear guide unit with integrated actuator
Function	double acting, G = with sliding bearing, K = with ball bearing
Materials	body and plate aluminum: anodized, rods steel, seals: NBR, PUR
Piston-Ø	16 ... 100 mm
Position	any
Temperature range	-20 °C ... +80 °C
Pneumatic characteristics	
Operation pressure	1 ... 10 bar
Medium	compressed air, filtered max. 50 µm
Magnetic piston	yes

Piston-Ø	Standard strokes [mm]									
	10	20	25	30	40	50	75	100	150	200
16 mm	•	•		•	•	•	•	•	•	•
20 mm		•		•	•	•	•	•	•	•
25 mm		•	•	•	•	•	•	•	•	•
32 mm			•			•	•	•	•	•
40 mm			•			•	•	•	•	•
50 mm			•			•	•	•	•	•
63 mm			•			•	•	•	•	•
80 mm			•			•	•	•	•	•
100 mm			•			•	•	•	•	•

Numbering system guide and actuator AMCCG



Additional accessories for cylinders

Integrated guide and actuator Type AMCCG Ø 16 – Ø 25 mm

Dimensions

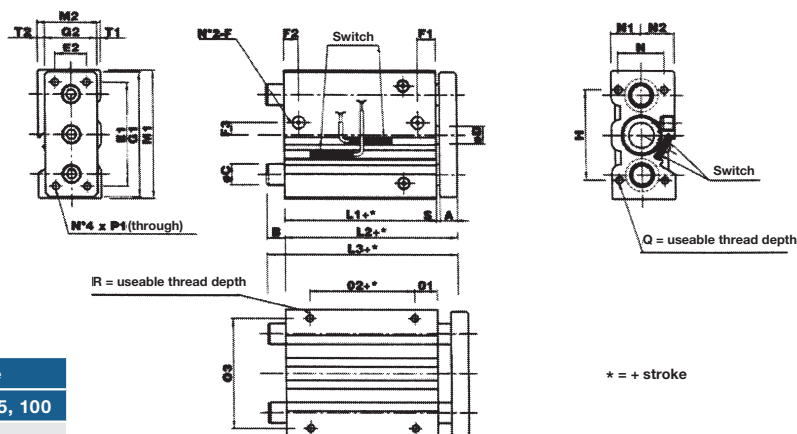
Piston-Ø	B		L3	
	Stroke		Stroke	
	0–50	75, 100	0–50	75, 100
16 mm	0	26.5	45.0	–
20 mm	0	27.5	49.0	76.5
25 mm	0	30.0	49.5	79.5

Piston-Ø	A	C	D	E1	E2	F	F1	F2	F3
16 mm	10	10	8	52	16	M5	11.0	8.0	6
20 mm	10	12	10	60	18	1/8	10.5	8.5	7
25 mm	10	16	12	70	26	1/8	11.5	9.0	8

Piston-Ø	G1	G2	H	H1	L1	L2	M1	M2	N	N1	N2	O1	O2	O3	P1	Q	R	S	T1	T2
16 mm	62	25	42	40	33.0	45.0	64	33	22	15	18	13	7	54	M4	13	8	2	2.5	6
20 mm	72	29	52	46	37.0	49.0	74	36	26	17	19	13	10	64	M5	13	8	2	2.0	4
25 mm	86	38	62	56	37.5	49.5	88	42	32	21	21	14	10	76	M6	15	9	2	2.0	2

Weight

Piston-Ø	Weight (g) stroke = 0 mm	Weight (g) 1 mm stroke
16	295	4.8
20	486	6.4
25	550	10.0



Integrated guide and actuator Type AMCCG Ø 32 – Ø 100 mm

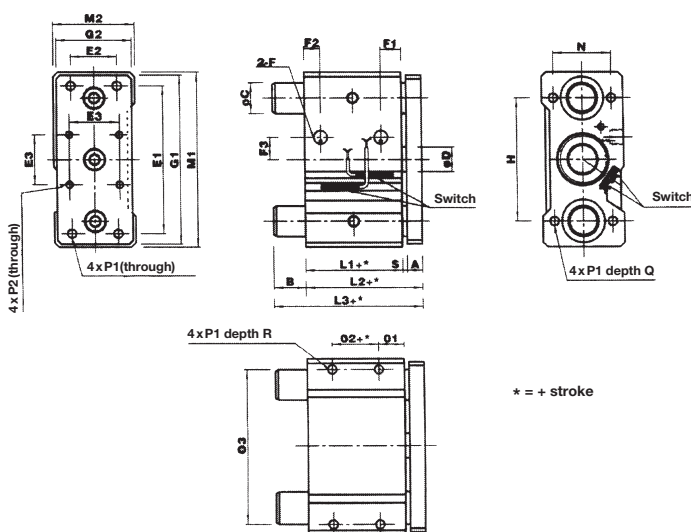
Dimensions

Piston-Ø	A	ØD	E1	E2	E3	F	F1	F2	F3
32 mm	10	16	96	30	32.5	1/8	12.05	9.0	1
40 mm	10	16	106	30	38.0	1/8	14.0	10.0	21
50 mm	12	20	120	40	46.5	1/4	14.0	11.0	27
63 mm	12	20	130	50	56.5	1/4	16.5	13.5	33
80 mm	16	25	160	60	72.0	3/8	19.0	15.5	37
100 mm	16	30	190	80	89.0	3/8	23.0	19.0	40

Piston-Ø	G1	G2	H	L1	L2	M1	M2	N	1	2	3	P1	P2	Q	R	S	L3	ØC	B
32 mm	112	48	80	37.5	49.5	114	53	38	16	5	100	M8	M6	20	11.0	2	73.5	20	24.0
40 mm	122	48	90	44.0	56.0	124	53	38	17	10	110	M8	M6	20	11.0	2	73.5	20	17.5
50 mm	138	56	100	44.0	58.0	139	59	44	17	10	124	M10	M8	25	12.5	2	83.0	25	25.0
63 mm	148	69	110	49.0	63.0	150	72	44	19	10	132	M10	M8	25	15.0	2	83.0	25	20.0
80 mm	185	88	140	56.5	74.5	188	92	56	21	15	166	M12	M10	30	18.0	2	93.0	28	18.5
100 mm	221	108	170	66.0	84.0	224	112	62	25	15	200	M14	M10	35	21.0	2	105.0	36	21.0

Weight

Piston-Ø	Weight (g) stroke = 0 mm	Weight (g) 1 mm stroke
32 mm	942	16.51
40 mm	1028	18.04
50 mm	1355	23.76
63 mm	1900	32.56
80 mm	3910	55.77
100 mm	5710	73.48



Clamping unit for cylinder ISO 6432**Type MRL**

Clamping unit for double acting cylinders with piston-Ø 20 mm and 25 mm. Rod lock functioning is of static type. It is necessary to stop the cylinder's rod before making the lock. It is possible to unblock the rod lock only if the forces in the piston are balanced, otherwise there can be accidents due to the irregular movement of the rod.

If the given blocking values are exceeded there can be a sliding on the rod.

When it is blocked and the loads are variable on the rod, the rod can have a slight axial play.

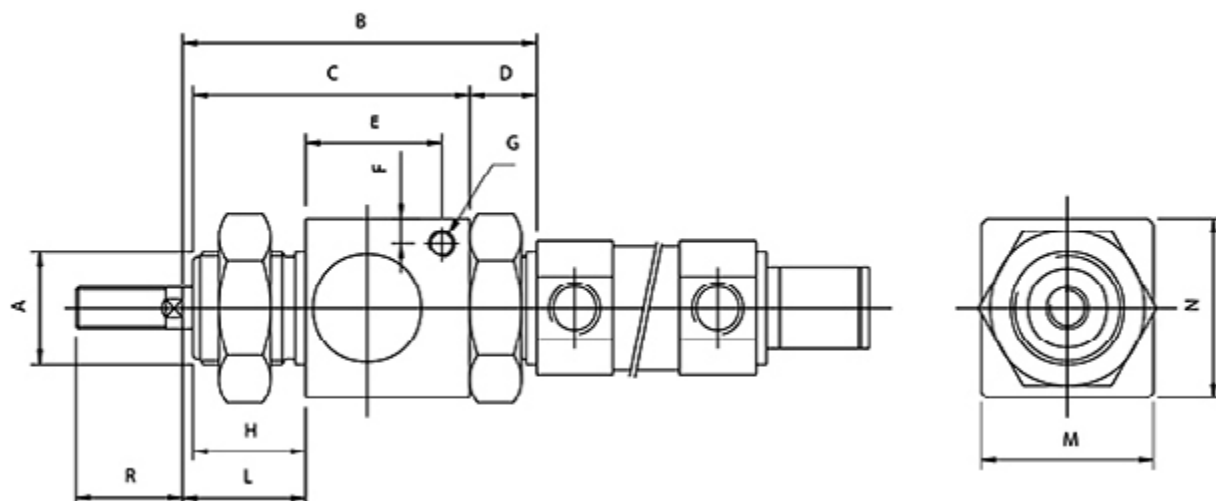
Pressure range: 3 ... 6 bar

Temperature range: -5 °C to +80 °C

Lubricated and unlubricated air.

Required piston-rod extension: 54 mm

Holding force at piston rod: 490 N

**Dimensions**

Type	Piston-Ø Cylinder	A	B	C	D	E	F	G	H	L	M	N	R
MRL 20	20mm	M22 x 1.5	68.5	54	13	27	5	M5	22	23.5	34	35	23
MRL 25	25mm	M22 x 1.5	69.5	54	13	27	5	M5	22	24.5	34	35	26



Clamping unit for cylinder ISO 15552

Type VRL

Clamping unit for double acting cylinders with piston-Ø 32 mm to 125 mm. Rod lock functioning is of static type. It is necessary to stop the cylinder's rod before making the lock. It is possible to unblock the rod lock only if the forces in the piston are balanced, otherwise there can be accidents due to the irregular movement of the rod.

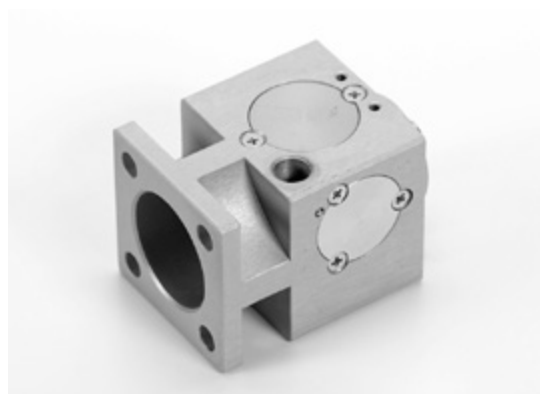
If the given blocking values are exceeded there can be a sliding on the rod.

When it is blocked and the loads are variable on the rod, the rod can have a slight axial play.

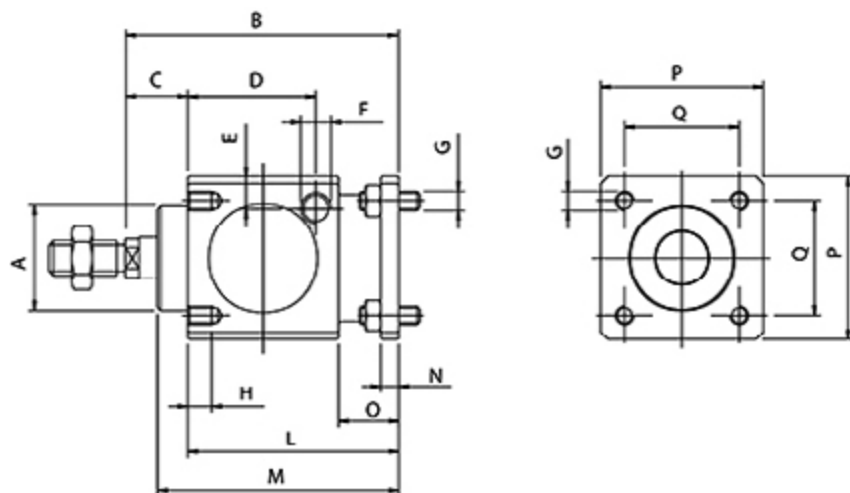
Pressure range: 3 to 6 bar

Temperature range: -5 °C to +80 °C

Lubricated and unlubricated air.



Type	Extension of piston rod [mm]	Holding force [N]
VRL 32	60	790
VRL 40	70	1.240
VRL 50	90	1.930
VRL 63	90	3.060
VRL 80	110	5.400
VRL 100	110	7.700
VRL 125	140	12.040



Dimensions

Type	Piston-Ø Cylinder	A	B	C	D	E	F	G	H	L	M	N	O	P	Q
VRL 32	32mm	30.0	86	26	33.3	9.0	G 1/8"	M6	8	60	67.5	6	20	47	32.5
VRL 40	40mm	34.5	100	30	42.5	9.0	G 1/8"	M6	8	70	80.0	6	20	54	38.0
VRL 50	50mm	40.0	127	37	58.0	12.5	G 1/8"	M8	12	90	100.0	8	24	65	46.5
VRL 63	63mm	45.0	127	37	59.0	17.5	G 1/8"	M8	12	90	100.0	8	24	75	56.5
VRL 80	80mm	45.0	156	46	69.0	17.5	G 1/4"	M10	16	110	120.0	12	32	95	72.0
VRL 100	100mm	55.0	161	51	69.0	20.0	G 1/4"	M10	16	110	120.0	12	32	114	89.0
VRL 125	125mm	60.0	205	65	84.5	19.0	G 1/4"	M12	20	140	156.0	20	45	138	110.0



High Flow
Compact design
Double acting / 5-way

Technical characteristics

General characteristics	
Medium	compressed air quality-class 7-4-4 for particles-water-oil according to ISO 8573-1:2010
Operating pressure	2 ... 10 bar eventually 3 bar due to restriction of certain valve-types
Temperature range	-10 °C * ... +50 °C low- as well as high-temperature version on request. * Below 0 °C dried air only.
	Ex Ex-version on request



The elements

- Profile cylinder type DVP/DVPM, refer to page 28 f.
- Tie-rod cylinders type DI/DIM, refer to page 30 f.
- ISO 15552
- Solenoid valves with NAMUR-interface
- Proximity switches
- Connectors
- Mounting plates, flexible on piston-Ø and stroke

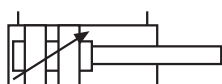
Advantages

- Easy assemblage
- Maximum cylinder speed
- Countless cylinder-valve-combinations possible
- Service friendly
- Quickly available
- Standard interface according to NAMUR

Cylinder types



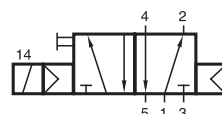
DVP



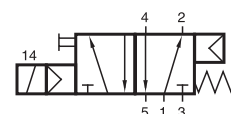
DVPM

refer to page 28 ff.

Single solenoid 5/2-way valve



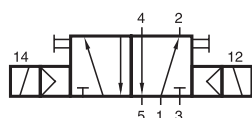
MNH 510



MNH 511

refer to catalogue No. 5 – 5.1.2.1 f.

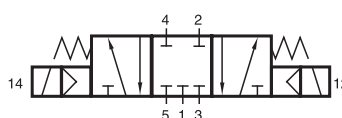
Double solenoid 5/2-way valve



MNH 520

refer to catalogue No. 5 – 5.1.2.3

5/3-way valve



MNH 531

refer to catalogue No. 5 – 5.1.4



You can find our wide range of valves with NAMUR-interface in the JOYNER catalogue No. 5

Pictures from valve manufacturing site in Hungary



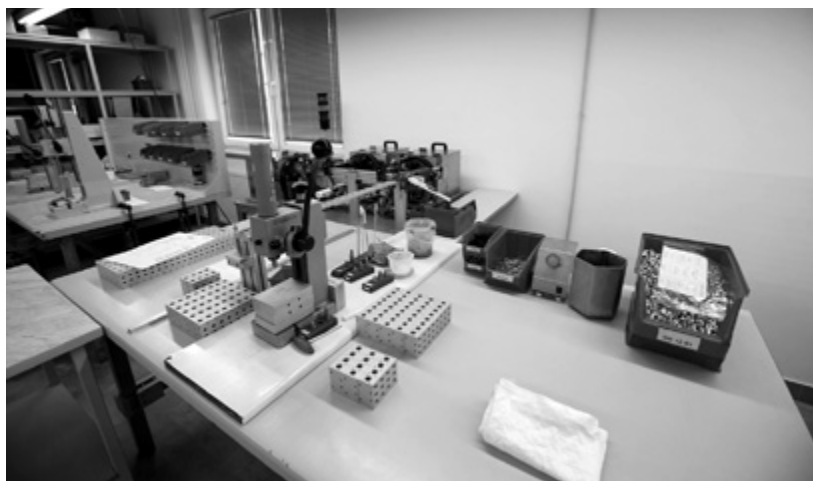
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