

# M

## Ø 8 ÷ 25 mm - Microcylinders ISO 6432

- Compact, clean, reliable
- Single and double acting
- With or without magnet
- With or without adjustable cushioning

Available ATEX version upon request



### TECHNICAL CHARACTERISTICS

Ambient temperature	-20 ÷ 80 °C
Fluid	filtered air, with or without lubrication
Working pressure	1,5 ÷ 10 bar
Bores	Ø 8 - 10 - 12 - 16 - 20 - 25 mm
Cushionings	adjustable in both sides (Ø16÷25)

### CONSTRUCTIVE CHARACTERISTICS

End-caps	Anodized aluminium (crimped on the barrel)
Barrel	stainless steel AISI 304 (crimped over the end-caps)
Piston	brass (Ø8÷16), aluminium (Ø20-25)
Guide slide	acetalic resin (Ø16÷25)
Piston rod	rolled stainless steel AISI 303
Piston seal	double-lip seal in nitrile rubber (NBR)
Guide bush for piston rod	steel structure, PTFE and sintered bronze sliding
Shock absorber seals	nitrile rubber (NBR) in both sides Ø12÷25
Magnet	neodimio (Ø10), plastoferrite (Ø12÷25)

### CODIFICATION KEY

M	1	0	0	0	2	5	0	0	5	0			
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1	2	3	4	5	6	7	8
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<b>1</b> Series	<b>2</b> Type	<b>3</b> Version
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**M** = Ø8÷25 mm - ISO 6432  
Microcylinders

- 1** = Stainless steel piston rod (standard vesion)  
**2** = Chromium-plated steel piston rod (to be used only with locking unit)  
**3** = Reduced version with stainless steel piston rod

- 00** = **D.A.** Standard version  
**01** = **D.A.** Through piston rod  
**50** = **D.A.** With adjustable cushionings (Ø16÷25)

- 51** = **D.A.** Through piston rod with adjustable cushionings (Ø16÷25)  
**60** = **S.A.** Retracted piston rod (Ø10÷25), Max stroke 50 mm  
**70** = **S.A.** Extended piston rod (Ø16÷25), Max stroke 25 mm

**D.A.** = Double acting  
**S.A.** = Single acting

<b>4</b> Bore (mm)	<b>5</b> Stroke (mm)	<b>6</b> Option	<b>7</b> Magnetic	<b>8</b> Atex option
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<b>008</b> = Ø8	<b>0010</b> = 10	<b>0080</b> = 80	<b>0250</b> = 250
<b>010</b> = Ø10	<b>0020</b> = 20	<b>0100</b> = 100	<b>0300</b> = 300
<b>012</b> = Ø12	<b>0025</b> = 25	<b>0125</b> = 125	<b>0320</b> = 320
<b>016</b> = Ø16	<b>0030</b> = 30	<b>0150</b> = 150	<b>0400</b> = 400
<b>020</b> = Ø20	<b>0040</b> = 40	<b>0160</b> = 160	<b>0500</b> = 500
<b>025</b> = Ø25	<b>0050</b> = 50	<b>0175</b> = 175	
	<b>0075</b> = 75	<b>0200</b> = 200	

**F** = Preset for locking unit reduced protrusion

**M** = Magnetic version (Ø10÷25)

**X** = Atex (upon request)

See ATEX Catalogue for types and versions

The version with high temperature seals (Max 120°C) available upon request.  
 Nut for piston rod and nut for end-cap standard supplied.

Stroke tolerances

Ø	stroke ≤ 500
	mm
8	+1,5 - 0
10	+1,5 - 0
12	+1,5 - 0
16	+1,5 - 0
20	+1,5 - 0
25	+1,5 - 0

Single acting cylinder  
Theoretical forces (N) for return stroke

Ø	Max force	Min. force	
		retraced piston rod	extended piston rod
	stroke 50 mm	stroke 50 mm	stroke 25 mm
10	7,6	4	-
12	8,7	5,9	-
16	16	7,8	11,9
20	20	13	16,5
25	23,5	15	13,3

Theoretical forces (N)  
at different working pressure (bar)

Ø	Surface area		Surface area					Surface area				
	mm²		bar					bar				
	Thrust	Traction	Thrust					Traction				
			2	4	6	8	10	2	4	6	8	10
8	50	38	10	20	30	40	50	8	15	23	30	38
10	79	66	16	31	47	63	79	13	26	40	53	66
12	113	85	23	45	68	90	113	17	34	51	68	85
16	201	173	40	80	121	161	201	35	69	104	138	173
20	314	264	63	126	188	251	314	53	106	158	211	264
25	419	412	98	196	295	393	491	82	165	247	330	412

Cushion

Ø	Length	Max kinetic energy absorption	Standard strokes																			
			mm	Nm		mm																
		with cushioning	without cushioning	10	20	25	30	40	50	75	80	100	125	150	160	-	-	-	-	-	-	
8	-	-	-	10	20	25	30	40	50	75	80	100	125	150	160	-	-	-	-	-	-	
10	-	-	-	10	20	25	30	40	50	75	80	100	125	150	160	-	-	-	-	-	-	
12	-	-	-	10	20	25	30	40	50	75	80	100	125	150	160	175	200	250	-	-	-	
16	-	-	0,12	10	20	25	30	40	50	75	80	100	125	150	160	175	200	250	-	-	-	
16*	16	0,9	-	-	-	25	30	40	50	75	80	100	125	150	160	175	200	250	300	320	400	500
20	-	-	0,16	10	20	25	30	40	50	75	80	100	125	150	160	175	200	250	300	-	-	
20*	18	1,3	-	-	-	25	30	40	50	75	80	100	125	150	160	175	200	250	300	320	400	500
25	-	-	0,22	10	20	25	30	40	50	75	80	100	125	150	160	175	200	250	300	320	400	500
25*	22	1,8	-	-	-	25	30	40	50	75	80	100	125	150	160	175	200	250	300	320	400	500

\*= version with adjustable cushionings

Mass - single acting

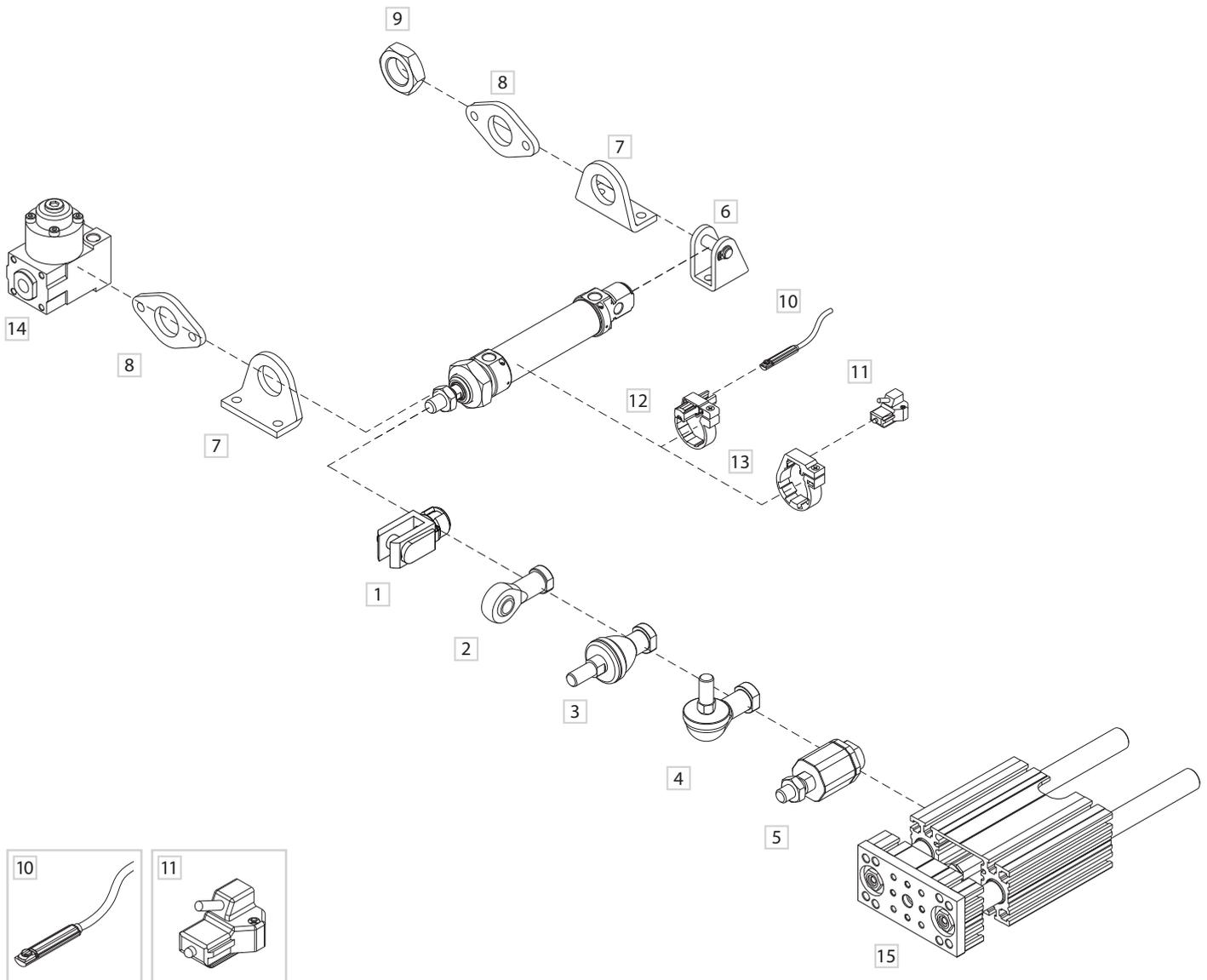
Ø	Cylinder - stroke 0	Increase per mm stroke	Moving element - stroke 0	Increase per mm stroke
	g	g	g	g
10	38	0,23	9	0,1
12	79	0,38	23	0,22
16	85	0,43	26	0,22
20	167	0,66	45	0,4
25	238	0,95	80	0,62

Mass - double acting

Ø	Cylinder - stroke 0	Increase per mm stroke	Moving element - stroke 0	Increase per mm stroke
	g	g	g	g
8	37	0,21	7	0,1
10	38	0,23	9	0,1
12	78	0,38	23	0,22
16	85	0,43	23	0,22
16*	87	0,43	25	0,22
20	167	0,66	45	0,4
20*	170	0,66	48	0,4
25	237	0,95	80	0,62
25*	245	0,95	88	0,62

\*= version with adjustable cushionings

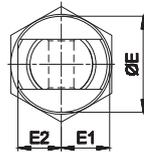
Fixing elements and accessories



1  
CYLINDERS

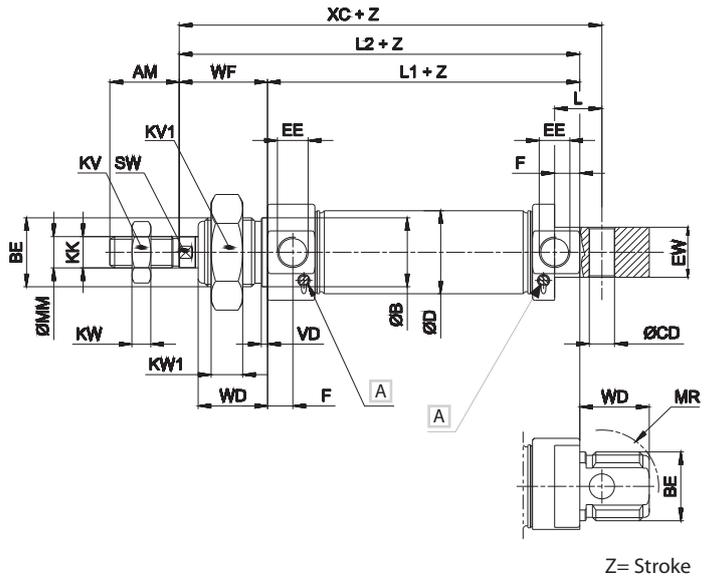
DESCRIPTION	PART NO.
1 Female fork with clips	MF/KF-15_ _ _
2 Articulated self-lubricating fork	MF/KF-17_ _ _
3 Fork with axially mounted articulated pin	MF/KF-22_ _ _
4 Fork with angle mounted articulated pin	MF/KF-23_ _ _
5 Floating joint	MF/KF-24_ _ _
6 Female rear hinge	MF-21_ _ _
7 Angle bracket (MS3)	MF-13_ _ _
8 Flange (MF8)	MF-12_ _ _
9 Nut for end-cap	MF-20_ _ _
10 DF Sensor	DF- _ _ _
11 DH Sensor	DH- _ _ _
12 Holder for DF sensor	DH-M_ _DF
13 Holder for DH sensor	DH-M_ _ _
14 Locking unit	L1-N
15 Slide unit	J12

### Double acting/Single acting



- M100**  
D.A. Standard
- M150**  
D.A. With adjustable cushionings
- M160**  
S.A. Retracted piston rod
- M170**  
S.A. Extended piston rod

For extended rod version add **WH+Z**(stroke) dimensions

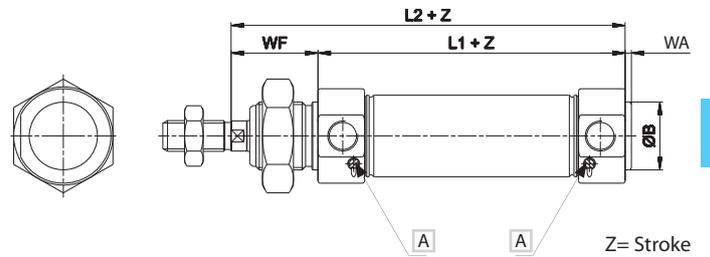


### Double acting reduced version



- M300**  
D.A. Standard
- M350**  
D.A. With adjustable cushionings
- M360**  
S.A. Retracted piston rod
- M370**  
S.A. Extended piston rod

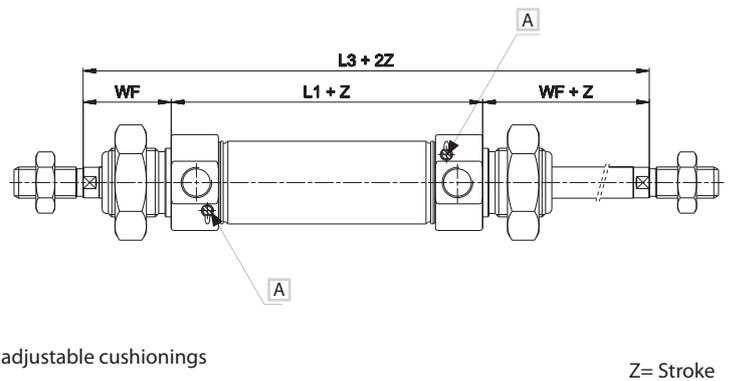
For extended rod version add **WH+Z**(stroke) dimensions



### Double acting through piston rod



- M101**  
D.A. Through piston rod
- M151**  
D.A. Through piston rod with adjustable cushionings



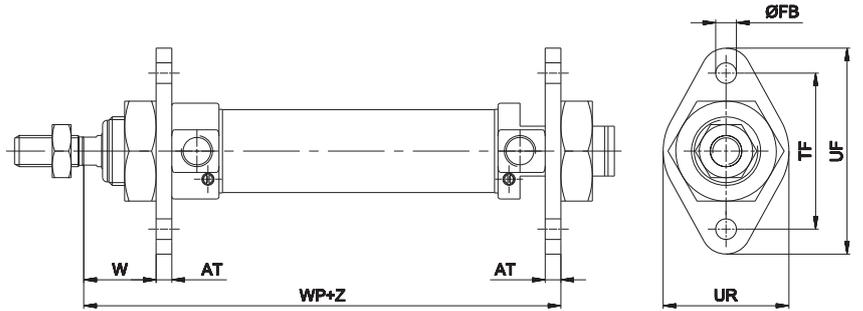
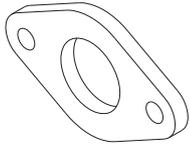
Ø	AM	B	BE	CD	D	E	E1	E2	EE	EW	F	KK	KV	KV1
		h 10		H 9						d 13				
8	12	12	M12x1,25	4	9,3	14	7,9	7,2	M5x0,8	8	5	M4x0,7	7	19
10	12	12	M12x1,25	4	11,3	14	7,9	7,2	M5x0,8	8	5	M4x0,7	7	19
12	16	16	M16x1,5	6	13,3	17	9,4	8,7	M5x0,8	12	5	M6x1	10	24
16	16	16	M16x1,5	6	17,3	20,8	10,4	9,6	M5x0,8	12	5,5	M6x1	10	24
20	20	22	M22x1,5	8	21,6	27,7	13,85	12	G1/8	16	8	M8x1,25	13	32
25	22	22	M22x1,5	8	26,6	30,7	15,35	13,75	G1/8	16	8	M10x1,25	17	32

Ø	KW	KW1	L	L1	L2	L3	MM	MR	SW	VD	WA	WD	WF	XC
													± 1,2	± 1
8	2,8	7	7	46	62	78	4	12	3	1,5	1,5	12	16	64
10	2,8	7	7	46	62	78	4	12	3	1,5	1,5	12	16	64
12	4	8	9	50	72	94	6	16	5	1,5	1,5	17	22	75
16	4	8	8	56	78	100	6	16	5	1,5	1,5	17	22	82
20	5	10	11	68	92	116	8	18	7	2	2	19	24	95
25	6	10	15	69	97	125	10	18	9	2	2	22	28	104

A Pneumatic cushioning adjusting screw

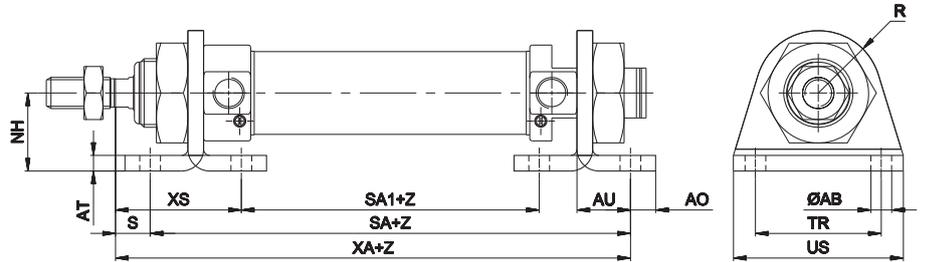
**Flange (MF8)**



Material: Zinc-plated steel

Ø	AT	ØFB	TF	UF	UR	W	WP	Mass	Part No.
		H13	Js14			± 1,4		g	
8 - 10	3	4,5	30	40	25	13	65	12	MF-12008
12	4	5,5	40	53	30	18	76	25	MF-12012
16	4	5,5	40	53	30	18	82	49	MF-12020
20	5	6,6	50	66	40	19	97		
25	5	6,6	50	66	40	23	102		

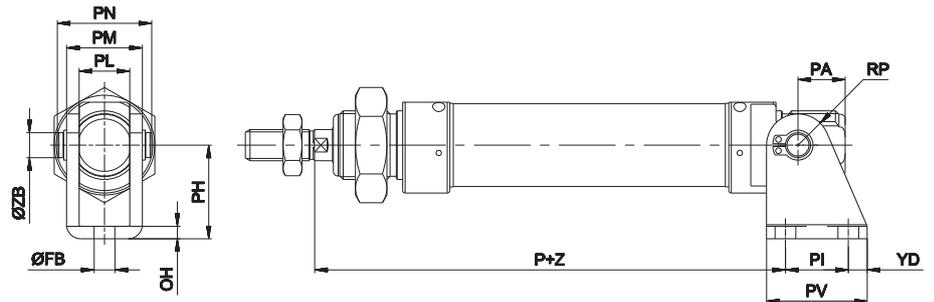
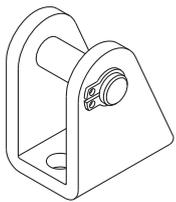
**Angle bracket (MS3)**



Material: Zinc-plated steel

Ø	AB	AO	AT	AU	NH	R	S	SA	SA1	TR	US	XA	XS	Mass	Part No.
	H13			+0,3 0	±0,3					Js14			±1,4	g	
8 - 10	4,5	5	3	11	16	10	5	68	30	25	35	73	24	20	MF-13008
12	5,5	6	4	14	20	13	8	78	30	32	42	86	32	40	MF-13012
16	5,5	6	4	14	20	13	8	84	36	32	42	92	32	40	MF-13020
20	6,6	8	5	17	25	20	7	102	44	40	54	109	36	90	
25	6,6	8	5	17	25	20	11	103	45	40	54	114	40		

**Female rear hinge**

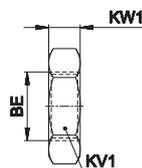


Including bolt and 2 clips

Material: Zinc-plated steel

Ø	FB	OH	P	PA	PH	PI	PL	PM	PN	PV	RP	YD	ZB	Mass	Part No.
	H13						E9						f8	g	
8 - 10	4,5	2,5	62,5	11	24	12,5	8,1	13,1	17	20	5,3	3,8	4	19	MF-21008
12	5,5	3	73	13	27	15	12,1	18,1	23	25	7	5	6	37	MF-21012
16	5,5	3	80	13	27	15	12,1	18,1	23	25	7	5	6	80	MF-21020
20	6,6	4	91	16	30	20	16,1	24,1	30	32	10	6	8		
25	6,6	4	100	16	30	20	16,1	24,1	30	32	10	6	8		

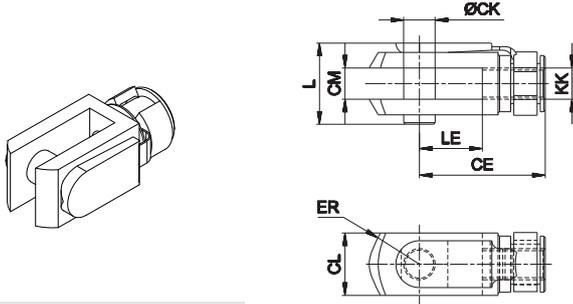
**Nut for end-cap**



Ø	BE	KV1	KW1	Mass	Part No.
8 - 10	M12x1,25	19	7	11	MF-20008
12 - 16	M16x1,5	24	8	18	MF-20012
20 - 25	M22x1,5	32	10	33	MF-20020

Material: Zinc-plated steel

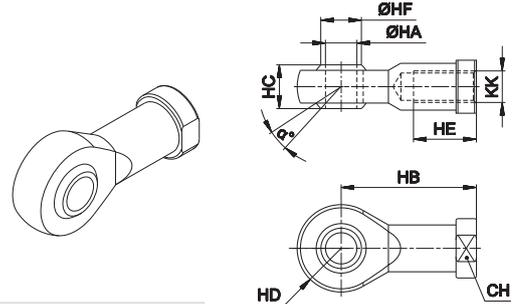
Female fork with clips



Material: Zinc-plated steel

Ø	CE	CK	CL	CM	ER	KK	L	LE	Mass	Part No.
	B12									
8 - 10	16	4	8	4	5	M4x0,7	11	8	7	MF-15008
12 - 16	24	6	12	6	7	M6x1	16	12	19	MF-15012
20	32	8	16	8	10	M8x1,25	22	16	46	MF-15020
25	40	10	20	10	16	M10x1,25	26	20	90	KF-15032

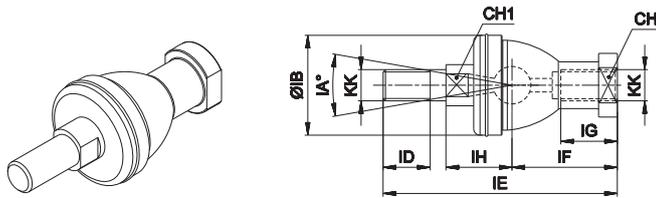
Articulated self-lubricating fork



Material: Zinc-plated steel

Ø	α°	CH	KK	HA	HB	HC	HD	HE	HF	Mass	Part No.
				H7							
8 - 10	13°	9	M4x0,7	5	27	8	9	10	7,7	18	MF-17008
12 - 16	13°	11	M6x1	6	30	9	10	12	9	26	MF-17012
20	14°	14	M8x1,25	8	36	12	12	16	10,4	46	MF-17020
25	13°	17	M10x1,25	10	43	14	14	20	12,9	76	KF-17032

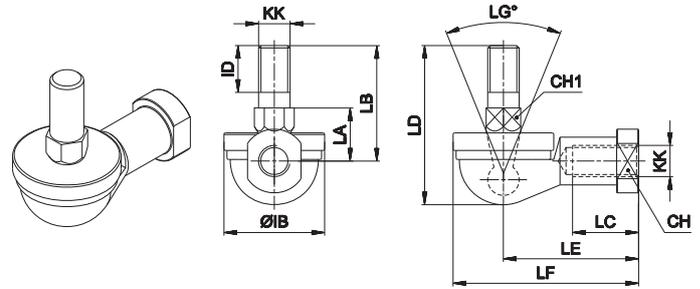
Fork with axially mounted articulated pin



Material: Zinc-plated steel

Ø	CH	CH1	IA°	KK	IH	IB	ID	IE	IF	IG	Mass	Part No.
					±0,3							
8 - 10	-	-	-	-	-	-	-	-	-	-	-	-
12 - 16	11	8	30°	M6x1	12,2	22	11	55,2	28	15	40	MF-22016
20	14	10	30°	M8x1,25	16	28	12	65	32	16	75	MF-22020
25	17	11	30°	M10x1,25	19,5	32	15	74,5	35	18	120	KF-22025

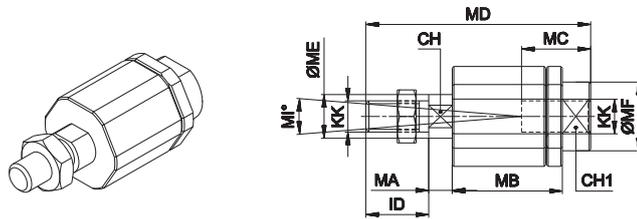
Fork with angle mounted articulated pin



Material: Zinc-plated steel

Ø	CH	CH1	LG°	KK	IB	ID	LA	LB	LC	LD	LE	LF	Mass	Part No.
							±0,3							
8 - 10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12 - 16	11	8	50°	M6x1	22	11	11	26	14	35,5	30	40	37	MF-23012
20	14	10	50°	M8x1,25	28	12	14	31	17	42,5	36	48	67	MF-23020
25	17	11	50°	M10x1,25	32	15	17	37	21	50,5	43	57	110	KF-23025

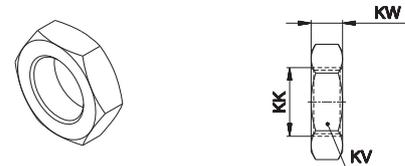
Floating joint



Material: Zinc-plated steel

Ø	CH	CH1	ID	KK	MA	MB	MC	MD	ME	MF	MG	MH	MI°	Mass	Part No.
12 - 16	5	7	11	M6x1	2,5	17,5	12,5	35	6	8,5	13	14,5	6°	35	MF-24012
20	7	11	21	M8x1,25	5	26	16	57	8	12,5	17	19	8°	60	MF-24020
25	12	19	20	M10x1,25	7,5	35	22	71,5	14	22	30	32	8°	220	KF-24032

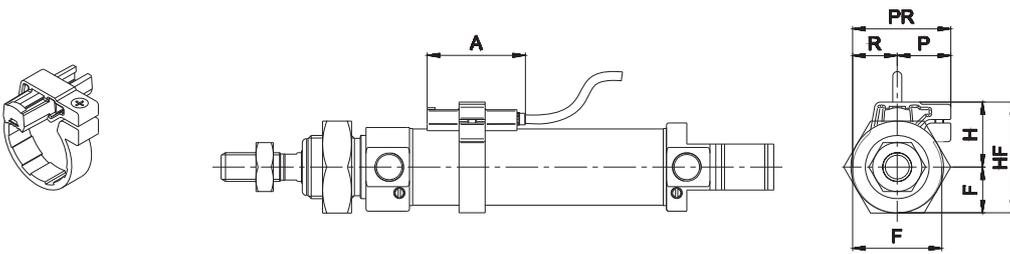
Nut for piston rod



Material: Zinc-plated steel

Ø	KK	KV	KW	Mass	Part No.
8 - 10	M4x0,7	7	2,8	0,2	MF-16008
12 - 16	M6x1	10	4	1,6	MF-16012
20	M8x1,25	13	5	3,4	MF-16020
25	M10x1,25	17	6	5	KF-16032

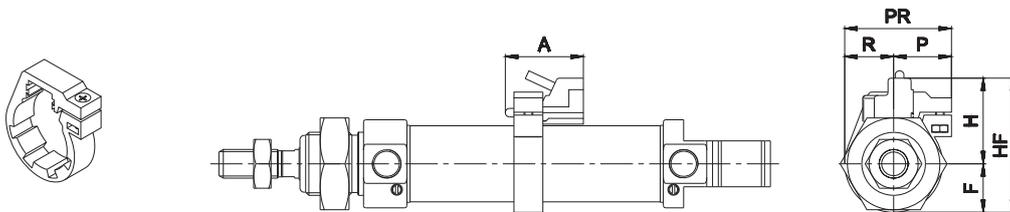
DF sensor fixing elements



Ø	A	F	H	HF	P	R	PR	Part No.
10	34	8	17	25	15	8	23	DH-M10DF
12	34	8	17	25	15	8	23	DH-M12DF
16	34	11	18	29	17	11	28	DH-M16DF
20	34	12	20	32	17	12	29	DH-M20DF
25	34	16	23	39	19	16	35	DH-M25DF

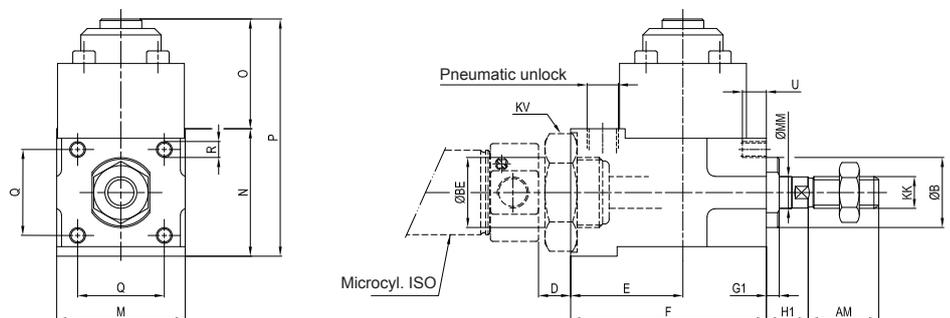
DH sensor fixing elements

1  
CYLINDERS

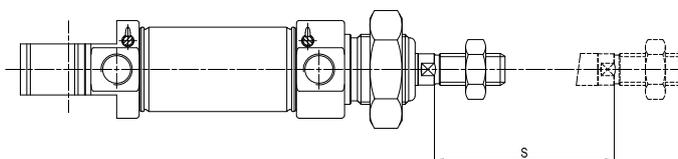


Ø	A	F	H	HF	P	R	PR	Part No.
10	24	12,5	22,5	35	17	10	27	DH-M10
12	24	11,5	23,5	35	17	10	27	DH-M12
16	24	15	25	40	18	13	31	DH-M16
20	24	19	27	46	18	17	29	DH-M20
25	24	18	30	48	20	17	37	DH-M25

Locking unit for Microcylinders Ø 16 - 20 - 25 mm



> Additional length to standard rod



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

# KL

## Ø 32 ÷ 125 mm - ISO 15552 Pneumatic cylinders

- New design of the profile for easier cleaning
- Grooves for recessed sensors and connections on one side for easy installation
- Traditional UNIVER technology to ensure strength and reliability
- Dimensions complying with international standards for a full interchangeability

Available ATEX version upon request



### TECHNICAL CHARACTERISTICS

Working temperature	-20 ÷ 80 °C
Fluid	filtered air, with or without lubrication
Working pressure	1,5 ÷ 10 bar
Bores	Ø 32 - 40 - 50 - 63 - 80 - 100 - 125 mm
Cushionings	adjustable in both sides

### CONSTRUCTIVE CHARACTERISTICS

End-caps	die-cast aluminium (painted)
Barrel	anodized aluminium
Piston	die-cast aluminium
Guide slide	acetalic resin
Piston rod	chromium-plated steel standard, stainless steel, rolled AISI 303
Piston seal	double-lip seal in nitrile rubber (NBR)
Guide bush for piston rod	UNIVER Original self-lubricating and self-aligning
Shock absorber seals	nitrile rubber (NBR) in both sides
Magnet	plasto-ferrite (standard supplied)

### CODIFICATION KEY

K	L	2	0	0	0	3	2	0	0	5	0		M	
1	2	3	4		5			6	7	8				

1 Series	2 Type	3 Version	4 Bore (mm)
KL = Ø 32÷125 mm - ISO 15552 Pneumatic cylinders	1 = Stainless steel piston rod 2 = Chromium-plated steel piston rod	00 = D.A. Standard version 01 = D.A. Through piston rod 60 = S.A. Retracted piston rod Max stroke 50 mm 70 = S.A. Extended piston rod Max stroke 50 mm  D.A. = Double acting S.A. = Single acting	032 = Ø32    080 = Ø80 040 = Ø40    100 = Ø100 050 = Ø50    125 = Ø125 063 = Ø63
5 Stroke (mm)	6 Option	7 Magnetic	8 Atex option
0025 = 25    0150 = 150    0320 = 320    0700 = 700 0050 = 50    0160 = 160    0350 = 350    0800 = 800 0075 = 75    0175 = 175    0400 = 400    0900 = 900 0080 = 80    0200 = 200    0450 = 450    1000 = 1000 0100 = 100    0250 = 250    0500 = 500 0125 = 125    0300 = 300    0600 = 600	F = Preset for locking unit reduced protrusion G = Preset for locking unit ISO protrusion	M = Magnetic version standard supplied	X = Atex (upon request)  See ATEX Catalogue for types and versions

Versions with high temperature seals (Max 120°C) and version with low temperature seals (Max -40°C) available upon request

Stroke tolerances

Ø	stroke ≤ 500	501 ≤ stroke ≤ 1000
	mm	mm
32	+2 - 0	+3,2 - 0
40	+2 - 0	+3,2 - 0
50	+2 - 0	+3,2 - 0
63	+2,5 - 0	+4 - 0
80	+2,5 - 0	+4 - 0
100	+2,5 - 0	+4 - 0
125	+4 - 0	+5 - 0

Single acting cylinder  
Theoretical forces (N) for return stroke

Ø	Max force	Min. force
	stroke 50 mm	stroke 50 mm
32	52	28
40	70	42,5
50	98	48
63	98	48
80	140	80
100	140	80
125	235	175

Theoretical forces (N)  
at different working pressure (bar)

Ø	Surface area		Working pressure					Working pressure				
	mm²		bar					bar				
	Thrust	Traction	Thrust					Traction				
			2	4	6	8	10	2	4	6	8	10
32	804	691	161	322	482	643	804	138	276	414	553	691
40	1256	1056	251	502	754	1005	1256	211	422	633	844	1055
50	1962	1649	393	785	1178	1570	1963	330	660	990	1320	1650
63	3116	2802	623	1246	1869	2493	3116	560	1120	1680	2240	2800
80	5024	4533	1005	2010	3014	4019	5024	907	1814	2722	3629	4536
100	7850	7359	1570	3140	4710	6280	7850	1472	2944	4416	5888	7360
125	12266	11462	2453	4906	7359	9812	12266	2294	4588	6882	9176	11470

Cushion

Ø	Length	Max kinetic energy absorption
	mm	Nm
32	18	1,8
40	24	2,5
50	24	4,5
63	30	8
80	30	12
100	35	21
125	35	36

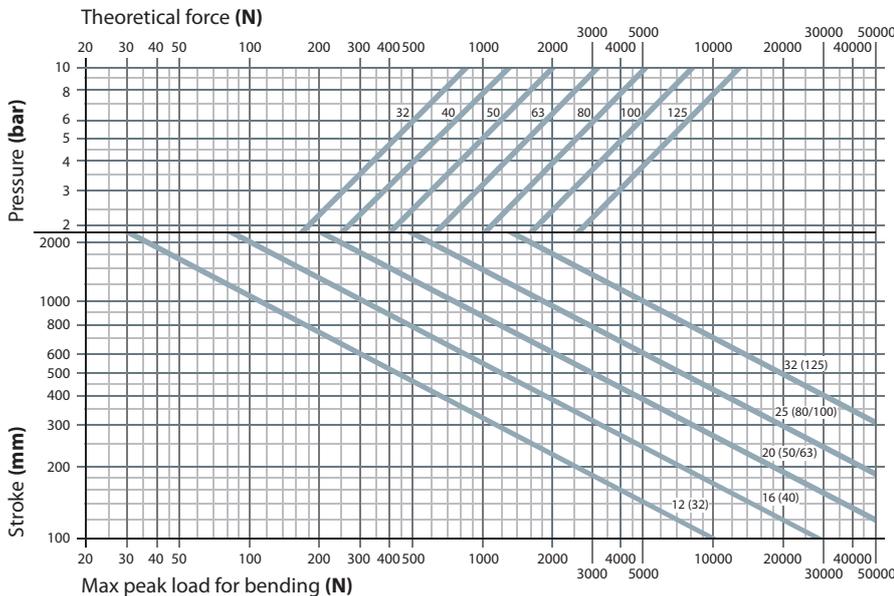
Mass - Standard cylinder

Ø	Cylinder - stroke 0	Increase per mm stroke	Moving element - stroke 0	Increase per mm stroke
	g	g	g	g
32	480	2,05	130	0,9
40	710	3,06	250	1,6
50	1180	4,28	440	2,5
63	1740	4,91	550	2,5
80	2740	7,20	970	3,9
100	3920	8,00	1190	3,9
125	6830	12,40	2200	6,3

Mass- Through piston rod cylinder

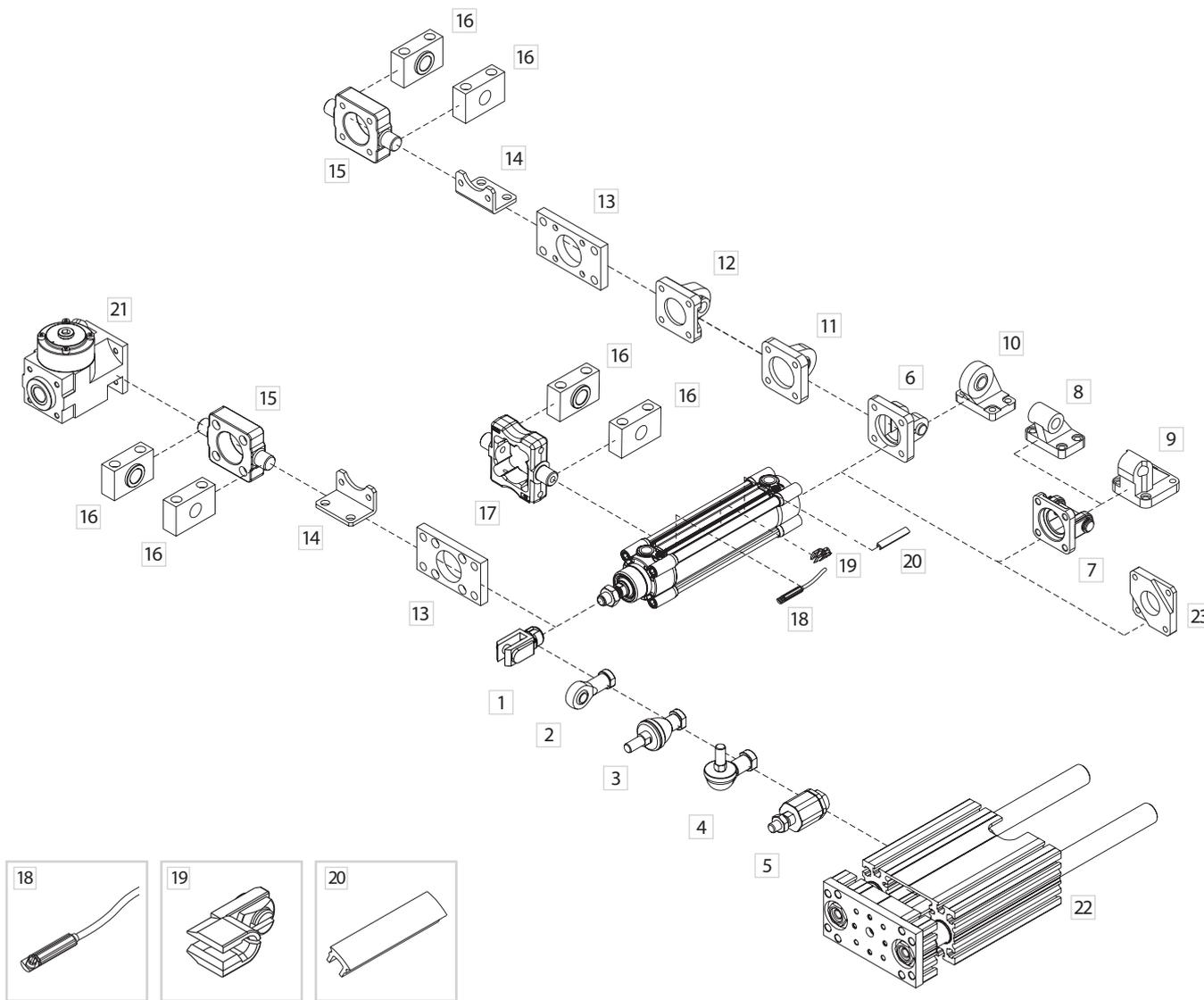
Ø	Cylinder - stroke 0	Increase per mm stroke	Moving element - stroke 0	Increase per mm stroke
	g	g	g	g
32	550	2,92	190	1,8
40	850	4,62	360	3,2
50	1440	6,72	640	4,9
63	2010	7,36	740	4,9
80	3190	11,0	1350	7,6
100	4460	11,8	1570	7,6
125	7810	18,53	3050	12,4

Graph of theoretical forces/pressure  
and acceptable strokes depending on maximum peak load



1  
CYLINDERS

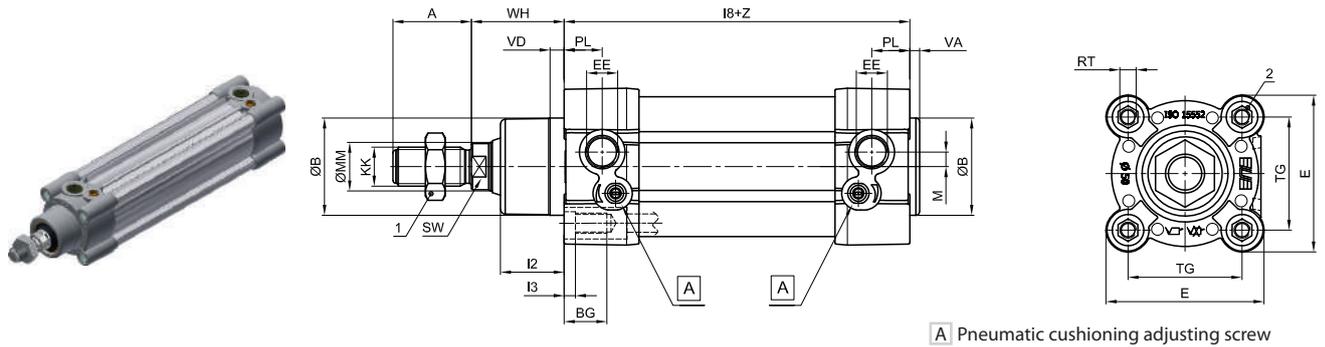
Fixing elements and accessories



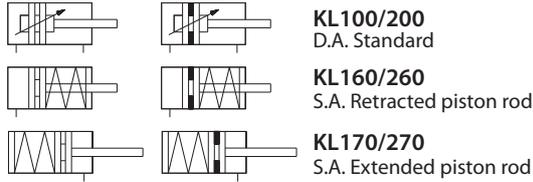
1  
CYLINDERS

DESCRIPTION	NOTE	PART NO.
1 Female fork with clips		KF-15 ___
2 Articulated self-lubricating fork		KF-17 ___
3 Fork with axially mounted articulated pin		KF-22 ___
4 Fork with angle-mounted articulated pin		KF-23 ___
5 Floating joint		KF-24 ___
6 Narrow female hinge with pin (DIN648K)		KF-10 ___ AS
7 Female hinge (ISO MP2) with pin		KF-10 ___ A
8 Counter-hinge 90° (CETOP RP107P)		KF-19 ___ CTA
9 Counter-hinge 90°		KF-19 ___
10 Articulated counter-hinge (DIN648K)		KF-19 ___ SC
11 Articulated rear male hinge (ISO MP6)		KF-11 ___ S
12 Rear male hinge (ISO MP4)		KF-11 ___
13 Front - rear flange (ISO MF1-MF2)		KF-12 ___
14 Angle bracket (ISO MS1)		KF-13 ___
15 Front - rear hinge with floating pin		KF-14 ___ AP
16 Support for hinges		KF-41 ___
17 ISO intermediate hinge (ISO MT4)		KLF-14 ___
18 DF magnetic sensor (see accessories section)		DF- ___
19 Cable clamping for DF sensor (see accessories section)		DF-001
20 DHF covering strip (see accessories section)		DHF-0020100
21 Locking unit		L1-N
22 Slide unit		J12
23 Flange for opposed cylinders		KF-36 ___

### Double acting/Single acting

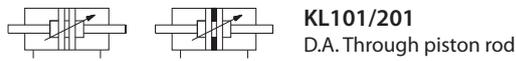
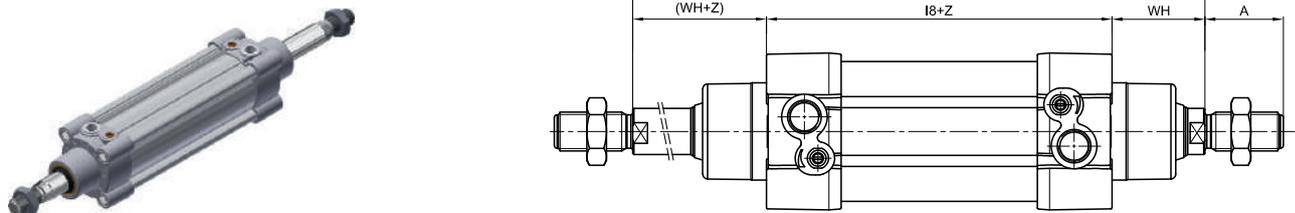


A Pneumatic cushioning adjusting screw



For extended rod version add **WH+Z** (stroke) dimensions

### Double acting through piston rod



KL101/201  
D.A. Through piston rod

Z= Stroke

Ø	A	ØB	BG	E+0,5	KK	I2	I3	I8	PL	RT	SW	TG	VA	VD	WH	ØMM	EE	M	1	2	ZM
32	22	30	16	46,5	M10x1,25	16	5	94 ±0,4	14	M6	10	32,5 ±0,5	3,5	5	26	12	G1/8	4,4	17	6	146
40	24	35	16	52	M12x1,25	20	5	105 ±0,7	16	M6	13	38 ±0,5	4	5,5	30	16	G1/4	5	19	6	165
50	32	40	17	64,5	M16x1,5	26	6	106 ±0,7	15,5	M8	17	46,5 ±0,6	4	6	37	20	G1/4	6	24	8	180
63	32	45	18	76,5	M16x1,5	26	6	121 ±0,8	17,5	M8	17	56,5 ±0,7	4	6	37	20	G3/8	8	24	8	195
80	40	45	20	95	M20x1,5	32	7	128 ±0,8	20	M10	22	72 ±0,7	4	8	46	25	G3/8	7,5	30	10	220
100	40	55	20	114	M20x1,5	35	7	138 ±1	20,5	M10	22	89 ±0,7	4	8	51	25	G1/2	9	30	10	240
125	54	60	24	140	M27x2	45	8	160 ±1	20,5	M12	27	110 ±1,1	5,5	10	65	32	G1/2	11	41	12	290

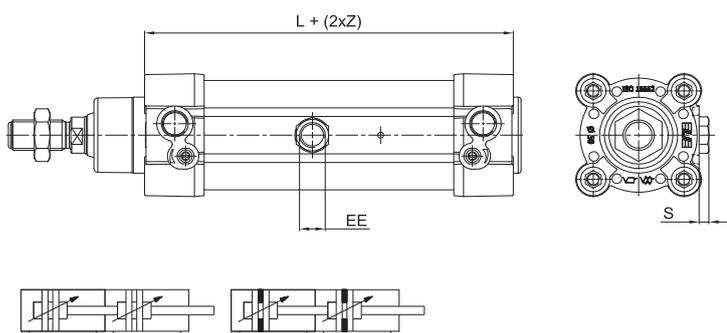
1  
CYLINDERS

## Tandem version

### CODIFICATION KEY

K	L	2	A	0	3	2	0	5	0	M
1	2	3	4	5						

1 Series	2 Type	3 Bore (mm)	4 Stroke (mm)	5 Magnetic
KL = Ø 32÷125 mm - ISO 15552 Pneumatic cylinders Magnetic version standard supplied	<b>1A</b> = Double thrust tandem only for forward movement, stainless steel piston rod <b>2A</b> = Double thrust tandem only for forward movement, chromium-plated steel piston rod <b>1D</b> = Double thrust tandem only for reverse movement, stainless steel piston rod <b>2D</b> = Double thrust tandem only for reverse movement, chromium-plated steel piston rod	<b>032</b> = Ø32 <b>080</b> = Ø80 <b>040</b> = Ø40 <b>100</b> = Ø100 <b>050</b> = Ø50 <b>125</b> = Ø125 <b>063</b> = Ø63	Upon request	<b>M</b> = Magnetic version (standard supplied)



Ø	Z = Stroke		
	EE	L	S Max
32	G1/8	169	3
40	G1/4	189	5
50	G3/8	175	4
63	G3/8	195	7
80	G1/2	211	6
100	G1/2	224	9
125	G1/2	251	9

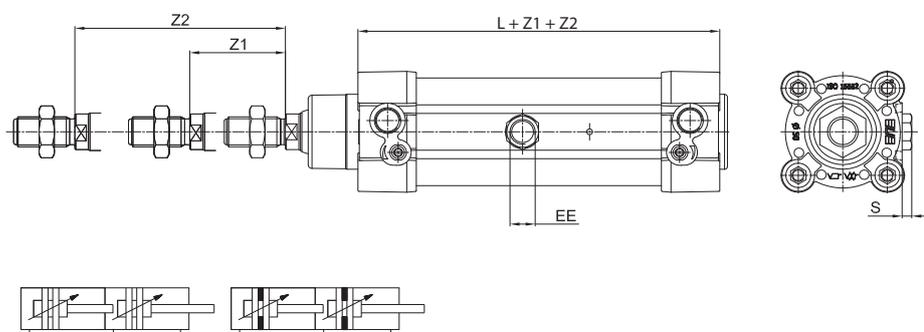
Tandem cylinders are constructed using two pistons coupled together which provide double the force in forward movement compared to the traditional ISO cylinders of the same bore size.

## Two-position tandem version

### CODIFICATION KEY

K	L	2	B	0	3	2	0	5	0	0	7	0	M
1	2	3	4	5	6								

1 Series	2 Type	3 Bore (mm)	4 Stroke Z1 (mm)	5 Stroke Z2 (mm)	6 Magnetic
KL = Ø 32÷125 mm - ISO 15552 Pneumatic cylinders Magnetic version standard supplied	<b>1B</b> = Two-position tandem, stainless steel <b>2B</b> = Two-position tandem, chromium-plated steel	<b>032</b> = Ø32 <b>080</b> = Ø80 <b>040</b> = Ø40 <b>100</b> = Ø100 <b>050</b> = Ø50 <b>125</b> = Ø125 <b>063</b> = Ø63	Stroke of rear cylinder (upon request)	Stroke of head cylinder (upon request)	<b>M</b> = Magnetic version (standard supplied)



Ø	Z = Stroke		
	EE	L	S Max
32	G1/8	166	3
40	G1/4	186	5
50	G1/4	172	4
63	G3/8	192	7
80	G3/8	208	6
100	G1/2	221	9
125	G1/2	248	9

Two-position cylinders with two independent piston-rods which allow to realize a double positioning in which the thrust forces are the same as those of an ISO cylinder of the same bore size.

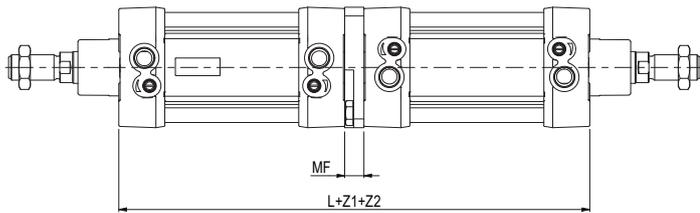
For all other dimensions please refer to the standard version.  
For other types of cylinders kindly contact our sales office.

## Opposed tandem version

### CODIFICATION KEY

K	L	2	C	0	3	2	0	3	0	0	5	0	M
1	2	3	4	5	6								

1 Series	2 Type	3 Bore (mm)	4 Stroke Z1 (mm)	5 Stroke Z2 (mm)	6 Magnetic
KL = Ø 32÷125 mm - ISO 15552 Pneumatic cylinders Magnetic version standard supplied	1C = Opposed tandem, stainless steel  2C = Opposed tandem, chromium-plated steel	032 = Ø32 080 = Ø80 040 = Ø40 100 = Ø100 050 = Ø50 125 = Ø125 063 = Ø63	Stroke 1 (upon request)	Stroke 2 (upon request)	M = Magnetic version (standard supplied)



Z = Stroke

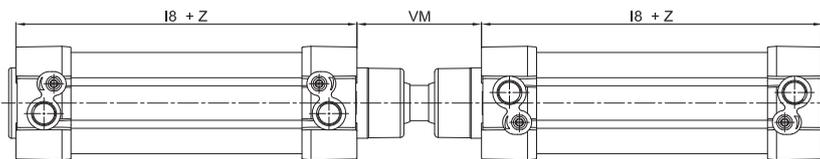
Ø	L	MF
32	198	10
40	220	10
50	227	15
63	257	15
80	271	15
100	291	15
125	335	15



Type of cylinder characterized by the coupling of two cylinders and whose piston rods move in opposite directions. The values of the thrust force are the same as those of the traditional cylinders.

1  
CYLINDERS

## With common piston rod tandem version (upon request)



Z = Stroke

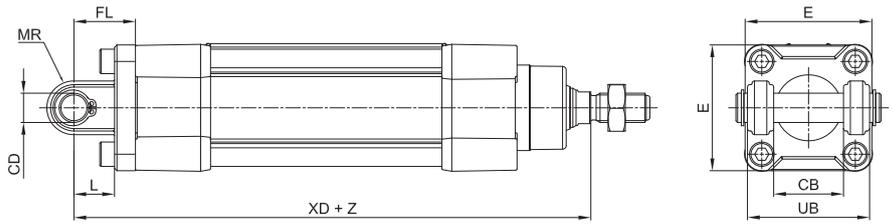
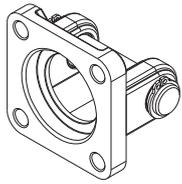
Ø	l8	VM
32	94 ±0,4	48
40	105 ±0,7	54
50	106 ±0,7	69
63	121 ±0,8	69
80	128 ±0,8	86
100	138 ±1	91
125	160 ±1	119



Two coupled cylinders with common piston rod  
The values of the thrust force are the same as those of the traditional cylinders.

For all other dimensions please refer to the standard version.  
For other types of cylinders kindly contact our sales office

Female hinge (ISO MP2) with pin

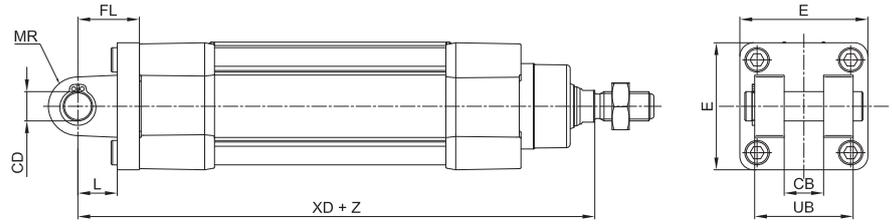
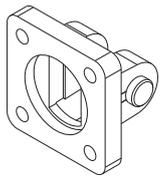


Material: Aluminium, zinc-plated steel pin

Z = Stroke

Ø	CB	CD	E	FL	L	MR	UB	XD		Mass	Part no.
	H14	H9		± 0,2	min.	Max	h14			g	
32	26	10	48	22	12	11	45	142	±1,25	75	KF-10032A
40	28	12	54	25	15	13	52	160	±1,25	110	KF-10040A
50	32	12	65	27	15	13	60	170	±1,25	150	KF-10050A
63	40	16	75	32	20	17	70	190	±1,6	270	KF-10063A
80	50	16	95	36	20	17	90	210	±1,6	420	KF-10080A
100	60	20	115	41	25	21	110	230	±1,6	765	KF-10100A
125	70	25	140	50	30	26	130	275	±2	1445	KF-10125A

Narrow female hinge with pin (DIN648K)

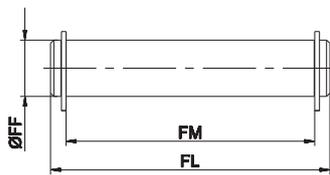


Material: Aluminium, zinc-plated pin

Z = Stroke

Ø	CB	CD	E	FL	L	MR	UB	XD		Mass	Part no.
	H14	H9		± 0,2	min.	Max	h14			g	
32	14	10	45	22	10	10	34	142	±1,25	68	KF-10032AS
40	16	12	52	25	16	12	40	160	±1,25	112	KF-10040AS
50	21	16	65	27	16	14	45	170	±1,5	196	KF-10050AS
63	21	16	75	32	21	18	51	190	±1,6	288	KF-10063AS
80	25	20	95	36	22	20	65	210	±1,6	566	KF-10080AS
100	25	20	115	41	27	22	75	230	±1,6	818	KF-10100AS
125	37	30	140	50	30	25	97	275	±2	1706	KF-10125AS

Pin for female hinge



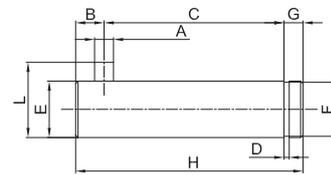
Including 2 circlips

Material: Zinc-plated steel

Ø	FF	FL	FM	Mass	Part no.*
	f8			g	
32	10	53	46	30	KF-18032
40	12	61,3	53	50	KF-18040
50	12	69	61	50	KF-18050
63	16	80,5	71	120	KF-18063
80	16	100,5	91	150	KF-18080
100	20	122,5	111	290	KF-18100
125	25	140	131	1530	KF-18125

\* = Pin for part no. KF-10...

Pin for narrow female hinge

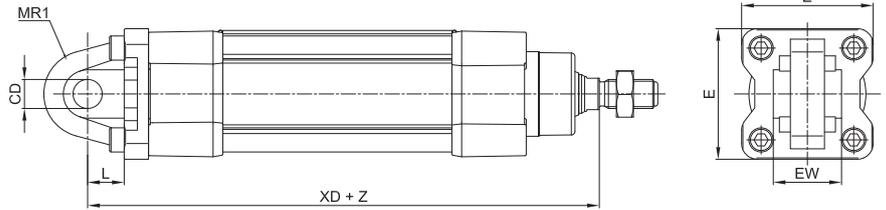
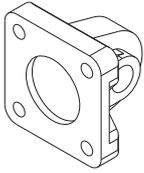


Including circlip

Material: Zinc-plated steel

Ø	A	C	D	E	F	G	H	L	B	Mass	Part no.
	H12	<sup>+0,5</sup> / <sub>+0,3</sub>	h13	f7	h11			<sup>0</sup> / <sub>-0,5</sub>			
32	3	32,5	1,1	10	9,6	4	41	14	4,5	26	KF-18032S
40	4	38	1,1	12	11,5	4	48	16	6	42	KF-18040S
50	4	43	1,1	16	15,2	5	54	20	6	84	KF-18050S
63	4	49	1,1	16	15,2	5	60	20	6 <sup>0</sup> / <sub>-1</sub>	94	KF-18063S
80	4	63	1,3	20	19	6	75	24	6	184	KF-18080S
100	4	73	1,3	20	19	6	85	24	6	208	KF-18100S
125	6	94	1,6	30	28,6	7	110	36	9 <sup>0</sup> / <sub>-2</sub>	606	KF-18125S

Rear male hinge (ISO MP4)



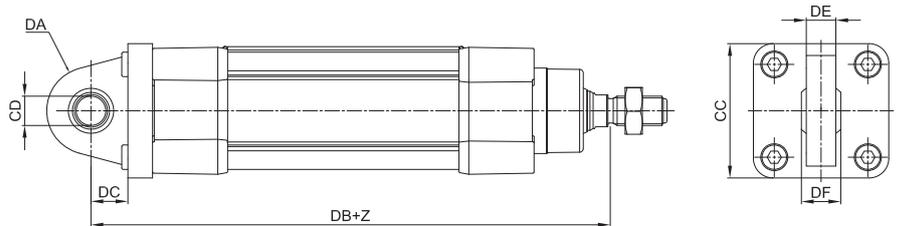
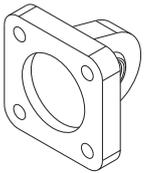
Material: Aluminium

Z = Stroke

Ø	CD	E	EW		L	MR1	XD		Mass	Part no.
	H9						min.			
32	10	48	26	-0,2 / -0,6	12	15*	142	±1,25	80	KF-11032
40	12	54	28	-0,2 / -0,6	15	18*	160	±1,25	100	KF-11040
50	12	65	32	-0,2 / -0,6	15	20*	170	±1,25	170	KF-11050
63	16	75	40	-0,2 / -0,6	20	23*	190	±1,6	250	KF-11063
80	16	95	50	-0,2 / -0,6	20	27*	210	±1,6	420	KF-11080
100	20	115	60	-0,2 / -0,6	25	29,5*	230	±1,6	660	KF-11100
125	25	140	70	-0,5 / -1,2	30	26	275	±2	1500	KF-11125

\* = Non-standard dimension

Articulated rear male hinge (ISO MP6)

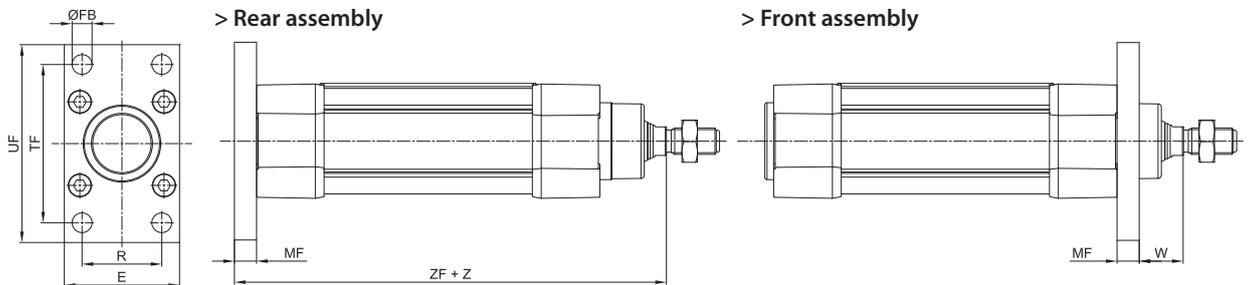
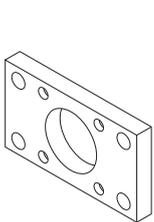


Material: Aluminium

Z = Stroke

Ø	CC	CD	DA	DB	DC	DE	DF	Mass	Part no.
		H9							
32	48	10	15	142	14	10,5	14	100	KF-11032S
40	54	12	18	160	16,5	12	16	200	KF-11040S
50	65	12	20	170	17,5	12	16	300	KF-11050S
63	75	16	21	190	21,5	15	21	350	KF-11063S
80	95	16	27	210	24	15	21	1600	KF-11080S
100	115	20	29,5	230	28	18	25	700	KF-11100S
125	140	30	40	275	30	25	37	1410	KF-11125S

Front/rear flange (ISO MF1-MF2)

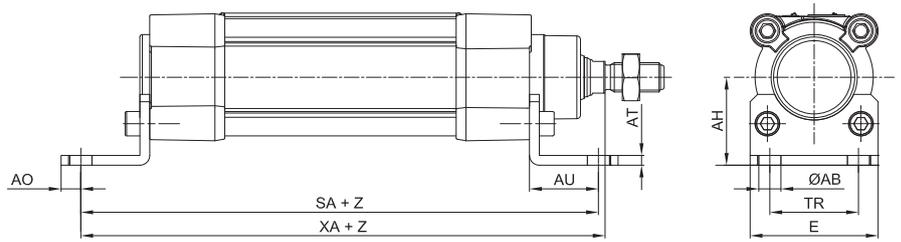
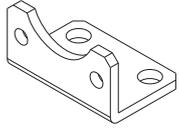


Material: Zinc-plated steel

Z = Stroke

Ø	E	ØFB	MF	R	TF	UF	W	ZF		Mass	Part no.	
		H13			JS14			JS14	Max			
32	45	7	±0,2	JS14	JS14	Max	16	±1,6	130	±1,25	200	KF-12032
40	52	9	±0,2	JS14	JS14	Max	20	±1,6	145	±1,25	250	KF-12040
50	65	9	±0,2	JS14	JS14	Max	25	±2	155	±1,25	500	KF-12050
63	75	9	±0,2	JS14	JS14	Max	25	±2	170	±1,6	650	KF-12063
80	95	12	±0,2	JS14	JS14	Max	30	±2	190	±1,6	1500	KF-12080
100	115	14	±0,2	JS14	JS14	Max	35	±2	205	±1,6	2200	KF-12100
125	140	16	±0,2	JS14	JS14	Max	45	±2,5	245	±2	4100	KF-12125

Angle bracket (ISO MS1)

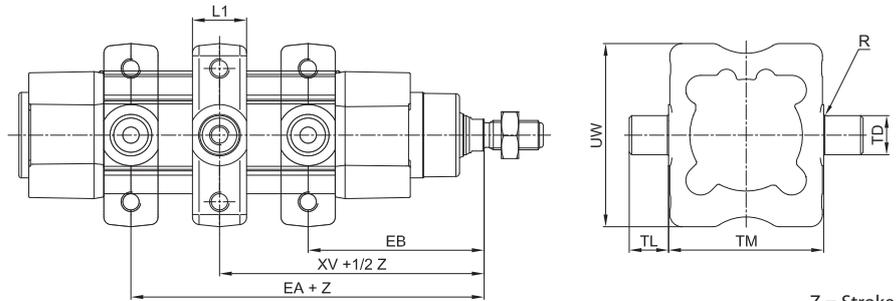
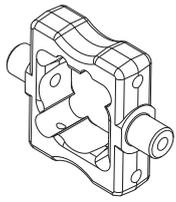


Material: Zinc-plated steel

Z = Stroke

Ø	ØAB	AH	AO	AT	AU	E	SA	TR	XA	Mass	Part no.		
	H13	JS15			±0,2			JS14		g			
32	7	32	6	4	24	45	142	±1,25	32	144	±1,25	55	KF-13032
40	9	36	8	4	28	52	161	±1,25	36	163	±1,25	80	KF-13040
50	9	45	10	5	32	64	170	±1,25	45	175	±1,25	146	KF-13050
63	9	50	12	5	32	74	185	±1,6	50	190	±1,6	175	KF-13063
80	12	63	15	6	41	94	210	±1,6	63	215	±1,6	390	KF-13080
100	14	71	20	6	41	114	220	±1,6	75	230	±1,6	525	KF-13100
125	16	90	15	8	45	140	250	±2	90	270	±2	1040	KF-13125

ISO intermediate hinge (ISO MT4)



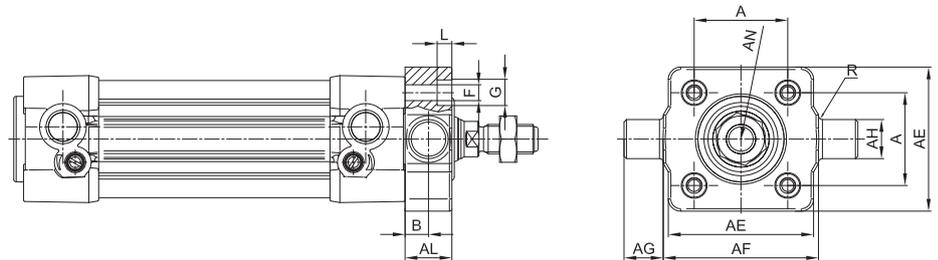
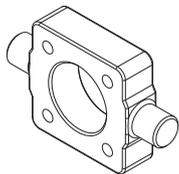
Material: Zinc-plated steel

Z = Stroke

Ø	EA	EB	L1	R	TD	TL	TM	UW	XV	Mass	Part no.	
	Max	min.			e9	h14	h14			g		
32	82	64	22	0,5	12	12	50	65	73	±2	20,2	KLF-14032
40	93	72	22	0,5	16	16	63	75	82,5	±2	34,8	KLF-14040
50	101	79	22	0,5	16	16	75	95	90	±2	53	KLF-14050
63	107	88	27,5	1	20	20	90	105	97,5	±2	79,2	KLF-14063
80	123	97	27,5	1,5	20	20	110	130	110	±2	118,6	KLF-14080
100	131	109	33	1	25	25	132	145	120	±2	179,2	KLF-14100
125	164	126	33	1	25	25	160	175	145	±2,5	251,2	KLF-14125

The dimension XV + 1/2 indicates the position of the hinge between the end-caps of the cylinder

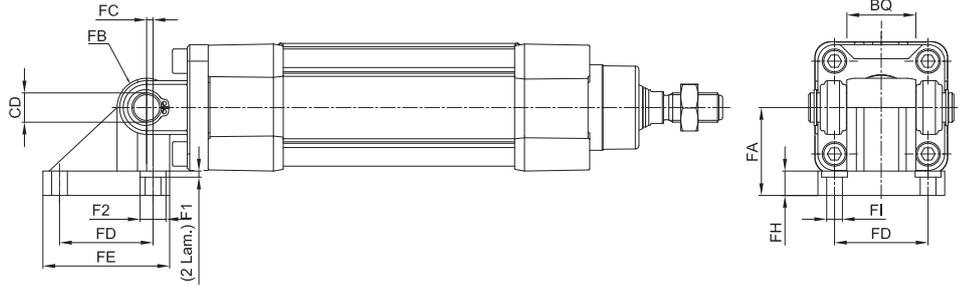
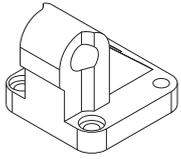
Front/rear hinge with floating pin



Material: Zinc-plated steel

Ø	AE	AL	AH	AG	AF	AN	A	B	F	G	L	R	Mass	Part no.
	Max	Max	e9	h14	h14	h11	±0,2	+0,2 0	H13	H13	+0,5 0	0 +0,3	g	
32	46	14	12	12	50	30	32,5	6,5	6,5	-	6	1	137	KF-14032AP
40	59	19	16	16	63	35	38	9	6,5	10,5	6	1,6	385	KF-14040AP
50	69	19	16	16	75	40	46,5	9	8,5	13,5	8	1,6	513	KF-14050AP
63	84	24	20	20	90	45	56,5	11,5	8,5	13,5	8	1,6	1041	KF-14063AP
80	102	24	20	20	110	45	72	11,5	10,5	16,5	10	1,6	1567	KF-14080AP
100	125	29	25	25	132	55	89	14	10,5	16,5	10	2	3000	KF-14100AP
125	155	32	25	25	160	133	110	-	13,5	20	12	2	2400	KF-14125AP

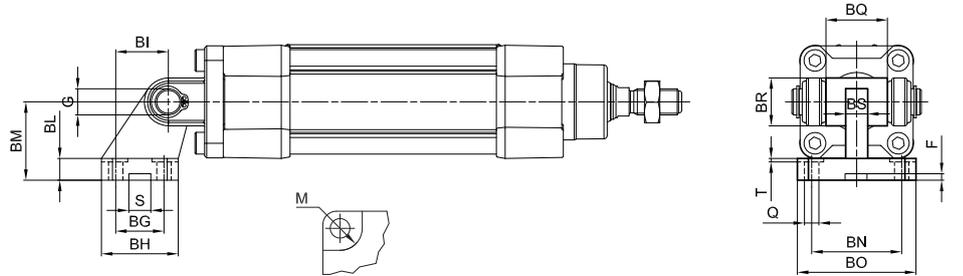
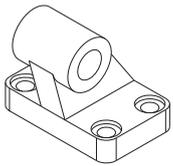
Counter hinge 90°



Material: Aluminium

Ø	CD	FA	FB	FC	FD	FE	FH	FI	F1	F2	BQ	Mass	Part no.
	H9												
32	10	32	10	1,2	32,5	46,5	9	6,4	5,5	10,5	26	90	KF-19032
40	12	36	12	2,6	38	51,5	9	6,4	5,5	10,5	28	120	KF-19040
50	12	45	12	0,3	46,5	63,5	9	8,4	5	13,5	32	200	KF-19050
63	16	50	16	3,3	56,5	73,5	10,5	8,4	5	13,5	40	320	KF-19063
80	16	63	16	1,0	72	93	12	10,5	4,5	16,5	50	580	KF-19080
100	20	73	20	2,5	89	113	13	10,5	4,5	16,5	60	910	KF-19100

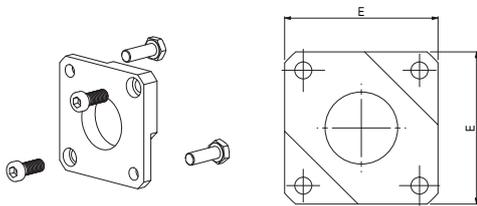
Counter hinge 90° (CETOP RP107P)



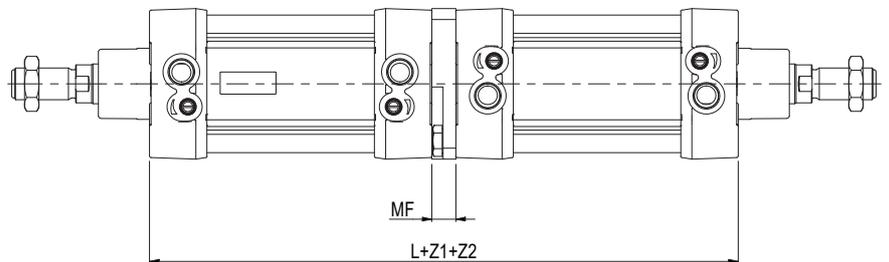
Material: Aluminium

Ø	Q	M	BG	BH	BI	BL	BM	BN	BO	BS	BR	T	G	S	F	BQ	Mass	Part no.
	H13	H13	JS14	Max	JS14	JS15	JS14	Max	Max	Max	Max	Max	H9	+0,5/0	+0,5/0			
32	6,6	11	18	31	21	8	32	38	51	10	20	1,6	10	10,5	3	26	56	KF-19032CTA
40	6,6	11	22	35	24	10	36	41	54	15	22	1,6	12	10,5	3	28	139	KF-19040CTA
50	9	15	30	45	33	12	45	50	65	16	26	1,6	12	10,5	3	32	142	KF-19050CTA
63	9	15	35	50	37	14	50	52	67	16	30	1,6	16	10,5	3	40	200	KF-19063CTA
80	11	18	40	60	47	14	63	66	86	20	30	2,5	16	10,5	3	50	321	KF-19080CTA
100	11	18	50	70	55	17	71	76	96	20	38	2,5	20	10,5	3	60	656	KF-19100CTA
125	14	20	60	90	70	20	90	94	124	30	45	3,2	25	10,5	3	70	826	KF-19125CTA

Flange for opposed cylinders

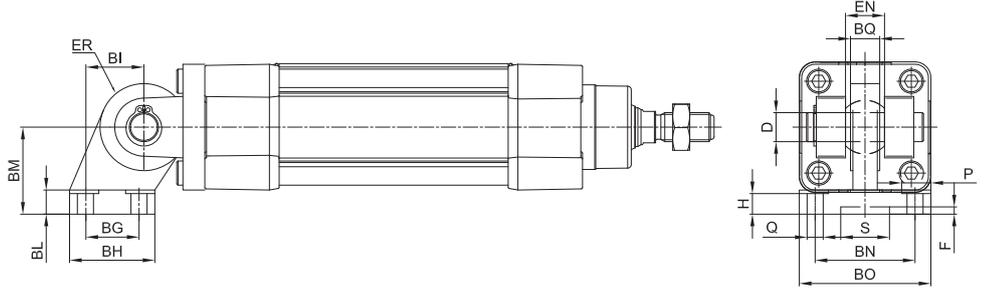
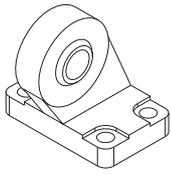


Fixing screws included



Ø	E	L	MF	Part no.
32	46,5	198	10	KF-36032
40	52	220	10	KF-36040
50	64,5	227	15	KF-36050
63	76,5	257	15	KF-36063
80	95	271	15	KF-36080
100	114	291	15	KF-36100
125	140	335	15	KF-36125

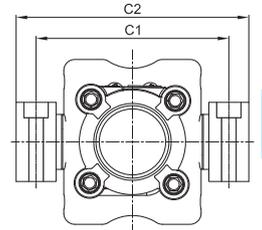
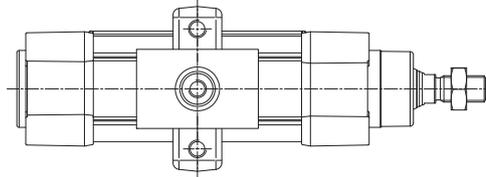
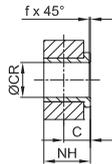
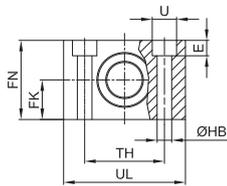
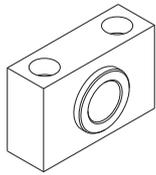
Articulated counter hinge (DIN648K)



Material: Aluminium

Ø	Q	P	BG	BH	BI	BL	BM	BN	BO	EN	ER	BQ	D	H	S	F	Mass	Part no.
	H13	H13	JS14	Max	JS15		JS15	JS14	Max	0/-0,1	Max	Max	H7	+0,5/0	H13		g	
32	6,6	11	18	31	21	10	32	38	51	14	15	10,5	10	8,5	20	3	178	KF-19032SC
40	6,6	11	22	35	24	10	36	41	54	16	18	12	12	8,5	20	3	268	KF-19040SC
50	9	15	30	45	33	12	45	50	65	21	20	15	16	10,5	20	3	458	KF-19050SC
63	9	15	35	50	37	12	50	52	67	21	23	15	16	10,5	20	3	550	KF-19063SC
80	11	18	40	60	47	14	63	66	86	25	27	18	20	11,5	20	3	970	KF-19080SC
100	11	18	50	70	55	15	71	76	96	25	30	18	20	12,5	20	3	1326	KF-19100SC
125	13,5	20	60	90	70	20	90	94	124	37	40	25	30	17	20	3	3000	KF-19125SC

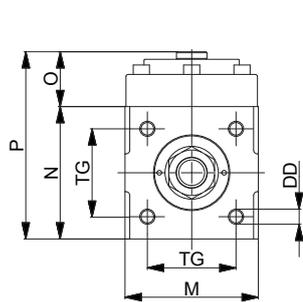
Hinge support



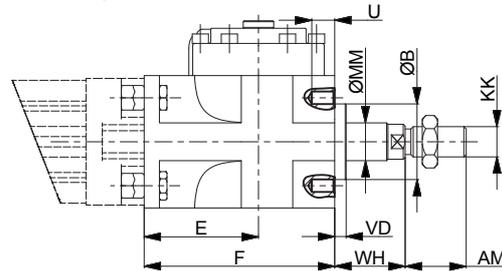
Material: Aluminium body and brass bushing

Ø	C	ØCR	FK	FN	ØHB	NH	TH	UL	ØU	E	f	C1	C2	Mass	Part no.
	H9	f7	±0,1				±0,1			±0,5				g	
32	10,5	12	15	30	6,6	18	32	46	11	7	1	71	86	100	KF-41032
40	12	16	18	36	9	21	36	55	15	9	1,6	87	105	150	KF-41040050
50	12	16	18	36	9	21	36	55	15	9	1,6	99	117	150	KF-41040050
63	13	20	20	40	11	23	42	65	18	11	1,6	116	136	234	KF-41063080
80	13	20	20	40	11	23	42	65	18	11	1,6	136	156	234	KF-41063080
100	16	25	25	50	14	28,5	50	75	20	13	2	164	189	435	KF-41100125
125	16	25	25	50	14	28,5	50	75	20	13	2	192	217	435	KF-41100125

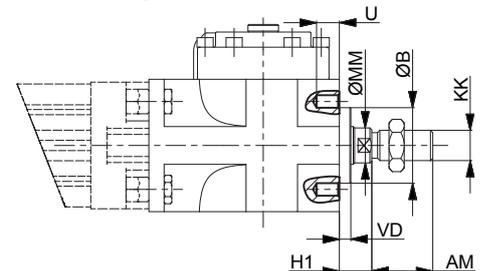
Locking unit for ISO cylinders Ø 32 ÷ 125



> ISO protrusion



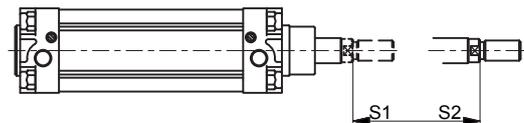
> Reduced protrusion



> Additional length to standard rod

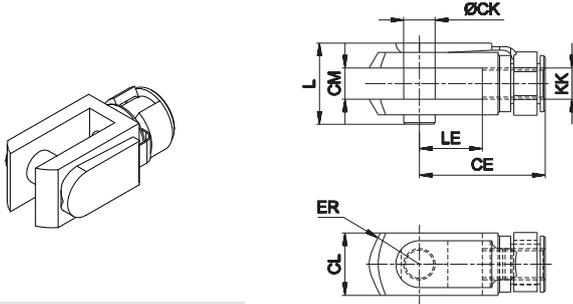
S<sub>1</sub> for ISO protrusion

S<sub>2</sub> for reduced protrusion



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

Female fork with clips

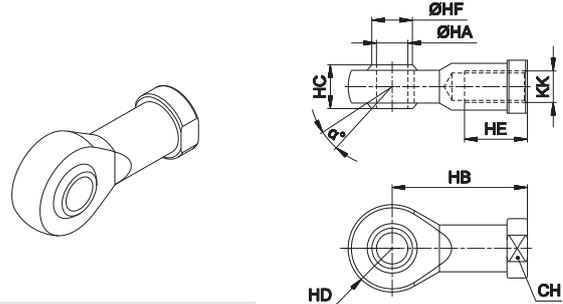


Material: Zinc-plated steel

Ø	CE	CK	CL	CM	ER	KK	L	LE	Mass g	Part no.
32	40	10	20	10	16	M10x1,25	26	20	90	KF-15032
40	48	12	24	12	19	M12x1,25	32	24	150	KF-15040
50 - 63	64	16	32	16	25	M16x1,5	40	32	340	KF-15050
80 - 100	80	20	40	20	32	M20x1,5	50	40	670	KF-15080
125	110	30	55	30	45	M27x2	65	54	1790	KF-15125

Fork with pin suitable for piston rod according to ISO 8140 standard

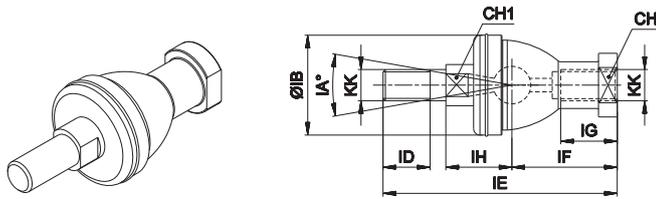
Articulated self-lubricating fork



Material: Zinc-plated steel

Ø	α°	CH	KK	HA	HB	HC	HD	HE	HF	Mass g	Part no.
32	13	17	M10x1,25	10	43	14	14	20	12,9	76	KF-17032
40	13	19	M12x1,25	12	50	16	16	22	15,4	110	KF-17040
50 - 63	15	22	M16x1,5	16	64	21	21	28	19,3	220	KF-17050
80 - 100	14	30	M20x1,5	20	77	25	25	33	24,3	400	KF-17080
125	17	41	M27x2	30	110	37	35	51	34,8	1119	KF-17125

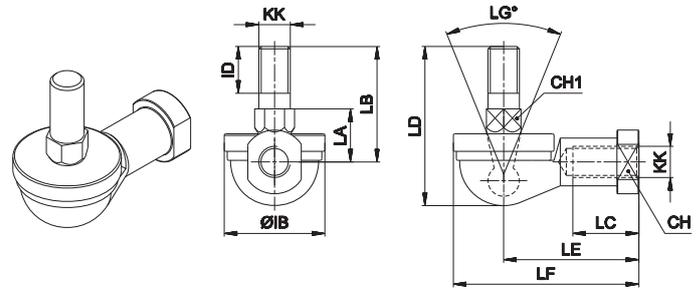
Fork with axially mounted articulated pin



Material: Zinc-plated steel

Ø	CH	CH1	IA°	KK	IH	IB	ID	IE	IF	IG	Mass g	Part no.
32	17	11	30	M10x1,25	19,5	32	15	74,5	35	18	120	KF-22025
40	19	17	30	M12x1,25	22	36	17	84	40	20	185	KF-22040
50 - 63	22	19	22	M16x1,5	27,5	47	23	112	50	27	360	KF-22050
80 - 100	30	24	15	M20x1,5	31,5	58	25	133	63	38	570	KF-22080
125	-	-	-	-	-	-	-	-	-	-	-	-

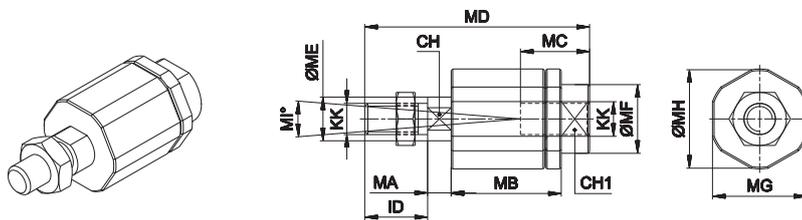
Fork with angle mounted articulated pin



Material: Zinc-plated steel

Ø	CH	CH1	LG°	KK	IB	ID	LA	LB	LC	LD	LE	LF	Mass g	Part no.
32	17	11	50	M10x1,25	32	15	17	37	21	50,5	43	57	110	KF-23025
40	19	17	50	M12x1,25	36	17	19	42	27	57,5	50	66	165	KF-23040
50 - 63	22	19	40	M16x1,5	47	23	23,5	60	33	79,5	64	84	330	KF-23050
80 - 100	30	24	32	M20x1,5	58	25	27	68	40	90	77	99	540	KF-23080
125	-	-	-	-	-	-	-	-	-	-	-	-	-	-

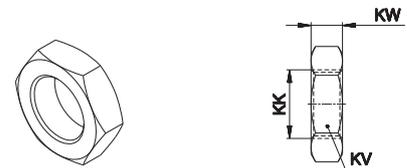
Floating joint



Material: Zinc-plated steel

Ø	CH	CH1	ID	KK	MA	MB	MC	MD	ME	MF	MG	MH	MI°	Mass g	Part no.
40	12	19	75	M12x1,25	5	35	20	75	14	22	30	32	8	230	KF-24040
50 - 63	20	30	103	M16x1,5	8	54	32	103	22	32	41	45	6	660	KF-24050
80 - 100	20	30	119	M20x1,5	8	54	40	119	22	32	41	45	6	700	KF-24080
125	24	54	54	M27x2	10	60	48	147	32	57	65	70	8	2060	KF-24125

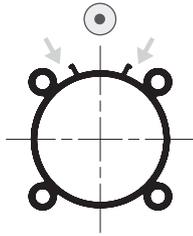
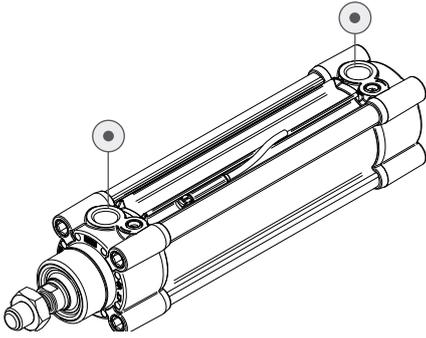
Piston rod locknut



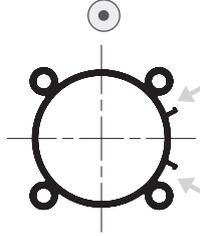
Material: Zinc-plated steel

Ø	KK	KV	KW	Mass g	Part no.
40	M12x1,25	19	7	10	KF-16040
50 - 63	M16x1,5	24	8	20	KF-16050
80 - 100	M20x1,5	30	9	30	KF-16080
125	M27x2	41	12	80	KF-16125

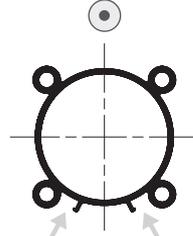
Slot positions for DF magnetic sensor



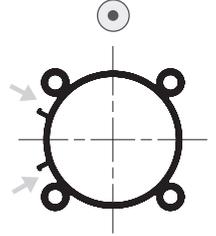
Supply port side standard



To the right of supply port side upon request



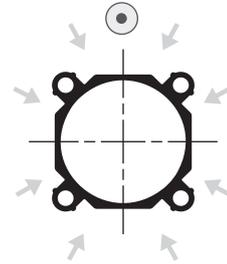
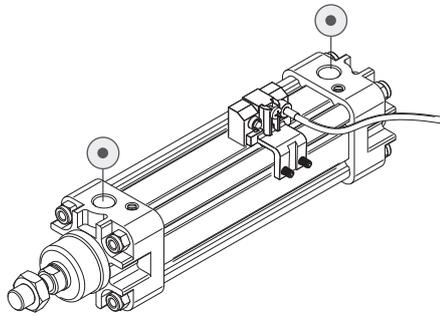
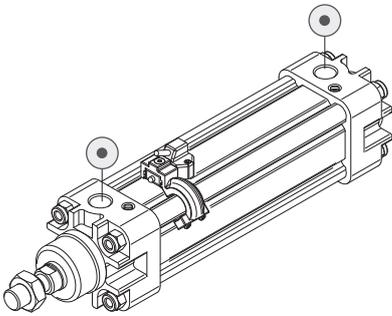
Opposite to the supply port side upon request



To the left of supply port side upon request

supply port

Slot positions for DH magnetic sensor - K cylinder series



standard on all sides

# KE

## Ø 32 ÷ 125 mm - Pneumatic Cylinders ISO 15552

- Clean profile heavy series
- High versatility even for more demanding users
- The UNIVER traditional technology grants strength and reliability
- Grooves for DF recessed sensors on one side

Available ATEX version upon request



### TECHNICAL CHARACTERISTICS

Working temperature	-20 ÷ 80 °C
Fluid	filtered air, with or without lubrication
Working pressure	1,5 ÷ 10 bar
Bores	Ø 32 - 40 - 50 - 63 - 80 - 100 - 125 mm
Cushionings	adjustable on both sides

### CONSTRUCTIVE CHARACTERISTICS

End caps	die-cast aluminium alloy (painted)
Barrel	anodized aluminium
Piston	die-cast aluminium alloy
Guide slide	acetalic resin
Piston rod	chromium-plated steel standard, stainless steel, rolled AISI 303
Piston seal	double-lip seal in nitrile rubber (NBR)
Guide bush for piston rod	UNIVER original self-lubricating and self-aligning
Shock absorber seals	nitrile rubber (NBR) in both sides
Magnet	plasto-ferrite

### CODIFICATION KEY

K	E	2	0	0	0	3	2	0	0	5	0				
1	2	3	4				5			6	7	8			

1 Series	2 Type	3 Version	4 Bore (mm)
<b>KE</b> = Cylinders according to ISO 15552 Ø 32 ÷ 125 mm	<b>1</b> = Stainless steel piston rod <b>2</b> = Chromium-plated steel piston rod	<b>00</b> = <b>D.A.</b> Standard version <b>01</b> = <b>D.A.</b> Through piston rod <b>60</b> = <b>S.A.</b> Retracted piston rod Max stroke 50 mm <b>70</b> = <b>S.A.</b> Extended piston rod Max stroke 50 mm  <b>D.A.</b> = Double acting <b>S.A.</b> = Single acting	<b>032</b> = Ø32 <b>080</b> = Ø80 <b>040</b> = Ø40 <b>100</b> = Ø100 <b>050</b> = Ø50 <b>125</b> = Ø125 <b>063</b> = Ø63

5 Stroke (mm)	6 Option	7 Magnetic	8 Atex option
<b>0025</b> = 25 <b>0150</b> = 150 <b>0320</b> = 320 <b>0700</b> = 700 <b>0050</b> = 50 <b>0160</b> = 160 <b>0350</b> = 350 <b>0800</b> = 800 <b>0075</b> = 75 <b>0175</b> = 175 <b>0400</b> = 400 <b>0900</b> = 900 <b>0080</b> = 80 <b>0200</b> = 200 <b>0450</b> = 450 <b>1000</b> = 1000 <b>0100</b> = 100 <b>0250</b> = 250 <b>0500</b> = 500 <b>0125</b> = 125 <b>0300</b> = 300 <b>0600</b> = 600	<b>F</b> = Preset for locking unit reduced protrusion <b>G</b> = Preset for locking unit ISO protrusion	<b>M</b> = Magnetic version	<b>X</b> = Atex (upon request)  See ATEX Catalogue for types and versions

KE190 and KE290 versions with high temperature seals (Max 120°C) available upon request

Stroke tolerances

Ø	stroke ≤ 500	501 ≤ stroke ≤ 1000
	mm	mm
32	+2 - 0	+3,2 - 0
40	+2 - 0	+3,2 - 0
50	+2 - 0	+3,2 - 0
63	+2,5 - 0	+4 - 0
80	+2,5 - 0	+4 - 0
100	+2,5 - 0	+4 - 0
125	+4 - 0	+5 - 0

Single acting cylinder  
Theoretical forces (N) for return stroke

Ø	Max spring force at 0 stroke	Min. spring force at 0 stroke
32	52	28
40	70	42,5
50	98	48
63	98	48
80	140	80
100	140	80
125	235	175

Theoretical forces (N)  
at different working pressure (bar)

Ø	Surface area		Working pressure					Working pressure				
	mm <sup>2</sup>		bar					bar				
	Thrust	Traction	Thrust					Traction				
			2	4	6	8	10	2	4	6	8	10
32	804	691	161	322	482	643	804	138	276	414	553	691
40	1256	1056	251	502	754	1005	1256	211	422	633	844	1055
50	1962	1649	393	785	1178	1570	1963	330	660	990	1320	1650
63	3116	2802	623	1246	1869	2493	3116	560	1120	1680	2240	2800
80	5024	4533	1005	2010	3014	4019	5024	907	1814	2722	3629	4536
100	7850	7359	1570	3140	4710	6280	7850	1472	2944	4416	5888	7360
125	12266	11462	2453	4906	7359	9812	12266	2294	4588	6882	9176	11470

Cushion

Ø	Length	Max kinetic energy absorption
	mm	Nm
32	18	1,8
40	24	2,5
50	24	4,5
63	30	8
80	30	12
100	35	21
125	35	36

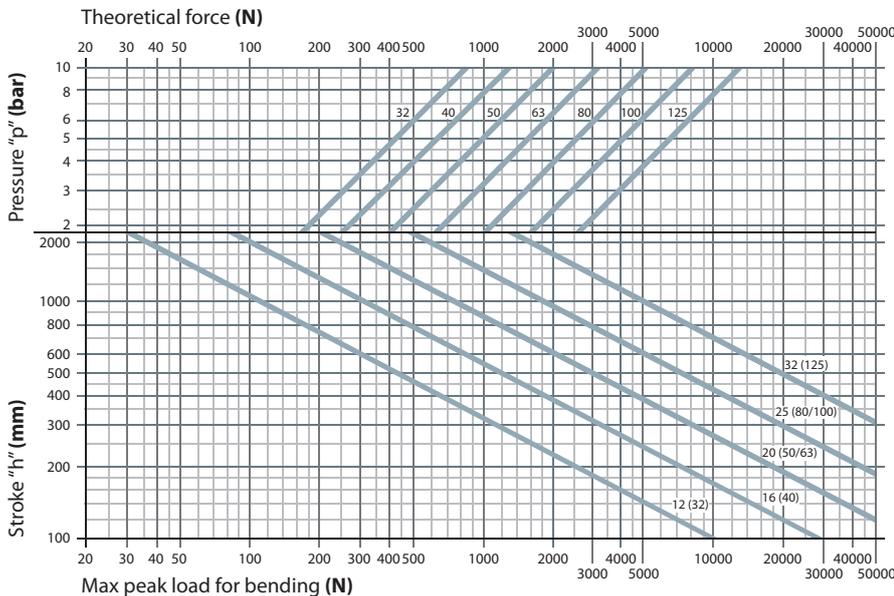
Mass - Standard cylinder

Ø	Cylinder - stroke 0	Increase per mm stroke	Moving element - stroke 0	Increase per mm stroke
	g	g	g	g
32	480	2,05	130	0,9
40	710	3,06	250	1,6
50	1180	4,28	440	2,5
63	1740	4,91	550	2,5
80	2740	7,20	970	3,9
100	3920	8,00	1190	3,9
125	6830	12,40	2200	6,3

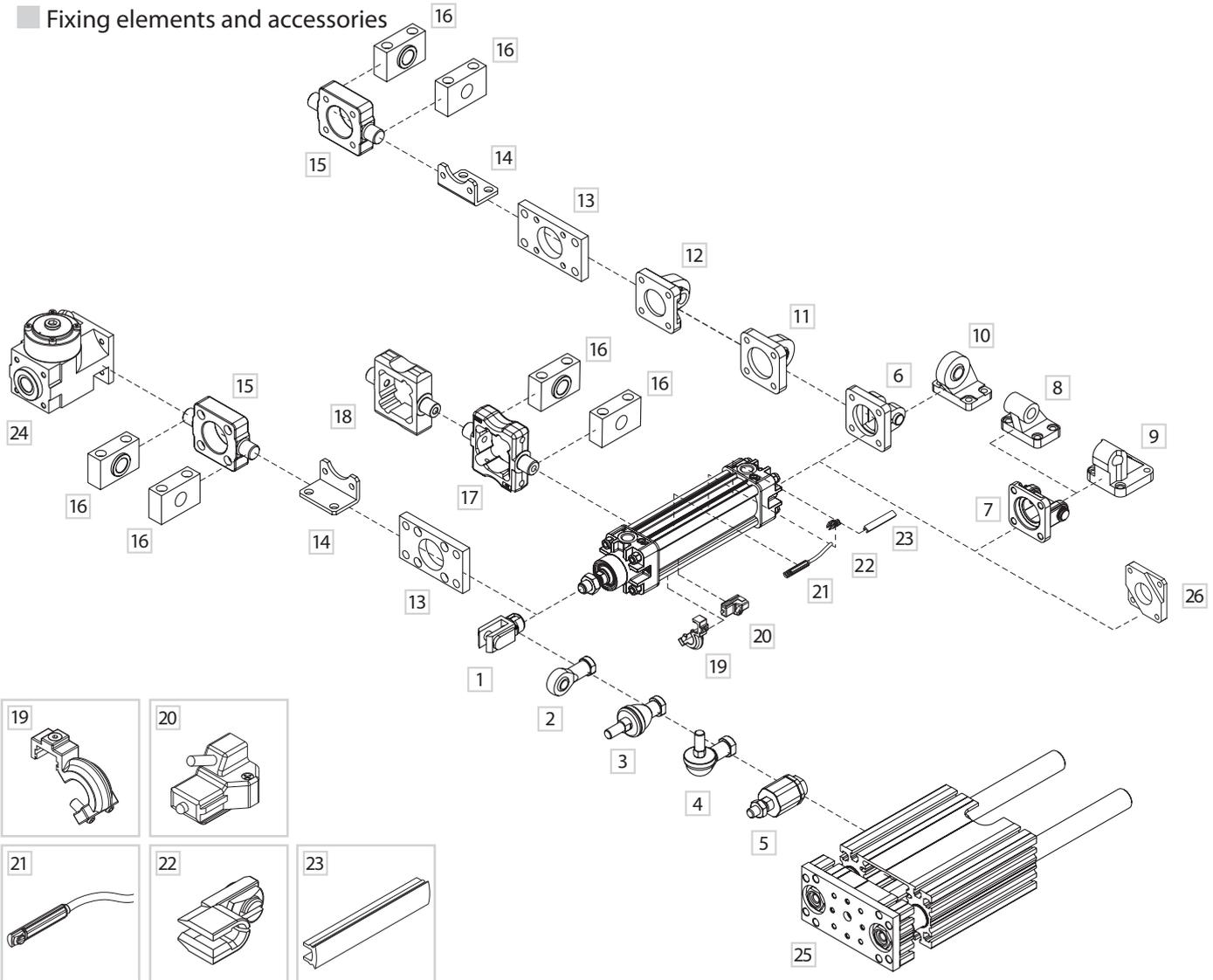
Mass - Through piston rod cylinder

Ø	Cylinder - stroke 0	Increase per mm stroke	Moving element - stroke 0	Increase per mm stroke
	g	g	g	g
32	550	2,92	190	1,8
40	850	4,62	360	3,2
50	1440	6,72	640	4,9
63	2010	7,36	740	4,9
80	3190	11,0	1350	7,6
100	4460	11,8	1570	7,6
125	7810	18,53	3050	12,4

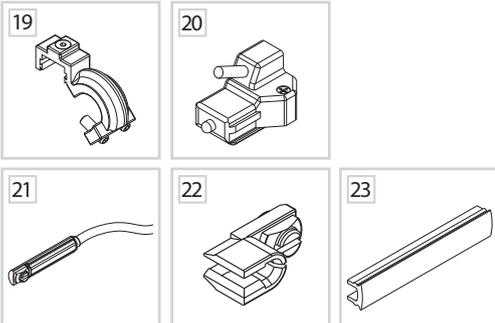
Graph of theoretical forces/pressure  
and of acceptable strokes depending on maximum peak load



Fixing elements and accessories



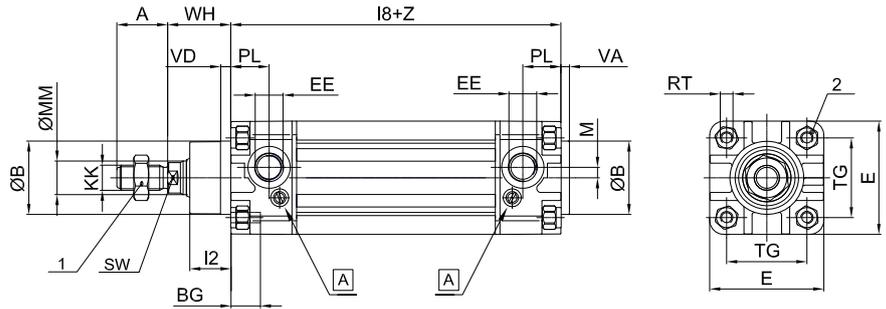
1  
CYLINDERS



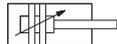
	DESCRIPTION	PART NO.
1	Female fork with clips	KF-15_ _ _
2	Articulated self-lubricating fork	KF-17_ _ _
3	Fork with axially mounted articulated pin	KF-22_ _ _
4	Fork with angle-mounted articulated pin	KF-23_ _ _
5	Floating joint	KF-24_ _ _
6	Narrow female hinge with clips (DIN648K)	KF-10_ _ _ AS
7	Female hinge (ISO MP2) with pin	KF-10_ _ _ A
8	Counter hinge 90° (CETOP RP107P)	KF-19_ _ _ CTA
9	Counter hinge 90°	KF-19_ _ _
10	Articulated counter-hinge (DIN648K)	KF-19_ _ _ SC
11	Articulated rear male hinge (ISO MP6)	KF-11_ _ _ S
12	Rear male hinge (ISO MP4)	KF-11_ _ _
13	Front - rear flange (ISO MF1-MF2)	KF-12_ _ _
14	Angle bracket (ISO MS1)	KF-13_ _ _
15	Front - rear hinge with floating pin	KF-14_ _ _ AP
16	Hinge support	KF-41_ _ _
17	ISO intermediate hinge (ISO MT4)	KLF-14_ _ _
* 18	ISO intermediate hinge (ISO MT4)*	KF-14_ _ _
* 19	Mounting bracket for DH sensor *	DH-K_ _ _
* 20	DH sensor	DH- _ _ _
21	DF sensor *	DF- _ _ _
22	Cable clamping for DF sensor	DF-001
23	DHF covering strip	DHF-0020100
24	Locking units	L1-N...
25	Slide units	J12...
26	Flange for opposed cylinders	KF-36_ _ _

\* = Fixing elements and accessories for K series

### Double acting/Single acting



A Pneumatic cushioning adjusting screw



**KE100/200**  
D.A. Standard



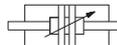
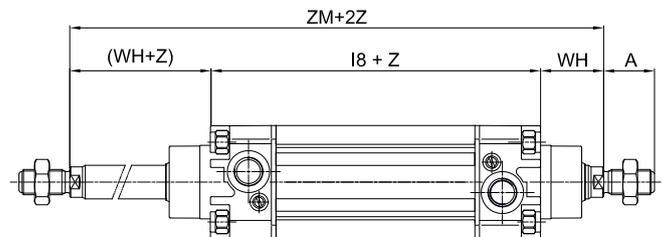
**KE160/260**  
S.A. Retracted piston rod



**KE170/270**  
S.A. Extended piston rod

For extended rod version add **WH+Z**(stroke) dimensions

### Double acting through piston rod



**KE101/201**  
D.A. Through piston rod

Z = Stroke

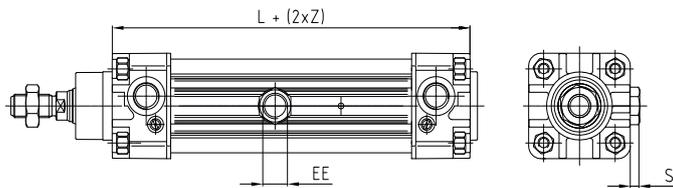
Ø	A	ØB	BG	E+0,5	KK	I2	I3	I8	PL	RT	SW	TG	VA	VD	WH	ØMM	EE	M	1	2	ZM
32	22	30	16	46,5	M10x1,25	16	5	94 ±0,4	14	M6	10	32,5 ±0,5	3,5	5	26	12	G1/8	4,4	17	6	146
40	24	35	16	52	M12x1,25	20	5	105 ±0,7	16	M6	13	38 ±0,5	4	5,5	30	16	G1/4	5	19	6	165
50	32	40	17	64,5	M16x1,5	26	6	106 ±0,7	15,5	M8	17	46,5 ±0,6	4	6	37	20	G1/4	6	24	8	180
63	32	45	18	76,5	M16x1,5	26	6	121 ±0,8	17,5	M8	17	56,5 ±0,7	4	6	37	20	G3/8	8	24	8	195
80	40	45	20	95	M20x1,5	32	7	128 ±0,8	20	M10	22	72 ±0,7	4	8	46	25	G3/8	7,5	30	10	220
100	40	55	20	114	M20x1,5	35	7	138 ±1	20,5	M10	22	89 ±0,7	4	8	51	25	G1/2	9	30	10	240
125	54	60	24	140	M27x2	45	8	160 ±1	20,5	M12	27	110 ±1,1	5,5	10	65	32	G1/2	11	41	12	290

## Tandem version

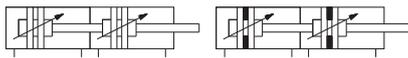
### CODIFICATION KEY

K	E	2	A	0	3	2	0	5	0	M
1	2	3	4	5						

1 Series	2 Type	3 Bore (mm)	4 Stroke (mm)	5 Magnetic
<b>KE</b> = Ø 32÷125 mm - ISO 15552 Pneumatic Cylinders <b>K</b> = Ø 32÷125 mm - ISO 15552 Pneumatic Cylinders (former ISO 6431 VDMA 24562) (available upon request)	<b>1A</b> = Double thrust tandem only for forward movement, stainless steel piston rod <b>2A</b> = Double thrust tandem only for forward movement, chromium-plated steel piston rod <b>1D</b> = Double thrust tandem only for reverse movement, stainless steel piston rod <b>2D</b> = Double thrust tandem only for reverse movement, chromium-plated steel piston rod	<b>032</b> = Ø32 <b>080</b> = Ø80 <b>040</b> = Ø40 <b>100</b> = Ø100 <b>050</b> = Ø50 <b>125</b> = Ø125 <b>063</b> = Ø63	Upon request	<b>M</b> = Magnetic version



Ø	Z = Stroke		
	EE	L	S Max
32	G1/8	169	3
40	G1/4	189	5
50	G3/8	175	4
63	G3/8	195	7
80	G1/2	211	6
100	G1/2	224	9
125	G1/2	251	9



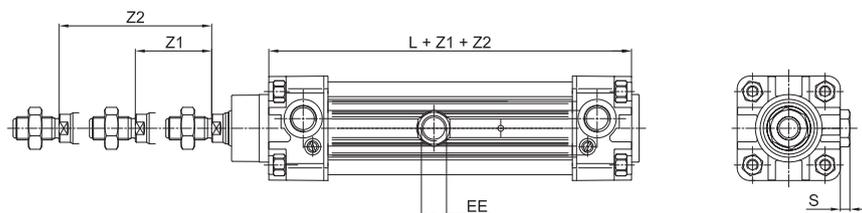
Tandem cylinders are constructed using two pistons coupled together which double the force in forward movement compared to the traditional ISO cylinders of the same bore size.

## Two-position tandem version

### CODIFICATION KEY

K	E	2	B	0	3	2	0	5	0	0	7	0	M
1	2	3	4	5	6								

1 Series	2 Type	3 Bore (mm)	4 Stroke Z1 (mm)	5 Stroke Z2 (mm)	6 Magnetic
<b>KE</b> = Ø 32÷125 mm - ISO 15552 Pneumatic Cylinders <b>K</b> = Ø 32÷125 mm - ISO 15552 Pneumatic Cylinders (former ISO 6431 VDMA 24562) (available upon request)	<b>1B</b> = Two position tandem, stainless steel male piston rod <b>2B</b> = Two position tandem, chromium-plated steel male piston rod	<b>032</b> = Ø32 <b>080</b> = Ø80 <b>040</b> = Ø40 <b>100</b> = Ø100 <b>050</b> = Ø50 <b>125</b> = Ø125 <b>063</b> = Ø63	Stroke of rear cylinder (upon request)	Stroke of head cylinder (upon request)	<b>M</b> = Magnetic version



Ø	Z = Stroke		
	EE	L	S
32	G1/8	166	3
40	G1/4	186	5
50	G1/4	172	4
63	G3/8	192	7
80	G3/8	208	6
100	G1/2	221	9
125	G1/2	248	9



Two-position cylinders with two independent piston-rods which allow to realize a double positioning in which the thrust forces are the same as those of an ISO cylinder of the same bore size.

For all other dimensions please refer to the standard version.

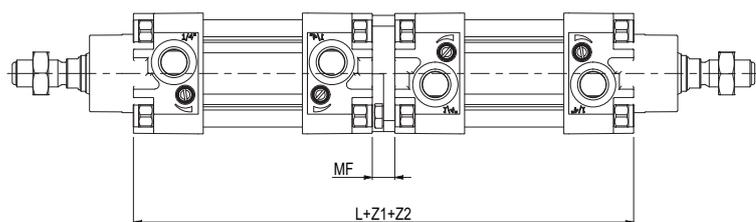
For other types of cylinders kindly contact our sales office.

## Opposed tandem version

### CODIFICATION KEY

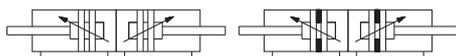
K	E	2	C	0	3	2	0	3	0	0	5	0	M
1	2	3	4	5	6								

1 Series	2 Type	3 Bore (mm)	4 Stroke Z1 (mm)	5 Stroke Z2 (mm)	6 Magnetic
<b>KE</b> = Ø 32÷125 mm - ISO 15552 Pneumatic Cylinders <b>K</b> = Ø 32÷125 mm - ISO 15552 Pneumatic Cylinders (former ISO 6431 VDMA 24562) (available upon request)	<b>1C</b> = Opposed tandem, stainless steel  <b>2C</b> = Opposed tandem, chromium-plated steel	<b>032</b> = Ø32 <b>080</b> = Ø80 <b>040</b> = Ø40 <b>100</b> = Ø100 <b>050</b> = Ø50 <b>125</b> = Ø125 <b>063</b> = Ø63	Stroke 1 (upon request)	Stroke 2 (upon request)	<b>M</b> = Magnetic version



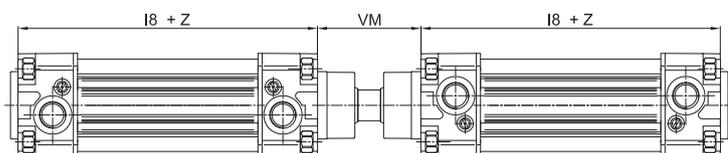
Z = Stroke

Ø	L	MF
32	198	10
40	220	10
50	227	15
63	257	15
80	271	15
100	291	15
125	335	15



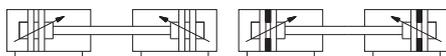
Type of cylinder characterized by the coupling of two cylinders and whose piston rods move in opposite directions. The values of the thrust force are the same as those of the traditional cylinders.

## With common piston rod tandem version (upon request)



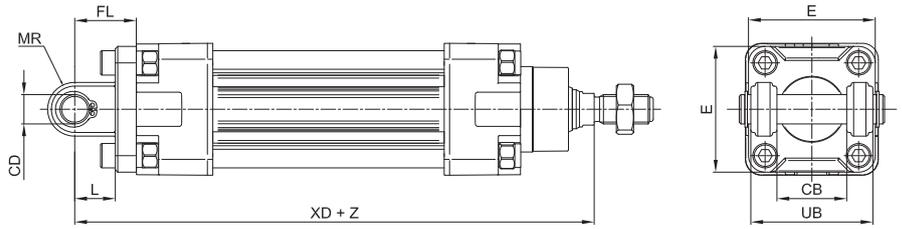
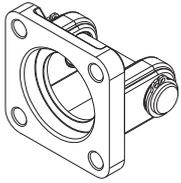
Z = Stroke

Ø	I8	VM	
32	94	±0,4	48
40	105	±0,7	54
50	106	±0,7	69
63	121	±0,8	69
80	128	±0,8	86
100	138	±1	91
125	160	±1	119



Two coupled cylinders with common piston rod  
 The values of the thrust force are the same as those of the traditional cylinders.  
 For all other dimensions please refer to the standard version.  
 For other types of cylinders kindly contact our sales office.

Female hinge (ISO MP2) with pin

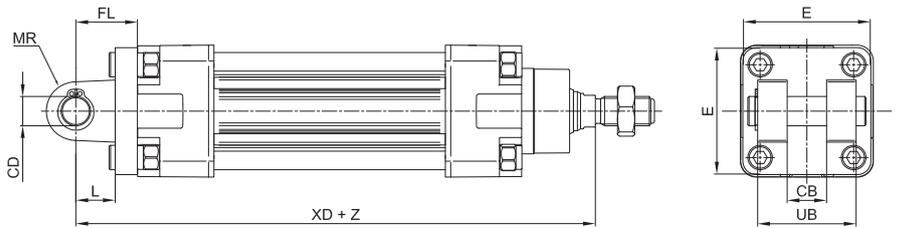
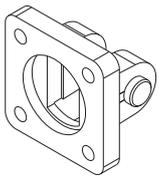


Material: Aluminium, zinc-plated steel pin

Z = Stroke

Ø	CB	CD	E	FL	L	MR	UB	XD		Mass	Part no.
	H14	H9		± 0,2	min.	Max	h14			g	
32	26	10	48	22	12	11	45	142	±1,25	75	KF-10032A
40	28	12	54	25	15	13	52	160	±1,25	110	KF-10040A
50	32	12	65	27	15	13	60	170	±1,25	150	KF-10050A
63	40	16	75	32	20	17	70	190	±1,6	270	KF-10063A
80	50	16	95	36	20	17	90	210	±1,6	420	KF-10080A
100	60	20	115	41	25	21	110	230	±1,6	765	KF-10100A
125	70	25	140	50	30	26	130	275	±2	1445	KF-10125A

Narrow female hinge with pin (DIN648K)

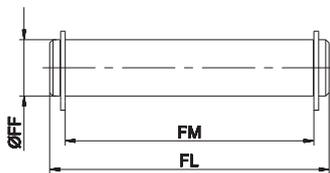


Material: Aluminium, zinc-plated steel pin

Z = Stroke

Ø	CB	CD	E	FL	L	MR	UB	XD		Mass	Part no.
	H14	H9		± 0,2	min.	Max	h14			g	
32	14	10	45	22	10	10	34	142	±1,25	68	KF-10032AS
40	16	12	52	25	16	12	40	160	±1,25	112	KF-10040AS
50	21	16	65	27	16	14	45	170	±1,25	196	KF-10050AS
63	21	16	75	32	21	18	51	190	±1,6	288	KF-10063AS
80	25	20	95	36	22	20	65	210	±1,6	566	KF-10080AS
100	25	20	115	41	27	22	75	230	±1,6	818	KF-10100AS
125	37	30	140	50	30	25	97	275	±2	1706	KF-10125AS

Pin for female hinge



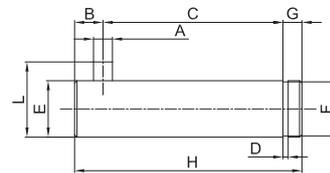
Including 2 circlips

Material: Zinc-plated steel

Ø	FF	FL	FM	Mass	Part no.*
	f8			g	
32	10	53	46	30	KF-18032
40	12	61,3	53	50	KF-18040
50	12	69	61	50	KF-18050
63	16	80,5	71	120	KF-18063
80	16	100,5	91	150	KF-18080
100	20	122,5	111	290	KF-18100
125	25	140	131	1530	KF-18125

\* = Pin for part no. KF-10...

Pin for narrow female hinge

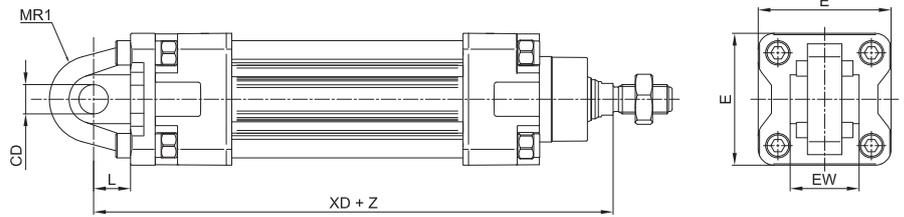
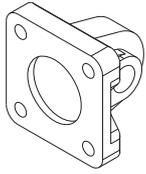


Including circlip

Material: Zinc-plated steel

Ø	A	C	D	E	F	G	H	L	B	Mass	Part no.
	H12	$\begin{smallmatrix} +0,5 \\ +0,3 \end{smallmatrix}$	h13	f7	h11			$\begin{smallmatrix} 0 \\ -0,5 \end{smallmatrix}$		g	
32	3	32,5	1,1	10	9,6	4	41	14	4,5	26	KF-18032S
40	4	38	1,1	12	11,5	4	48	16	6	42	KF-18040S
50	4	43	1,1	16	15,2	5	54	20	6	84	KF-18050S
63	4	49	1,1	16	15,2	5	60	20	6	94	KF-18063S
80	4	63	1,3	20	19	6	75	24	6	184	KF-18080S
100	4	73	1,3	20	19	6	85	24	6	208	KF-18100S
125	6	94	1,6	30	28,6	7	110	36	9	606	KF-18125S

Rear male hinge (ISO MP4)



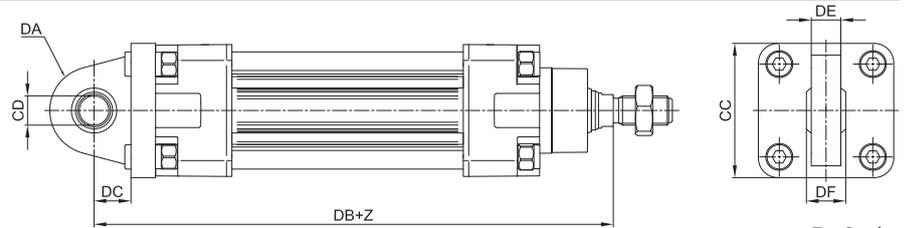
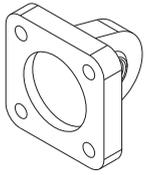
Material: Aluminium

Z = Stroke

Ø	CD	E	EW	L	MR1	XD	Mass	Part no.	
	H9								min.
32	10	48	26	-0,2 / -0,6	12	142	±1,25	80	KF-11032
40	12	54	28	-0,2 / -0,6	15	160	±1,25	100	KF-11040
50	12	65	32	-0,2 / -0,6	15	170	±1,25	170	KF-11050
63	16	75	40	-0,2 / -0,6	20	190	±1,6	250	KF-11063
80	16	95	50	-0,2 / -0,6	20	210	±1,6	420	KF-11080
100	20	115	60	-0,5 / -1,2	25	230	±1,6	660	KF-11100
125	30	140	70	-0,5 / -1,2	30	275	±2	1500	KF-11125

\* = Non-standard dimension

Articulated rear male hinge (ISO MP6)

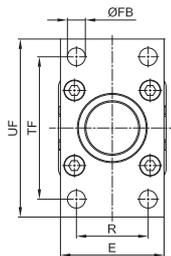
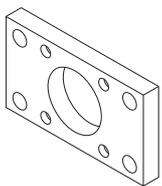


Material: Aluminium

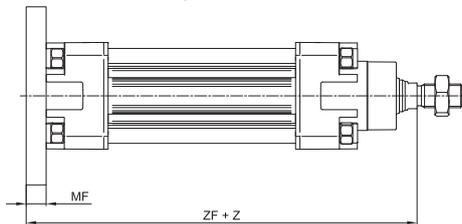
Z = Stroke

Ø	CC	CD	DA	DB	DC	DE	DF	Mass	Part no.
	H9	g							
32	48	10	15	142	14	10,5	14	100	KF-11032S
40	54	12	18	160	16,5	12	16	200	KF-11040S
50	65	12	20	170	17,5	12	16	300	KF-11050S
63	75	16	21	190	21,5	15	21	350	KF-11063S
80	95	16	27	210	24	15	21	1600	KF-11080S
100	115	20	29,5	230	28	18	25	700	KF-11100S
125	140	30	40	275	30	25	37	1410	KF-11125S

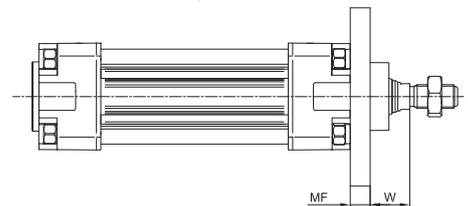
Front/rear flange (ISO MF1-MF2)



> Rear assembly



> Front assembly

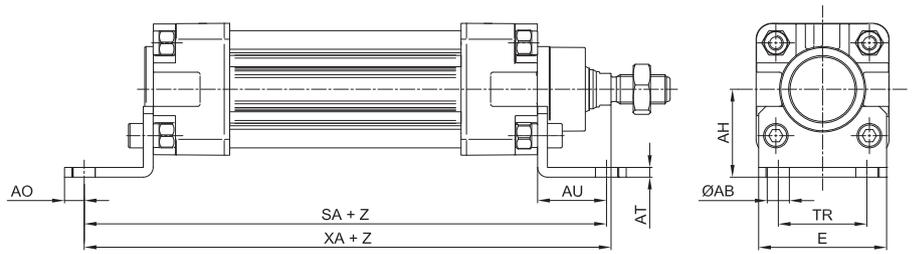
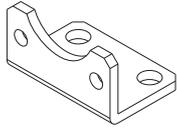


Material: Zinc-plated steel

Z = Stroke

Ø	E	ØFB	MF	R	TF	UF	W	ZF	Mass	Part no.	
		H13			JS14						Max
32	45	7	± 0,2	32	64	80	±1,6	130	±1,25	200	KF-12032
40	52	9	± 0,2	36	72	90	±1,6	145	±1,25	250	KF-12040
50	65	9	± 0,2	45	90	110	±2	155	±1,25	500	KF-12050
63	75	9	± 0,2	50	100	120	±2	170	±1,6	650	KF-12063
80	95	12	± 0,2	63	126	150	±2	190	±1,6	1500	KF-12080
100	115	14	± 0,2	75	150	170	±2	205	±1,6	2200	KF-12100
125	140	16	± 0,2	90	180	205	±2,5	245	±2	4100	KF-12125

Angle bracket (ISO MS1)



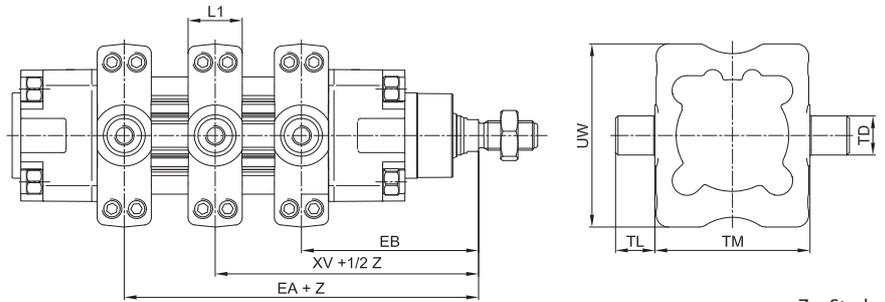
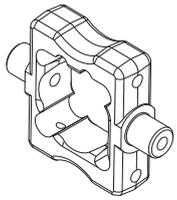
Material: Zinc-plated steel

Z = Stroke

Ø	ØAB	AH	AO	AT	AU	E	SA		TR	XA	Mass	Part no.	
	H13	JS15					±0,2	JS14					g
32	7	32	6	4	24	45	142	±1,25	32	144	±1,25	55	KF-13032
40	9	36	8	4	28	52	161	±1,25	36	163	±1,25	80	KF-13040
50	9	45	10	5	32	64	170	±1,25	45	175	±1,25	146	KF-13050
63	9	50	12	5	32	74	185	±1,6	50	190	±1,6	175	KF-13063
80	12	63	15	6	41	94	210	±1,6	63	215	±1,6	390	KF-13080
100	14	71	20	6	41	114	220	±1,6	75	230	±1,6	525	KF-13100
125	16	90	15	8	45	140	250	±2	90	270	±2	1040	KF-13125

ISO intermediate hinge (ISO MT4)

CYLINDERS



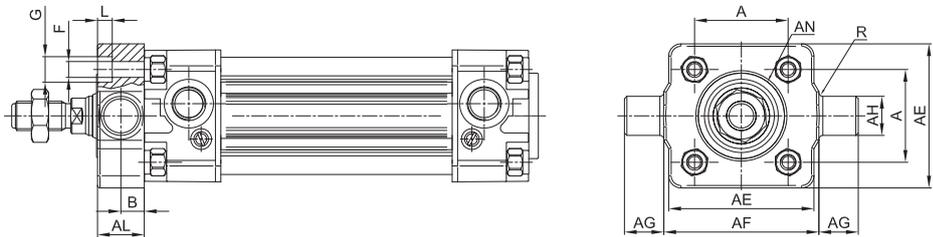
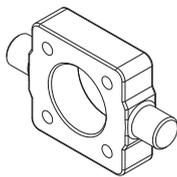
Material: Zinc-plated steel

Z = Stroke

Ø	EA	EB	L1	R	TD	TL	TM	UW	XV	Mass	Part no.	
	Max	min.										e9
32	82	64	22	0,5	2	12	50	65	73	±2	20,2	KLF-14032
40	93	72	22	0,5	16	16	63	75	82,5	±2	34,8	KLF-14040
50	101	79	22	0,5	16	16	75	95	90	±2	53	KLF-14050
63	107	88	27,5	1	20	20	90	105	97,5	±2	79,2	KLF-14063
80	123	97	27,5	1,5	20	20	110	130	110	±2	118,6	KLF-14080
100	131	109	33	1	25	25	132	145	120	±2	179,2	KLF-14100
125	164	126	33	1	25	25	160	175	145	±2,5	251,2	KLF-14125

The dimension XV + 1/2 indicates the position of the hinge between the end-caps of the cylinder

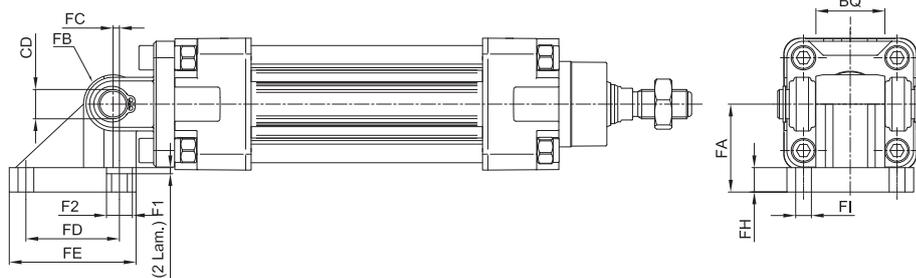
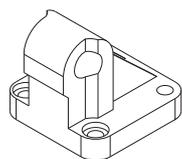
Front/rear hinge with floating pin



Material: Zinc-plated steel

Ø	AE	AL	AH	AG	AF	AN	A	B	F	G	L	R	Mass	Part no.
	Max	Max	e9	h14	h14	h11	±0,2	<sup>+0,2</sup> <sub>0</sub>	H13	H13	<sup>+0,5</sup> <sub>0</sub>	<sup>0</sup> <sub>+0,3</sub>		
32	46	14	12	12	50	30	32,5	6,5	6,5	-	6	1	137	KF-14032AP
40	59	19	16	16	63	35	38	9	6,5	10,5	6	1,6	385	KF-14040AP
50	69	19	16	16	75	40	46,5	9	8,5	13,5	8	1,6	513	KF-14050AP
63	84	24	20	20	90	45	56,5	11,5	8,5	13,5	8	1,6	1041	KF-14063AP
80	102	24	20	20	110	45	72	11,5	10,5	16,5	10	1,6	1567	KF-14080AP
100	125	29	25	25	132	55	89	14	10,5	16,5	10	2	3000	KF-14100AP
125	155	32	25	25	160	133	110	-	13,5	20	12	2	2400	KF-14125AP

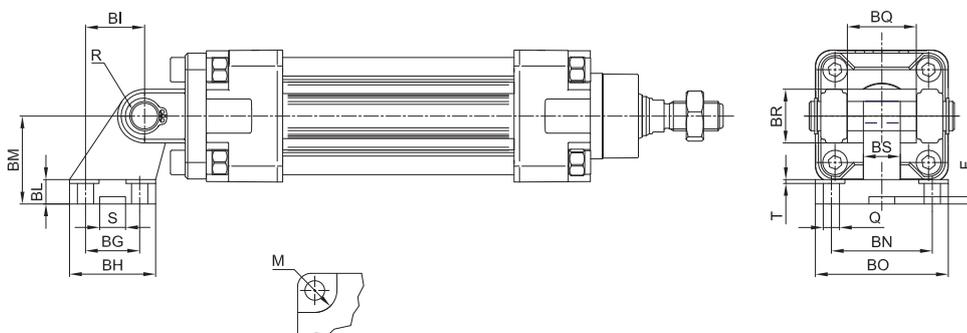
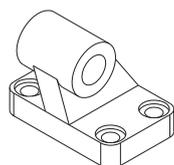
Counter hinge 90°



Material: Aluminium

Ø	CD H9	FA	FB	FC	FD	FE	FH	FI	F1	F2	BQ	Mass g	Part no.
32	10	32	10	1,2	32,5	46,5	9	6,4	5,5	10,5	26	90	KF-19032
40	12	36	12	2,6	38	51,5	9	6,4	5,5	10,5	28	120	KF-19040
50	12	45	12	0,3	46,5	63,5	9	8,4	5	13,5	32	200	KF-19050
63	16	50	16	3,3	56,5	73,5	10,5	8,4	5	13,5	40	320	KF-19063
80	16	63	16	1,0	72	93	12	10,5	4,5	16,5	50	580	KF-19080
100	20	73	20	2,5	89	113	13	10,5	4,5	16,5	60	910	KF-19100

Counter hinge 90° (CETOP RP107P)

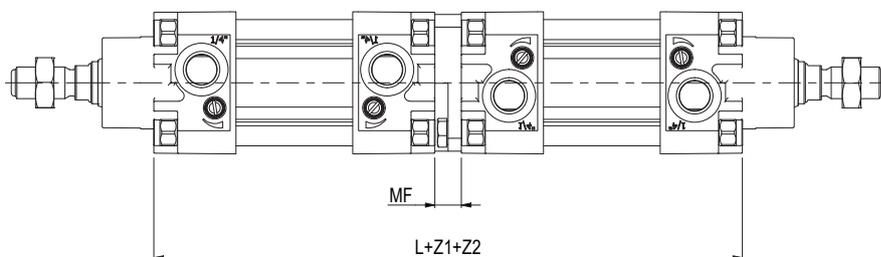
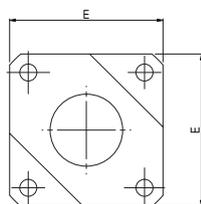
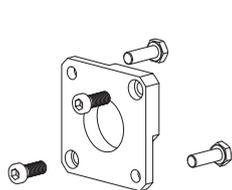


Material: Aluminium

Ø	Q	M	BG	BH	BI	BL	BM	BN	BO	BS	BR	T	G	S	F	BQ	Mass g	Part no.
	H13	H13	JS14	Max	JS14		JS15	JS14	Max	Max	Max	Max	H9	+0,5/0	+0,5/0			
32	6,6	11	18	31	21	8	32	38	51	10	20	1,6	10	10,5	3	26	56	KF-19032CTA
40	6,6	11	22	35	24	10	36	41	54	15	22	1,6	12	10,5	3	28	139	KF-19040CTA
50	9	15	30	45	33	12	45	50	65	16	26	1,6	12	10,5	3	32	142	KF-19050CTA
63	9	15	35	50	37	14	50	52	67	16	30	1,6	16	10,5	3	40	200	KF-19063CTA
80	11	18	40	60	47	14	63	66	86	20	30	2,5	16	10,5	3	50	321	KF-19080CTA
100	11	18	50	70	55	17	71	76	96	20	38	2,5	20	10,5	3	60	656	KF-19100CTA
125	14	20	60	90	70	20	90	94	124	30	45	3,2	25	10,5	3	70	826	KF-19125CTA

1  
CYLINDERS

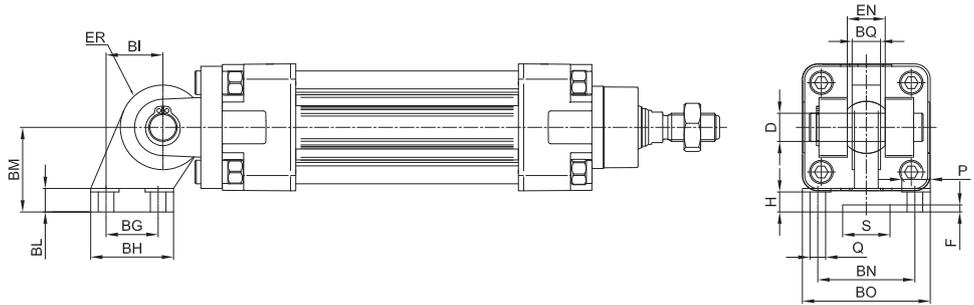
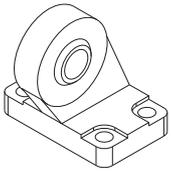
Flange for opposed cylinders



Fixing screws included

Ø	E	L	MF	Part no.
32	46,5	198	10	KF-36032
40	52	220	10	KF-36040
50	64,5	227	15	KF-36050
63	76,5	257	15	KF-36063
80	95	271	15	KF-36080
100	114	291	15	KF-36100
125	140	335	15	KF-36125

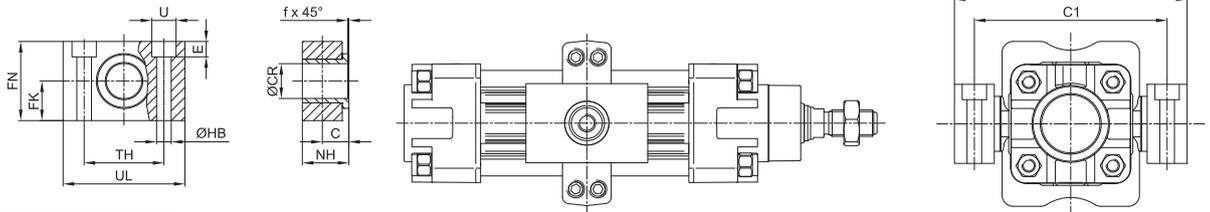
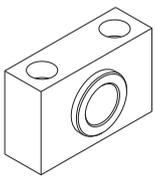
Articulated counter hinge (DIN648K)



Material: Aluminium

Ø	Q	P	BG	BH	BI	BL	BM	BN	BO	EN	ER	BQ	D	H	S	F	Mass	Part no.
	H13	H13	JS14	Max	JS15		JS15	JS14	Max	0/-0,1	Max	Max	H7	+0,5/0	H13		g	
32	6,6	11	18	31	21	10	32	38	51	14	15	10,5	10	8,5	20	3	178	KF-19032SC
40	6,6	11	22	35	24	10	36	41	54	16	18	12	12	8,5	20	3	268	KF-19040SC
50	9	15	30	45	33	12	45	50	65	21	20	15	16	10,5	20	3	458	KF-19050SC
63	9	15	35	50	37	12	50	52	67	21	23	15	16	10,5	20	3	550	KF-19063SC
80	11	18	40	60	47	14	63	66	86	25	27	18	20	11,5	20	3	970	KF-19080SC
100	11	18	50	70	55	15	71	76	96	25	30	18	20	12,5	20	3	1326	KF-19100SC
125	13,5	20	60	90	70	20	90	94	124	37	40	25	30	17	20	3	3000	KF-19125SC

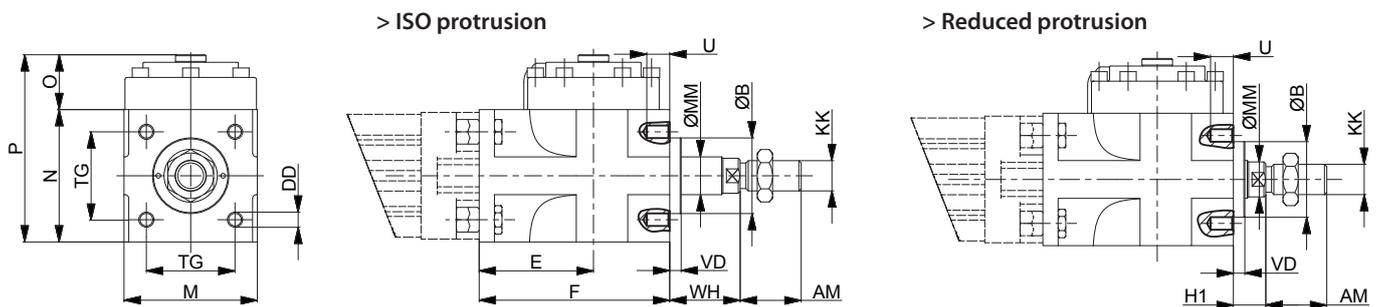
Hinge support



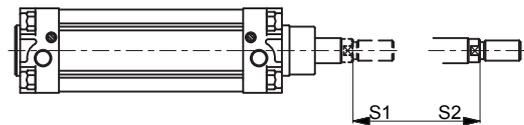
Material: Aluminium body and brass bushing

Ø	C	ØCR	FK	FN	ØHB	NH	TH	UL	ØU	E	f	C1	C2	Mass	Part no.
	H9	f7	±0,1				±0,1			±0,5				g	
32	10,5	12	15	30	6,6	18	32	46	11	7	1	71	86	100	KF-41032
40	12	16	18	36	9	21	36	55	15	9	1,6	87	105	150	KF-41040050
50	12	16	18	36	9	21	36	55	15	9	1,6	99	117	150	KF-41040050
63	13	20	20	40	11	23	42	65	18	11	1,6	116	136	234	KF-41063080
80	13	20	20	40	11	23	42	65	18	11	1,6	136	156	234	KF-41063080
100	16	25	25	50	14	28,5	50	75	20	13	2	164	189	435	KF-41100125
125	16	25	25	50	14	28,5	50	75	20	13	2	192	217	435	KF-41100125

Locking unit for ISO cylinders Ø 32 ÷ 125

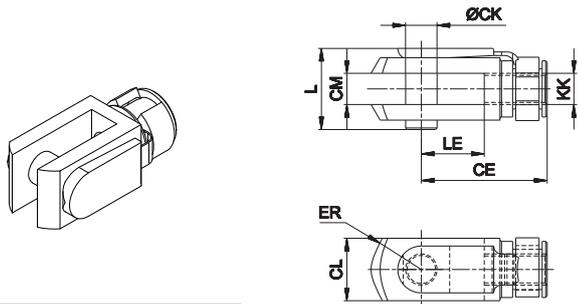


> Additional length to standard rod  
 S<sub>1</sub> for ISO protrusion  
 S<sub>2</sub> for reduced protrusion



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

**Female fork with clips**

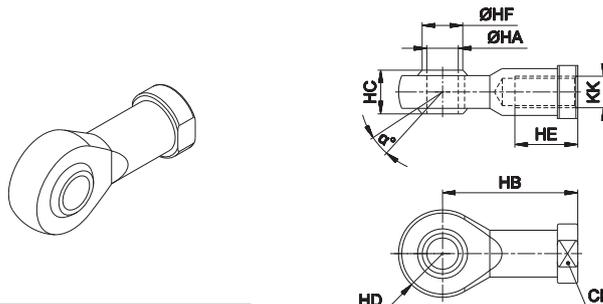


Material: Zinc-plated steel

Ø	CE	CK	CL	CM	ER	KK	L	LE	Mass g	Part no.
32	40	10	20	10	16	M10x1,25	26	20	90	KF-15032
40	48	12	24	12	19	M12x1,25	32	24	150	KF-15040
50 - 63	64	16	32	16	25	M16x1,5	40	32	340	KF-15050
80 - 100	80	20	40	20	32	M20x1,5	50	40	670	KF-15080
125	110	30	55	30	45	M27x2	65	54	1790	KF-15125

Fork with pin for piston rod according to ISO 8140 standard with pin

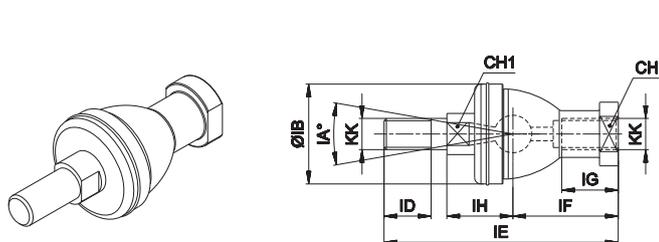
**Articulated self-lubricating fork**



Material: Zinc-plated steel

Ø	α°	CH	KK	HA	HB	HC	HD	HE	HF	Mass g	Part no.
32	13	17	M10x1,25	10	43	14	14	20	12,9	76	KF-17032
40	13	19	M12x1,25	12	50	16	16	22	15,4	110	KF-17040
50 - 63	15	22	M16x1,5	16	64	21	21	28	19,3	220	KF-17050
80 - 100	14	30	M20 x 1,5	20	77	25	25	33	24,3	400	KF-17080
125	17	41	M27x2	30	110	37	35	51	34,8	1119	KF-17125

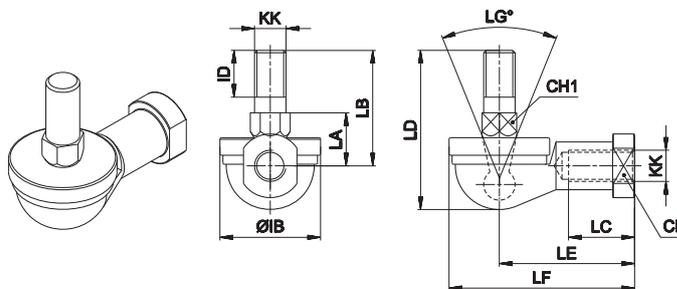
**Fork with axially mounted articulated pin**



Material: Zinc-plated steel

Ø	CH	CH1	IA°	KK	IH	IB	ID	IE	IF	IG	Mass g	Part no.
32	17	11	30	M10x1,25	19,5	32	15	74,5	35	18	120	KF-22025
40	19	17	30	M12x1,25	22	36	17	84	40	20	185	KF-22040
50 - 63	22	19	22	M16x1,5	27,5	47	23	112	50	27	360	KF-22050
80 - 100	30	24	15	M20x1,5	31,5	58	25	133	63	38	570	KF-22080
125	-	-	-	-	-	-	-	-	-	-	-	-

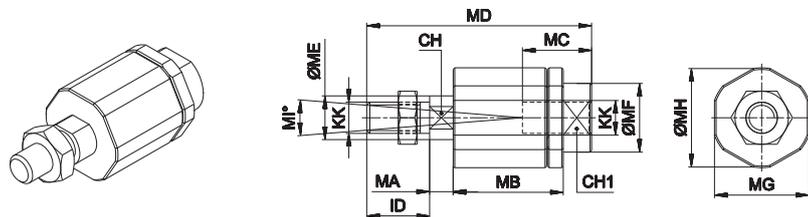
**Fork with angle mounted articulated pin**



Material: Zinc-plated steel

Ø	CH	CH1	LG°	KK	IB	ID	LA	LB	LC	LD	LE	LF	Mass g	Part no.
32	17	11	50	M10x1,25	32	15	17	37	21	50,5	43	57	110	KF-23025
40	19	17	50	M12x1,25	36	17	19	42	27	57,5	50	66	165	KF-23040
50 - 63	22	19	40	M16x1,5	47	23	23,5	60	33	79,5	64	84	330	KF-23050
80 - 100	30	24	32	M20x1,5	58	25	27	68	40	90	77	99	540	KF-23080
125	-	-	-	-	-	-	-	-	-	-	-	-	-	-

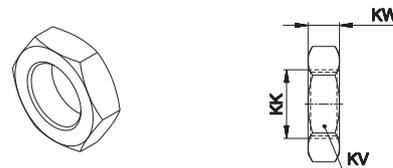
**Floating joint**



Material: Zinc-plated steel

Ø	CH	CH1	ID	KK	MA	MB	MC	MD	ME	MF	MG	MH	MI°	Mass g	Part no.
40	12	19	75	M12x1,25	5	35	20	75	14	22	30	32	8	230	KF-24040
50 - 63	20	30	103	M16x1,5	8	54	32	103	22	32	41	45	6	660	KF-24050
80 - 100	20	30	119	M20x1,5	8	54	40	119	22	32	41	45	6	700	KF-24080
125	24	54	54	M27x2	10	60	48	147	32	57	65	70	8	2060	KF-24125

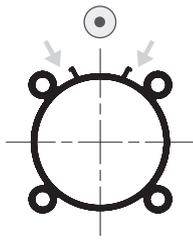
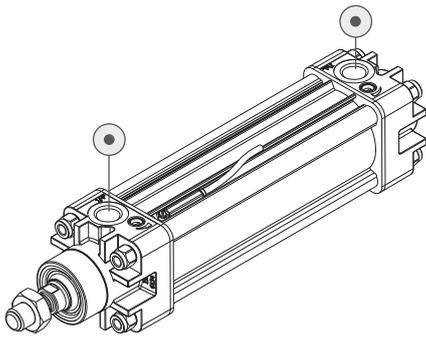
**Piston rod locknut (zinc-plated steel)**



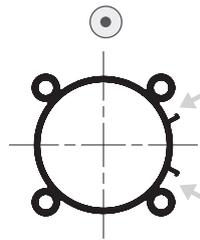
Material: Zinc-plated steel

Ø	KK	KV	KW	Mass g	Part no.
40	M12x1,25	19	7	10	KF-16040
50 - 63	M16x1,5	24	8	20	KF-16050
80 - 100	M20x1,5	30	9	30	KF-16080
125	M27x2	41	12	80	KF-16125

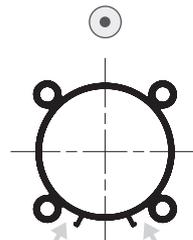
Slot positions for DF magnetic sensor



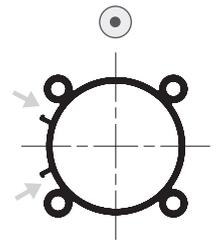
Supply port side standard



To the right of supply port side upon request



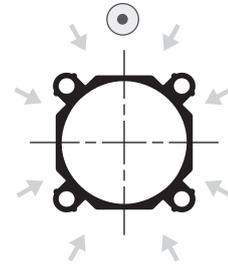
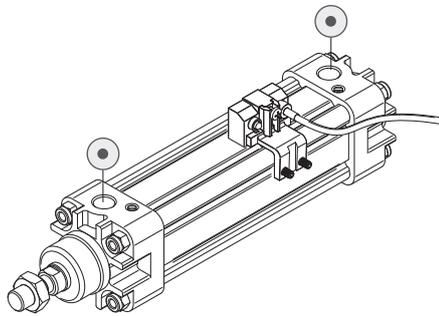
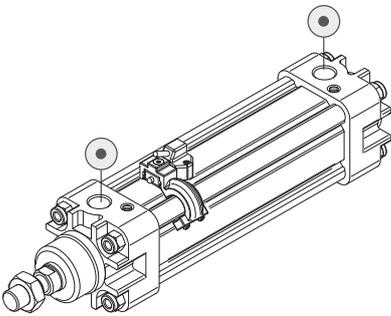
Opposite to the supply port side upon request



To the left of supply port side upon request

supply port

Slot positions for DH magnetic sensor - K cylinder series



standard on all sides

1  
CYLINDERS

# KD

Ø 32 ÷ 125 mm - Pneumatic cylinders ISO 15552

- Heavy series
- Grooves for DF recessed sensors
- Version with magnetic piston

Available ATEX version upon request



## TECHNICAL CHARACTERISTICS

Working temperature	-20 ÷ 80 °C
Fluid	filtered air, with or without lubrication
Working pressure	1,5 ÷ 10 bar
Bores	Ø 32 - 40 - 50 - 63 - 80 - 100 - 125 mm
Cushionings	adjustable in both sides

## CONSTRUCTIVE CHARACTERISTICS

End-caps	die-cast aluminium alloy (painted)
Barrel	anodized aluminium
Piston	die-cast aluminium alloy
Guide slide	acetalic resin
Piston rod	chromium-plated steel standard, stainless steel, rolled AISI 303
Piston seal	double-lip seal in nitrile rubber (NBR)
Guide bush for piston rod	UNIVER Original self-lubricating and self-aligning
Shock absorber seals	nitrile rubber (NBR) in both sides
Magnet	plasto-ferrite (standard supplied)

## CODIFICATION KEY

K	D	2	0	0	0	3	2	0	0	5	0		M	
1	2	3	4		5			6	7	8				

1 Series	2 Type	3 Version	4 Bore (mm)
<b>KD</b> = Ø 32÷125 mm - ISO 15552 Pneumatic cylinders (former ISO 6431 and VDMA 24562)	<b>1</b> = Stainless steel piston rod <b>2</b> = Chromium-plated steel piston rod	<b>00</b> = <b>D.A.</b> Standard version <b>01</b> = <b>D.A.</b> Through piston rod <b>60</b> = <b>S.A.</b> Retracted piston rod Max stroke 50 mm <b>70</b> = <b>S.A.</b> Extended piston rod Max stroke 50 mm	<b>032</b> = Ø32 <b>080</b> = Ø80 <b>040</b> = Ø40 <b>100</b> = Ø100 <b>050</b> = Ø50 <b>125</b> = Ø125 <b>063</b> = Ø63
Magnetic version standard supplied		<b>D.A.</b> = Double acting <b>S.A.</b> = Single acting	

5 Stroke (mm)	6 Option	7 Magnetic	8 Atex option
<b>0025</b> = 25 <b>0150</b> = 150 <b>0320</b> = 320 <b>0700</b> = 700 <b>0050</b> = 50 <b>0160</b> = 160 <b>0350</b> = 350 <b>0800</b> = 800 <b>0075</b> = 75 <b>0175</b> = 175 <b>0400</b> = 400 <b>0900</b> = 900 <b>0080</b> = 80 <b>0200</b> = 200 <b>0450</b> = 450 <b>1000</b> = 1000 <b>0100</b> = 100 <b>0250</b> = 250 <b>0500</b> = 500 <b>0125</b> = 125 <b>0300</b> = 300 <b>0600</b> = 600	<b>F</b> = Preset for locking unit reduced protrusion <b>G</b> = Preset for locking unit ISO protrusion	<b>M</b> = Magnetic version standard supplied	<b>X</b> = Atex (upon request)  See ATEX Catalogue for types and versions

**KD190 and KD290 versions with high temperature seals (max 120°C) available upon request**

Stroke tolerances

Ø	stroke ≤ 500	501 ≤ stroke ≤ 1000
	mm	mm
32	+2 - 0	+3,2 - 0
40	+2 - 0	+3,2 - 0
50	+2 - 0	+3,2 - 0
63	+2,5 - 0	+4 - 0
80	+2,5 - 0	+4 - 0
100	+2,5 - 0	+4 - 0
125	+4 - 0	+5 - 0

Single acting cylinder  
Theoretical forces (N) for return stroke

Ø	Max spring force at 0 stroke	Min. spring force at 0 stroke
32	52	28
40	70	42,5
50	98	48
63	98	48
80	140	80
100	140	80
125	235	175

Theoretical forces (N)  
at different working pressure (bar)

Ø	Surface area mm <sup>2</sup>		Working pressure bar					Working pressure bar				
	Thrust	Traction	Thrust					Traction				
			2	4	6	8	10	2	4	6	8	10
32	804	691	161	322	482	643	804	138	276	414	553	691
40	1256	1056	251	502	754	1005	1256	211	422	633	844	1055
50	1962	1649	393	785	1178	1570	1963	330	660	990	1320	1650
63	3116	2802	623	1246	1869	2493	3116	560	1120	1680	2240	2800
80	5024	4533	1005	2010	3014	4019	5024	907	1814	2722	3629	4536
100	7850	7359	1570	3140	4710	6280	7850	1472	2944	4416	5888	7360
125	12266	11462	2453	4906	7359	9812	12266	2294	4588	6882	9176	11470

Cushion

Ø	Length mm	Max kinetic energy absorption Nm
	32	18
40	24	2,5
50	24	4,5
63	30	8
80	30	12
100	35	21
125	35	36

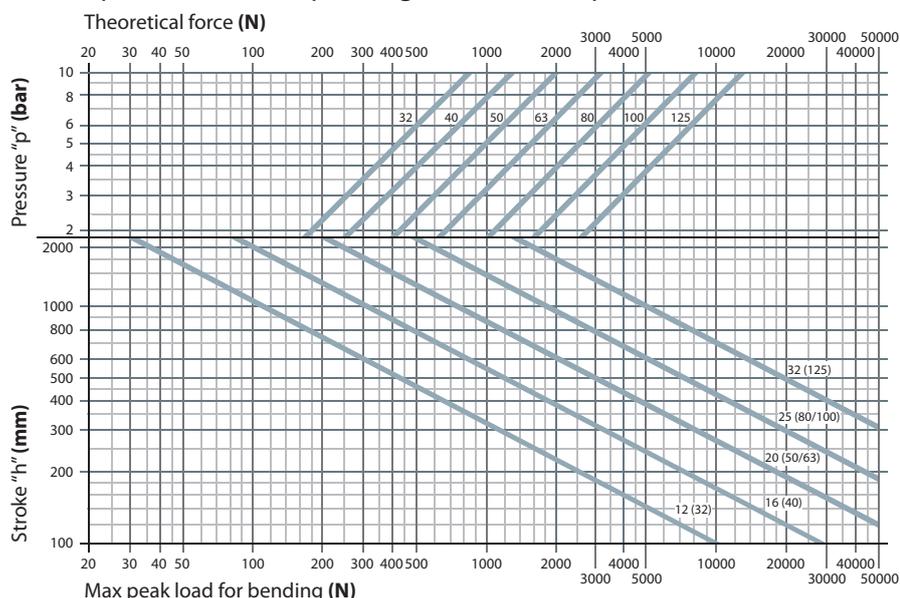
Mass - Standard cylinder

Ø	Cylinder - stroke 0	Increase per mm stroke	Moving element - stroke 0	Increase per mm stroke
	g	g	g	g
32	530	2,8	130	0,9
40	800	4,0	240	1,6
50	1270	6,0	430	2,5
63	1760	6,2	470	2,5
80	2860	10,8	950	3,9
100	3950	13,4	1180	3,9
125	6870	18,6	2180	6,3

Mass - Through piston rod cylinder

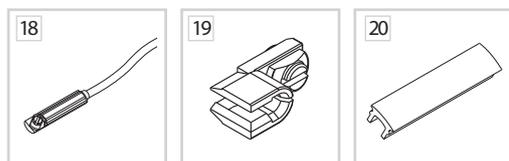
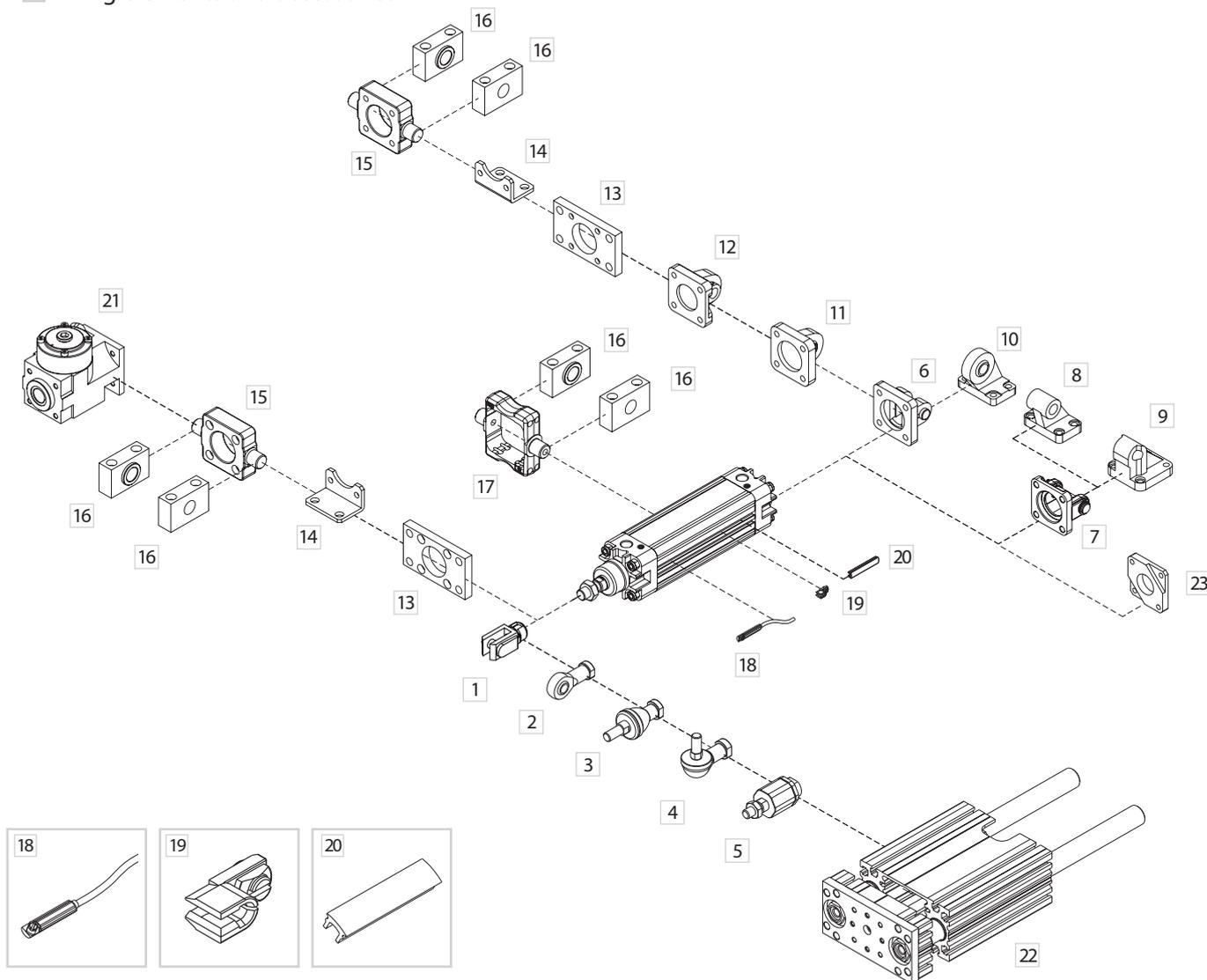
Ø	Cylinder - stroke 0	Increase per mm stroke	Moving element - stroke 0	Increase per mm stroke
	g	g	g	g
32	660	3,7	200	1,8
40	950	5,5	370	3,2
50	1570	8,5	640	4,9
63	2050	8,7	750	4,9
80	3380	14,7	1370	7,7
100	4550	17,3	1600	7,7
125	8080	24,9	3200	12,6

Graph of theoretical forces/pressure and acceptable strokes depending on maximum peak load



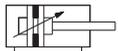
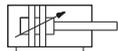
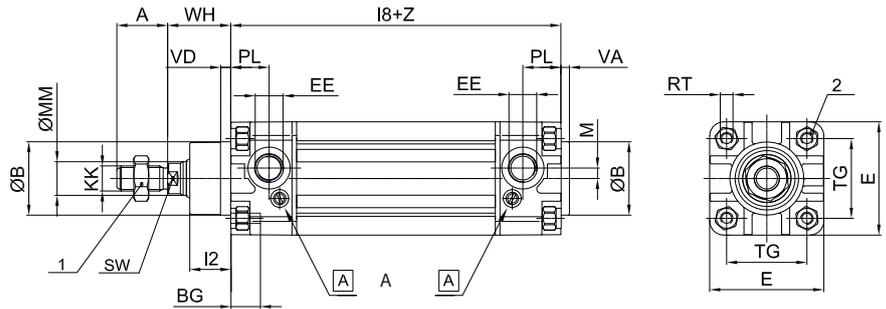
1 CYLINDERS

Fixing elements and accessories

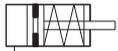
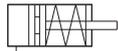


DESCRIPTION	PART NO.
1 Female fork with clips	KF-15 ___
2 Articulated self-lubricating fork	KF-17 ___
3 Fork with axially mounted articulated pin	KF-22 ___
4 Fork with angle-mounted articulated pin	KF-23 ___
5 Floating joint	KF-24 ___
6 Narrow female hinge with pin (DIN648K)	KF-10 ___ AS
7 Female hinge (ISO MP2) with pin	KF-10 ___ A
8 Counter-hinge 90° (CETOP RP107P)	KF-19 ___ CTA
9 Counter-hinge 90°	KF-19 ___
10 Articulated counter-hinge (DIN648K)	KF-19 ___ SC
11 Articulated rear male hinge (ISO MP6)	KF-11 ___ S
12 Rear male hinge (ISO MP4)	KF-11 ___
13 Front/rear flange (ISO MF1-MF2)	KF-12 ___
14 Angle bracket (ISO MS1)	KF-13 ___
15 Front/rear hinge with floating pin	KF-14 ___ AP
16 Hinge support	KF-41 ___
17 ISO intermediate hinge (ISO MT4)	KDF-14 ___
18 DF magnetic sensor (see accessories section)	DF- ___
19 Cable clamping for DF sensor (see accessories section)	DF-001
20 DHF covering strip (see accessories section)	DHF-0020100
21 Locking unit	L1-N
22 Slide unit	J12
23 Flange for opposed cylinders	KF-36 ___

### Double acting/Single acting



**KD100/200**  
D.A. Standard



**KD160/260**  
S.A. Retracted piston rod

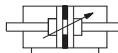
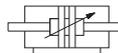
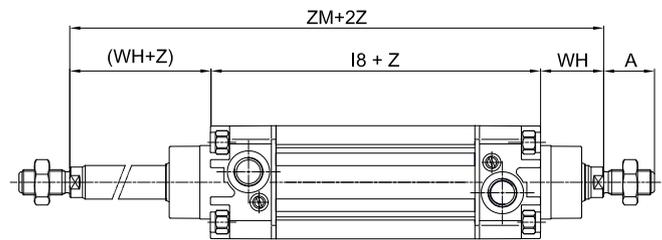
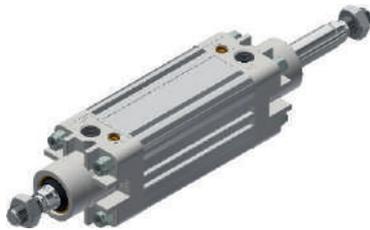


**KD170/270**  
S.A. Extended piston rod

For extended rod version add **WH+Z**(stroke) dimensions

**A** Adjusting screw pneumatic cushioning

### Double acting through piston rod



**KD101/201**  
D.A. Through piston rod

Z = Stroke

Ø	A	ØB	BG	E+0,5	KK	I2	I3	I8	PL	RT	SW	TG	VA	VD	WH	ØMM	EE	M	1	2	ZM
32	22	30	16	46,5	M10x1,25	16	5	94 ±0,4	14	M6	10	32,5 ±0,5	3,5	5	26	12	G1/8	4,4	17	6	146
40	24	35	16	52	M12x1,25	20	5	105 ±0,7	16	M6	13	38 ±0,5	4	5,5	30	16	G1/4	5	19	6	165
50	32	40	17	64,5	M16x1,5	26	6	106 ±0,7	15,5	M8	17	46,5 ±0,6	4	6	37	20	G1/4	6	24	8	180
63	32	45	18	76,5	M16x1,5	26	6	121 ±0,8	17,5	M8	17	56,5 ±0,7	4	6	37	20	G3/8	8	24	8	195
80	40	45	20	95	M20x1,5	32	7	128 ±0,8	20	M10	22	72 ±0,7	4	8	46	25	G3/8	7,5	30	10	220
100	40	55	20	114	M20x1,5	35	7	138 ±1	20,5	M10	22	89 ±0,7	4	8	51	25	G1/2	9	30	10	240
125	54	60	24	140	M27x2	45	8	160 ±1	20,5	M12	27	110 ±1,1	5,5	10	65	32	G1/2	11	41	12	290

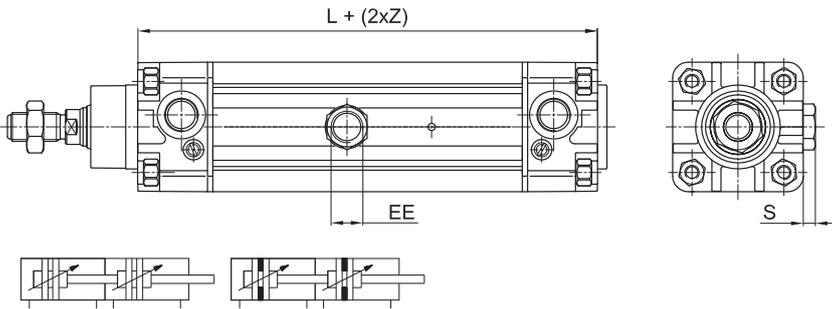
1  
CYLINDERS

## Tandem version

### CODIFICATION KEY

K	D	2	A	0	3	2	0	5	0	M
1	2	3	4	5						

1 Series	2 Type	3 Bore (mm)	4 Stroke (mm)	5 Magnetic
<b>KD</b> = Ø 32÷125 mm - ISO 15552 Pneumatic Cylinders (former ISO 6431 VDMA 24562) <b>Magnetic version standard supplied</b>	<b>1A</b> = Double thrust tandem only for forward movement, stainless steel piston rod <b>2A</b> = Double thrust tandem only for forward movement, chromium-plated steel piston rod <b>1D</b> = Double thrust tandem only for reverse movement, stainless steel piston rod <b>2D</b> = Double thrust tandem only for reverse movement, chromium-plated steel piston rod	<b>032</b> = Ø32 <b>080</b> = Ø80 <b>040</b> = Ø40 <b>100</b> = Ø100 <b>050</b> = Ø50 <b>125</b> = Ø125 <b>063</b> = Ø63	Upon request	<b>M</b> = Magnetic version (standard supplied)



Z = Stroke

Ø	EE	L	S
32	G1/8	169	3
40	G1/4	189	5
50	G1/4	175	4
63	G3/8	195	7
80	G3/8	211	6
100	G1/2	224	9
125	G1/2	251	9

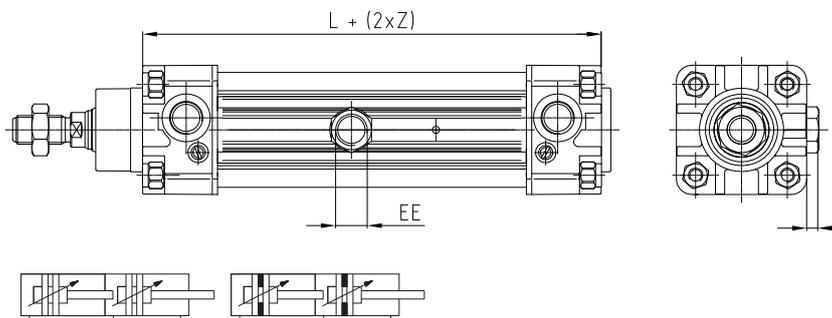
Tandem cylinders are constructed using two pistons coupled together which double the force in forward movement compared to the traditional ISO cylinders of the same bore size

## Two-position tandem version

### CODIFICATION KEY

K	D	2	B	0	3	2	0	5	0	0	7	0	M
1	2	3	4	5	6								

1 Series	2 Type	3 Bore (mm)	4 Stroke Z1 (mm)	5 Stroke Z2 (mm)	6 Magnetic
<b>KD</b> = Ø 32÷125 mm - ISO 15552 Pneumatic Cylinders (former ISO 6431 VDMA 24562) <b>Magnetic version standard supplied</b>	<b>1B</b> = Two-position tandem, stainless steel <b>2B</b> = Two-position tandem, chromium-plated steel	<b>032</b> = Ø32 <b>080</b> = Ø80 <b>040</b> = Ø40 <b>100</b> = Ø100 <b>050</b> = Ø50 <b>125</b> = Ø125 <b>063</b> = Ø63	Stroke of rear cylinder Upon request	Stroke of head cylinder Upon request	<b>M</b> = Magnetic version (standard supplied)



Z = Stroke

Ø	EE	L	S
32	G1/8	166	3
40	G1/4	186	5
50	G1/4	172	4
63	G3/8	192	7
80	G3/8	208	6
100	G1/2	221	9
125	G1/2	248	9

Two-position cylinders with two independent piston-rods which allow to realize a double positioning in which the thrust forces are the same as those of an ISO cylinder of the same bore size

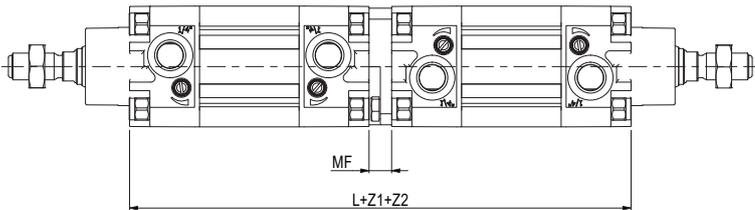
For all other dimensions please refer to the standard version.  
 For other types of cylinders kindly contact our sales office

## Opposed tandem version

### CODIFICATION KEY

K	D	2	C	0	3	2	0	3	0	0	5	0	M
1	2	3	4	5	6								

1 Series	2 Type	3 Bore (mm)	4 Stroke Z1 (mm)	5 Stroke Z2 (mm)	6 Magnetic
<b>KD</b> = Ø 32÷125 mm - ISO 15552 Pneumatic Cylinders (former ISO 6431 VDMA 24562) <b>Magnetic version standard supplied</b>	<b>1C</b> = Opposed tandem, stainless steel <b>2C</b> = Opposed tandem, chromium-plated steel	<b>032</b> = Ø32 <b>080</b> = Ø80 <b>040</b> = Ø40 <b>100</b> = Ø100 <b>050</b> = Ø50 <b>125</b> = Ø125 <b>063</b> = Ø63	Stroke 1 (upon request)	Stroke 2 (upon request)	<b>M</b> = Magnetic version (standard supplied)



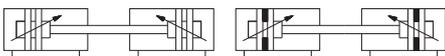
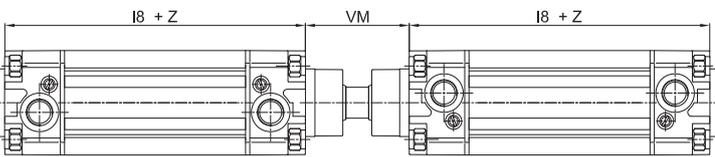
Z = Stroke

Ø	L	MF
32	198	10
40	220	10
50	227	15
63	257	15
80	271	15
100	291	15
125	335	15

1  
CYLINDERS

Type of cylinder characterized by the coupling of two cylinders and whose piston rods move in opposite directions. The values of the thrust force are the same as those of the traditional cylinders

### With common piston rod tandem version (upon request)

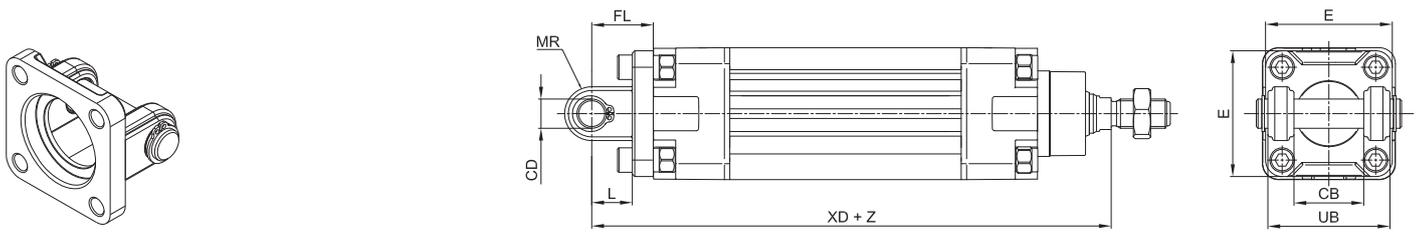


Z = Stroke

Ø	I8	VM
32	94	±0,4   48
40	105	±0,7   54
50	106	±0,7   69
63	121	±0,8   69
80	128	±0,8   86
100	138	±1   91
125	160	±1   119

Two coupled cylinders with common piston rod  
The values of the thrust force are the same as those of the traditional cylinders.  
For all other dimensions please refer to the standard version.  
For other types of cylinders kindly contact our sales office.

Female rear hinge (ISO MP2) with pin

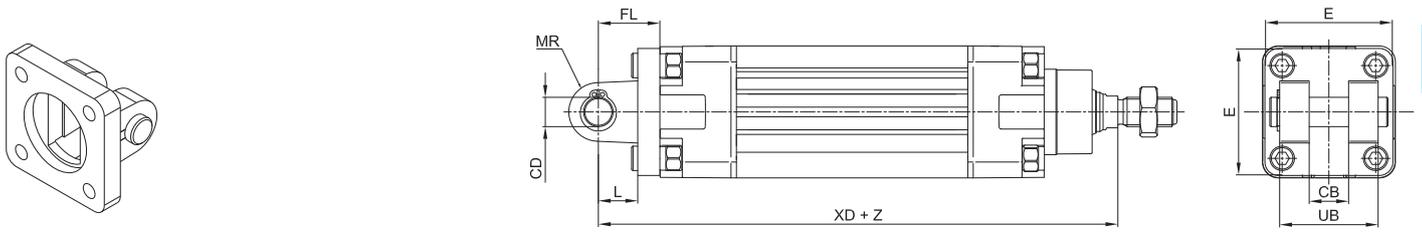


Material: Aluminium, zinc-plated steel pin

Z = Stroke

Ø	CB	CD	E	FL	L	MR	UB	XD		Mass	Part no.
	H14	H9		± 0,2	min.	Max	h14			g	
32	26	10	48	22	12	11	45	142	±1,25	75	KF-10032A
40	28	12	54	25	15	13	52	160	±1,25	110	KF-10040A
50	32	12	65	27	15	13	60	170	±1,25	150	KF-10050A
63	40	16	75	32	20	17	70	190	±1,6	270	KF-10063A
80	50	16	95	36	20	17	90	210	±1,6	420	KF-10080A
100	60	20	115	41	25	21	110	230	±1,6	765	KF-10100A
125	70	25	140	50	30	26	130	275	±2	1445	KF-10125A

Narrow female hinge with pin (DIN648K)



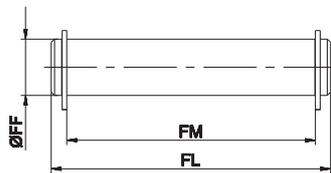
Material: Aluminium, zinc-plated steel pin

Z = Stroke

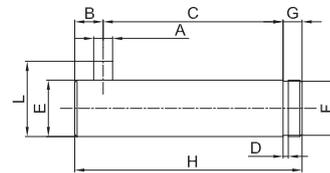
Ø	CB	CD	E	FL	L	MR	UB	XD		Mass	Part no.
	H14	H9		± 0,2	min.	Max	h14			g	
32	14	10	45	22	13	10	34	142	±1,25	68	KF-10032AS
40	16	12	52	25	16	12	40	160	±1,25	112	KF-10040AS
50	21	16	65	27	16	14	45	170	±1,25	196	KF-10050AS
63	21	16	75	32	21	18	51	190	±1,6	288	KF-10063AS
80	25	20	95	36	22	20	65	210	±1,6	566	KF-10080AS
100	25	20	115	41	27	22	75	230	±1,6	818	KF-10100AS
125	37	30	140	50	30	25	97	275	±2	1706	KF-10125AS

1  
CYLINDERS

Pin for female hinge



Pin for narrow female hinge



Including 2 circlips

Material: Zinc-plated steel

Ø	FF	FL	FM	Mass	Part no.*
	f8			g	
32	10	53	46	30	KF-18032
40	12	61,3	53	50	KF-18040
50	12	69	61	50	KF-18050
63	16	80,5	71	120	KF-18063
80	16	100,5	91	150	KF-18080
100	20	122,5	111	290	KF-18100
125	25	140	131	1530	KF-18125

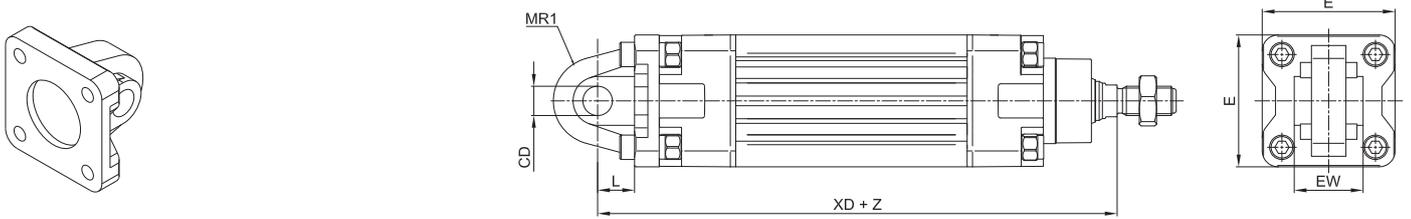
Including circlip

Material: Zinc-plated steel

Ø	A	C	D	E	F	G	H	L	B	Mass	Part no.
	H12	$\begin{smallmatrix} +0,5 \\ -0,3 \end{smallmatrix}$	h13	f7	h11			$\begin{smallmatrix} 0 \\ -0,5 \end{smallmatrix}$	g		
32	3	32,5	1,1	10	9,6	4	41	14	4,5	26	KF-18032S
40	4	38	1,1	12	11,5	4	48	16	6	42	KF-18040S
50	4	43	1,1	16	15,2	5	54	20	6	84	KF-18050S
63	4	49	1,1	16	15,2	5	60	20	$\begin{smallmatrix} 0 \\ -1 \end{smallmatrix}$	94	KF-18063S
80	4	63	1,3	20	19	6	75	24	6	184	KF-18080S
100	4	73	1,3	20	19	6	85	24	6	208	KF-18100S
125	6	94	1,6	30	28,6	7	110	36	$\begin{smallmatrix} 0 \\ -2 \end{smallmatrix}$	606	KF-18125S

\* = Pin for part no. KF-10...

Rear male hinge (ISO MP4)



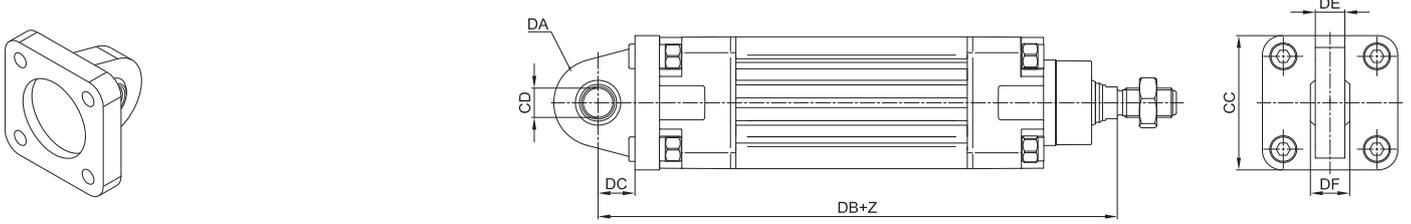
Material: Aluminium

Z = Stroke

Ø	CD	E	EW	L	MR1	XD	Mass	Part no.	
	H9								min.
32	10	48	26	-0,2 / -0,6	12	142	±1,25	80	KF-11032
40	12	54	28	-0,2 / -0,6	15	160	±1,25	100	KF-11040
50	12	65	32	-0,2 / -0,6	15	170	±1,25	170	KF-11050
63	16	75	40	-0,2 / -0,6	20	190	±1,6	250	KF-11063
80	16	95	50	-0,2 / -0,6	20	210	±1,6	420	KF-11080
100	20	115	60	-0,2 / -0,6	25	230	±2	660	KF-11100
125	25	140	70	-0,5 / -1,2	30	275	±1,25	1500	KF-11125

\* = Non-standard dimension

Articulated rear male hinge (ISO MP6)

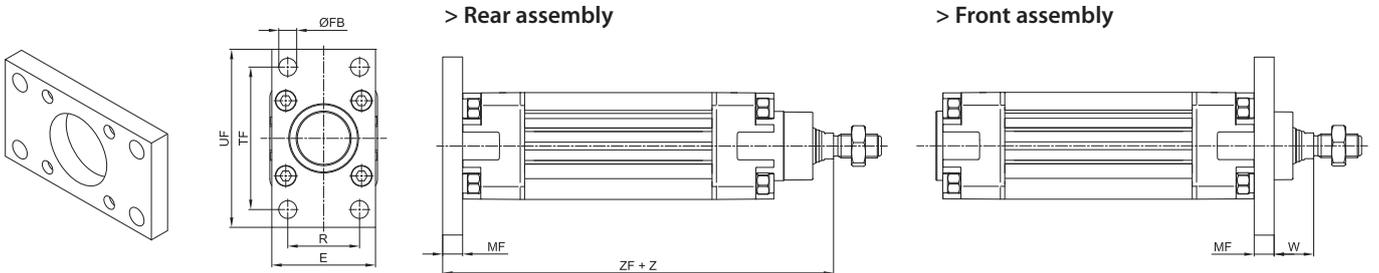


Material: Aluminium

Z = Stroke

Ø	CC	CD	DA	DB	DC	DE	DF	Mass	Part no.
	H9						g		
32	48	10	15	142	14	10,5	14	100	KF-11032S
40	54	12	18	160	16,5	12	16	200	KF-11040S
50	65	12	20	170	17,5	12	16	300	KF-11050S
63	75	16	21	190	21,5	15	21	350	KF-11063S
80	95	16	27	210	24	15	21	1600	KF-11080S
100	115	20	29,5	230	28	18	25	700	KF-11100S
125	140	30	40	275	30	25	37	1410	KF-11125S

Front/rear flange (ISO MF1-MF2)

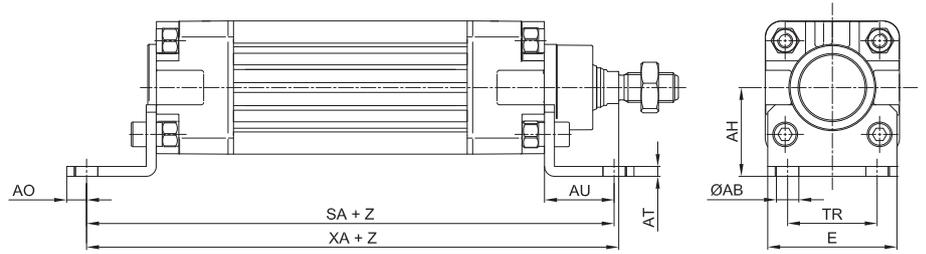
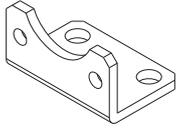


Material: Zinc-plated steel

Z = Stroke

Ø	E	ØFB	MF	R	TF	UF	W	ZF	Mass	Part no.		
		H13	± 0,2	JS14	JS14	Max					g	
32	45	7	10	32	64	80	16	±1,6	130	±1,25	200	KF-12032
40	52	9	10	36	72	90	20	±1,6	145	±1,25	250	KF-12040
50	65	9	12	45	90	110	25	±2	155	±1,25	500	KF-12050
63	75	9	12	50	100	120	25	±2	170	±1,6	650	KF-12063
80	95	12	16	63	126	150	30	±2	190	±1,6	1500	KF-12080
100	115	14	16	75	150	170	35	±2	205	±1,6	2200	KF-12100
125	140	16	20	90	180	205	45	±2,5	245	±2	4100	KF-12125

Angle bracket (ISO MS1)

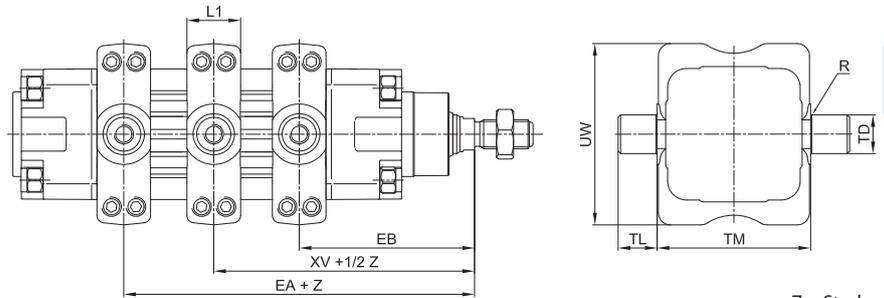
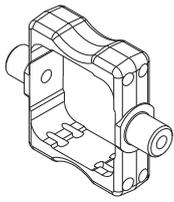


Material: Zinc-plated steel

Z = Stroke

Ø	ØAB	AH	AO	AT	AU	E	SA		TR	XA	Mass	Part no.	
	H13	JS15					±0,2	JS14					
32	7	32	6	4	24	45	142	±1,25	32	144	±1,25	55	KF-13032
40	9	36	8	4	28	52	161	±1,25	36	163	±1,25	80	KF-13040
50	9	45	10	5	32	64	170	±1,25	45	175	±1,25	146	KF-13050
63	9	50	12	5	32	74	185	±1,6	50	190	±1,6	175	KF-13063
80	12	63	15	6	41	94	210	±1,6	63	215	±1,6	390	KF-13080
100	14	71	20	6	41	114	220	±1,6	75	230	±1,6	525	KF-13100
125	16	90	15	8	45	140	250	±2	90	270	±2	1040	KF-13125

ISO intermediate hinge (ISO MT4)



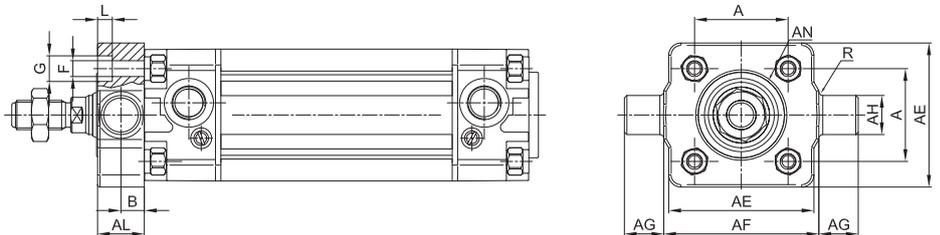
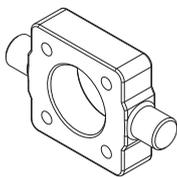
Material: Zinc-plated steel

Z = Stroke

Ø	EA	EB	L1	R	TD	TL	TM	UW	XV		Mass	Part no.
	Max	min.							e9	h14		
32	82	64	22	0,5	12	12	50	65	73	±2	120	KDF-14032
40	93	72	22	0,5	16	16	63	75	82,5	±2	240	KDF-14040
50	101	79	22	1	16	16	75	95	90	±2	320	KDF-14050
63	107	88	28	1	20	20	90	105	97,5	±2	470	KDF-14063
80	123	97	28	1	20	20	110	130	110	±2	800	KDF-14080
100	131	109	34	1	25	25	132	145	120	±2	1500	KDF-14100
125	164	126	34	1,5	25	25	160	175	145	±2,5	1920	KDF-14125

The dimension XV + 1/2 indicates the position of the hinge between the end-caps of the cylinder

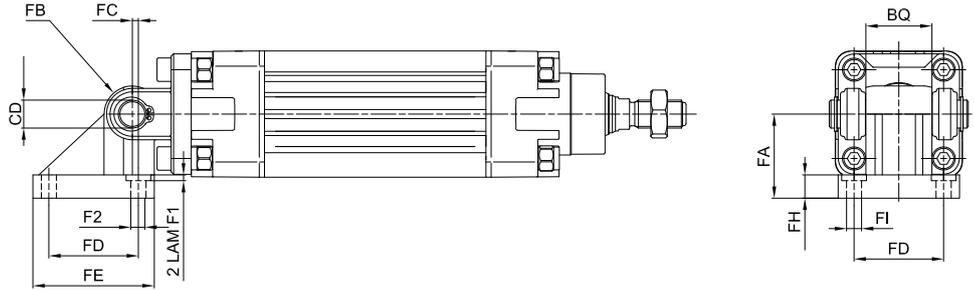
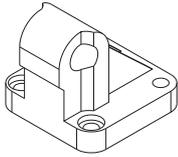
Front/rear hinge with floating pin



Material: Zinc-plated steel

Ø	AE	AL	AH	AG	AF	AN	A	B	F	G	L	R	Mass	Part no.
	Max	Max	e9	h14	h14	h11	±0,2	±0,2/0	H13	H13	+0,5/0	0/-0,3		
32	46	14	12	12	50	30	32,5	6,5	6,5	-	6	1	137	KF-14032AP
40	59	19	16	16	63	35	38	9	6,5	10,5	6	1,6	385	KF-14040AP
50	69	19	16	16	75	40	46,5	9	8,5	13,5	8	1,6	513	KF-14050AP
63	84	24	20	20	90	45	56,5	11,5	8,5	13,5	8	1,6	1041	KF-14063AP
80	102	24	20	20	110	45	72	11,5	10,5	16,5	10	1,6	1567	KF-14080AP
100	125	29	25	25	132	55	89	14	10,5	16,5	10	2	3000	KF-14100AP
125	155	32	25	25	160	133	110	-	13,5	20	12	2	2400	KF-14125AP

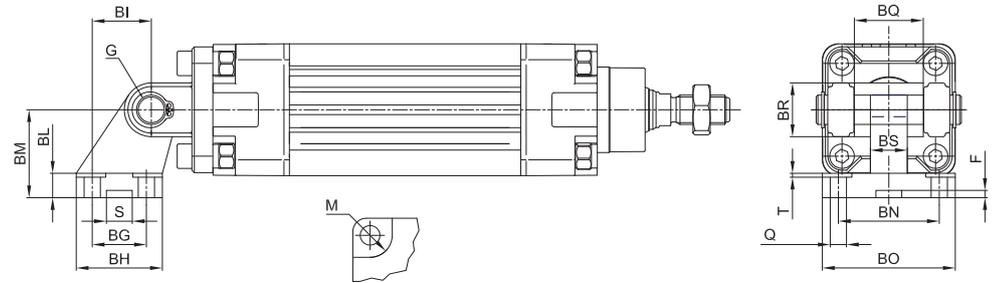
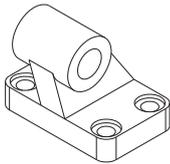
Counter hinge 90°



Material: Aluminium

Ø	CD	FA	FB	FC	FD	FE	FH	FI	F1	F2	BQ	Mass	Part no.
32	10	32	10	1,2	32,5	46,5	9	6,4	5,5	10,5	26	90	KF-19032
40	12	36	12	2,6	38	51,5	9	6,4	5,5	10,5	28	120	KF-19040
50	12	45	12	0,3	46,5	63,5	9	8,4	5	13,5	32	200	KF-19050
63	16	50	16	3,3	56,5	73,5	10,5	8,4	5	13,5	40	320	KF-19063
80	16	63	16	1,0	72	93	12	10,5	4,5	16,5	50	580	KF-19080
100	20	73	20	2,5	89	113	13	10,5	4,5	16,5	60	910	KF-19100

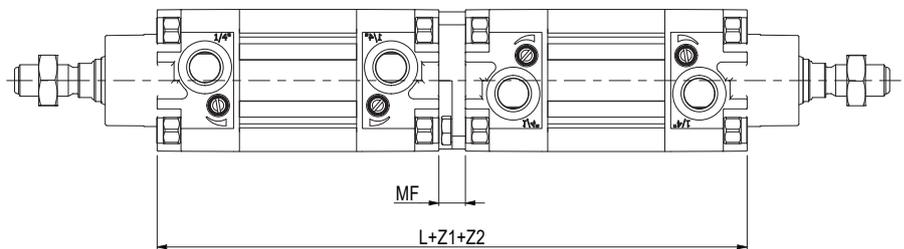
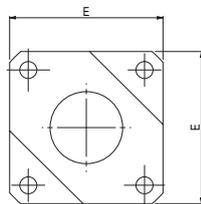
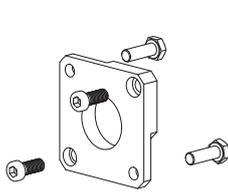
Counter hinge 90° (CETOP RP107P)



Material: Aluminium

Ø	Q	M	BG	BH	BI	BL	BM	BN	BO	BS	BR	T	G	S	F	BQ	Mass	Part no.
32	6,6	11	18	31	21	8	32	38	51	10	20	1,6	10	10,5	3	26	56	KF-19032CTA
40	6,6	11	22	35	24	10	36	41	54	15	22	1,6	12	10,5	3	28	139	KF-19040CTA
50	9	15	30	45	33	12	45	50	65	16	26	1,6	12	10,5	3	32	142	KF-19050CTA
63	9	15	35	50	37	14	50	52	67	16	30	1,6	16	10,5	3	40	200	KF-19063CTA
80	11	18	40	60	47	14	63	66	86	20	30	2,5	16	10,5	3	50	321	KF-19080CTA
100	11	18	50	70	55	17	71	76	96	20	38	2,5	20	10,5	3	60	656	KF-19100CTA
125	14	20	60	90	70	20	90	94	124	30	45	3,2	25	10,5	3	70	826	KF-19125CTA

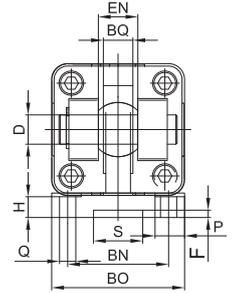
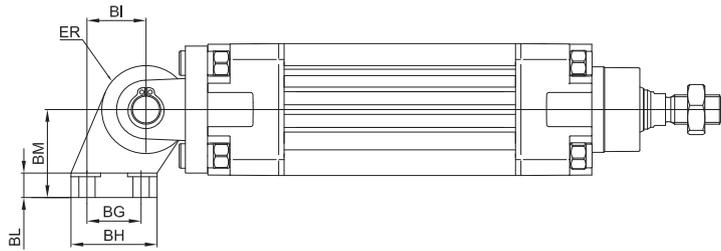
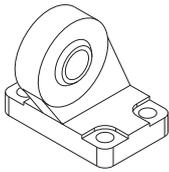
Flange for opposed cylinders



Fixing screws included

Ø	E	L	MF	Part no.
32	46,5	198	10	KF-36032
40	52	220	10	KF-36040
50	64,5	227	15	KF-36050
63	76,5	257	15	KF-36063
80	95	271	15	KF-36080
100	114	291	15	KF-36100
125	140	335	15	KF-36125

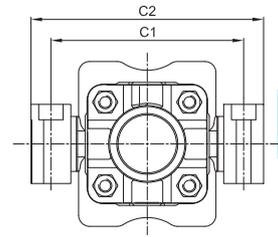
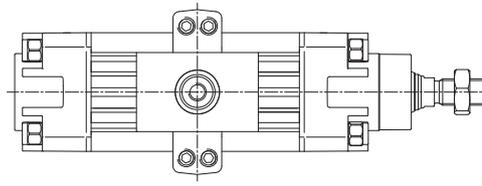
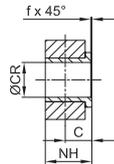
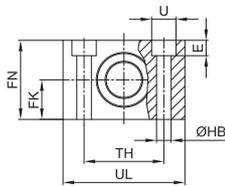
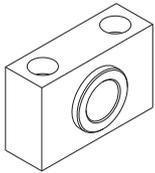
**Articulated counter hinge (DIN648K)**



Material: Aluminium

Ø	Q	P	BG	BH	BI	BL	BM	BN	BO	EN	ER	BQ	D	H	S	F	g	Part no.
	H13	H13	JS14	Max	JS15		JS15	JS14	Max	0/-0,1	Max	Max	H7	+0,5/0	H13			
32	6,6	11	18	31	21	10	32	38	51	14	15	10,5	10	8,5	20	3	178	KF-19032SC
40	6,6	11	22	35	24	10	36	41	54	16	18	12	12	8,5	20	3	268	KF-19040SC
50	9	15	30	45	33	12	45	50	65	21	20	15	16	10,5	20	3	458	KF-19050SC
63	9	15	35	50	37	12	50	52	67	21	23	15	16	10,5	20	3	550	KF-19063SC
80	11	18	40	60	47	14	63	66	86	25	27	18	20	11,5	20	3	970	KF-19080SC
100	11	18	50	70	55	15	71	76	96	25	30	18	20	12,5	20	3	1326	KF-19100SC
125	13,5	20	60	90	70	20	90	94	124	37	40	25	30	17	20	3	3000	KF-19125SC

**Hinge support**

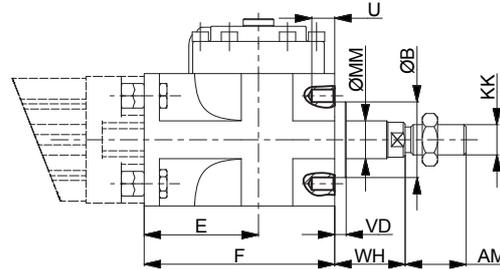
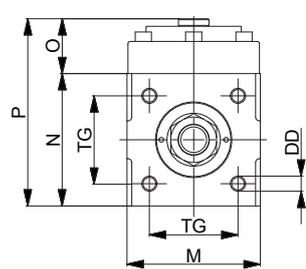


Material: Aluminium body and brass bushing

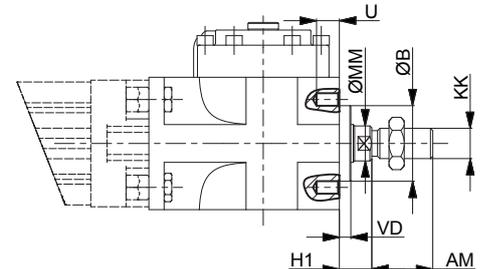
Ø	C	ØCR	FK	FN	ØHB	NH	TH	UL	ØU	E	f	C1	C2	Mass	Part no.
	H9	f7	±0,1				±0,1			±0,5				g	
32	10,5	12	15	30	6,6	18	32	46	11	7	1	71	86	100	KF-41032
40	12	16	18	36	9	21	36	55	15	9	1,6	87	105	150	KF-41040050
50	12	16	18	36	9	21	36	55	15	9	1,6	99	117	150	KF-41040050
63	13	20	20	40	11	23	42	65	18	11	1,6	116	136	234	KF-41063080
80	13	20	20	40	11	23	42	65	18	11	1,6	136	156	234	KF-41063080
100	16	25	25	50	14	28,5	50	75	20	13	2	164	189	435	KF-41100125
125	16	25	25	50	14	28,5	50	75	20	13	2	192	217	435	KF-41100125

**Locking unit for ISO cylinder Ø 32 ÷ 125**

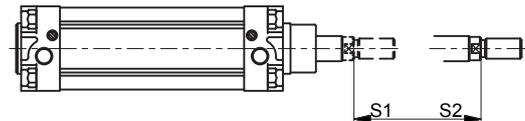
> ISO protrusion



> Reduced protrusion

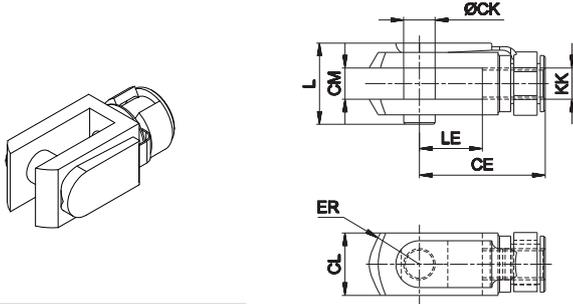


> Additional length to standard rod  
 S<sub>1</sub> for ISO protrusion  
 S<sub>2</sub> for reduced protrusion



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

Female fork with clips

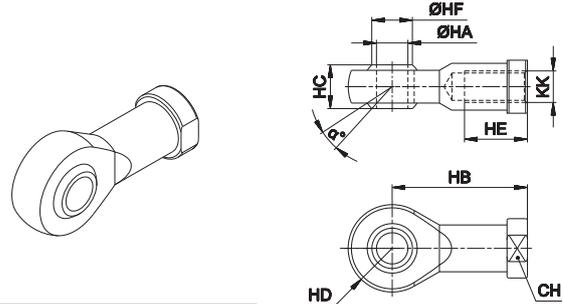


Material: Zinc-plated steel

Ø	CE	CK	CL	CM	ER	KK	L	LE	Mass g	Part no.
32	40	10	20	10	16	M10x1,25	26	20	90	KF-15032
40	48	12	24	12	19	M12x1,25	32	24	150	KF-15040
50 - 63	64	16	32	16	25	M16x1,5	40	32	340	KF-15050
80 - 100	80	20	40	20	32	M20x1,5	50	40	670	KF-15080
125	110	30	55	30	45	M27x2	65	54	1790	KF-15125

Fork with pin for piston rod according to ISO 8140 standard with pin

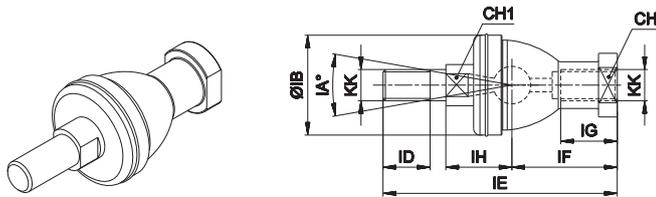
Articulated self-lubricating fork



Material: Zinc-plated steel

Ø	α°	CH	KK	HA	HB	HC	HD	HE	HF	Mass g	Part no.
32	13	17	M10x1,25	10	43	14	14	20	12,9	76	KF-17032
40	13	19	M12x1,25	12	50	16	16	22	15,4	110	KF-17040
50 - 63	15	22	M16x1,5	16	64	21	21	28	19,3	220	KF-17050
80 - 100	14	30	M20 x 1,5	20	77	25	25	33	24,3	400	KF-17080
125	17	41	M27x2	30	110	37	35	51	34,8	1119	KF-17125

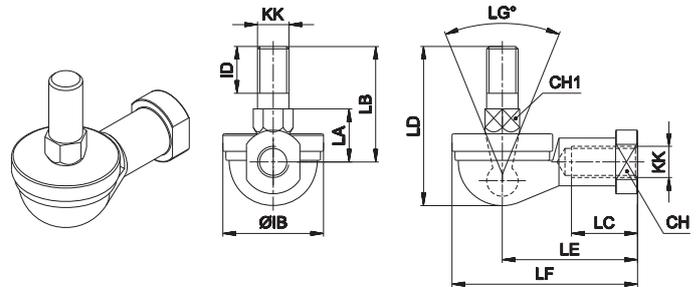
Fork with axially mounted articulated pin



Material: Zinc-plated steel

Ø	CH	CH1	IA°	KK	IH	IB	ID	IE	IF	IG	Mass g	Part no.
32	17	11	30	M10x1,25	19,5	32	15	74,5	35	18	120	KF-22025
40	19	17	30	M12x1,25	22	36	17	84	40	20	185	KF-22040
50 - 63	22	19	22	M16x1,5	27,5	47	23	112	50	27	360	KF-22050
80 - 100	30	24	15	M20x1,5	31,5	58	25	133	63	38	570	KF-22080
125	-	-	-	-	-	-	-	-	-	-	-	-

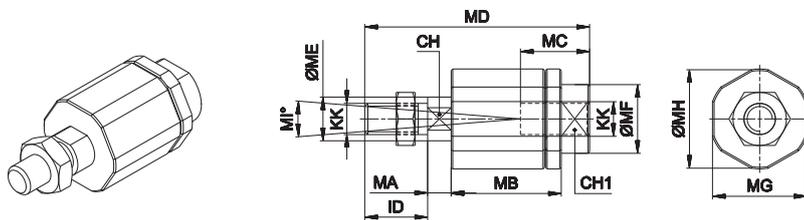
Fork with angle mounted articulated pin



Material: Zinc-plated steel

Ø	CH	CH1	LG°	KK	IB	ID	LA	LB	LC	LD	LE	LF	Mass g	Part no.
32	17	11	50	M10x1,25	32	15	17	37	21	50,5	43	57	110	KF-23025
40	19	17	50	M12x1,25	36	17	19	42	27	57,5	50	66	165	KF-23040
50 - 63	22	19	40	M16x1,5	47	23	23,5	60	33	79,5	64	84	330	KF-23050
80 - 100	30	24	32	M20x1,5	58	25	27	68	40	90	77	99	540	KF-23080
125	-	-	-	-	-	-	-	-	-	-	-	-	-	-

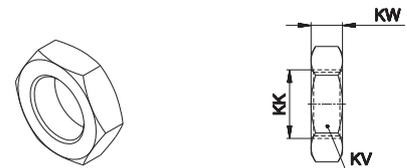
Floating joint



Material: Zinc-plated steel

Ø	CH	CH1	ID	KK	MA	MB	MC	MD	ME	MF	MG	MH	MI°	Mass g	Part no.
40	12	19	75	M12x1,25	5	35	20	75	14	22	30	32	8	230	KF-24040
50 - 63	20	30	103	M16x1,5	8	54	32	103	22	32	41	45	6	660	KF-24050
80 - 100	20	30	119	M20x1,5	8	54	40	119	22	32	41	45	6	700	KF-24080
125	24	54	54	M27x2	10	60	48	147	32	57	65	70	8	2060	KF-24125

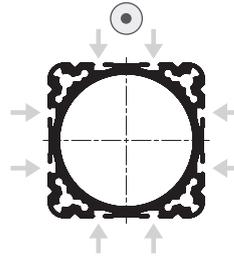
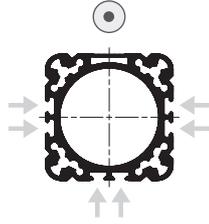
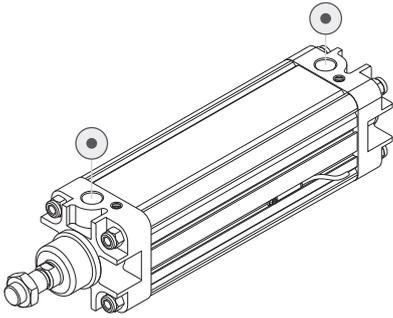
Piston rod locknut (zinc-plated steel)



Material: Zinc-plated steel

Ø	KK	KV	KW	Mass g	Part no.
40	M12x1,25	19	7	10	KF-16040
50 - 63	M16x1,5	24	8	20	KF-16050
80 - 100	M20x1,5	30	9	30	KF-16080
125	M27x2	41	12	80	KF-16125

Slot positions for DF magnetic sensor

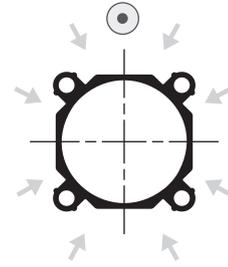
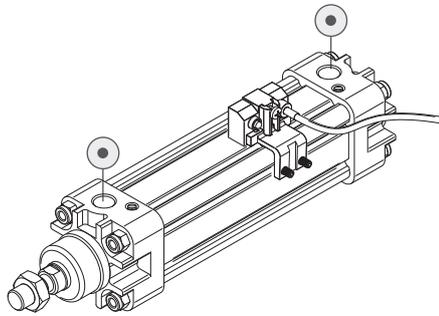
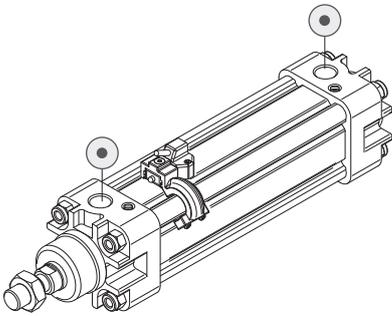


supply port

**KD Ø32 ÷ Ø63 mm**  
right/left and opposite  
to the supply port

**KD Ø80 ÷ Ø125 mm**  
all sides

Slot positions for DH magnetic sensor - K cylinder series



standard  
on all sides

# K 160/200

## Pneumatic cylinders ISO 15552

- High payload series
- With aluminium tube and tie-rods
- High temperature seals available on request

Available ATEX version upon request



### TECHNICAL CHARACTERISTICS

Working temperature	-20 ÷ 80 °C
Fluid	filtered air, with or without lubrication
Working pressure	1,5 ÷ 10 bar
Bore size	Ø160 - 200 mm
Cushioning	adjustable in both sides

### CONSTRUCTIVE CHARACTERISTICS

End caps	die-cast aluminium alloy (painted)
Barrel	anodized aluminium
Tie rods	zinc-plated steel
Piston	die-cast aluminium alloy
Piston rod guide	acetal resin
Piston rod	C43 chromium-plated steel (standard) stainless steel, rolled AISI 303
Piston rod scraper seals	nitrile rubber (NBR)
Piston seal	polyurethane PU (Ø160) - nitrile rubber NBR (Ø200)
Magnet	plasto-ferrite

### Version available upon request



Ø160/200 Cylinder with profiled tube

### CODIFICATION KEY

K	2	0	0	1	6	0	0	0	8	0		
1	2	3	4		5			6	7			

1 Series	2 Type	3 Version	4 Bore (mm)
K = Ø 160/200 mm - ISO 15552 Pneumatic Cylinders	1 = Stainless steel piston rod 2 = Chromium-plated steel piston rod	00 = D.A. Standard version 01 = D.A. Through piston rod  D.A. = Double acting	160 = Ø160 200 = Ø200

5 Stroke (mm)	6 Magnetic	7 Atex option
0025 = 25    0150 = 150    0320 = 320    0700 = 700	M = Magnetic version	X = Atex (upon request) See ATEX Catalogue for types and versions
0050 = 50    0160 = 160    0350 = 350    0800 = 800		
0075 = 75    0175 = 175    0400 = 400    0900 = 900		
0080 = 80    0200 = 200    0450 = 450    1000 = 1000		
0100 = 100    0250 = 250    0500 = 500		
0125 = 125    0300 = 300    0600 = 600		

K190 and K290 versions with high temperature seals (Max 120°C) available upon request

Stroke tolerances

Ø	stroke ≤ 500	501 ≤ stroke ≤ 1000
	mm	mm
160	+4 - 0	+5 - 0
200	+4 - 0	+5 - 0

Theoretical forces (N) at different working pressure (bar)

Ø	Surface area		Working pressure					Working pressure				
	mm <sup>2</sup>		bar					bar				
	Thrust	Traction	Thrust					Traction				
			2	4	6	8	10	2	4	6	8	10
160	20096	18850	4019	8038	12058	16077	20096	3770	7540	11310	15080	18850
200	31400	30144	6280	12560	18840	25120	31400	6029	12058	18066	24115	30144

Cushion

Length	Max kinetic energy absorption
mm	Nm
45	52
45	95

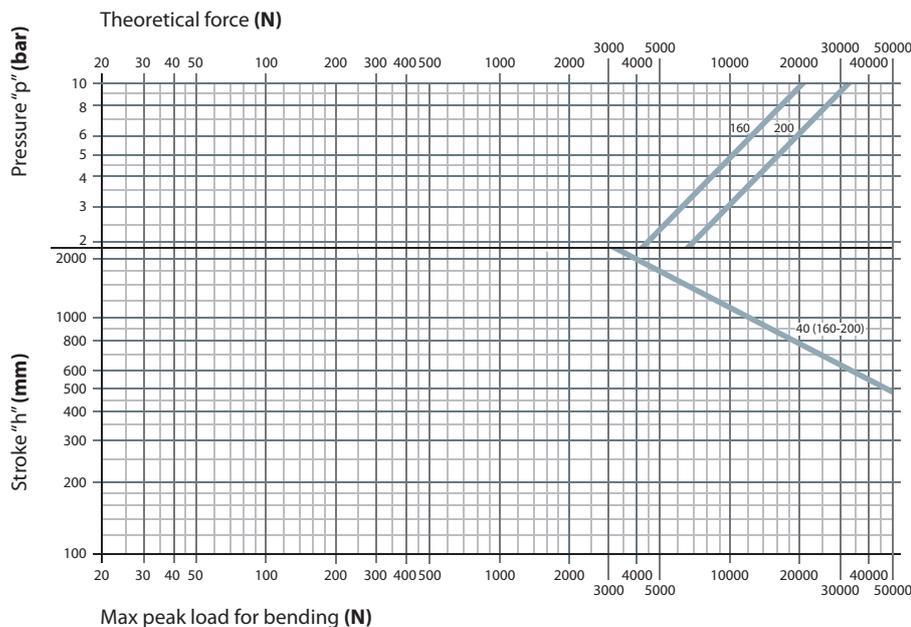
Mass - Standard cylinder

Ø	Cylinder - stroke 0	Increase per mm stroke	Moving element - stroke 0	Increase per mm stroke
	g	g	g	g
160	14600	16,9	4020	9,9
200	16500	18,5	4780	9,9

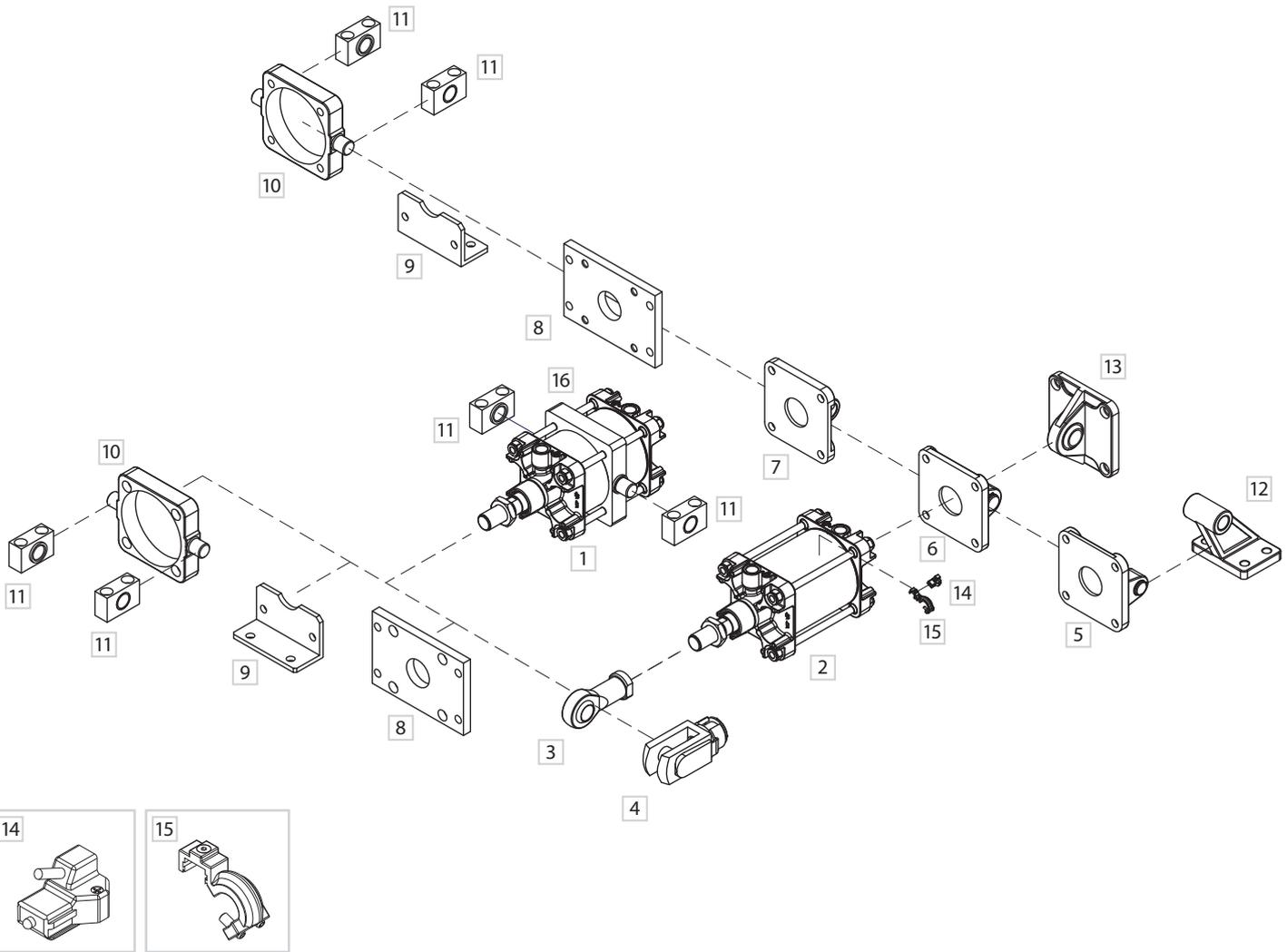
Mass - Through piston rod cylinder

Ø	Cylinder - stroke 0	Increase per mm stroke	Moving element - stroke 0	Increase per mm stroke
	g	g	g	g
160	16850	26,80	5940	19,8
200	19900	28,40	6800	19,8

Graph of theoretical forces/pressure and of acceptable strokes depending on maximum peak load



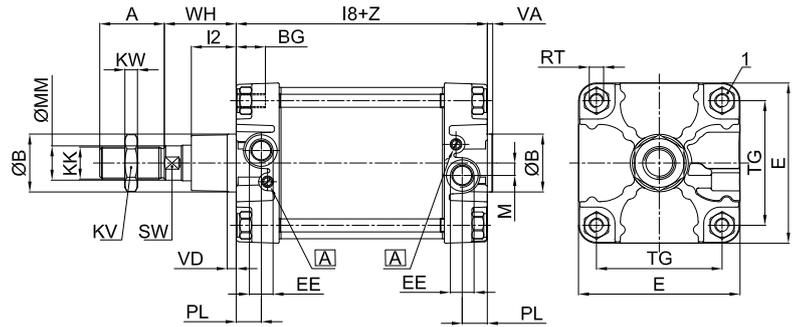
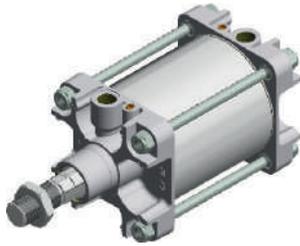
Fixing elements and accessories



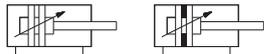
1  
CYLINDERS

DESCRIPTION	PART NO.
1 ISO cylinder with intermediate hinge	-
2 ISO cylinder	-
3 Articulated self-lubricating fork	KF-17__
4 Female fork with clips	KF-15__
5 Female hinge (ISO MP2) with pin	KF-10__ A
6 Narrow female hinge with pin (DIN648K)	KF-10__ AS
7 Male rear hinge (ISO MP4)	KF-11__
8 Front- rear flange (ISO MF1-MF2)	KF-12__
9 Angle bracket (ISO MS1)	KF-13__
10 Front-rear hinge with floating pin	KF-14__ AP
11 Support for front-rear-intermediate hinge	KF-41__
12 Counter hinge 90° (CETOP RP107P)	KF-19__ CTA
13 Articulated rear male hinge (ISO MP6)	KF-11__ S
14 ISO intermediate hinge (ISO MT4)	DH-__
15 DH sensor	DH-__
16 Mounting bracket for DH sensor	KF-14__

Double acting standard version

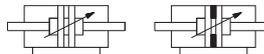
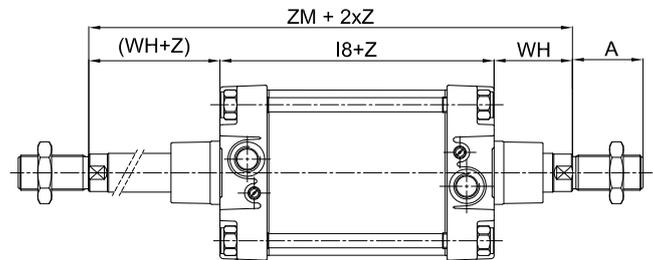


A Pneumatic cushioning adjusting screw



**K100/200**  
D.A. Standard version

Double acting through piston rod



**K101/201**  
D.A. Through piston rod

Z = Stroke

Ø	A <sup>(a)</sup>	B	BG	E	EE <sup>(b)</sup>	KK <sup>(a)</sup>	KV	KW	I2	I8	M	MM	PL	RT	SW	TG	VA	VD	WH	ZM	1			
160	72	e11 65	25	180	G3/4	M36x2	55	14	50	180	±1,1	14	40	28	M16	36	140	±1,1	6	9	80	±2,2	340	27
200	72	75	25	220	G3/4	M36x2	55	14	60	180	±1,1	14	40	27	M16	36	175	±1,1	6	9	95	±2,2	370	27

(a) = A and KK dimension according to ISO 4395

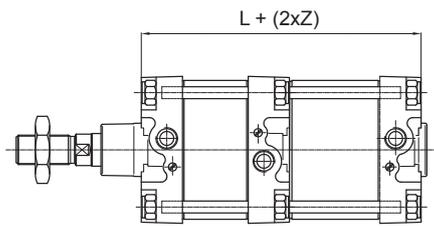
(b) = EE according to ISO 228/1

## Tandem version

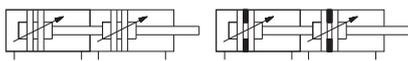
### CODIFICATION KEY

K	2	A	1	6	0	0	5	0	M
1	2	3			4		5		

1 Series	2 Type	3 Bore (mm)	4 Stroke (mm)	5 Magnetic
K = Ø 160/200 mm - ISO 15552 Pneumatic Cylinders	<b>1A</b> = Double thrust tandem only for forward movement, stainless steel piston rod <b>2A</b> = Double thrust tandem only for forward movement, chromium-plated steel piston rod <b>1D</b> = Double thrust tandem only for reverse movement, stainless steel piston rod <b>2D</b> = Double thrust tandem only for reverse movement, chromium-plated steel piston rod	<b>160</b> = Ø160 <b>200</b> = Ø200	Upon request	<b>M</b> = Magnetic version



Z = Stroke	
Ø	L
160	340
200	350



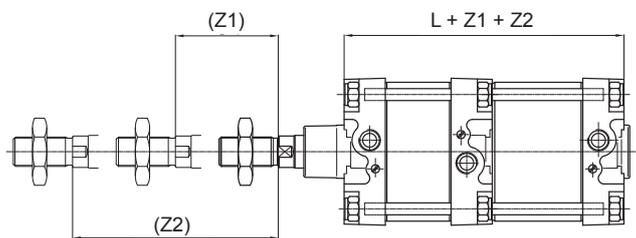
Tandem cylinders are constructed using two pistons coupled together which double the force in forward movement compared to the traditional ISO cylinders of the same bore size.

## Two-position tandem version

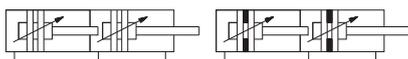
### CODIFICATION KEY

K	2	B	1	6	0	0	5	0	0	7	0	M
1	2	3			4		5			6		

1 Series	2 Type	3 Bore (mm)	4 Stroke Z1 (mm)	5 Stroke Z2 (mm)	6 Magnetic
K = Ø 160/200 mm - ISO 15552 Pneumatic Cylinders	<b>1B</b> = Two-position tandem, stainless steel male piston rod <b>2B</b> = Two-position tandem, chromium-plated steel male piston rod	<b>160</b> = Ø160 <b>200</b> = Ø200	Stroke of rear cylinder (upon request)	Stroke of head cylinder (upon request)	<b>M</b> = Magnetic version



Z = Stroke	
Ø	L
160	340
200	350



Two-position cylinders with two independent piston-rods which allow to realize a double positioning in which the thrust forces are the same as those of an ISO cylinder of the same bore size.

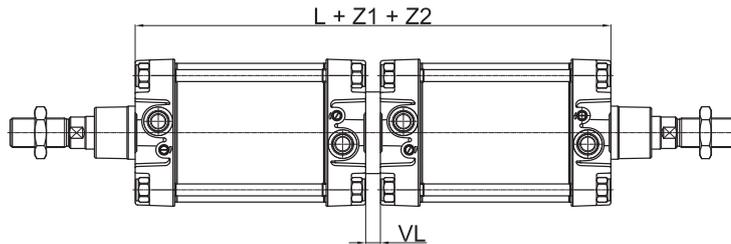
For all other dimensions please refer to the standard version on.  
For other types of cylinders kindly contact our sales office.

## Opposed tandem version

### CODIFICATION KEY

K	2	C	1	6	0	0	3	0	0	5	0	M
1	2	3			4			5			6	

1 Series	2 Type	3 Bore (mm)	4 Stroke Z1 (mm)	5 Stroke Z2 (mm)	6 Magnetic
K = Ø 160/200 mm - ISO 15552 Pneumatic Cylinders	<b>1C</b> = Opposed tandem, stainless steel male piston rod <b>2C</b> = Opposed tandem, chromium-plated steel male piston rod	<b>160</b> = Ø160 <b>200</b> = Ø200	Stroke 1 (upon request)	Stroke 2 (upon request)	<b>M</b> = Magnetic version

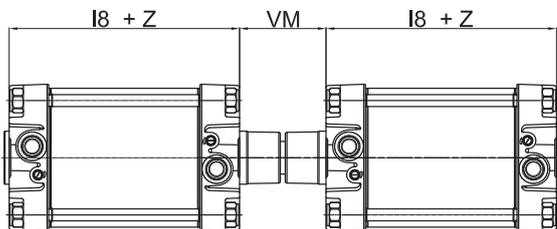


Z = Stroke

Ø	L	VL
160	378	18
200	382	22

Type of cylinder characterized by the coupling of two cylinders and whose piston rods move in opposite directions. The values of the thrust force are the same as those of the traditional cylinders.

## With common piston rod tandem version (upon request)

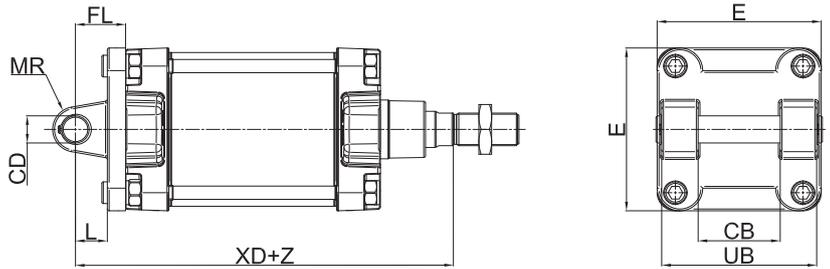
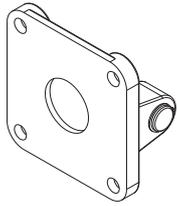


Z = Stroke

Ø	L	I8	VM
160	378	180 ±1,1	152
200	382	180 ±1,1	167

Two coupled cylinders with common piston rod  
 The values of the thrust force are the same as those of the traditional cylinders.  
 For all other dimensions please refer to the standard version.  
 For other types of cylinders kindly contact our sales office.

Female rear hinge (ISO MP2) with pin

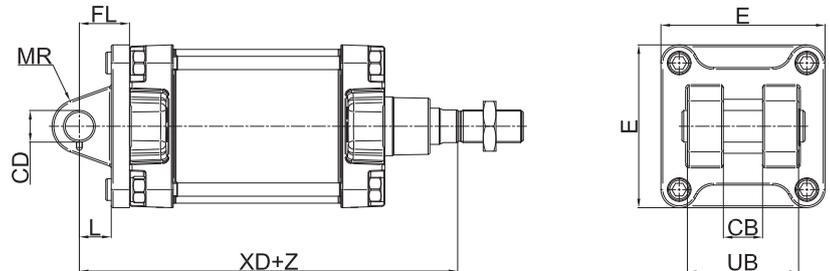
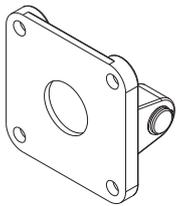


Material: Aluminium

Z = Stroke

Ø	CB	CD	E	FL	L	MR	UB	XD		Mass g	Part no.
	H14	H9		± 0,2	min.	max		h14			
160	90	30	180	55	35	31	170	315	±2	3460	KF-10160A
200	90	30	220	60	35	31	170	335	±2	4610	KF-10200A

Narrow female hinge with pin (DIN648K)

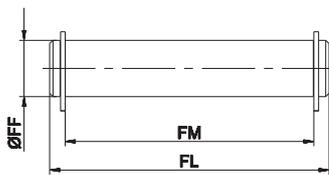


Material: Aluminium

Z = Stroke

Ø	CB	CD	E	FL	L	MR	UB	XD		Mass g	Part no.
	H14	H9		± 0,2	min.	max		h14			
160	43	35	180	55	35	30	122	315	± 2	3002	KF-10160AS
200	43	35	220	60	35	30	122	335	± 2	4372	KF-10200AS

Pin for female hinge



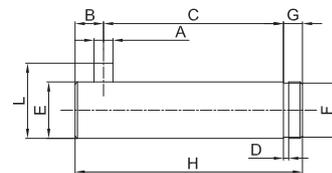
Including 2 circlips

Material: Zinc-plated steel

Cylinder Ø	FF	FL	FM	Mass g	Part no.
	f8				
160 - 200	30	205	171	978	KF-18160*

\* = Pin for part no. KF-10...

Pin for narrow female hinge

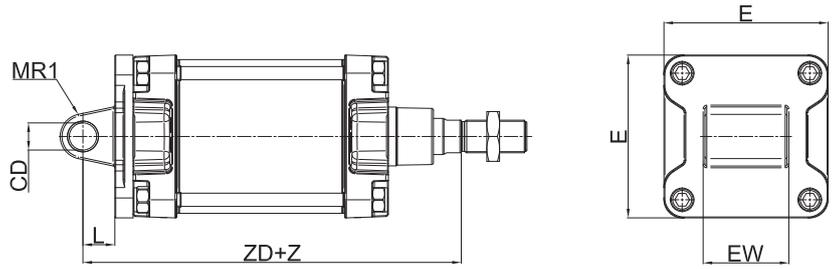
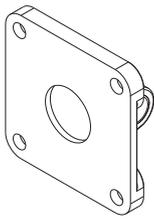


Including circlip

Material: Zinc-plated steel

Ø	A	C	D	E	F	G	H	L	B	g	Part no.
	H12	+0,5 +0,3	h13	f7	h11		L	0 -0,5			
160	6	119	1,6	35	33	7	135	41	9	26	KF-18160S
200	6	119	1,6	35	33	7	135	41	9	42	KF-18040S

Rear male hinge (ISO MP4)



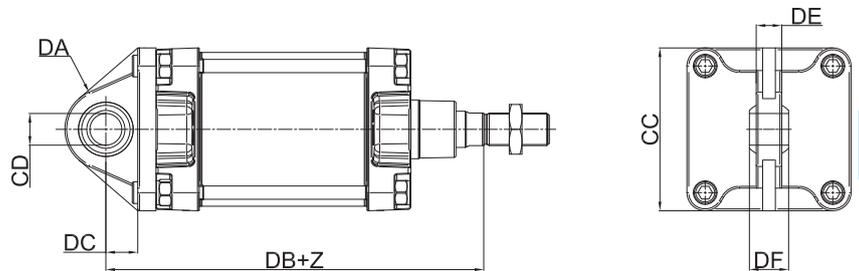
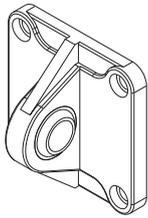
Material: Aluminium

Z = Stroke

Cylinder Ø	CD	E	EW	L	MR	XD	Mass	Part no.
	H9			min.			g	
160	30	180	90	35	31	315	1846	KF-11160
200	30	220	90	35	31	335	2950	KF-11200

\* = Non-standard dimension

Articulated rear male hinge (ISO MP6)



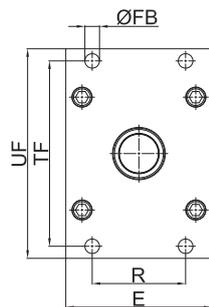
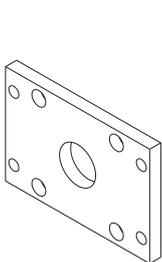
Material: Aluminium

Z = Stroke

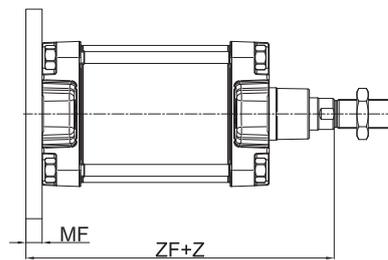
Cylinder Ø	CC	CD	DA	DB	DC	DE	DF	Mass	Part no.
		H7						g	
160	180	35	45	315	35	28	43	2420	KF-11160S
200	220	35	48	335	35	28	43	3840	KF-11200S

\* = Non-standard dimension

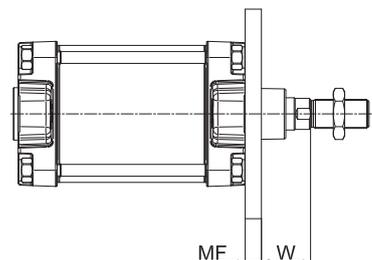
Front/rear flange (ISO MF1-MF2)



> Rear assembly



> Front assembly

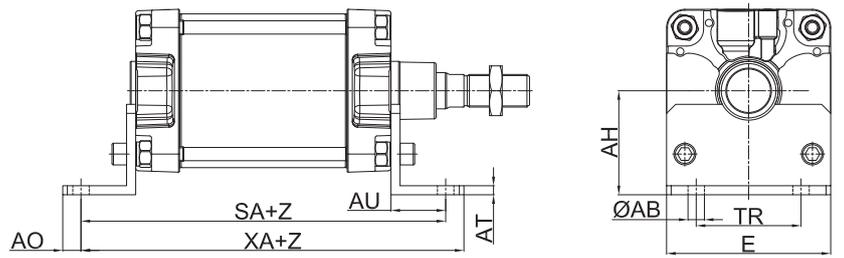
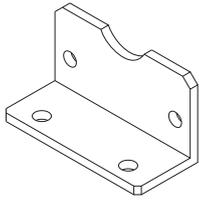


Material: Zinc-plated steel

Z = Stroke

Cylinder Ø	E	FB	MF	R	TF	UF	W	ZF	Mass	Part no.		
		H13	± 0,2	JS14	JS14	max			g			
160	180	18	20	115	230	260	60	±2,5	280	±2	7000	KF-12160
200	220	22	25	135	270	300	70	±2,5	300	±2	12400	KF-12200

Angle bracket (ISO MS1)



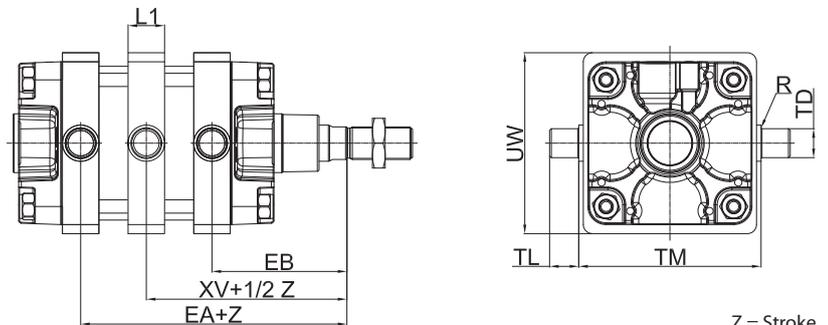
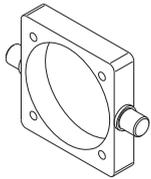
Material: Zinc-plated steel

Cylinder Ø	ØAB	AH	AO	AT	AU	E	SA	TR	XA	Mass	Part no.
	H13	JS15			±0,2			JS14		g	
160	18	115	20	10	60	180	300	±2	115	2530	KF-13160
200	22	135	30	10	70	220	320	±2	135	4300	KF-13200

Z = Stroke

\* = Non-standard dimension

ISO intermediate hinge (ISO MT4)

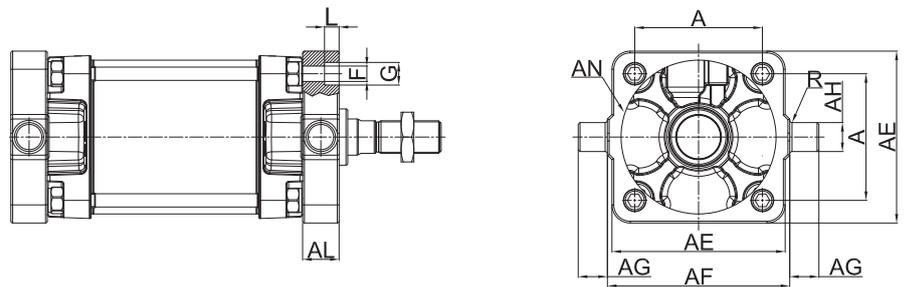
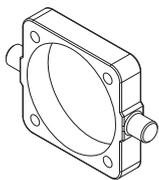


Material: Zinc-plated steel

Cylinder Ø	EA	EB	TD	TL	TM	UW	L1	XV	R	Mass	Part no.
	Max	Max								g	
160	240	148	32	32	200	200	40	218	±2,5	4300	KF-14160
200	255	163	32	32	250	250	40	233	±2,5	7450	KF-14200

Z = Stroke

Front/rear hinge with floating pin

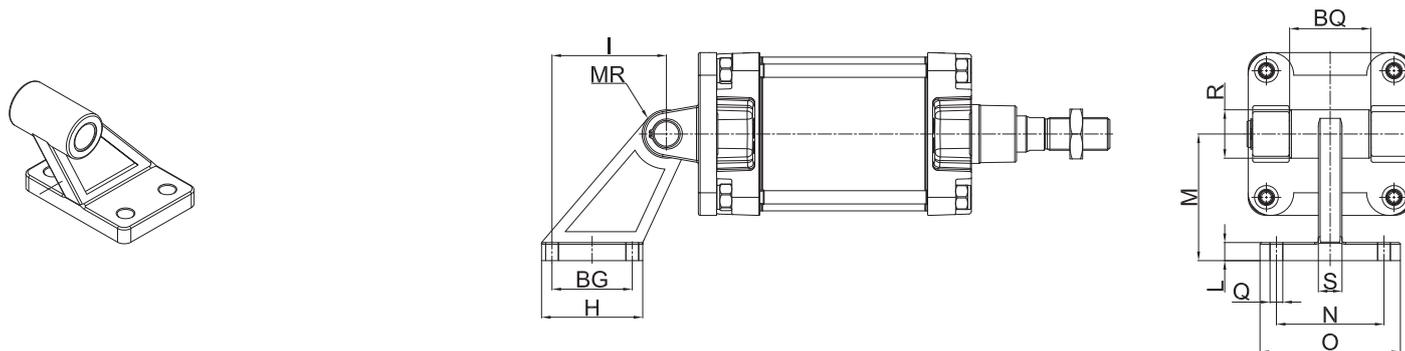


Material: Zinc-plated steel

Cylinder Ø	AE	AL	AH	AG	AF	AN	A	F	G	L	R	Mass	Part no.
	Max	Max	e9	h14	h14	+0,2/0	±0,2	H13	H13	+0,5/0	0/-0,3	g	
160	190	40	32	32	200	170	140	17	25	16	2,5	4150	KF-14160AP
200	240	40	32	32	250	211	175	17	25	16	2,5	7350	KF-14200AP

1  
CYLINDERS

Counter hinge 90° (CETOP RP107P)

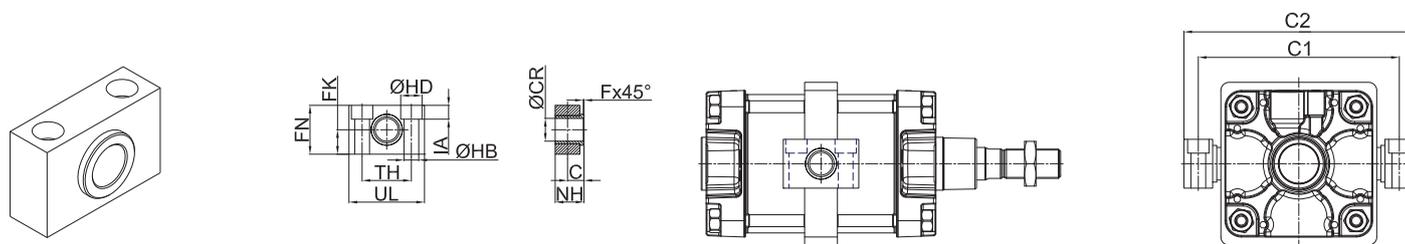


Material: Aluminium

Cylinder Ø	Q	BG	H	I	L	M	O	N	S	R	BQ	G	Mass	Part no.
	H13	JS14	Max	JS14		JS15	Max	JS14	Max	Max	-0,5/-1,2	H9	g	
160	14	88	126	97	25	115	156	118	36	63	90	30	2600	KF-19160CTA
200	18	90	130	105	30	135	162	122	40	63	90	30	3250	KF-19200CTA

\* = Non-standard dimension

Hinge support

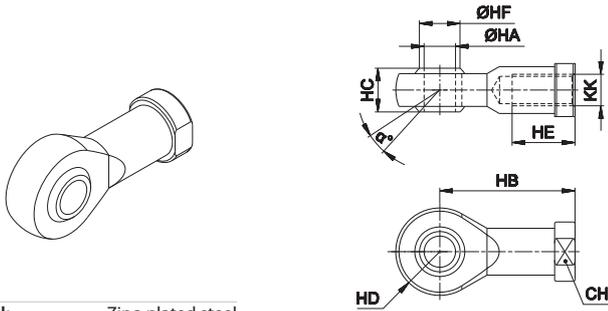


Material: Zinc-plated steel

Cylinder Ø	UL	NH	FN	FK	TH	CR	C	HB	HD	AI	F	C1	C2	Mass	Part no.
														g	
160	92	40	60	30	60	32	22,5	18	26	17	2,5	245	280	850	KF-41160200
200	92	40	60	30	60	32	22,5	18	26	17	2,5	295	330	850	KF-41160200

1  
CYLINDERS

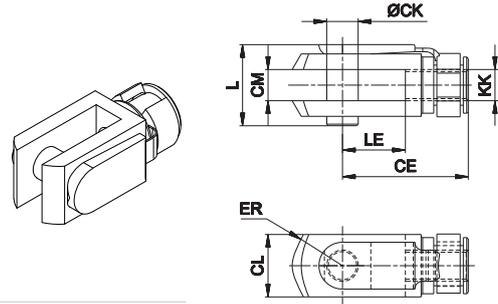
Articulated self-lubricating fork



Material: Zinc-plated steel

Cylinder Ø	α°	CH	KK	HA	HB	HC	HD	HE	HF	Mass g	Part no.
160 - 200	16°	50	M36x2	H7	125	43	40 <sup>0</sup> <sub>-0,12</sub>	56	37,7	1595	KF-17160

Female fork with clips



Material: Zinc-plated steel

Cylinder Ø	CE	CK	CL	CM	ER	KK	L	LE	Mass g	Part no.
160 - 200	144	35	70	B12	57	M36x2	81	72	3870	KF-15160

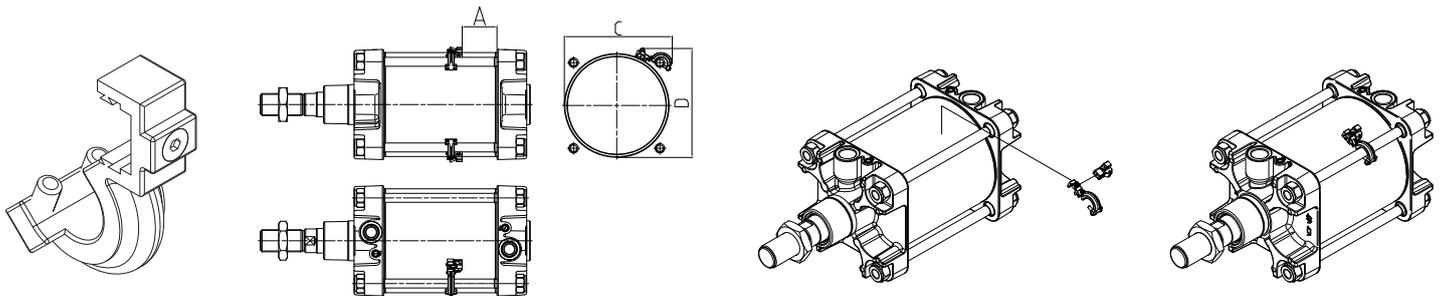
Piston rod locknut (zinc-plated steel)



Material: Zinc-plated steel

Cylinder Ø	KK	KV	KW	Mass g	Part no.
160 - 200	M36x2	55	14	170	KF-16160

DH sensor fixing elements



Ø	A - B	C	D	Part no.
160	25 - 27	180	180	DH-K160200
200	24 - 26	200	220	

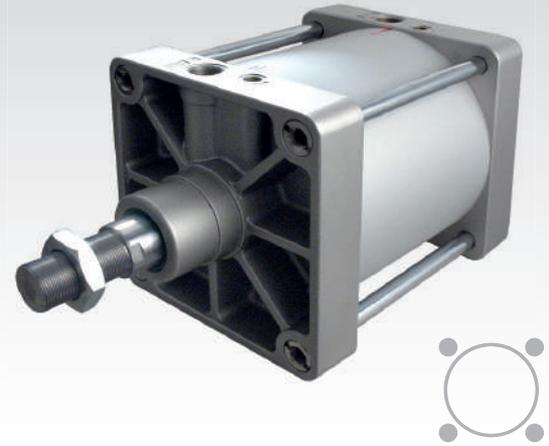
1 CYLINDERS

# K 250/320

## Pneumatic cylinders ISO 15552

- High payload series
- With aluminium tube and tie-rods
- High temperature seals available on request

Available ATEX version upon request



### TECHNICAL CHARACTERISTICS

Working temperature	-20 ÷ 80 °C
Fluid	filtered air, with or without lubrication
Working pressure	1,5 ÷ 10 bar
Bore size	Ø160 - 200 mm
Cushioning	adjustable in both sides

### CONSTRUCTIVE CHARACTERISTICS

End caps	die-cast aluminium (painted)
Barrel	anodized aluminium
Tie rod	zinc-plated steel
Piston	die-cast aluminium
Piston rod guide	acetal resin
Piston rod	chromium -plated steel (standard) stainless steel, rolled AISI 303
Piston rod scraper seals	nitrile rubber (NBR)
Piston seal	nitrile rubber (NBR)
Magnet	plasto-ferrite

### CODIFICATION KEY

K	2	0	0	2	5	0	0	0	8	0		
1	2	3	4		5			6	7			

1 Series	2 Type	3 Version	4 Bore (mm)
K = Ø 250/320 mm - ISO 15552 Pneumatic Cylinders	1 = Stainless steel piston rod 2 = Chromium-plated steel piston rod	00 = D.A. Standard version 01 = D.A. Through piston rod  D.A. = Double acting	250 = Ø250 320 = Ø320

5 Stroke (mm)	6 Magnetic	7 ATEX version
0025 = 25    0150 = 150    0320 = 320    0700 = 700	M = Magnetic version	X = Atex (upon request)
0050 = 50    0160 = 160    0350 = 350    0800 = 800		See ATEX Catalogue for types and versions
0075 = 75    0175 = 175    0400 = 400    0900 = 900		
0080 = 80    0200 = 200    0450 = 450    1000 = 1000		
0100 = 100    0250 = 250    0500 = 500		
0125 = 125    0300 = 300    0600 = 600		

Versions with high temperature seals (max 120°C) and version with low temperature seals (max -30°C) available upon request.

Stroke tolerances

∅	mm	
	mm	mm
250	+4 - 0	+5 - 0
320	+4 - 0	+5 - 0

Theoretical forces (N)  
at different working pressure (bar)

∅	Surface area		Working pressure					Working pressure				
	mm <sup>2</sup>		bar					bar				
	Thrust	Traction	Thrust					Traction				
			2	4	6	8	10	2	4	6	8	10
250	49087	43850	9817	19635	29452	39270	49087	9770	17540	26310	34080	43850
320	80425	71144	16085	32170	48255	64340	80425	14029	28058	43066	57115	71144

Cushion

Length	Max kinetic energy absorption
mm	Nm
45	56
45	98

Mass - Standard cylinder

∅	Cylinder - stroke 0	Increase per mm stroke	Moving element - stroke 0	Increase per mm stroke
	g	g	g	g
250	25830	65	6320	15
320	39100	226	7100	24

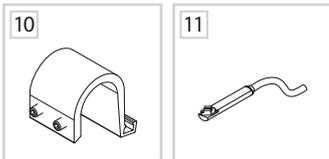
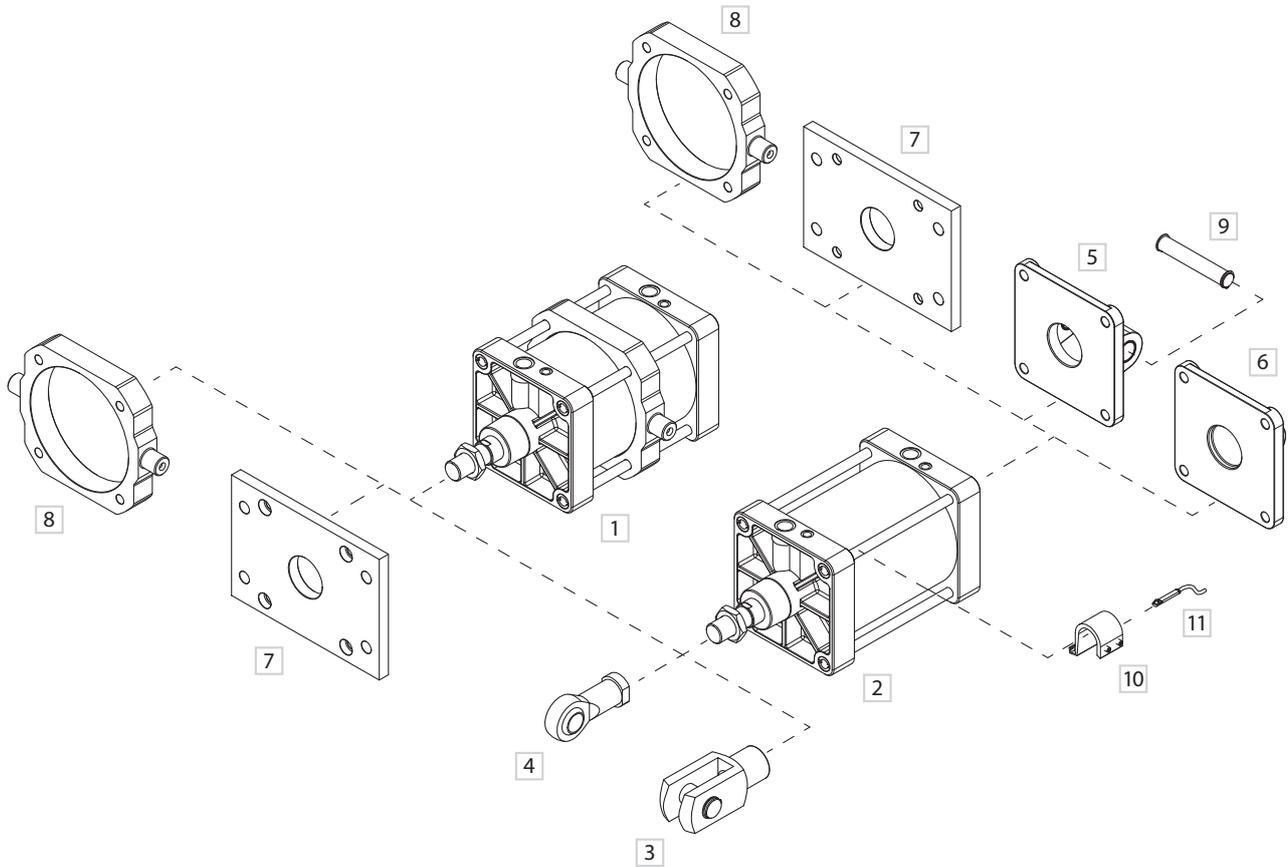
1

CYLINDERS

Mass - Through piston rod cylinder

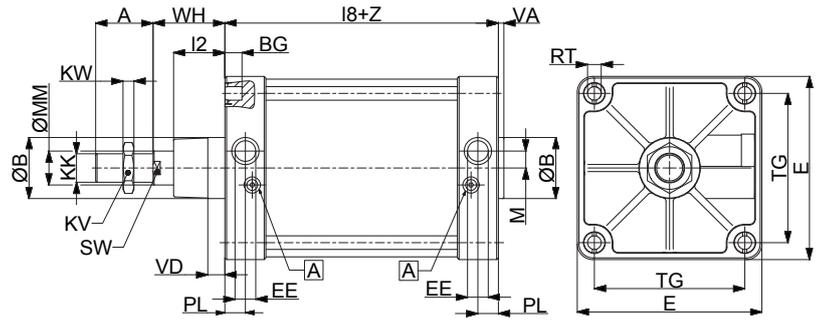
∅	Cylinder - stroke 0	Increase per mm stroke	Moving element - stroke 0	Increase per mm stroke
	g	g	g	g
250	28180	116	7300	15
320	40570	297	8200	24

Fixing elements and accessories

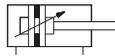
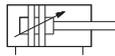


DESCRIPTION	PART NO.
1 ISO cylinder with intermediate hinge	-
2 ISO cylinder	-
3 Female fork with pin	KF-15_ _ _
4 Articulated self-lubricating fork	KF-17_ _ _
5 Female rear hinge (ISO MP2)	KF-10_ _ _ A
6 Male rear hinge (ISO MP4)	KF-11_ _ _
7 Front- rear flange (ISO MF1-MF2)	KF-12_ _ _
8 ISO intermediate hinge (ISO MT4)	KF-14_ _ _
9 Pin for hinge (ISO MP2)	KF-18_ _ _
10 Sensor bracket	DH-K_ _ _
11 DF sensor	DF- _ _ _

Double acting standard version



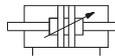
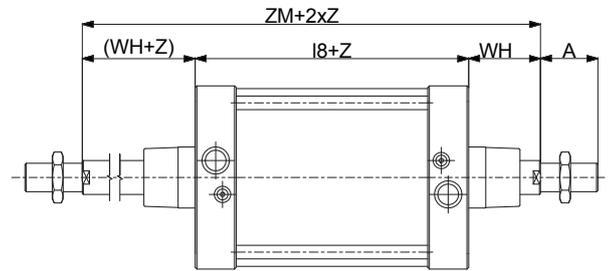
A Pneumatic cushioning adjusting screw



K100/200

For extended rod version add **WH+Z**(stroke) dimensions

Double acting through piston rod



K101/201

Z = Stroke

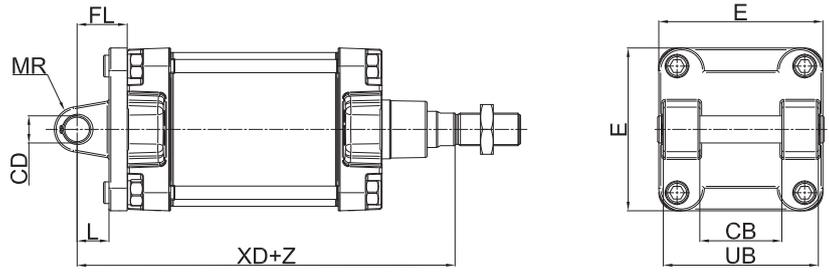
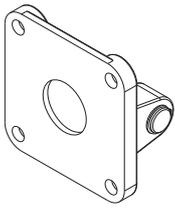
Ø	A <sup>(a)</sup>	B	BG	E	EE <sup>(b)</sup>	KK <sup>(a)</sup>	KV	KW	I2	I8	M	MM	PL	RT	SW	TG	VA	VD	WH	ZM
250	84	90	25	270	G1"	M42x2	65	16	75	200 ±1,1	25	50	30	M20	46	220 ±1,1	8	25	105 ±2,2	410
320	96	100	28	350	G1"	M48x2	75	18	90	220 ±1,1	35	63	30	M24	55	270 ±1,1	10	25	120 ±2,2	460

(a) = A and KK dimension according to ISO 4395

(b) = EE dimension according to ISO 228/1

For all other dimensions please refer to the standard version  
Other versions available on request

Female rear hinge (ISO MP2)

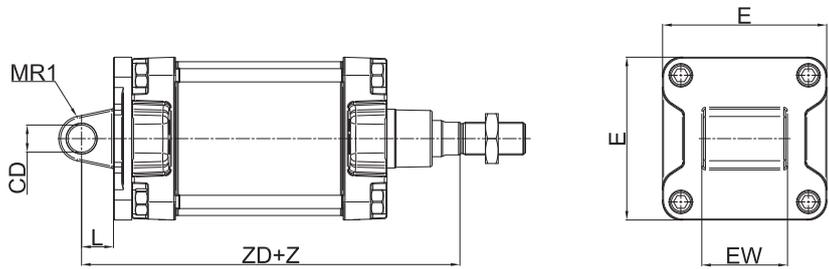
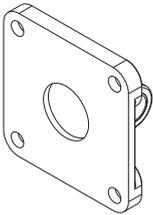


Material: Aluminium body  
PTFE and steel bushing

Z = Stroke

Cylinder Ø	CB	CD	E	FL	L	MR	UB	XD		Mass	Part no.
	H14	H9		± 0,2	min.	max	h14			g	
250	110	40	270	70	45	40	200	375	± 2,5	5400	KF-10250A
320	220	45	350	80	50	45	220	420	± 2,5	9950	KF-10320A

Rear male hinge (ISO MP4)



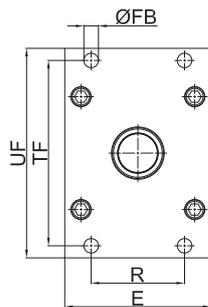
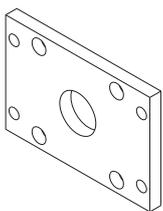
Material: Aluminium body  
PTFE and steel bushing

Z = Stroke

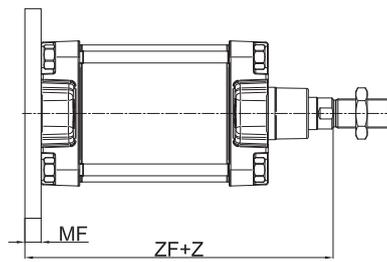
Cylinder Ø	CD	E	EW		L	MR1	XD		Mass	Part no.
	H9				min.				g	
250	40	270	110	- 1,2	45	40	375	± 2,5	5800	KF-11250
320	45	350	120	- 1,2	50	45	420	± 2,5	10800	KF-11320

\* = Non-standard dimension

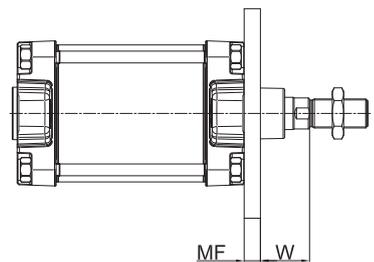
Front/rear flange (ISO MF1-MF2)



> Rear assembly



> Front assembly



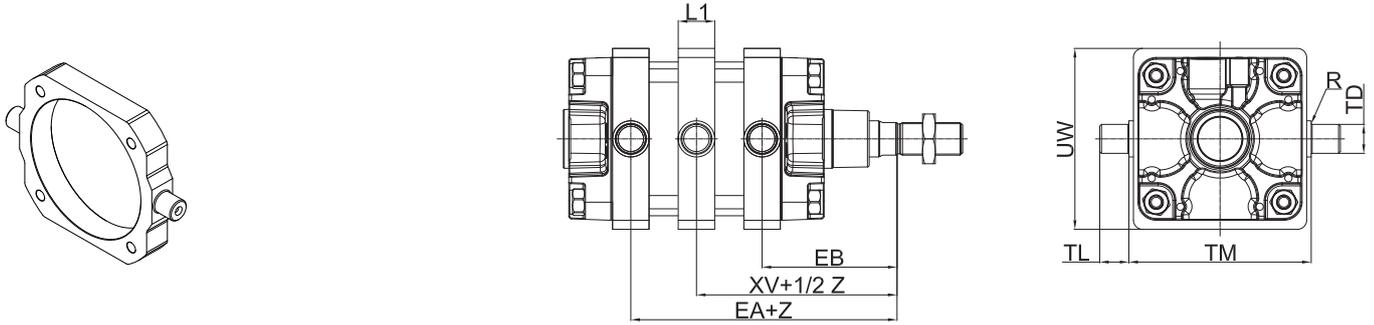
Material: Zinc-plated steel

Z = Stroke

Cylinder Ø	E	FB	MF	R	TF	UF	W		ZF	Mass	Part no.	
		H13	± 0,2	JS14	JS14	max				g		
250	285	26	25	165	330	400	80	± 2,5	330	± 2,5	18400	KF-12250
320	350	33	30	200	400	470	90	± 2,5	370	± 2,5	31800	KF-12320

VDMA standard upon request

ISO intermediate hinge (ISO MT4)

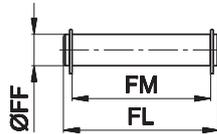


Material: Zinc-plated steel

Z = Stroke

Cylinder Ø	EA	EB	TD	TL	TM	UW	L1	XV	R	Mass	Part no.
	Max	Max								g	
250	220	105	40	40	320	295	50	205	2	12800	KF-14250
320	245	215	50	50	400	370	70	230	2	24600	KF-14320

Pin with 2 circlips

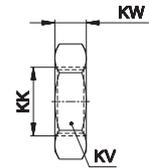


Material: Zinc-plated steel

Cylinder Ø	FF	FL	FM	Mass	Part no.
	f8			g	
250	37,5	211	202	1800	KF-18250
320	42,5	234	222	2600	KF-18320

\* = Pin for part no. KF-10...

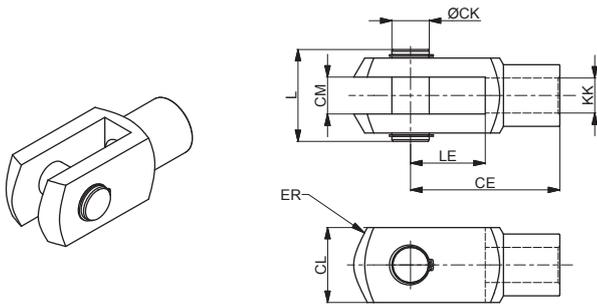
Piston rod locknut



Material: Zinc-plated steel

Cylinder Ø	KK	KV	KW	Mass	Part no.
				g	
250	M42 x 2	65	16	300	KF-16250
320	M48 x 2	75	18	450	KF-16320

Female fork with clips

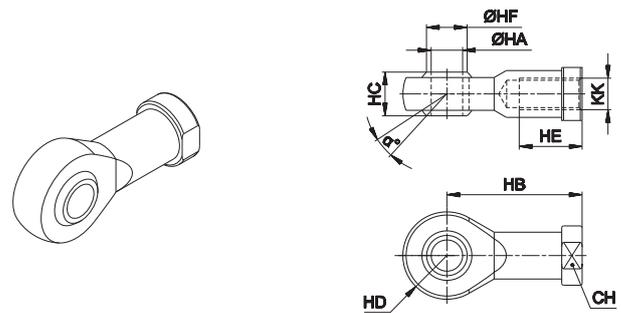


Material: Zinc-plated steel

Cylinder Ø	CE	CK	CL	CM	ER	KK	L	LE	Mass	Part no.
				B12					g	
250	168	42	85	40	65	M42 x 2	104	84	6141	KF-15250
320	192	50	96	50	81	M48 x 2	117	96	10189	KF-15320

Fork with pin suitable for piston rod according to ISO 8140 standard with pin

Articulated self-lubricating fork



Cylinder Ø	α°	CH	KK	HA	HB	HC	HD	HE	HF	Mass	Part no.
				H7			0 -0,12			g	
250	16	55	M42 x 2	40	142	49	91	60	45,1	2372	KF-17250
320	14	65	M48 x 2	50	162	60	117	65	56,6	5620	KF-17320

Stroke tolerances

Ø	mm	
	mm	mm
250	+4 - 0	+5 - 0
320	+4 - 0	+5 - 0

Theoretical forces (N) at different working pressure (bar)

Ø	Surface area		Working pressure					Working pressure				
	mm <sup>2</sup>		bar					bar				
	Thrust	Traction	Thrust					Traction				
			2	4	6	8	10	2	4	6	8	10
250	49087	43850	9817	19635	29452	39270	49087	9770	17540	26310	34080	43850
320	80425	71144	16085	32170	48255	64340	80425	14029	28058	43066	57115	71144

Cushion

Length	Max kinetic energy absorption
mm	Nm
45	56
45	98

Mass - Standard cylinder

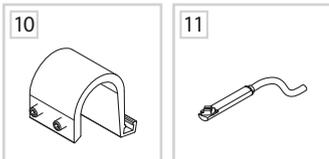
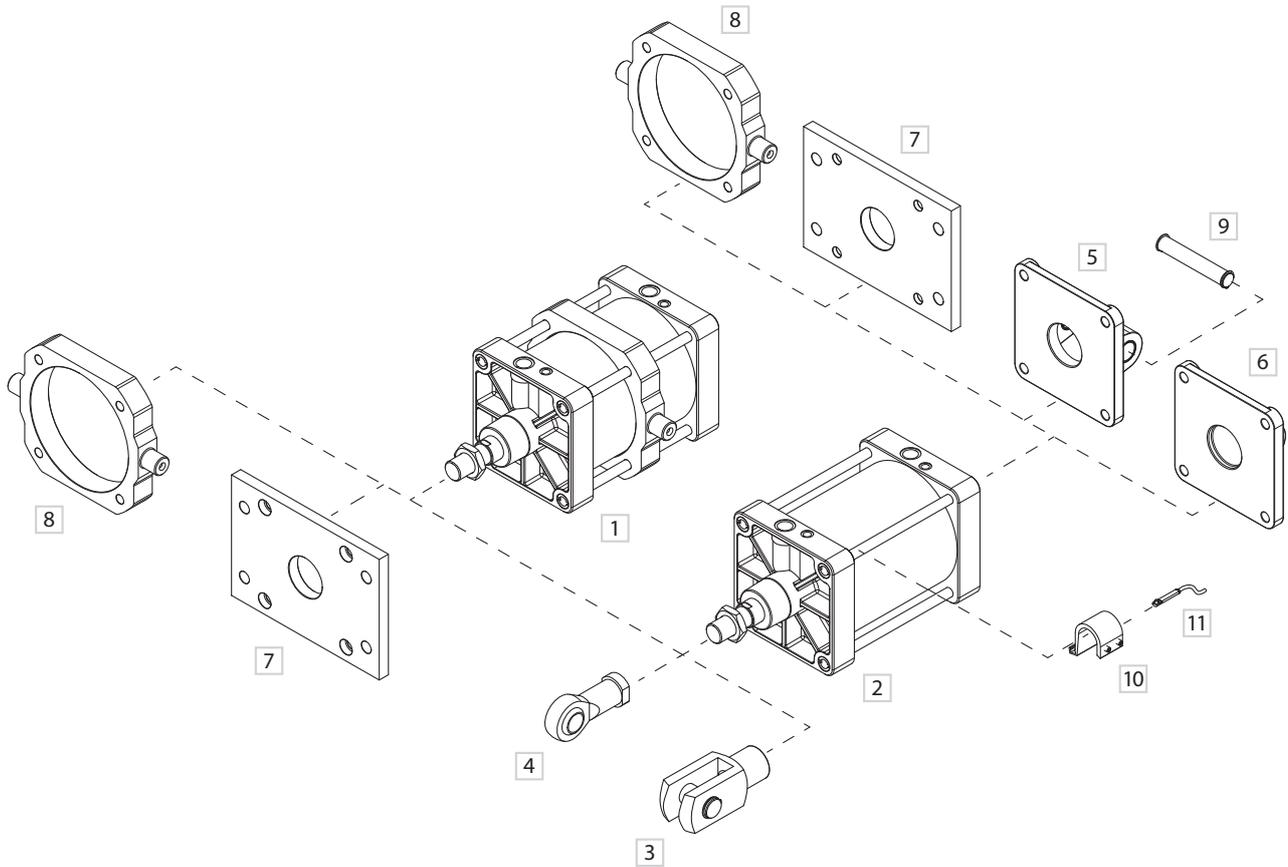
Ø	Cylinder - stroke 0	Increase per mm stroke	Moving element - stroke 0	Increase per mm stroke
	g	g	g	g
250	25830	65	6320	15
320	39100	226	7100	24

1

Mass - Through piston rod cylinder

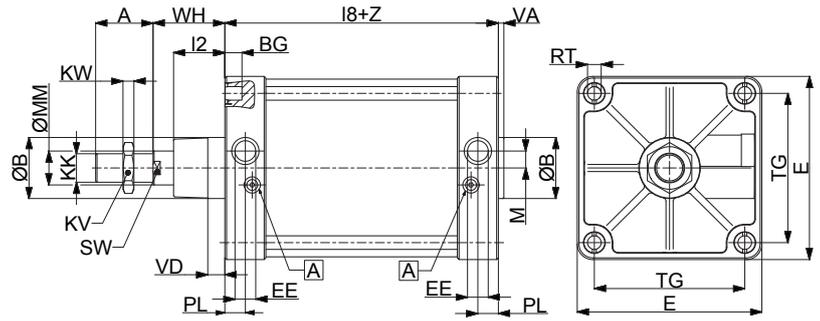
Ø	Cylinder - stroke 0	Increase per mm stroke	Moving element - stroke 0	Increase per mm stroke
	g	g	g	g
250	28180	116	7300	15
320	40570	297	8200	24

Fixing elements and accessories

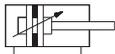
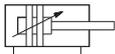


	DESCRIPTION	PART NO.
1	ISO cylinder with intermediate hinge	-
2	ISO cylinder	-
3	Female fork with pin	KF-15_ _ _
4	Articulated self-lubricating fork	KF-17_ _ _
5	Female rear hinge (ISO MP2)	KF-10_ _ _ A
6	Male rear hinge (ISO MP4)	KF-11_ _ _
7	Front- rear flange (ISO MF1-MF2)	KF-12_ _ _
8	ISO intermediate hinge (ISO MT4)	KF-14_ _ _
9	Pin for hinge (ISO MP2)	KF-18_ _ _
10	Sensor bracket	DH-K_ _ _
11	DF sensor	DF- _ _ _

### Double acting standard version



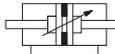
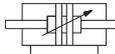
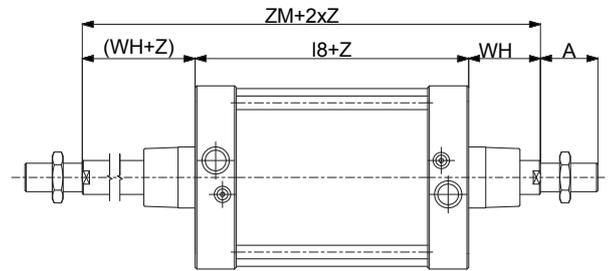
A Pneumatic cushioning adjusting screw



K100/200

For extended rod version add **WH+Z**(stroke) dimensions

### Double acting through piston rod



K101/201

Z = Stroke

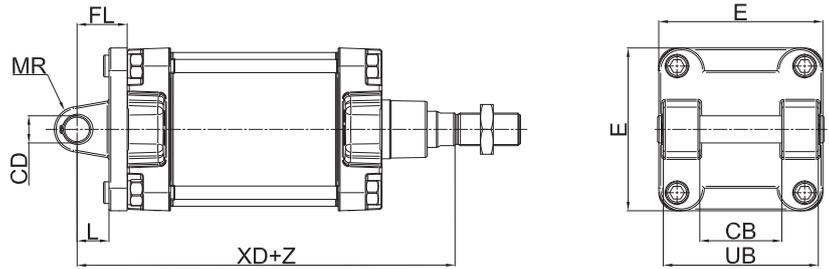
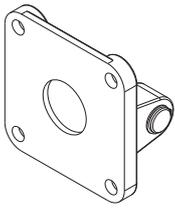
Ø	A <sup>(a)</sup>	B	BG	E	EE <sup>(b)</sup>	KK <sup>(a)</sup>	KV	KW	I2	I8	M	MM	PL	RT	SW	TG	VA	VD	WH	ZM
250	84	90	25	270	G1"	M42x2	65	16	75	200 ±1,1	25	50	30	M20	46	220 ±1,1	8	25	105 ±2,2	410
320	96	100	28	350	G1"	M48x2	75	18	90	220 ±1,1	35	63	30	M24	55	270 ±1,1	10	25	120 ±2,2	460

(a) = A and KK dimension according to ISO 4395

(b) = EE dimension according to ISO 228/1

For all other dimensions please refer to the standard version  
Other versions available on request

Female rear hinge (ISO MP2)

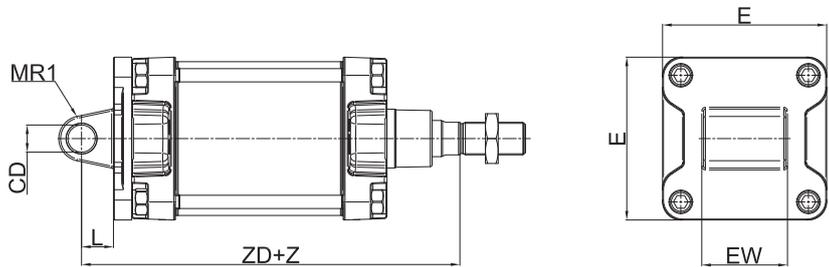
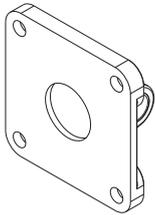


Material: Aluminium body  
PTFE and steel bushing

Z = Stroke

Cylinder Ø	CB	CD	E	FL	L	MR	UB	XD		Mass	Part no.
	H14	H9		± 0,2	min.	max	h14			g	
250	110	40	270	70	45	40	200	375	± 2,5	5400	KF-10250A
320	220	45	350	80	50	45	220	420	± 2,5	9950	KF-10320A

Rear male hinge (ISO MP4)



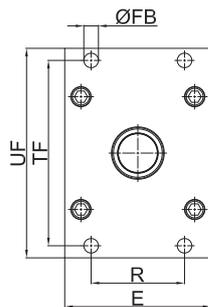
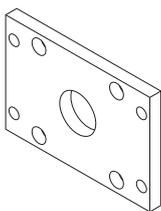
Material: Aluminium body  
PTFE and steel bushing

Z = Stroke

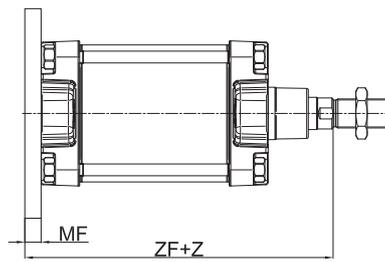
Cylinder Ø	CD	E	EW		L	MR1	XD		Mass	Part no.
	H9				min.				g	
250	40	270	110	- 1,2	45	40	375	± 2,5	5800	KF-11250
320	45	350	120	- 1,2	50	45	420	± 2,5	10800	KF-11320

\* = Non-standard dimension

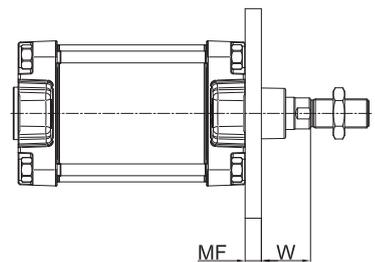
Front/rear flange (ISO MF1-MF2)



> Rear assembly



> Front assembly



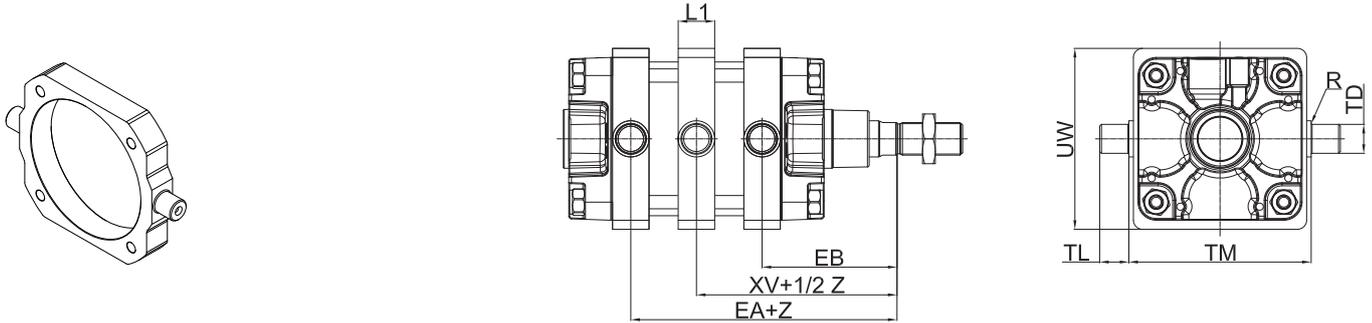
Material: Zinc-plated steel

Z = Stroke

Cylinder Ø	E	FB	MF	R	TF	UF	W		ZF	Mass	Part no.	
		H13	± 0,2	JS14	JS14	max				g		
250	285	26	25	165	330	400	80	± 2,5	330	± 2,5	18400	KF-12250
320	350	33	30	200	400	470	90	± 2,5	370	± 2,5	31800	KF-12320

VDMA standard upon request

ISO intermediate hinge (ISO MT4)

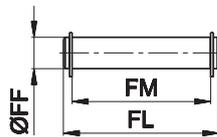


Material: Zinc-plated steel

Z = Stroke

Cylinder Ø	EA	EB	TD	TL	TM	UW	L1	XV	R	Mass	Part no.
	Max	Max								g	
250	220	105	40	40	320	295	50	205	2	12800	KF-14250
320	245	215	50	50	400	370	70	230	2	24600	KF-14320

Pin with 2 circlips



Piston rod locknut



Material: Zinc-plated steel

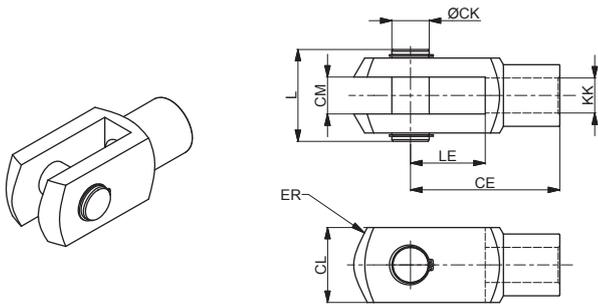
Material: Zinc-plated steel

Cylinder Ø	FF	FL	FM	Mass	Part no.
	f8			g	
250	37,5	211	202	1800	KF-18250
320	42,5	234	222	2600	KF-18320

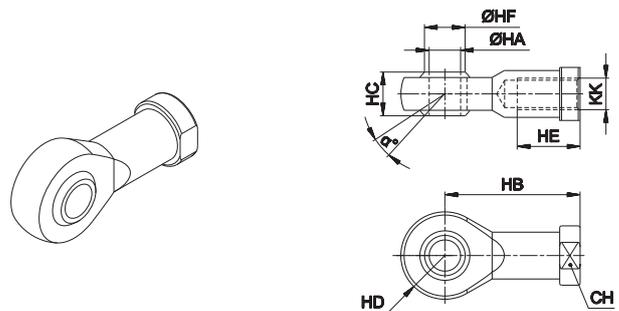
Cylinder Ø	KK	KV	KW	Mass	Part no.
				g	
250	M42 x 2	65	16	300	KF-16250
320	M48 x 2	75	18	450	KF-16320

\* = Pin for part no. KF-10...

Female fork with clips



Articulated self-lubricating fork



Material: Zinc-plated steel

Cylinder Ø	CE	CK	CL	CM	ER	KK	L	LE	Mass	Part no.
				B12					g	
250	168	42	85	40	65	M42 x 2	104	84	6141	KF-15250
320	192	50	96	50	81	M48 x 2	117	96	10189	KF-15320

Cylinder Ø	α°	CH	KK	HA	HB	HC	HD	HE	HF	Mass	Part no.
				H7			0 -0,12			g	
250	16	55	M42 x 2	40	142	49	91	60	45,1	2372	KF-17250
320	14	65	M48 x 2	50	162	60	117	65	56,6	5620	KF-17320

Fork with pin suitable for piston rod according to ISO 8140 standard with pin



Stroke tolerances

Ø	mm
16	+1,5 - 0
20	+1,5 - 0
25	+1,5 - 0
32	+2 - 0
40	+2 - 0
50	+2 - 0
63	+2,5 - 0
80	+4 - 0
100	+4 - 0

Single acting cylinder  
Spring return theoretical forces (N)

Ø	Max force	Min force	Max stroke	Decrease for mm stroke
	N	N	mm	N/mm
16	14	11,8	10	0,22
20	23,5	20	10	0,35
25	23,5	20	10	0,35
32	40	24	25	0,64
40	50	35	25	0,6
50	90	49	25	1,64
63	90	49	25	1,64
80	120	60	25	2,4
100	160	92,5	25	2,7

Theoretical forces (N)  
at working pressure (bar)

Ø	Surface area		Working pressure					Working pressure				
	mm <sup>2</sup>		bar					bar				
	Thrust	Traction	Thrust					Traction				
			2	4	6	8	10	2	4	6	8	10
16	201	151	40	80	121	161	201	30	60	91	121	151
20	314	236	63	126	188	251	314	47	94	142	189	236
25	491	412	98	196	295	393	491	82	165	247	330	412
32	804	691	161	322	482	643	804	138	276	414	553	691
40	1256	1143	251	502	754	1005	1256	228	457	685	914	1143
50	1962	1762	393	785	1178	1570	1963	352	704	1057	1409	1762
63	3116	2916	623	1246	1869	2493	3116	583	1166	1749	2332	2916
80	5024	4710	1005	2010	3014	4019	5024	942	1884	2826	3768	4710
100	7850	7536	1570	3140	4710	6280	7850	1507	3014	4521	6029	7536

1

CYLINDERS

Mass - Standard cylinder and long piston version

Ø	Cylinder - stroke 0 Standard		Cylinder - stroke 0 Long piston		Increase for mm stroke	Moving element stroke 0 - Standard		Moving element stroke 0 - Long piston		Increase for mm stroke
	g		g		g	g		g		g
	RP200	RM400	RP220	RM420	RP200/220 - RM400/420	RP200	RM400	RP220	RM420	RP200/220 - RM400/420
16	103	115	-	-	1,05	15,5	27,5	-	-	0,39
20	135	157	-	-	1,45	24,5	46,5	-	-	0,62
25	203	225	-	-	1,65	34,5	56,5	-	-	0,62
32	205	240	291,5	326,5	2,65	60	95	115,5	146,5	0,9
40	305	340	426	461	3,3	75	110	148	183	0,9
50	450	505	676,5	731,5	4,7	125	180	274	329	1,6
63	735	790	1063,5	1198,5	5,65	200	255	427	482	1,6
80	-	1146	-	-	8,95	-	285	-	-	2,1
100	-	1966	-	-	11,05	-	298	-	-	2,3

Mass - Through piston rod cylinder

Ø	Cylinder - stroke 0		Increase for mm stroke	Moving element - stroke 0		Increase for mm stroke
	g		g	g		g
	RP201	RM401	RP201 - RM401	RP201	RM401	RP201 - RM401
16	105	129	1,45	17,5	41,5	0,78
20	138	182	2,07	24,8	68,8	1,24
25	206	250	2,27	34,8	78,8	1,24
32	230	290	3,55	85	125	1,8
40	325	390	4,2	100	140	1,8
50	490	570	6,3	165	225	3,2
63	775	855	7,25	245	300	3,2
80	-	1261	11,4	-	335	3,6
100	-	2128	13,5	-	355	3,9

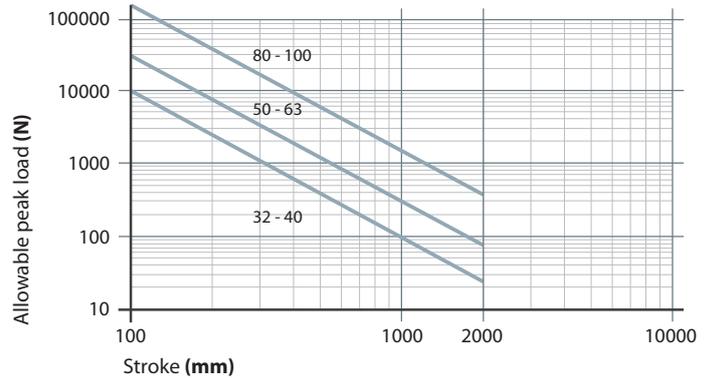
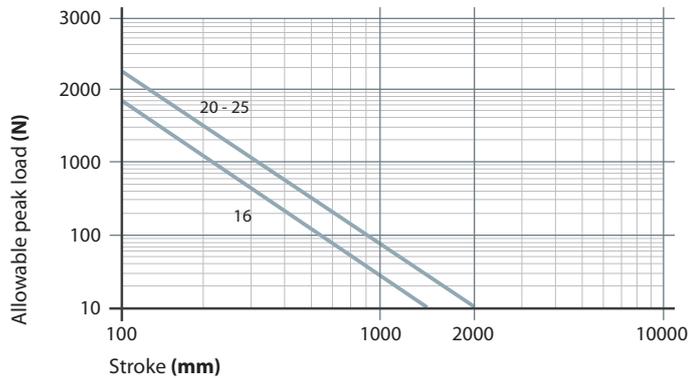
Mass - Retracted and extended piston rod cylinder

Ø	Cylinder - stroke 0 Retracted piston rod		Cylinder - stroke 0 Extended piston rod		Increase for mm stroke Retracted/extended piston rod	Moving mass - stroke 0 Retracted/extended piston rod		Increase for mm stroke Retracted/extended piston rod
	g		g		g	g		g
	RP260	RM460	RP270	RM470	RP260/RM460 - RP270/RM470	RP260/RP270	RM460/RM470	RP260/RM460 - RP270/RM470
16	103	115	103	115	1,05	15,5	27,5	0,39
20	135	157	135	157	1,45	24,5	46,5	0,62
25	203	225	203	225	1,65	34,5	56,5	0,62
32	215	250	203	238	2,65	63	98	0,9
40	315	350	302	337	3,3	81	116	0,9
50	468	523	445	500	4,7	137	192	1,6
63	753	808	730	785	5,65	212	267	1,6
80	-	1182	-	1182	8,95	-	289	1,9
100	-	2002	-	2002	11,05	-	310	2,2

Cylinder mass with non-rotating device  
and through piston rod with non-rotating device

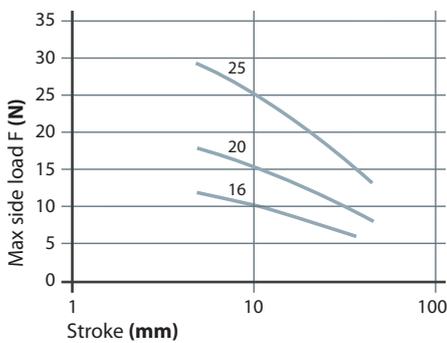
Ø	Cylinder - stroke 0		Increase for mm stroke		Moving mass - stroke 0		Increase for mm stroke	
	g		g		g		g	
	RP210	RP211	RP210	RP211	RP210	RP211	RP210	RP211
16	122	124	1,25	1,64	34,5	36,7	0,59	0,98
20	165	168	1,75	2,37	54,5	57,5	0,93	1,65
25	240	243	1,95	2,57	71,5	74,5	0,93	1,55
32	245	270	3,09	3,99	100	125	1,34	2,24
40	372	392	4,1	5	142	167	1,7	2,6
50	545	585	5,5	7,1	220	260	2,4	4
63	875	915	6,89	8,49	340	385	2,84	4,44

Peak load

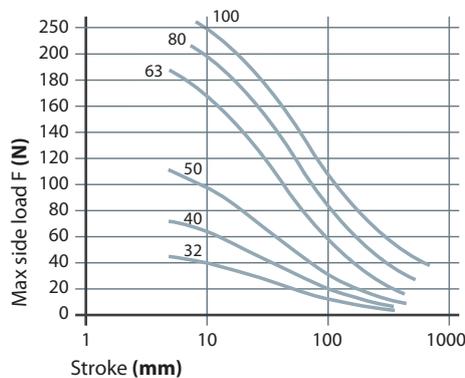


Graph of side load on piston rod

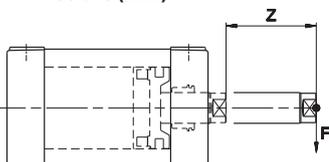
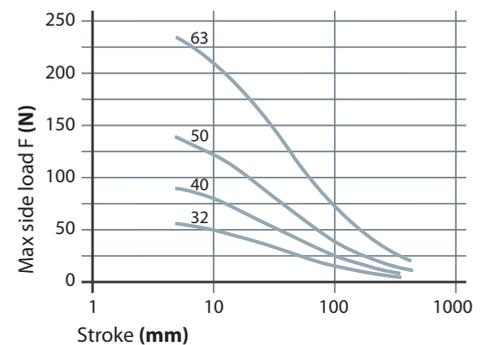
Standard piston Ø16 ÷ 25 mm



Standard piston Ø32 ÷ 100 mm

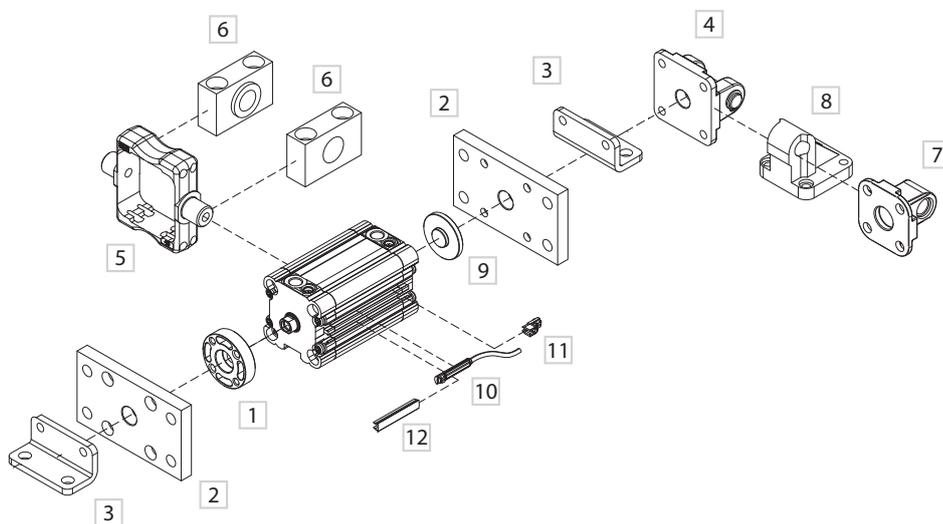


Long piston Ø32 ÷ 63 mm

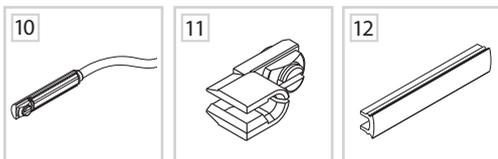


Z = Stroke  
F = Force

■ RP Ø 16 ÷ 63 fixing elements and accessories

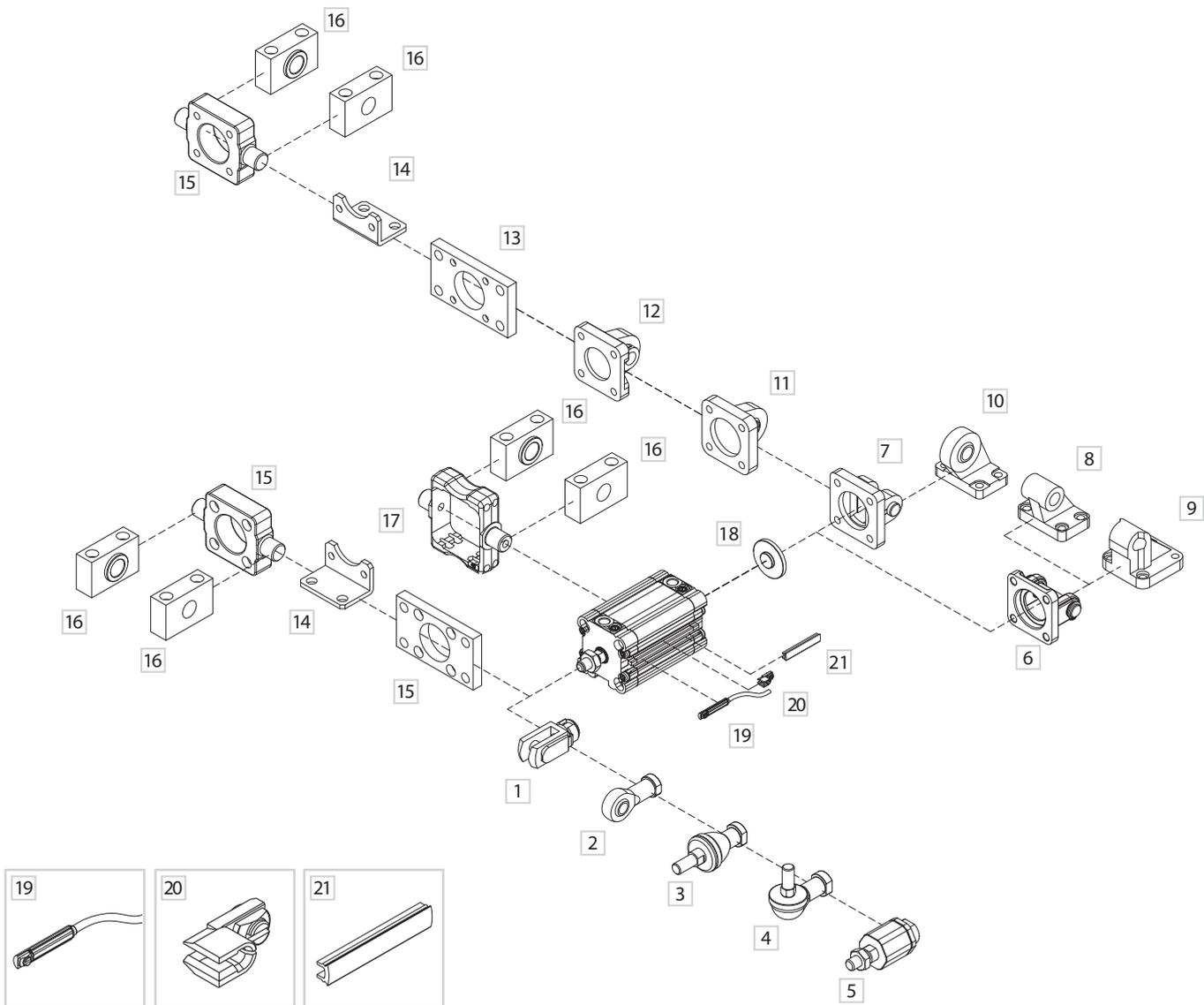


1  
CYLINDERS



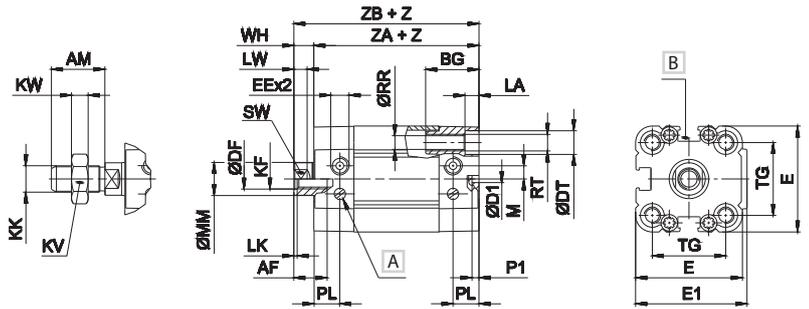
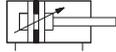
DESCRIPTION	PART NO.
1 Flange for female piston rod	RPF-28_ _ _
2 Front/rear flange	RPF-12_ _ _ / KF-12_ _ _ (Ø32)
3 Angle bracket	RPF-13_ _ _ / KF-13_ _ _ (Ø32)
4 Rear female hinge with pin	RPF-10_ _ _ A / KF-10_ _ _ A (Ø32)
5 Intermediate hinge	RPF-14_ _ _ / KDF-14_ _ _ (Ø32)
6 Hinge support	KF-41_ _ _
7 Rear male hinge	RPF-11_ _ _ / KF-11_ _ _ (Ø32)
8 Counter hinge 90°	KF-19_ _ _ Ø32 ÷ 63
9 Centering adaptor ring	RSF-09_ _ _ Ø32 ÷ 63
10 DF sensor (see accessories section)	DF- _ _ _
11 Cable clamping for DF sensor (see accessories section)	DF-001
12 DHF covering strip (see accessories section)	DHF-0020100

RM Ø 16 ÷ 100 fixing elements and accessories



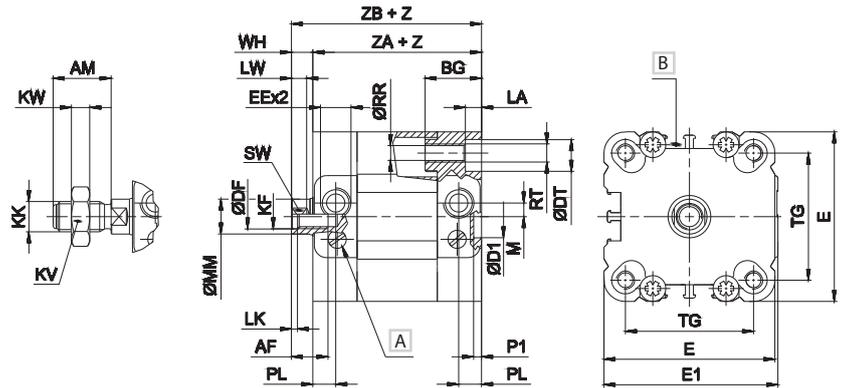
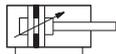
DESCRIPTION	PART NO.
1 Female fork with clips	KF-15___ / MF-15___ (Ø16-20-25)
2 Articulated self-lubricating fork	KF-17___ / MF-17___ (Ø16-20-25)
3 Fork with axially mounted articulated pin	KF-22___ / MF-22___ (Ø16-20-25)
4 Fork with angle mounted articulated pin	KF-23___ / MF-23___ (Ø16-20-25)
5 Floating joint	KF-24___ / MF-24___ (Ø16-20-25)
6 Female rear hinge with pin	KF-10___A
7 Narrow female hinge with pin	KF-10___AS
8 Counter hinge 90° (CETOP)	KF-19___CTA
9 Counter hinge 90°	KF-19___
10 Articulated counter hinge	KF-19___SC
11 Articulated rear male hinge	KF-11___S
12 Rear male hinge	KF-11___ RPF (Ø16-20-25)
13 Front/rear flange	KF-12___ RPF (Ø16-20-25)
14 Angle bracket	KF-13___ RPF (Ø16-20-25)
15 Front/rear hinge with floating pin	KF-14___AP
16 Hinge support	KF-41___
17 ISO intermediate hinge	KDF-14___ (Ø32)/ RPF-14___ (Ø40-50-63)
18 Centering adaptor ring	RSF-09___ (Ø32÷100)
19 DF Sensor (see accessories section)	DF-___
20 Cable clamping for DF sensor (see accessories section)	DF-001
21 DHF covering strip (see accessories section)	DHF-0020100

Double acting RP - RM Ø 16 ÷ 25



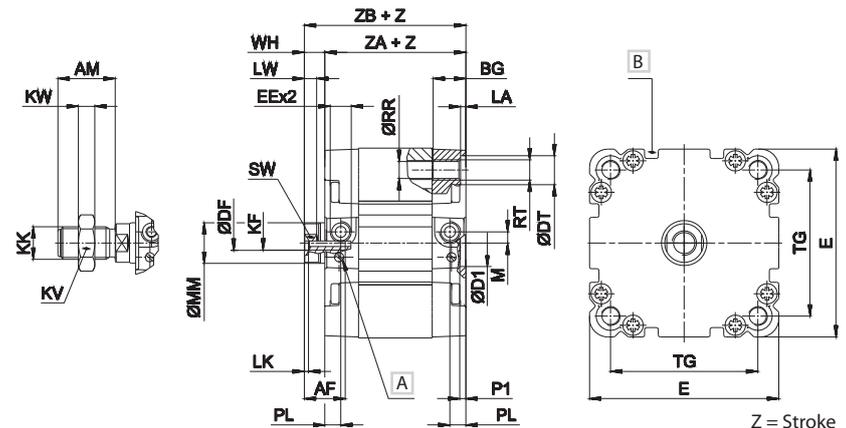
Z = Stroke

Double acting RP - RM Ø 32 ÷ 63



Z = Stroke

Double acting RM Ø 80 - 100



Z = Stroke

Ø	AM	AF	BG	DF	DT	D1	E	EE	E1	KF	KK	KV	KW	LA
16	12	8	16	4,1	5,8	2	28	M5	30	M4	M6x1	10	4	3,2
20	16	10	16	6,1	7,3	2	32	M5	34	M6	M8x1,25	13	5	4,2
25	16	10	16	6,1	8	2	37	M5	39	M6	M8x1,25	13	5	4,5
32	19	12	18	8,2	9	14	46	G1/8	47	M8	M10x1,25	17	6	5,3
40	19	12	18	8,2	9	14	56	G1/8	57	M8	M10x1,25	17	6	5,3
50	22	16	24	10,2	11	18	66	G1/8	67	M10	M12x1,25	19	7	6,5
63	22	16	24	10,2	11	18	79	G1/8	80	M10	M12x1,25	19	7	6,5
80	28	20	16,5	12,2	14	23	93,5	G1/8	-	M12	M16x1,5	24	9	2,6
100	28	20	21,5	12,2	14	28	112	G1/8	-	M12	M16x1,5	24	9	2,6

Ø	LK	LW	M	MM	PL	P1	RR	RT	SW	TG	WH	ZA	ZB
16	1	4,5	3,5	8	8	2	3,2	M4	7	18	5	37	42
20	1	4,5	4	10	8	2	4,2	M5	8	22	6	37	43
25	1	4,5	4	10	8	2	4,2	M5	8	26	6	39	45
32	2	5	4,5	12	7,5	2,5	5,2	M6	10	32,5	7	44	51
40	2	5	4,5	12	7,5	2,5	5,2	M6	10	42*	7	45	52
50	2	6	6,5	16	7,5	2,5	6,5	M8	13	50*	8	45	53
63	2	6	6,5	16	7,5	2,5	6,5	M8	13	62*	8	50	58
80	2	6	5,5	20	8	3	8,4	M10	17	72	10	54	64
100	2	6	8	20	10,5	3	8,4	M10	17	89	10	67	77

A Pneumatic cushioning adjusting screw

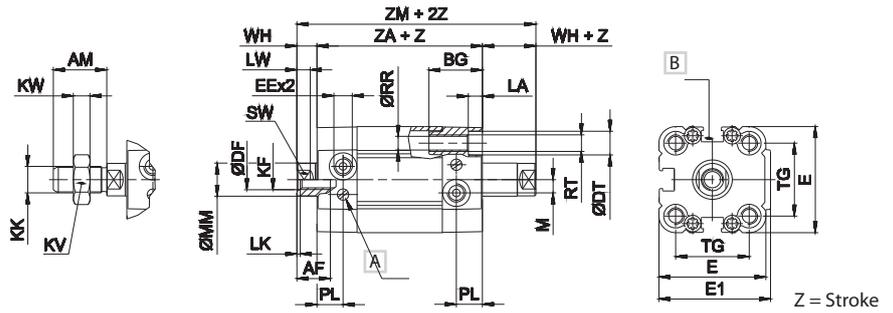
B Groove for sensor

Ø80 - Ø100 only for RM series

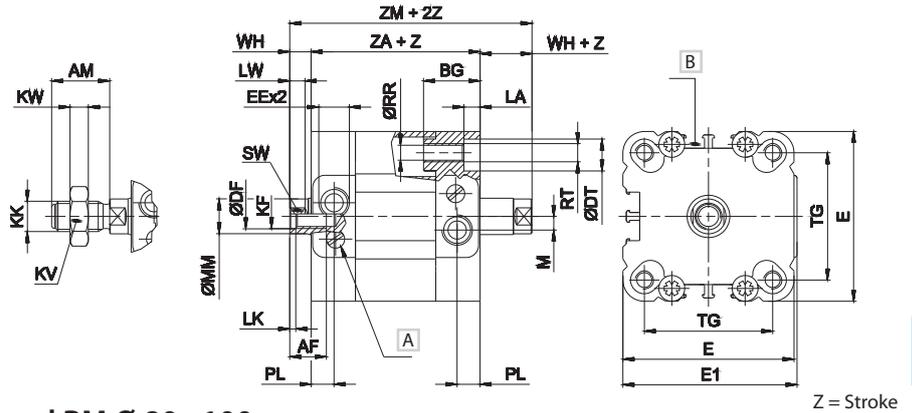
\* = Dimensional variations for end-caps with ISO inter-axes (RM series): Ø40 38 mm - Ø50 46,5 mm - Ø63 56,5 mm

For cylinder version with long piston, dimensions ZA - ZB will be increased by 20 mm (Ø32 - Ø40), and 25 mm (Ø50 - Ø63)

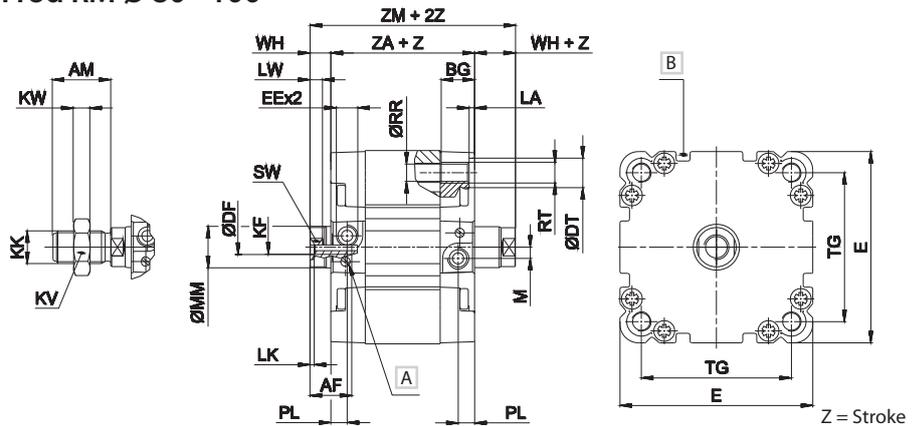
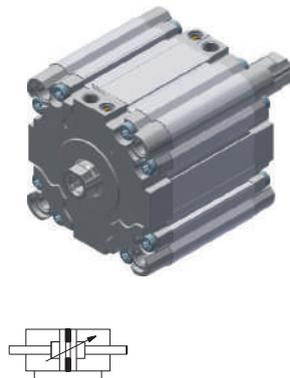
Double acting through piston rod RP- RM Ø 16 ÷ 25



Double acting through piston rod RP- RM Ø 32 ÷ 63



Double acting through piston rod RM Ø 80 - 100



Ø	AM	AF	BG	DF	DT	E	EE	E1	KF	KK	KV	KW	LA
	16	12	8	16	4,1	5,8	28	M5	30	M4	M6x1	10	4
20	16	10	16	6,1	7,3	32	M5	34	M6	M8x1,25	13	5	4,2
25	16	10	16	6,1	8	37	M5	39	M6	M8x1,25	13	5	4,5
32	19	12	18	8,2	9	46	G1/8	47	M8	M10x1,25	17	6	5,3
40	19	12	18	8,2	9	56	G1/8	57	M8	M10x1,25	17	6	5,3
50	22	16	24	10,2	11	66	G1/8	67	M10	M12x1,25	19	7	6,5
63	22	16	24	10,2	11	79	G1/8	80	M10	M12x1,25	19	7	6,5
80	28	20	16,5	12,2	14	93,5	G1/8	-	M12	M16x1,5	24	9	2,6
100	28	20	21,5	12,2	14	112	G1/8	-	M12	M16x1,5	24	9	2,6

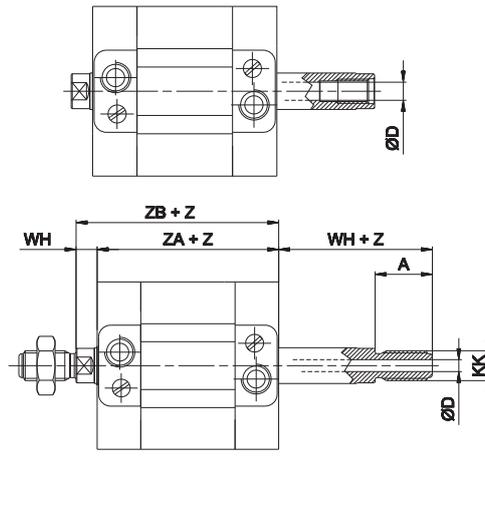
Ø	LK	LW	M	MM	PL	RR	RT	SW	TG	WH	ZA	ZM
	16	1	4,5	3,5	8	8	3,2	M4	7	18	5	37
20	1	4,5	4	10	8	4,2	M5	8	22	6	37	49
25	1	4,5	4	10	8	4,2	M5	8	26	6	39	51
32	2	5	4,5	12	7,5	5,2	M6	10	32,5	7	44	58
40	2	5	4,5	12	7,5	5,2	M6	10	42*	7	45	59
50	2	6	6,5	16	7,5	6,5	M8	13	50*	8	45	61
63	2	6	6,5	16	7,5	6,5	M8	13	62*	8	50	66
80	2	6	5,5	20	8	8,4	M10	17	72	10	54	74
100	2	6	8	20	10,5	8,4	M10	17	89	10	67	87

A Pneumatic cushioning adjusting screw  
 B Groove for sensor

Ø80 - Ø100 only for RM series

\* = Dimensional variations for end-caps with ISO inter-axes (RM series): Ø40 38 mm - Ø50 46,5 mm - Ø63 56,5 mm

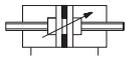
### Double acting female/male hollow through piston rod Ø 16 ÷ 100



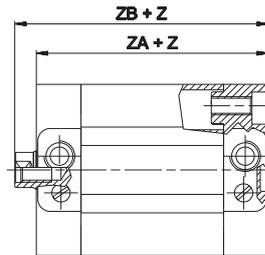
Z = Stroke

Ø	D
16	2
20	2,5
25	2,5
32	3,5
40	3,5
50	4,5
63	4,5
80	6
100	8

Ø16 ÷ 25 Max stroke **50 mm** Ø32 ÷ 63 Max stroke **75 mm** Ø80 - 100 Max stroke **100 mm**  
 For all other dimensions please refer to the through piston rod version at the previous page



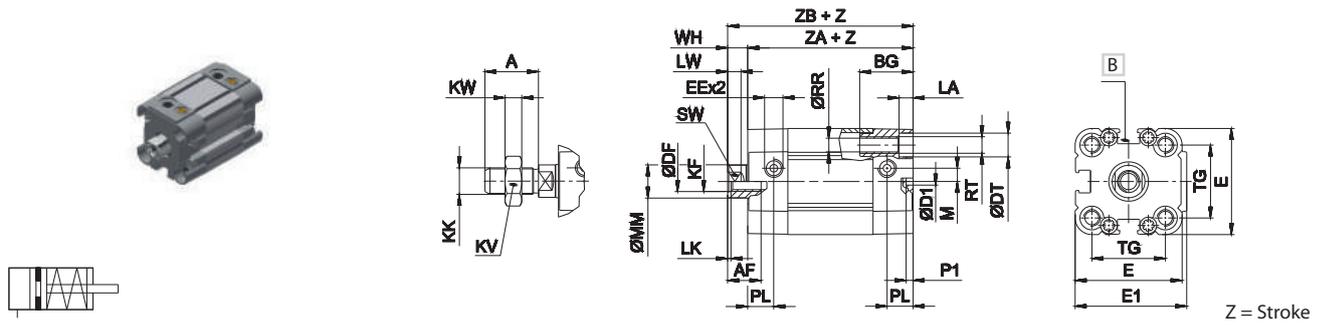
### Double acting long piston Ø 32 ÷ 63



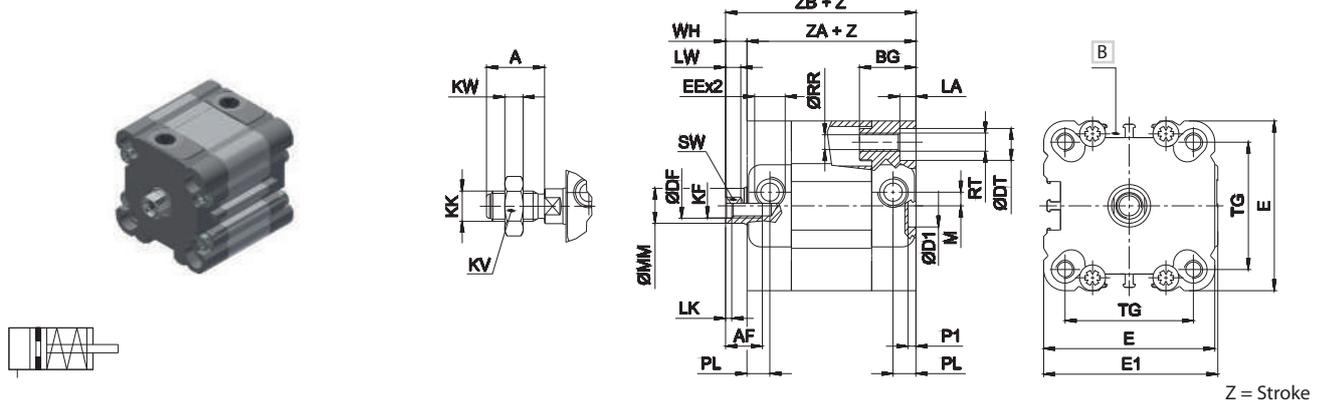
Z = Stroke

Ø	ZA	ZB
32	64	71
40	65	72
50	70	78
63	75	83

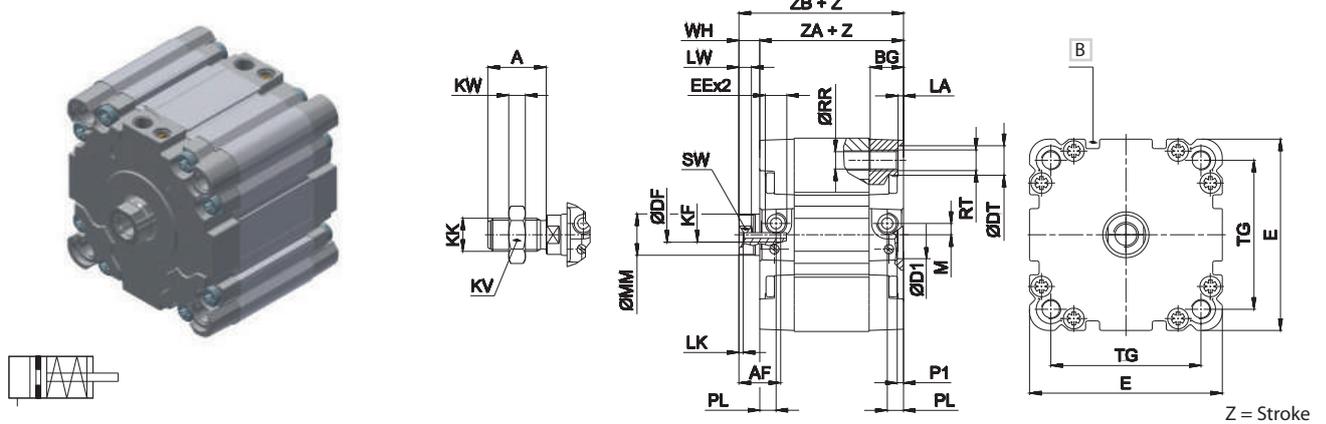
Single acting retracted piston rod RP - RM Ø 16 ÷ 25



Single acting retracted piston rod RP - RM Ø 32 ÷ 63



Single acting retracted piston rod RM Ø 80 - 100



Ø	A	AF	BG	DF	DT	D1	E	EE	E1	KF	KK	KV	KW	LA
						H11								
16	12	8	16	4,1	5,8	2	28	M5	30	M4	M6x1	10	4	3,2
20	16	10	16	6,1	7,3	2	32	M5	34	M6	M8x1,25	13	5	4,2
25	16	10	16	6,1	8	2	37	M5	39	M6	M8x1,25	13	5	4,5
32	19	12	18	8,2	9	14	46	G1/8	47	M8	M10x1,25	17	6	5,3
40	19	12	18	8,2	9	14	56	G1/8	57	M8	M10x1,25	17	6	5,3
50	22	16	24	10,2	11	18	66	G1/8	67	M10	M12x1,25	19	7	6,5
63	22	16	24	10,2	11	18	79	G1/8	80	M10	M12x1,25	19	7	6,5
80	28	20	16,5	12,2	14	23	93,5	G1/8	-	M12	M16x1,5	24	9	2,6
100	28	20	21,5	12,2	14	28	112	G1/8	-	M12	M16x1,5	24	9	2,6

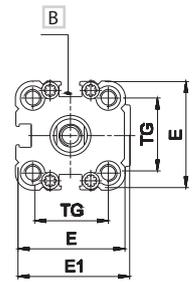
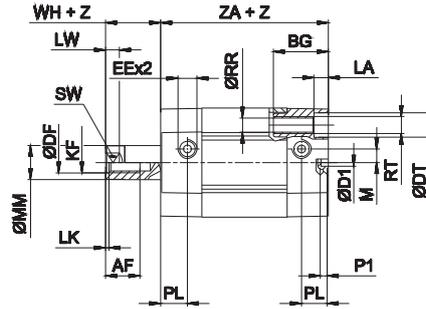
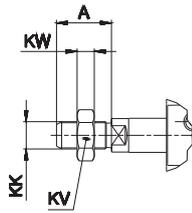
Ø	LK	LW	M	MM	PL	P1	RR	RT	SW	TG	WH	ZA	ZB
16	1	4,5	3,5	8	8	2	3,2	M4	7	18	5	37	42
20	1	4,5	4	10	8	2	4,2	M5	8	22	6	37	43
25	1	4,5	4	10	8	2	4,2	M5	8	26	6	39	45
32	2	5	4,5	12	7,5	2,5	5,2	M6	10	32,5	7	44	51
40	2	5	4,5	12	7,5	2,5	5,2	M6	10	42*	7	45	52
50	2	6	6,5	16	7,5	2,5	6,5	M8	13	50*	8	45	53
63	2	6	6,5	16	7,5	2,5	6,5	M8	13	62*	8	50	58
80	2	6	5,5	20	8	3	8,4	M10	17	72	10	54	64
100	2	6	8	20	10,5	3	8,4	M10	17	89	10	67	77

[B] Groove for sensor

Ø80 - Ø100 only for RM series

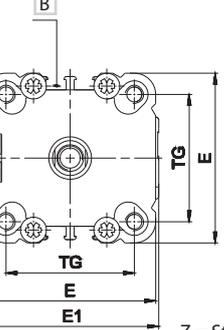
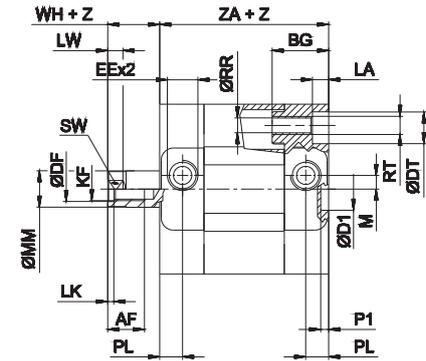
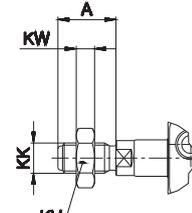
\* = Dimensional variations for end-caps with ISO inter-axes (RM series): Ø40 38 mm - Ø50 46,5 mm - Ø63 56,5 mm

Single acting extended piston rod RP - RM Ø 16 ÷ 25



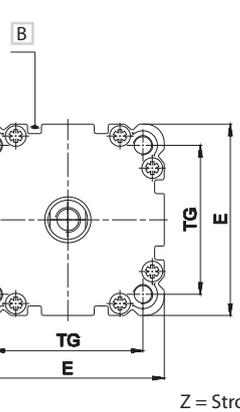
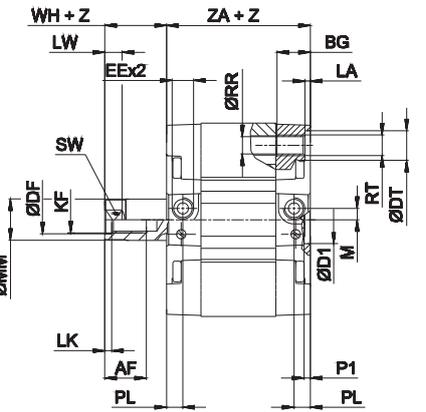
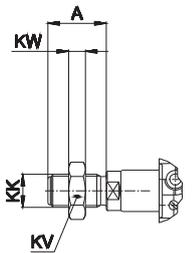
Z = Stroke

Single acting extended piston rod RP - RM Ø 32 ÷ 63



Z = Stroke

Single acting extended piston rod RM Ø 80 - 100



Z = Stroke

Ø	A	AF	BG	DF	DT	D1	E	EE	E1	KF	KK	KV	KW
16	12	8	16	4,1	5,8	H11	28	M5	30	M4	M6x1,25	10	4
20	16	10	16	6,1	7,3	2	32	M5	34	M6	M8x1,25	13	5
25	16	10	16	6,1	8	2	37	M5	39	M6	M8x1,25	13	5
32	19	12	18	8,2	9	14	46	G1/8	47	M8	M10x1,25	17	6
40	19	12	18	8,2	9	14	56	G1/8	57	M8	M10x1,25	17	6
50	22	16	24	10,2	11	18	66	G1/8	67	M10	M12x1,25	19	7
63	22	16	24	10,2	11	18	79	G1/8	80	M10	M12x1,25	19	7
80	28	20	16,5	12,2	14	23	93,5	G1/8	-	M12	M16x1,5	24	9
100	28	20	21,5	12,2	14	28	112	G1/8	-	M12	M16x1,5	24	9

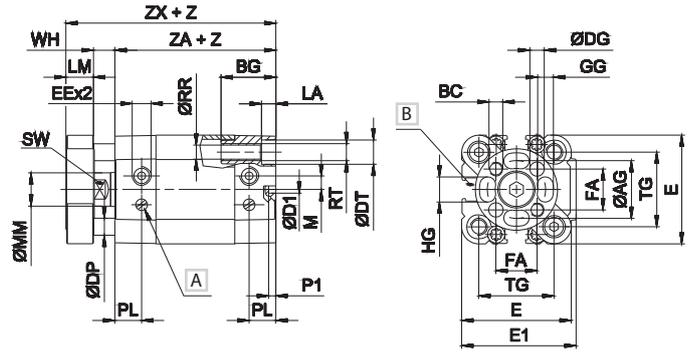
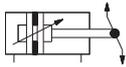
Ø	LA	LK	LW	M	MM	PL	P1	RR	RT	SW	TG	WH	ZA
16	3,2	1	4,5	3,5	8	8	2	3,2	M4	7	18	5	37
20	4,2	1	4,5	4	10	8	2	4,2	M5	8	22	6	37
25	4,5	1	4,5	4	10	8	2	4,2	M5	8	26	6	39
32	5,3	2	5	4,5	12	7,5	2,5	5,2	M6	10	32,5	7	44
40	5,3	2	5	4,5	12	7,5	2,5	5,2	M6	10	42*	7	45
50	6,5	2	6	6,5	16	7,5	2,5	6,5	M8	13	50*	8	45
63	6,5	2	6	6,5	16	7,5	2,5	6,5	M8	13	62*	8	50
80	2,6	2	6	5,5	20	8	3	8,4	M10	17	72	10	54
100	2,6	2	6	8	20	10,5	3	8,4	M10	17	89	10	67

B Groove for sensor

Ø80 - Ø100 only for RM series

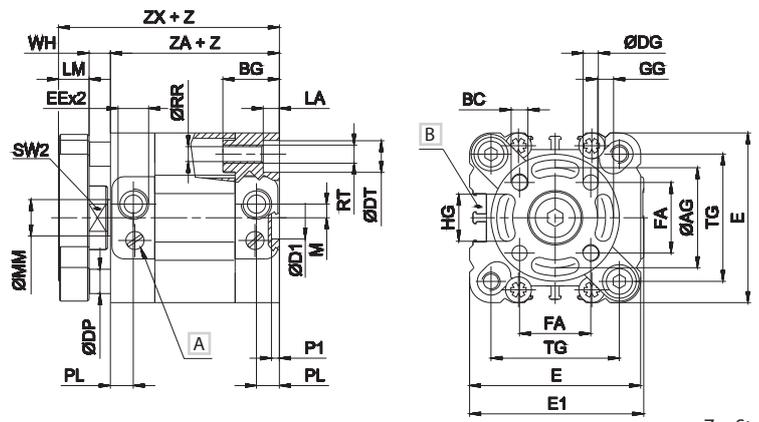
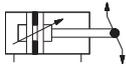
\* = Dimensional variations for end-caps with ISO inter-axes (RM series): Ø40 38 mm - Ø50 46,5 mm - Ø63 56,5 mm

### Double acting non-rotating guided piston rod RP Ø 16 ÷ 25



Z = Stroke

### Double acting non-rotating guided piston rod RP - RM Ø 32 ÷ 63



Z = Stroke

Ø	AG	BC	BG	DG	DP	DT	D1	E	EE	E1	FA	GG	HG	LA
16	14	M3	16	3	4	5,8	2	28	M5	30	9,9	3	5	3,2
20	17	M4	16	4	5	7,3	2	32	M5	34	12	4	7	4,2
25	22	M5	16	5	5	8	2	37	M5	39	15,6	5	9	4,5
32	28	M5	18	5	6	9	14	46	G1/8	47	19,8	5,2	11	5,3
40	33	M5	18	5	8	9	14	56	G1/8	57	23,3	5,2	15	5,3
50	42	M6	24	6	8	11	18	66	G1/8	67	29,7	6,2	19	6,5
63	50	M6	24	6	10	11	18	79	G1/8	80	35,4	6,2	25	6,5

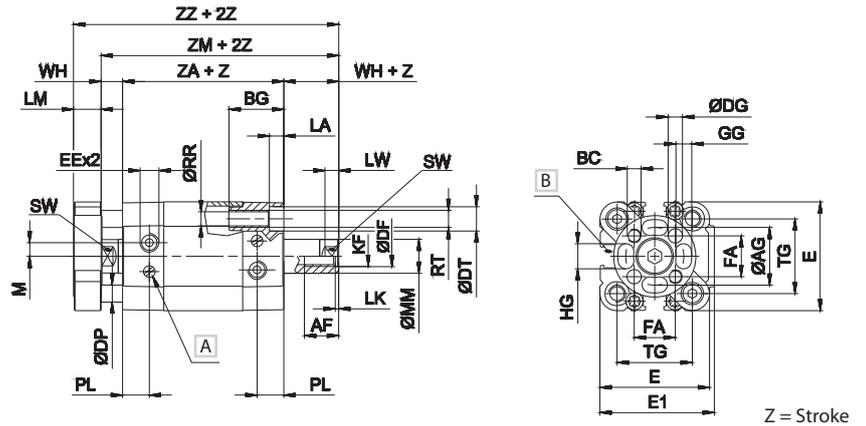
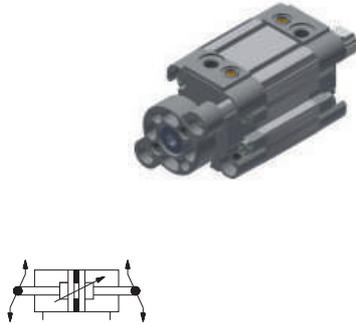
Ø	LM	M	MM	PL	P1	RR	RT	SW	SW2	TG	WH	ZA	ZX
16	6	3,5	8	8	2	3,2	M4	7	-	18	5	37	48
20	8	4	10	8	2	4,2	M5	8	-	22	6	37	51
25	8	4	10	8	2	4,2	M5	8	-	26	6	39	53
32	10	4,5	12	7,5	2,5	5,2	M6	10	17	32,5	7	44	61
40	10	4,5	12	7,5	2,5	5,2	M6	10	19	42*	7	45	62
50	12	6,5	16	7,5	2,5	6,5	M8	13	24	50*	8	45	65
63	12	6,5	16	7,5	2,5	6,5	M8	13	24	62*	8	50	70

A) Pneumatic cushioning adjusting screw

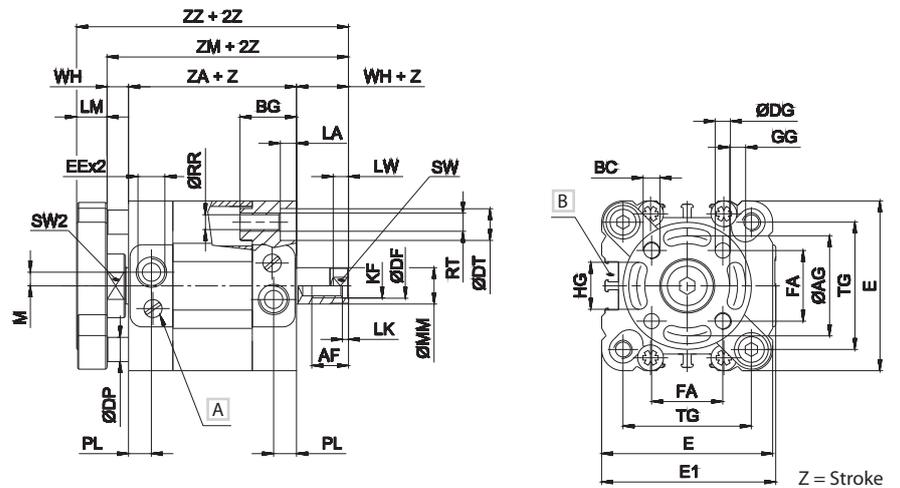
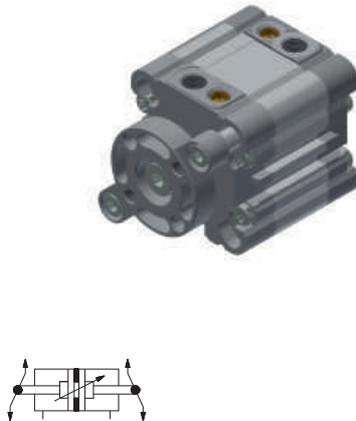
B) Groove for sensor

\* = Dimensional variations for end-caps with ISO inter-axes (RM series): Ø40 38 mm - Ø50 46,5 mm - Ø63 56,5 mm

Double acting non-rotating guided through piston rod RP Ø 16 ÷ 25



Double acting non-rotating guided through piston rod RP - RM Ø 32 ÷ 63



1  
CYLINDERS

Ø	AF	AG	BC	BG	DF	DG	DP	DT	E	EE	E1	FA	GG	HG	KF	LA
16	8	14	M3	16	4,1	3	4	5,8	28	M5	30	9,9	3	5	M4	3,2
20	10	17	M4	16	6,1	4	5	7,3	32	M5	34	12	4	7	M6	4,2
25	10	22	M5	16	6,1	5	5	8	37	M5	39	15,6	5	9	M6	4,5
32	12	28	M5	18	8,2	5	6	9	46	G1/8	47	19,8	5,2	11	M8	5,3
40	12	33	M5	18	8,2	5	8	9	56	G1/8	57	23,3	5,2	15	M8	5,3
50	16	42	M6	24	10,2	6	8	11	66	G1/8	67	29,7	6,2	19	M10	6,5
63	16	50	M6	24	10,2	6	10	11	79	G1/8	80	35,4	6,2	25	M10	6,5

Ø	LK	LM	LW	M	MM	PL	RR	RT	SW	SW2	TG	WH	ZA	ZM	ZZ
16	1	6	4,5	3,5	8	8	3,2	M4	7	-	18	5	37	47	53
20	1	8	4,5	4	10	8	4,2	M5	8	-	22	6	37	49	57
25	1	8	4,5	4	10	8	4,2	M5	8	-	26	6	39	51	59
32	2	10	5	4,5	12	7,5	5,2	M6	10	17	32,5	7	44	58	68
40	2	10	5	4,5	12	7,5	5,2	M6	10	19	42*	7	45	59	69
50	2	12	6	6,5	16	7,5	6,5	M8	13	24	50*	8	45	61	73
63	2	12	6	6,5	16	7,5	6,5	M8	13	24	62*	8	50	66	78

A Pneumatic cushioning adjusting screw

B Groove for sensor

\* = Dimensional variations for end-caps with ISO inter-axes (RM series): Ø40 38 mm - Ø50 46,5 mm - Ø63 56,5 mm

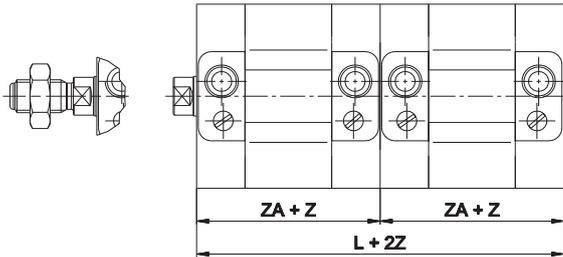
## Tandem version

### CODIFICATION KEY

R	P	1	A	0	2	0	0	4	0
1	2	3	4						

1 Series	2 Type	3 Bore (mm)	4 Stroke (mm)
<b>RP</b> = Ø16÷63 mm UNITOP Compact Cylinders <b>RM</b> = Ø16÷100 mm - ISO 21287 Compact Cylinders <b>Magnetic series</b>	<b>1A</b> = Double thrust tandem, stainless steel female piston rod <b>2A</b> = Double thrust tandem, chromium-plated steel female piston rod <b>3A</b> = Double thrust tandem, stainless steel male piston rod <b>4A</b> = Double thrust tandem, chromium-plated steel male piston rod	<b>016</b> = Ø16 <b>032</b> = Ø32 <b>063</b> = Ø63 <b>020</b> = Ø20 <b>040</b> = Ø40 <b>080</b> = Ø80 (only RM) <b>025</b> = Ø25 <b>050</b> = Ø50 <b>100</b> = Ø100 (only RM)	Upon request

Z = Stroke



Ø	L	ZA
16	74	37
20	74	37
25	78	39
32	88	44
40	90	45
50	90	45
63	100	50
80	108	54
100	134	67



Tandem cylinders are constructed using two pistons coupled together which double the force in forward movement compared to the traditional cylinders of the same bore size

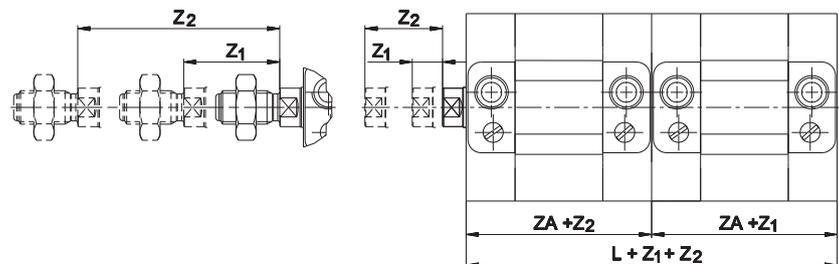
## Two-position tandem version

### CODIFICATION KEY

R	P	1	B	0	2	0	0	3	0	0	5	0
1	2	3	4									

1 Series	2 Type	3 Bore (mm)	4 Z1 stroke (mm)	5 Z2 stroke (mm)
<b>RP</b> = Ø16÷63 mm UNITOP Compact Cylinders <b>RM</b> = Ø16÷100 mm - ISO 21287 Compact Cylinders	<b>1B</b> = Two-position tandem, stainless steel female piston rod <b>2B</b> = Two-position tandem, chromium-plated steel female piston rod <b>3B</b> = Two-position tandem, stainless steel male piston rod <b>4B</b> = Two-position tandem, chromium-plated steel male piston rod	<b>016</b> = Ø16 <b>063</b> = Ø63 <b>020</b> = Ø20 <b>080</b> = Ø80 (only RM) <b>025</b> = Ø25 <b>100</b> = Ø100 (only RM) <b>032</b> = Ø32 <b>040</b> = Ø40 <b>050</b> = Ø50	Rear cylinder stroke on request	Front cylinder stroke on request

Z = Stroke



Ø	L	ZA
16	74	37
20	74	37
25	78	39
32	88	44
40	90	45
50	90	45
63	100	50
80	108	54
100	134	67

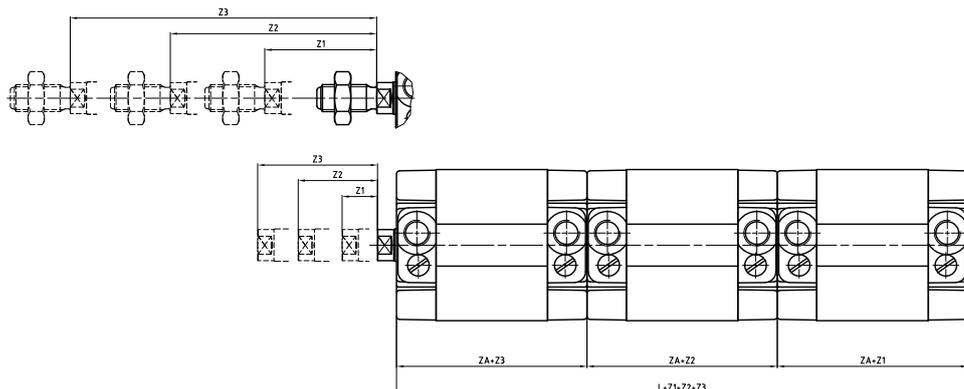


Two-position cylinders with two independent piston rods which allow to realize a double positioning in which the thrust forces are the same as those of a cylinder of the same bore size

For all other dimensions please refer to the standard version.  
For other types of cylinders kindly contact our sales office

Subject to change

### Three-position version (upon request)



Z = Stroke

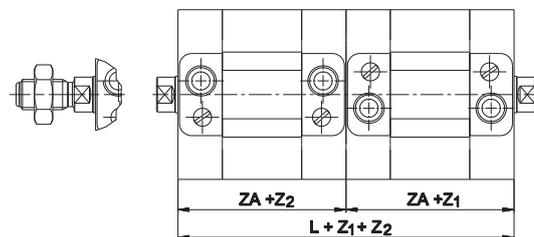
Ø	L	ZA
16	111	37
20	111	37
25	117	39
32	132	44
40	135	45
50	135	45
63	150	50
80	162	54
100	201	67

### Opposed tandem version

#### CODIFICATION KEY

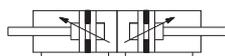
R	P	1	C	0	2	0	0	2	0	0	4	0
1	2	3	4	5								

1 Series	2 Type	3 Bore (mm)	4 Z1 stroke (mm)	5 Z2 stroke (mm)
<b>RP</b> = Ø16÷63 mm UNITOP Compact Cylinders <b>RM</b> = Ø16÷100 mm - ISO 21287 Compact Cylinders	<b>1C</b> = Opposed tandem, stainless steel female piston rod <b>2C</b> = Opposed tandem, chromium-plated steel female piston rod <b>3C</b> = Opposed tandem, stainless steel male piston rod <b>4C</b> = Opposed tandem, chromium-plated steel male piston rod	<b>016</b> = Ø16 <b>063</b> = Ø63 <b>020</b> = Ø20 <b>080</b> = Ø80 (only RM) <b>025</b> = Ø25 <b>100</b> = Ø100 (only RM) <b>032</b> = Ø32 <b>040</b> = Ø40 <b>050</b> = Ø50	Upon request	Upon request



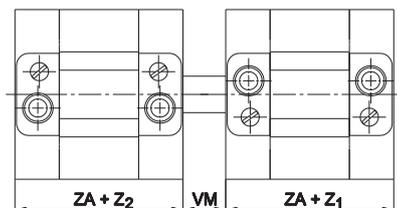
Z = Stroke

Ø	L	ZA
16	74	37
20	74	37
25	78	39
32	88	44
40	90	45
50	90	45
63	100	50
80	108	54
100	134	67



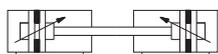
Type of cylinder characterized by the coupling of two cylinders and whose piston rods move in opposite directions. The values of the thrust force are the same as those of the traditional cylinders

### With common piston rod tandem version (upon request)



Z = Stroke

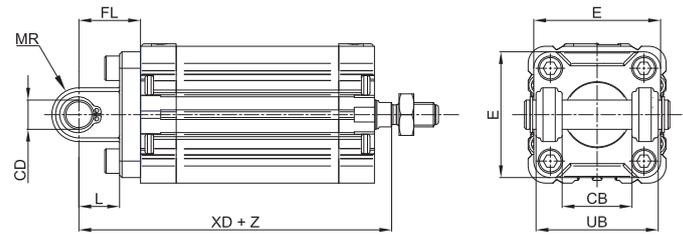
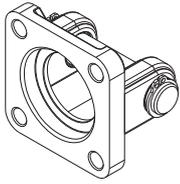
Ø	L	VM	ZA
16	74	10	37
20	74	10	37
25	78	12	39
32	88	14	44
40	90	14	45
50	90	16	45
63	100	16	50
80	108	20	54
100	134	20	67



Two coupled cylinders with common piston rod. The values of the thrust force are the same as those of the traditional cylinders

For all other dimensions please refer to the standard version  
 For other types of cylinders kindly contact our sales office

Female rear hinge (ISO MP2) with pin

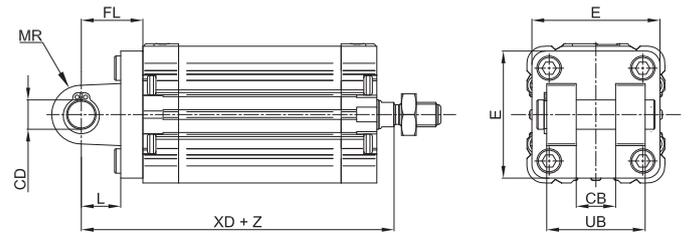
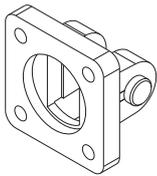


Material: Aluminium, zinc-plated steel pin

Z = Stroke

Ø	CB		C		E		FL		L		MR		UB		XD		Mass		Part no.			
	h14		h9				± 0,2		min		max		h14				g		RM ISO			
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
32	26	26	10	10	48	48	22	22	12	12	11	11	45	45	73	73	± 1,25	± 1,25	75	-	KF-10032A	
40	28	28	12	12	54	54	25	25	15	16	13	12,5	52	52	77	77	± 1,25	± 1,25	110	156	RPF-10040A KF-10040A	
50	32	32	12	12	65	65	27	27	15	16	13	12,5	60	60	80	80	± 1,25	± 1,25	150	200	RPF-10050A KF-10050A	
63	40	40	16	16	75	75	32	32	20	21	17	15	70	70	90	90	± 1,6	± 1,6	270	362	RPF-10063A KF-10063A	
80	50	-	20	-	95	-	36	-	20	-	17	-	90	-	100	-	-	± 1,6	-	420	-	KF-10080A
100	60	-	25	-	115	-	41	-	25	-	21	-	110	-	118	-	-	± 1,6	-	765	-	KF-10100A

Narrow female hinge with pin (DIN648K)

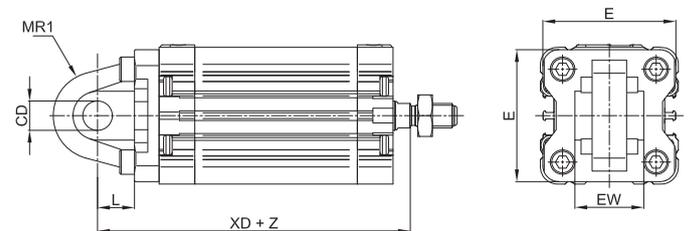
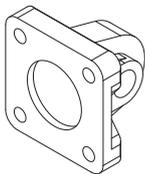


Material: Aluminium, zinc-plated steel pin

Z = Stroke

Ø	CB		C		E		FL		L		MR		UB		XD		Mass		Part no.		
	h14		h9				± 0,2		min		max		h14				g		RM ISO		
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	14	10	10	10	45	45	22	22	13	13	10	10	34	34	73	73	± 1,25	± 1,25	68	-	KF-10032AS
40	16	12	12	12	52	52	25	25	16	16	12	12	40	40	77	77	± 1,25	± 1,25	112	-	KF-10040AS
50	21	16	16	16	65	65	27	27	16	16	14	14	45	45	80	80	± 1,25	± 1,25	196	-	KF-10050AS
63	21	16	16	16	75	75	32	32	21	21	18	18	51	51	90	90	± 1,6	± 1,6	288	-	KF-10063AS
80	25	20	20	20	95	95	36	36	22	22	20	20	65	65	100	100	± 1,6	± 1,6	566	-	KF-10080AS
100	25	20	20	20	115	115	41	41	27	27	22	22	75	75	118	118	± 1,6	± 1,6	818	-	KF-10100AS

Rear hinge (ISO MP4)

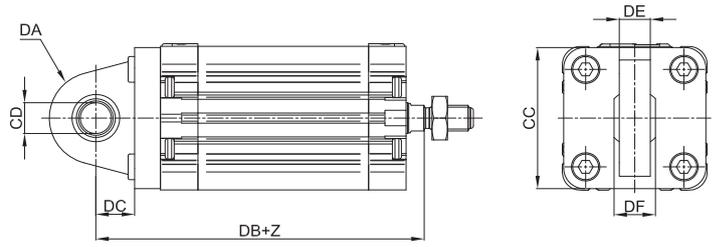
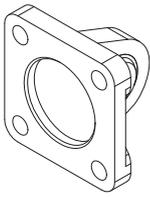


Material: Aluminium

Z = Stroke

Ø	CD		E		EW		L		MR1		XD		Mass		Part no.	
	h7		± 0,5		h14								g			
16	6	27	12	12	10	10	6	6	58	58	17	17	-	-	-	RPF-11016
20	8	34	16	16	14	14	8	8	63	63	21	21	-	-	-	RPF-11020
25	8	38	16	16	14	14	8	8	65	65	27	27	-	-	-	RPF-11025
32	10	48	26	26	12	12	15	15	73	73	80	80	-	-	-	KF-11032
40	12	54	28	28	15	15	18	18	77	77	100	100	-	-	-	KF-11040
50	12	65	32	32	15	15	20	20	80	80	170	170	-	-	-	KF-11050
63	16	75	40	40	20	20	23	23	89	89	250	250	-	-	-	KF-11063
80	16	95	50	50	20	20	27	27	210	210	420	420	-	-	-	KF-11080
100	20	115	60	60	25	25	29,5	29,5	230	230	660	660	-	-	-	KF-11100

Articulated rear male hinge (ISO MP4)



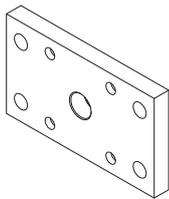
Material: Aluminium

Z = Stroke

Ø	CC	CD	DA	DB	DC	DE	DF	Mass g	Part no.	
									RP UNITOP	RM ISO
16	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-
32	48	10	15	73	14	10,5	14	70	-	KF-110325
40	54	12	18	77	16,5	12	16	100	-	KF-110405
50	65	12	20	80	17,5	12	16	145	-	KF-110505
63	75	16	21	90	21,5	15	21	250	-	KF-110635
80	95	15	27	100	24	15	21	360	-	KF-110805
100	115	20	29,5	118	28	18	25	600	-	KF-111005

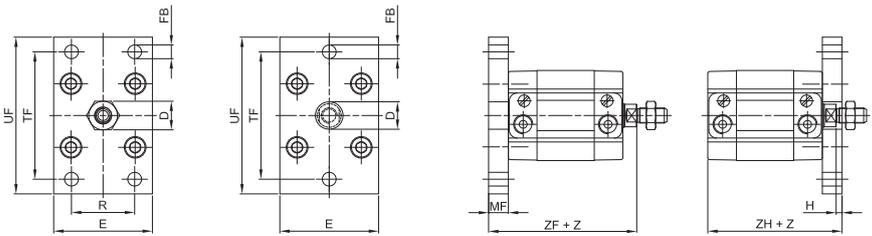
Front/rear flange

CYLINDERS



> Rear assembly

> Front assembly

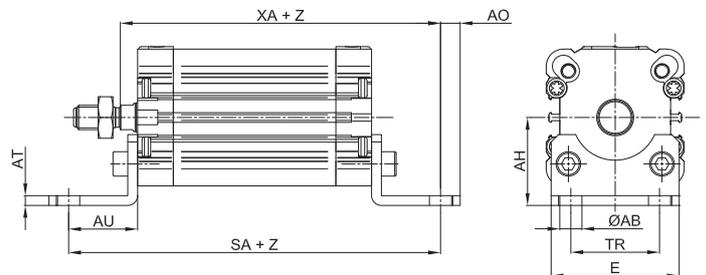
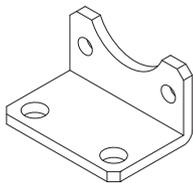


Material: Zinc-plated steel

Z = Stroke

Ø	Ø D		E		Ø FB		H		MF		R		TF		UF		ZF		ZH		Mass g		Part no.		
	h11				h13						Js14	Js14									RP UNITOP	RM ISO	RP UNITOP	RM ISO	
16	10	-	29	-	4,5	-	5	-	10	-	-	-	43	-	55	-	52	-	47	-	100	-	RPF-12016		
20	12	-	36	-	6,6	-	4	-	10	-	-	-	55	-	70	-	53	-	47	-	160	-	RPF-12020		
25	12	-	40	-	6,6	-	4	-	10	-	-	-	60	-	76	-	55	-	49	-	200	-	RPF-12025		
32	14	30	50	45	7	7	3	3	10	10	32	32	65/64	64	80	80	61	61	54	54	260	200	KF-12032		
40	14	35	60	52	9	9	3	3	10	10	36	36	82/72	72	102	90	62	62	55	55	420	250	RPF-12040	KF-12040	
50	18	40	68	65	9	9	4	4	12	12	45	45	90	90	110	110	65	65	57	57	600	500	RPF-12050	KF-12050	
63	18	45	87	75	9	9	7	4	15	12	50	50	110	100	130	120	73	70	65	63	1200	650	RPF-12063	KF-12063	
80	-	45	-	95	-	12	-	8	-	16	-	63	-	126	-	150	-	80	-	70	-	1500	-	KF-12080	
100	-	55	-	115	-	14	-	8	-	16	-	75	-	150	-	170	-	93	-	83	-	2200	-	KF-12100	

Angle bracket

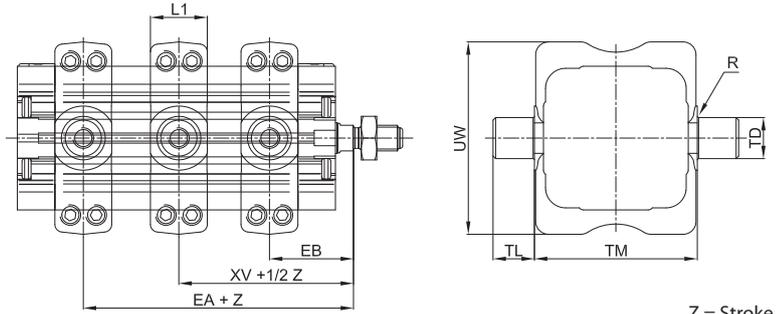
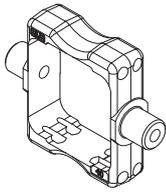


Material: Zinc-plated steel

Z = Stroke

Ø	Ø AB		AH		AO	AT	AU		E	SA	TR	XA		Mass g	Part no.								
	h13		Js15														RP UNITOP	RM ISO					
16	5,5	-	22	-	4,5	-	3	-	13	-	30	-	63	-	18	-	55	-	20	-	RPF-13016		
20	6,6	-	27	-	6	-	4	-	16	-	36	-	69	-	22	-	59	-	30	-	RPF-13020		
25	6,6	-	30	-	6	-	4	-	16	-	40	-	71	-	26	-	61	-	40	-	RPF-13025		
32	6,6	7	32,25	32	8	6	5	4	18	24	50	45	80	92	32	32	69	75	70	-	KF-13032		
40	6,6	9	42,5	36	8	8	5	4	20	28	60	52	85	101	42	36	72	80	100	-	RPF-13040	KF-13040	
50	9	9	47	45	8	10	6	5	24	32	68	64	93	109	50	45	77	85	150	-	RPF-13050	KF-13050	
63	9	9	59,5	50	12	12	6	5	27	32	84	74	104	114	62	50	85	93	250	-	RPF-13063	KF-13063	
80	-	12	-	63	-	15	-	6	-	41	-	94	-	136	-	63	-	215	-	400	-	KF-13080	
100	-	14	-	71	-	20	-	6	-	41	-	114	-	149	-	75	-	230	-	600	-	KF-13100	

ISO intermediate hinge

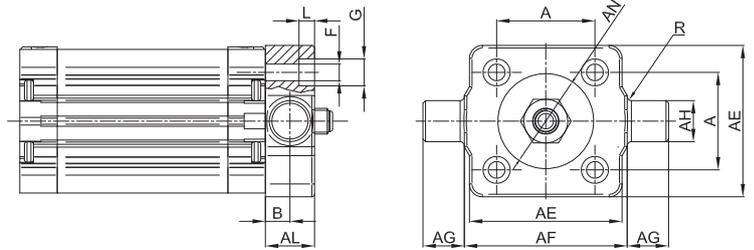
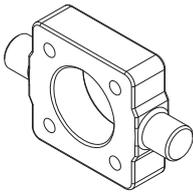


Material: Zinc-plated steel

Z = Stroke

Ø	EA	EB	L1	R	TD	TL	TM	UW	XV		Mass	Part no.											
	(MAX)	(min)	(MAX)	(MAX)	(e9)	(h14)	(h14)	(MAX)			g	RP UNITOP	RM ISO										
16	-	-	-	-	-	-	-	-	-	-	-	-	-										
20	-	-	-	-	-	-	-	-	-	-	-	-	-										
25	-	-	-	-	-	-	-	-	-	-	-	-	-										
32	24	34	22	0,5	12	12	50	65	29	± 2	130	KDF-14032											
40	25	34	22	0,5	16	16	63	75	29,5	± 2	240	RPF-14040											
50	26	35	22	1	16	16	75	95	30,5	± 2	320	RPF-14050											
63	27	38	28	1	20	20	90	105	32,5	± 2	470	RPF-14063											
80	-	37,5	-	40	-	27,5	-	1	-	20	-	20	-	108	-	130	-	37	-	± 2	800	-	KDF-14080
100	-	45,5	-	48	-	33	-	1	-	25	-	25	-	130	-	145	-	43,5	-	± 2	1500	-	KDF-14100

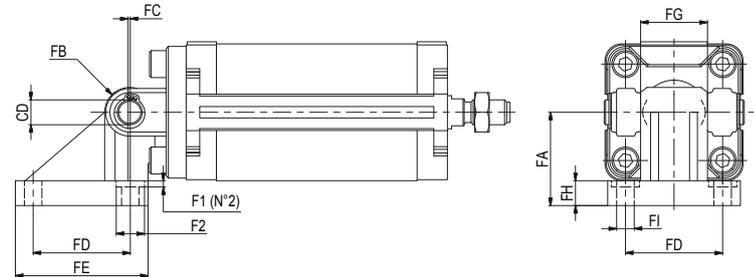
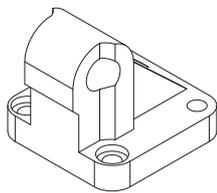
Front/rear hinge with floating pin



Material: Zinc-plated steel

Ø	AE	AL	AH	AG	AF	AN	A	B	F	G	L	R	Mass	Part no.
	(MAX)	(MAX)	e9	h14	h14	h11	± 0,2	± 0,2/0	h13	h13	± 0,5/0	0/± 0,3	g	RM ISO
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	46	14	12	12	50	30	32,5	6,5	6,5	-	6	1	137	KF-14032AP
40	59	19	16	16	63	35	38	9	6,5	10,5	6	1,6	385	KF-14040AP
50	69	19	16	16	75	40	46,5	9	8,5	13,5	8	1,6	513	KF-14050AP
63	84	24	20	20	90	45	56,5	11,5	8,5	13,5	8	1,6	1041	KF-14063AP
80	102	24	20	20	110	45	72	11,5	10,5	16,5	10	1,6	1567	KF-14080AP
100	125	29	25	25	132	55	89	14	10,5	16,5	10	2	3000	KF-14100AP

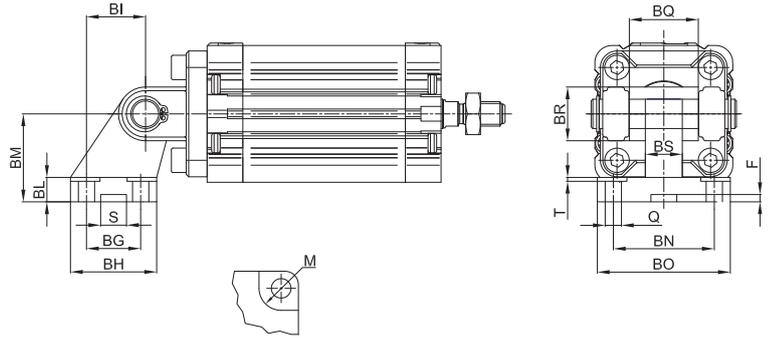
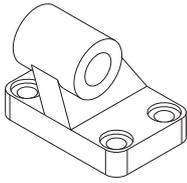
Counter hinge 90°



Material: Aluminium

Ø	CD	FA	FB	FC	FD	FE	FG	FH	FI	F1	F2	Mass	Part no.													
	h9	J515					- 0,2/- 0,6					g	RP UNITOP	RM ISO												
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
32	10	32	10	1,2	32,5	46,5	26	9	6,4	5,5	10,5	90		KF-19032												
40	12	36	12	2,6	38	51,5	28	9	6,6	5,5	10,5	120		KF-19040												
50	12	45	12	0,3	46,5	63,5	32	9	8,4	5	13,5	200		KF-19050												
63	16	50	16	3,3	56,5	73,5	40	10,5	8,4	5	13,5	320		KF-19063												
80	-	16	-	63	-	16	-	1,0	-	72	-	93	-	50	-	12	-	10,5	-	6	-	16,5	-	580	-	KF-19080
100	-	20	-	73	-	20	-	2,5	-	89	-	113	-	60	-	13	-	10,5	-	6	-	16,5	-	910	-	KF-19100

Counter hinge 90° (CETOP)

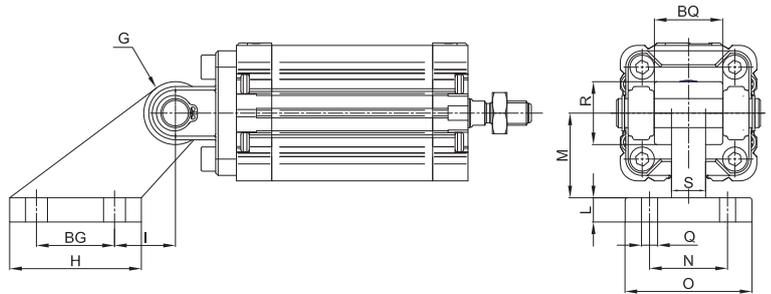
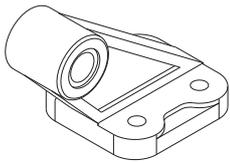


Material: Aluminium

Ø	Q	M	BG	BH	BI	BL	BM	BN	BO	BS	BR	T	G	S	F	BQ	Mass	Part no.
	h13	h13	Js14	Max	Js14		Js15	Js14	Max	Max	Max	Max	h9	+ 0,5/0	+ 0,5/0			
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	6,6	11	18	31	21	8	32	38	51	10	20	1,6	10	10,5	3	-	56	KF-19032CTA
40	6,6	11	22	35	24	10	36	41	54	15	22	1,6	12	10,5	3	-	139	KF-19040CTA
50	9	15	30	45	33	12	45	50	65	16	26	1,6	12	10,5	3	0,2	142	KF-19050CTA
63	9	15	35	50	37	14	50	52	67	16	30	1,6	16	10,5	3	0,6	200	KF-19063CTA
80	11	18	40	60	47	14	63	66	86	20	30	2,5	16	10,5	3	-	321	KF-19080CTA
100	11	18	50	70	55	17	71	76	96	20	38	2,5	20	10,5	3	-	656	KF-19100CTA

Counter hinge 90° (CNOMO)

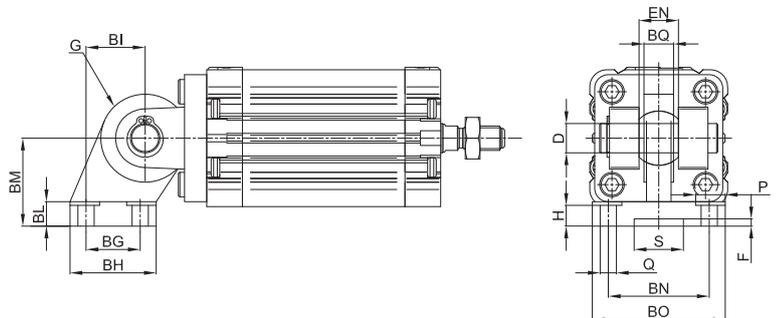
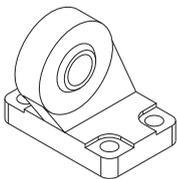
1  
CYLINDERS



Material: Zinc-plated steel

Ø	Q	BG	H	I	L	M	N	O	S	R	BQ	G	Mass	Part no.
	h13	± 0,2		± 0,2		± 0,2	± 0,2			Max	± 0,2/± 0,1	h9		
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	7	20	37	18	8	24	25	41	9	19,5	25	8	58	KF-19032CN
40	9	32	54	25	10	35	32	52	14	26	32	12	144	KF-19040050CN
50	9	32	54	25	10	35	32	52	14	26	32	12	144	KF-19040050CN
63	11	50	75	32	13	50	40	63	14	32	46	16	300	KF-19063080CN
80	11	50	75	32	13	50	40	63	14	32	46	16	300	KF-19063080CN
100	14	70	103	40	17	73	50	80	22	42	56	20	694	KF-19100125CN

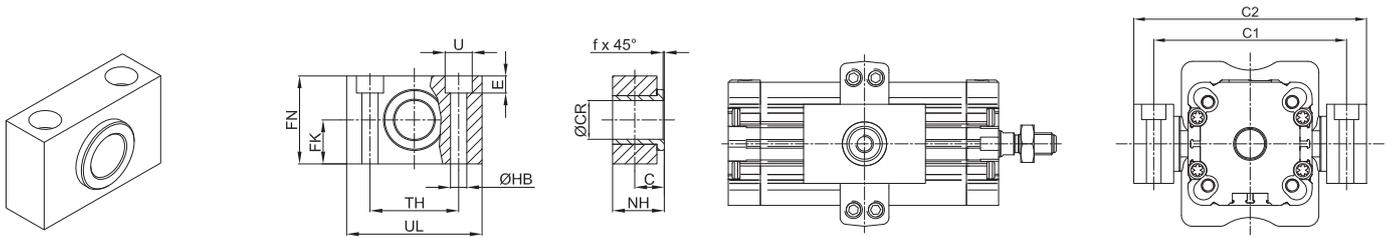
Counter hinge with articulated team



Material: Zinc-plated steel

Ø	Q	P	BG	BH	BI	BL	BM	BN	BO	EN	ER	BQ	D	H	S	F	Mass	Part no.	
	h13	h13	Js14	Max	Js15		Js15	Js14	Max	0/- 0,1	Max	Max	h7	+ 0,5/0	h13				
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	6,6	11	18	31	21	10	32	38	51	14	15	10,5	10	8,5	20	3	58	KF-19032SC	
40	6,6	11	22	35	24	10	36	41	54	16	18	12	12	8,8	20	3	144	KF-19040SC	
50	9	15	30	45	33	12	45	50	65	21	20	15	16	10,5	20	3	144	KF-19050SC	
63	9	15	35	50	37	12	50	52	67	21	23	15	16	10,5	20	3	300	KF-19063SC	
80	11	18	40	60	47	14	63	66	86	25	27	18	20	11,5	20	3	300	KF-19080SC	
100	11	18	50	70	55	15	71	76	96	25	30	18	20	12,5	20	3	694	KF-19100SC	

Hinge support

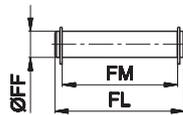


Material: Anodized aluminium and brass bushing

Z = Stroke

Ø	C	CR	FK	FN	HB	NH	TH	UL	U	E	F	C1	C2	Mass	Part no.
		F7	± 0,1				± 0,1			± 0,5				g	
32	10,2	12	15	30	6,6	18	32	46	11	7	1	71	86	110	KF-41032
40-50	12	16	18	36	9	21	36	55	15	9	1,6	Ø40 Ø50 87 99	Ø40 Ø50 105 117	200	KF-41040050
63-80	13	20	20	40	11	23	42	65	18	11	1,6	Ø63 Ø80 116 136	Ø63 Ø80 136 156	267	KF-41063080
100-125	16	25	25	50	14	28,5	50	75	20	13	2	Ø100 Ø125 164 192	Ø100 Ø125 189 217	485	KF-41100125

Pin with 2 circlips



Material: Zinc-plated steel

Cylinder Ø	FF	FL	FM	Mass	Part no.
	f8			g	
32	10	53	46	30	KF-18032
40	12	61,3	53	50	KF-18040
50	12	69	61	50	KF-18050
63	16	80,5	71	120	KF-18063
80	16	100,5	91	150	KF-18080
100	20	122,5	111	290	KF-18100

> Fixing screws

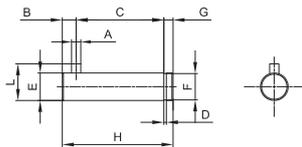
Cylindrical screw  
UNI 5931 suitable for  
mounting elements  
Series RPF-12.../RPF-13.../RPF-11...

Cylinder Ø	Screw	Part no.
16	M4x18	AZ4-VN0418
20 - 25	M5x18	AZ4-VN0518
32 - 40	M6x20	AZ4-VN0620
50 - 63	M8x25	AZ4-VN0825
80	M10x30	AZ4-VN1030
100	M10x30	AZ4-VN1030

Cylindrical screw  
UNI 5931 suitable for  
mounting elements  
Series KF-10032/RPF-10...

Cylinder Ø	Screw	Part no.
32 - 40	M6x25	AZ4-VN0625
50 - 63	M8x30	AZ4-VN0830
80	M10x30	AZ4-VN1030
100	M10x30	AZ4-VN1030

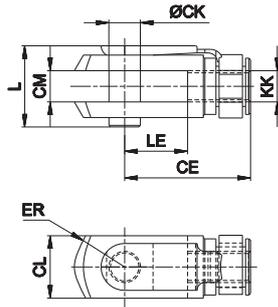
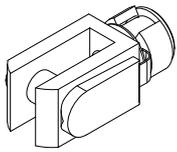
Pin for narrow hinge



Material: Zinc-plated steel

Ø	A	C	D	E	F	G	H	L	B	Part no.
	H12	+0,5/ +0,3	H13	F7	H11			0 / -0,5		
32	3	32,5	1,1	10	9,6	4	41	14	4,5	KF-18032S
40	4	38	1,1	12	11,5	4	48	16	6	KF-18040S
50	4	43	1,1	16	15,2	5	54	20	6	KF-18050S
63	4	49	1,1	16	15,2	5	60	20	6	KF-18063S
80	4	63	1,3	20	19	6	75	24	6	KF-18080S
100	4	73	1,3	20	19	6	85	24	6	KF-18100S

Female fork with clips

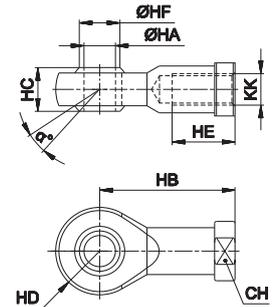
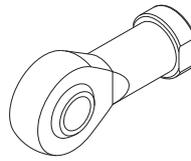


Material: Zinc-plated steel

Cylinder Ø	CE	CK	CL	CM	ER	KK	L	LE	Mass g	Part no.
16	24	6	12	6	7	M6x1	16	12	19	MF-15012
20 - 25	32	8	16	8	10	M8x1,25	22	16	46	MF-15020
32 - 40	40	10	20	10	16	M10x1,25	26	20	90	KF-15032
50 - 63	48	12	24	12	19	M12x1,25	32	24	150	KF-15040
80 - 100	80	20	40	20	32	M16x1,5	50	40	670	KF-15050

Fork with pin for piston rod according to ISO 8140 standard

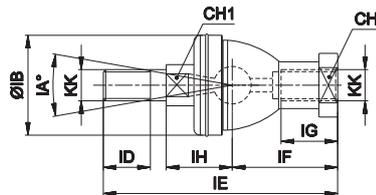
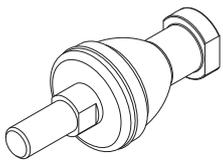
Articulated self-lubricating fork



Material: Zinc-plated steel

Cylinder Ø	α°	CH	KK	HA	HB	HC	HD	HE	HF	Mass g	Part no.	
16	13	11	M6x1	H7	6	30	9	10	12	9	26	MF-17012
20 - 25	13	14	M8x1,25	8	36	12	12	16	10,4	46	MF-17020	
32 - 40	13	17	M10x1,25	10	43	14	14	20	12,9	76	KF-17032	
50 - 63	13	19	M12x1,25	12	50	16	16	22	15,4	110	KF-17040	
80 - 100	14	30	M16 x 1,5	20	77	25	25	33	24,3	400	KF-17050	

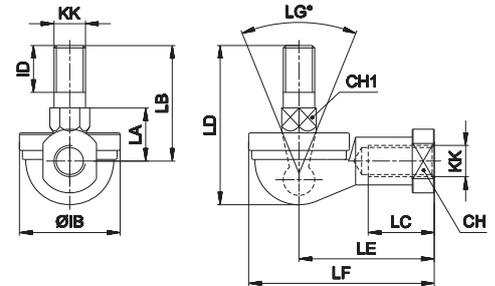
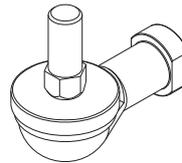
Fork with axially mounted articulated pin



Material: Zinc-plated steel

Cylinder Ø	CH	CH1	IA°	KK	IH	IB	ID	IE	IF	IG	Mass g	Part no.
16	11	8	30	M6x1	12,2	22	11	55,2	28	15	40	MF-22016
20 - 25	14	10	30	M8x1,25	16	28	12	65	32	16	75	MF-22020
32 - 40	17	11	30	M10x1,25	19,5	32	15	74,5	35	18	120	KF-22025
50 - 63	19	17	30	M12x1,25	22	36	17	84	40	20	185	KF-22040
80 - 100	30	24	15	M16x1,5	31,5	58	25	133	63	38	570	KF-22050

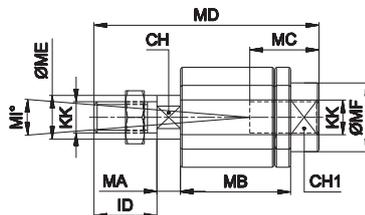
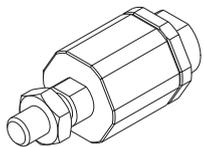
Fork with angle mounted articulated pin



Material: Zinc-plated steel

Cylinder Ø	CH	CH1	LG°	KK	IB	ID	LA	LB	LC	LD	LE	LF	Mass g	Part no.
16	11	8	50	M6x1	22	11	11	26	14	35,5	30	40	37	MF-23012
20 - 25	14	10	50	M8x1,25	28	12	14	31	17	42,5	36	48	67	MF-23020
32 - 40	17	11	50	M10x1,25	32	15	17	37	21	50,5	43	57	110	KF-23025
50 - 63	19	17	50	M12x1,25	36	17	19	42	27	57,5	50	66	165	KF-23040
80 - 100	30	24	32	M16x1,5	58	25	27	68	40	90	77	99	540	KF-23050

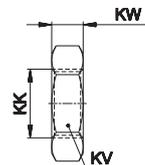
Floating joint



Material: Zinc-plated steel

Cylinder Ø	CH	CH1	ID	KK	MA	MB	MC	MD	ME	MF	MG	MH	MI°	Mass g	Part no.
16	5	7	11	M6x1	2,5	17,5	12,5	35	6	8,5	13	14,5	6	55	MF-24012
20 - 25	7	11	21	M8x1,25	5	26	16	57	8	12,5	17	19	8	60	MF-24020
32 - 40	12	19	71	M10x1,25	5	35	20	71	14	22	30	32	8	220	KF-24032
50 - 63	12	19	75	M12x1,25	5	35	20	75	14	22	30	32	8	230	KF-24040
80 - 100	20	30	119	M20x1,5	8	54	40	119	22	32	41	45	6	700	KF-24080

Piston rod locknut (zinc-plated steel)

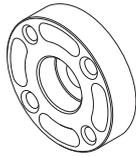


Material: Zinc-plated steel

Cylinder Ø	KK	KV	KW	Mass g	Part no.
16	M6x1	10	4	1,6	MF-16012
20 - 25	M8x1,25	13	5	3,4	MF-16020
32 - 40	M10x1,25	17	6	5	KF-16032
50 - 63	M12x1,25	19	7	10	KF-16040
80 - 100	M20x1,5	30	9	30	KF-16080

CYLINDERS

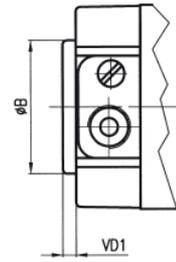
Flange for female piston rod (only for RP series)



Material: Aluminium

Cylinder Ø	Mass g	Part no.
16	0,007	RPF-28016
20	0,018	RPF-28020
25	0,020	RPF-28025
32	0,024	RPF-28032
40	0,035	RPF-28040
50	0,057	RPF-28050
63	0,094	RPF-28063

Centering adaptor ring



Material: Aluminium

Ø	ØB	VD1	Part no.	
			RP UNITOP	RM ISO
16	-	-	-	-
20	-	-	-	-
25	-	-	-	-
32	30	3	RSF-09032	
40	35	3	RSF-09040	
50	40	3	RSF-09050	
63	45	3	RSF-09063	
80	45	4	-	RSF-09080
100	55	4	-	RSF-09100

# RO-RN

## Ø16 ÷ 63 mm UNITOP, ISO 21287 Compact Cylinders

- Extended piston rod version available
- Equipped with adjustable pneumatic cushioning for a sensible reduction of noise
- Magnetic version standard supplied
- Non-rotating octagonal tube

Available ATEX version upon request



### TECHNICAL CHARACTERISTICS

Ambient temperature	-20 ÷ 80°C
Fluid	filtered air, with or without lubrication
Working pressure	1,5 ÷ 10 bar
Bores	Ø 16 - 20 - 25 - 32 - 40 - 50 - 63 mm
Cushionings	adjustable on both sides (UNIVER Original standard supplied)

### CONSTRUCTIVE CHARACTERISTICS

End-caps	die-cast zamak (Ø 16 ÷ 25 mm), aluminium (Ø 32 ÷ 63 mm)
Barrel	anodized aluminium
Piston	aluminium
Guide slide	acetalic resin
Piston rod	chromium-plated, rolled stainless steel AISI 303 upon request
Piston seal	nitrile rubber (NBR)
Guide bush for piston rod	acetalic resin
Shock absorber seals	nitrile rubber (NBR) on both sides
Magnet	plasto-ferrite (standard supplied)

### CODIFICATION KEY

R	O	2	0	0	0	3	2	0	0	2	5		
1	2	3	4				5			6	7		

1 Series	2 Type	3 Version	
<b>RO</b> = Ø16 ÷ 63 mm - UNITOP Compact Cylinders octagonal tube - NON-ROTATING <b>RN</b> = Ø32 ÷ 63 mm - ISO 21287 Compact Cylinders octagonal tube - NON-ROTATING 	<b>RO</b> 1 = Stainless steel female piston rod with flange 2 = Chromium-plated steel female piston rod with flange <b>RN</b> 3 = Stainless steel male piston rod 4 = Chromium-plated steel male piston rod	<b>Type 1 - 2</b> <b>00</b> = D.A. Standard version <b>01</b> = D.A. Through piston rod <b>20</b> = D.A. Long piston (Ø32 ÷ 63 mm) D.A. = Double acting	<b>Type 3 - 4</b> <b>00</b> = D.A. Standard version <b>01</b> = D.A. Through piston rod <b>20</b> = D.A. Long piston (Ø32 ÷ 63 mm)

4 Bore (mm)	5 Stroke (mm)	6 Option	7 Atex option
<b>016</b> = Ø16 <b>020</b> = Ø20 <b>025</b> = Ø25 <b>032</b> = Ø32 <b>040</b> = Ø40 <b>050</b> = Ø50 <b>063</b> = Ø63	<b>0005 - 0010 - 0015 - 0020 - 0025 - 0030 - 0040</b> <b>0050 - 0060 - 0080</b> Max standard stroke <b>0040</b> (Ø16) <b>0050</b> (Ø20-25) <b>0080</b> (Ø32÷63)	<b>H</b> = Hollow piston rod only for through piston rod versions without flange	<b>X</b> = Atex (upon request) See ATEX Catalogue for types and versions

## Stroke tolerances

Ø	mm
16	+1,5 - 0
20	+1,5 - 0
25	+1,5 - 0
32	+2 - 0
40	+2 - 0
50	+2 - 0
63	+2,5 - 0

## Maximum torque (Nm)

Ø	Nm
16	0,5
20	0,8
25	1
32	2
40	3
50	5
63	8

## Theoretical forces (N)

## at different working pressure (bar)

Ø	Surface area		Working pressure				Working pressure					
	mm <sup>2</sup>		bar				bar					
	Thrust	Traction	Thrust				Traction					
			2	4	6	8	10	2	4	6	8	10
16	201	151	40	80	121	161	201	30	60	91	121	151
20	314	236	63	126	188	251	314	47	94	142	189	236
25	491	412	98	196	295	393	491	82	165	247	330	412
32	804	691	161	322	482	643	804	138	276	414	553	691
40	1256	1143	251	502	754	1005	1256	228	457	685	914	1143
50	1962	1762	393	785	1178	1570	1963	352	704	1057	1409	1762
63	3116	2916	623	1246	1869	2493	3116	583	1166	1749	2332	2916

In case of pneumatic cylinders with through piston rod, the theoretical force to be considered, in both directions, is always equal to the "traction" value indicated in the table. For practical purposes these values should be reduced taking into account the weight and sliding friction of the moving element (~ -10%).

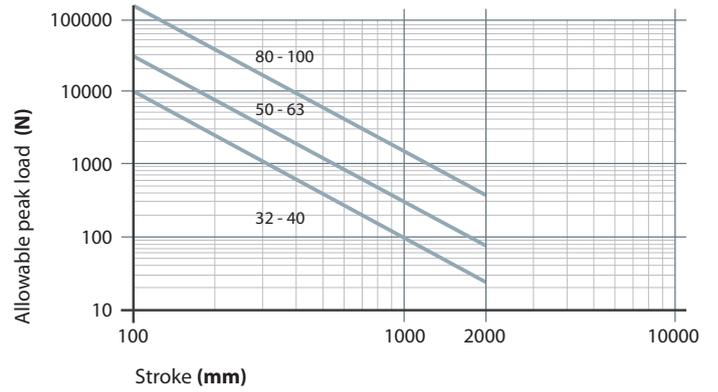
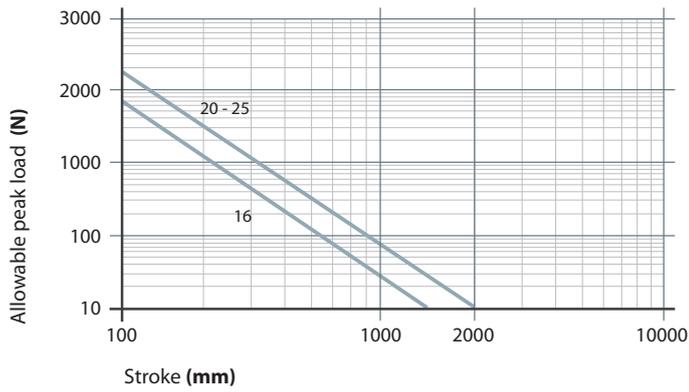
## Mass - Standard and long piston version

Ø	Cylinder stroke 0 Standard	Cylinder stroke 0 Long piston	Increase per mm stroke	Moving element stroke 0 Standard	Moving element stroke 0 Long piston	Increase per mm stroke
	g	g	g	g	g	g
	RO200	RO220	RO200/220	RO200	RO220	RO200/220
16	110	-	1,05	22,5	-	0,39
20	150	-	1,45	38,5	-	0,62
25	225	-	1,65	54,5	-	0,62
32	229	316,5	2,65	84	136,5	0,9
40	344	466	3,3	113,5	188	0,9
50	517	746,5	4,7	192	344	1,6
63	829	1161,5	5,65	294	525	1,6

## Mass - Through piston rod cylinder

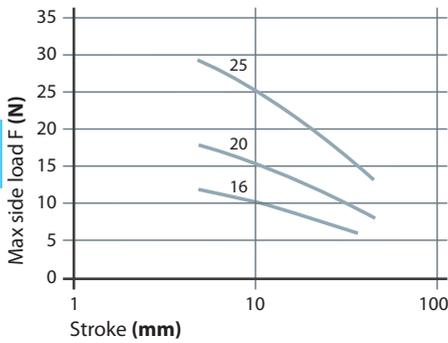
Ø	Cylinder stroke 0 Standard	Increase per mm stroke	Moving element stroke 0 Standard	Increase per mm stroke
	g	g	g	g
	RO201	RO201	RO201	RO201
16	112	1,45	24,5	0,78
20	153	2,07	39	1,24
25	228	2,27	55	1,24
32	254	3,55	109	1,8
40	364	4,2	138,5	1,8
50	557	6,3	232	3,2
63	869	7,25	339	3,2

Peak load

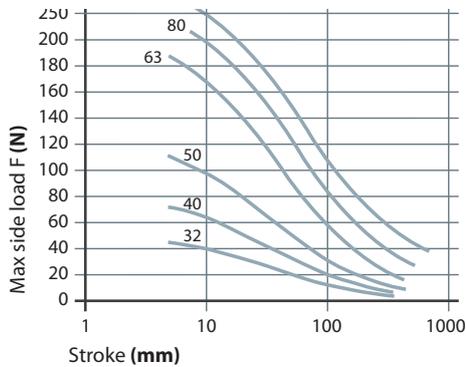


Graph side load on piston rod

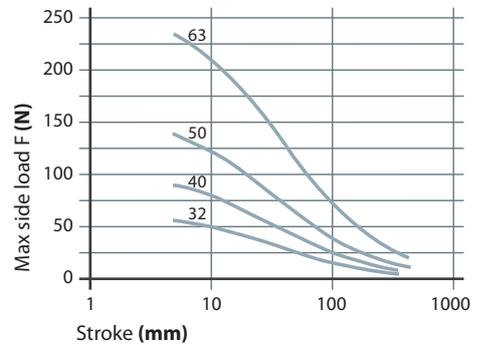
Standard piston Ø16 ÷ 25 mm



Standard piston Ø32 ÷ 63 mm

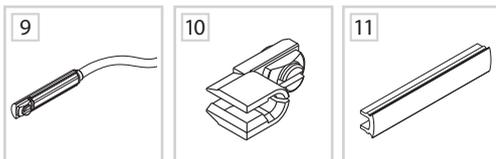
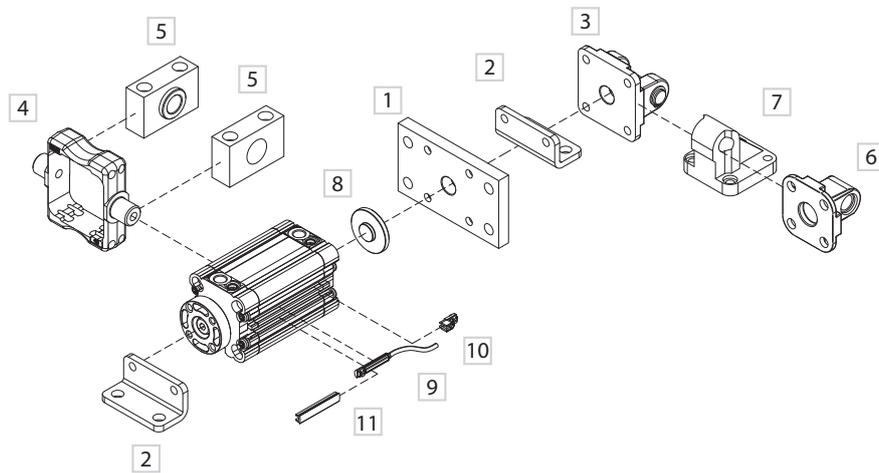


Long piston Ø32 ÷ 63 mm



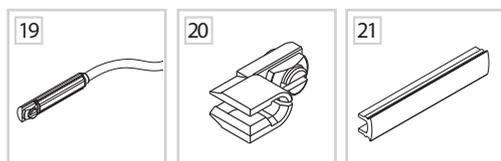
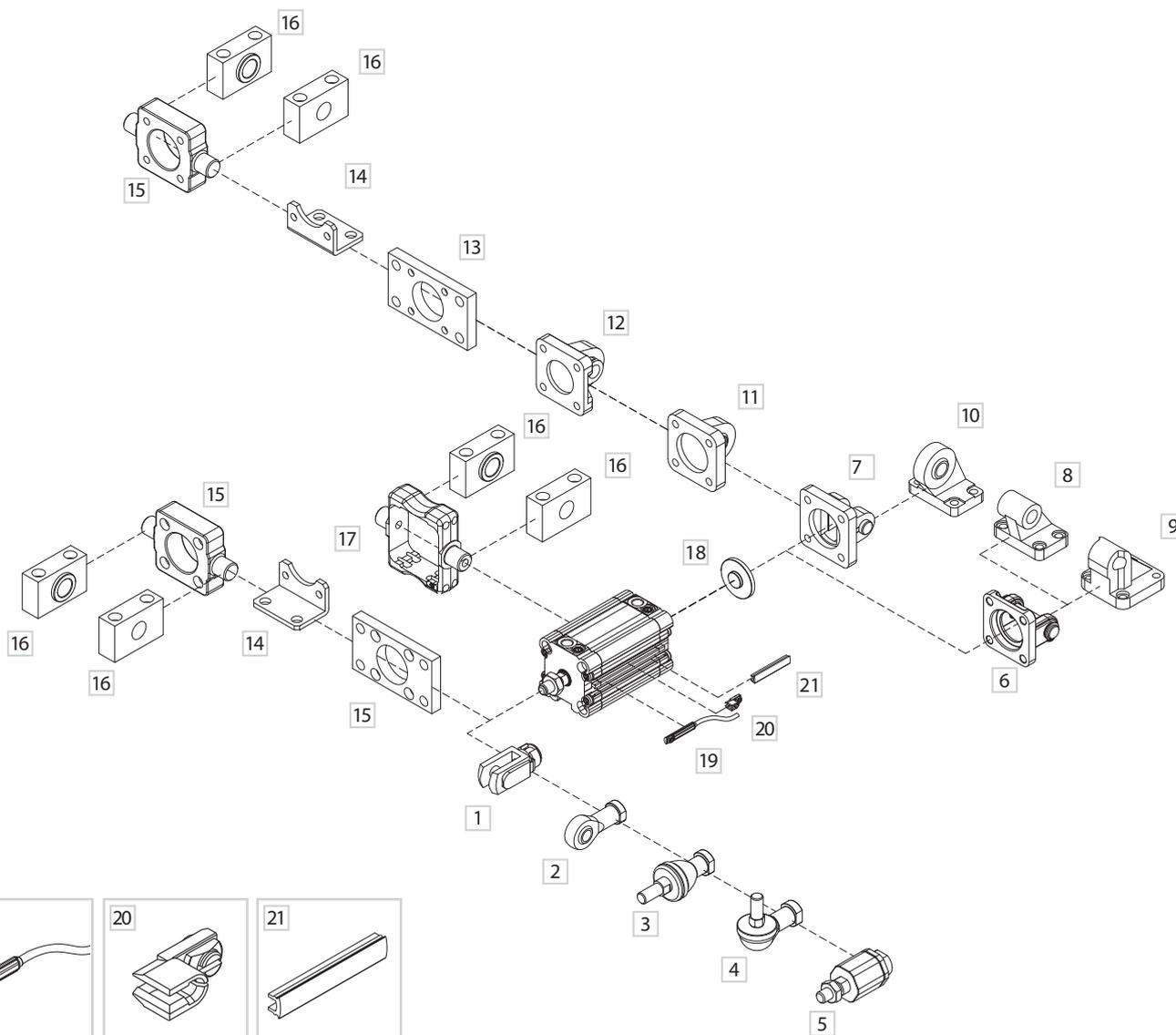
CYLINDERS 1

RO fixing elements and accessories



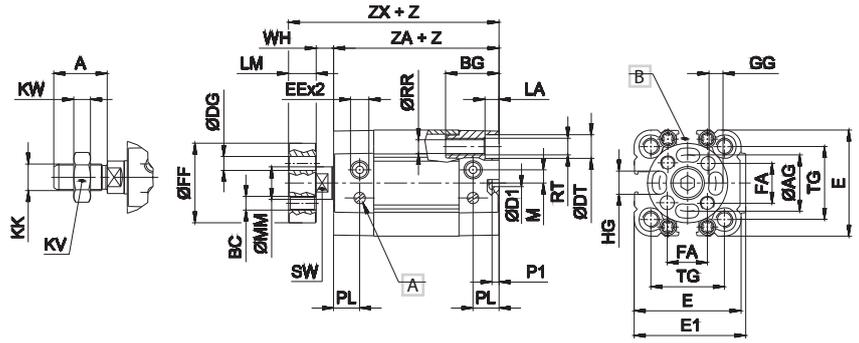
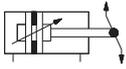
DESCRIPTION	PART NO.
1 Front/rear flange	RPF-12___ / KF-12___ (Ø32)
2 Angle bracket	RPF-13___ / KF-13___ (Ø32)
3 Rear female hinge with pin	RPF-10___ A / KF-10___ A (Ø32)
4 Intermediate hinge	RPF-14___ / KDF-14___ (Ø32)
5 Hinge support	KF-41___
6 Rear male hinge	RPF-11___ / KF 11___ (Ø32)
7 Counter hinge 90°	KF-19___ Ø32 ÷ 63
8 Centering adaptor ring	RSF-09___ Ø32 ÷ 63
9 DF sensor (see accessories section)	DF-___
10 Cable clamping for DF sensor (see accessories section)	DF-001
11 DHF covering strip (see accessories section)	DHF-0020100

RN fixing elements and accessories

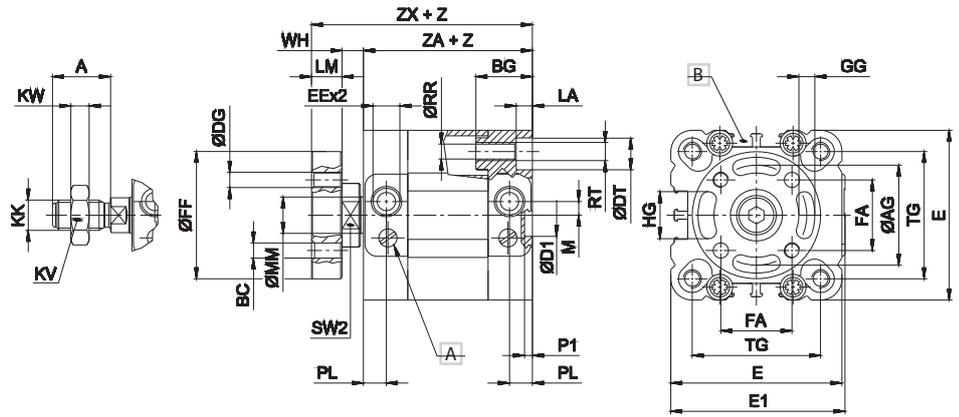
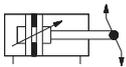


DESCRIPTION	PART NO.
1 Female fork with clips	KF-15___ / MF-15___ (Ø16-20-25)
2 Articulated self-lubricating fork	KF-17___ / MF-17___ (Ø16-20-25)
3 Fork with axially mounted articulated pin	KF-22___ / MF-22___ (Ø16-20-25)
4 Fork with angle mounted articulated pin	KF-23___ / MF-23___ (Ø16-20-25)
5 Floating joint	KF-24___ / MF-24___ (Ø16-20-25)
6 Female rear hinge with pin	KF-10___A
7 Narrow female hinge with pin	KF-10___AS
8 Counter hinge 90° (CETOP)	KF-19___CTA
9 Counter hinge 90°	KF-19___
10 Articulated counter hinge	KF-19___SC
11 Articulated rear male hinge	KF-11___S
12 Rear male hinge	KF-11___ RPF (Ø16-20-25)
13 Front/rear flange	KF-12___ RPF (Ø16-20-25)
14 Angle bracket	KF-13___ RPF (Ø16-20-25)
15 Front/rear hinge with floating pin	KF-14___AP
16 Hinge support	KF-41___
17 ISO intermediate hinge	KDF-14___ (Ø32)/ RPF-14___ (Ø40-50-63)
18 Centering adaptor ring	RSF-09___ (Ø32÷100)
19 DF Sensor (see accessories section)	DF-___
20 Cable clamping for DF sensor (see accessories section)	DF-001
21 DHF covering strip (see accessories section)	DHF-0020100

### Double-acting non-rotating piston rod Ø 16 ÷ 25



### Double-acting non-rotating piston rod Ø 32 ÷ 63



Z = Stroke

Ø	A	AG	BC	BG	DG	DT	D1	E	EE	E1	FA	FF	GG	HG	KK	KV
16	12	14	M3	16	3	5,8	2	28	M5	30	9,9	19	3	5	M6x1	10
20	16	17	M4	16	4	7,3	2	32	M5	34	12	24	4	7	M8x1,25	13
25	16	22	M5	16	5	8	2	37	M5	39	15,6	30	5	9	M8x1,25	13
32	19	28	M5	18	5	9	14	46	G1/8	47	19,8	37	5,2	11	M10x1,25	17
40	19	33	M5	18	5	9	14	56	G1/8	57	23,3	42	5,2	15	M10,x1,25	17
50	22	42	M6	24	6	11	18	66	G1/8	67	29,7	52	6,2	19	M12x1,25	19
63	22	50	M6	24	6	11	18	79	G1/8	80	35,4	64	6,2	25	M12x1,25	19

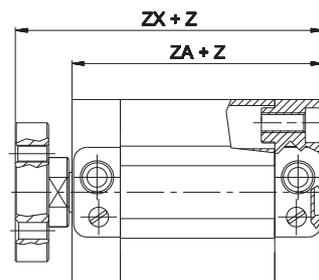
Ø	KW	LA	LM	LW	M	MM	PL	P1	RR	RT	SW	SW2	TG	WH	ZA	ZX
16	4	3,2	6	4,5	3,5	8	8	2	3,2	M4	7	-	18	5	37	48
20	5	4,2	8	4,5	4	10	8	2	4,2	M5	8	-	22	6	37	51
25	5	4,5	8	4,5	4	10	8	2	4,2	M5	8	-	26	6	39	53
32	6	5,3	10	5	4,5	12	7,5	2,5	5,2	M6	10	17	32,5	7	44	61
40	6	5,3	10	5	4,5	12	7,5	2,5	5,2	M6	10	19	42*	7	45	62
50	7	6,5	12	6	6,5	16	7,5	2,5	6,5	M8	13	24	50*	8	45	65
63	7	6,5	12	6	6,5	16	7,5	2,5	6,5	M8	13	24	62*	8	50	70

A Pneumatic cushioning adjusting screw

B Groove for sensor

\* = Dimensional variations for end-caps with ISO inter-axes (RN series): Ø40 38 mm - Ø50 46,5 mm - Ø63 56,5 mm

### Long piston RN Ø 32 ÷ 63

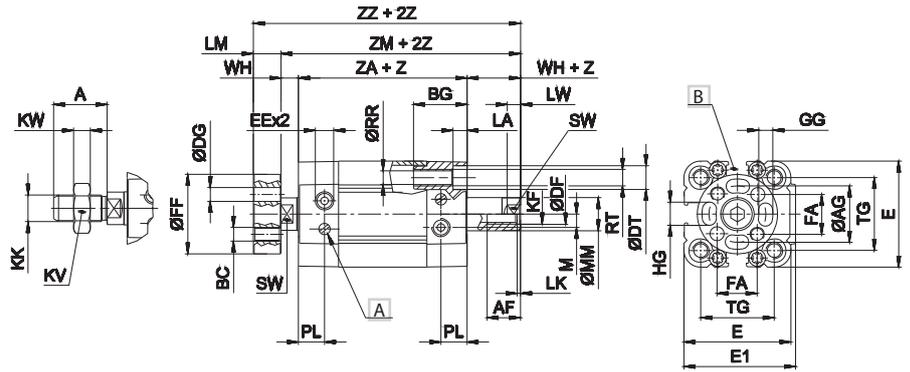
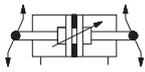


Z = Stroke

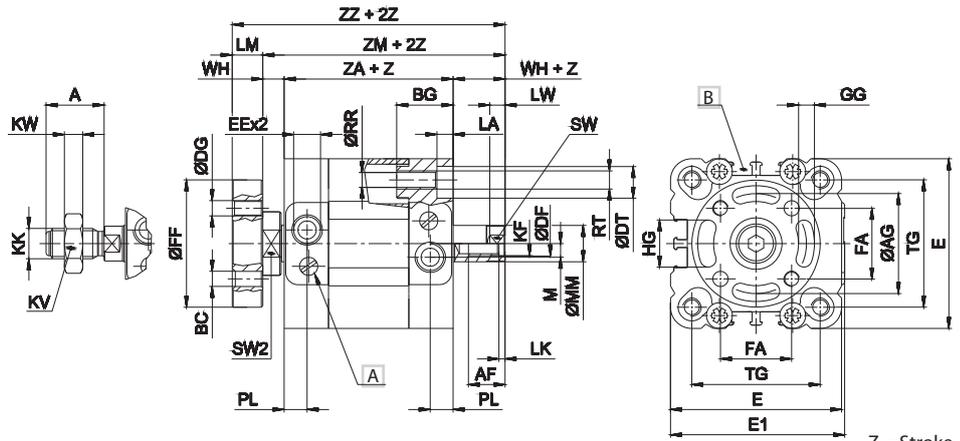
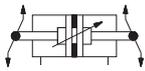
Ø	ZA	ZX
32	64	81
40	65	82
50	70	90
63	75	95

For cylinder types with long piston, dimensions ZA and ZX will be increased by 20 mm (Ø32 - Ø40 mm) and by 25 mm (Ø50 - Ø63 mm)

### Double-acting non-rotating through piston rod Ø 16 ÷ 25



### Double-acting non-rotating through piston rod Ø 32 ÷ 63



Z = Stroke

1  
CYLINDERS

Ø	A	AF	AG	BC	BG	DF	DG	DT	E	EE	E1	FA	FF	GG	HG	KF	KK
16	12	8	14	M3	16	4,1	3	5,8	28	M5	30	9,9	19	3	5	M4	M6x1
20	16	10	17	M4	16	6,1	4	7,3	32	M5	34	12	24	4	7	M6	M8x1,25
25	16	10	22	M5	16	6,1	5	8	37	M5	39	15,6	30	5	9	M6	M8x1,25
32	19	12	28	M5	18	8,2	5	9	46	G1/8	47	19,8	37	5,2	11	M8	M10x1,25
40	19	12	33	M5	18	8,2	5	9	56	G1/8	57	23,3	42	5,2	15	M8	M10x1,25
50	22	16	42	M6	24	10,2	6	11	66	G1/8	67	29,7	52	6,2	19	M10	M12x1,25
63	22	16	50	M6	24	10,2	6	11	79	G1/8	80	35,4	64	6,2	25	M10	M12x1,25

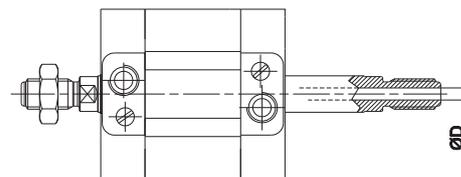
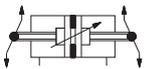
Ø	KV	KW	LA	LM	LK	LW	M	MM	PL	RR	RT	SW	SW2	TG	WH	ZA	ZM	ZZ
16	10	4	3,2	6	1	4,5	3,5	8	8	3,2	M4	7	-	18	5	37	47	53
20	13	5	4,2	8	1	4,5	4	10	8	4,2	M5	8	-	22	6	37	49	57
25	13	5	4,5	8	1	4,5	4	10	8	4,2	M5	8	-	26	6	39	51	59
32	17	6	5,3	10	2	5	4,5	12	7,5	5,2	M6	10	17	32,5	7	44	58	61
40	17	6	5,3	10	2	5	4,5	12	7,5	5,2	M6	10	19	42*	7	45	59	62
50	19	7	6,5	12	2	6	6,5	16	7,5	6,5	M8	13	24	50*	8	45	61	65
63	19	7	6,5	12	2	6	6,5	16	7,5	6,5	M8	13	24	62*	8	50	68	70

A) Pneumatic cushioning adjusting screw

B) Groove for sensor

\* = Dimensional variations for end-caps with ISO inter-axes (RN series): Ø40 38 mm - Ø50 46,5 mm - Ø63 56,5 mm

### Male hollow through piston rod Ø 16 ÷ 63



Ø	D
16	2
20	2,5
25	2,5
32	3,5
40	3,5
50	4,5
63	4,5

Ø16 ÷ 25 Max stroke 50 mm Ø32 ÷ 63 Max stroke 75 mm

For all other dimensions please refer to the through piston rod version

Female hollow through piston rod upon request

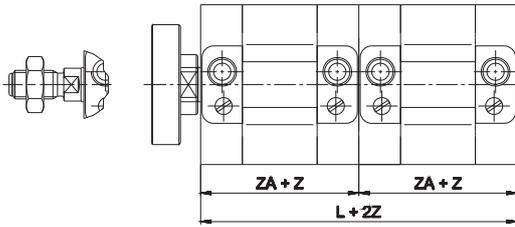
## Tandem version

### CODIFICATION KEY

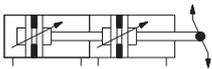
R	O	1	A	0	2	0	0	4	0
1	2	3	4						

1 Series	2 Type	3 Bore (mm)	4 Stroke (mm)
<b>RO</b> = Ø16 ÷ 63 mm - UNITOP Compact Cylinders octagonal tube NON-ROTATING  <b>RN</b> = Ø16 ÷ 63 mm - ISO 21287 Compact Cylinders octagonal tube NON-ROTATING <b>Magnetic series</b>	<b>1A</b> = Double thrust tandem, stainless steel female piston rod with flange <b>2A</b> = Double thrust tandem, chromium-plated steel female piston rod with flange <b>3A</b> = Double thrust tandem, stainless steel male piston rod <b>4A</b> = Double thrust tandem, chromium-plated steel male piston rod	<b>016</b> = Ø16 <b>040</b> = Ø40 <b>020</b> = Ø20 <b>050</b> = Ø50 <b>025</b> = Ø25 <b>063</b> = Ø63 <b>032</b> = Ø32	Upon request

Z = Stroke



Ø	L	ZA
16	74	37
20	74	37
25	78	39
32	88	44
40	90	45
50	90	45
63	100	50
80	108	54
100	134	67



Tandem cylinders are constructed using two pistons coupled together which double the force in forward movement compared to the traditional cylinders of the same bore size

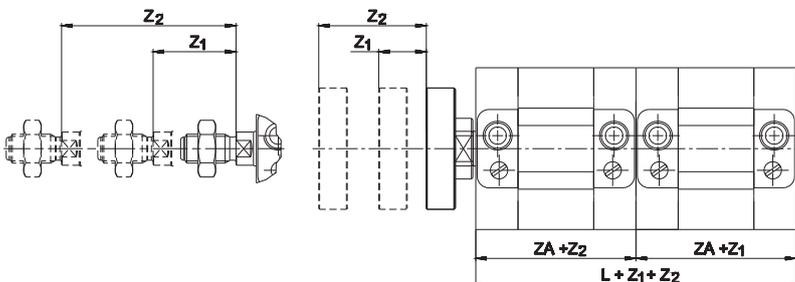
## Two-position tandem version

### CODIFICATION KEY

R	O	1	B	0	2	0	0	3	0	0	5	0
1	2	3	4	5								

1 Series	2 Type	3 Bore (mm)	4 Z1 stroke (mm)	5 Z2 stroke (mm)
<b>RO</b> = Ø16 ÷ 63 mm - UNITOP Compact Cylinders octagonal tube NON-ROTATING  <b>RN</b> = Ø16 ÷ 63 mm - ISO 21287 Compact Cylinders octagonal tube NON-ROTATING	<b>1B</b> = Two-position tandem, stainless steel female piston rod with flange <b>2B</b> = Two-position tandem, chromium-plated steel female piston rod with flange <b>3B</b> = Two-position tandem, stainless steel male piston rod <b>4B</b> = Two-position tandem, chromium-plated steel male piston rod	<b>016</b> = Ø16 <b>040</b> = Ø40 <b>020</b> = Ø20 <b>050</b> = Ø50 <b>025</b> = Ø25 <b>063</b> = Ø63 <b>032</b> = Ø32	Upon request	Upon request

Z = Stroke



Ø	L	ZA
16	74	37
20	74	37
25	78	39
32	88	44
40	90	45
50	90	45
63	100	50
80	108	54
100	134	67



Two-position cylinders with two independent piston-rods which allow to realize a double positioning in which the thrust forces are the same as those of a cylinder of the same bore size

For all other dimensions please refer to the standard version  
 For other types of cylinders kindly contact our sales office

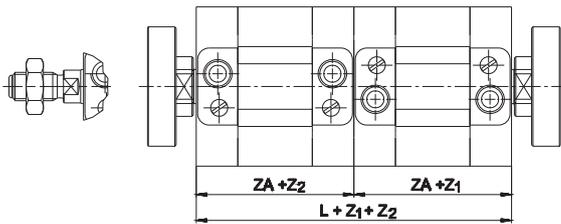
## Opposed tandem

### CODIFICATION KEY

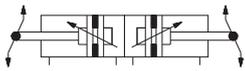
R	O	1	C	0	2	0	0	2	0	0	4	0
1	2	3	4	5								

1 Series	2 Type	3 Bore (mm)	4 Z1 stroke (mm)	5 Z2 stroke (mm)
<b>RO</b> = Ø16 ÷ 63 mm - UNITOP Compact Cylinders octagonal tube NON-ROTATING  <b>RN</b> = Ø16 ÷ 63 mm - ISO 21287 Compact Cylinders octagonal tube NON-ROTATING	<b>1C</b> = Opposed tandem, stainless steel female piston rod with flange  <b>2C</b> = Opposed tandem, chromium-plated steel female piston rod with flange  <b>3C</b> = Opposed tandem, stainless steel male piston rod  <b>4C</b> = Opposed tandem, chromium-plated steel male piston rod	<b>016</b> = Ø16 <b>040</b> = Ø40 <b>020</b> = Ø20 <b>050</b> = Ø50 <b>025</b> = Ø25 <b>063</b> = Ø63 <b>032</b> = Ø32	Upon request	Upon request

Z = Stroke

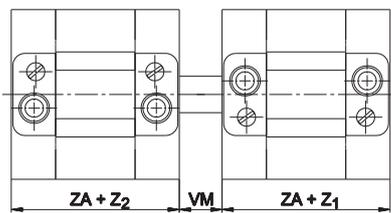


Ø	L	ZA
16	74	37
20	74	37
25	78	39
32	88	44
40	90	45
50	90	45
63	100	50
80	108	54
100	134	67



Type of cylinder characterized by the coupling of two cylinders and whose piston rods move in opposite directions. The values of the thrust force are the same as those of the traditional cylinders

### With common piston rod tandem version (upon request)



Z = Stroke

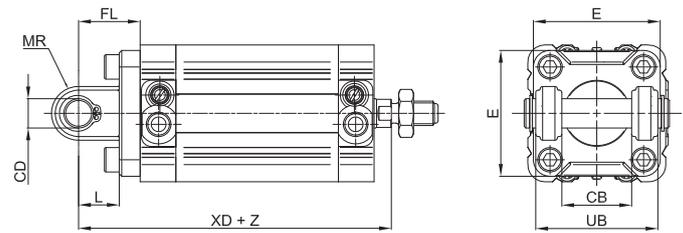
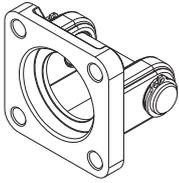
Ø	L	VM	ZA
16	74	10	37
20	74	10	37
25	78	12	39
32	88	14	44
40	90	14	45
50	90	16	45
63	100	16	50



Two coupled cylinders with common piston rod.  
The values of the thrust force are the same as those of the traditional cylinders

For all other dimensions please refer to the standard version  
For other types of cylinders kindly contact our sales office

**Female rear hinge (ISO MP2) with pin**

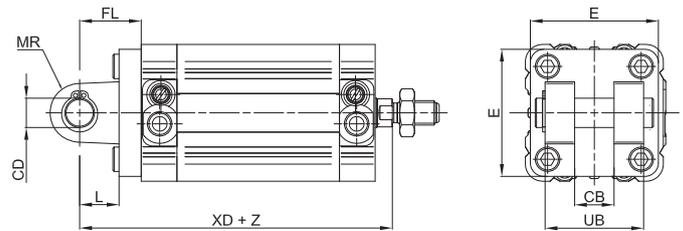
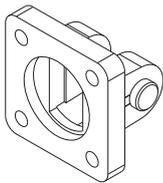


Material: Aluminium, zinc-plated steel pin

Z = Stroke

Ø	CB		C		E		FL		L		MR		UB		XD				Mass		Part no.	
	h14		h9				± 0,2		min		Max		h14						RO UNITOP	RN ISO	RO UNITOP	RN ISO
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	26	26	10	10	48	48	22	22	12	12	11	11	45	45	73	73	± 1,25	± 1,25	75		KF-10032A	
40	28	28	12	12	54	54	25	25	15	16	13	12,5	52	52	77	77	± 1,25	± 1,25	110	156	RPF-10040A	KF-10040A
50	32	32	12	12	65	65	27	27	15	16	13	12,5	60	60	80	80	± 1,25	± 1,25	150	200	RPF-10050A	KF-10050A
63	40	40	16	16	75	75	32	32	20	21	17	15	70	70	90	90	± 1,6	± 1,6	270	362	RPF-10063A	KF-10063A

**Narrow female hinge with pin (DIN 648K)**

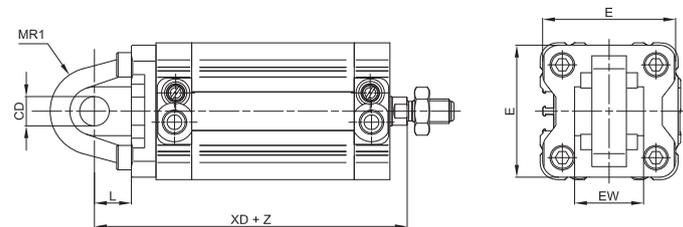
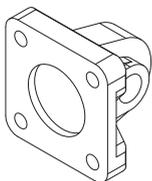


Material: Aluminium, zinc-plated steel pin

Z = Stroke

Ø	CB		CD	E	FL	L	MR	UB	XD		Mass	Part no.
	h14								h9			
16	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-
32	14	10	10	45	22	13	10	34	73	± 1,25	68	KF-10032AS
40	16	12	12	52	25	16	12	40	77	± 1,25	112	KF-10040AS
50	21	16	16	65	27	16	14	45	80	± 1,25	196	KF-10050AS
63	21	16	16	75	32	21	18	51	90	± 1,6	288	KF-10063AS

**Rear male hinge (ISO MP4)**

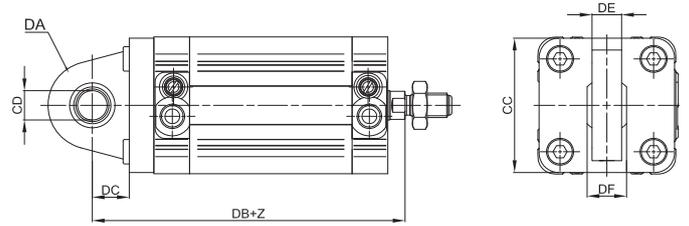
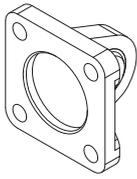


Material: Aluminium

Z = Stroke

Ø	CD	E	EW	L	MR1	XD		Mass	Part no.		
									g	RO UNITOP	RN ISO
16	6	27	12	-0,2/- 0,6	10	6	58	± 1	17	RPF-11016	
20	8	34	16	-0,2/- 0,6	14	8	63	± 1	21	RPF-11020	
25	8	38	16	-0,2/- 0,6	14	8	65	± 1	27	RPF-11025	
32	10	48	26	-0,2/- 0,6	12	15	73	± 1,25	80	KF-11032	
40	12	54	28	-0,2/- 0,6	15	18	77	± 1,25	100	-	KF-11040
50	12	65	32	-0,2/- 0,6	15	20	80	± 1,25	170	-	KF-11050
63	16	75	40	-0,2/- 0,6	20	23	90	± 1,6	250	-	KF-11063

Articulated rear male hinge (ISO MP4)



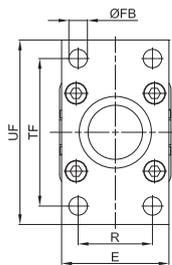
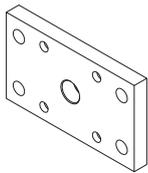
Material: Aluminium

Z = Stroke

Ø	CC	CD	DA	DB	DC	DE	DF	Mass g	Part no.	
									RO UNITOP	RN ISO
16	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-
32	48	10	15	73	14	10,5	14	70	-	KF-110325
40	54	12	18	77	16,5	12	16	100	-	KF-100405
50	65	12	20	80	17,5	12	16	145	-	KF-100505
63	75	16	21	90	21,5	15	21	250	-	KF-100635

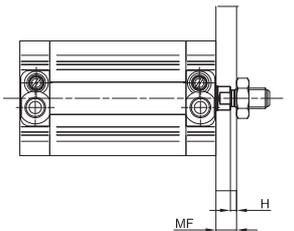
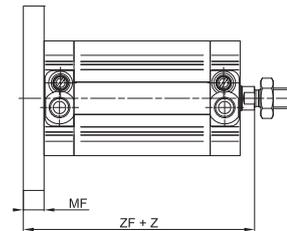
Front/rear flange

CYLINDERS



> Rear assembly

> Front assembly

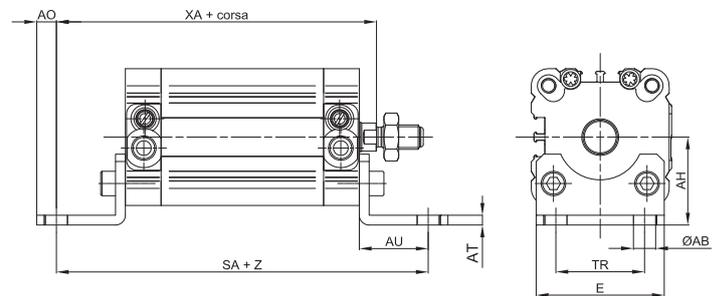
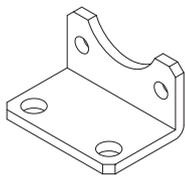


Material: Zinc-plated steel

Z = Stroke

Ø	Ø D		E		Ø FB		H		MF		R		TF		UF		ZF		ZH		Mass		Part no.			
	Ø h11				Ø h13						Js14		Js14								g		RO UNITOP		RN ISO	
16	10	-	29	-	4,5	-	5	-	10	-	-	-	43	-	55	-	52	-	47	-	100				RPF-12016	
20	12	-	36	-	6,6	-	4	-	10	-	-	-	55	-	70	-	53	-	47	-	160				RPF-12020	
25	12	-	40	-	6,6	-	4	-	10	-	-	-	60	-	76	-	55	-	49	-	200				RPF-12025	
32	14	30	50	45	7	7	3	3	10	10	32	32	65/64	64	80	80	61	61	54	54	260				RPF-12032	
40	14	35	60	52	9	9	3	3	10	10	36	36	82/72	72	102	90	62	62	55	55	420	250			RPF-12040	KF-12040
50	18	40	68	65	9	9	4	4	12	12	45	45	90	90	110	110	65	65	57	57	600	500			RPF-12050	KF-12050
63	18	45	87	75	9	9	7	4	15	12	50	50	100	100	130	120	73	70	65	63	1200	650			RPF-12063	KF-12063

Angle bracket

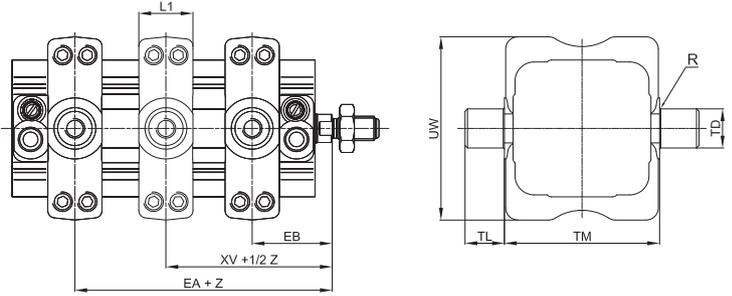
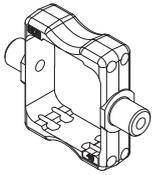


Material: Zinc-plated steel

Z = Stroke

Ø	Ø AB		Ø AH		AO		AT		AU		E		SA		TR		XA		Mass		Part no.				
	Ø h13		Js15		Js15														g		RO UNITOP		RN ISO		
16	5,5	-	22	-	4,5	-	3	-	13	-	30	-	63	-	18	-	55	-	20					RPF-13016	
20	6,6	-	27	-	6	-	4	-	16	-	36	-	69	-	22	-	59	-	30					RPF-13020	
25	6,6	-	30	-	6	-	4	-	16	-	40	-	71	-	26	-	61	-	40					RPF-13025	
32	6,6	7	32,25	32	8	6	5	4	18	24	50	45	80	92	32	32	69	75	70					RPF-13032	
40	6,6	9	42,5	36	8	8	5	4	20	28	60	52	85	101	42	36	72	80	100					RPF-13040	KF-13040
50	9	9	47	45	8	10	6	5	24	32	68	64	93	109	50	45	77	85	150					RPF-13050	KF-13050
63	9	9	59,5	50	12	12	6	5	27	32	84	74	104	114	62	50	85	93	250					RPF-13063	KF-13063

ISO intermediate hinge

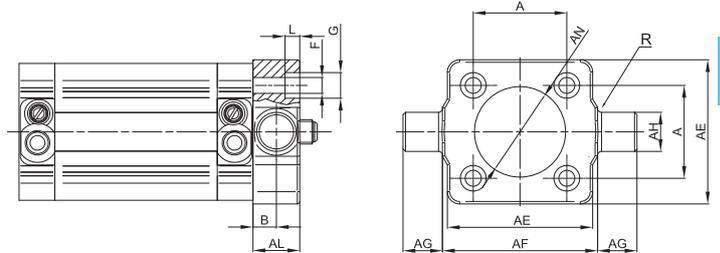
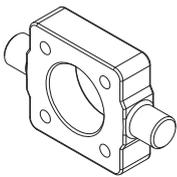


Material: Zinc-plated steel

Z = Stroke

Ø	EA	EB	L1	R	TD	TL	TM	UW	XV	Mass	Part no.	
	Max	min	Max	Max	e9	h14	h14	Max		g	RO UNITOP	RN ISO
16	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-
32	24	34	22	0,5	12	12	50	65	29	± 2	130	KDF-14032
40	25	34	22	0,5	16	16	63	75	29,5	± 2	240	RPF-14040
50	26	35	22	1	16	16	75	95	30,5	± 2	320	RPF-14050
63	27	38	28	1	20	20	90	105	32,5	± 2	470	RPF-14063

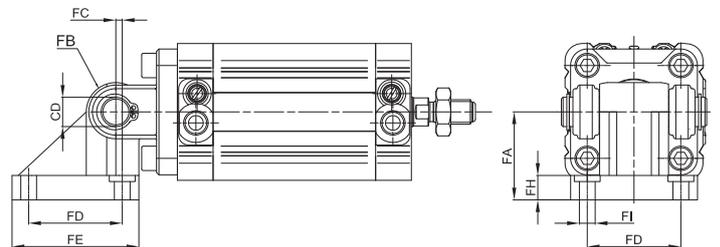
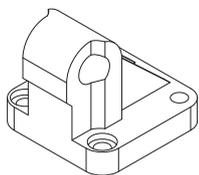
Front/rear hinge with floating pin



Material: Zinc-plated steel

Ø	AE	AL	AH	AG	AF	AN	A	B	F	G	L	R	Mass	Part no.
	Max	Max	e9	h14	h14	h11	± 0,2	± 0,2/0	h13	h13	± 0,5/0	0/± 0,3	g	RN ISO
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	46	14	12	12	50	30	32,5	6,5	6,5	-	6	1	137	KF-14032AP
40	59	19	16	16	63	35	38	9	6,5	10,5	6	1,6	385	KF-14040AP
50	69	19	16	16	75	40	46,5	9	8,5	13,5	8	1,6	513	KF-14050AP
63	84	24	20	20	90	45	56,5	11,5	8,5	13,5	8	1,6	1041	KF-14063AP

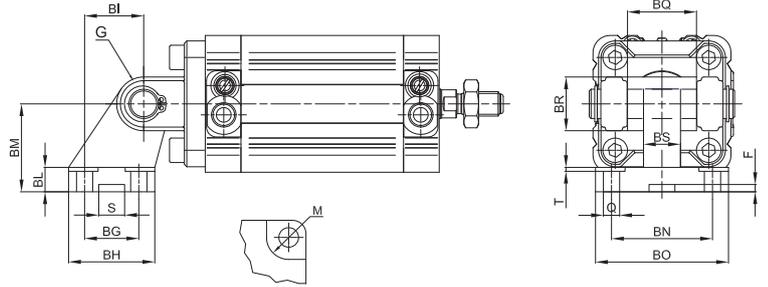
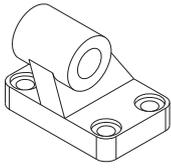
Counter hinge 90°



Material: Aluminium

Ø	CD	FA	FB	FC	FD	FE	FG	FH	FI	F1	F2	Mass	Part no.	
	h9	J515					- 0,2/- 0,6					g	RO UNITOP	RN ISO
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	10	32	10	1,2	32,5	46,5	26	9	6,4	5,5	10,5	90	KF-19032	-
40	12	36	12	2,6	38	51,5	28	9	6,6	5,5	10,5	120	KF-19040	-
50	12	45	12	0,3	46,5	63,5	32	9	8,4	5	13,5	200	KF-19050	-
63	16	50	16	3,3	56,5	73,5	40	10,5	8,4	5	13,5	320	KF-19063	-

Counter hinge 90° (CETOP)

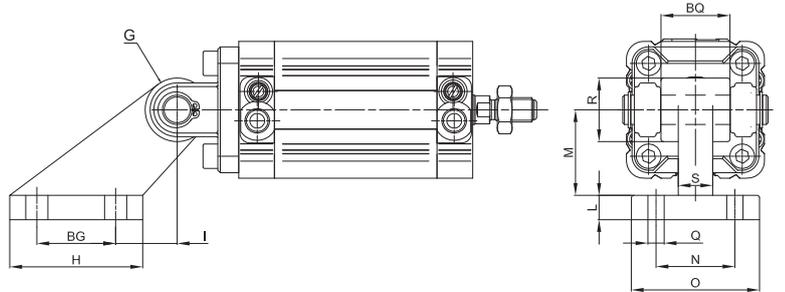
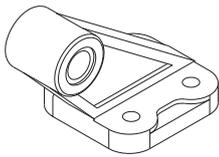


Material: Aluminium

Z = Stroke

Ø	Q	M	BG	BH	BI	BL	BM	BN	BO	BS	BR	T	G	S	F	BQ	Mass	Part no.
	h13	h13	Js14	Max	Js14		Js15	Js14	Max	Max	Max	Max	h9	+ 0,5/0	+ 0,5/0		g	
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	6,6	11	18	31	21	8	32	38	51	10	20	1,6	10	10,5	3	26	56	KF-19032CTA
40	6,6	11	22	35	24	10	36	41	54	15	22	1,6	12	10,5	3	28	139	KF-19040CTA
50	9	15	30	45	33	12	45	50	65	16	26	1,6	12	10,5	3	32	142	KF-19050CTA
63	9	15	35	50	37	14	50	52	67	16	30	1,6	16	10,5	3	40	200	KF-19063CTA

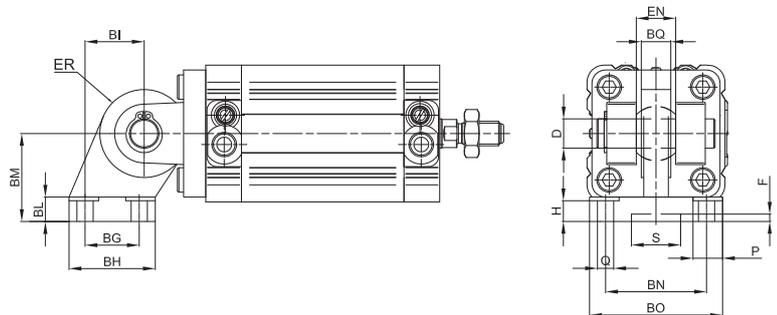
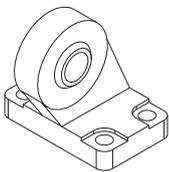
Counter hinge 90° (CNOMO)



Material: Aluminium

Ø	Q	BG	H	I	L	M	N	O	S	R	BQ	G	Mass	Part no.
	h13	± 0,2		± 0,2		± 0,2	± 0,2			Max	± 0,2/± 0,1	h9	g	
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	7	20	37	18	8	24	25	41	9	19,5	25	8	58	KF-19032CN
40	9	32	54	25	10	35	32	52	14	26	32	12	144	KF-19040050CN
50	9	32	54	25	10	35	32	52	14	26	32	12	144	KF-19040050CN
63	11	50	75	32	13	50	40	63	14	32	46	16	300	KF-19063080CN

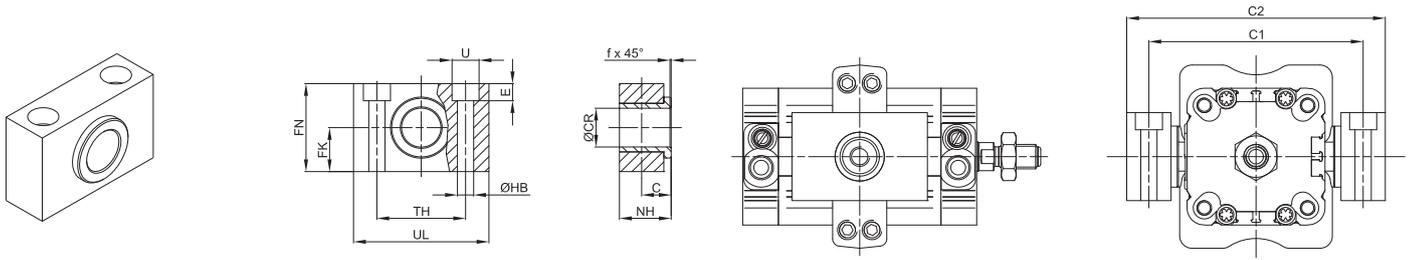
Counter hinge 90°



Material: Aluminium

Ø	Q	P	BG	BH	BI	BL	BM	BN	BO	EN	ER	BQ	D	H	S	F	Mass	Part no.
	h13	h13	Js14	Max	Js15		Js15	Js14	Max	0/- 0,1	Max	Max	h7	+ 0,5/0	h13		g	
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	6,6	11	18	31	21	10	32	38	51	14	15	10,5	10	8,5	20	3	58	KF-190325C
40	6,6	11	22	35	24	10	36	41	54	16	18	12	12	8,8	20	3	144	KF-190405C
50	9	15	30	45	33	12	45	50	65	21	20	15	16	10,5	20	3	144	KF-190505C
63	9	15	35	50	37	12	50	52	67	21	23	15	16	10,5	20	3	300	KF-190635C

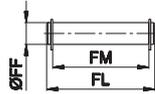
**Hinge support**



Material: Anodized aluminium and brass bushing

Ø	C	CR	FK	FN	HB	NH	TH	UL	U	E	F	C1	C2	Mass g	Part no.		
32	10,2	12	15	30	6,6	18	± 0,1	46	11	7	1	71	86	110	KF-41032		
												Ø40	Ø50	Ø40	Ø50		
40-50	12	16	18	36	9	21	36	55	15	9	1,6	87	99	105	117	200	KF-41040050
												Ø63	Ø80	Ø63	Ø80		
63	13	20	20	40	11	23	42	65	18	11	1,6	116	136	136	156	267	KF-41063080
												Ø63	Ø80	Ø63	Ø80		

**Pin with 2 circlips**



Material: Zinc-plated steel

Cylinder Ø	FF	FL	FM	Mass g	Part no.
32	10	53	46	30	KF-18032
40	12	61,3	53	50	KF-18040
50	12	69	61	50	KF-18050
63	16	80,5	71	120	KF-18063
80	16	100,5	91	150	KF-18080
100	20	122,5	111	290	KF-18100

**> Fixing screws**

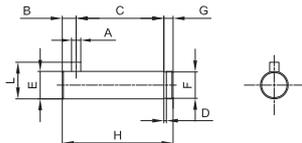
Cylindrical screw  
UNI 5931 suitable for  
mounting elements  
Series RPF-12.../RPF-13.../RPF-11...

Cylinder Ø	Screw	Part no.
16	M4x18	AZ4-VN0418
20 - 25	M5x18	AZ4-VN0518
32 - 40	M6x20	AZ4-VN0620
50 - 63	M8x25	AZ4-VN0825
80	M10x30	AZ4-VN1030
100	M10x30	AZ4-VN1030

Cylindrical screw  
UNI 5931 suitable for  
mounting elements  
Series KF-10032/RPF-10...

Cylinder Ø	Screw	Part no.
32 - 40	M6x25	AZ4-VN0625
50 - 63	M8x30	AZ4-VN0830
80	M10x30	AZ4-VN1030
100	M10x30	AZ4-VN1030

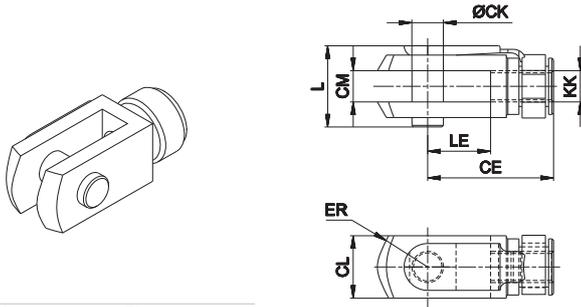
**Pin for narrow hinge**



Material: Zinc-plated steel

Ø	A	C	D	E	F	G	H	L	B	Part no.
32	H12	+0,5/ +0,3	H13	F7	H11			0 / -0,5		KF-18032S
40	3	32,5	1,1	10	9,6	4	41	14	4,5	KF-18040S
50	4	38	1,1	12	11,5	4	48	16	6	KF-18050S
63	4	43	1,1	16	15,2	5	54	20	6	KF-18063S
80	4	49	1,1	16	15,2	5	60	20	6	KF-18080S
100	4	63	,13	20	19	6	75	24	6	KF-18100S

Female fork with clips

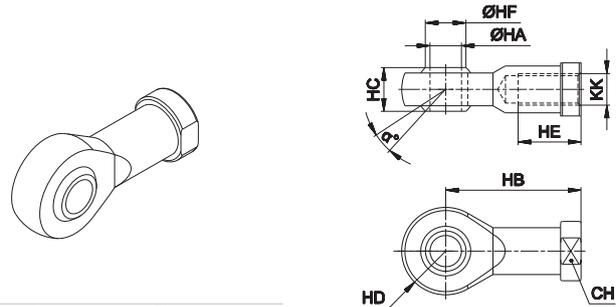


Material: Zinc-plated steel

Cylinder Ø	CE	CK	CL	CM	ER	KK	L	LE	Mass g	Part no.
16	24	6	12	6	7	M6x1	16	12	19	MF-15012
20 - 25	32	8	16	8	10	M8x1,25	22	16	46	MF-15020
32 - 40	40	10	20	10	16	M10x1,25	26	20	90	KF-15032
50 - 63	48	12	24	12	19	M12x1,25	32	24	150	KF-15040

Fork with pin suitable for piston rod according to ISO 8140 standard

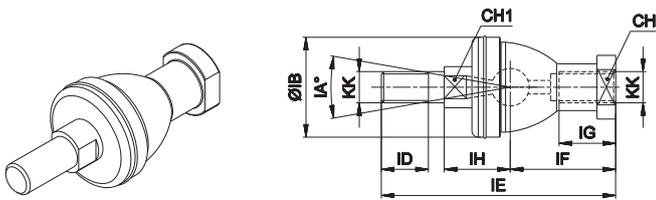
Articulated self-lubricating fork



Material: Zinc-plated steel

Cylinder Ø	α°	CH	KK	HA	HB	HC	HD	HE	HF	Mass g	Part no.	
16	13	11	M6x1	H7	6	30	9	10	12	9	26	MF-17012
20 - 25	13	14	M8x1,25	8	36	12	12	16	10,4	46	MF-17020	
32 - 40	13	17	M10x1,25	10	43	14	14	20	12,9	76	KF-17032	
50 - 63	13	19	M12x1,25	12	50	16	16	22	15,4	110	KF-17040	

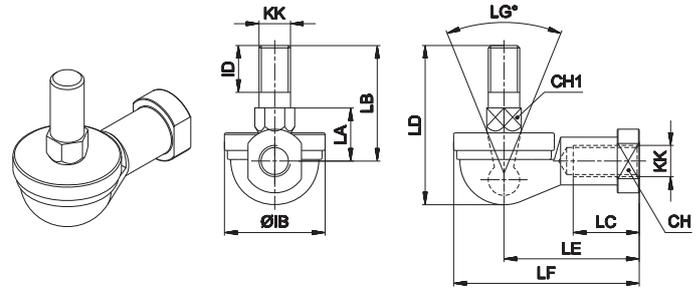
Fork with axially mounted articulated pin



Material: Zinc-plated steel

Cylinder Ø	CH	CH1	IA°	KK	IH	IB	ID	IE	IF	IG	Mass g	Part no.
16	11	8	30	M6x1	12,2	22	11	55,2	28	15	40	MF-22016
20 - 25	14	10	30	M8x1,25	16	28	12	65	32	16	75	MF-22020
32 - 40	17	11	30	M10x1,25	19,5	32	15	74,5	35	18	120	KF-22025
50 - 63	19	17	30	M12x1,25	22	36	17	84	40	20	185	KF-22040

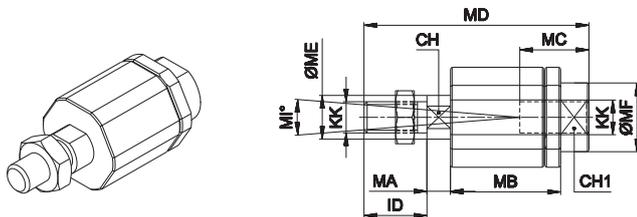
Fork with angle mounted articulated pin



Material: Zinc-plated steel

Cylinder Ø	CH	CH1	LG°	KK	IB	ID	LA	LB	LC	LD	LE	LF	Mass g	Part no.
16	11	8	50	M6x1	22	11	11	26	14	35,5	30	40	37	MF-23012
20 - 25	14	10	50	M8x1,25	28	12	14	31	17	42,5	36	48	67	MF-23020
32 - 40	17	11	50	M10x1,25	32	15	17	37	21	50,5	43	57	110	KF-23025
50 - 63	19	17	50	M12x1,25	36	17	19	42	27	57,5	50	66	165	KF-23040

Floating joint



Material: Zinc-plated steel

Cylinder Ø	CH	CH1	ID	KK	MA	MB	MC	MD	ME	MF	MG	MH	MI°	Mass g	Part no.
16	5	7	11	M6x1	2,5	17,5	12,5	35	6	8,5	13	14,5	6	35	MF-24012
20 - 25	7	11	21	M8x1,25	5	26	16	57	8	12,5	17	19	8	60	MF-24020
32 - 40	12	19	71	M10x1,25	5	35	20	71	14	22	30	32	8	220	KF-24032
50 - 63	12	19	75	M12x1,25	5	35	20	75	14	22	30	32	8	230	KF-24040

Piston rod locknut (zinc-plated steel)



Material: Zinc-plated steel

Cylinder Ø	KK	KV	KW	Mass g	Part no.
16	M6x1	10	4	1,6	MF-16012
20 - 25	M8x1,25	13	5	3,4	MF-16020
32 - 40	M10x1,25	17	6	5	KF-16032
50 - 63	M12x1,25	19	7	10	KF-16040

# RS-RQ

Ø 32 ÷ 100 mm - **STRONG Compact Cylinders**  
centering diameters, interaxes and piston rods complying with ISO 15552

Available ATEX version upon request



## TECHNICAL CHARACTERISTICS

Ambient temperature	-20 ÷ 80 °C
Fluid	filtered air, with or without lubrication
Working pressure	1,5 ÷ 10 bar
Bores	Ø 32 - 40 - 50 - 63 - 80 - 100 mm
Cushionings	adjustable pneumatic on both sides (UNIVER Original standard supplied)

## CONSTRUCTIVE CHARACTERISTICS

End-caps	die-cast aluminium
Barrel	anodized aluminium
Piston	aluminium
Guide slide	acetalic resin
Piston rod	chromium-plated steel, stainless steel upon request
Piston seal	nitrile rubber (NBR)
Guide bush for piston rod	acetalic resin
Shock absorber seals	nitrile rubber (NBR) on both sides
Magnet	plasto-ferrite (standard supplied)

## CODIFICATION KEY

R	S	2	0	0	0	3	2	0	0	2	5		
1	2	3	4				5			6	7		

1 Series	2 Type	3 Version	
<b>RS</b> Ø 32÷100 mm - STRONG Compact Cylinders	<b>RS</b> 1 = Stainless steel female piston rod 2 = Chromium-plated steel female piston rod 3 = Stainless steel male piston rod 4 = Chromium-plated steel male piston rod	<b>Type 1 - 2 RS</b> 00 = D.A. Standard version 01 = D.A. Through piston rod 10 = D.A. Non-rotating guided piston rod (Ø32÷63) 11 = D.A. Non-rotating guided through piston rod (Ø32÷63) 20 = D.A. Long piston (Ø32÷63) 60 = S.A. Retracted piston rod 70 = S.A. Extended piston rod	<b>Type 3 - 4 RS</b> 00 = D.A. Standard version 01 = D.A. Through piston rod 20 = D.A. Long piston (Ø32÷63) 60 = S.A. Retracted piston rod 70 = S.A. Extended piston rod
<b>RQ</b> Ø 32÷63 mm - STRONG Compact Cylinders Octagonal tube NON-ROTATING	<b>RQ</b> 1 = Stainless steel female piston rod with flange 2 = Chromium-plated steel female piston rod with flange	<b>Type 1 - 2 RQ</b> 00 = D.A. Standard version 01 = D.A. Through piston rod 20 = D.A. Long piston D.A. = Double acting S.A. = Single acting	



4 Bore (mm)	5 Stroke (mm)	6 Option	7 ATEX option
032 = Ø32 040 = Ø40 050 = Ø50 063 = Ø63 080 = Ø80 (only RS) 100 = Ø100 (only RS)	<b>Single acting</b> 0005 - 0010 - 0015 0020 - 0025 <b>Double acting</b> 0005 - 0010 - 0015 0020 - 0025 - 0030 0040 - 0050 - 0060 - 0080 <b>Max standard stroke</b> 0080 (Ø32÷100)	<b>Max stroke with long piston (upon request)</b> 0800 (Ø32-40) 1000 (Ø50-63) <b>Max stroke with non-rotating guided piston rod (upon request)</b> 0400 (Ø32-40) 0800 (Ø63) 0500 (Ø50)	X = ATEX (upon request)  See ATEX Catalogue for types and versions
		C = With flange for RP series, version: 200-201-260-270 and 100-101-160-170 H = Hollow piston rod only for through piston rod versions without flange G = Preset for locking unit only for D.A. cylinders with chromium-plated steel piston rod	

Subject to change

Stroke tolerances

Maximum torque (Nm)  
RQ

Ø	mm	Nm
32	+ 2-0	2
40	+ 2-0	3
50	+ 2-0	5
63	+ 2,5-0	8
80	+ 4-0	-
100	+ 4-0	-

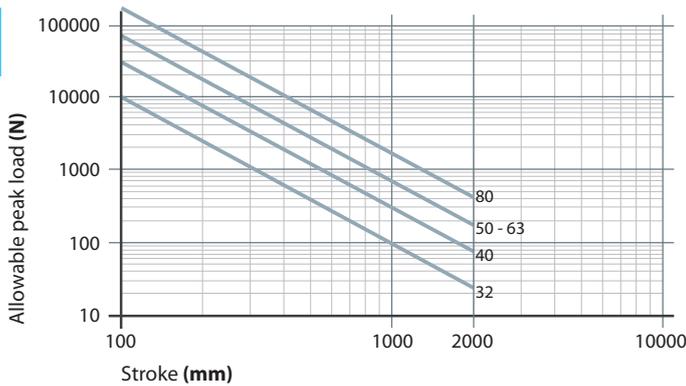
Theoretical forces (N)  
at different working pressure (bar)

Ø	Surface area		Working pressure					Working pressure				
	mm <sup>2</sup>		bar					bar				
	Thrust	Traction	Thrust					Traction				
			2	4	6	8	10	2	4	6	8	10
32	804	691	161	322	482	643	804	138	276	414	553	691
40	1256	1056	251	502	754	1005	1256	211	422	633	844	1055
50	1962	1649	393	785	1178	1570	1963	330	660	990	1320	1650
63	3116	2802	623	1246	1869	2493	3116	560	1120	1680	2240	2800
80	5024	4533	1005	2010	3014	4019	5024	907	1814	2722	3629	4536
100	7850	7359	1570	3114	4710	6280	7850	1472	2944	4416	5888	7360

Graph of the theoretical thrust forces based on pressure and allowable strokes depending on maximum peak load

Peak load

CYLINDERS

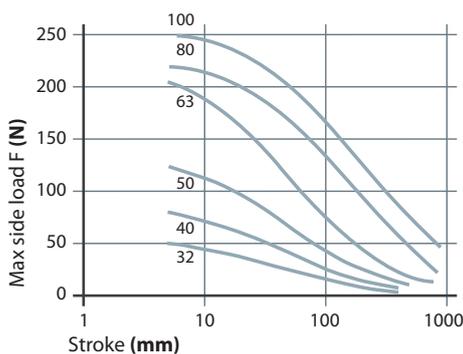


Theoretical forces of spring traction  
for single-acting cylinder

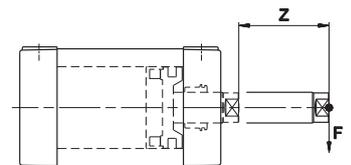
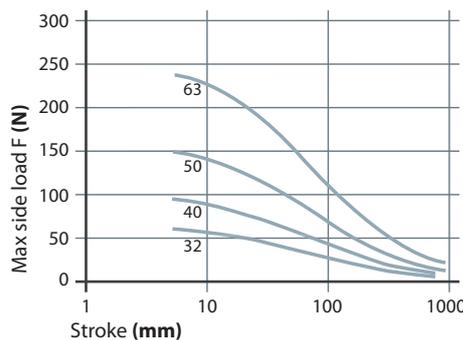
Ø	Max force	Min. force	Max stroke	Decrease per mm stroke
	N	N	mm	N/mm
32	40	24	25	0,64
40	50	35	25	0,6
50	90	49	25	1,64
63	90	49	25	1,64
80	120	60	25	2,4
100	160	92,5	25	2,4

Graph side load on piston rod

Standard piston Ø16 ÷ 100 mm



Extended piston Ø32 ÷ 100 mm



Z = Stroke  
F = Force

Mass - standard cylinder **RS200/RS400**

Mass - long piston cylinder **RS220/RS420**

Ø	Cylinder stroke 0 Standard		Cylinder stroke 0 Long piston		Increase per mm stroke	Moving element stroke 0 Standard		Moving element stroke 0 Long piston		Increase per mm stroke
	g		g		g	g		g		g
	RS200	RS400	RS220	RS420	RS200/220 - RS400/420	RS200	RS400	RS220	RS420	RS200/220 - RS400/420
32	215	245	301,5	331,5	2,65	70	100	12,5	151,5	0,9
40	347	392	482	527	4	110	155	197	242	1,6
50	520	600	769	849	5,6	180	260	327	407	2,5
63	800	880	1151,5	1231,5	6,55	260	340	485	565	2,5
80	1204	1362	-	-	10,5	320	375	-	-	3,9
100	2079	2249	-	-	12,5	445	500	-	-	3,9

Mass - through piston rod cylinder **RS201/RS401**

Ø	Cylinder stroke 0		Increase per mm stroke	Moving element stroke 0		Increase per mm stroke
	g		g	g		g
	RS201	RS401	RS201 - RS401	RS201	RS401	RS201 - RS401
32	245	305	3,55	96	156	1,8
40	392	482	5,6	151	241	3,2
50	596	756	8,1	250	410	5
63	875	1035	9,05	330	490	5
80	1427	1747	14,5	350	430	7
100	2450	2761	16,5	405	470	9

Mass - retracted piston rod cylinder **RS260/RS460**

Mass - extended piston rod cylinder **RS270/RS470**

Ø	Cylinder stroke 0 Retracted piston rod		Cylinder stroke 0 Extended piston rod		Increase per mm stroke Retracted/Extended piston rod	Moving element - stroke 0 Retracted/Extended piston rod		Increase per mm stroke Retracted/Extended piston rod
	g		g		g	g		g
	RS260	RS460	RS270	RS470	RS260/RS460 - RS270/RS470	RS260/RS270	RS460/RS470	RS260/RS460 - RS270/RS470
32	217	247	213	243	2,65	73	103	0,9
40	350	395	344	398	4	116	161	1,6
50	525	605	515	595	5,6	192	272	2,5
63	805	885	795	875	6,55	272	352	2,5
80	1105	1261	1100	1102	10,5	350	430	3,9
100	2082	2128	1900	2002	12,5	420	480	3,9

Mass - non-rotating guided piston rod cylinder **RS210**

Mass - non-rotating guided through piston rod cylinder **RS211**

Ø	Cylinder stroke 0		Increase per mm stroke		Moving element stroke 0		Increase per mm stroke	
	g		g		g		g	
	RS210	RS211	RS210	RS211	RS210	RS211	RS210	RS211
32	255	285	3,09	3,99	110	136	1,34	2,24
40	414	459	4,8	6,4	177	218	2,4	4
50	622	698	6,4	8,9	282	352	3,3	5,8
63	952	1025	7,79	10,29	412	482	3,7	6,24

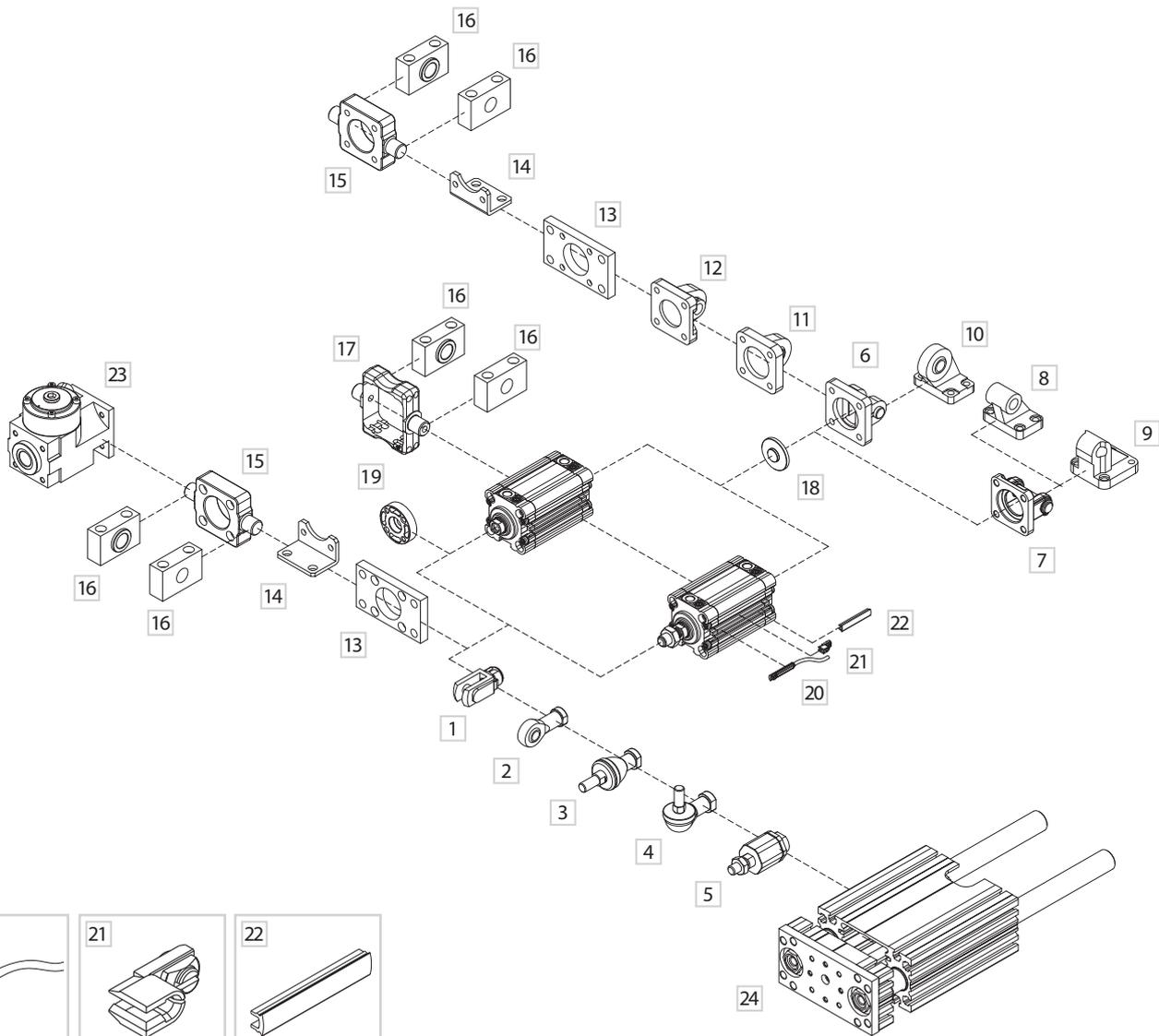
Mass - non-rotating guided piston rod cylinder **RQ200** and long piston **RQ220**

Ø	Cylinder stroke 0 Standard		Cylinder stroke 0 Long piston		Increase per mm stroke	Moving element stroke 0 Standard		Moving element stroke 0 Long piston		Increase per mm stroke
	g		g		g	g		g		g
	RQ200	RQ220	RQ200	RQ220	RQ200/220	RQ200	RQ220	RQ200	RQ220	RQ200/220
32	240	326,5	2,65	94	146,5	0,9				
40	386	522	4	148,5	237	1,6				
50	587	839	5,6	247	397	2,5				
63	894	1249,5	6,55	354	583	2,5				

Mass - non rotating guided through piston rod cylinder **RQ201**

Ø	Cylinder stroke 0		Increase per mm stroke	Moving element stroke 0		Increase per mm stroke
	g		g	g		g
	RQ201	RQ201	RQ201	RQ201	RQ201	
32	270	3,55	120	1,8		
40	431	5,6	189,5	3,2		
50	663	8,1	317	5		
63	969	9,05	424	5		

RS fixing elements and accessories

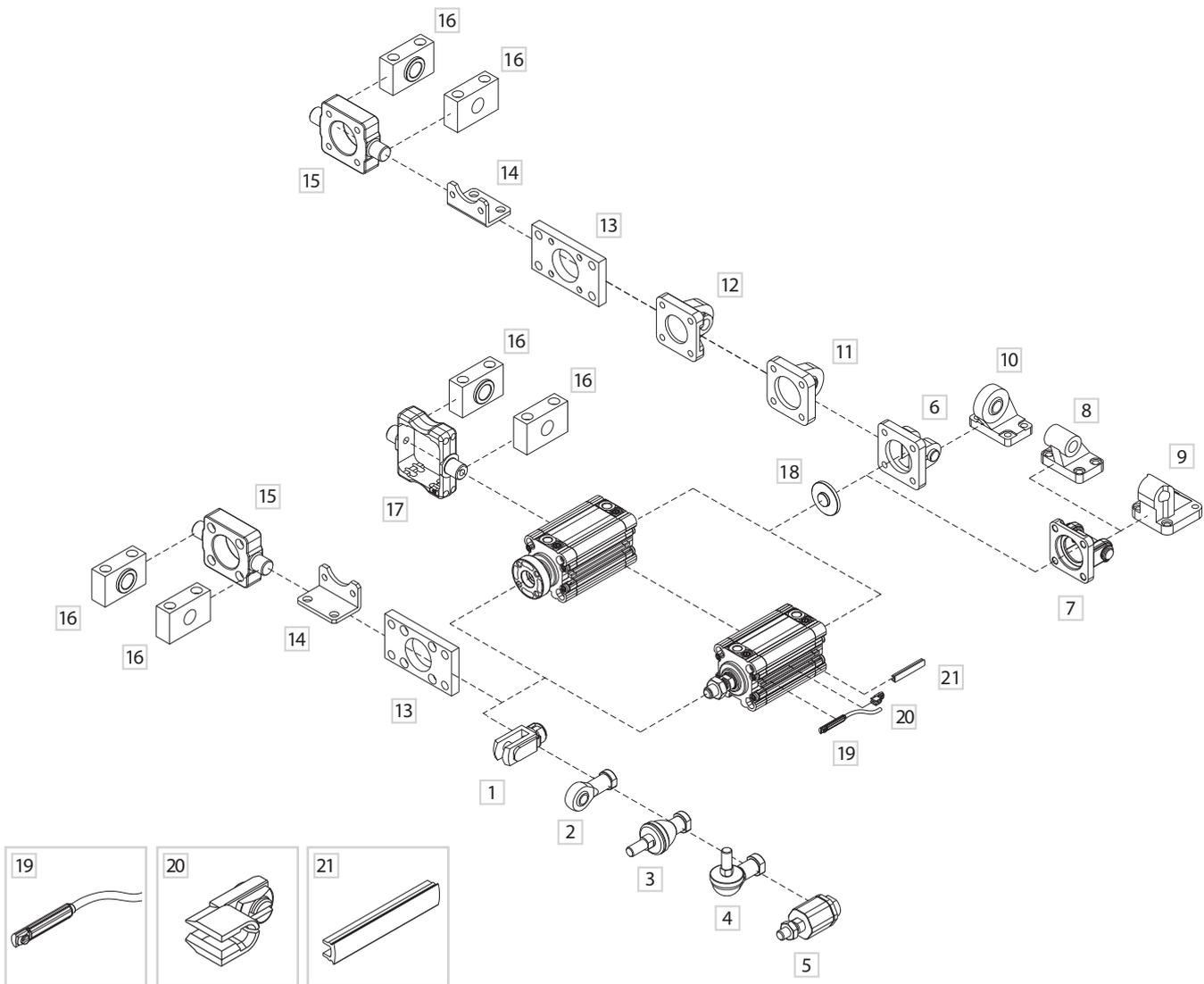


1  
CYLINDERS



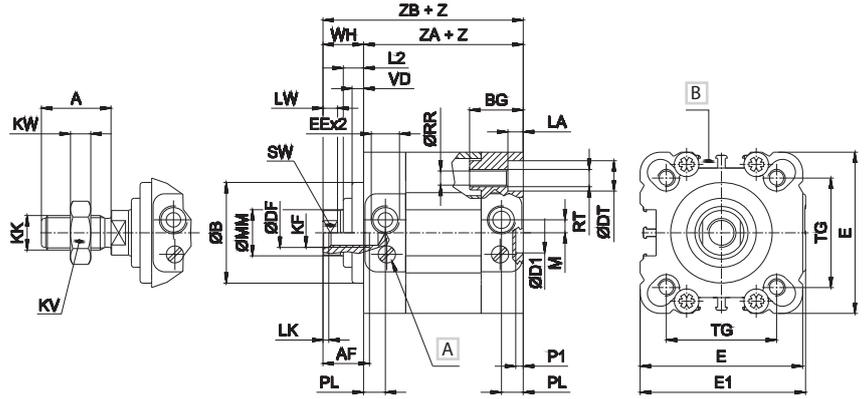
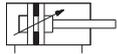
DESCRIPTION	PART NO.
1 Female fork with clips	KF-15 ___
2 Articulated self-lubricating fork	KF-17 ___
3 Fork with axially mounted articulated pin	KF-22 ___
4 Fork with angle mounted articulated pin	KF-23 ___
5 Floating joint	KF-24 ___
6 Female rear hinge with pin	KF-10 __ _A
7 Narrow female hinge with pin	KF-10 __ _AS
8 Counter hinge 90° (CETOP)	KF-19 __ _CTA
9 Counter hinge 90°	KF-19 __ _
10 Articulated counter hinge	KF-19 __ _SC
11 Articulated rear male hinge	KF-11 __ _S
12 Rear male hinge	KF-11 __ _
13 Front/rear flange	KF-12 __ _
14 Angle bracket	KF-13 __ _
15 Front/rear hinge with floating pin	KF-14 __ _AP
16 Hinge support	KF-41 __ _
17 ISO intermediate hinge	KDF-14 __ _ (Ø32-80-100)/ RPF-14 __ _
18 Centering adaptor ring	RSF-09 __ _
19 Flange for female piston rod	RPF-28 __ _
20 DF Sensor (see accessories section)	DF __ _
21 Cable clamping for DF sensor (see accessories section)	DF-001
22 DHF covering strip (see accessories section)	DHF-0020100
23 Locking unit	L1-N __ _
24 Slide Units for pneumatic cylinders	J64RS

RQ fixing elements and accessories

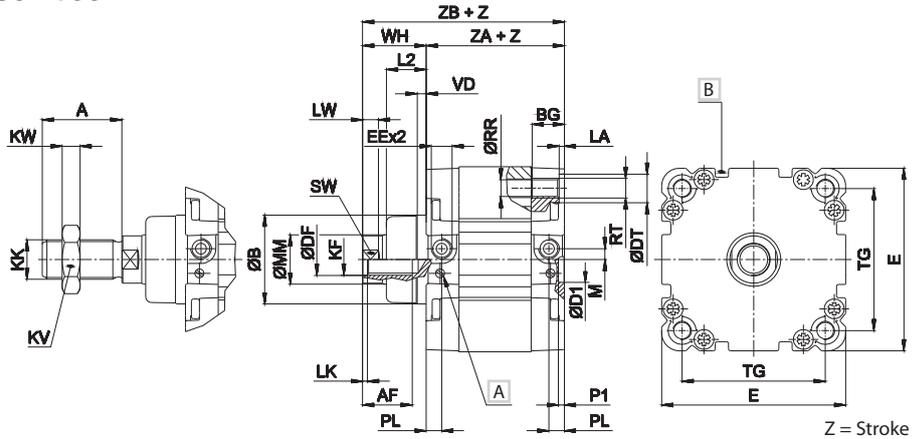
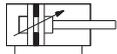


DESCRIPTION	PART NO.
1 Female fork with clips	KF-15___
2 Articulated self-lubricating fork	KF-17___
3 Fork with axially mounted articulated pin	KF-22___
4 Fork with angle mounted articulated pin	KF-23___
5 Floating joint	KF-24___
6 Female rear hinge with pin	KF-10___A
7 Narrow female hinge with pin	KF-10___AS
8 Counter hinge 90° (CETOP)	KF-19___CTA
9 Counter hinge 90°	KF-19___
10 Articulated counter hinge	KF-19___SC
11 Articulated rear male hinge	KF-11___S
12 Rear male hinge	KF-11___
13 Front/rear flange	KF-12___
14 Angle bracket	KF-13___
15 Front/rear hinge with floating pin	KF-14___AP
16 Hinge support	KF-41___
17 ISO intermediate hinge	KDF-14___(Ø32-80-100)/RPF-14___
18 Centering adaptor ring	RSF-09___
19 DF Sensor (see accessories section)	DF-___
20 Cable clamping for DF sensor (see accessories section)	DF-001
21 DHF covering strip (see accessories section)	DHF-0020100

### Double acting standard RS Ø 32 ÷ 63



### Double acting standard RS Ø 80 - 100



Z = Stroke

1  
CYLINDERS

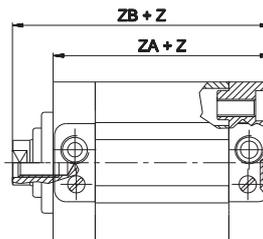
Ø	A	AF	B	BG	DF	DT	D1	E	EE	E1	KF	KK	KV	KW	LA
	H11														
32	22	12	30	18	8,2	9	14	46	G1/8	47	M8	M10x1,25	17	6	5,3
40	24	16	35	18	10,2	9	14	56	G1/8	57	M10	M12x1,25	19	6	5,3
50	32	20	40	24	12,2	11	18	66	G1/8	67	M12	M16x1,5	24	7	6,5
63	32	20	45	24	12,2	11	18	79	G1/8	80	M12	M16x1,5	24	7	6,5
80	40	25	45	16,5	16,2	14	23	93,5	G1/8	-	M16	M20x1,5	30	9	2,6
100	40	25	55	21,5	16,2	14	28	112	G1/8	-	M16	M20x1,5	30	9	2,6

Ø	LK	LW	L2	M	MM	PL	P1	RR	RT	SW	TG	VD	WH	ZA	ZB
32	2	5	7	4,5	12	7,5	2,5	5,2	M6	10	32,5	4	14	44	58
40	2	5	7	4,5	16	7,5	2,5	5,2	M6	13	38	4	14	45	59
50	2	6	10	6,5	20	7,5	2,5	6,5	M8	17	46,5	5	18	45	63
63	2	6	10	6,5	20	7,5	2,5	6,5	M8	17	56,5	5	18	50	68
80	2,5	8	20	5,5	25	8	3	8,4	M10	22	72	4	32	54	86
100	2,5	8	20	8	25	10,5	3	8,4	M10	22	89	4	32	67	99

- A Pneumatic cushioning adjusting screw
- B Groove for sensor

### Long piston RS Ø 32 ÷ 63

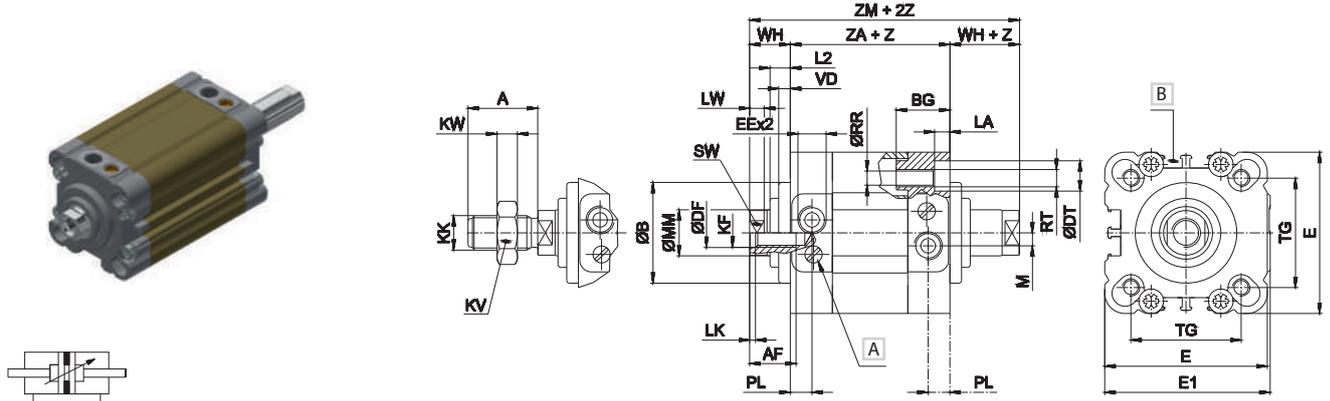


Z = Stroke

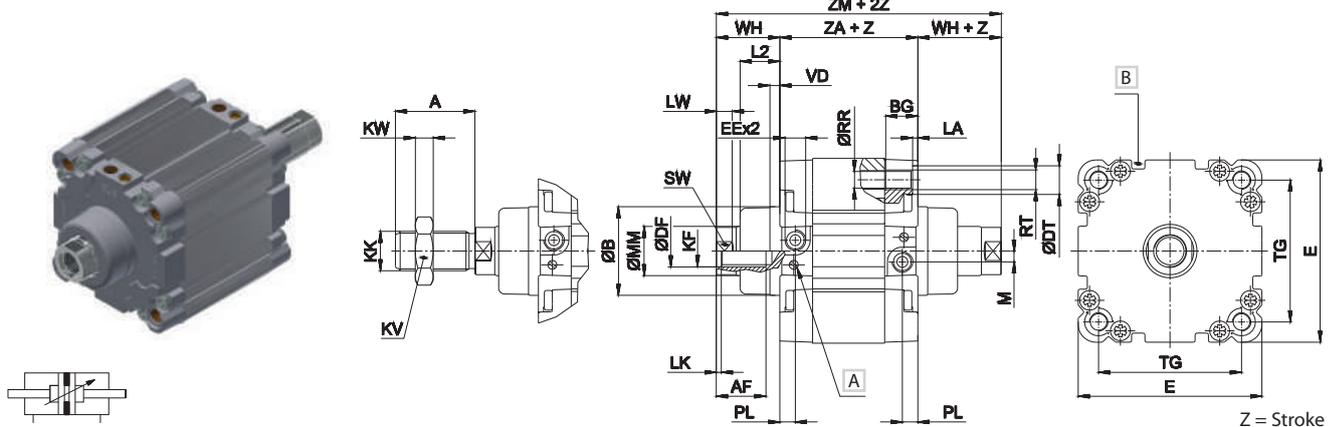
Ø	ZA	ZB
32	64	78
40	65	79
50	70	88
63	75	93

For cylinder types with long piston, dimensions ZA and ZB will be increased by 20 mm (Ø32 - Ø40 mm) and by 25 mm (Ø50 - Ø63 mm)

Double acting through piston rod RS Ø 32 ÷ 63



Double acting through piston rod RS Ø 80 - 100



1  
CYLINDERS

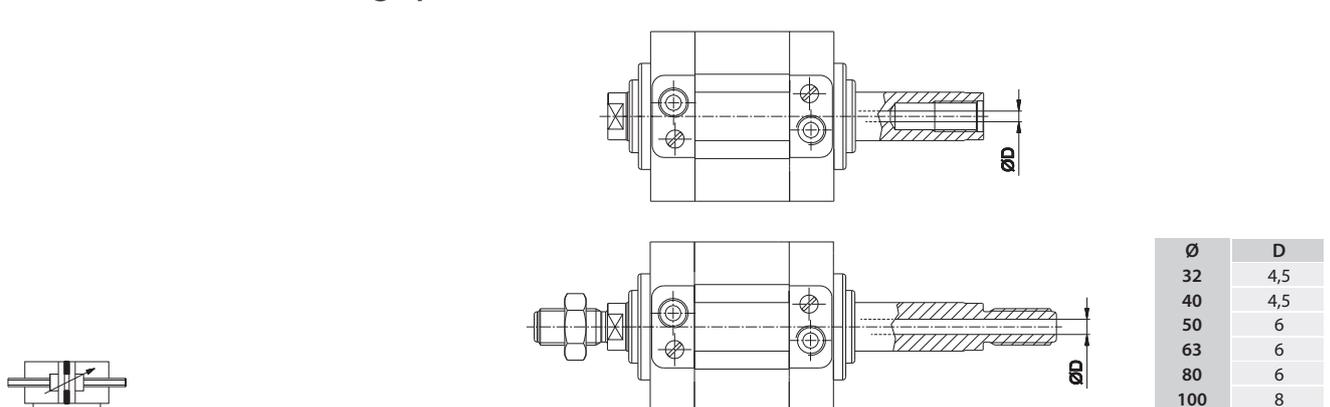
Ø	A	AF	B	BG	DF	DT	E	EE	E1	KF	KK	KV	KW	LA
32	22	12	30	18	8,2	9	46	G1/8	47	M8	M10x1,25	17	6	5,3
40	24	16	35	18	10,2	9	56	G1/8	57	M10	M12x1,25	19	6	5,3
50	32	20	40	24	12,2	11	66	G1/8	67	M12	M16x1,5	24	7	6,5
63	32	20	45	24	12,2	11	79	G1/8	80	M12	M16x1,5	24	7	6,5
80	40	25	45	16,5	16,2	14	93,5	G1/8	-	M16	M20x1,5	30	9	2,6
100	40	25	55	21,5	16,2	14	112	G1/8	-	M16	M20x1,5	30	9	2,6

Ø	LK	LW	L2	M	MM	PL	RR	RT	SW	TG	VD	WH	ZA	ZM
32	2	5	7	4,5	12	7,5	5,2	M6	10	32,5	4	14	44	72
40	2	5	7	4,5	16	7,5	5,2	M6	13	38	4	14	45	73
50	2	6	10	6,5	20	7,5	6,5	M8	17	46,5	5	18	45	81
63	2	6	10	6,5	20	7,5	6,5	M8	17	56,5	5	18	50	86
80	2,5	8	20	5,5	25	8	8,4	M10	22	72	4	32	54	118
100	2,5	8	20	8	25	10,5	8,4	M10	22	89	4	32	67	131

- A Pneumatic cushioning adjusting screw
- B Groove for sensor

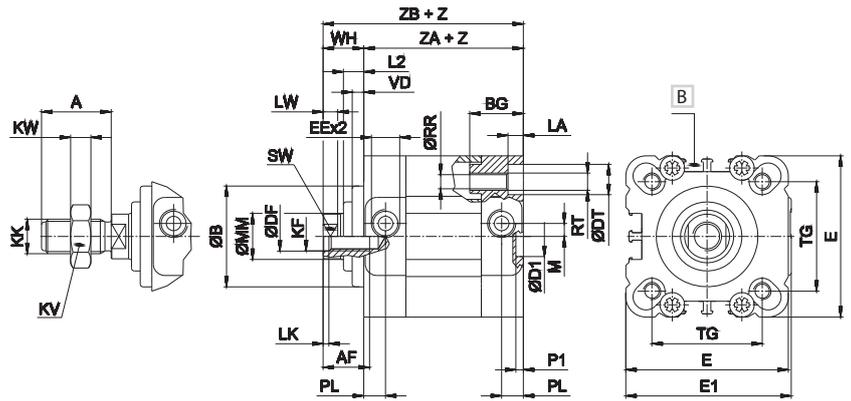
Female/male hollow through piston rod RS Ø 32 ÷ 100



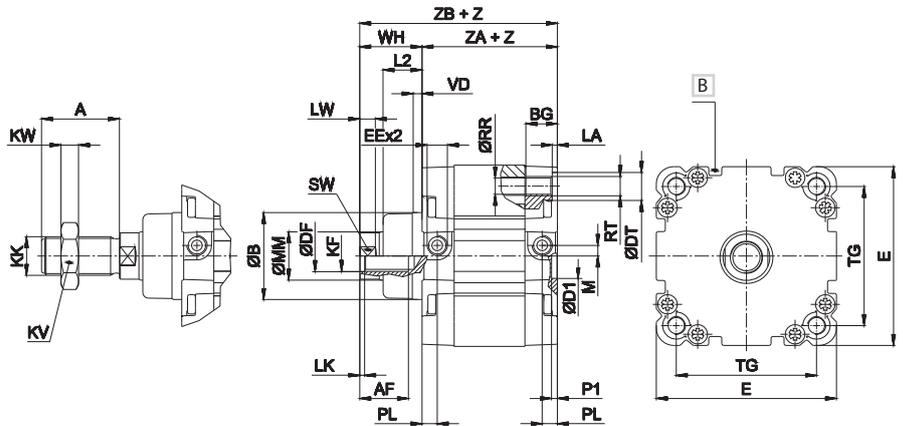
Ø	D
32	4,5
40	4,5
50	6
63	6
80	6
100	8

Ø16 ÷ 25 Max stroke 50 mm Ø32 ÷ 63 Max stroke 75 mm Ø80 - 100 Max stroke 100 mm  
For all other dimensions please refer to the through piston rod version

Single acting retracted piston rod RS Ø 32 ÷ 63



Single acting retracted piston rod RS Ø 80 - 100



Z = Stroke

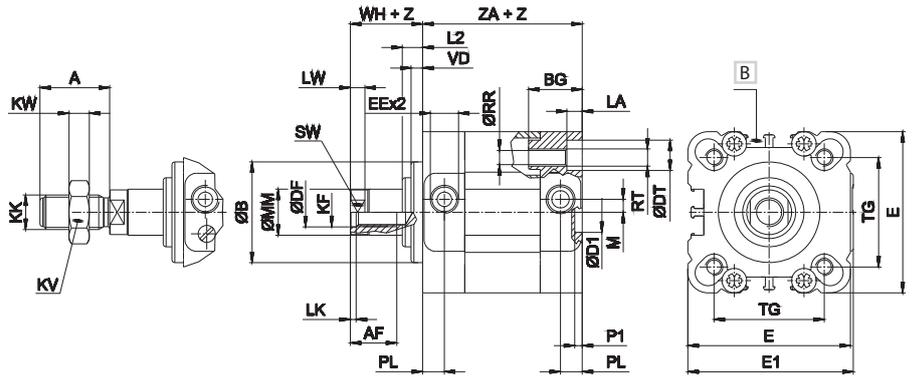
Ø	A	AF	B	BG	DF	DT	D1	E	EE	E1	KF	KK	KV	KW	LA
32	22	12	30	18	8,2	9	14	46	G1/8	47	M8	M10x1,25	17	6	5,3
40	24	16	35	18	10,2	9	14	56	G1/8	57	M10	M12x1,25	19	6	5,3
50	32	20	40	24	12,2	11	18	66	G1/8	67	M12	M16x1,5	24	7	6,5
63	32	20	45	24	12,2	11	18	79	G1/8	80	M12	M16x1,5	24	7	6,5
80	40	25	45	16,5	16,2	14	23	93,5	G1/8	-	M16	M20x1,5	30	9	2,6
100	40	25	55	21,5	16,2	14	28	112	G1/8	-	M16	M20x1,5	30	9	2,6

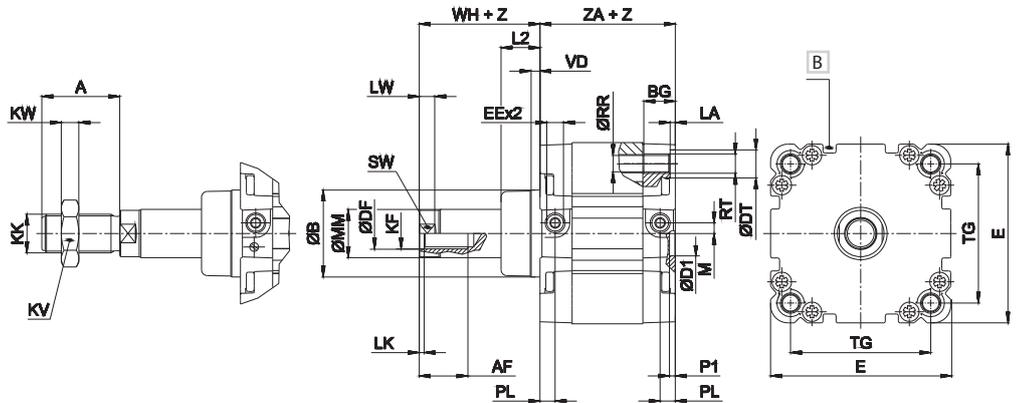
Ø	LK	LW	L2	M	MM	PL	P1	RR	RT	SW	TG	VD	WH	ZA	ZM
32	2	5	7	4,5	12	7,5	2,5	5,2	M6	10	32,5	4	14	44	58
40	2	5	7	4,5	16	7,5	2,5	5,2	M6	13	38	4	14	45	59
50	2	6	10	6,5	20	7,5	2,5	6,5	M8	17	46,5	5	18	45	63
63	2	6	10	6,5	20	7,5	2,5	6,5	M8	17	56,5	5	18	50	68
80	2,5	8	20	5,5	25	8	3	8,4	M10	22	72	4	32	54	86
100	2,5	8	20	8	25	10,5	3	8,4	M10	22	89	4	32	67	99

B Groove for sensor

Single acting extended piston rod RS Ø 32 ÷ 63



Single acting extended piston rod RS Ø 80 - 100



1  
CYLINDERS

Z = Stroke

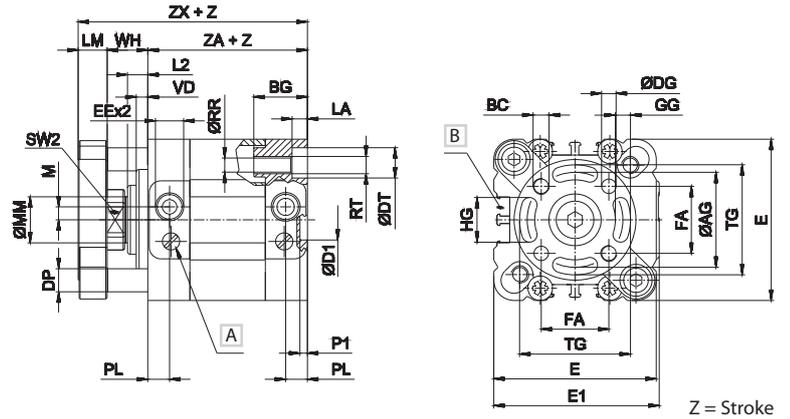
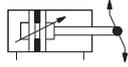
Ø	A	AF	B	BG	DF	DT	D1	E	EE	E1	KF	KK	KV	KW
32	22	12	30	18	8,2	9	H11	14	G1/8	47	M8	M10x1,25	17	6
40	24	16	35	18	10,2	9	14	56	G1/8	57	M10	M12x1,25	19	6
50	32	20	40	24	12,2	11	18	66	G1/8	67	M12	M16x1,5	24	7
63	32	20	45	24	12,2	11	18	79	G1/8	80	M12	M16x1,5	24	7
80	40	25	45	16,5	16,2	14	23	93,5	G1/8	-	M16	M20x1,5	30	9
100	40	25	55	21,5	16,2	14	28	112	G1/8	-	M16	M20x1,5	30	9

Ø	LA	LK	LW	L2	M	MM	PL	P1	RR	RT	SW	TG	VD	WH	ZA
32	5,3	2	5	7	4,5	12	7,5	2,5	5,2	M6	10	32,5	4	14	44
40	5,3	2	5	7	4,5	16	7,5	2,5	5,2	M6	13	38	4	14	45
50	6,5	2	6	10	6,5	20	7,5	2,5	6,5	M8	17	46,5	5	18	45
63	6,5	2	6	10	6,5	20	7,5	2,5	6,5	M8	17	56,5	5	18	50
80	2,6	2,5	8	20	5,5	25	8	3	8,4	M10	22	72	4	32	54
100	2,6	2,5	8	20	8	25	10,5	3	8,4	M10	22	89	4	32	67

B Groove for sensor

### Double acting non-rotating guided piston rod RS Ø 32 ÷ 63



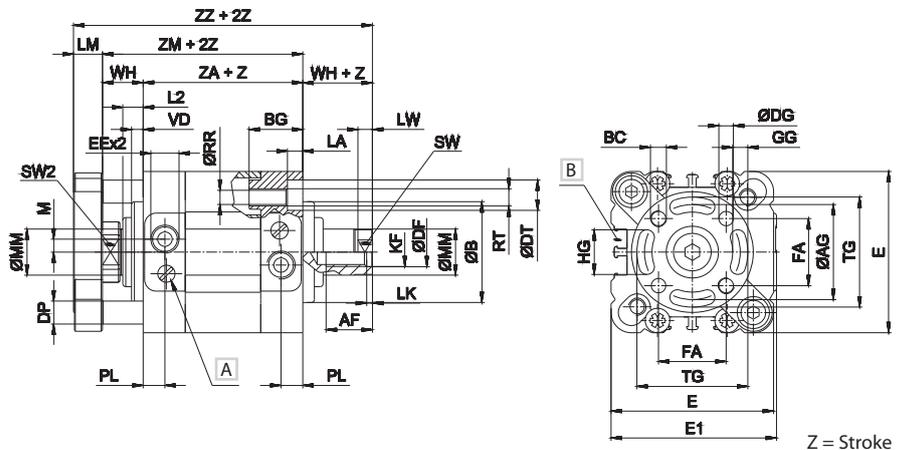
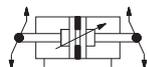
Ø	AG	BC	BG	DG	DP	DT	D1	E	EE	E1	FA	GG	HG	LA
32	28	M5	18	5	6	9	14	46	G1/8	47	19,8	5,2	11	5,3
40	33	M5	18	5	8	9	14	56	G1/8	57	23,3	5,2	15	5,3
50	42	M6	24	6	8	11	18	66	G1/8	67	29,7	6,2	19	6,5
63	50	M6	24	6	10	11	18	79	G1/8	80	35,4	6,2	25	6,5

Ø	LM	L2	M	MM	PL	P1	RR	RT	SW2	TG	VD	WH	ZA	ZX
32	10	7	4,5	12	7,5	2,5	5,2	M6	17	32,5	4	14	44	68
40	10	7	4,5	16	7,5	2,5	5,2	M6	19	38	4	14	45	69
50	12	10	6,5	20	7,5	2,5	6,5	M8	24	46,5	5	18	45	75
63	12	10	6,5	20	7,5	2,5	6,5	M8	24	56,5	5	18	50	80

- A Pneumatic cushioning adjusting screw
- B Groove for sensor

### Double acting non-rotating guided through piston rod RS Ø 32 ÷ 63



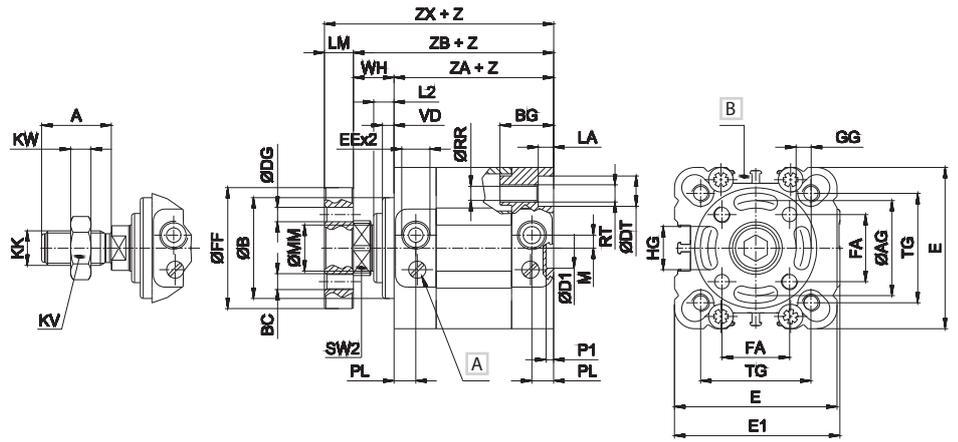
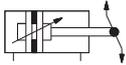
Ø	AF	AG	B	BC	BG	DF	DG	DP	D1	E	EE	E1	FA	GG	HG	KF	LA
32	12	28	30	M5	18	8,2	5	6	14	46	G1/8	47	19,8	5,2	11	M8	5,3
40	16	33	35	M5	18	10,2	5	8	14	56	G1/8	57	23,3	5,2	15	M10	5,3
50	20	42	40	M6	24	12,2	6	8	18	66	G1/8	67	29,7	6,2	19	M12	6,5
63	20	50	45	M6	24	12,2	6	10	18	79	G1/8	80	35,4	6,2	25	M12	6,5

Ø	LK	LM	LW	L2	M	MM	PL	RR	RT	SW	SW2	TG	VD	WH	ZA	ZM	ZZ
32	2	10	5	7	4,5	12	7,5	5,2	M6	10	17	32,5	4	14	44	72	82
40	2	10	5	7	4,5	16	7,5	5,2	M6	13	19	38	4	14	45	73	83
50	2	12	6	10	6,5	20	7,5	6,5	M8	17	24	46,5	5	18	45	81	93
63	2	12	6	10	6,5	20	7,5	6,5	M8	17	24	56,5	5	18	50	86	98

- A Pneumatic cushioning adjusting screw
- B Groove for sensor

### Double acting standard RQ Ø 32 ÷ 63



Z = Stroke

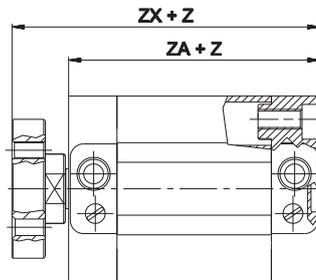
Ø	A	AG	B	BC	BG	DG	DT	D1	E	EE	E1	FA	FF	GG	HG	KK	KV	KW
32	22	28	30	M5	18	5	9	14	46	G1/8	47	19,8	37	5,2	11	M10x1,25	17	6
40	24	33	35	M5	18	5	9	14	56	G1/8	57	23,3	42	5,2	15	M12x1,25	19	6
50	32	42	40	M6	24	6	11	18	66	G1/8	67	29,7	52	6,2	19	M16x1,5	24	7
63	32	50	45	M6	24	6	11	18	79	G1/8	80	35,4	64	6,2	25	M16x1,5	24	7

Ø	LA	LM	LW	L2	M	MM	PL	P1	RR	RT	SW	SW2	TG	VD	WH	ZA	ZB	ZX
32	5,3	10	5	7	4,5	12	7,5	2,5	5,2	M6	10	17	32,5	4	14	44	58	68
40	5,3	10	5	7	4,5	16	7,5	2,5	5,2	M6	13	19	38	4	14	45	59	69
50	6,5	12	6	10	6,5	20	7,5	2,5	6,5	M8	17	24	46,5	5	18	45	63	75
63	6,5	12	6	10	6,5	20	7,5	2,5	6,5	M8	17	24	56,5	5	18	50	68	80

A Pneumatic cushioning adjusting screw

B Groove for sensor

### Long piston RQ Ø 32 ÷ 63

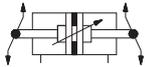
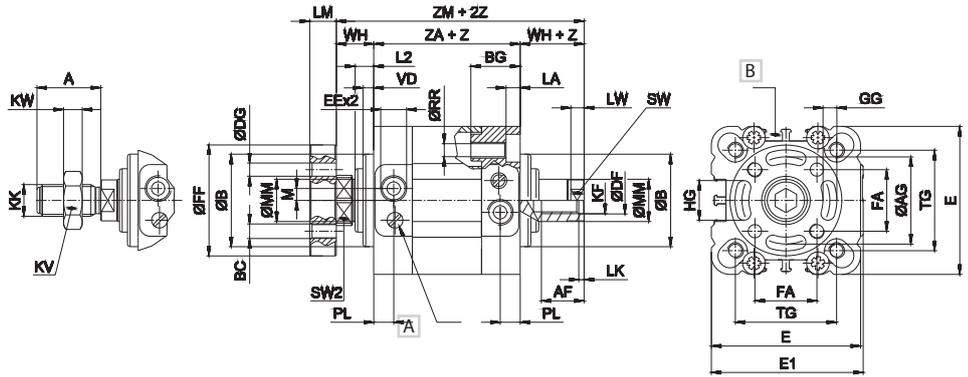


Z = Stroke

Ø	ZA	ZX
32	64	88
40	65	89
50	70	100
63	75	105

For cylinder types with long piston, dimensions ZA and ZB will be increased by 20 mm (Ø32 - Ø40 mm) and by 25 mm (Ø50 - Ø63 mm)

### Double acting through piston rod RQ Ø 32 ÷ 63



Ø	A	AF	AG	B	BC	BG	DF	DG	E	EE	E1	FA	FF	GG	HG	KF	KK
32	22	12	28	30	M5	18	8,2	5	46	G1/8	47	19,8	37	5,2	11	M8	M10x1,25
40	24	16	33	35	M5	18	10,2	5	56	G1/8	57	23,3	42	5,2	15	M10	M12x1,25
50	32	20	42	40	M6	24	12,2	6	66	G1/8	67	29,7	52	6,2	19	M12	M16x1,5
63	32	20	50	45	M6	24	12,2	6	79	G1/8	80	35,4	64	6,2	25	M12	M16x1,5

Ø	KV	KW	LA	LK	LM	LW	L2	M	MM	PL	RR	SW	SW2	TG	VD	WH	ZA	ZM
32	17	6	5,3	2	10	5	7	4,5	12	7,5	5,2	10	17	32,5	4	14	44	72
40	19	6	5,3	2	10	5	7	4,5	16	7,5	5,2	13	19	38	4	14	45	73
50	24	7	6,5	2	12	6	10	6,5	20	7,5	6,5	17	24	46,5	5	18	45	81
63	24	7	6,5	2	12	6	10	6,5	20	7,5	6,5	17	24	56,5	5	18	50	86

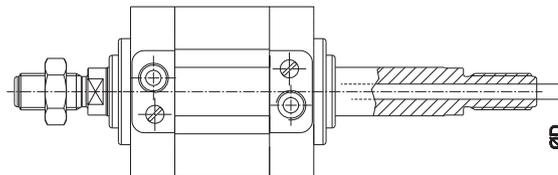
A Pneumatic cushioning adjusting screw

Z = Stroke

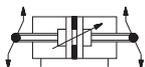
B Groove for sensor

CYLINDERS 1

### Male hollow through piston rod RQ Ø 32 ÷ 63



Ø	D
32	3,5
40	3,5
50	4,5
63	4,5



Ø16 ÷ 25 Max stroke **50 mm** Ø32 ÷ 63 Max stroke **75 mm**

For all other dimensions please refer to the through piston rod version

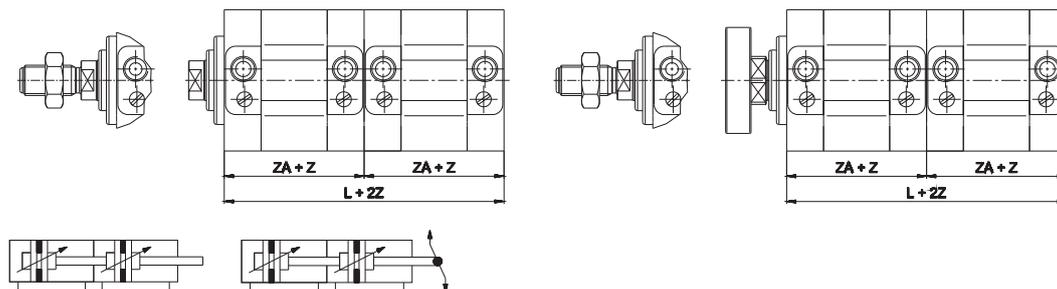
Female hollow through piston rod upon request

## Tandem version

### CODIFICATION KEY

R	S	2	A	0	3	2	0	8	0
1	2	3	4						

1 Series	2 Type	3 Bore (mm)	4 Stroke (mm)
RS = Ø 32÷100 mm - STRONG Compact Cylinders	1A = Double thrust tandem, stainless steel female piston rod (with flange for RQ series)	032 = Ø32 063 = Ø63	Upon request
RQ = Ø 32÷63 mm - STRONG Compact Cylinders Octagonal tube NON-ROTATING	2A = Double thrust tandem, chromium-plated steel female piston rod (with flange for RQ series)	040 = Ø40 080 = Ø80	
	3A = Double thrust tandem, stainless steel male piston rod	050 = Ø50 100 = Ø100	
	4A = Double thrust tandem, chromium-plated steel male piston rod		



Ø	L	ZA
32	88	44
40	90	45
50	90	45
63	100	50
80	108	54
100	134	67

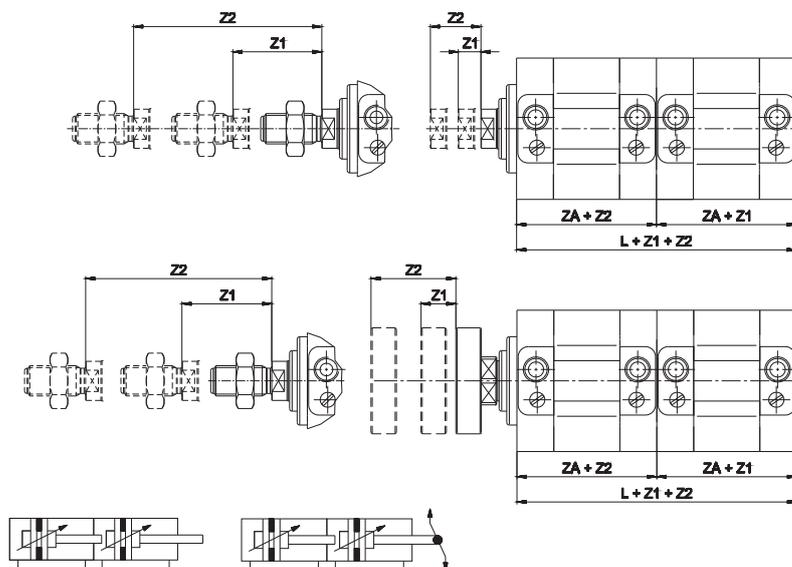
Tandem cylinders are constructed using two pistons coupled together which double the force in forward movement compared to the traditional cylinders of the same bore size

## Two-position tandem version

### CODIFICATION KEY

R	S	2	B	0	3	2	0	3	0	0	5	0
1	2	3	4	5								

1 Series	2 Type	3 Bore (mm)	4 Stroke Z1 (mm)	5 Stroke Z2 (mm)
RS = Ø 32÷100 mm - STRONG Compact Cylinders	1B = Two-position tandem, stainless steel female piston rod (with flange for RQ series)	032 = Ø32 063 = Ø63	Upon request	Upon request
RQ = Ø 32÷63 mm - STRONG Compact Cylinders Octagonal tube NON-ROTATING	2B = Two-position tandem, chromium-plated steel female piston rod (with flange for RQ series)	040 = Ø40 080 = Ø80		
	3B = Two-position tandem, stainless steel male piston rod	050 = Ø50 100 = Ø100		
	4B = Two-position tandem, chromium-plated steel male piston rod			



Z = Stroke

Ø	L	ZA
32	88	44
40	90	45
50	90	45
63	100	50
80	108	54
100	134	67

Two-position cylinders with two independent piston-rods which allow to realize a double positioning in which the thrust forces are the same as those of a cylinder of the same bore size

For all other dimensions please refer to the standard version  
For other types of cylinders kindly contact our sales office

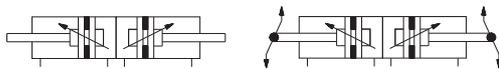
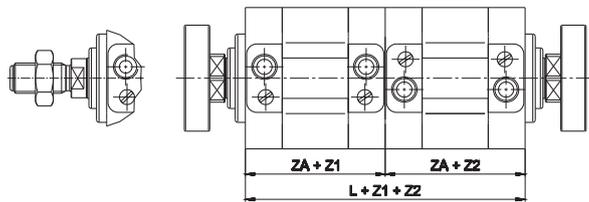
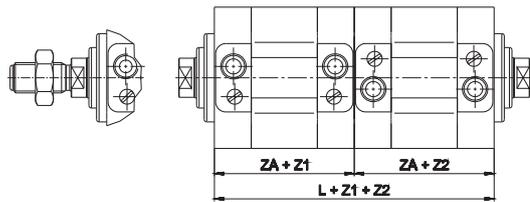
Subject to change

## Opposed tandem version

### CODIFICATION KEY

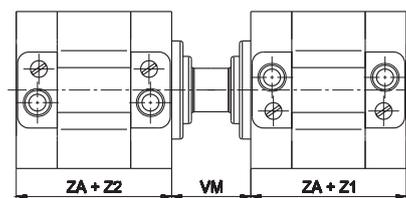
R	S	2	C	0	4	0	0	2	0	0	4	0
1	2	3	4	5								

1 Series	2 Type	3 Bore (mm)	4 Stroke Z1 (mm)	5 Stroke Z2 (mm)
RS = Ø 32÷100 mm - STRONG Compact Cylinders RQ = Ø 32÷63 mm - STRONG Compact Cylinders Octagonal tube NON-ROTATING	1C = Opposed tandem, stainless steel female piston rod (with flange for RQ series) 2C = Opposed tandem, chromium-plated steel female piston rod (with flange for RQ series) 3C = Opposed tandem, stainless steel male piston rod 4C = Opposed tandem, chromium-plated steel male piston rod	032 = Ø32 063 = Ø63 040 = Ø40 080 = Ø80 050 = Ø50 100 = Ø100	Upon request	Upon request



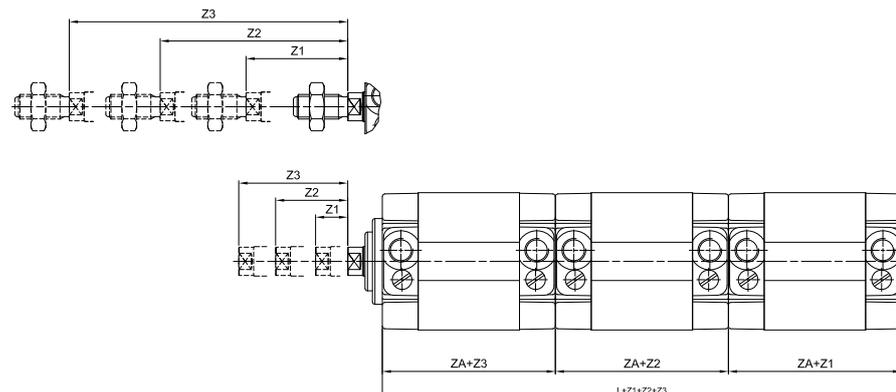
Type of cylinder characterized by the coupling of two cylinders piston rods move in opposite directions. The values of the thrust force are the same as those of the traditional cylinders

### With common piston rod tandem version (upon request)



Type of cylinder characterized by the coupling of two cylinders and whose piston rods move in opposite directions. The values of the thrust force are the same as those of the traditional cylinders

### Three-position version (upon request)



For all other dimensions please refer to the standard version  
For other types of cylinders kindly contact our sales office

Z = Stroke

Ø	L	ZA
32	88	44
40	90	45
50	90	45
63	100	50
80	108	54
100	134	67

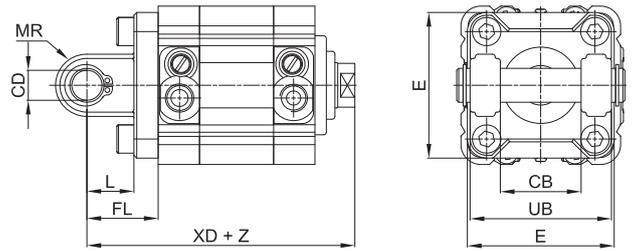
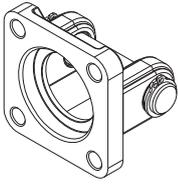
Z = Stroke

Ø	L	VM	ZA
32	88	14	44
40	90	14	45
50	90	16	45
63	100	16	50
80	108	20	54
100	134	20	67

Z = Stroke

Ø	L	ZA
32	132	44
40	135	45
50	135	45
63	150	50
80	162	54
100	201	67

**Female rear hinge (ISO MP2) with pin**



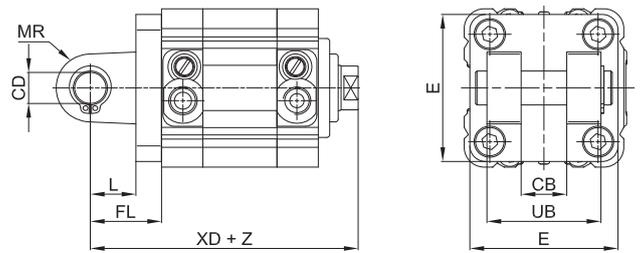
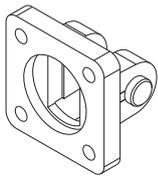
Material: Aluminium, zinc-plated steel pin

Z = Stroke

Cylinder Ø	CB	CD	E	FL	L	MR	UB	XD		Mass	Part no.
	H14	H9		± 0,2	min.	Max	h14			g	
32	26	10	48	22	12	11	45	80	±1,25	75	KF-10032A
40	28	12	54	25	15	13	52	84	±1,25	110	KF-10040A
50	32	12	65	27	15	13	60	90	±1,25	150	KF-10050A
63	40	16	75	32	20	17	70	100	±1,6	270	KF-10063A
80	50	16	95	36	20	17	90	103	±1,6	420	KF-10080A
100	60	20	115	41	25	21	110	118	±1,6	765	KF-10100A

By removing the pin it is possible to use the female hinge also on the front side

**Narrow female hinge with pin (DIN 648K)**

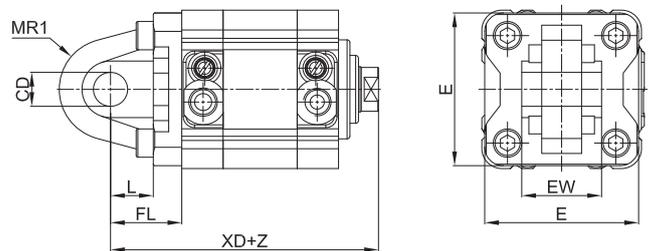
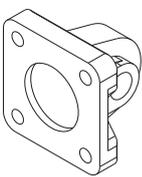


Material: Aluminium, zinc-plated steel pin

Z = Stroke

Cylinder Ø	CB	CD	E	FL	L	MR	UB	XD		Mass	Part no.
	H14	H9		± 0,2	min.	Max	h14			g	
32	14	10	45	22	13	10	34	73	±1,25	68	KF-10032AS
40	16	12	52	25	16	12	40	77	±1,25	112	KF-10040AS
50	21	16	65	27	16	14	45	80	±1,25	196	KF-10050AS
63	21	16	75	32	21	18	51	90	±1,6	288	KF-10063AS
80	25	20	95	36	22	20	65	100	±1,6	566	KF-10080AS
100	25	20	115	41	27	22	75	118	±1,6	818	KF-10100AS

**Rear male hinge (ISO MP4)**



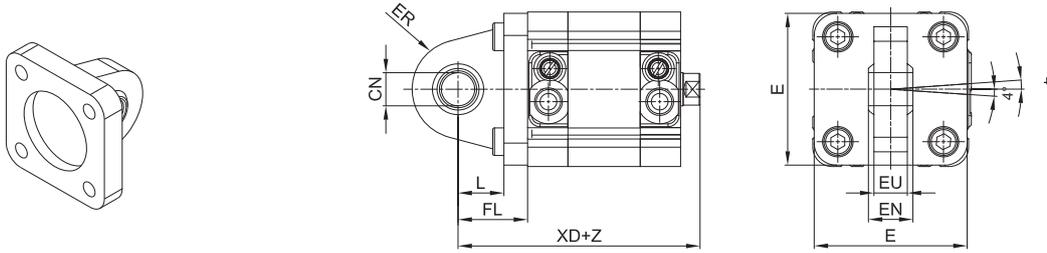
Material: Aluminium

Z = Stroke

Ø	CD	E	EW		FL	L	MR1	XD		Mass	Part no.
	h9		Nom.	Toll.	±0,2	min.				g	
32	10	48	26	-0,2 / -0,6	22	12	15*	80	±1,25	80	KF-11032
40	12	54	28	-0,2 / -0,6	25	15	18*	84	±1,25	100	KF-11040
50	12	65	32	-0,2 / -0,6	27	15	20*	90	±1,25	170	KF-11050
63	16	75	40	-0,2 / -0,6	32	20	23*	100	±1,6	250	KF-11063
80	16	95	50	-0,2 / -0,6	36	20	27*	103	±1,6	420	KF-11080
100	20	115	60	-0,2 / -0,6	41	25	29,5*	118	±2	660	KF-11100

\* = Non-standard dimension

Articulated rear male hinge (ISO MP4)

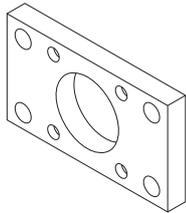


Material: Aluminium

Z = Stroke

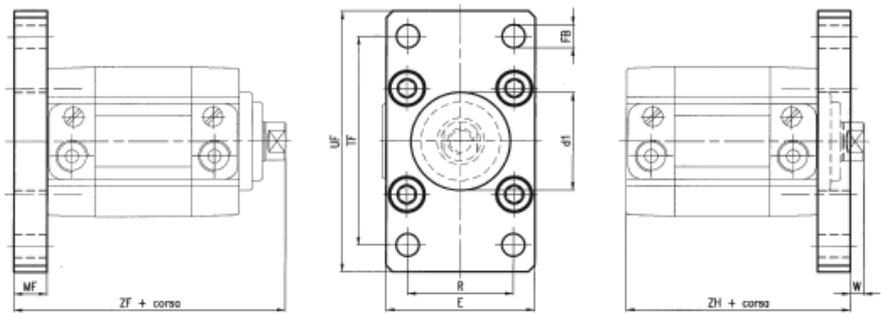
Cylinder Ø	E	CN H9	ER	XD	L	EU	FL	EN	Mass g	Part no.
32	48	10	15	80	14	10,5	22	14	100	KF-11032S
40	54	12	18	84	16,5	12	25	16	200	KF-11040S
50	65	12	20	90	17,5	12	27	16	300	KF-11050S
63	75	16	21	99	21,5	15	32	21	350	KF-11063S
80	95	16	27	106	24	15	36	21	1600	KF-11080S
100	115	20	29,5	124	28	18	41	25	700	KF-11100S

Front/rear flange



> Front assembly

> Rear assembly



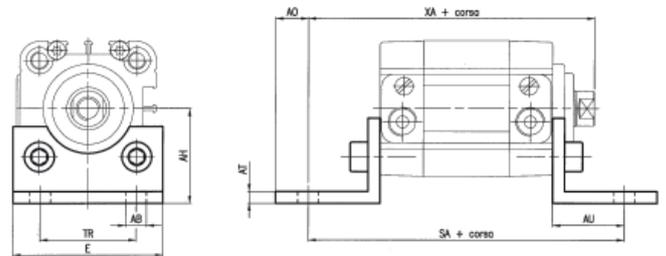
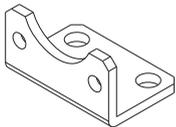
Material: Zinc-plated steel

Z = Stroke

Cylinder Ø	E	FB H13	W	MF ±0,2	R JS14	TF JS14	UF Max	ZF	ZH	Mass g	Part no.
32	45	7	4	10	32	64	80	68 ±1,25	54 ±1,25	200	KF-12032
40	52	9	4	10	36	72	90	69 ±1,25	55 ±1,25	250	KF-12040
50	65	9	6	12	45	90	110	75 ±1,25	57 ±1,25	500	KF-12050
63	75	9	6	12	50	100	120	80 ±1,6	62 ±1,6	650	KF-12063
80	95	12	16	16	63	126	150	102 ±1,6	70 ±1,6	1500	KF-12080
100	115	14	16	16	75	150	170	115 ±1,6	83 ±1,6	2200	KF-12100

VDMA standard upon request

Angle bracket



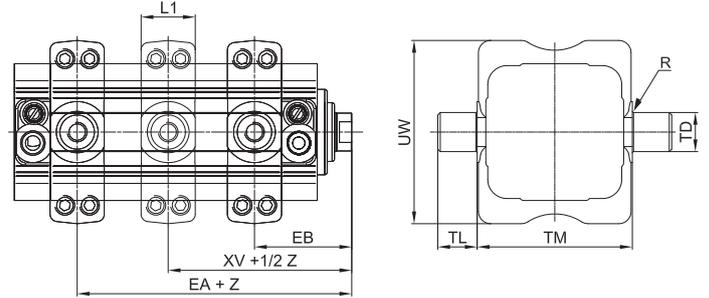
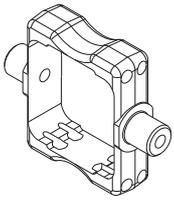
Material: Zinc-plated steel

Z = Stroke

Cylinder Ø	ØAB H13	AH JS15	AO	AT	AU ±0,2	E	SA Norm.	TR JS14	XA	Mass g	Part no.
32	7	32	6	4	24	45	92 ±1,25	32	82 ±1,25	55	KF-13032
40	9 *	36	8	4	28	52	101 ±1,25	36	87 ±1,25	80	KF-13040
50	9 *	45	10	5	32	64	109 ±1,25	45	95 ±1,25	146	KF-13050
63	9 *	50	12	5	32	74	114 ±1,6	50	100 ±1,6	175	KF-13063
80	12	63	15	6	41	94	136 ±1,6	63	127 ±1,6	390	KF-13080
100	14 *	71	20	6	41	114	149 ±1,6	75	140 ±1,6	525	KF-13100

\* = Non-standard dimension

ISO intermediate hinge



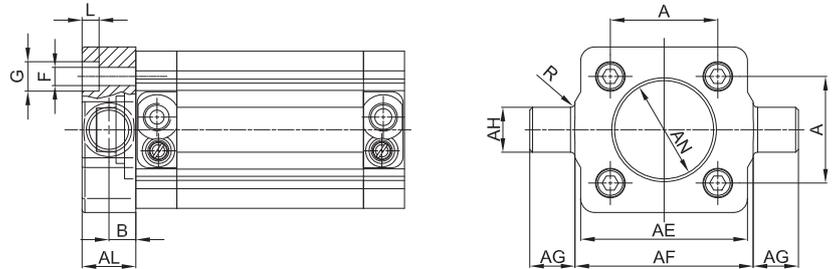
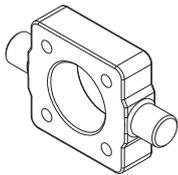
Material: Zinc-plated steel

Z = Stroke

Cylinder Ø	EA	EB	L1	R	TD	TL	TM	UW	XV	Mass	Part no.	
	Max	min.										e9
32	31	41	22	0,5	12	12	50	65	36	±2	120	KDF-14032
40	32	41	22	0,5	16	16	63	75	36,5	±2	240	RPF-14040
50	36	45	22	1	16	16	75	95	40,5	±2	320	RPF-14050
63	37	48	28	1	20	20	90	105	43	±2	470	RPF-14063
80	56,5	62,5	27,5	1	20	20	110	130	59	±2	800	KDF-14080
100	61	70	33	1	25	25	132	145	65,5	±2	1500	KDF-14100

The dimension XV + 1/2 indicates the position of the hinge between the end-caps of the cylinder

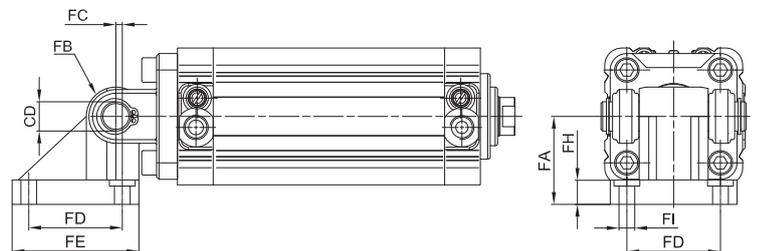
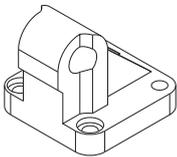
Front/rear hinge with floating pin



Material: Zinc-plated steel

Cylinder Ø	AE	AL	AH	AG	AF	AN	A	B	F	G	L	R	Mass	Part no.
	Max	Max	e9	h14	h14	h11	±0,2	±0,2 / 0	h13	h13	±0,5 / 0	0 / ±0,3	g	
32	46	14	12	12	50	30	32,5	6,5	6,5	-	6	1	137	KF-14032AP
40	59	19	16	16	63	35	38	9	6,5	10,5	6	1,6	385	KF-14040AP
50	69	19	16	16	75	40	46,5	9	8,5	13,5	8	1,6	513	KF-14050AP
63	84	24	20	20	90	45	56,5	11,5	8,5	13,5	8	1,6	1041	KF-14063AP
80	102	24	20	20	110	45	72	11,5	10,5	16,5	10	1,6	1567	KF-14080AP
100	125	29	25	25	132	55	89	14	10,5	16,5	10	2	3000	KF-14100AP

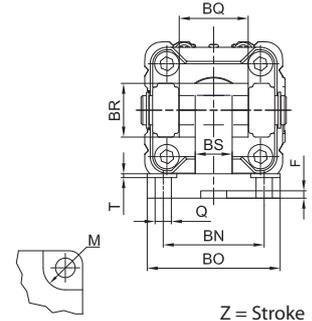
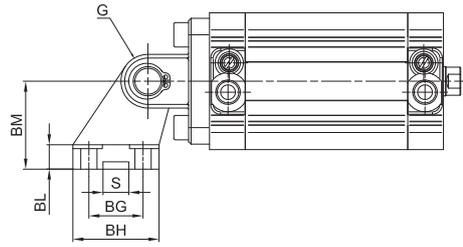
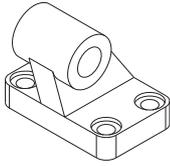
Counter hinge 90°



Material: Aluminium

Cylinder Ø	CD	FA	FB	FC	FD	FE	FG	FH	FI	F1	F2	Mass	Part no.	
	H9											g		
32	10	32	10	1,2	32,5	46,5	26	-0,2 / -0,6	9	6,5	5,5	10,5	90	KF-19032
40	12	36	12	2,6	38	51,5	28	-0,2 / -0,6	9	6,5	5,5	10,5	120	KF-19040
50	12	45	12	0,3	46,5	63,5	32	-0,2 / -0,6	9	8,5	5	13,5	200	KF-19050
63	16	50	16	3,3	56,5	73,5	40	-0,2 / -0,6	10,5	8,5	5	13,5	320	KF-19063
80	16	63	16	1,0	72	93	50	-0,2 / -0,6	12	10,5	4,5	16,5	580	KF-19080
100	20	73	20	2,5	89	113	60	-0,2 / -0,6	13	10,5	4,5	16,5	910	KF-19100

Counter hinge 90° (CETOP)



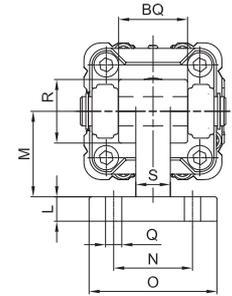
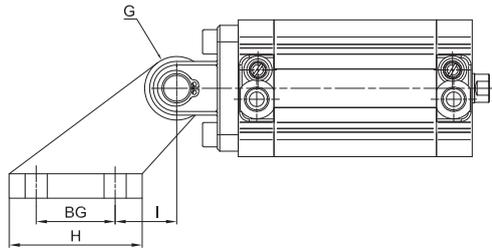
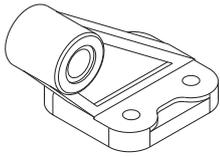
Z = Stroke

Material: Aluminium

Cylinder Ø	Q	M	BG	BH	BI	BL	BM	BN	BO	BS	BR	T	G	S	F	BQ	Mass g	Part no.	
	H13	H13	JS14	Max	JS14		Max	Max	Max	Max	Max	Max	H9	+0,5/0	+0,5/0				
32	6,6	11	18	31	21	8	32	38	51	10	20	1,6	10	10,5	3	26	-0,2 -0,6	56	KF-19032CTA
40	6,6	11	22	35	24	10	36	41	54	15	22	1,6	12	10,5	3	28		139	KF-19040CTA
50	9	15	30	45	33	12	45	50	65	16	26	1,6	12	10,5	3	32		142	KF-19050CTA
63	9	15	35	50	37	14	50	52	67	16	30	1,6	16	10,5	3	40		200	KF-19063CTA
80	11	18	40	60	47	14	63	66	86	20	30	2,5	16	10,5	3	50		321	KF-19080CTA
100	11	18	50	70	55	17	71	76	96	20	38	2,5	20	10,5	3	60	656	KT-19100CTA	

Counter hinge 90° (CNOMO)

1  
CYLINDERS

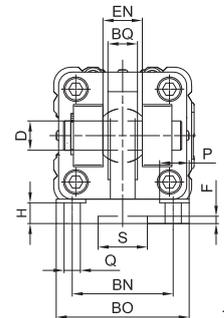
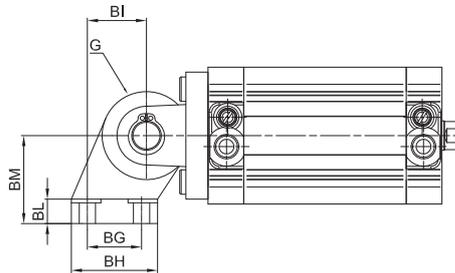
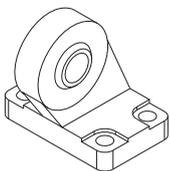


Z = Stroke

Material: Aluminium

Cylinder Ø	Q	BG	H	I	L	M	N	O	S	R	BQ	G	Mass g	Part no.
	H13	±0,2		±0,2		±0,2	±0,2			Max	±0,2/ ±0,1	H9		
32	7	20	37	18	8	24	25	41	9	19,5	25	8	58	KF-19032CN
40 - 50	9	32	54	25	10	35	32	52	14	26	32	12	144	KF-19040050CN
63 - 80	11	50	75	32	13	50	40	63	14	32	46	16	300	KF-19063080CN
100	14	70	103	40	17	73	50	80	22	42	56	20	694	KF-19100125CN

Articulated counter hinge

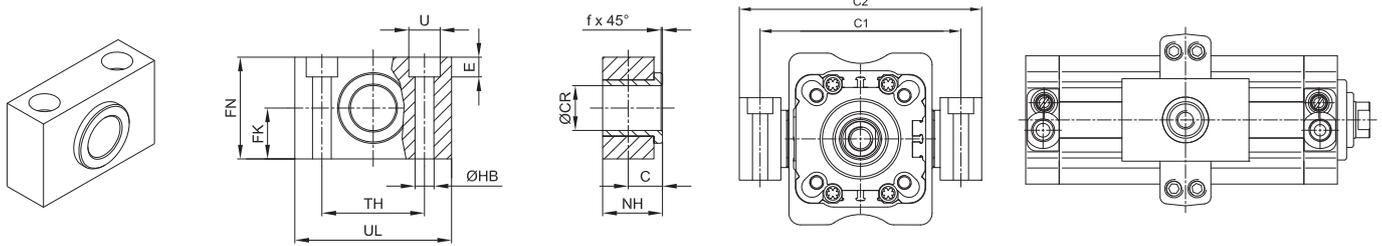


Z = Stroke

Material: Aluminium

Cylinder Ø	Q	P	BG	BH	BI	BL	BM	BN	BO	EN	ER	BQ	D	H	S	F	Mass g	Part no.
	H13	H13	JS14	Max														
32	6,6	11	18	31	21	10	32	38	51	14	15	10,5	10	8,5	20	3	178	KF-19032SC
40	6,6	11	22	35	24	10	36	41	54	16	18	12	12	8,5	20	3	268	KF-19040SC
50	9	15	30	45	33	12	45	50	65	21	20	15	16	10,5	20	3	458	KF-19050SC
63	9	15	35	50	37	12	50	52	67	21	23	15	16	10,5	20	3	550	KF-19063SC
80	11	18	40	60	47	14	63	66	86	25	27	18	20	11,5	20	3	970	KF-19080SC
100	11	18	50	70	55	15	71	76	96	25	30	18	20	12,5	20	3	1326	KF-19100SC

### Hinge support

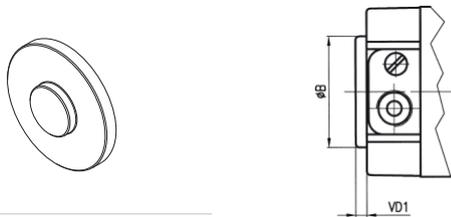


Material: Anodized aluminium and brass bushing

Z = Stroke

Ø	C	CR	FK	FN	HB	NH	TH	UL	U	E	F	C1	C2	Mass	Part no.
		F7	± 0,1				± 0,1			± 0,5				g	
32	10,2	12	15	30	6,6	18	32	46	11	7	1	71	86	110	KF-41032
40-50	12	16	18	36	9	21	36	55	15	9	1,6	Ø40 Ø50 Ø63 Ø80	Ø40 Ø50 Ø63 Ø80	200	KF-41040050
63-80	13	20	20	40	11	23	42	65	18	11	1,6	Ø100 Ø125	Ø100 Ø125	267	KF-41063080
100-125	16	25	25	50	14	28,5	50	75	20	13	2	Ø100 Ø125	Ø100 Ø125	485	KF-41100125

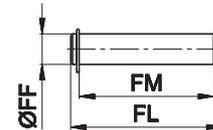
### Centering adaptor ring



Material: Aluminium

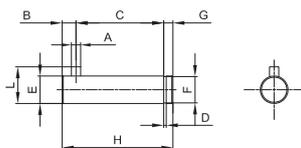
Cylinder Ø	B	VD1	Part no.
32	30	3	RSF-09032
40	35	3	RSF-09040
50	40	3	RSF-09050
63	45	3	RSF-09063
80	45	4	RSF-09080
100	55	5	RSF-09100

### Pin with 2 circlips



Cylinder Ø	FF	FL	FM	Mass	Part no.
	f8			g	
32	10	53	46	30	KF-18032
40	12	61,3	53	50	KF-18040
50	12	69	61	50	KF-18050
63	16	80,5	71	120	KF-18063
80	16	100,5	91	150	KF-18080
100	20	122,5	111	290	KF-18100

### Pin for narrow hinge



Material: Zinc-plated steel

Ø	A	C	D	E	F	G	H	L	B	Part no.
	H12	+0,5/ +0,3	H13	F7	H11			0 / -0,5		
32	3	32,5	1,1	10	9,6	4	41	14	4,5	KF-18032S
40	4	38	1,1	12	11,5	4	48	16	6	KF-18040S
50	4	43	1,1	16	15,2	5	54	20	6	KF-18050S
63	4	49	1,1	16	15,2	5	60	20	6	KF-18063S
80	4	63	1,3	20	19	6	75	24	6	KF-18080S
100	4	73	1,3	20	19	6	85	24	6	KF-1/8100S

### > Fixing screws

Cylindrical screw  
UNI 5931 suitable for  
mounting elements  
Series KF-12.../KF-13...

Cylinder Ø	Screw	Part no.
32 - 40	M6x20	AZ4-VN0620
50 - 63	M8x25	AZ4-VN0825
80 - 100	M10x30	AZ4-VN1030

Cylindrical screw  
UNI 5931 suitable for  
mounting elements  
Series KF-10.../KF-11

Cylinder Ø	Screw	Part no.
32 - 40	M6x25	AZ4-VN0625
50 - 63	M8x30	AZ4-VN0830
80 - 100	M10x30	AZ4-VN1030

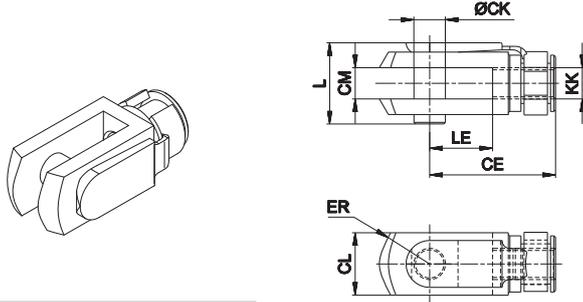
Cylindrical screw  
UNI 5931 and DIN 7984 suitable for  
mounting elements  
Series KF-19...(Ø32-40-80-100)

Cylinder Ø	Screw	Part no.
32 - 40	M6x20 <sup>(a)</sup>	AZ4-VN0620
	M6x25 <sup>(b)</sup>	AZ4-VN0625
80 - 100	M10x30	AZ4-VN1030
	M10x30	AZ4-VN1030

Cylindrical screw  
DIN 7984 suitable for  
mounting elements  
Series KF-19...(Ø50-63-80-100)

Cylinder Ø	Screw	Part no.
50 - 63	M8x25 <sup>(a)</sup>	AZ4-VPA0825
	M8x30 <sup>(b)</sup>	AZ4-VPA0830
80 - 100	M10x30	AZ4-VN1030

Female fork with clips

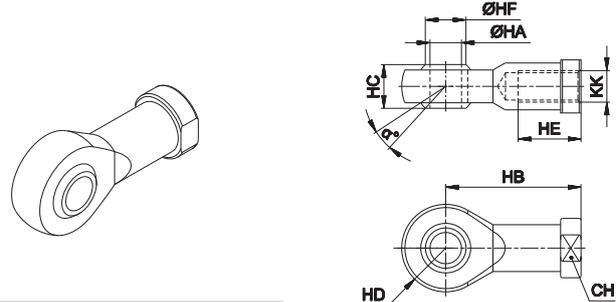


Material: Zinc-plated steel

Cylinder Ø	CE	CK	CL	CM	ER	KK	L	LE	Mass g	Part no.
32	40	10	20	10	16	M10x1,25	26	20	90	KF-15032
40	48	12	24	12	19	M12x1,25	32	24	150	KF-15040
50 - 63	64	16	32	16	25	M16x1,5	40	32	340	KF-15050
80 - 100	80	20	40	20	32	M20x1,5	50	40	670	KF-15080

Fork with pin suitable for piston rod according to ISO 8140 standard

Articulated self-lubricating fork

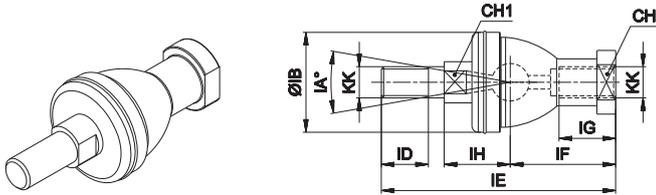


Material: Zinc-plated steel

Cylinder Ø	α°	CH	KK	HA	HB	HC	HD	HE	HF	Mass g	Part no.
32	13	17	M10x1,25	10	43	14	14	20	12,9	76	KF-17032
40	13	19	M12x1,25	12	50	16	16	22	15,4	110	KF-17040
50 - 63	15	22	M16x1,5	16	64	21	21	28	19,3	220	KF-17050
80 - 100	14	30	M20 x 1,5	20	77	25	25	33	24,3	400	KF-17080

CYLINDERS 1

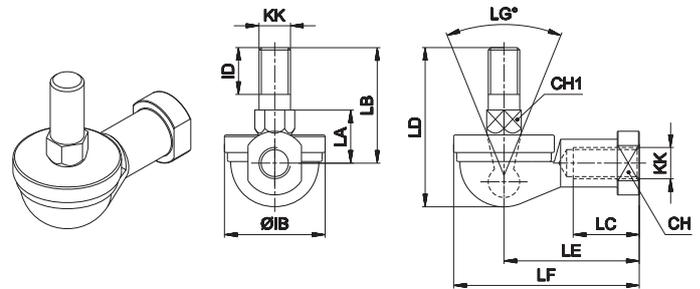
Fork with axially mounted articulated pin



Material: Zinc-plated steel

Cylinder Ø	CH	CH1	IA°	KK	IH	IB	ID	IE	IF	IG	Mass g	Part no.
32	17	11	30	M10x1,25	19,5 ±0,3	32	15	74,5	35	18	120	KF-22025
40	19	17	30	M12x1,25	22	36	17	84	40	20	185	KF-22040
50 - 63	22	19	22	M16x1,5	27,5	47	23	112	50	27	360	KF-22050
80 - 100	30	24	15	M20x1,5	31,5	58	25	133	63	38	570	KF-22080

Fork with angle mounted articulated pin

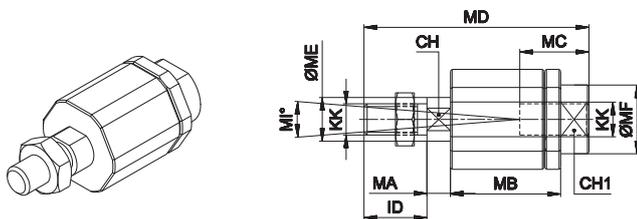


Material: Zinc-plated steel

Cylinder Ø	CH	CH1	LG°	KK	IB	ID	LA	LB	LC	LD	LE	LF	Mass g	Part no.
32	17	11	50	M10x1,25	32	15	17	37	21	50,5	43	57	110	KF-23025
40	19	17	50	M12x1,25	36	17	19	42	27	57,5	50	66	165	KF-23040
50 - 63	22	19	40	M16x1,5	47	23	23,5	60	33	79,5	64	84	330	KF-23050
80 - 100	30	24	32	M20x1,5	58	25	27	68	40	90	77	99	540	KF-23080

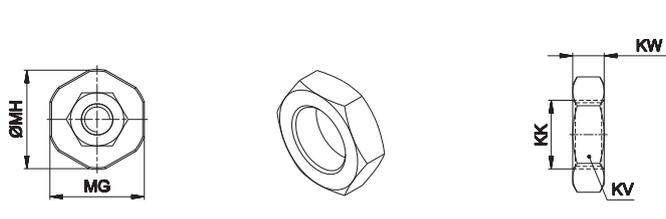
Floating joint

Piston rod locknut (zinc-plated steel)



Material: Zinc-plated steel

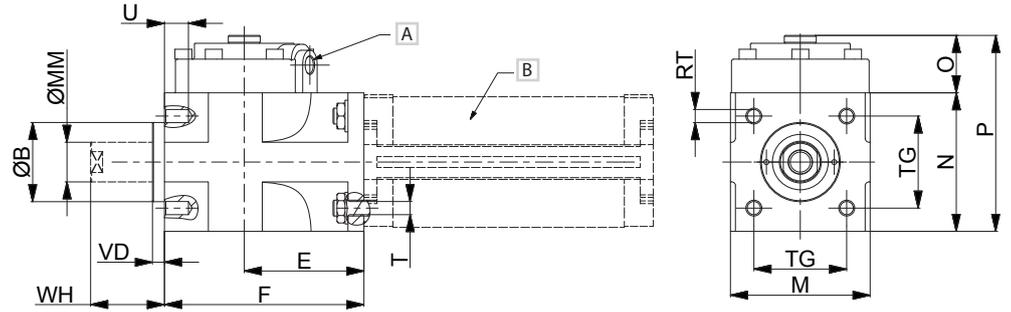
Cylinder Ø	CH	CH1	ID	KK	MA	MB	MC	MD	ME	MF	MG	MH	MI°	Mass g	Part no.
32	12	19	71	M10x1,25	5	35	20	71	14	22	30	32	8	220	KF-24032
40	12	19	75	M12x1,25	5	35	20	75	14	22	30	32	8	230	KF-24040
50 - 63	20	30	103	M16x1,5	8	54	32	103	22	32	41	45	6	660	KF-24050
80 - 100	20	30	119	M20x1,5	8	54	40	119	22	32	41	45	6	700	KF-24080



Material: Zinc-plated steel

Cylinder Ø	KK	KV	KW	Mass g	Part no.
32	M10x1,25	17	6	5	KF-16032
40	M12x1,25	19	7	10	KF-16040
50 - 63	M16x1,5	24	8	20	KF-16050
80 - 100	M20x1,5	30	9	30	KF-16080

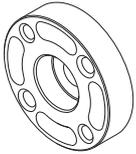
Locking unit



A G1/8 pneumatic release  
 B STRONG cylinder

Ø	B	RT	E	F	M	MM	N	O	P	TG	U	T	VD	WH
32	30	M6	54,5	84	50	12	50	29,5	79,5	32,5	10	6,5	6	26
40	35	M6	58	90	58	16	58	29,5	87,5	38	9	6,5	6	30
50	40	M8	60	100	70	20	70	29	99	46,5	10	8,5	6	37
63	45	M8	65	110	85	20	85	37	122	56,5	13	8,5	6	37
80	45	M10	75	125	100	25	100	40,5	140,5	72	16	10,5	8	46
100	55	M10	90	152	116	25	116	59	179	89	18	10,5	8	51

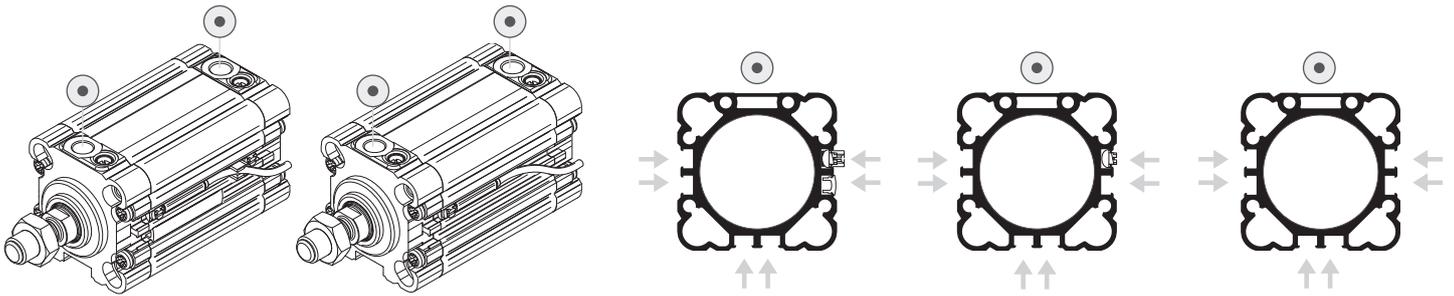
Flange for female piston rod (standard supplied for RQ series)



Material: Aluminium

Cylinder Ø	Mass g	Part no.
32	24	RPF-28032
40	35	RPF-28040
50	57	RPF-28050
63	94	RPF-28063
80 - 100	-	-

DF sensor



 supply port

# PM

## Ø 16 ÷ 25 mm - ISO 6432 Stainless steel pneumatic cylinders

- Stainless steel AISI 304
- Double acting versions
- Through piston rod and adjustable cushionings versions
- Execution with or without magnet

Available ATEX version upon request



### TECHNICAL CHARACTERISTICS

Ambient temperature	0 ÷ 80 °C (-20°C with dry air)
Fluid	compressed air, filtered air, not lubricated
Working pressure	1 ÷ 10 bar
Bores	Ø 16 - 20 - 25 mm

### CONSTRUCTIVE CHARACTERISTICS

End-caps	stainless steel AISI 304
Barrel	stainless steel AISI 304
Piston	brass
Piston rod	stainless steel AISI 304
Piston seal	polyurethane
Guide bush for piston rod	sintered bronze
Shock absorber seals	neoprene
Magnet	plastroferrite
Nut	stainless steel AISI 304
O-Ring	nitrile rubber (NBR)

### CODIFICATION KEY

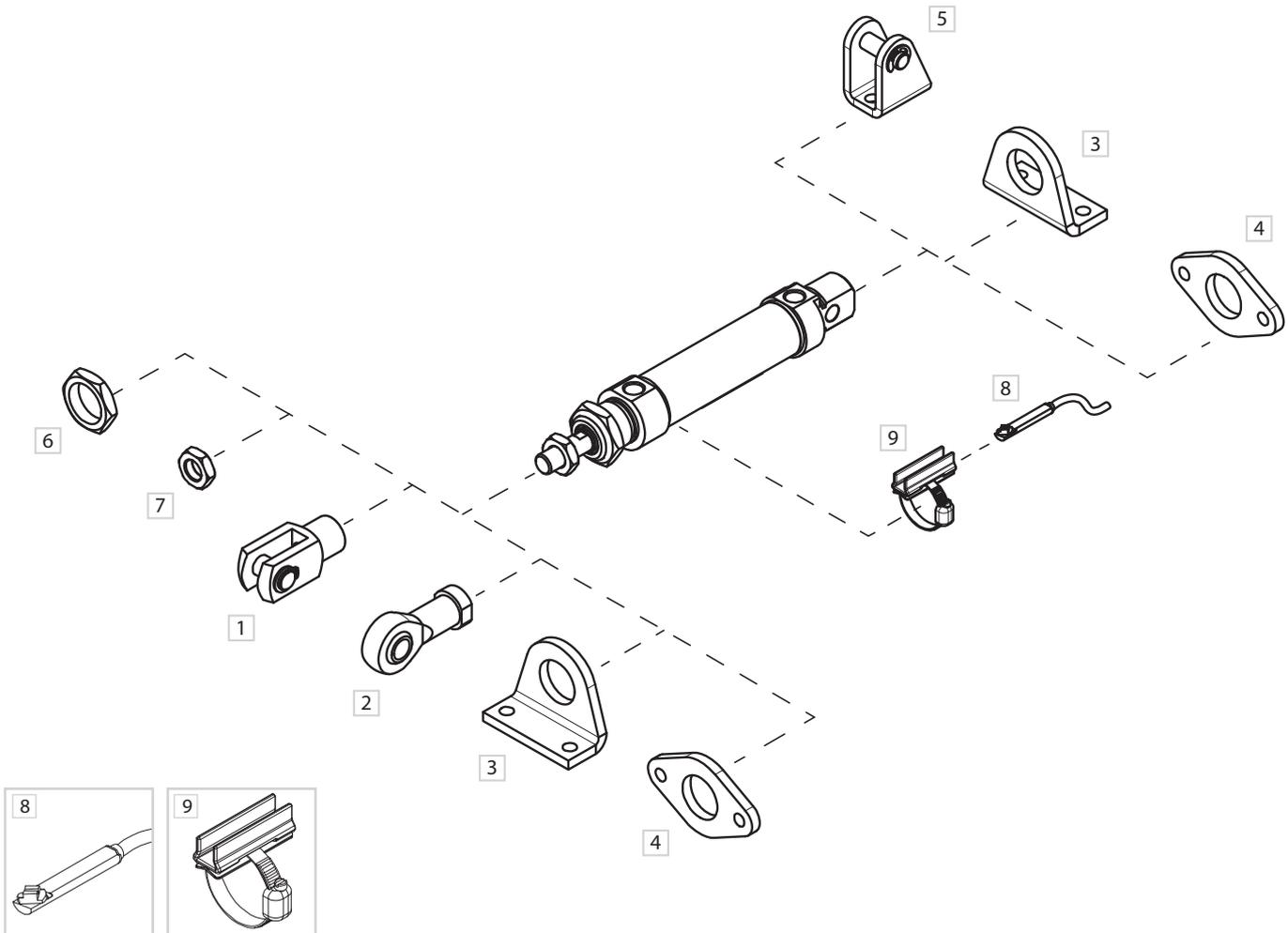
P	M	3	0	0	0	1	6	0	0	1	0	M	
1	2	3	4				5			6	7		

1 Series	2 Type	3 Version	4 Bore (mm)
<b>PM</b> = Ø 16 ÷ 25 mm - ISO 6432 Stainless steel pneumatic cylinders	<b>3</b> = Male piston rod	<b>00</b> = <b>D.A.</b> Standard <b>01</b> = <b>D.A.</b> Through piston rod <b>50</b> = <b>D.A.</b> With adjustable cushionings (Ø25) <b>51</b> = <b>D.A.</b> Through piston rod with adjustable cushionings (Ø25)  <b>D.A.</b> = Double acting	<b>016</b> = Ø16 <b>020</b> = Ø20 <b>025</b> = Ø25

5 Stroke (mm)	6 Magnetic	7 ATEX option
<b>0010</b> = 10 <b>0160</b> = 160 <b>0025</b> = 25 <b>0200</b> = 200 <b>0050</b> = 50 <b>0250</b> = 250 <b>0080</b> = 80 <b>0320</b> = 320 <b>0100</b> = 100 <b>0400</b> = 400 <b>0125</b> = 125 <b>0500</b> = 500	<b>M</b> = Magnetic version (standard supplied)	<b>X</b> = Atex (upon request)  <b>For types and versions please contact our Sales Office</b>

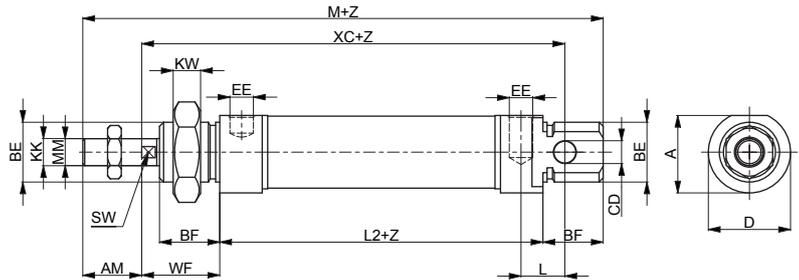
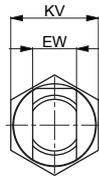
Version with high temperature seals (Max 150°C) available upon request.

Fixing elements and accessories

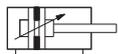


DESCRIPTION	NOTE	PART NO.
1 Female fork with pin	Stainless steel	MF/KF-15__PI
2 Articulated self-lubricating fork	Stainless steel	MF/KF-17__I
3 Angle bracket (MS3)	Stainless steel	MF-13__I
4 Flange (MF8)	Stainless steel	MF-12__I
5 Rear female hinge	Stainless steel	MF-21__I
6 End-cap nut	Stainless steel	MF-20__I
7 Piston rod nut	Stainless steel	MF-16__I
8 DF sensor	-	DF-P700L06
9 DF bracket and adapter	Stainless steel	DH-P__DFI

### Double acting

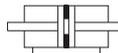


**PM300**  
D.A. Standard

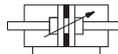


**PM350**  
D.A. with adjusting cushionings

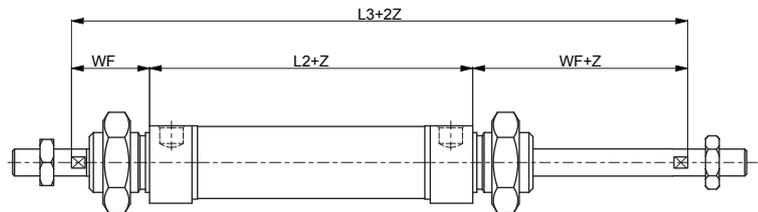
### Double acting through piston rod



**PM301**  
D.A. Through piston rod



**PM351**  
D.A. Through piston rod  
with adjustable cushionings



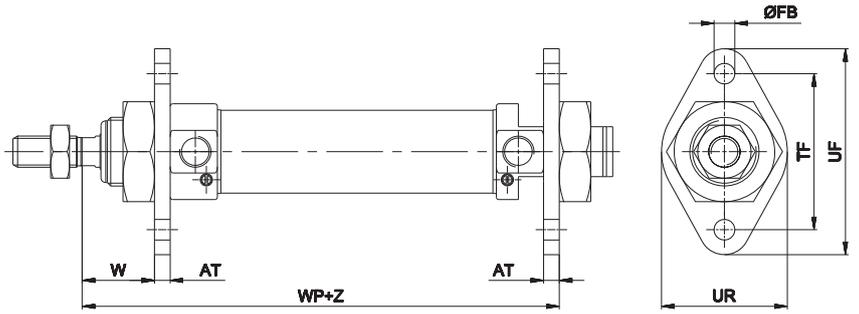
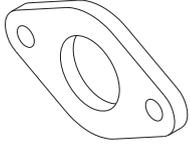
Z= Stroke

Ø	AM	A	BE	BF	CD	D	EE	EW	KK	KV
						H 9			d 13	
16	16	18	M16x1,5	18	6	19	M5x0,8	12	M6x1	22
20	20	25,5	M22x1,5	20	8	27	G1/8	16	M8x1,25	27
25	22	28,5	M22x1,5	22	8	30	G1/8	16	M10x1,25	27

Ø	KW	L	L2	L3	ØMM	M	SW	WF	XC
									± 1,2
16	8	9	53	97	6	109	5	22	82
20	11	12	67	115	8	131	7	24	95
25	11	12	68	124	10	140	9	28	104

Flange (MF8)



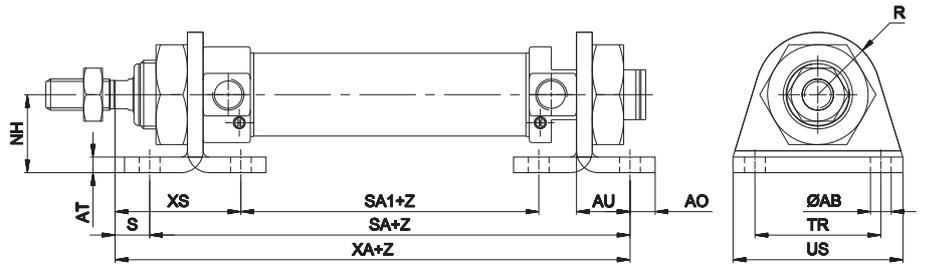
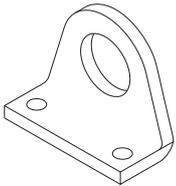
Z = Stroke

Material: Stainless steel AISI 304

Ø	AT	ØFB	TF	UF	UR	W	WP	Part no.
		H13	Js14			± 1,4		
16	4	5,5	40	53	30	18	79	MF-12012I
20	5	6,6	50	66	40	19	96	MF-12020I
25	5	6,6	50	66	40	23	101	

Angle bracket (MS3)

1

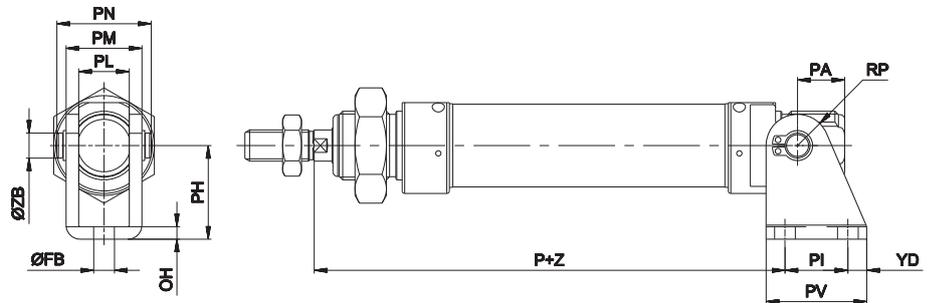
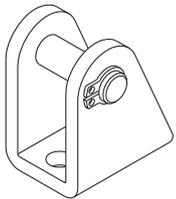


Z = Stroke

Material: Stainless steel AISI 304

Ø	AB	AO	AT	AU	NH	R	S	SA	SA1	TR	US	XA	XS	Part no.
	H13			+0,3 0	±0,3					Js14			±1,4	
16	5,5	6	4	14	20	13	8	81	33	32	42	89	32	MF-13012I
20	6,6	8	5	17	25	20	7	101	43	40	54	108	36	MF-13020I
25	6,6	8	5	17	25	20	11	102	44	40	54	113	40	

Rear female hinge



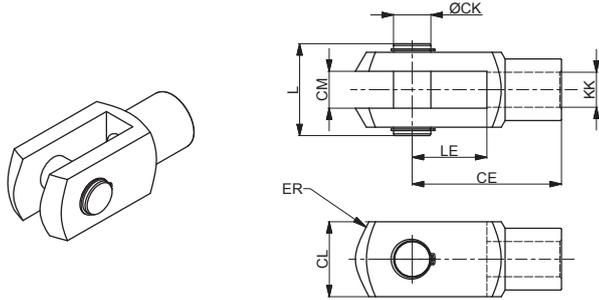
Z = Stroke

Including bolt and 2 circlips

Material: Stainless steel AISI 304

Ø	FB	OH	P	PA	PH	PI	PL	PM	PN	PV	RP	YD	ZB	Part no.
	H13						E9						f8	
16	5,5	3	80	13	27	15	12,1	18,1	23	25	7	5	6	MF-21012I
20	6,6	4	91	16	30	20	16,1	24,1	30	32	10	6	8	MF-21020I
25	6,6	4	100	16	30	20	16,1	24,1	30	32	10	6	8	

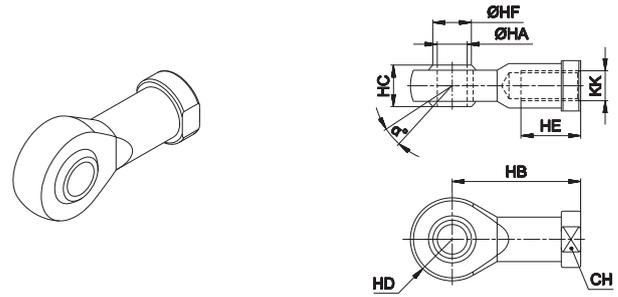
**Female fork with pin**



Material: Stainless steel AISI 303 (Ø16-20) 304 (Ø25)

Ø	CE	CK	CL	CM	ER	KK	L	LE	Part no.
16	24	6	12	6	7	M6x1	16	12	MF-15012PI
20	32	8	16	8	10	M8x1,25	22	16	MF-15020PI
25	40	10	20	10	16	M10x1,25	26	20	KF-15032PI

**Articulated self-lubricating fork**



Material: Stainless steel AISI 303 (Ø16-20) 304 (Ø25)

Ø	α°	CH	KK	HA	HB	HC	HD	HE	HF	Part no.
16	13°	11	M6x1	6	30	9	10	12	9	MF-17012I
20	14°	14	M8x1,25	8	36	12	12	16	10,4	MF-17020I
25	13°	17	M10x1,25	10	43	14	14	20	12,9	KF-17032I

**Piston rod nut**



Material: Stainless steel AISI 304

Ø	KK	KV	KW	Part no.
16	M6x1	10	4	MF-16012I
20	M8x1,25	13	5	MF-16020I
25	M10x1,25	17	6	KF-16032I

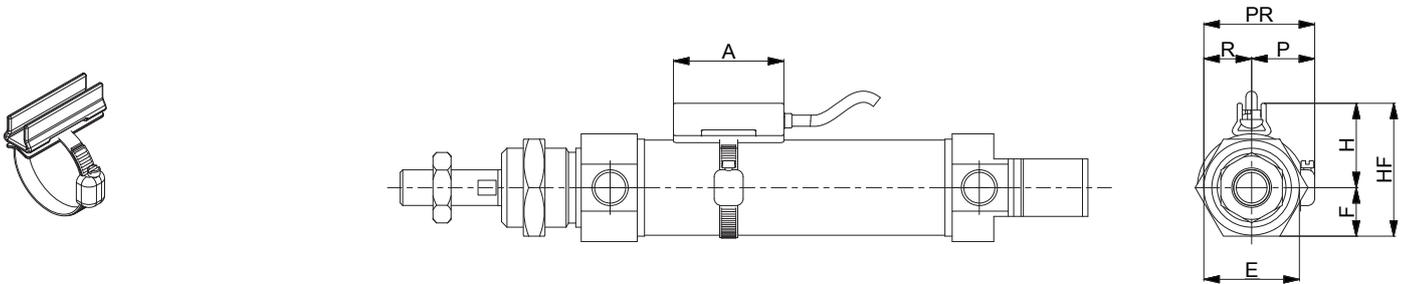
**End-cap nut**



Material: Stainless steel AISI 303

Ø	BE	KV1	KW1	Part no.
16	M16x1,5	24	8	MF-20012I
20	M22x1,5	32	10	MF-20020I

**DF bracket**

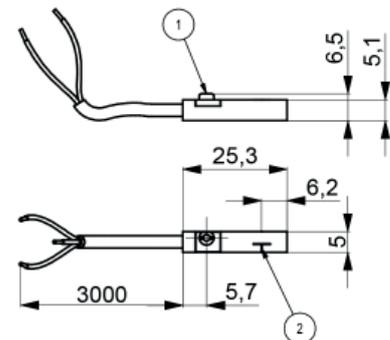
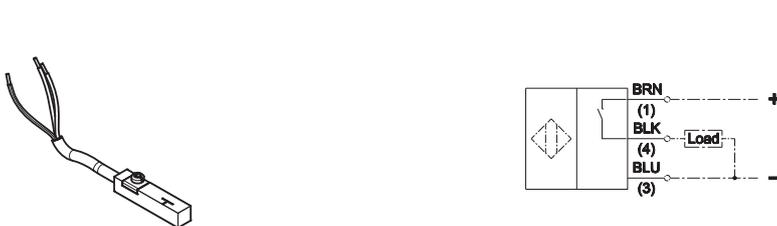


Material: Stainless steel AISI 303

Ø	A	E	F	H	HF	P	R	PR	Part no.
16	34	22	11	18	29	17	11	28	DH-P016020DFI
20	34	24	12	20	32	17	12	29	
25	34	32	16	23	39	19	16	35	

For DF sensors see accessories section

**DF sensor**



1	2	Part no.
fixing eccentric	active sensing face	DF-P700L06



# PM

## Ø 32 ÷ 63 mm - Stainless steel pneumatic cylinders

- Stainless steel AISI 304
- Double acting versions
- Through piston rod versions
- Execution with or without magnet



### TECHNICAL CHARACTERISTICS

Ambient temperature	0 ÷ 80 °C (-20°C with dry air)
Fluid	compressed air, filtered air, not lubricated
Working pressure	1 ÷ 10 bar
Bores	Ø 32 - 40 - 50 - 63 mm

### CONSTRUCTIVE CHARACTERISTICS

End-caps	stainless steel AISI 304
Barrel	stainless steel AISI 304
Piston	aluminium
Guide slide	PBT+PTFE
Piston rod	stainless steel AISI 316
Piston seal	polyurethane
Guide bush for piston rod	sintered bronze
Shock absorber seals	neoprene
Magnet	plastoferrite
Nut	stainless steel AISI 304
O-Ring	nitrile rubber (NBR)

### CODIFICATION KEY

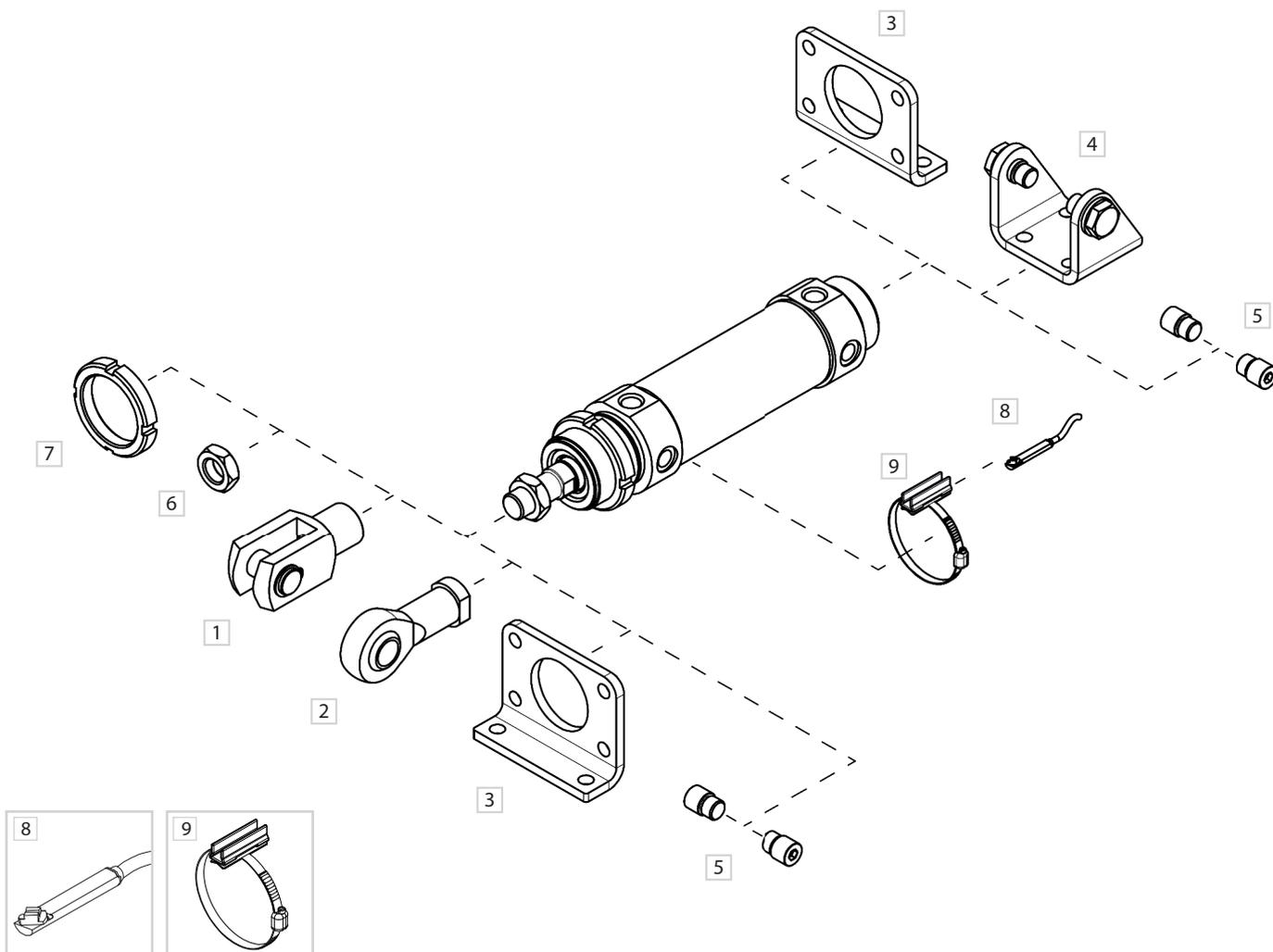
P	M	3	0	0	0	3	2	0	0	5	0	M
1	2	3	4				5			6		

1 Series	2 Type	3 Version	4 Bore (mm)
PM = Ø 32 ÷ 63 mm Stainless steel pneumatic cylinders	3 = Male piston rod	00 = D.A. Standard 01 = D.A. Through piston rod  D.A. = Double acting	032 = Ø32 040 = Ø40 050 = Ø50 063 = Ø63

5 Stroke (mm)	6 Magnetic
0010 = 10    0160 = 160 0025 = 25    0200 = 200 0050 = 50    0250 = 250 0080 = 80    0320 = 320 0100 = 100    0400 = 400 0125 = 125    0500 = 500	M = Magnetic version (standard supplied)

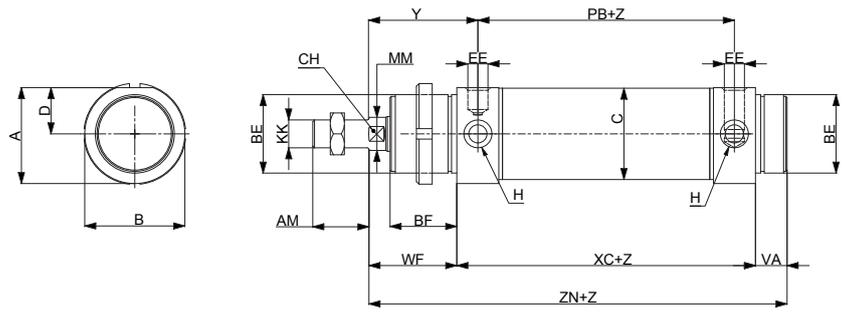
Version with high temperature seals (Max 150°C) available upon request.

Fixing elements and accessories



DESCRIPTION	NOTE	PART NO.
1 Female fork with pin	Stainless steel	MF/KF-15 __ _PI
2 Articulated self-lubricating fork	Stainless steel	MF/KF-17 __ _I
3 Angle bracket/Flange	Stainless steel	MF-13 __ _I
4 Female hinge with screws	Stainless steel	MF-21 __ _I
5 Pins (pair)	Stainless steel	MF-18 __ _I
6 Piston rod nut	Stainless steel	MF-16 __ _I
7 Nut	Stainless steel	MF-20 __ _I
8 DF sensor	-	DF-P700L06
9 DF bracket and adapter	Stainless steel	DH-P __ _DFI

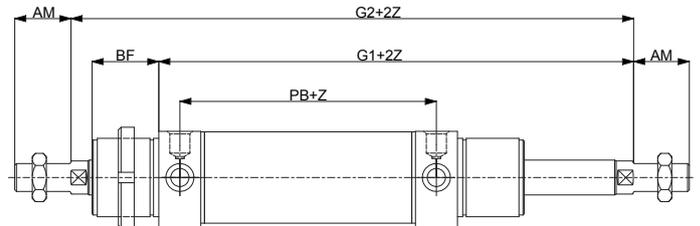
### Double acting



**PM300**  
D.A. Standard

### Double acting through piston rod

**PM301**  
D.A. Through piston rod



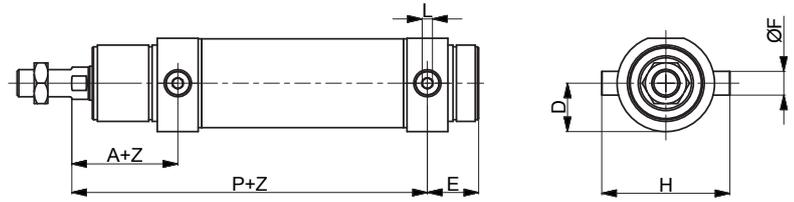
Z= Stroke

Ø	A	AM	ØB	BE	BF	C	CH	D	EE	H
32	36,5	20	38	M30x1,5	30	33,6	10	17,5	G1/8	M30x1,5
40	44	24	46	M38x1,5	35	41,6	13	21	G1/4	M38x1,5
50	55	32	57	M45x1,5	38	52,4	17	26,5	G1/4	M45x1,5
63	67,5	32	70	M45x1,5	38	65,4	17	32,5	G3/8	M45x1,5

Ø	KK	ØMM	PB	VA	WF	XC	Y	ZN	G1	G2
32	M10x1,25	12	78	14	38	96	47	148	134	172
40	M12x1,25	16	89	16	45	113	57	174	158	203
50	M16x1,5	20	96	18	50	120	62	188	170	220
63	M16x1,5	20	98	18	50	124	63	192	174	224

Pins



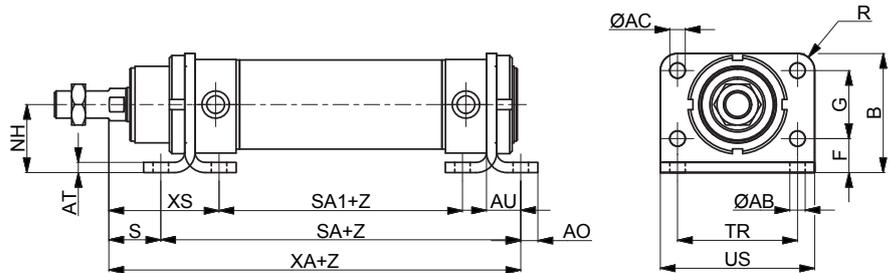
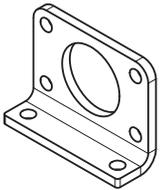
Material: Stainless steel AISI 304

Z = Stroke

Ø	A	P	E	L	D	H	ØF	Part no.
32	47	125	23	5	19	51	10	MF-18032I
40	57	146	28	6	23	61	12	MF-18040I
50	62	158	30	6	28,5	75	14	MF-18050I
63	63	161	31	8	35	92	16	MF-18063I

Angle bracket/Flange

1

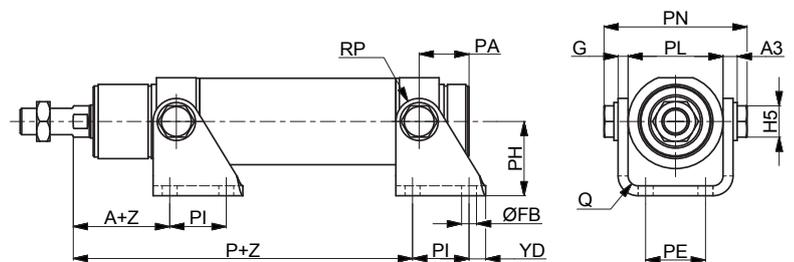
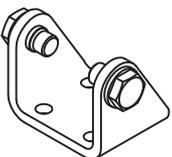


Material: Stainless steel AISI 304

Z = Stroke

Ø	NH	AT	XS	S	SA	SA1	XA	AU	AO	ØAC	R	US	TR	ØAB	F	G	B	Part no.
32	28	4	52	24	124	68	148	14	7	7	7	66	52	7	14	28	49	MF-13032I
40	33	5	65	25	153	73	178	20	10	9	10	80	60	9	18	30	58	MF-13040I
50	40	6	70	30	160	80	190	20	10	9	10	90	70	9	20	40	70	MF-13050I
63	45	6	70	30	164	84	194	20	10	9	10	96	76	9	20	50	80	MF-13063I

Female hinge with screws



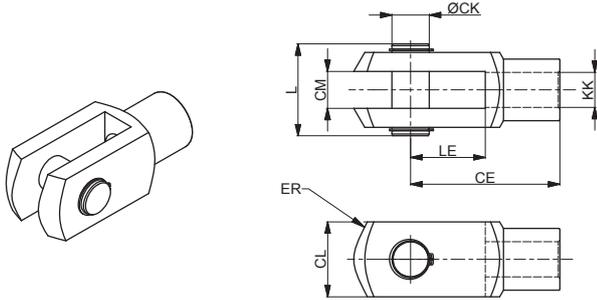
Including bolt and 2 circlips

Material: Stainless steel AISI 304

Z = Stroke

Ø	A	P	PI	ØFB	YD	PH	RP	PA	G	PN	PL	A3	H5	PE	Q	Part no.
32	45	120	24	7	8	35	12	20	4	54,1	38,1	6	13	20	4	MF-21032I
40	55	141	30	9	10	40	13	27	5	65,1	46,1	7	17	28	5	MF-21040I
50	59	152	34	9	10	45	14	30	6	80,1	57,1	8,5	19	36	6	MF-21050I
63	60	155	35	9	15	50	16	34	6	93,1	70,1	8,5	19	42	6	MF-21063I

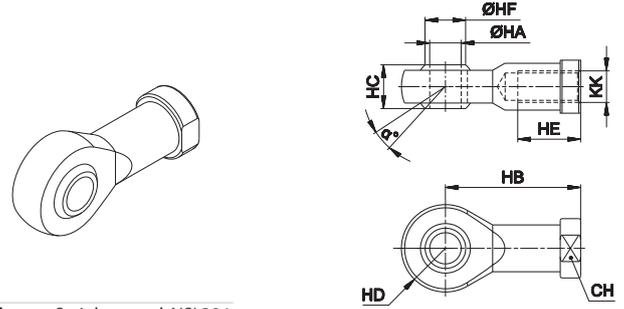
Female fork with pin



Material: Stainless steel AISI 304

Ø	CE	CK	CL	CM	ER	KK	L	LE	Part no.
32	40	10	20	10	16	M10x1,25	26	20	KF-15032PI
40	48	12	24	12	19	M12x1,25	32	24	KF-15040PI
50	64	16	32	16	25	M16x1,5	40	32	KF-15050PI
63									

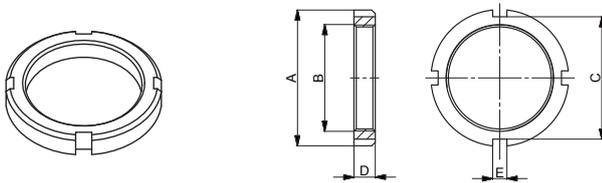
Articulated self-lubricating fork



Material: Stainless steel AISI 304

Ø	α°	CH	KK	HA	HB	HC	HD	HE	HF	Part no.
32	13	17	M10x1,25	10	43	14	14	20	12,9	KF-17032I
40	13	19	M12x1,25	12	50	16	16	22	15,4	KF-17040I
50	15	22	M16x1,5	16	64	21	21	28	19,3	KF-17050I
63										

Nut for end-cap



Material: Stainless steel AISI 304

Ø	A	B	C	D	E	Part no.
40	50	M38x1,5	46	8	5	MF-20040I
50	58	M45x1,5	52	9	6	MF-20050I
63	58	M45x1,5	52	9	6	MF-20063I

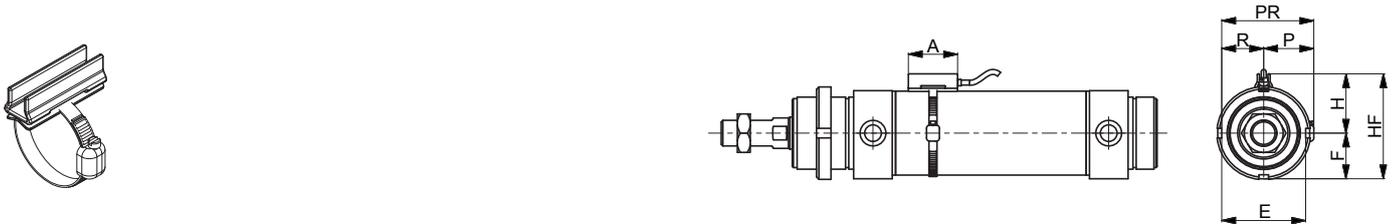
Piston rod nut



Material: Stainless steel AISI 304

Ø	KK	KV	KW	Part no.
40	M12x1,25	19	7	KF-16040I
50	M16x1,5	24	8	KF-16050I
63				

DF bracket

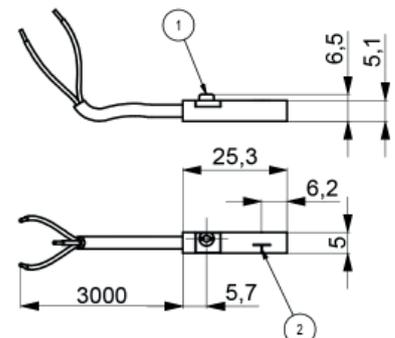


Material: Stainless steel AISI 303

Ø	A	E	F	H	HF	P	R	PR	Part no.
40	34	41,5	20,75	53	94,5	47	41,5	88,5	DH-P040DFI
50	34	51,5	25,75	63	114,5	57	51,5	108,5	DH-P050DFI
63	34	64,5	32,25	76	140,5	70	64,5	134,5	DH-P063DFI

For DF sensors see accessories section

DF sensor



1	2	Part no.
fixing eccentric	active sensing face	DF-P700L06

Subject to change



# PK

## ISO 15552 Stainless steel pneumatic cylinders - Ø 32 ÷ 125 mm

- Stainless steel AISI 316
- Double acting versions
- Through piston rod versions
- FDA approved piston seals
- Execution with or without magnet

Available ATEX version upon request



### TECHNICAL CHARACTERISTICS

Ambient temperature	0 ÷ 80 °C (-20°C with dry air) 0 ÷ 150 °C (with high temperature seals)
Fluid	compressed air, filtered air, not lubricated
Working pressure	1 ÷ 10 bar
Bores	Ø 32 - 40 - 50 - 63 - 80 - 100 - 125 mm
Cushionings	adjustable on both sides

### CONSTRUCTIVE CHARACTERISTICS

End-caps	stainless steel AISI 316
Barrel	stainless steel AISI 316
Piston	die-cast aluminium
Guide slide	PBT+PTFE
Piston rod	stainless steel AISI 316
Piston seal	polyurethane
Guide bush for piston rod	sintered bronze
Magnet	plastroferrite
O-Ring	nitrile rubber (NBR)
Tie-rods	stainless steel AISI 316

### CODIFICATION KEY

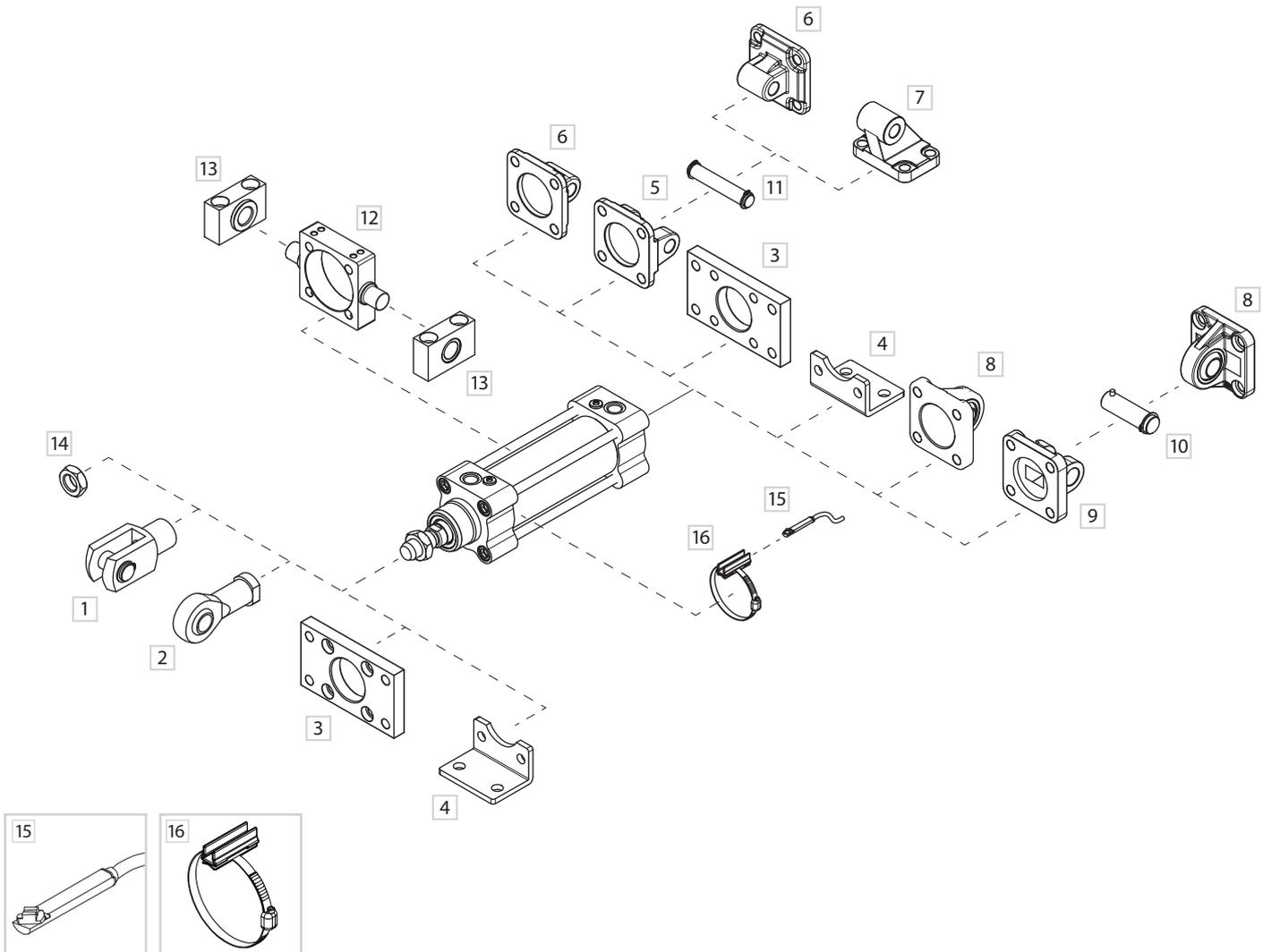
P	K	3	0	0	0	3	2	0	0	2	5	M	
1	2	3	4	5	6	7							

1 Series	2 Type	3 Version	4 Bore (mm)
PK = Pneumatic cylinders ISO 15552 Ø 32 ÷ 125 mm	3 = Stainless steel piston rod	00 = D.E. Standard 01 = D.E. Through-rod  D.E. = Double effect	032 = Ø32 080 = Ø80 040 = Ø40 100 = Ø100 050 = Ø50 125 = Ø125 063 = Ø63

5 Stroke (mm)	6 Magnetic	7 ATEX option
0025 = 25 0150 = 150 0320 = 320 0600 = 600 0850 = 850 0050 = 50 0160 = 160 0400 = 400 0650 = 650 0900 = 900 0080 = 80 0200 = 200 0450 = 450 0700 = 700 0950 = 950 0100 = 100 0250 = 250 0500 = 500 0750 = 750 1000 = 1000 0125 = 125 0300 = 300 0550 = 550 0800 = 800	M = Magnetic version (standard supplied)	X = ATEX (upon request)

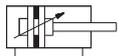
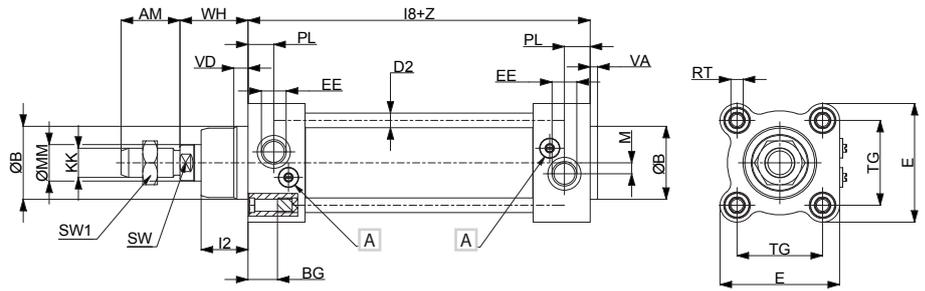
Version with high temperature seals (Max 150°C) available upon request.

Fixing elements and accessories



DESCRIPTION	NOTE	PART NO.
1 Female fork with pin	Stainless steel	KF-15 __ _PI
2 Articulated self-lubricating fork	Stainless steel	KF-17 __ _I
3 Front/rear flange (ISO MF1-MF2)	Stainless steel	KF-12 __ _I
4 Angle bracket (ISO MS1)	Stainless steel	KF-13 __ _I
5 Female hinge (ISO MP2)	Stainless steel	KF-10 __ _AI
6 Rear male hinge (ISO MP4)	Stainless steel	KF-11 __ _I
7 Counter hinge 90° (CETOP RP107P)	Stainless steel	KF-19 __ _CTAI
8 Articulated rear male hinge (ISO MP6)	Stainless steel	KF-11 __ _SI
9 Narrow female hinge with pin (DIN648K)	Stainless steel	KF-10 __ _ASI/
10 Narrow hinge pin (DIN648K)	Stainless steel	KF-18S I
11 Female hinge pin (ISO MS1)	Stainless steel	KF-18 _I
12 Intermediate hinge for tie-rods	Stainless steel	KF-14 __ _TI
13 Hinge support	Stainless steel	KF-41 __ _I
14 Piston rod nut	Stainless steel	KF-16 __ _I
15 DF sensor	-	DF-P700L06
16 DF bracket and adapter	Stainless steel	DH-P __ _DFI

### Double acting

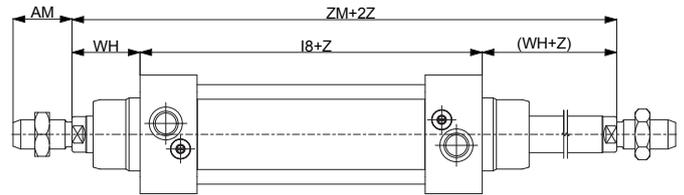


**PK300**  
D.A. Standard

### Double acting through piston rod



**PK301**  
D.A. Through piston rod

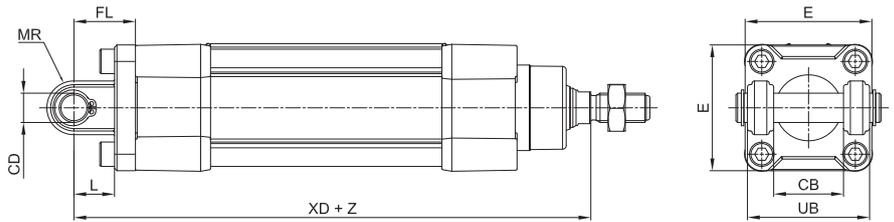
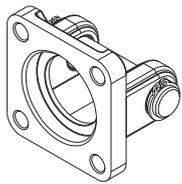


Z= Stroke

Ø	AM	ØB	BG	E	KK	I2	I8	PL	RT	SW	TG	VA	VD	WH	ØMM	EE	M	SW1	D2	ZM
32	22	30	16	48	M10x1,25	18	94 ±0,4	13	M6	10	32,5 ±0,5	4	5	26	12	G1/8	5,3	17	6	146
40	24	35	16	52	M12x1,25	22	105 ±0,7	14	M6	13	38 ±0,5	4	5	30	16	G1/4	5	19	6	165
50	32	40	16	65	M16x1,5	25,5	106 ±0,7	14	M8	17	46,5 ±0,6	4	6	37	20	G1/4	6	24	8	180
63	32	45	16	75	M16x1,5	26	121 ±0,8	16	M8	17	56,5 ±0,7	4	6	37	20	G3/8	6,5	24	8	195
80	40	45	18	95	M20x1,5	32	128 ±0,8	16	M10	22	72 ±0,7	4	7	46	25	G3/8	8	30	10	220
100	40	55	18	115	M20x1,5	38	138 ±1	18	M10	22	89 ±0,7	4	7	51	25	G1/2	7	30	10	240
125	54	60	20	140	M27x2	46	160 ±1	18	M12	27	110 ±1,1	6	10	65	32	G1/2	7	41	12	290

A Adjusting screw for pneumatic cushioning

Female hinge (ISO MP2) with pin



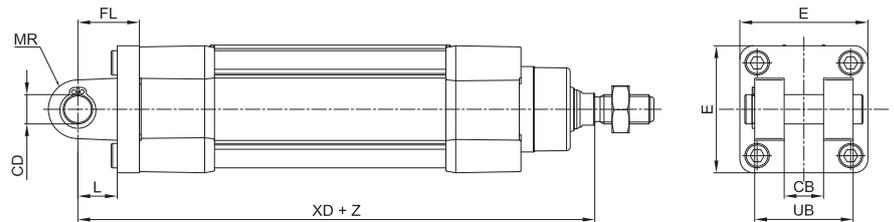
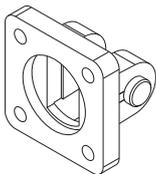
Material: Stainless steel AISI 304

Z = Stroke

Ø	CB	CD	E	FL	L	MR	UB	XD		Part no.
	H14	H9		± 0,2	min	Max	h14			
32	26	10	48	22	12	11	45	142	±1,25	KF-10032AI
40	28	12	54	25	15	13	52	160	±1,25	KF-10040AI
50	32	12	65	27	15	13	60	170	±1,25	KF-10050AI
63	40	16	75	32	20	17	70	190	±1,6	KF-10063AI
80	50	16	95	36	20	17	90	210	±1,6	KF-10080AI
100	60	20	115	41	25	21	110	230	±1,6	KF-10100AI
125	70	25	140	50	30	26	130	275	±2	KF-10125AI

Narrow female hinge with pin (DIN648K)

1

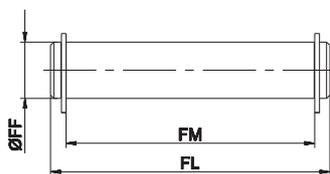


Material: Stainless steel AISI 316

Z = Stroke

Ø	CB	CD	E	FL	L	MR	UB	XD		Part no.
	H14	H9		± 0,2	min	Max	h14			
32	14	10	45	22	10	10	34	142	±1,25	KF-10032ASI
40	16	12	52	25	16	12	40	160	±1,25	KF-10040ASI
50	21	16	65	27	16	14	45	170	±1,5	KF-10050ASI
63	21	16	75	32	21	18	51	190	±1,6	KF-10063ASI
80	25	20	95	36	22	20	65	210	±1,6	KF-10080ASI
100	25	20	115	41	27	22	75	230	±1,6	KF-10100ASI
125	37	30	140	50	30	25	97	275	±2	KF-10125ASI

Female hinge pin

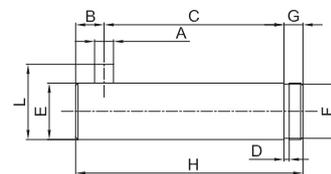


Including 2 circlips

Material: Stainless steel AISI 304

Ø	FF	FL	FM	Part no.
32	f8	53	46	KF-18032I
40	12	61,3	53	KF-18040I
50	12	69	61	KF-18050I
63	16	80,5	71	KF-18063I
80	16	100,5	91	KF-18080I
100	20	122,5	111	KF-18100I
125	25	140	131	KF-18125I

Narrow female hinge pin

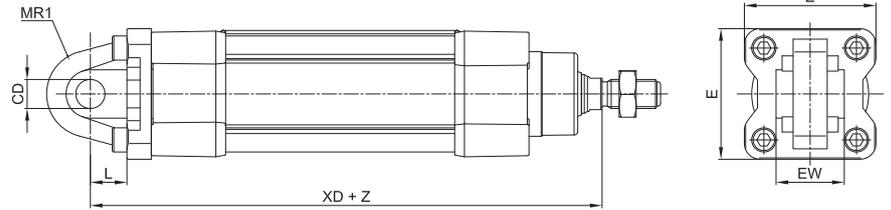
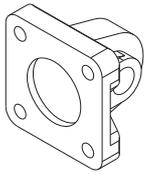


Including 2 circlips

Material: Stainless steel AISI 316

Ø	A	C	D	E	F	G	H	L	B	Part no.
	H12	<sup>+0,5</sup> / <sub>+0,3</sub>	h13	f7	h11			<sup>0</sup> / <sub>-0,5</sub>		
32	3	32,5	1,1	10	9,6	4	41	14	4,5	KF-18032SI
40	4	38	1,1	12	11,5	4	48	16	6	KF-18040SI
50	4	43	1,1	16	15,2	5	54	20	6	KF-18050SI
63	4	49	1,1	16	15,2	5	60	20	6	KF-18063SI
80	4	63	1,3	20	19	6	75	24	6	KF-18080SI
100	4	73	1,3	20	19	6	85	24	6	KF-18100SI
125	6	94	1,6	30	28,6	7	110	36	9	KF-18125SI

Rear male hinge (ISO MP4)



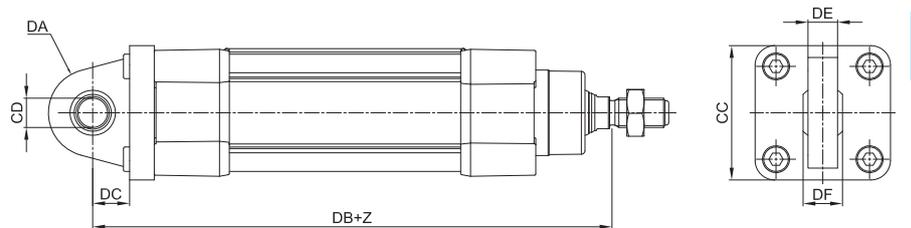
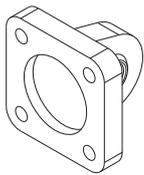
Material: Stainless steel AISI 304

Z = Stroke

Ø	CD	E	EW		L	MR1	XD		Part no.
	H9				min				
32	10	48	26	-0,2 / -0,6	12	15*	142	±1,25	KF-11032I
40	12	54	28	-0,2 / -0,6	15	18*	160	±1,25	KF-11040I
50	12	65	32	-0,2 / -0,6	15	20*	170	±1,25	KF-11050I
63	16	75	40	-0,2 / -0,6	20	23*	190	±1,6	KF-11063I
80	16	95	50	-0,2 / -0,6	20	27*	210	±1,6	KF-11080I
100	20	115	60	-0,2 / -0,6	25	29,5*	230	±1,6	KF-11100I
125	25	140	70	-0,5 / -1,2	30	26	275	±2	KF-11125I

\* = Non-standard dimension

Articulated rear male hinge (ISO MP6)

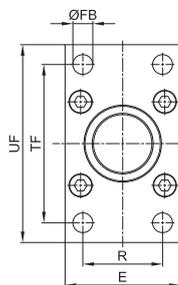
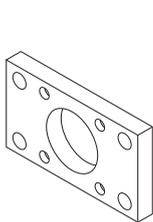


Material: Stainless steel AISI 316

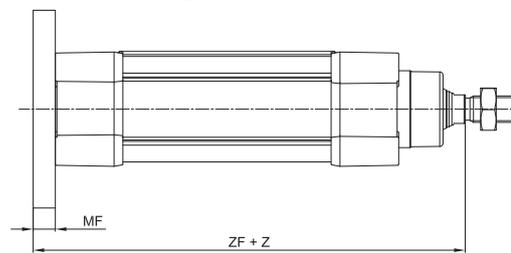
Z = Stroke

Ø	CC	CD	DA	DB	DC	DE	DF	Part no.
		H9						
32	48	10	15	142	14	10,5	14	KF-11032SI
40	54	12	18	160	16,5	12	16	KF-11040SI
50	65	12	20	170	17,5	12	16	KF-11050SI
63	75	16	21	190	21,5	15	21	KF-11063SI
80	95	16	27	210	24	15	21	KF-11080SI
100	115	20	29,5	230	28	18	25	KF-11100SI
125	140	30	40	275	30	25	37	KF-11125SI

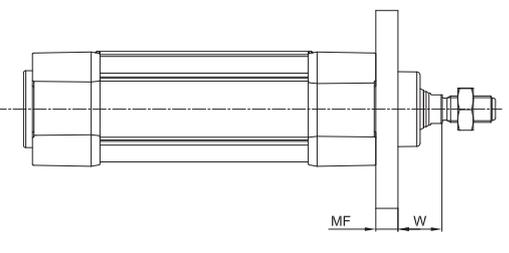
Front/rear flange (ISO MF1-MF2)



> Rear mounting



> Front mounting

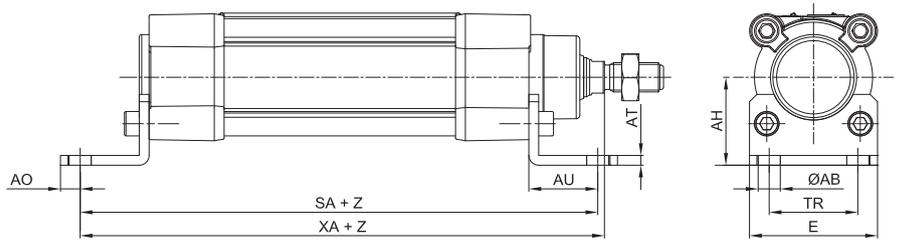
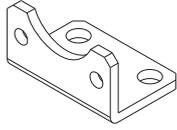


Material: Stainless steel AISI 304

Z = Stroke

Ø	E	FB	MF	R	TF	UF	W		ZF	Part no.	
		H13	± 0,2	JS14	JS14	Max					
32	45	7	10	32	64	80	16	±1,6	130	±1,25	KF-12032I
40	52	9	10	36	72	90	20	±1,6	145	±1,25	KF-12040I
50	65	9	12	45	90	110	25	±2	155	±1,25	KF-12050I
63	75	9	12	50	100	120	25	±2	170	±1,6	KF-12063I
80	95	12	16	63	126	150	30	±2	190	±1,6	KF-12080I
100	115	14	16	75	150	170	35	±2	205	±1,6	KF-12100I
125	140	16	20	90	180	205	45	±2,5	245	±2	KF-12125I

Angle bracket (ISO MS1)



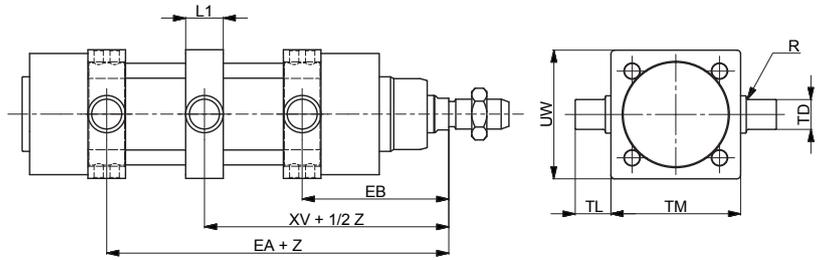
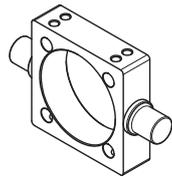
Material: Stainless steel AISI 304

Z = Stroke

Ø	ØAB	AH	AO	AT	AU	E	SA	TR	XA	Part no.		
	H13	JS15									±0,2	JS14
32	7	32	6	4	24	45	142	±1,25	32	144	±1,25	KF-13032I
40	9	36	8	4	28	52	161	±1,25	36	163	±1,25	KF-13040I
50	9	45	10	5	32	64	170	±1,25	45	175	±1,25	KF-13050I
63	9	50	12	5	32	74	185	±1,6	50	190	±1,6	KF-13063I
80	12	63	15	6	41	94	210	±1,6	63	215	±1,6	KF-13080I
100	14	71	20	6	41	114	220	±1,6	75	230	±1,6	KF-13100I
125	16	90	15	8	45	140	250	±2	90	270	±2	KF-13125I

Intermediate hinge for tie-rods

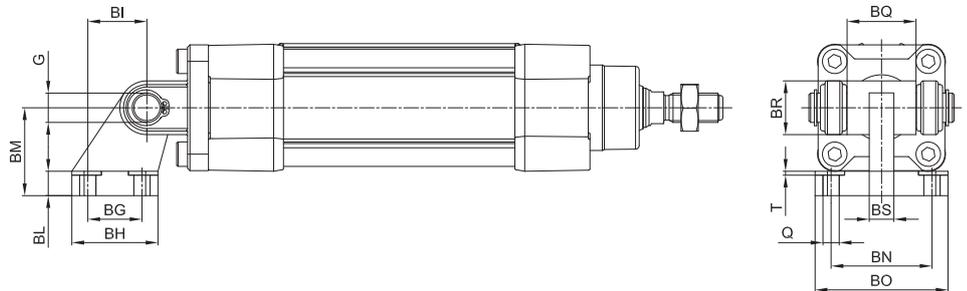
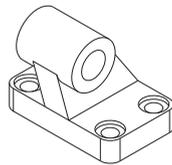
1



Material: Stainless steel AISI 304

Ø	EA	EB	L1	R	TD	TL	TM	UW	XV	Part no.	
	Max	min									e9
32	82	64	22	0,5	12	12	50	65	73	±2	KF-14032TI
40	93	72	22	0,5	16	16	63	75	82,5	±2	KF-14040TI
50	101	79	22	0,5	16	16	75	95	90	±2	KF-14050TI
63	107	88	27,5	1	20	20	90	105	97,5	±2	KF-14063TI
80	123	97	27,5	1,5	20	20	110	130	110	±2	KF-14080TI
100	131	109	33	1	25	25	132	145	120	±2	KF-14100TI
125	164	126	33	1	25	25	160	175	145	±2,5	KF-14125TI

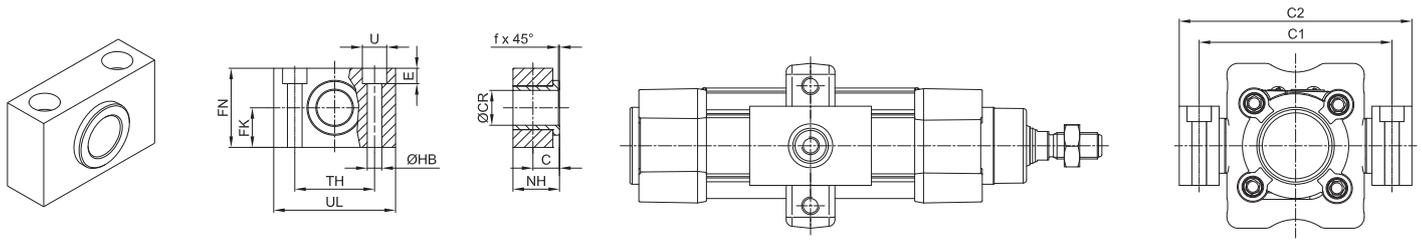
Counter hinge 90° (CETOP RP107P)



Material: Stainless steel AISI 304

Ø	Q	BG	BH	BI	BL	BM	BN	BO	BS	BR	T	G	Part no.
	H13	JS14	Max	JS14		JS15	JS14	Max	Max	Max	Max	H9	
32	6,6	18	31	21	8	32	38	51	10	20	1,6	10	KF-19032CTAI
40	6,6	22	35	24	10	36	41	54	15	22	1,6	12	KF-19040CTAI
50	9	30	45	33	12	45	50	65	16	26	1,6	12	KF-19050CTAI
63	9	35	50	37	14	50	52	67	16	30	1,6	16	KF-19063CTAI
80	11	40	60	47	14	63	66	86	20	30	2,5	16	KF-19080CTAI
100	11	50	70	55	17	71	76	96	20	38	2,5	20	KF-19100CTAI
125	14	60	90	70	20	90	94	124	30	45	3,2	25	KF-19125CTAI

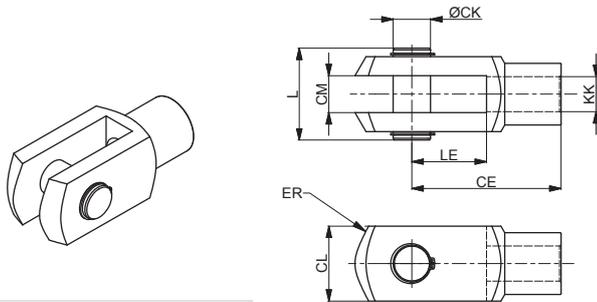
Hinge support



Material: Stainless steel AISI 316

Ø	C	ØCR	FK	FN	ØHB	NH	TH	UL	ØU	E	f	C1	C2	Part no.
	H9	f7	±0,1				±0,1			±0,5				
32	10,5	12	15	30	6,6	18	32	46	11	7	1	71	86	KF-41032I
40	12	16	18	36	9	21	36	55	15	9	1,6	87	105	KF-41040050I
50	12	16	18	36	9	21	36	55	15	9	1,6	99	117	KF-41040050I
63	13	20	20	40	11	23	42	65	18	11	1,6	116	136	KF-41063080I
80	13	20	20	40	11	23	42	65	18	11	1,6	136	156	KF-41063080I
100	16	25	25	50	14	28,5	50	75	20	13	2	164	189	KF-41100125I
125	16	25	25	50	14	28,5	50	75	20	13	2	192	217	KF-41100125I

Female fork with pin

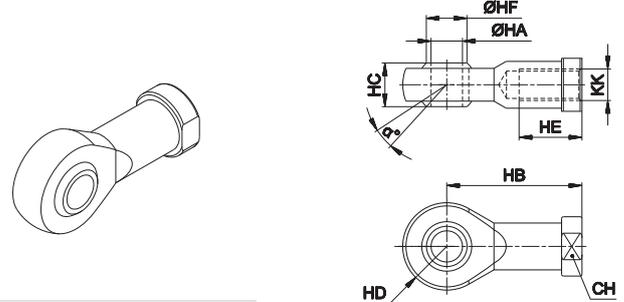


Material: Stainless steel AISI 304

Ø	CE	CK	CL	CM	ER	KK	L	LE	Part no.
	B12								
32	40	10	20	10	16	M10x1,25	26	20	KF-15032PI
40	48	12	24	12	19	M12x1,25	32	24	KF-15040PI
50 - 63	64	16	32	16	25	M16x1,5	40	32	KF-15050PI
80 - 100	80	20	40	20	32	M20x1,5	50	40	KF-15080PI
125	110	30	55	30	45	M27x2	65	54	KF-15125PI

Fork with clip suitable for piston rod according to ISO 8140

Articulated self-lubricating fork



Material: Stainless steel AISI 304

Ø	α°	CH	KK	HA	HB	HC	HD	HE	HF	Part no.
		H7					<sup>0</sup> <sub>-0,12</sub>			
32	13	17	M10x1,25	10	43	14	14	20	12,9	KF-17032I
40	13	19	M12x1,25	12	50	16	16	22	15,4	KF-17040I
50 - 63	15	22	M16x1,5	16	64	21	21	28	19,3	KF-17050I
80 - 100	14	30	M20 x 1,5	20	77	25	25	33	24,3	KF-17080I
125	17	41	M27x2	30	110	37	35	51	34,8	KF-17125I

1  
CYLINDERS

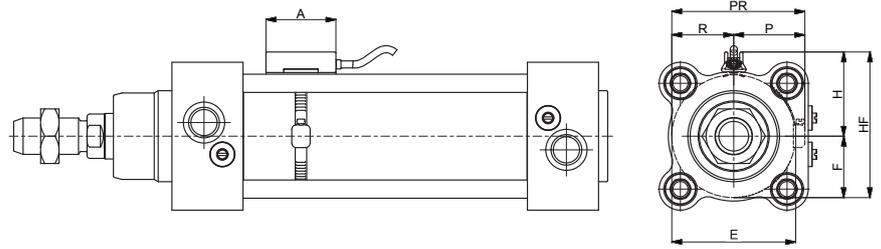
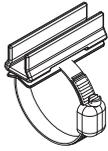
Piston rod nut



Material: Stainless steel AISI 304

Ø	KK	KV	KW	Part no.
32	M10x1,25	17	6	KF-16032I
40	M12x1,25	19	7	KF-16040I
50 - 63	M16x1,5	24	8	KF-16050I
80 - 100	M20x1,5	30	9	KF-16080I
125	M27x2	41	12	KF-16125I

DF bracket



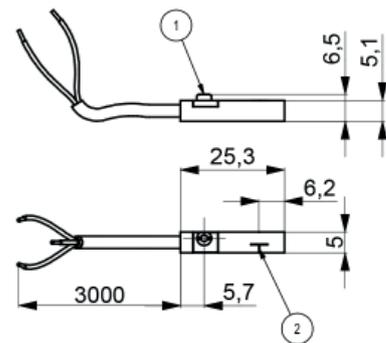
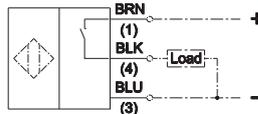
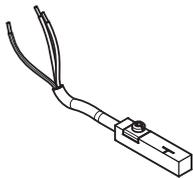
Material: Stainless steel AISI 303

Ø	A	E	H	F	HF	P	R	PR	Part no.
32	34	33,5	45	16,75	78,5	39	33,5	72,5	DH-P025032DFI
40	34	41,5	53	20,75	94,5	47	41,5	88,5	DH-P040DFI
50	34	51,5	63	25,75	114,5	57	51,5	108,5	DH-P050DFI
63	34	64,5	76	32,25	140,5	70	64,5	134,5	DH-P063DFI
80	34	81,5	93	40,75	174,5	87	81,5	168,5	DH-P080DFI
100	34	101,5	113	50,75	214,5	107	101,5	208,5	DH-P100DFI
125	34	126,5	138	63,25	264,5	132	126,5	258,5	DH-P125DFI

For DF sensors see accessories section

DF sensor

1



1	2	Part no.
fixing eccentric	active sensing face	DF-P700L06

# PRM

## ISO 21287 Stainless steel compact pneumatic cylinders Ø 20 ÷ 100 mm

- Stainless steel AISI 316
- Double acting and single acting versions
- Through piston rod versions
- FDA approved piston seals

Available ATEX version upon request

CE II 2GDc T4



### TECHNICAL CHARACTERISTICS

Ambient temperature	0 ÷ 80 °C (-20°C with dry air)
Fluid	compressed air, filtered air, not lubricated
Working pressure	1 ÷ 10 bar (double acting) 2 ÷ 10 bar (simple acting)
Bores	Ø 20 - 25 - 32 - 40 - 50 - 63 - 80 - 100 mm

### CONSTRUCTIVE CHARACTERISTICS

End-caps	stainless steel AISI 316
Barrel	Ø20-25 stainless steel AISI 304, Ø32-100 stainless steel AISI 316
Piston	aluminium
Guide slide	PBT+PTFE
Piston rod	stainless steel AISI 316
Piston seal	polyurethane
Guide bush for piston rod	technopolymer
Magnet	Ø20÷50 neodimio, Ø63÷100 plastoferrite
O-Ring	nitrile rubber (NBR)
Tie-rods	stainless steel AISI 316

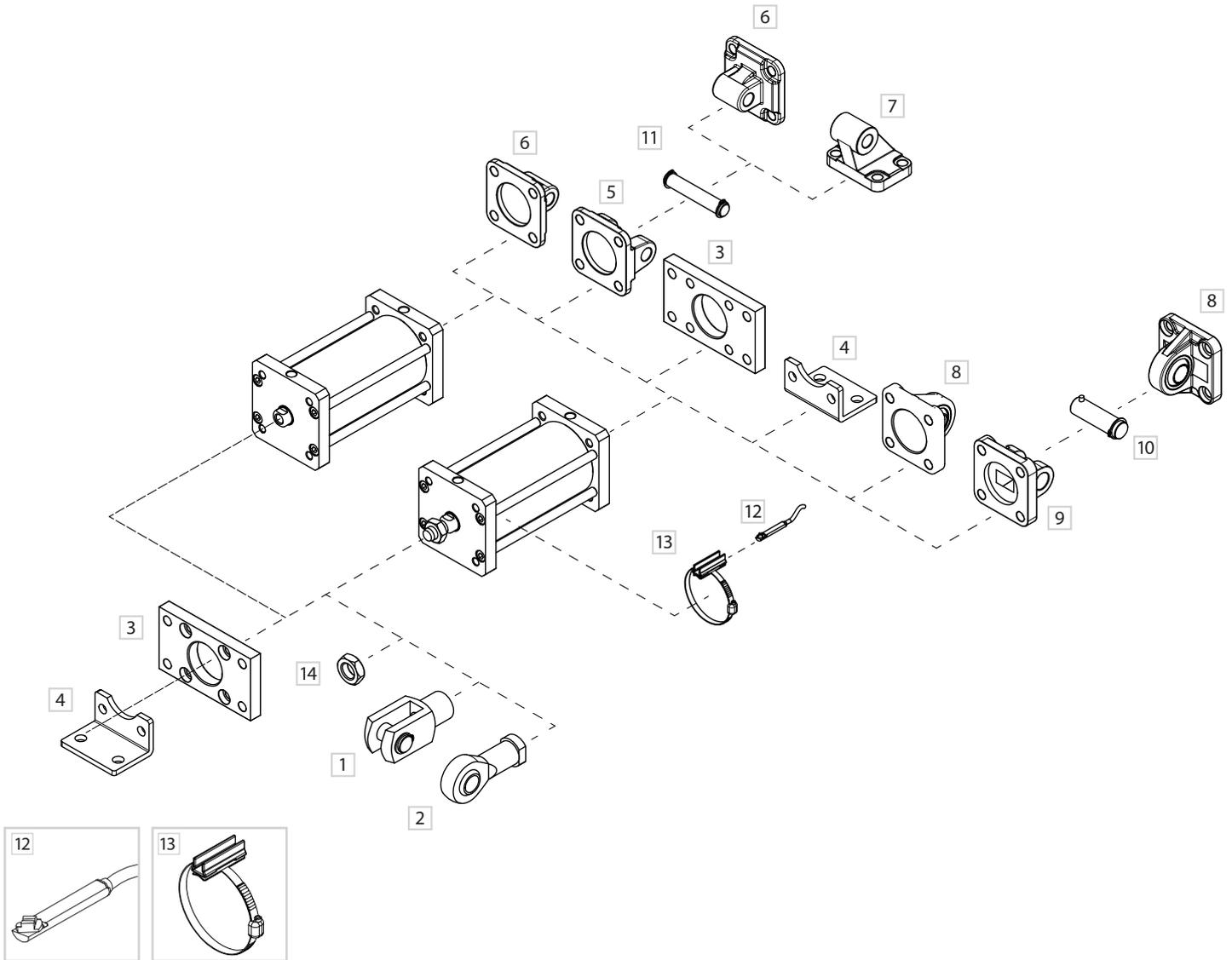
### CODIFICATION KEY

P	R	M	3	0	0	0	3	2	0	0	2	5	M	
1	2	3	4	5			6	7						

1 Series	2 Type	3 Version	4 Bore (mm)
PRM = Ø 20 ÷ 100 mm - ISO 21287 Stainless steel compact pneumatic cylinders	1 = Female piston rod 3 = Male piston rod	00 = D.A. Standard 01 = D.A. Through piston rod 60 = S.A. Retracted piston rod 70 = S.A. Extended piston rod  D.A. = Double acting S.A. = Single acting	020 = Ø20 050 = Ø50 025 = Ø25 063 = Ø63 032 = Ø32 080 = Ø80 040 = Ø40 100 = Ø100
5 Stroke (mm)	6 Magnetic	7 ATEX option	
0010 = 10 0100 = 100 0250 = 250 0025 = 25 0125 = 125 0300 = 300 0050 = 50 0160 = 160 0350 = 350 0075 = 75 0200 = 200 0400 = 400	M = Magnetic version (standard supplied)	X = Atex (upon request)  See ATEX Catalogue for types and versions	

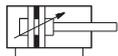
Version with high temperature seals (Max 150°C) available upon request.

Fixing elements and accessories

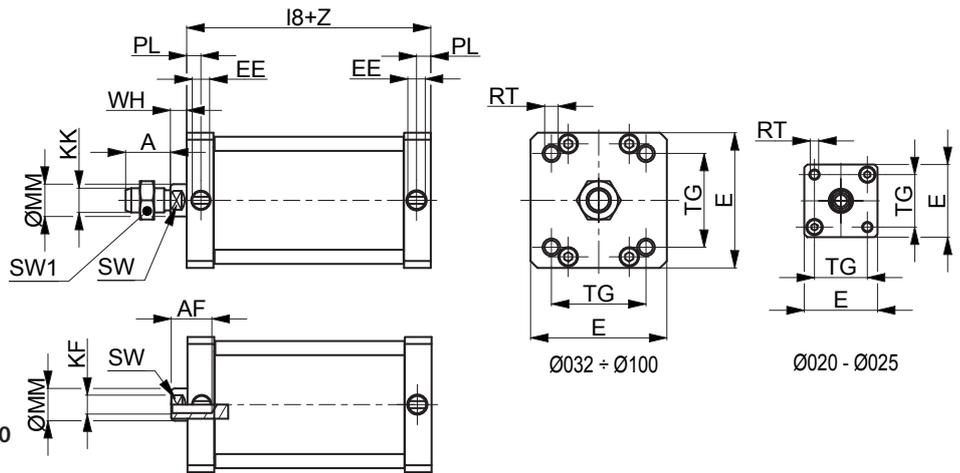


DESCRIPTION	NOTE	PART NO.
1 Female fork with pin	Stainless steel	KF-15 __ _PI
2 Articulated self-lubricating fork	Stainless steel	KF-17 __ _I
3 Front/rear flange (ISO MF1-MF2)	Stainless steel	KF-12 __ _I
4 Angle bracket (ISO MS1)	Stainless steel	KF-13 __ _I
5 Female hinge (ISO MP2)	Stainless steel	KF-10 __ _AI
6 Rear male hinge (ISO MP4)	Stainless steel	KF-11 __ _I
7 Counter hinge 90° (CETOP RP107P)	Stainless steel	KF-19 __ _CTAI
8 Articulated rear male hinge (ISO MP6)	Stainless steel	KF-11 __ _SI
9 Narrow female hinge with pin (DIN648K)	Stainless steel	KF-10 __ _ASI/
10 Narrow hinge pin (DIN648K)	Stainless steel	KF-18S I
11 Female hinge pin (ISO MS1)	Stainless steel	KF-18 _I
12 DF sensor	-	DF-P700L06
13 DF bracket and adapter	Stainless steel	DH-P __ _DFI
14 Piston rod nut	Stainless steel	KF-16 __ _I

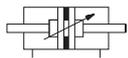
### Double acting



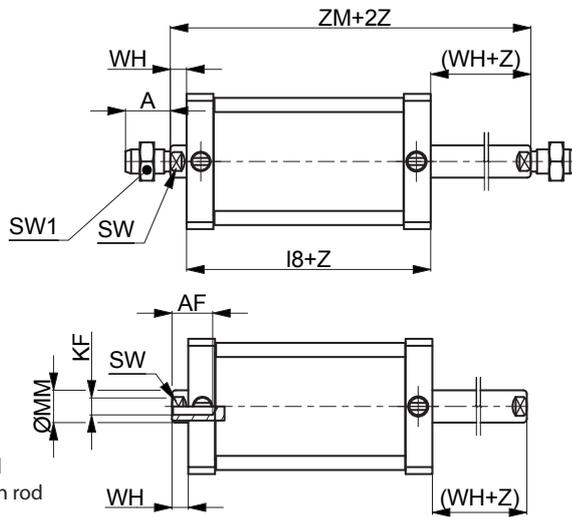
PRM100/PRM300  
D.A. Standard



### Double acting through piston rod



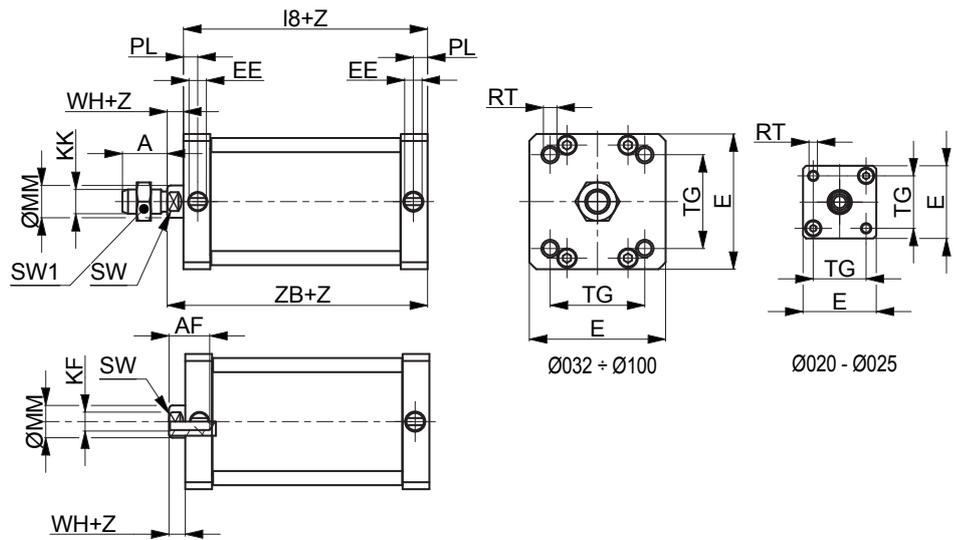
PRM101/PRP301  
D.A. Through piston rod



Z= Stroke

Ø	A	AF	KF	E+0,5	KK	l8	PL	RT	SW	TG	WH	ØMM	EE	SW1	ZM		
20	16	10	M6	32	M8	37	±0,3	6	M5	8	22	±0,3	6,5	10	M5x0,8	13	43,5
25	16	10	M6	36	M8	39	±0,3	6	M5	8	26	±0,3	6	10	M5x0,8	13	45
32	19	12	M8	50	M10x1,25	44	±0,4	7	M6	10	32,5	±0,5	6,5	12	G1/8	17	50,5
40	19	12	M8	57	M10x1,25	45	±0,7	7	M6	10	38	±0,6	7	12	G1/8	17	52
50	22	16	M10	67	M12x1,25	45	±0,7	7	M8	13	46,5	±0,7	8	16	G1/8	19	53
63	22	16	M10	80	M12x1,25	49	±0,8	7	M8	13	56,5	±0,7	8	16	G1/8	19	57
80	28	20	M12	96	M16x1,5	54	±0,8	7,5	M10	17	72	±0,7	10	20	G1/8	24	64
100	28	20	M12	116	M16x1,5	67	±1	7,5	M10	22	89	±1,1	10	25	G1/8	24	77

### Single acting retracted piston rod



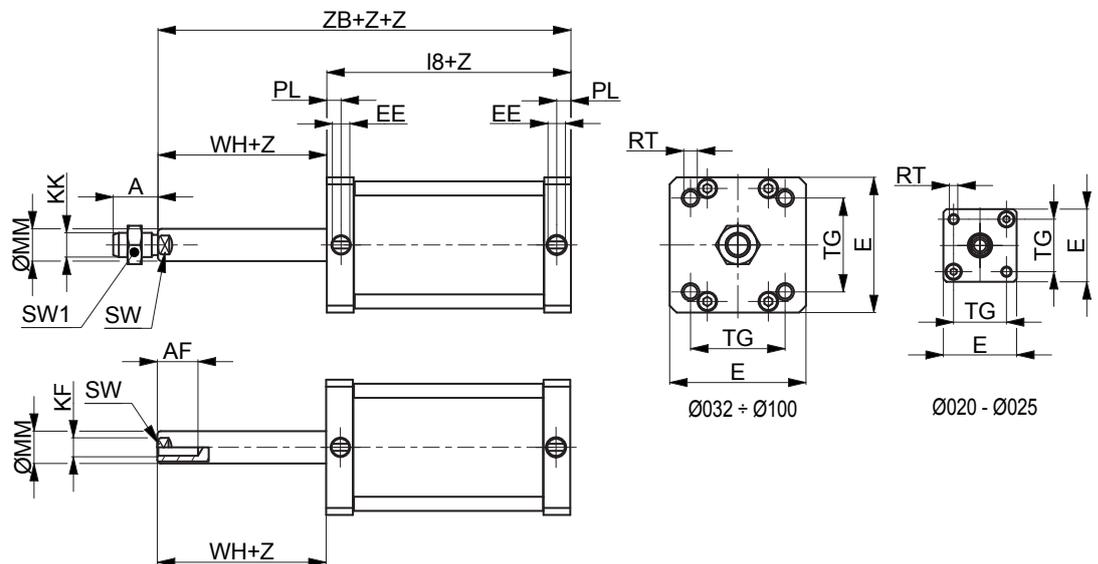
**PRM160/PRM360**  
S.A. Retracted piston rod

Z= Stroke

Ø	A	AF	KF	E+0,5	KK	I8	PL	RT	SW	TG	WH	ØMM	EE	SW1	ZB
20	16	10	M6	32	M8	47 ±0,3	6	M5	8	22 ±0,3	6,5	10	M5x0,8	13	53,5
25	16	10	M6	36	M8	49 ±0,3	6	M5	8	26 ±0,3	6	10	M5x0,8	13	55
32	19	12	M8	50	M10x1,25	44 ±0,4	7	M6	10	32,5 ±0,5	6,5	12	G1/8	17	50,5
40	19	12	M8	57	M10x1,25	45 ±0,7	7	M6	10	38 ±0,6	7	12	G1/8	17	52
50	22	16	M10	67	M12x1,25	45 ±0,7	7	M8	13	46,5 ±0,7	8	16	G1/8	19	53
63	22	16	M10	80	M12x1,25	49 ±0,8	7	M8	13	56,5 ±0,7	8	16	G1/8	19	57
80	28	20	M12	96	M16x1,5	54 ±0,8	7,5	M10	17	72 ±0,7	10	20	G1/8	24	64
100	28	20	M12	116	M16x1,5	67 ±1	7,5	M10	22	89 ±1,1	10	25	G1/8	24	77

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### Single acting extended piston rod

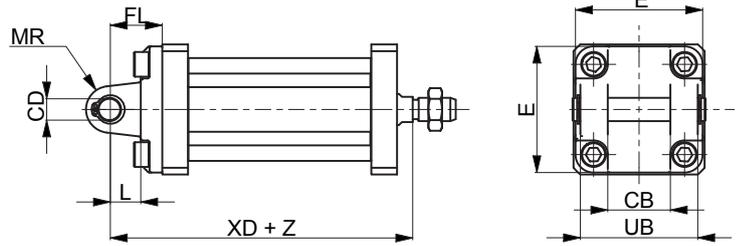
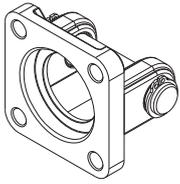


**PRM170/PRM370**  
S.A. Extended piston rod

Z= Stroke

Ø	A	AF	KF	E+0,5	KK	I8	PL	RT	SW	TG	WH	ØMM	EE	SW1	ZB
20	16	10	M6	32	M8	47 ±0,3	6	M5	8	22 ±0,3	6,5	10	M5x0,8	13	53,5
25	16	10	M6	36	M8	49 ±0,3	6	M5	8	26 ±0,3	6	10	M5x0,8	13	55
32	19	12	M8	50	M10x1,25	44 ±0,4	7	M6	10	32,5 ±0,5	6,5	12	G1/8	17	50,5
40	19	12	M8	57	M10x1,25	45 ±0,7	7	M6	10	38 ±0,6	7	12	G1/8	17	52
50	22	16	M10	67	M12x1,25	45 ±0,7	7	M8	13	46,5 ±0,7	8	16	G1/8	19	53
63	22	16	M10	80	M12x1,25	49 ±0,8	7	M8	13	56,5 ±0,7	8	16	G1/8	19	57
80	28	20	M12	96	M16x1,5	54 ±0,8	7,5	M10	17	72 ±0,7	10	20	G1/8	24	64
100	28	20	M12	116	M16x1,5	67 ±1	7,5	M10	22	89 ±1,1	10	25	G1/8	24	77

Female hinge (ISO MP2) with pin

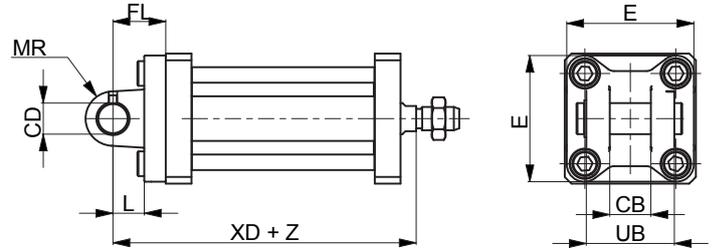
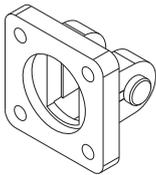


Material: Stainless steel AISI 304

Z = Stroke

Ø	CB	CD	E	FL	L	MR	UB	XD		Part no.
	H14	H9		± 0,2				min	Max	
20	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-
32	26	10	48	22	12	11	45	62,5	±1,25	KF-10032AI
40	28	12	54	25	15	13	52	67	±1,25	KF-10040AI
50	32	12	65	27	15	13	60	68	±1,25	KF-10050AI
63	40	16	75	32	20	17	70	77	±1,6	KF-10063AI
80	50	16	95	36	20	17	90	84	±1,6	KF-10080AI
100	60	20	115	41	25	21	110	102	±1,6	KF-10100AI

Narrow female hinge with pin (DIN648K)

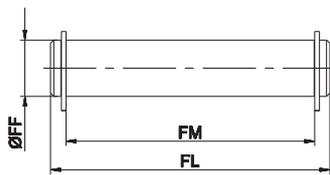


Material: Stainless steel AISI 316

Z = Stroke

Ø	CB	CD	E	FL	L	MR	UB	XD		Part no.
	H14	H9		± 0,2				min	Max	
20	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-
32	14	10	45	22	10	10	34	60,5	±1,25	KF-10032ASI
40	16	12	52	25	16	12	40	68	±1,25	KF-10040ASI
50	21	16	65	27	16	14	45	69	±1,5	KF-10050ASI
63	21	16	75	32	21	18	51	78	±1,6	KF-10063ASI
80	25	20	95	36	22	20	65	86	±1,6	KF-10080ASI
100	25	20	115	41	27	22	75	104	±1,6	KF-10100ASI

Female hinge pin

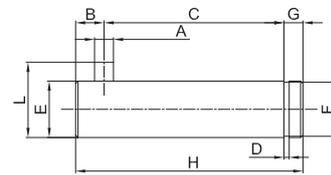


Including 2 circlips

Material: Stainless steel AISI 304

Ø	FF	FL	FM	Part no.
	f8			
20	-	-	-	-
25	-	-	-	-
32	10	53	46	KF-18032I
40	12	61,3	53	KF-18040I
50	12	69	61	KF-18050I
63	16	80,5	71	KF-18063I
80	16	100,5	91	KF-18080I
100	20	122,5	111	KF-18100I

Narrow female hinge pin

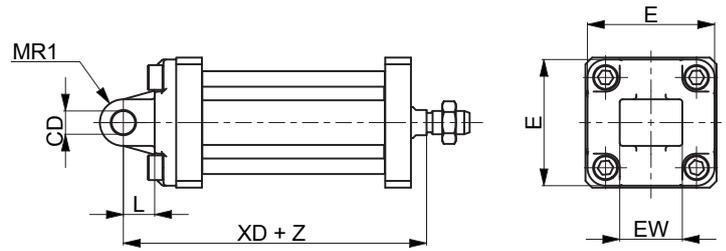
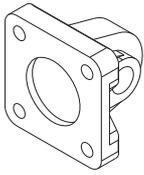


Including 2 circlips

Material: Stainless steel AISI 316

Ø	A	C	D	E	F	G	H	L	B	Part no.
	H12	$\begin{smallmatrix} +0,5 \\ -0,3 \end{smallmatrix}$	h13	f7	h11			$\begin{smallmatrix} 0 \\ -0,5 \end{smallmatrix}$		
20	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-
32	3	32,5	1,1	10	9,6	4	41	14	4,5	KF-18032SI
40	4	38	1,1	12	11,5	4	48	16	6	KF-18040SI
50	4	43	1,1	16	15,2	5	54	20	6	KF-18050SI
63	4	49	1,1	16	15,2	5	60	20	6	KF-18063SI
80	4	63	1,3	20	19	6	75	24	6	KF-18080SI
100	4	73	1,3	20	19	6	85	24	6	KF-18100SI

Rear male hinge (ISO MP4)



Material: Stainless steel AISI 304

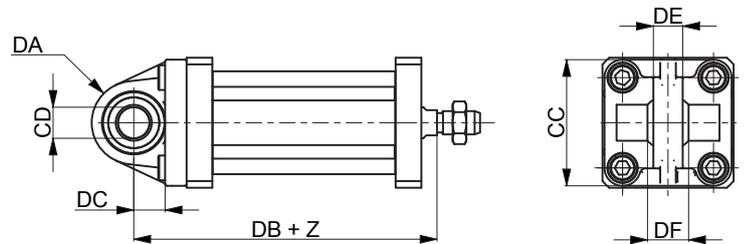
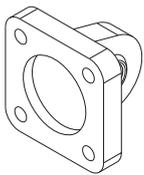
Z = Stroke

Ø	CD	E	EW		L	MR1	XD		Part no.
	H9				min				
20	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-
32	10	48	26	-0,2/-0,6	12	15*	62,5	±1,25	KF-11032I
40	12	54	28	-0,2/-0,6	15	18*	67	±1,25	KF-11040I
50	12	65	32	-0,2/-0,6	15	20*	68	±1,25	KF-11050I
63	16	75	40	-0,2/-0,6	20	23*	77	±1,6	KF-11063I
80	16	95	50	-0,2/-0,6	20	27*	84	±1,6	KF-11080I
100	20	115	60	-0,2/-0,6	25	29,5*	102	±1,6	KF-11100I

\* = Non-standard dimension

Articulated rear male hinge (ISO MP6)

1

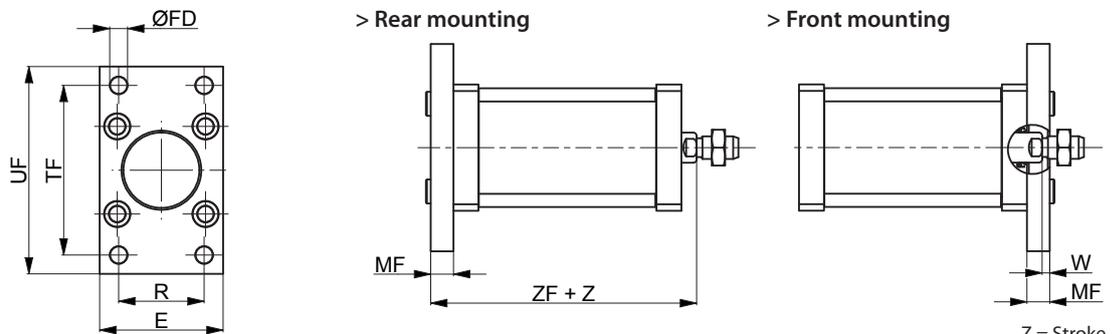
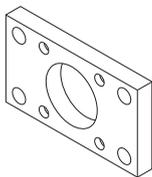


Material: Stainless steel AISI 316

Z = Stroke

Ø	CC	CD	DA	DB	DC	DE	DF	Part no.
		H9						
20	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-
32	48	10	15	64	14	10,5	14	KF-11032SI
40	54	12	18	68,5	16,5	12	16	KF-11040SI
50	65	12	20	70,5	17,5	12	16	KF-11050SI
63	75	16	21	78,5	21,5	15	21	KF-11063SI
80	95	16	27	88	24	15	21	KF-11080SI
100	115	20	29,5	105	28	18	25	KF-11100SI

Front/rear flange (ISO MF1-MF2)

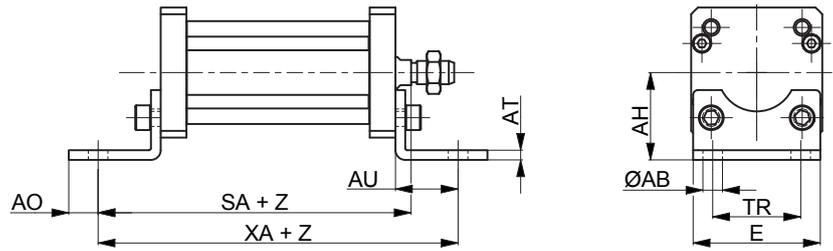
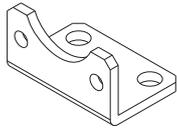


Material: Stainless steel AISI 304

Z = Stroke

Ø	E	FB	MF	R	TF	UF	W		ZF	Part no.
		H13	±0,2	JS14	JS14	Max				
20	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-
32	45	7	10	32	64	80	3,5	±1,6	54	±1,25
40	52	9	10	36	72	90	3	±1,6	55	±1,25
50	65	9	12	45	90	110	4	±2	57	±1,25
63	75	9	12	50	100	120	4	±2	61	±1,6
80	95	12	16	63	126	150	6	±2	70	±1,6
100	115	14	16	75	150	170	6	±2	83	±1,6

Angle bracket (ISO MS1)

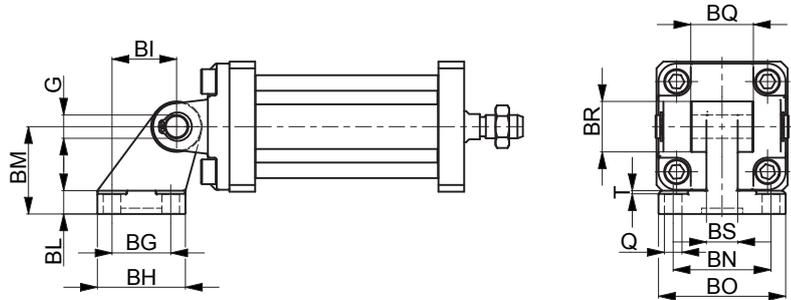
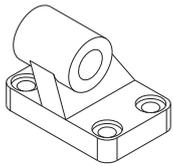


Material: Stainless steel AISI 304

Z = Stroke

Ø	ØAB	AH	AO	AT	AU	E	SA+		TR	XA+		Part no.
	H13	JS15					±0,2	JS14	±1,25	±1,25		
20	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-
32	7	32	6	4	24	45	74,5	±1,25	32	98,5	±1,25	KF-13032I
40	9	36	8	4	28	52	80	±1,25	36	108	±1,25	KF-13040I
50	9	45	10	5	32	64	85	±1,25	45	117	±1,25	KF-13050I
63	9	50	12	5	32	74	89	±1,6	50	121	±1,6	KF-13063I
80	12	63	15	6	41	94	105	±1,6	63	146	±1,6	KF-13080I
100	14	71	20	6	41	114	118	±1,6	75	159	±1,6	KF-13100I

Counter hinge 90° (CETOP RP107P)

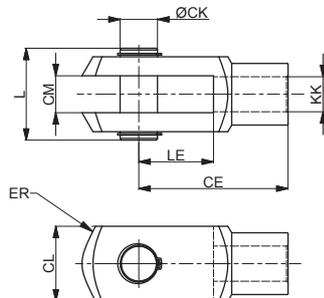
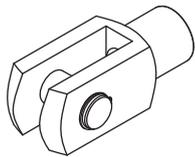


Material: Stainless steel AISI 304

Ø	Q	BG	BH	BI	BL	BM	BN	BO	BS	BR	T	G	Part no.
	H13	JS14	Max	JS14		JS15	JS14	Max	Max	Max	Max	H9	
20	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-
32	6,6	18	31	21	8	32	38	51	10	20	1,6	10	KF-19032CTAI
40	6,6	22	35	24	10	36	41	54	15	22	1,6	12	KF-19040CTAI
50	9	30	45	33	12	45	50	65	16	26	1,6	12	KF-19050CTAI
63	9	35	50	37	14	50	52	67	16	30	1,6	16	KF-19063CTAI
80	11	40	60	47	14	63	66	86	20	30	2,5	16	KF-19080CTAI
100	11	50	70	55	17	71	76	96	20	38	2,5	20	KF-19100CTAI

1  
CYLINDERS

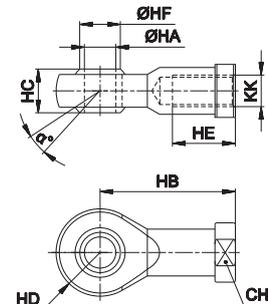
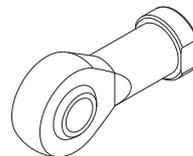
Female fork with pin



Material: Stainless steel AISI 304

Ø	CE	CK	CL	CM	ER	KK	L	LE	Part no.
20 - 25	32	8	16	8	10	M8x1,25	22	16	MF-15020PI
32 - 40	40	10	20	10	16	M10x1,25	26	20	KF-15032PI
50 - 63	48	12	24	12	19	M12x1,25	32	24	KF-15040PI
80 - 100	64	16	32	16	25	M16x1,5	40	32	KF-15050PI

Articulated self-lubricating fork

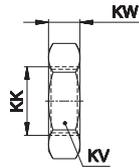


Material: Stainless steel AISI 304

Ø	α°	CH	KK	HA	HB	HC	HD	HE	HF	Part no.
20 - 25	14	14	M8x1,25	8	36	12	12	16	10,4	MF-17020I
32 - 40	13	17	M10x1,25	10	43	14	14	20	12,9	KF-17032I
50 - 63	13	19	M12x1,25	12	50	16	16	22	15,4	KF-17040I
80 - 100	15	22	M16x1,5	16	64	21	21	28	19,3	KF-17050I

Fork with clip suitable for piston rod according to ISO 8140

**Piston rod nut**

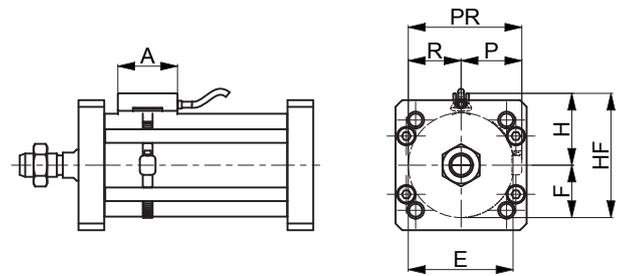
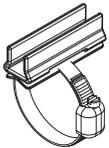


Material: Stainless steel AISI 304

Ø	KK	KV	KW	Part no.
20 - 25	M8x1,25	13	5	MF-16020I
32 - 40	M10x1,25	17	6	KF-16032I
50 - 63	M12x1,25	19	7	KF-16040I
80 - 100	M16x1,5	24	8	KF-16050I

**DF bracket**

1

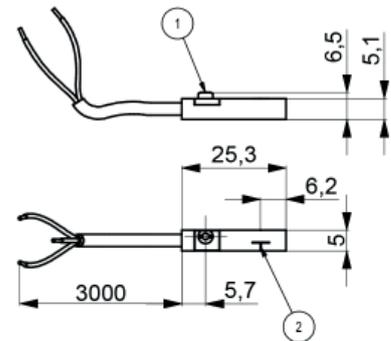
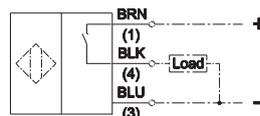
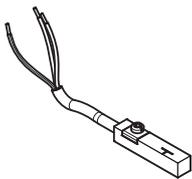


Material: Stainless steel AISI 303

Ø	A	E	H	F	HF	P	R	PR	Part no.
20	34	24	20	12	32	17	12	29	DH-P020DFI
25	34	32	23	16	39	19	16	35	DH-P025032DFI
32	34	41,5	53	16,75	94,5	47	41,5	88,5	DH-P025032DFI
40	34	51,5	63	20,75	114,5	57	51,5	108,5	DH-P040DFI
50	34	64,5	76	25,75	140,5	70	64,5	134,5	DH-P050DFI
63	34	81,5	93	32,25	174,5	87	81,5	168,5	DH-P063DFI
80	34	101,5	113	40,75	214,5	107	101,5	208,5	DH-P080DFI
100	34	126,5	138	50,75	264,5	132	126,5	258,5	DH-P100DFI

For DF sensors see accessories section

**DF sensor**



1	2	Part no.
fixing eccentric	active sensing face	DF-P700L06

# OV

## Ø 18 ÷ 80 mm - Oval Cylinders

Compact oval cylinder with adjustable pneumatic cushioning and standard magnetic piston its special shape allows the assembly of several coupled cylinders with reduced overall dimensions (in width) and offers a reduction of overall dimensions compared to traditional ISO cylinders.

Available ATEX version upon request

CE Ex II 2Gc IIC T5 II 2Dc T100°C



### TECHNICAL CHARACTERISTICS

Ambient temperature	-20 ÷ 80 °C
Fluid	filtered air with or not lubrication
Working pressure	1,5 ÷ 10 bar
Bore	Ø18 - 25 - 32 - 40 - 50 - 63 - 80 mm
Cushionings	adjustable pneumatic in both sides

### CONSTRUCTIVE CHARACTERISTICS

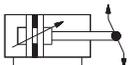
End-caps	anodized aluminium
Barrel	anodized aluminium
Piston	aluminium
Guide slide	Turcite (Ø18 - 25 - 32 - 63 - 80), Acetalic resin (Ø40 - 50)
Piston rod	stainless steel (Ø18 - 25), chromium-plated steel (Ø32 - 80)
Piston seals	nitrile rubber self-lubricating
Guide bush for piston rod	steel structure, PTFE and sintered bronze sliding
Rod seal	polyurethane
Magnet	Neodymium

### CODIFICATION KEY

O	V	2	0	0	0	3	2	0	0	5	0	
1	2	3	4	5	6							

#### 1 Series

**OV** = Ø18 ÷ 80 mm  
Oval cylinders



#### 2 Type

- 1 = Stainless steel female piston rod (Ø18÷80)
- 2 = Chromium-plated steel female piston rod (Ø32÷80)
- 3 = Stainless steel male piston rod (Ø18÷80)
- 4 = Chromium-plated steel male piston rod (Ø32÷80)

#### 3 Version

- 00** = D.A. Standard version
- 01** = D.A. Through piston rod
- 02** = D.A. Hollow through piston rod

D.A. = Double-acting

#### 4 Bore (mm)

**018** = Ø18      **050** = Ø50  
**025** = Ø25      **063** = Ø63  
**032** = Ø32      **080** = Ø80  
**040** = Ø40

#### 5 Stroke (mm)

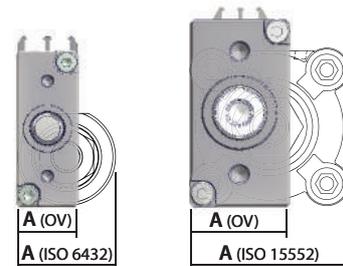
**0010 - 0025 - 0040 - 0050 - 0080 - 0100 - 0125**  
**0160 - 0200** (Ø18-25)  
**0010 - 0025 - 0040 - 0050 - 0080 - 0100 - 0125**  
**0160 - 0200 - 0250 - 0320** (Ø32÷80)

#### 6 ATEX option

X = ATEX (upon request)

For types and versions, see ATEX catalogue

### Comparison of A dimension: OV cylinder vs ISO standard cylinder



Ø	A (OV)	A (ISO)	Reduction
18	16	28	-42%
25	20	31	-35%
32	24,5	48	-45%
40	38	54	-30%
50	40	67	-40%
63	50	78	-35%
80	60	97	-38%

Nominal tolerances on the stroke

Ø	Nominal tolerances
	mm
18	+ 1,5/0
25	+ 1,5/0
32	+ 2/0
40	+ 2/0
50	+ 2/0
63	+ 2,5/0
80	+ 2,5/0

Maximum applicable torque (Nm) and related max. rotation (°)

Ø	Max applicable torque	Related Max rotation
	(Nm)	
18	0,80	0,90°
25	1,00	0,80°
32	1,40	0,60°
40	1,70	0,40°
50	2,00	0,35°
63	2,30	0,30°
80	2,60	0,30°

Theoretical forces (N) at different working pressure (bar)

Ø	Surface area		Working pressure					Working pressure				
	mm <sup>2</sup>		bar					bar				
	Thrust	Traction	Thrust					Traction				
			2	4	6	8	10	2	4	6	8	10
18	255	205	54	108	162	216	270	41	82	122	163	204
25	491	412	98	196	295	393	491	82	165	247	330	412
32	804	691	161	322	483	643	804	138	276	415	553	691
40	1256	1056	251	502	754	1005	1256	221	442	663	884	1105
50	1962	1649	393	785	1178	1570	1963	330	660	990	1320	1650
63	3116	2802	623	1246	1870	2493	3116	560	1120	1682	2240	2800
80	5024	4710	1005	2010	3015	4019	5024	942	1884	2826	3770	4711

Cushion

Ø	Length
	mm
18	8
25	10
32	10
40	14
50	Front 11/Rear 14
63	Front 11/Rear 14
80	Front 20/Rear 27

1

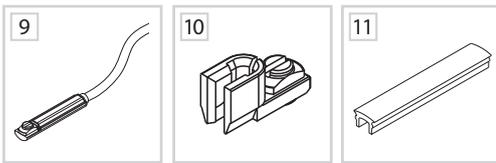
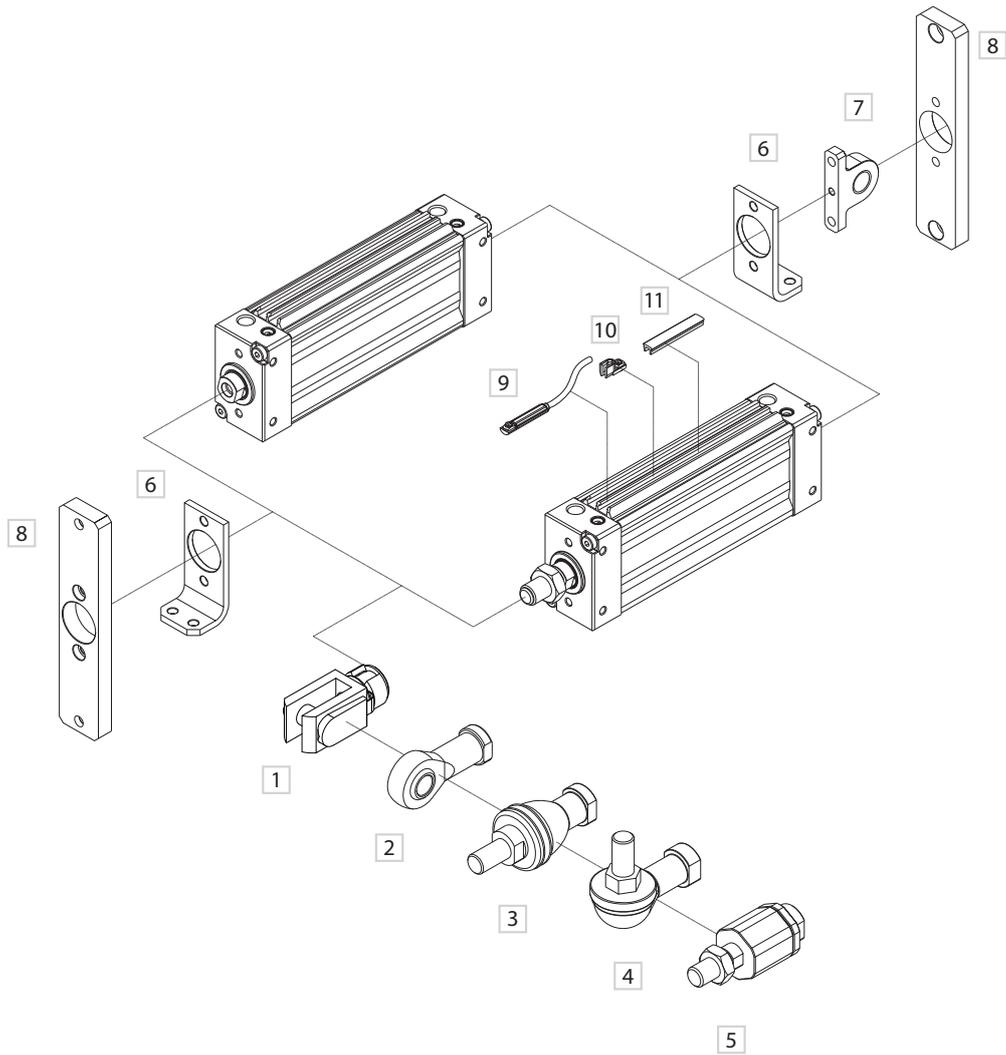
Mass - Double-acting cylinders

Ø	Cylinders - stroke 0	Increase per mm stroke	Moving element - stroke 0	Increase per mm stroke
	g	g	g	g
18	120	1,3	30	0,4
25	180	1,8	60	0,6
32	290	2,4	105	0,9
40	465	3,4	165	1,6
50	780	4,7	230	2,5
63	1145	5,8	295	2,5
80	2245	8,6	535	2,5

Mass - Double-acting cylinders with through piston rod

Ø	Cylinders - stroke 0	Increase per mm stroke	Moving element - stroke 0	Increase per mm stroke
	g	g	g	g
18	140	1,7	50	0,8
25	210	2,4	90	1,2
32	330	3,2	140	1,8
40	535	5	235	3,2
50	900	7,2	350	5
63	1265	8,3	415	5
80	2390	11	680	5

Fixing elements and accessories

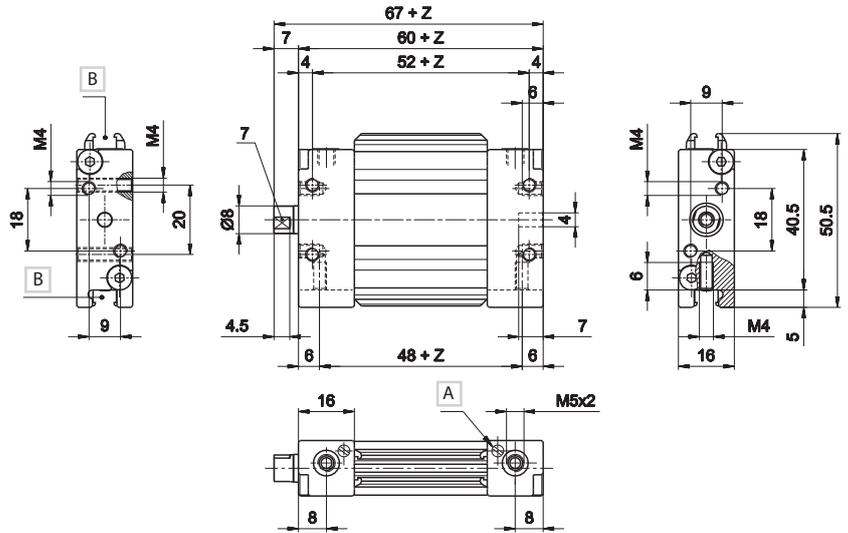
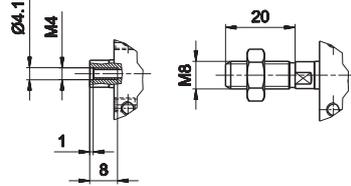


DESCRIPTION	NOTE	PART NO.
1 Female fork with clips		KF-15___ / MF-15___ (Ø18)
2 Articulated self-lubricating fork		KF-17___ / MF-17___ (Ø18)
3 Fork with axially mounted articulated pin		KF-22___ / MF-22___ (Ø18)
4 Fork with angle mounted articulated pin		KF-23___ / MF-23___ (Ø18)
5 Floating joint		KF-24___
6 Angle bracket		OVF-13___
7 Male hinge		OVF-11___
8 Flange		OVF-12___
9 DF sensor		DF-___
10 Cable clamping for DF sensor		DF-001
11 DHF covering strip		DHF-0020100

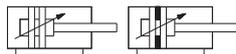
Double acting Ø 18 mm



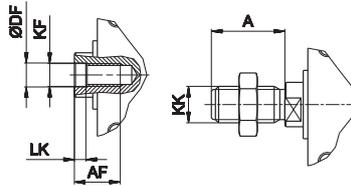
> Female/male rod



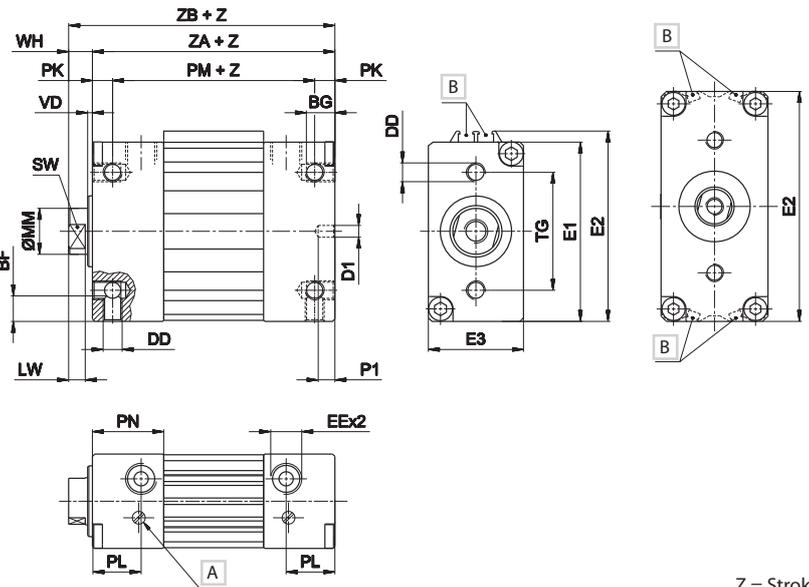
Double acting Ø 25 ÷ 80 mm



> Female/male rod



> Version Ø 80 mm



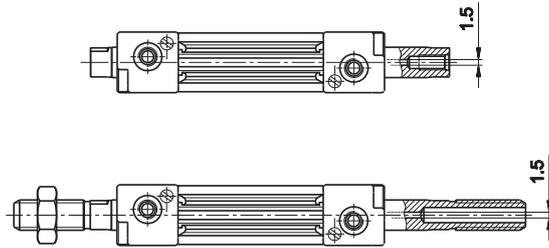
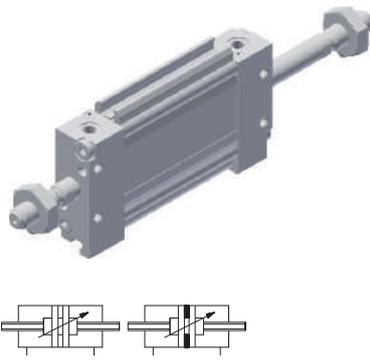
Z = Stroke

Ø	A	AF	BF	BG	DD	DF	D1	EE	E1	E2	E3	KF	KK	
			min.	min.			H 9							
25	22	12	8	8	M4	5,1	4	M5	52	57	20	M5	M10x1,25	
32	22	14	8	8	M5	6,2	4	G1/8	61	66	24,5	M6	M10x1,25	
40	24	16	10	12	M5	8,2	4	G1/8	61,5	67	38	M8	M12x1,25	
50	32	20	12	14	M8	10,5	5	G1/4	76	81	40	M10	M16x1,5	
63	32	20	14	10,5	M10	10,5	5	G1/4	92	97	50	M10	M16x1,5	
80	32	20	15	15	M10	10,5	5	G1/4	-	130	60	M10	M16x1,5	
Ø	LK	LW	MM	PK	PL	PM	PN	P1	SW	TG	VD	WH	ZA	ZB
25	2	4,5	10	4	12	54	16	7	8	32	2	8	62	70
32	2,5	5	12	5	7,5	62	18	7	10	36	2	8	72	80
40	3	6	16	7,5	14,5	61	22	7	13	40	2	9	76	85
50	5	7	20	8,5	20,5	65	30	7	17	50	2	10	82	92
63	5	7	20	8,5	20,5	65	30	7	17	60	2	10	82	92
80	5	7	20	9	20	88	30	7	17	75	2	12	106	118

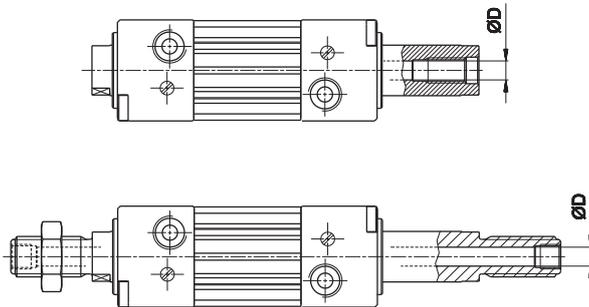
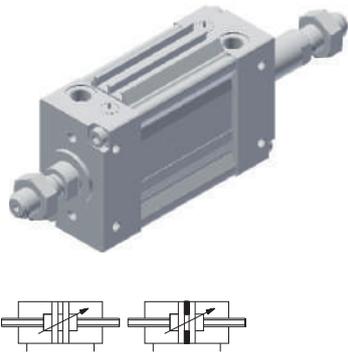
- A Pneumatic cushioning adjusting screw
- B Sensor groove



**Double acting female/male hollow through piston rod Ø 18 mm**



**Double acting female/male hollow through piston rod Ø 25 ÷ 80 mm**



Ø	D
25	2,5
32	3,5
40	5
50	7,5
63	7,5
80	7,5

Ø18 ÷ 25 Max stroke **100 mm** Ø32 ÷ 80 Max stroke **160 mm**

For all other dimensions please refer to the through piston rod version at previous page.

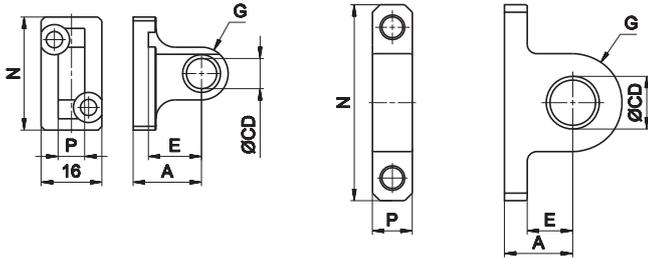
For other types of cylinders kindly contact our sales office.

1

Male hinge

Ø 18 mm

Ø 25 ÷ 80 mm



Ø	A	CD	E	G	N	P	Part No.
	ØH7					H12	
18	18	8	14	7	30	7	OVF-11018
25	14	8	8	7,5	42	9	OVF-11025
32	15	10	9	10	47	10,5	OVF-11032
40	18	12	12	13	52	10,5	OVF-11040
50	20	12	12	13	68	20	OVF-11050
63	24	16	16	17	80	25	OVF-11063
80	24	16	9	17	95	25	OVF-11080

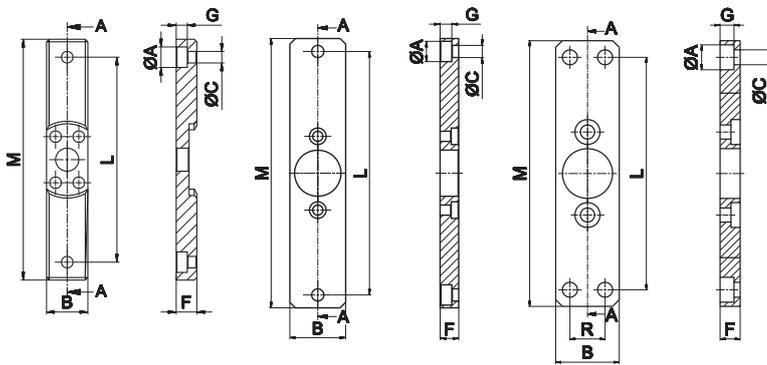
Material: Aluminium

Flange

Ø 18 mm

Ø 25 ÷ 40 mm

Ø 50 ÷ 80 mm



Ø	ØA	B	ØC	F	G	L	M	R	Part No.
	18	8	16	4,5	8	4,3	80	94	-
25	10	20	5,5	10	5,7	100	115	-	OVF-12025
32	11	24	6,6	10	6,3	115	130	-	OVF-12032
40	11	30	6,6	10	6,3	132	146	-	OVF-12040
50	15	38	9	12	8,3	140	160	21	OVF-12050
63	15	50	9	15	8,3	140	160	33	OVF-12063
80	15	60	9	20	8,3	178	200	40	OVF-12080

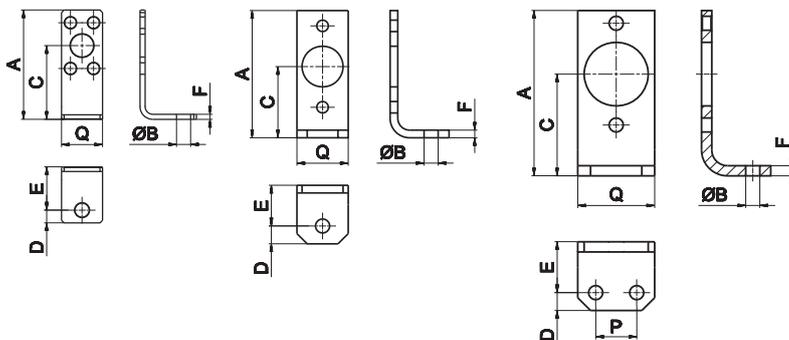
Material: Aluminium

Angle bracket

Ø 18 mm

Ø 25 mm

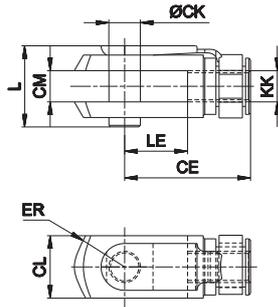
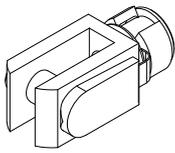
Ø 32 ÷ 80 mm



Ø	A	ØB	C	D	E	F	P	Q	Part No.
	18	43	5,5	29	5	17	2	-	16
25	50	5,5	28	7	16	3	-	20	OVF-13025
32	55	5,5	32	5,5	18	3	13	24	OVF-13032
40	65	5,5	40	7	20	4	16	30	OVF-13040
50	85	6,6	50	8	24	4	22	38	OVF-13050
63	105	9	63	10	27	4	30	50	OVF-13063
80	130	9	80	10	29	6	40	60	OVF-13080

Material: Zinc-plated steel

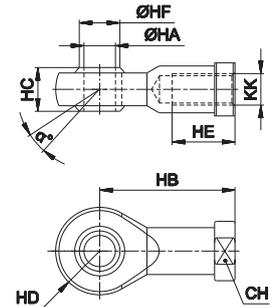
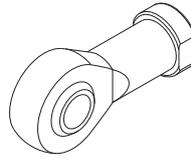
Female fork with clips



Material: Zinc-plated steel

Cylinder Ø	CE	CK	CL	CM	ER	KK	L	LE	Mass g	Part no.
18	32	8	16	8	10	M8x1,25	22	16	46	MF-15020
25-32	40	10	20	10	16	M10x1,25	26	20	90	KF-15032
40	48	12	24	12	19	M12x1,25	32	24	150	KF-15040
50-63-80	64	16	32	16	25	M16x1,5	40	32	340	KF-15050

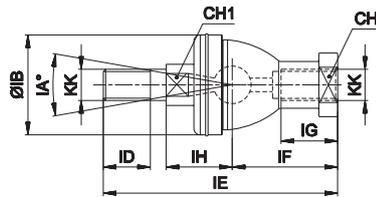
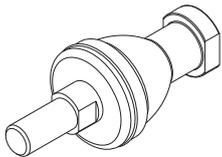
Articulated self-lubricating fork



Material: Zinc-plated steel

Cylinder Ø	α°	CH	KK	HA	HB	HC	HD	HE	HF	Mass g	Part no.	
18	14	14	M8x1,25	H7	8	36	12	12	16	10,4	46	MF-17020
25-32	13	17	M10x1,25	10	43	14	14	20	12,9	76	KF-17032	
40	13	19	M12x1,25	12	50	16	16	22	15,4	110	KF-17040	
50-63-80	15	22	M16x1,5	16	64	21	21	28	19,3	220	KF-17050	

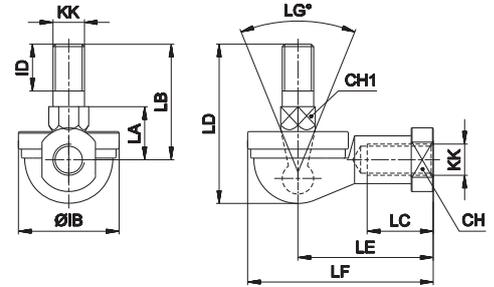
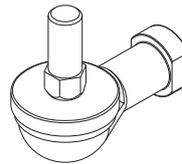
Fork with axially mounted articulated pin



Material: Zinc-plated steel

Cylinder Ø	CH	CH1	IA°	KK	IH	IB	ID	IE	IF	IG	Mass g	Part no.
18	14	10	30	M8x1,25	16	28	12	65	32	16	75	MF-22020
25-32	17	11	30	M10x1,25	19,5	32	15	74,5	35	18	120	KF-22025
40	19	17	30	M12x1,25	22	36	17	84	40	20	185	KF-22040
50-63-80	22	19	22	M16x1,5	27,5	47	23	112	50	27	360	KF-22050

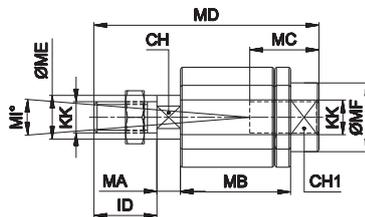
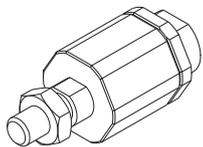
Fork with angle mounted articulated pin



Material: Zinc-plated steel

Cylinder Ø	CH	CH1	LG°	KK	IB	ID	LA	LB	LC	LD	LE	LF	Mass g	Part no.
18	14	10	50	M8x1,25	28	12	14	31	17	42,5	36	48	67	MF-23020
25-32	17	11	50	M10x1,25	32	15	17	37	21	50,5	43	57	110	KF-23025
40	19	17	50	M12x1,25	36	17	19	42	27	57,5	50	66	165	KF-23040
50-63-80	22	19	40	M16x1,5	47	23	23,5	60	33	79,5	64	84	330	KF-23050

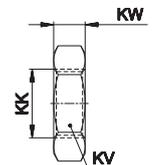
Floating joint



Material: Zinc-plated steel

Cylinder Ø	CH	CH1	ID	KK	MA	MB	MC	MD	ME	MF	MG	MH	MI°	Mass g	Part no.
18	7	11	11	M8x1,25	5	26	16	57	8	12,5	17	19	8	60	MF-24020
25-32	12	19	71	M10x1,25	5	35	20	71	14	22	30	32	8	220	KF-24032
40	12	19	75	M12x1,25	5	35	20	75	14	22	30	32	8	230	KF-24040
50-63-80	20	30	103	M16x1,5	8	54	32	103	22	32	41	45	6	660	KF-24050

Piston rod locknut (zinc-plated steel)



Material: Zinc-plated steel

Cylinder Ø	KK	KV	KW	Mass g	Part no.
18	M8	13	5	3,4	KF-16020
25-32	M10x1,25	17	6	5	KF-16032
40	M12x1,25	19	7	10	KF-16040
50-63-80	M16x1,5	24	8	20	KF-16050

# W

## Ø 12 ÷ 100 mm - Short stroke cylinders

The wide range of versions and the project originality make UNIVER Short stroke cylinders the perfect solution for those who need pneumatic cylinders with short strokes and compact dimensions. Thanks to their versatility, reliability and the different bore size availability, these cylinders are the ideal answer to the industry's demands.

Available ATEX version upon request



### TECHNICAL CHARACTERISTICS

Ambient temperature	-20 ÷ 80 °C
Fluid	filtered air, with or without lubrication
Working pressure	1,5 ÷ 10 bar
Bores	Ø 12 - 16 - 20 - 25 - 32 - 40 - 50 - 63 - 80 - 100 mm

### CONSTRUCTIVE CHARACTERISTICS

End-caps	aluminium
Barrel	anodized aluminium
Piston	aluminium
Guide slide	acetalic resin
Piston rod	rolled stainless steel (AISI 303)
Piston seal	nitrile rubber
Guide bush for piston rod	steel structure, PTFE and sintered bronze sliding
Piston rod scraper seal	polyurethane
Shock absorber seals	nitrile rubber in both sides
Magnet	plasto-ferrite

### CODIFICATION KEY

W	1	0	0	0	3	2	0	0	5	0			
1	2	3	4		5			6	7	8			

1 Series	2 Type	3 Version	4 Bore (mm)
W = Ø 12÷100 mm Short Stroke Cylinders	1 = Stainless steel piston rod 7 = Stainless steel piston rod with male rear hinge, versions 00 - 10 - 60 - 70 (except for bore Ø12)	00 = D.A. Standard version 01 = D.A. Through piston rod 10 = D.A. Non-rotating piston rod (except for Ø 12) <sup>(a)</sup> 11 = D.A. Non-rotating through piston rod (except for Ø 12) <sup>(a)</sup> 31 = D.A. Hollow through piston rod (except for Ø 12-16) 60 = S.A. Retracted piston rod 70 = S.A. Extended piston rod D.A. = Double acting S.A. = Single acting	012 = Ø12 016 = Ø16 020 = Ø20 025 = Ø25 032 = Ø32 040 = Ø40 050 = Ø50 063 = Ø63 080 = Ø80 100 = Ø100

5 Stroke (mm)	6 Option	7 Magnetic	8 Atex option
Single acting 0005 - 0010 (Ø12÷25) 0005 - 0010 - 0025 (Ø32÷100) Double acting 0005 - 0010 - 0020 - 0025 0030 - 0040 - 0050 (Ø12-16) 0005 - 0010 - 0020 - 0025 0030 - 0040 - 0050 - 0075 (Ø20÷100)	S = Safety distance <sup>(a)</sup> (only for versions 10 and 11)	M = Magnetic version (except for Ø 12)	X = Atex (upon request)  For types and versions, see ATEX catalogue

(a) = The cylinder types without safety distance requested by the customer have to be installed by the user in accordance with EC rules EN 294 EN 294 (vedi pag. 9)  
Atex version not available

Stroke tolerances

Ø	Nominal tolerances mm
12	+ 1,5/0
16	+ 1,5/0
20	+ 1,5/0
25	+ 1,5/0
32	+ 2/0
40	+ 2/0
50	+ 2/0
63	+ 2,5/0
80	+ 2,5/0
100	+ 2,5/0

Theoretical forces (N) at working pressure (bar)

Ø	Surface area mm <sup>2</sup>		Working pressure bar					Working pressure bar				
	Thrust	Traction	Thrust					Traction				
			2	4	6	8	10	2	4	6	8	10
12	113	85	23	45	68	90	113	17	34	51	68	85
16	201	173	40	80	121	161	201	35	69	104	138	173
20	314	236	63	126	188	251	314	47	94	142	189	236
25	491	412	98	196	295	393	491	82	165	247	330	412
32	804	691	161	322	482	643	804	138	276	414	553	691
40	1256	1056	251	502	754	1005	1256	211	422	633	844	1055
50	1962	1762	393	785	1178	1570	1963	352	704	1057	1409	1762
63	3116	2802	623	1246	1869	2493	3116	560	1120	1680	2240	2800
80	5024	4533	1005	2010	3014	4019	5024	907	1814	2722	3629	4536
100	7850	7359	1570	3140	4710	6280	7850	1472	2944	4416	5888	7360

Single acting cylinder Theoretical forces (N) for return stroke

Ø	Max force	Min force
12	6,8	2,6
16	7,8	4,1
20	13,2	7,8
25	19,6	11,7
32	35,3	17
40	45,6	21,5
50	70,5	24,6
63	96	41
80	119,5	52,9
100	237,2	118,5

1 CYLINDERS

Mass - Double acting cylinder

Ø	Cylinder - stroke 0		Increase per mm stroke g
	g		
	non-magnetic	magnetic	
12	45	-	1,20
16	74	102	1,40
20	95	120	2
25	135	155	2,85
32	233	292	4,06
40	394	430	5,47
50	390	446	6,40
63	640	772	9,70
80	1190	1275	14,85
100	1720	1920	19,70

Mass - Double acting through or hollow through piston rod cylinder

Ø	Cylinder - stroke 0		Increase per mm stroke g
	g		
	non-magnetic	magnetic	
12	55	-	1,40
16	86	114	1,60
20	112	137	2,65
25	165	185	3,50
32	295	354	5
40	500	536	7
50	478	534	8
63	790	922	12,2
80	1345	1430	18,7
100	1875	2075	23,6

Mass - Single acting retracted piston rod cylinder

Ø	Cylinder - stroke 0		Increase per mm stroke g
	g		
	non-magnetic	magnetic	
12	38	-	1,20
16	59	79	1,40
20	70	95	2
25	96	116	2,85
32	194	253	4,06
40	326	362	5,47
50	322	378	6,4
63	533	715	9,7
80	1020	1105	14,85
100	1490	1690	19,70

Mass - Single acting extended piston rod cylinder

Ø	Cylinder - stroke 0		Increase per mm stroke g
	g		
	non-magnetic	magnetic	
12	45	-	1,20
16	70	98	1,40
20	86	111	2
25	122	142	2,85
32	212	271	4,06
40	366	402	5,47
50	352	408	6,40
63	590	772	9,70
80	1104	1189	14,85
100	1576	1776	19,70

Mass - Double acting non-rotating piston rod cylinder

Ø	Cylinder - stroke 0		Increase per mm stroke
	g		
	non-magnetic	magnetic	
16	92	120	1,60
20	133	158	2,45
25	185	205	3,30
32	330	390	4,85
40	545	580	6,70
50	600	656	7,60
63	960	1092	11,50
80	1750	1835	17,25
100	2630	2830	22,80

Mass - Double acting non-rotating through piston rod cylinder

Ø	Cylinder - stroke 0		Increase per mm stroke
	g		
	non-magnetic	magnetic	
16	104	132	1,80
20	150	175	3,10
25	214	234	3,95
32	392	452	5,80
40	651	686	8,20
50	688	744	9,20
63	1110	1242	14
80	1905	1990	21
100	2785	2985	26,70

Mass - Double acting with male rear hinge cylinder

Ø	Cylinder - stroke 0		Increase per mm stroke
	Kg		
	non-magnetic	magnetic	
16	0,082	0,11	1,40
20	0,108	0,133	2
25	0,159	0,179	2,85
32	0,277	0,336	4,06
40	0,471	0,507	5,47
50	0,417	0,473	6,40
63	0,682	0,814	9,70
80	1,239	1,324	14,85
100	1,775	1,975	19,70

Mass - Double acting non-rotating piston rod with male rear hinge cylinder

Ø	Cylinder - stroke 0		Increase per mm stroke
	Kg		
	non-magnetic	magnetic	
16	0,12	0,140	1,60
20	0,14	0,160	2,45
25	0,189	0,190	3,30
32	0,340	0,360	4,85
40	0,510	0,560	6,70
50	0,480	0,499	7,60
63	0,820	0,850	11,50
80	1,330	1,50	17,25
100	1,980	2,10	22,80

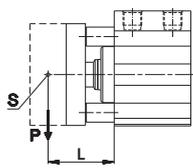
Mass - Single acting retracted piston rod with male rear hinge cylinder

Ø	Cylinder - stroke 0		Increase per mm stroke
	Kg		
	non-magnetic	magnetic	
16	0,067	0,087	1,40
20	0,083	0,098	2
25	0,119	0,139	2,85
32	0,238	0,297	4,06
40	0,403	0,439	5,47
50	0,349	0,405	6,4
63	0,575	0,757	9,7
80	1,069	1,154	14,85
100	1,545	1,745	19,70

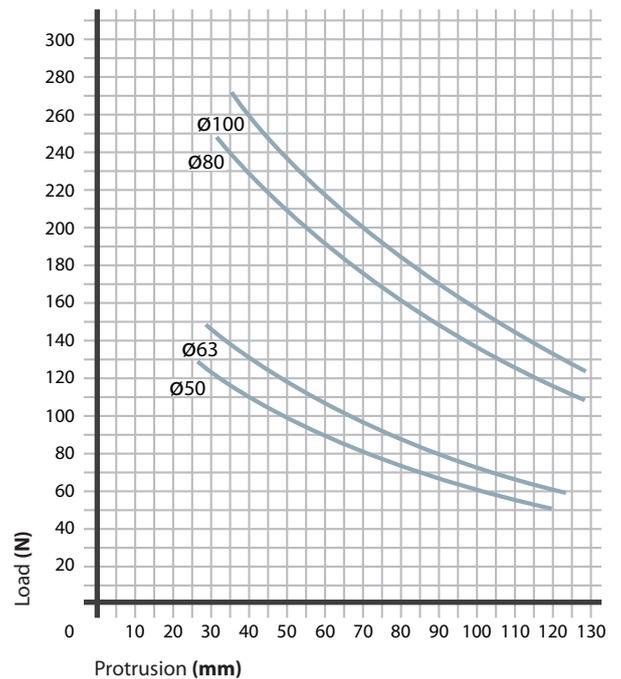
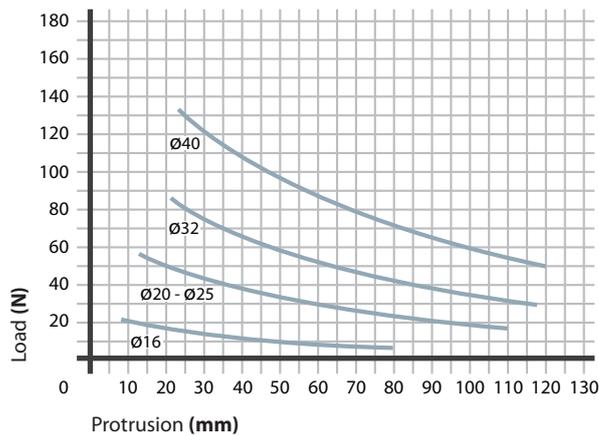
Mass - Single acting extended piston rod with male rear hinge cylinder

Ø	Cylinder - stroke 0		Increase per mm stroke
	Kg		
	non-magnetic	magnetic	
16	0,078	0,106	1,40
20	0,099	0,124	2
25	0,145	0,165	2,85
32	0,256	0,316	4,06
40	0,422	0,479	5,47
50	0,379	0,435	6,40
63	0,632	0,914	9,70
80	1,153	1,238	14,85
100	1,631	1,831	19,70

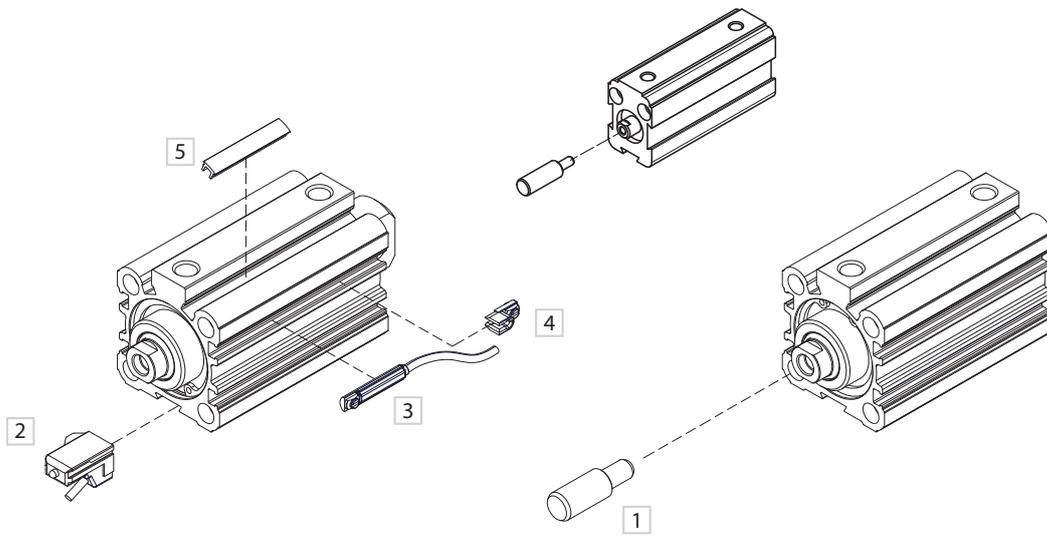
Bending load (on piston rod) diagrams



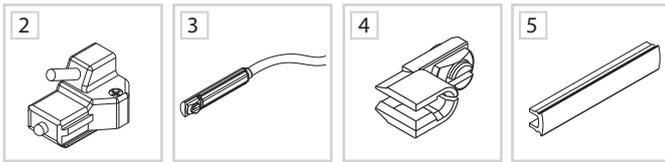
S = Point of application of load  
 P = Load (N)  
 L = Protrusion



■ Fixing elements and accessories

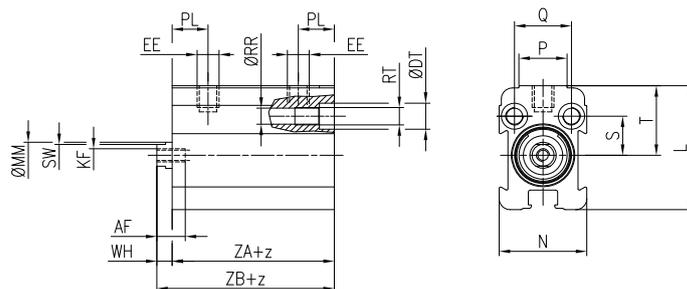


1  
CYLINDERS

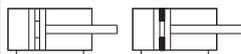
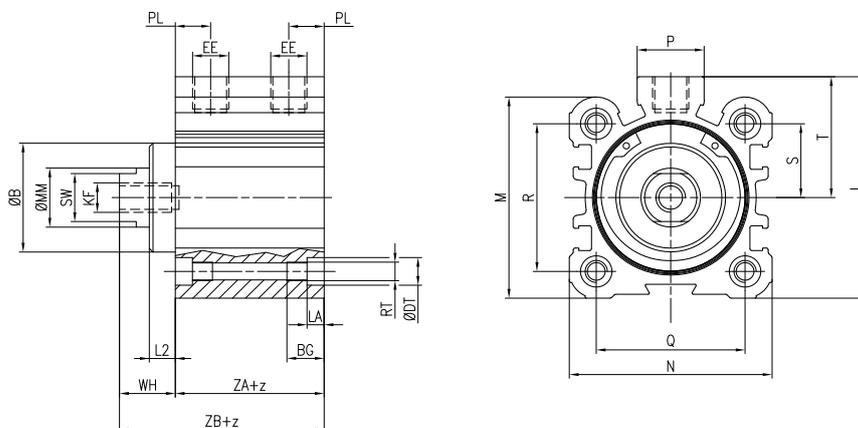


	DESCRIPTION	NOTE	PART NO.
1	Nipple		WF-50_ _ _
2	DH sensor		DH- _ _ _
3	DF sensor		DF- _ _ _
4	Cable clamping for DF sensor		DF-001
5	DHF covering strip		DHF-0020100

### Double acting Ø12



### Double acting Ø16 ÷ Ø100

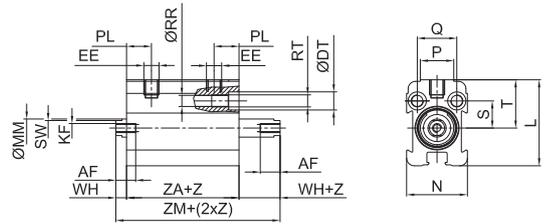
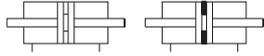
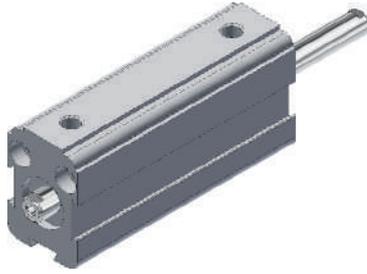


Z = Stroke

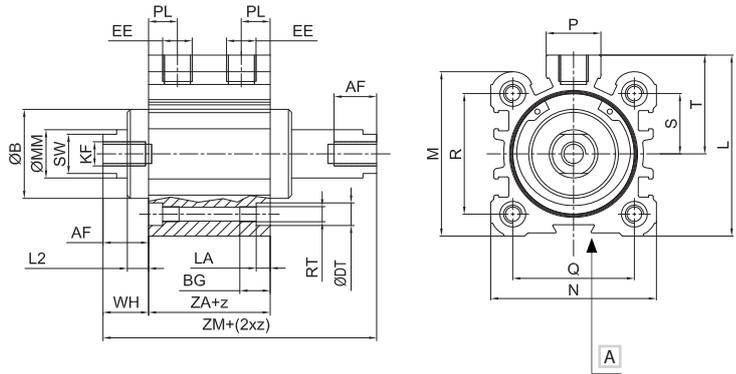
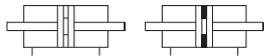
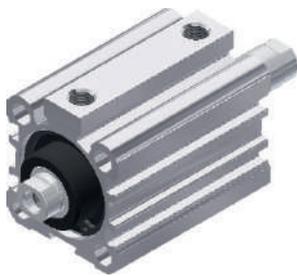
Ø	AF	B	BG	DT	EE	KF	L	LA	L2	M	MM	N	P
12	6,5	-	9	6	M5	M3	28,5	3,4	-	-	6	20	11
16	6,5	-	9	5,8	M5	M3	31	3,4	-	28	6	28	11
20	10	-	10	7,5	M5	M5	35	4,6	-	32	10	32	11
25	10	-	10	7,5	G1/8	M5	44,5	4,6	-	39	10	37	18
32	12	23	16	8,5	G1/8	M6	54	5,7	5	48	12	45	18
40	14	29,5	16	8,5	G1/8	M8	60	5,7	7	54,5	16	54,5	18
50	14	35,5	16	10,5	G1/4	M8	72	6,8	6,5	64	16	64	22
63	15	43	20	13,5	G1/4	M10	88	9	8,5	80	20	80	22
80	20	50	20	13,5	G3/8	M12	110	9	8	100	25	100	26
100	20	56	25	16,5	G3/8	M12	134	11	8	124	25	124	26

Ø	PL	Q	R	RR	RT	S	SW	T	WH	ZA	ZB	ZA	ZB
												Magnetic	
12	8,2	13	-	3,7	M4	9	5	16	3,5	32	35,5	-	-
16	6,5	20	20	3,7	M4	10	5	17	3,5	32	35,5	42	45,5
20	7	22	22	4,6	M5	11	8	19	7	35	42	45	52
25	7,5	26	28	4,6	M5	14	8	25	7	35	42	45	52
32	9	32	36	5,55	M6	18	10	30	12	37	49	47	59
40	9,5	40	40	5,55	M6	20	13	33	15	40	55	45	60
50	10	50	50	7,4	M8	25	13	40	15	40	55	45	60
63	10	62	62	9,3	M10	31	17	48	17	42	59	47	64
80	15	82	82	9,3	M10	41	22	60	19,5	52	71,5	57	76,5
100	15	103	103	11,2	M12	51,5	22	72	19,5	52	71,5	57	76,5

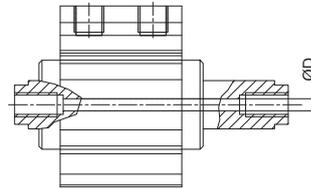
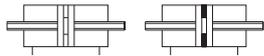
**Double acting through piston rod Ø12**



**Double acting through piston rod Ø16 ÷ Ø100**



**Double acting hollow through piston rod Ø20 ÷ Ø100**



A Groove for sensor

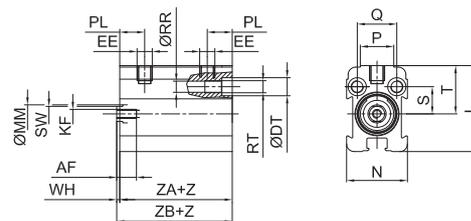
Z = Stroke

Ø	AF	B	BG	D	DT	EE	KF	L	LA	L2	M	MM	N	P
12	6,5	-	9	-	6	M5	M3	28,5	3,4	-	-	6	20	11
16	6,5	-	9	-	5,8	M5	M3	31	3,4	-	28	6	28	11
20	10	-	10	2,5	7,5	M5	M5	35	4,6	-	32	10	32	11
25	10	-	10	2,5	7,5	G1/8	M5	44,5	4,6	-	39	10	37	18
32	12	23	16	3	8,5	G1/8	M6	54	5,7	5	48	12	45	18
40	14	29,5	16	4	8,5	G1/8	M8	60	5,7	7	54,5	16	54,5	18
50	14	35,5	16	4	10,5	G1/4	M8	72	6,8	6,5	64	16	64	22
63	15	43	20	6	13,5	G1/4	M10	88	9	8,5	80	20	80	22
80	20	50	20	6	13,5	G3/8	M12	110	9	8	100	25	100	26
100	20	56	25	6	16,5	G3/8	M12	134	11	8	124	25	124	26

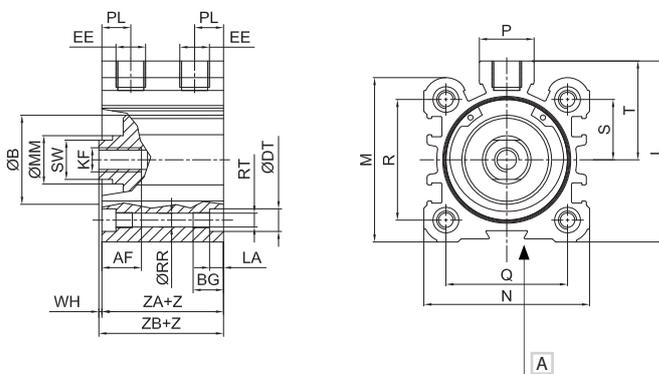
  

Ø	PL	Q	R	RR	RT	S	SW	T	WH	ZA	ZM	ZA	ZM
12	8,2	13	-	3,7	M4	9	5	16	3,5	37	44	-	-
16	6,5	20	20	3,7	M4	10	5	17	3,5	37	44	47	54
20	7	22	22	4,6	M5	11	8	19	7	40	54	50	64
25	7,5	26	28	4,6	M5	14	8	25	7	40	54	50	64
32	9	32	36	5,55	M6	18	10	30	12	42	66	52	76
40	9,5	40	40	5,55	M6	20	13	33	15	45	75	50	80
50	10	50	50	7,4	M8	25	13	40	15	45	75	50	80
63	10	62	62	9,3	M10	31	17	48	17	47	81	52	86
80	15	82	82	9,3	M10	41	22	60	19,5	52	91	57	96
100	15	103	103	11,2	M12	51,5	22	72	19,5	52	91	57	96

### Single acting retracted piston rod Ø12



### Single acting retracted piston rod Ø16 ÷ Ø100



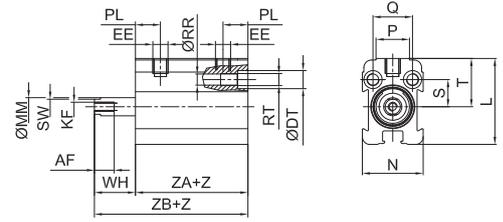
A Groove for sensor

Z = Stroke

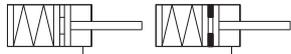
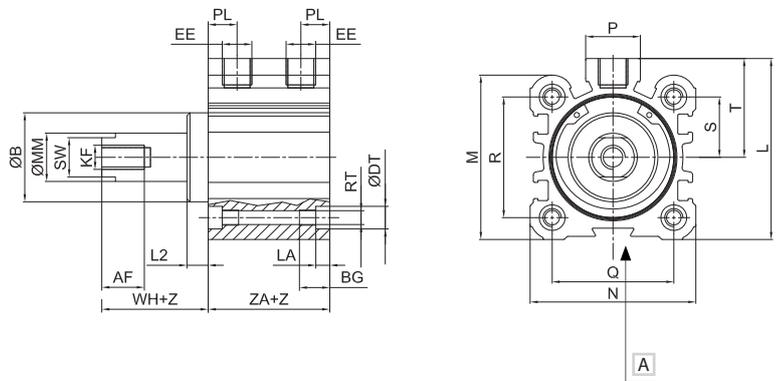
Ø	AF	BG	DT	EE	KF	L	LA	M	MM	N	P	PL
12	6,5	9	6	M5	M3	28,5	3,4	-	6	20	11	8,2
16	6,5	9	5,8	M5	M3	31	3,4	28	6	28	11	6,5
20	10	10	7,5	M5	M5	35	4,6	32	10	32	11	7
25	10	10	7,5	G1/8	M5	44,5	4,6	39	10	37	18	7,5
32	12	16	8,5	G1/8	M6	54	5,7	48	12	45	18	9
40	14	16	8,5	G1/8	M8	60	5,7	54,5	16	54,5	18	9,5
50	14	16	10,5	G1/4	M8	72	6,8	64	16	64	22	10
63	15	20	13,5	G1/4	M10	88	9	80	20	80	22	10
80	20	20	13,5	G3/8	M12	110	9	100	25	100	26	15
100	20	25	16,5	G3/8	M12	134	11	124	25	124	26	15

Ø	Q	R	RR	RT	S	SW	T	WH	ZA	ZB	ZA	ZB
											Magnetic	
12	13	-	3,7	M4	9	5	16	1	27	28	-	-
16	20	20	3,7	M4	10	5	17	1	22	23	37	38
20	22	22	4,6	M5	11	8	19	1	25	26	40	41
25	26	28	4,6	M5	14	8	25	1	25	26	40	41
32	32	36	5,55	M6	18	10	30	1	32	33	47	48
40	40	40	5,55	M6	20	13	33	1	35	36	45	46
50	50	50	7,4	M8	25	13	40	1	35	36	45	46
63	62	62	9,3	M10	31	17	48	2	37	39	47	49
80	82	82	9,3	M10	41	22	60	6	47	53	57	63
100	103	103	11,2	M12	51,5	22	72	6	47	53	57	63

Single acting extended piston rod Ø12



Single acting extended piston rod Ø16 ÷ Ø100



CYLINDERS 1

A Groove for sensor

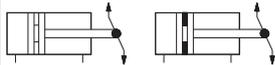
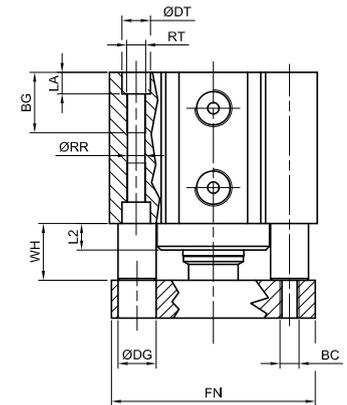
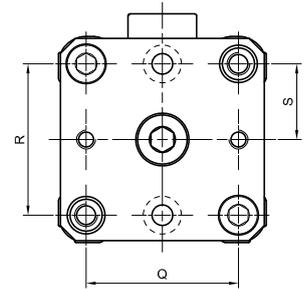
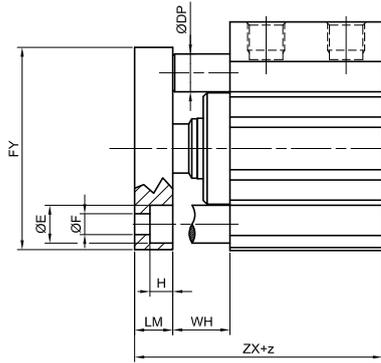
Z = Stroke

Ø	AF	B	BG	DT	EE	KF	L	LA	L2	M	MM	N
12	6,5	-	9	6	M5	M3	28,5	3,4	-	-	6	20
16	6,5	-	9	5,8	M5	M3	31	3,4	-	28	6	28
20	10	-	10	7,5	M5	M5	35	4,6	-	32	10	32
25	10	-	10	7,5	G1/8	M5	44,5	4,6	-	39	10	37
32	12	23	16	8,5	G1/8	M6	54	5,7	5	48	12	45
40	14	29,5	16	8,5	G1/8	M8	60	5,7	7	54,5	16	54,5
50	14	35,5	16	10,5	G1/4	M8	72	6,8	6,5	64	16	64
63	15	43	20	13,5	G1/4	M10	88	9	8,5	80	20	80
80	20	50	20	13,5	G3/8	M12	110	9	8	100	25	100
100	20	56	25	16,5	G3/8	M12	134	11	8	124	25	124

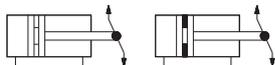
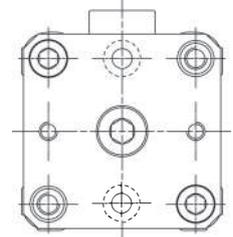
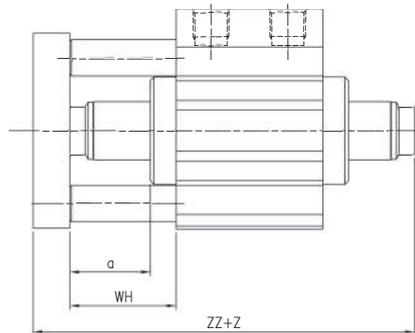
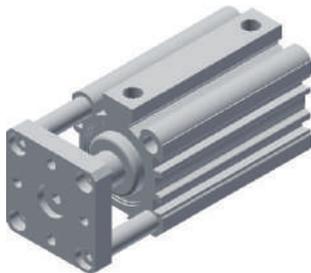
Ø	P	PL	Q	R	RR	RT	S	SW	T	WH	ZA	ZA
12	11	8,2	13	-	3,7	M4	9	5	16	3,5	32	-
16	11	6,5	20	20	3,7	M4	10	5	17	3,5	27	42
20	11	7	22	22	4,6	M5	11	8	19	7	30	45
25	18	7,5	26	28	4,6	M5	14	8	25	7	30	47
32	18	9	32	36	5,55	M6	18	10	30	12	32	45
40	18	9,5	40	40	5,55	M6	20	13	33	15	35	45
50	22	10	50	50	7,4	M8	25	13	40	15	35	45
63	22	10	62	62	9,3	M10	31	17	48	17	37	47
80	26	15	82	82	9,3	M10	41	22	60	19,5	47	57
100	26	15	103	103	11,2	M12	51,5	22	72	19,5	47	57

Magnetic

Double acting non-rotating piston rod Ø16 ÷ Ø100



Double acting non-rotating piston rod and safety distance Ø16 ÷ Ø100



Accident prevention safety distance in accordance with EC rules EN 294 to be provided by the user

A Groove for sensor

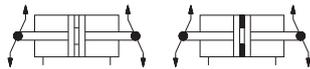
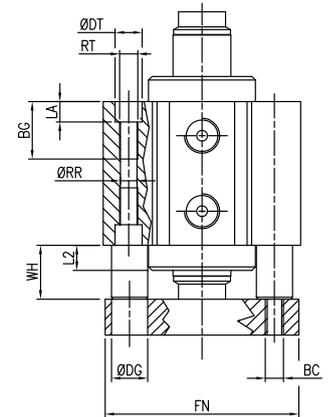
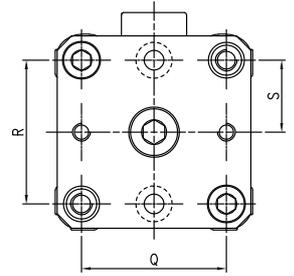
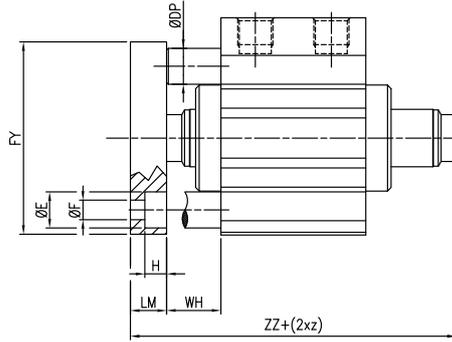
Z = Stroke

Ø	BC	BG	DG	DP	DT	E	F	FN	FY	H	LA	LM
16	M3	9	6	4	5,8	6	3,5	27,5	27,5	3,5	3,4	7
20	M4	10	7,5	6	7,5	7,5	4,5	31,5	31,5	4,5	4,6	8
25	M4	10	7,5	6	7,5	7,5	4,5	36	38	5	4,6	8
32	M4	16	10	8	8,5	10	5,5	44,5	47,5	6	5,7	10
40	M5	16	10	10	8,5	10	5,5	53,5	53,5	6	5,7	10
50	M6	16	11	10	10,5	11	6,5	63,5	63,5	7	6,8	12
63	M6	20	15	12	13,5	14	9	79,5	79,5	9	9	12
80	M8	20	15	14	13,5	14	9	99,5	99,5	9	9	14
100	M8	25	17	16	16,5	16,5	10,5	123,5	123,5	10,5	11	16

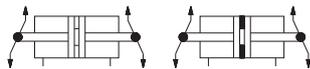
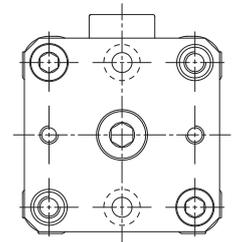
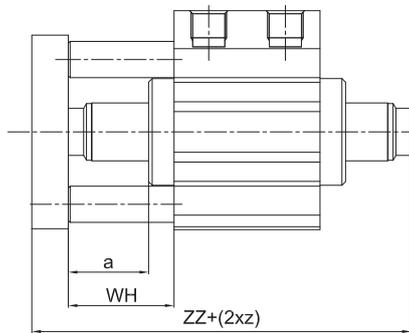
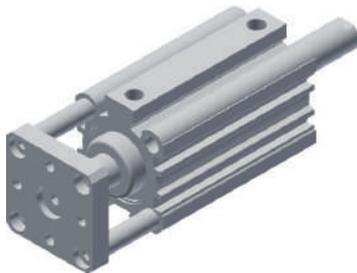
> Safety distance version available

Ø	L2	Q	R	RR	S	WH	ZX	ZX Magnetic	a	WH	ZX	ZX Magnetic
16	-	20	20	3,7	10	3,5	42,5	52,5	28,5	28,5	67,5	77,5
20	-	22	22	4,6	11	7	50	60	27	27	70	80
25	-	26	28	4,6	14	7	50	60	27	27	70	80
32	5	32	36	5,55	18	12	59	69	27	32	79	89
40	7	40	40	5,55	20	15	65	70	28	35	85	90
50	6,5	50	50	7,4	25	15	67	72	28,5	35	87	92
63	8,5	62	62	9,3	31	17	71	76	28,5	37	91	96
80	8	82	82	9,3	41	19,5	85,5	90,5	26,5	34,5	100,5	105,5
100	8	103	103	11,2	51,5	19,5	87,5	92,5	26,5	34,5	102,5	107,5

**Double acting non-rotating through piston rod Ø16 ÷ Ø100**



**Double acting non-rotating through piston rod and safety distance Ø16 ÷ Ø100**



Accident prevention safety distance in accordance with EC rules EN 294 to be provided by the user

A Groove for sensor

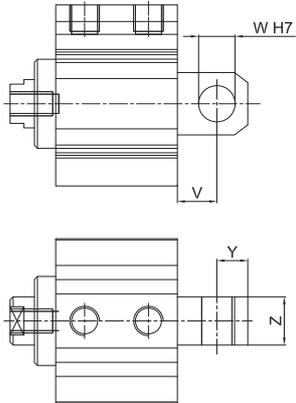
Z = Stroke

Ø	BC	BG	DG	DP	DT	E	F	FN	FY	H	LA	LM
16	M3	9	6	4	5,8	6	3,5	27,5	27,5	3,5	3,4	7
20	M4	10	7,5	6	7,5	7,5	4,5	31,5	31,5	4,5	4,6	8
25	M4	10	7,5	6	7,5	7,5	4,5	36	38	5	4,6	8
32	M4	16	10	8	8,5	10	5,5	44,5	47,5	6	5,7	10
40	M5	16	10	10	8,5	10	5,5	53,5	53,5	6	5,7	10
50	M6	16	11	10	10,5	11	6,5	63,5	63,5	7	6,8	12
63	M6	20	15	12	13,5	14	9	79,5	79,5	9	9	12
80	M8	20	15	14	13,5	14	9	99,5	99,5	9	9	14
100	M8	25	17	16	16,5	16,5	10,5	123,5	123,5	10,5	11	16

> Safety distance version available

Ø	L2	Q	R	RR	S	WH	ZZ	ZZ	a	WH	ZZ	ZZ
								Magnetic				Magnetic
16	-	20	20	3,7	10	3,5	51	61	28,5	28,5	76	86
20	-	22	22	4,6	11	7	62	72	27	27	82	92
25	-	26	28	4,6	14	7	62	72	27	27	82	92
32	5	32	36	5,55	18	12	76	86	27	32	96	106
40	7	40	40	5,55	20	15	85	90	28	35	105	110
50	6,5	50	50	7,4	25	15	87	92	28,5	35	107	112
63	8,5	62	62	9,3	31	17	93	98	28,5	37	113	118
80	8	82	82	9,3	41	19,5	105	110	26,5	34,5	120	125
100	8	103	103	11,2	51,5	19,5	107	112	26,5	34,5	122	127

Male rear hinge Ø16 ÷ Ø100



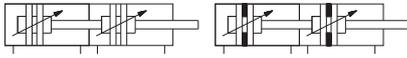
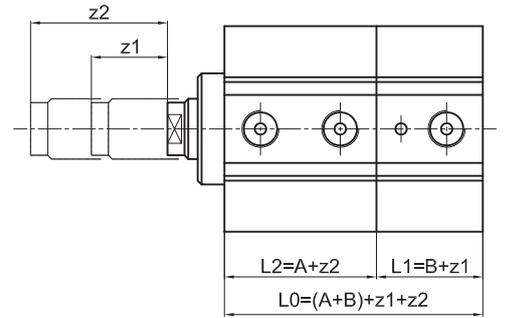
Ø	Y	Z	W	V
16	5,5	9	6	6,2
20	5,5	9	6	6,5
25	6	12	6	8
32	9	14	10	11
40	10	16	12	13
50	12	17	12	16,5
63	14	21	16	18
80	14	21	16	16,5
100	17	25	20	21

## Tandem version

### CODIFICATION KEY

W	1	A	0	3	2	0	5	0	
1	2	3	4	5					

1 Series	2 Type	3 Bore (mm)	4 Stroke (mm)	5 Magnetic
W = Ø 12÷100 mm Short Stroke Cylinders	1A = Double thrust tandem only for forward movement	012 = Ø12 016 = Ø16 020 = Ø20 025 = Ø25 032 = Ø32	040 = Ø40 050 = Ø50 063 = Ø63 080 = Ø80 100 = Ø100	Z1/Z2 Upon request  <b>M</b> = Magnetic version (upon request)



Ø	Tandem			Tandem magnetic		
	L2 = A + Z2	L1 = B + Z1	L0 = (A + B) + Z1 + Z2	L2 = A + Z2	L1 = B + Z1	L0 = (A + B) + Z1 + Z2
16	L2 = 37 + Z2	L1 = 22 + Z1	L0 = 59 + Z1 + Z2	L2 = 47 + Z2	L1 = 37 + Z1	L0 = 84 + Z1 + Z2
20	L2 = 40 + Z2	L1 = 25 + Z1	L0 = 65 + Z1 + Z2	L2 = 50 + Z2	L1 = 40 + Z1	L0 = 90 + Z1 + Z2
25	L2 = 40 + Z2	L1 = 25 + Z1	L0 = 65 + Z1 + Z2	L2 = 50 + Z2	L1 = 40 + Z1	L0 = 90 + Z1 + Z2
32	L2 = 42 + Z2	L1 = 23 + Z1	L0 = 65 + Z1 + Z2	L2 = 52 + Z2	L1 = 38 + Z1	L0 = 90 + Z1 + Z2
40	L2 = 45 + Z2	L1 = 26,5 + Z1	L0 = 71,5 + Z1 + Z2	L2 = 50 + Z2	L1 = 36,5 + Z1	L0 = 86,5 + Z1 + Z2
50	L2 = 45 + Z2	L1 = 26 + Z1	L0 = 71 + Z1 + Z2	L2 = 50 + Z2	L1 = 36 + Z1	L0 = 86 + Z1 + Z2
63	L2 = 47 + Z2	L1 = 29 + Z1	L0 = 76 + Z1 + Z2	L2 = 52 + Z2	L1 = 39 + Z1	L0 = 91 + Z1 + Z2
80	L2 = 52 + Z2	L1 = 38 + Z1	L0 = 90 + Z1 + Z2	L2 = 57 + Z2	L1 = 48 + Z1	L0 = 105 + Z1 + Z2
100	L2 = 52 + Z2	L1 = 38 + Z1	L0 = 90 + Z1 + Z2	L2 = 57 + Z2	L1 = 48 + Z1	L0 = 105 + Z1 + Z2

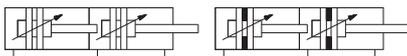
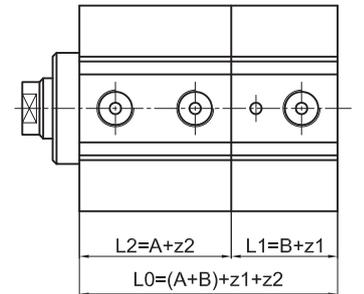
CYLINDERS

## Two-position tandem version

### CODIFICATION KEY

W	1	B	0	3	2	0	5	0	0	9	0
1	2	3	4	5	6						

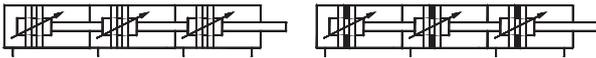
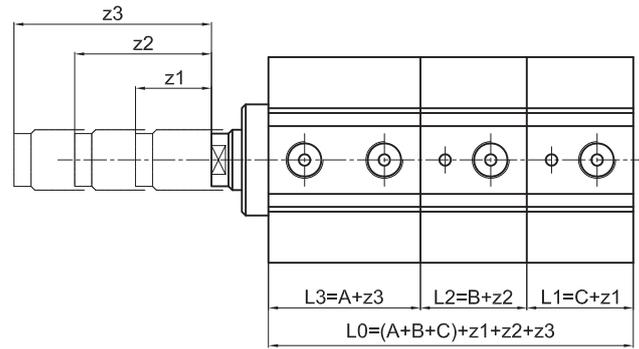
1 Series	2 Type	3 Bore (mm)	4 Stroke 1 (mm)	5 Stroke 2 (mm)	6 Magnetic	
W = Ø 12÷100 mm Short Stroke Cylinders	1B = Two-position tandem	012 = Ø12 016 = Ø16 020 = Ø20 025 = Ø25 032 = Ø32	040 = Ø40 050 = Ø50 063 = Ø63 080 = Ø80 100 = Ø100	Stroke of rear cylinder Upon request	Stroke of head cylinder Upon request	<b>M</b> = Magnetic version (upon request)



Ø	Tandem			Tandem magnetic		
	L2 = A + Z2	L1 = B + Z1	L0 = (A + B) + Z1 <+ Z2	L2 = A + Z2	L1 = B + Z1	L0 = (A + B) + Z1 <+ Z2
16	L2 = 37 + Z2	L1 = 22 + Z1	L0 = 59 + Z1 <+ Z2	L2 = 47 + Z2	L1 = 37 + Z1	L0 = 84 + Z1 <+ Z2
20	L2 = 40 + Z2	L1 = 25 + Z1	L0 = 65 + Z1 <+ Z2	L2 = 50 + Z2	L1 = 40 + Z1	L0 = 90 + Z1 <+ Z2
25	L2 = 40 + Z2	L1 = 25 + Z1	L0 = 65 + Z1 <+ Z2	L2 = 50 + Z2	L1 = 40 + Z1	L0 = 90 + Z1 <+ Z2
32	L2 = 42 + Z2	L1 = 23 + Z1	L0 = 65 + Z1 <+ Z2	L2 = 52 + Z2	L1 = 38 + Z1	L0 = 90 + Z1 <+ Z2
40	L2 = 45 + Z2	L1 = 26,5 + Z1	L0 = 71,5 + Z1 <+ Z2	L2 = 50 + Z2	L1 = 36,5 + Z1	L0 = 86,5 + Z1 <+ Z2
50	L2 = 45 + Z2	L1 = 26 + Z1	L0 = 71 + Z1 <+ Z2	L2 = 50 + Z2	L1 = 36 + Z1	L0 = 87 + Z1 <+ Z2
63	L2 = 47 + Z2	L1 = 29 + Z1	L0 = 76 + Z1 <+ Z2	L2 = 52 + Z2	L1 = 39 + Z1	L0 = 91 + Z1 <+ Z2
80	L2 = 52 + Z2	L1 = 38 + Z1	L0 = 90 + Z1 <+ Z2	L2 = 57 + Z2	L1 = 48 + Z1	L0 = 105 + Z1 <+ Z2
100	L2 = 52 + Z2	L1 = 38 + Z1	L0 = 90 + Z1 <+ Z2	L2 = 57 + Z2	L1 = 48 + Z1	L0 = 105 + Z1 <+ Z2

Stroke C1 is always lower than stroke C2

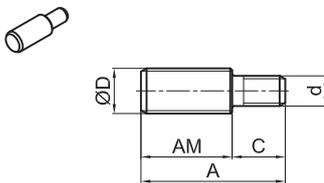
Three-position tandem version WS (upon request)



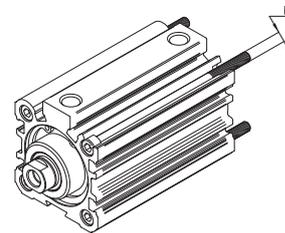
Ø	Tandem				Tandem magnetic			
	$L_3 = A + Z_3$	$L_2 = B + Z_2$	$L_1 = D + Z_1$	$L_0 = (A + B + D) + Z_1 + Z_2 + Z_3$	$L_3 = A + Z_3$	$L_2 = B + Z_2$	$L_1 = D + Z_1$	$L_0 = (A + B + D) + Z_1 + Z_2 + Z_3$
16	$L_3 = 37 + Z_3$	$L_2 = 27 + Z_2$	$L_1 = 22 + Z_1$	$L_0 = 86 + Z_1 + Z_2 + Z_3$	$L_3 = 47 + Z_3$	$L_2 = 42 + Z_2$	$L_1 = 37 + Z_1$	$L_0 = 126 + Z_1 + Z_2 + Z_3$
20	$L_3 = 40 + Z_3$	$L_2 = 30 + Z_2$	$L_1 = 25 + Z_1$	$L_0 = 95 + Z_1 + Z_2 + Z_3$	$L_3 = 50 + Z_3$	$L_2 = 45 + Z_2$	$L_1 = 40 + Z_1$	$L_0 = 135 + Z_1 + Z_2 + Z_3$
25	$L_3 = 40 + Z_3$	$L_2 = 30 + Z_2$	$L_1 = 25 + Z_1$	$L_0 = 95 + Z_1 + Z_2 + Z_3$	$L_3 = 50 + Z_3$	$L_2 = 45 + Z_2$	$L_1 = 40 + Z_1$	$L_0 = 135 + Z_1 + Z_2 + Z_3$
32	$L_3 = 42 + Z_3$	$L_2 = 28 + Z_2$	$L_1 = 23 + Z_1$	$L_0 = 93 + Z_1 + Z_2 + Z_3$	$L_3 = 52 + Z_3$	$L_2 = 43 + Z_2$	$L_1 = 38 + Z_1$	$L_0 = 133 + Z_1 + Z_2 + Z_3$
40	$L_3 = 45 + Z_3$	$L_2 = 31,5 + Z_2$	$L_1 = 26,5 + Z_1$	$L_0 = 103 + Z_1 + Z_2 + Z_3$	$L_3 = 50 + Z_3$	$L_2 = 41,5 + Z_2$	$L_1 = 36,5 + Z_1$	$L_0 = 128 + Z_1 + Z_2 + Z_3$
50	$L_3 = 45 + Z_3$	$L_2 = 31 + Z_2$	$L_1 = 26 + Z_1$	$L_0 = 102 + Z_1 + Z_2 + Z_3$	$L_3 = 50 + Z_3$	$L_2 = 41 + Z_2$	$L_1 = 36 + Z_1$	$L_0 = 127 + Z_1 + Z_2 + Z_3$
63	$L_3 = 47 + Z_3$	$L_2 = 36 + Z_2$	$L_1 = 29 + Z_1$	$L_0 = 112 + Z_1 + Z_2 + Z_3$	$L_3 = 52 + Z_3$	$L_2 = 44 + Z_2$	$L_1 = 39 + Z_1$	$L_0 = 135 + Z_1 + Z_2 + Z_3$
80	$L_3 = 52 + Z_3$	$L_2 = 38 + Z_2$	$L_1 = 38 + Z_1$	$L_0 = 128 + Z_1 + Z_2 + Z_3$	$L_3 = 57 + Z_3$	$L_2 = 48 + Z_2$	$L_1 = 48 + Z_1$	$L_0 = 153 + Z_1 + Z_2 + Z_3$
100	$L_3 = 52 + Z_3$	$L_2 = 38 + Z_2$	$L_1 = 38 + Z_1$	$L_0 = 128 + Z_1 + Z_2 + Z_3$	$L_3 = 57 + Z_3$	$L_2 = 48 + Z_2$	$L_1 = 48 + Z_1$	$L_0 = 153 + Z_1 + Z_2 + Z_3$

For all other dimensions please refer to the standard version  
Options with non-rotating piston rod are also possible

Nipple



Fixing screws



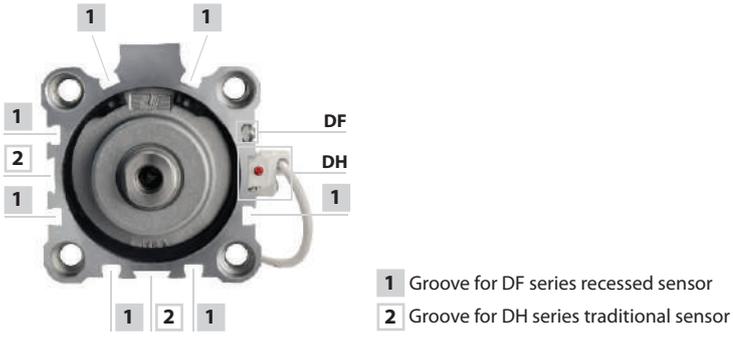
Material: Zinc-plated steel

Cylinder Ø	A	AM	C	D	d	Part no.
12 - 16	22,5	16	6,5	6x1	M3	WF-50012
20 - 25	30	20	10	8x1,25	M5	WF-50020
32	34	22	12	10x1,25	M6	WF-50032
40	38	24	14	12x1,25	M8	WF-50040
50	46	32	14	16x1,5	M8	WF-50050
63	47	32	15	16x1,5	M10	WF-50063
80 - 100	60	40	20	20x1,5	M12	WF-50080

Cylinder Ø	12	16*	20	25	32	40	50	63	80	100
M	3	3	4	4	5	5	6	8	8	10

\* = only for bore 16 (magnetic version), the fixing screws have to be non-magnetic

Slot positions for DF - DH magnetic sensors



Ø 12 mm



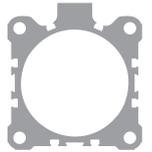
Ø 16-20 mm



Ø 25-32 mm



Ø 40 mm



Ø 50-63-80-100 mm

# R

## Ø 32 ÷ 125 mm - Pneumatic Rotary Actuators

The rotating action pneumatic cylinders are thought to transform a linear motion to a circular motion with standard or customized angles of rotation. Made of proved components, they include the backlash recovery of the rack and the rotating pignon supported by ball-bearing, making these units ideal to be used in the most demanding applications.



### TECHNICAL CHARACTERISTICS

Ambient temperature	-20 ÷ 80 °C
Fluid	filtered air, with or without lubrication
Working pressure	1,5 ÷ 10 bar
Bores	Ø 32 - 40 - 50 - 63 - 80 - 100 - 125 mm
Cushionings	adjustable in both sides

### CONSTRUCTIVE CHARACTERISTICS

End-caps	die-cast aluminium (painted)
Barrel	anodize aluminium
Piston	die-cast aluminium
Guide slide	acetalic resin
Rack	steel
Piston seal	double-lip nitril rubber (NBR)
Pinion	nitrided steel
Shock absorber seals	nitrile rubber (NBR) on both sides
Magnet	plasto-ferrite

### CODIFICATION KEY

R	1	1	0	3	2	1	8	0	
1	2	3	4	5					

1 Series	2 Type	3 Bore (mm)
R = Ø 32÷125 mm Pneumatic rotary actuators	<b>11</b> = Male pinion without adjustment (degree of accuracy ± 3°) <b>12</b> = Male pinion with adjustment ± 5° <b>13</b> = Female pinion without adjustment (degree of accuracy ± 3°) <b>14</b> = Female pinion with adjustment ± 5°	<b>032</b> = Ø32 <b>040</b> = Ø40 <b>050</b> = Ø50 <b>063</b> = Ø63 <b>080</b> = Ø80 <b>100</b> = Ø100 <b>125</b> = Ø125

4 Angle of rotation	5 Magnetic
<b>090</b> = 90° <b>180</b> = 180° <b>270</b> = 270° <b>360</b> = 360°	<b>M</b> = Magnetic version

Theoretical torque at 1 bar

Ø	Torque	Max kinetic energy
	Nm	Nm
32	1,2	1,8
40	2,25	2,5
50	3,9	4,5
63	7,3	8
80	15,7	12
100	26,5	21
125	51	36

Multiply the value in the table by the operating pressure

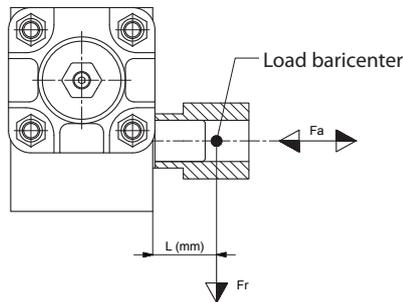
Maximum absorbable kinetic energy

The adjustment of the rotation angle reduces the effect of the cushioning (R12 - R14)

Static loads acceptable for the pinion

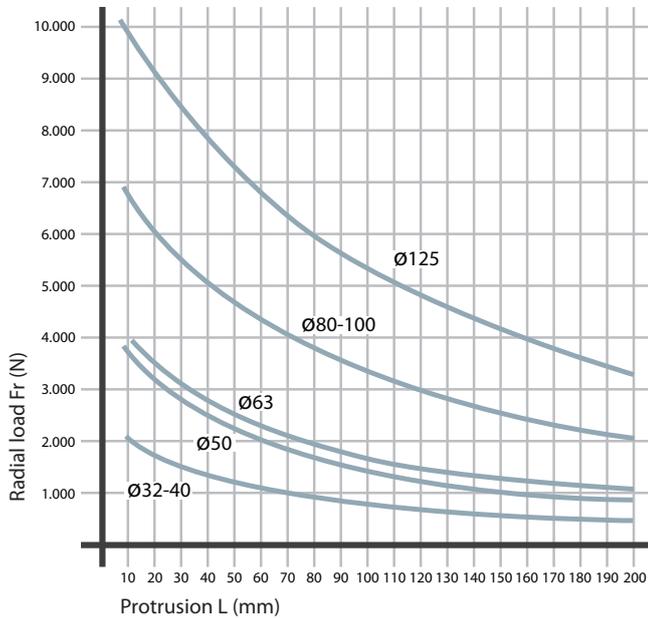
Ø	Fa
	N
32	100
40	100
50	120
63	120
80	200
100	250
125	300

Fa = axial loads max (N) with Fr = 0



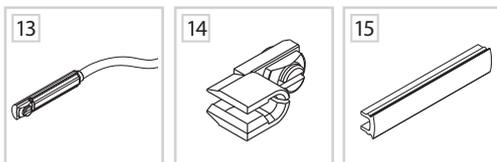
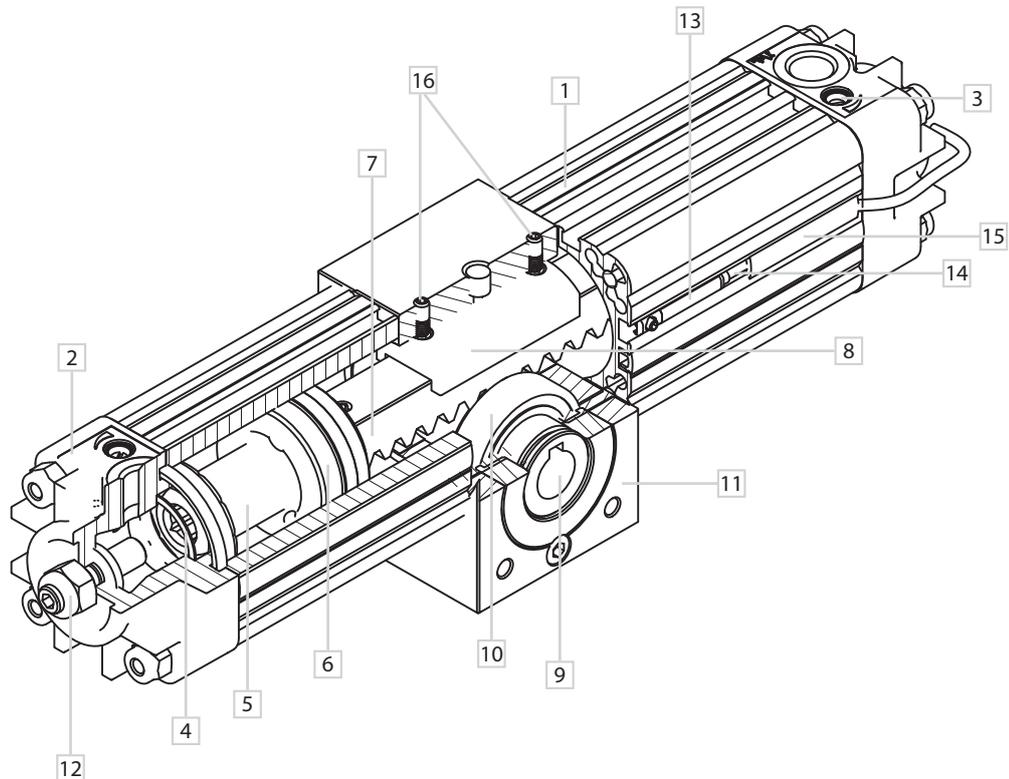
1

Radial loads max based on protrusion



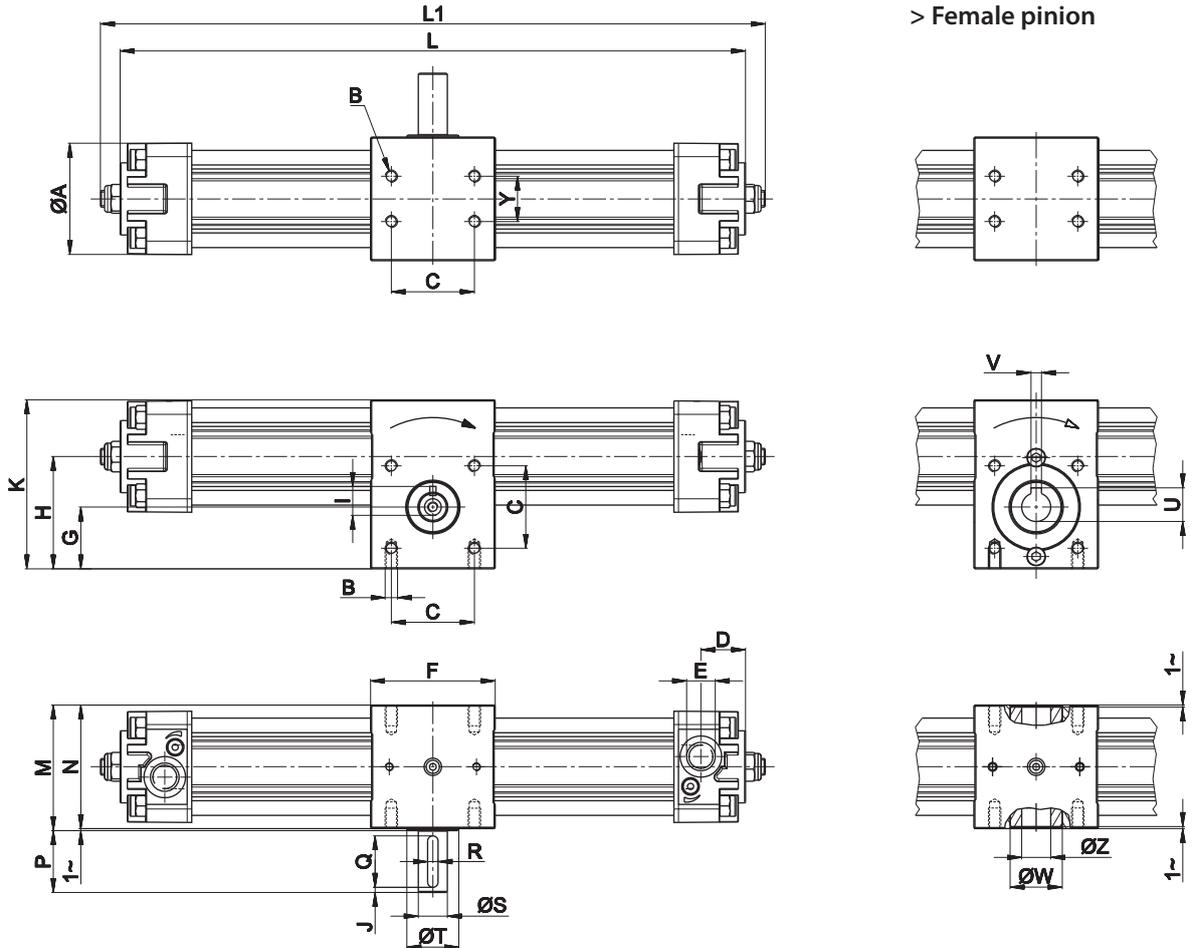
Fr = radial loads Max (N) with Fa = 0 based on L protrusion

## Technical characteristics and accessories



DESCRIPTION	PART NO.
1 Cylinder barrel: extruded profile in aluminium	
2 Die-cast end-caps in aluminium	
3 Pneumatic adjustable cushionings	
4 Shock absorber seals	
5 Die-cast piston in aluminium alloy and acetalic resin guide slide	
6 Piston seals in nitrile rubber compound	
7 Standards-based steel square rack	
8 Guide slide for rack (with self-adjusting backlash recovery system)	
9 Nitrided steel pinion	
10 Ball bearings for pinion support	
11 Anodized aluminum central body	
12 Adjustment screws: angle of rotation $\pm 2,5^\circ$	
13 DF magnetic sensor	DF-____
14 Cable clamping for DF sensor	DF-001
15 DHF covering strip	DHF-0020100
16 Screw for backlash recovery	

Male/female pinion with or without adjustment



Ø	A	B	C	D	E	F	G	H	I	J	K	M	N	P	Q	R	S	T	U	V	W	X	Y	Z
			±0,1													H7	g 6			M7			±0,1	H7
32	48	M6	33	18	G1/8	50	25	46,5	16	2,5	71,5	51	50	30	25	5	14	25	16,3	5	25	M5	18	14
40	54	M6	40	22	G1/4	60	30	54,5	16	2,5	82	61	60	30	25	5	14	25	16,3	5	25	M5	22	14
50	67	M8	50	22	G1/4	70	32,5	60,5	21,5	2,5	94	66	65	40	35	6	19	30	21,8	6	30	M6	25	19
63	78	M8	60	22,5	G3/8	75	37	70,8	27	2,5	110	76	75	40	35	8	24	30	21,8	6	30	M8	35	19
80	97	M10	80	27	G3/8	99	50	93,5	31	2,5	142	100	99	50	45	8	28	45	27,3	8	45	M8	50	24
100	115	M10	80	27,5	G1/2	115	54	99	41	2,5	156,5	116	115	50	45	10	38	50	31,3	8	50	M10	60	28
125	140	M12	90	31,5	G1/2	125	60	118	41	2,5	188	141	140	50	45	10	38	60	31,3	8	60	M10	70	28

R = UNI 6604-A DIN 6885/A

Overall dimensions L - L1 and weights with standard rotations

Ø	Rotation 90°				Rotation 180°				Rotation 270°				Rotation 360°			
	L		Kg		L		Kg		L		Kg		L		Kg	
	L	L1	male pinion	female pinion	L	L1	male pinion	female pinion	L	L1	male pinion	female pinion	L	L1	male pinion	female pinion
32	206	234	1,300	1,200	254	282	1,420	1,320	302	330	1,540	1,440	348	378	1,660	1,560
40	246	278	2,010	1,900	304	336	2,210	2,900	360	394	2,390	2,280	418	450	2,580	2,470
50	268	308	3,070	2,840	332	372	3,340	3,110	394	436	3,610	3,380	458	498	3,880	3,650
63	310	356	4,990	4,640	386	432	5,500	5,170	460	508	6,010	5,700	536	582	6,520	6,230
80	376	426	9,840	9,220	476	526	10,840	10,230	574	626	11,840	11,240	674	726	12,840	12,250
100	404	456	13,650	12,680	512	564	14,860	13,870	618	672	16,070	15,060	726	778	17,280	16,250
125	474	520	23,370	22,220	606	654	25,720	24,520	738	786	28,070	26,820	870	918	30,420	29,120

L = overall dimensions without stroke regulation (R11 - R13)

L1 = overall dimensions with stroke regulation (R12 - R14)

Overall dimensions with intermediate rotations

Intermediate rotations can be obtained by reducing the length of the right-hand piston housing. For this purpose select the standard model having a rotation degree slightly higher than the one required. The length dimensions L-L1 are then reduced in accordance with the following table for each rotation degree.

Ø	Reduction
	mm
32	0,262
40	0,315
50	0,350
63	0,415
80	0,550
100	0,594
125	0,733

The left-hand piston housing maintains standard dimensions

$$\left( \frac{L}{2}, \frac{L_1}{2} \right)$$

# YR2

## Rotary Actuators for Process Automation

- Pneumatic connections configuration: **NAMUR interface - VDI/VDE 3845**
- Top pinion: **VDI/VDE 3845**
- Holes for sensor box connection: **VDI/VDE 3845**
- Bottom holes for connecting valves: **ISO 5211 - DIN 3337**
- Single acting actuators available (2-3-4-5-6 springs)

Standard supplied ATEX version

CE Ex II 2GD T85°C



### TECHNICAL CHARACTERISTICS

Ambient temperature	-20° ÷ 80 °C
Fluid	filtered air, with or without lubrication, neutral gases
Working pressure	single acting: 4 ÷ 8 bar double acting: 2 ÷ 8 bar
Connections <sup>(A)</sup>	NAMUR interface (G1/4)
Rotation	0 - 90° ± 3° (external regulation)
Max pressure	10 bar

### CONSTRUCTIVE CHARACTERISTICS

End-caps	die-cast aluminium
Piston	die-cast aluminium
Guide slide	acetalic resin
Piston seal	nitrile rubber (NBR)
Body	hard anodized aluminum extrusion
Pinion	nickel plated steel
Screws and nuts	stainless steel

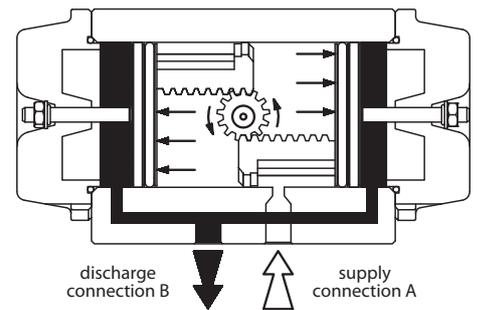
### CODIFICATION KEY

Y	R	2	0	1	D	A	0
1		2			3		

1 Series	2 Size (mm)	3 Version
YR2 = Rotary Actuators for Process Automation	00 = 32 mm (DA0 only) 01 = 50 mm 2A = 63 mm (F04) 2B = 63 mm (F05) 03 = 75 mm 35 = 85 mm 04 = 100 mm 45 = 115 mm 05 = 125 mm 55 = 145 mm 06 = 160 mm 08 = 200 mm 10 = 250 mm	DA0 = Double acting S12 = Single acting 12 springs standard (different number of springs upon request)

(A) = bottom hole for ball valve installation in compliance with ISO 5211/DIN 3337 standards.  
Solenoid valve interface, shaft top-end and top hole for accessory fixing in compliance with VDI/VDE 3845 NAMUR standards.

### Functioning



Opening movement of pistons, anticlockwise rotation when supplying to connection A

### Weight (Kg)

	YR200	YR201	YR22A/2B	YR203	YR235	YR204	YR245	YR205	YR255	YR206	YR208	YR210
Single acting	-	1,27	1,85	3,36	4,81	6,92	9,72	14,15	17,35	25,90	48,62	101
Double acting	0,58	1,15	1,60	2,80	4,28	5,80	8,26	11,63	14,15	21,70	40,10	77

### Opening and closing time at 5,6 bar (sec)

	YR200	YR201	YR22A/2B	YR203	YR235	YR204	YR245	YR205	YR255	YR206	YR208	YR210
Single acting	-	1 Max	1 Max	1 Max	1,5 Max	1,5 Max	1 Max	1,5 ÷ 2	2 Max	2 ÷ 3	4 ÷ 6	7 ÷ 8
Double acting	0,5 Max	1 Max	1 Max	1 Max	1 Max	1 Max	1 Max	1,25 Max	1,5 Max	1,5 ÷ 2	3 ÷ 4	5 ÷ 6

### Air consumption for stroke (l)

	YR200	YR201	YR22A/2B	YR203	YR235	YR204	YR245	YR205	YR255	YR206	YR208	YR210
Opening	0,04	0,08	0,12	0,24	0,48	0,68	1	1,4	1,6	3,2	5,3	14,2
Closing	0,05	0,1	0,16	0,44	0,56	0,96	1,6	2,16	2,56	4	8,6	16,5

### Torque output double acting actuators (Nm)

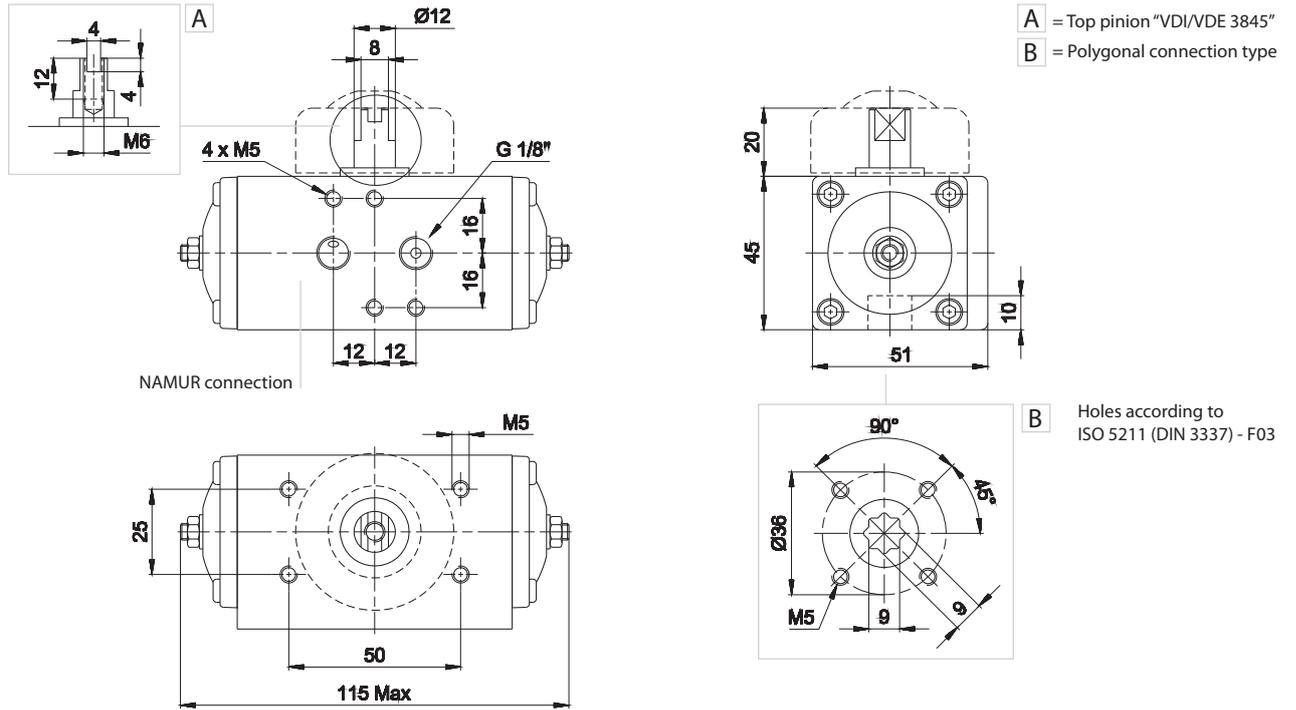
	Working pressure (bar)							
	2	3	4	5	6	7	8	
YR200DA0	2,4	3,6	4,8	6	7,3	8,5	9,7	
YR201DA0	5,9	8,9	11,8	14,8	17,7	21,7	24,8	
YR224DA0-YR22BDA0	9,4	14,1	18,8	23,5	28,2	32,9	37,6	
YR203DA0	20	30	40	50	60	70	80	
YR235DA0	34	51	68	85	102	119	136	
YR204DA0	48	71	95	119	142	168	192	
YR245DA0	87,2	130,8	174,4	218	261,6	305,2	348,8	
YR205DA0	111	167	222	278	333	388,5	444	
YR255DA0	157,6	236,4	315,3	394,1	473	551,8	630,6	
YR206DA0	227	340	454	567	680	794,5	908	
YR208DA0	428	638	851	1064	1276	1491	1704	
YR210DA0	1078	1617	2156	2695	3234	3773	4312	

### Torque output single acting actuators (Nm)

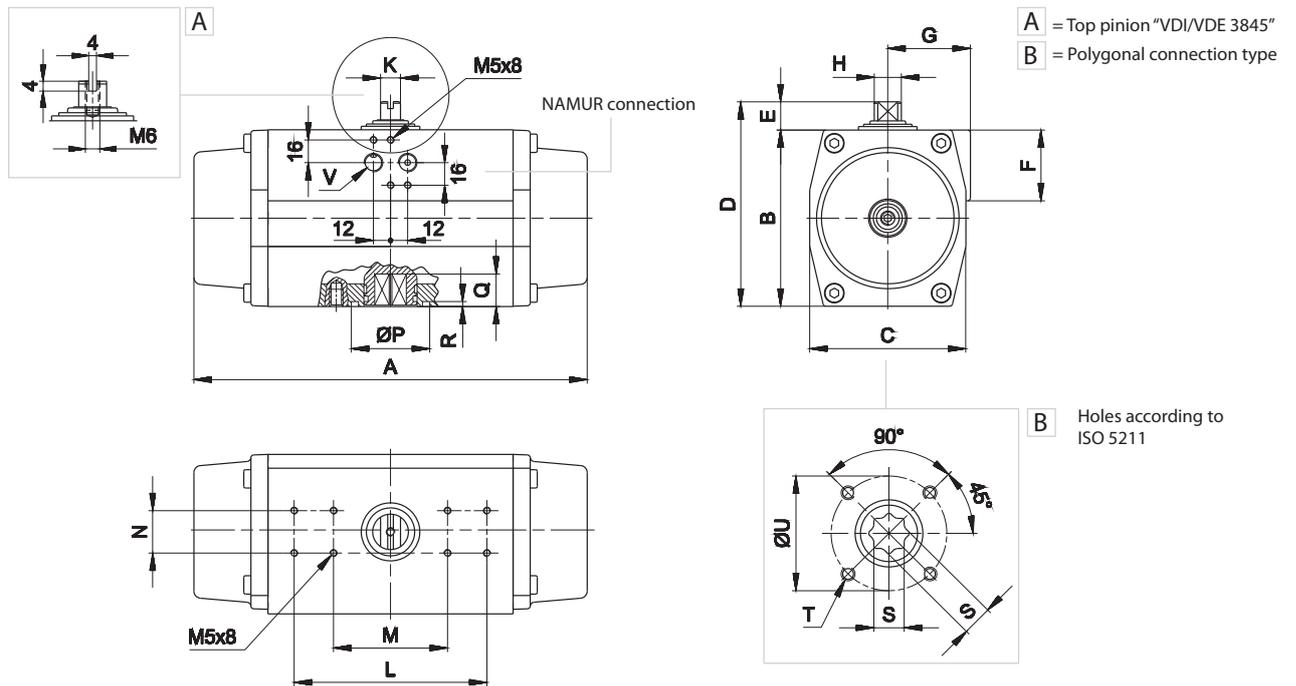
	Working pressure (bar)									
	4		5		6		7		8	
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°
YR201S12	-	-	7,6	4,3	10,5	7,2	14,5	11,2	17,6	14,3
YR224S12-YR22BS12	-	-	12,1	6,7	16,8	11,4	21,5	16,1	26,2	20,8
YR203S12	-	-	26	14	36	24	46	34	56	44
YR235S12	-	-	47	22	64	39	81	56	106,4	73
YR204S12	-	-	64	33	87	56	113	82	137	88,8
YR245S12	72,4	14,4	116	58	159,6	101,6	203,2	145,2	246,8	188,8
YR205S12	-	-	148	75	203	130	258,5	185,5	314	241
YR255S12	145,3	15,3	224,1	94,1	303	173	381,8	241,8	460,6	330,6
YR206S12	-	-	316	147	429	260	543,5	374,5	657	488
YR208S12	-	-	584	308	796	520	1011	735	1224	948
YR210S12	-	-	-	-	1909	1254	2448	1793	2987	2332

- The torque of the actuator must not be lower than the torque needed by the valve.
- The torque needed by the valve is increased by 25% as a safety coefficient

YR200



YR2\_ \_



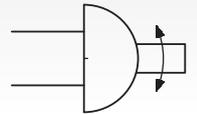
	A	B	C	D	E	F	G	H	K	L	M	N	P	Q	R	S	T	U	V	ISO 5211
YR201	142	67	60	87	20	42	41	12	8	-	80	30	25	10	2	9	M5/M6	36/50	G1/8	F03/F05
YR22A	155	83	73	103	20	42	44,5	12	8	-	80	30	30	12	2	11	M5	42	G1/4	F04
YR22B	155	83	73	103	20	42	44,5	12	8	-	80	30	35	12	2	11	M6	50	G1/4	F05
YR203	213	100	85	120	20	50	49,5	14	10	-	80	30	35	16	3	14	M6/M8	50/70	G1/4	F05/F07
YR235	236	110	98	130	20	50	53	19	14	-	80	30	55	20	3,5	17	M/8	70	G1/4	F07
YR204	276	125	110	145	20	50	58	19	14	-	80	30	55	20	3,5	17	M8/M10	70/102	G1/4	F07/F10
YR245	310	142	128	172	30	58	69	28	20	130	80	30	70	24	3,5	22	M10	102	G1/4	F10
YR205	366	155	140	185	30	-	-	28	20	130	80	30	70	24	3,5	22	M10	102	G1/4	F10
YR255	388	176	160	206	30	-	-	36	28	130	80	30	85	29	3,5	27	M12	125	G1/4	F12
YR206	468	200	175	230	30	-	-	36	28	130	80	30	85	29	3,5	27	M12	125	G1/4	F12
YR208	563	250	215	300	50	-	-	48	32	130	-	30	100	38	5	36	M16	140	G1/4	F14
YR210	750	335	290	385	50	-	-	48	32	130	-	30	130	50	5	46	M20	165	G1/4	F16



# YR3

## Double Rack Rotary Table

- Combination of double piston drive with rotating plate and double rack rotating system
- No backlash
- Adjustable angle based on customer request
- Possibility to choose between adjustment screws and internal hydraulic shock absorbers
- Body and table centering bore for accurate assembly
- Direct mounting of the load on the table
- Grooves for recessed magnetic sensors - two grooves on each side



### TECHNICAL CHARACTERISTICS

Ambient temperature	0 ÷ 50 °C
Fluid	filtered air, with or without lubrication
Working pressure	1,5 ÷ 7 bar
Rotation angle	180°
Adjustable angle	0° ÷ 190°
Bores	Ø 10 - 12 - 15 - 18 - 20 - 25 - 28 - 32 - 40 mm

### CONSTRUCTIVE CHARACTERISTICS

Body	aluminium
End-caps	aluminium
Rotary table	aluminium
Rack	stainless steel
Pinion	carbon steel
Seal	nitrile rubber (NBR)
Shock absorber seals	nitrile rubber (NBR)
Magnet	standard

### CODIFICATION KEY

Y	R	3	0	1	0	
1		2		3		

#### 1 Series

**YR3** = Double Rack Rotary Table

#### 2 Bore (mm)

**003** = Ø10      **070** = Ø28  
**007** = Ø12      **100** = Ø32  
**010** = Ø15      **200** = Ø40  
**020** = Ø18  
**030** = Ø20  
**050** = Ø25

#### 3 Option

**D** = Hydraulic Shock Absorbers (Ø15 ÷ 63)

### Weight

	YR3003	YR3007	YR3010	YR3020	YR3030	YR3050	YR3070	YR3100	YR3200
Kg	0,150	0,250	0,530	0,990	1,290	2,100	2,890	4,100	7,650

### Torque

	YR3003	YR3007	YR3010	YR3020	YR3030	YR3050	YR3070	YR3100	YR3200
∅	10	12	15	18	20	25	28	32	40
Nm	0,3	0,6	1,5	2,2	3,2	5,5	7,5	9,8	19

Theoretical torque at 5 bar

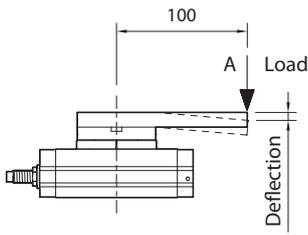
### Maximum kinetic energy absorbable (J)

	YR3003	YR3007	YR3010	YR3020	YR3030	YR3050	YR3070	YR3100	YR3200
With adjusting screw	0,002	0,006	0,007	0,025	0,048	0,81	0,24	0,32	0,56
With hydraulic shock absorbers	-	-	0,039	0,116	0,116	0,294	1,1	1,6	2,9

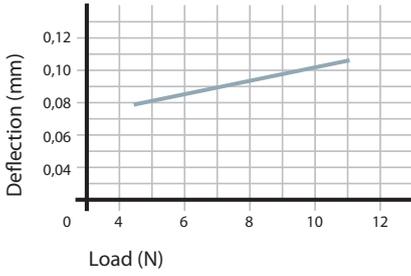
### Ammissible load

Load position						Torque (Nm)
	Side load (N)	Rotary table load (N)				
Load		(P1)	(P2)			
YR3003	33	48	48	1,1		
YR3007	54	71	71	1,5		
YR3010	70	78	74	2		
YR3020	140	130	130	3,5		
YR3030	185	188	358	4,8		
YR3050	300	285	442	9		
YR3070	333	296	476	12		
YR3100	390	493	706	18		
YR3200	543	740	1009	25		

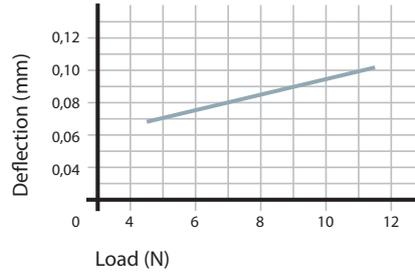
Transverse load and deflection



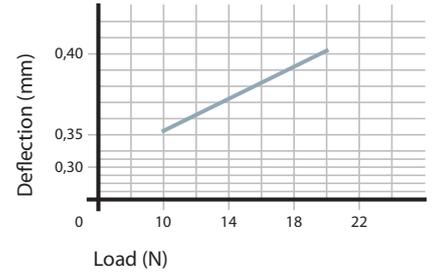
YR3003



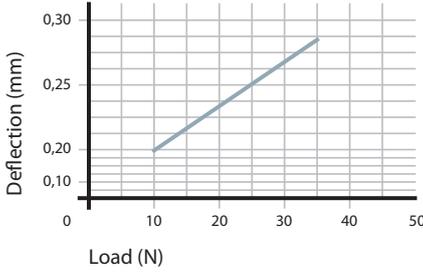
YR3007



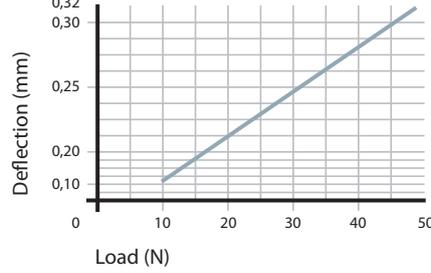
YR3010



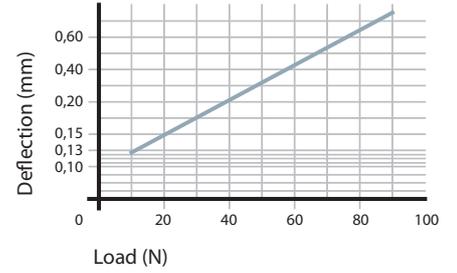
YR3020



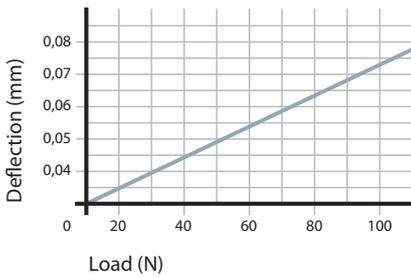
YR3030



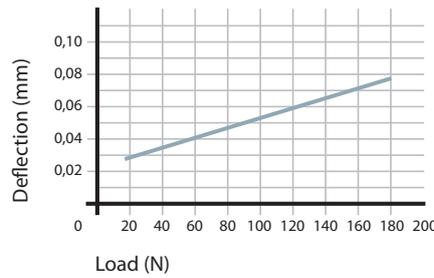
YR3050



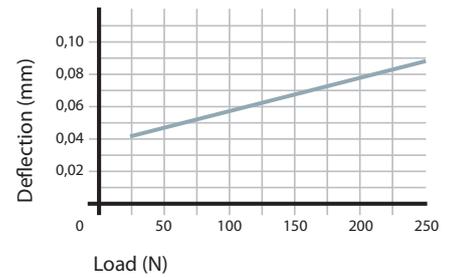
YR3070



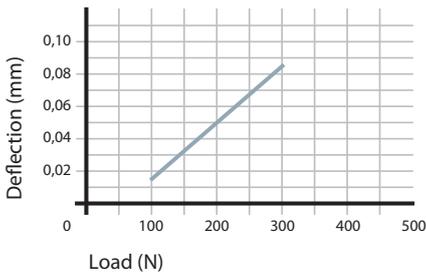
YR3100



YR3200

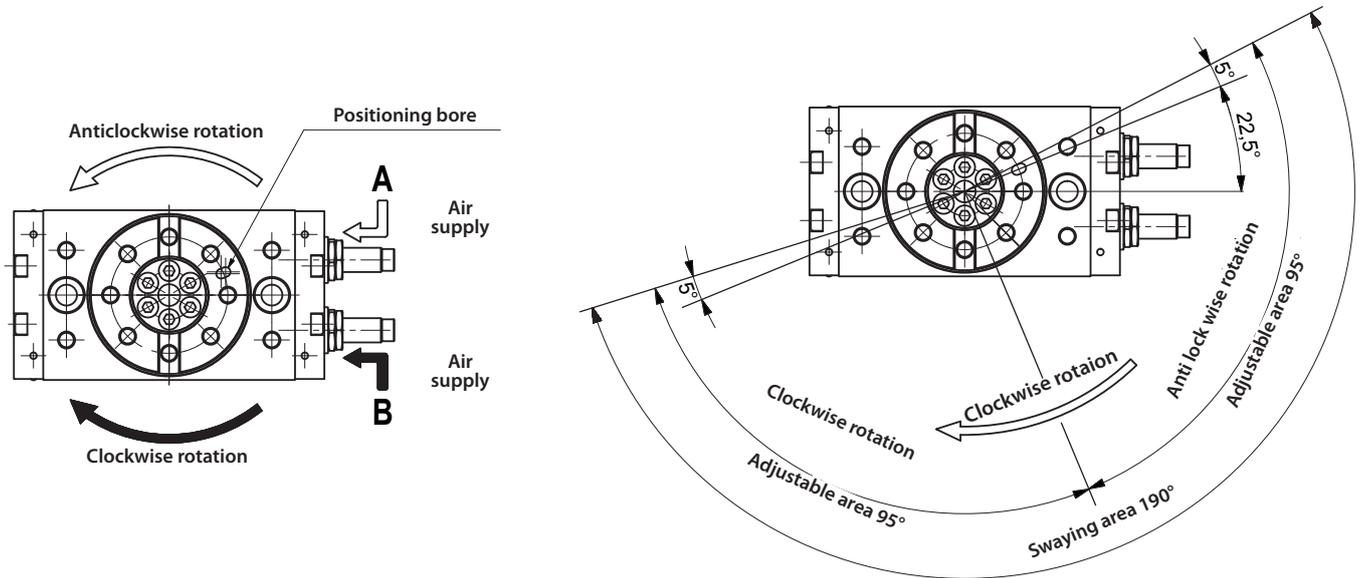


YR3300

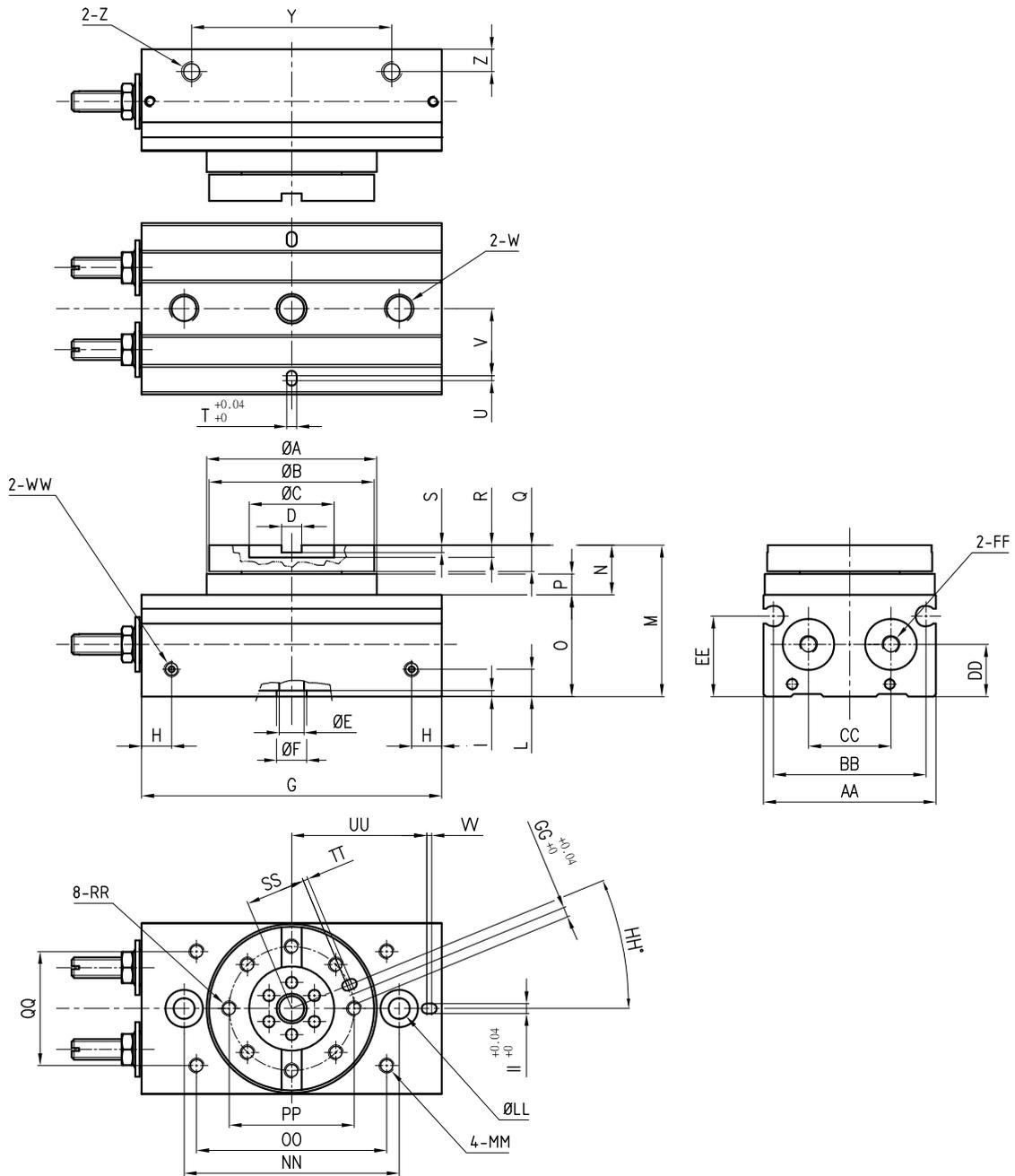


1  
CYLINDERS

## Rotary direction and rotation angle



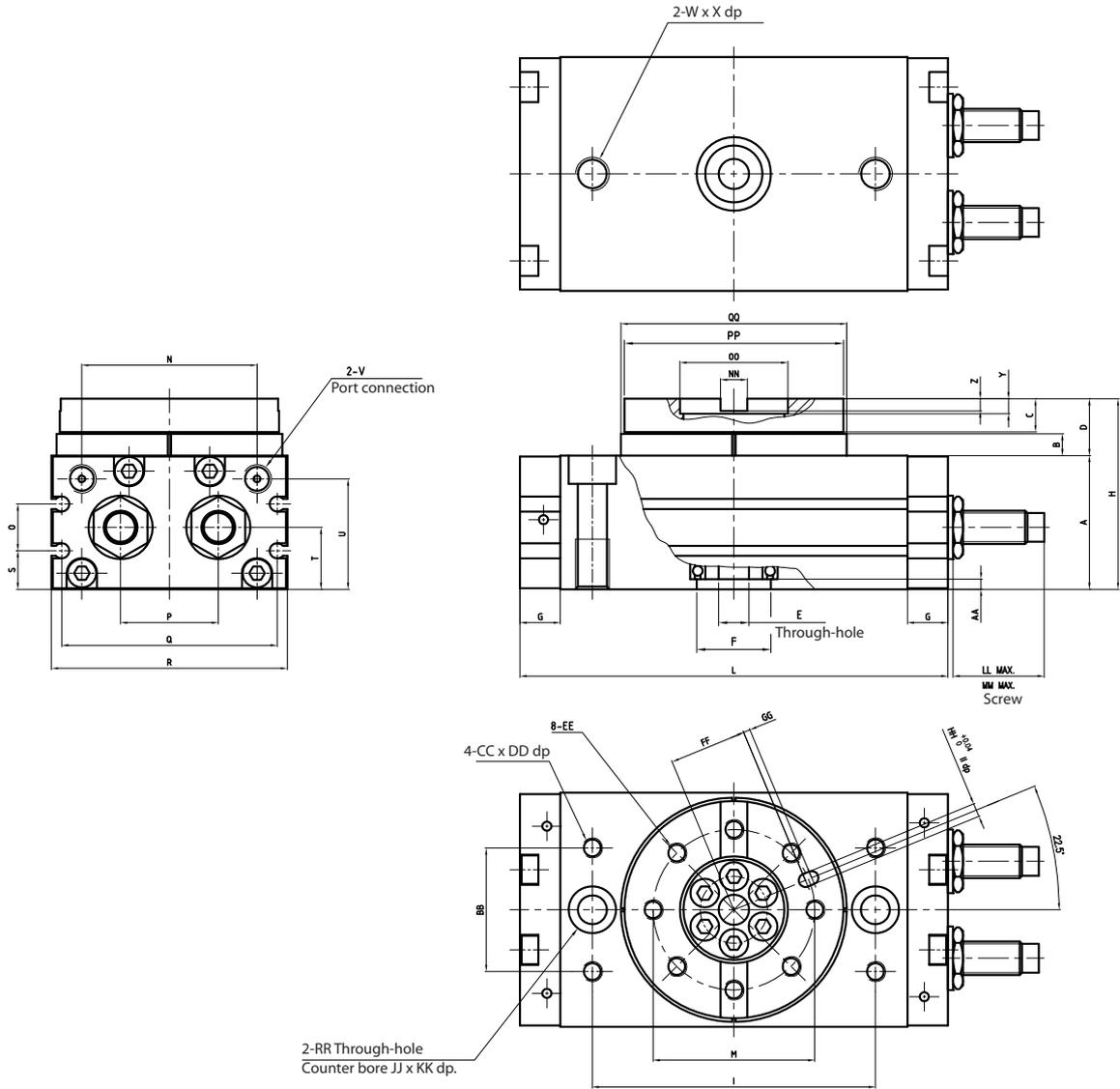
YR3 Ø 10-12



	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
YR3003	34	33	17	4	5	6	60	6	1,2	5,5	30,5	10	20,5	4,2	5,3	2,5	1,5	2	1	13,5	M5x0,8	4,5	40	M4x0,7
YR3007	40	39	20	5	6	7	73,5	9	1,2	5,5	34,5	11,5	23	4,5	6,5	2,5	2	3	1	15,5	M5x0,8	4,5	50	M5x0,8

	AA	BB	CC	DD	EE	FF	GG	HH	II	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV	WW
YR3003	34,5	30,5	16,5	10,5	16,2	M3x0,5	2	22,5°	2	4,2	M3x0,5	43	38	25	23	M3,0,5	12	1	27	1	M3x0,5
YR3007	41	37	19,2	12,5	17	M5x0,8	3	22,5°	3	4,2	M4x0,7	50	45	29	30	M4x0,7	14	1	32,5	1	M5x0,8

YR3 Ø 15-18



	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S	T	U	V	W
YR3010D	34	4,5	8	13	Ø5	Ø15	9,5	47	60	92	Ø32	35	13	18	44	50	9	15,5	28,2	M5x0,8	M8x1,25
YR3020D	37	6,6	9,7	17	Ø9	Ø17	12	54	76	117	Ø43	50,8	12	27,5	59	65	10	16	28,6	M5x0,8	M10x1,5
YR3030D	40	6,5	10	17	Ø9	Ø22	12	57	84	127	Ø48	52	14	29	64	70	11,5	18,5	33	G1/8	M10x1,5
YR3050D	46	7,5	12	20	Ø10	Ø26	15,5	66	100	152	Ø55	62	15	38	74	80	14,5	22	37,5	G1/8	M12x1,75
YR3070D	53	9	12,5	22	Ø16	Ø22	17	75	110	170	Ø67	70	24	43	78	84	14,5	26,5	46,5	G1/8	M12x1,75

	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	II	LL	MM	NN	OO	PP	QQ	RR	SS	TT
YR3010D	12	4	2,7	2,5	27	M4x0,8	8	M5x0,8	15	2	3	3,5	27,1	19	6	Ø20	Ø45	Ø46	Ø6,8	Ø11	6,5
YR3020D	15	6,5	3,2	2,5	34	M6x1	10	M6x1	20,5	2	4	5	27,1	19	8	Ø28	Ø60	Ø61	Ø8,6	Ø14	8,5
YR3030D	15	4,5	3,7	3	37	M6x1	10	M6x1	23	2	4	4,5	27,1	19	8	Ø32	Ø65	Ø67	Ø8,6	Ø14	8,5
YR3050D	18	5	4,2	2	50	M8x1,25	10	M8x1,25	26,5	2	5	5,5	27,1	19	10	Ø35	Ø75	Ø77	Ø10,5	Ø17	10,5
YR3070D	18	5	4,2	4	57	M8x1,25	10	M8x1,25	32,5	2	5	3,5	32	-	10	Ø46	Ø88	Ø90	Ø10,5	Ø17	10,5



# S1

## Rodless Cylinders standard version - Ø 16÷50 mm

- Extruded aluminium profile Ø 16÷50 mm
- Stroke length up to 6 m
- Different possibilities of end-cap supply
- Different carriage types: standard, medium, long
- High translation speed until 3 m/s
- Magnetic version standard supplied for Ø 16
- Assembly with integrated slide unit - series J30-31- available upon request

Available ATEX version upon request

CE Ex II 2Gc IIC T5 II 2Dc T100°C



### TECNICAL CHARACTERISTICS

Ambient temperature	-20÷80 °C
Fluid	filtered air, with or without lubrication
Working pressure	3÷10 bar
Bores	Ø 16 - 25 - 32 - 40 - 50 mm
Cushionings	adjustable on both sides

### CONSTRUCTIVE CHARACTERISTICS

End-caps	zamak (Ø16), die-cast aluminium (Ø25÷50)
Barrel	anodized aluminium
Piston	aluminium
Guide slide	acetalic resin
Piston seal	double lip nitrile rubber (NBR)
Shock absorber seals	nitrile rubber (NBR) on both sides
Magnet	neodimio

### CODIFICATION KEY

S	1	0	1	1	2	5	0	8	5	0		
1	2	3	4	5	6	7	8					

#### 1 Series

S1 = Ø 16÷50 mm - Rodless cylinders standard version

#### 2 Carriage type

- 0 = Standard carriage
- 2 = Medium carriage (except for Ø16)
- 3 = Long carriage (except for Ø16)

#### 3 Left end-cap supply port

- 0 = No supply port (both chambers are supplied from the right end-cap)
- 1 = Side supply port (except for Ø16)
- 2 = Bottom supply port (except for Ø16)
- 3 = Rear supply port (except for Ø16)

#### 4 Right end-cap supply port

- 1 = Side supply port (except for Ø16)
- 2 = Bottom supply port (except for Ø16)
- 3 = Rear supply port (except for Ø16)
- 4 = Rear supply ports for both chambers on the right end-cap
- 5 = Side supply ports for both chambers on the right end-cap (only for Ø16)

#### 5 Bore (mm)

- 16 = Ø16
- 25 = Ø25
- 32 = Ø32
- 40 = Ø40
- 50 = Ø50

#### 6 Stroke (mm)

- Up to 5000 (Ø 16)
- Up to 6000 (Ø 25÷50)

#### 7 Magnetic

M = Magnetic version standard supplied (Ø 16) upon request (Ø 25÷50)

#### 8 Atex option

X = Atex (upon request)

For types and versions, see ATEX catalogue

### Standard version Ø 16÷50 mm



## CONSTRUCTIVE CHARACTERISTICS

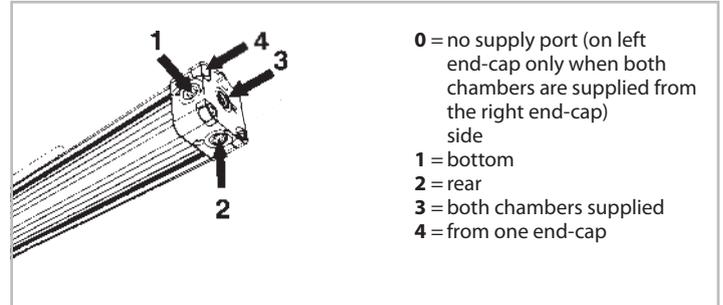
### END-CAPS

End-caps in die-cast light alloy with various supply port options. The unique method of stripseal attachment permits easy assembly and disassembly, without the need for tools or the necessity for continuous adjustment.

Ø 16 mm



Ø 25÷50 mm

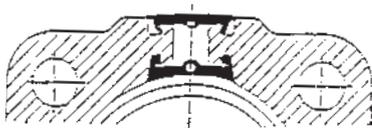


### SLIDEWAY SEALING

The pneumatic sealing is achieved through an axial elastomer stripseal reinforced with Kevlar. This system guarantees dimensional stability even with high speeds.

1

The external protection seal consists of a thermoplastic stripseal reinforced with Kevlar.



### PISTON-CARRIAGE ASSEMBLY

In extruded aluminium alloy with thermoplastic plane guide bearings. The piston is fitted with double lip seals which automatically self-compensate against wear. Pistons with permanent magnets are available upon request (S1 series only).

### BARREL

In extruded aluminium alloy with internal and external anodisation.

### CUSHIONINGS

Pneumatic adjustable cushionings with two regulation screws in each end-cap allow an improved regulation of piston deceleration.

### MECHANICAL SHOCK ABSORBERS

Mechanical rubber shock absorbers avoid mechanical stress and reduce machinery noise (below 50 dB).

Stroke tolerances

Ø	mm
16	+2,5 - 0
25	+2,5 - 0
32	+3,2 - 0
40	+3,2 - 0
50	+3,2 - 0

Cylinder mass  
Standard carriage

Cylinder mass  
Medium carriage

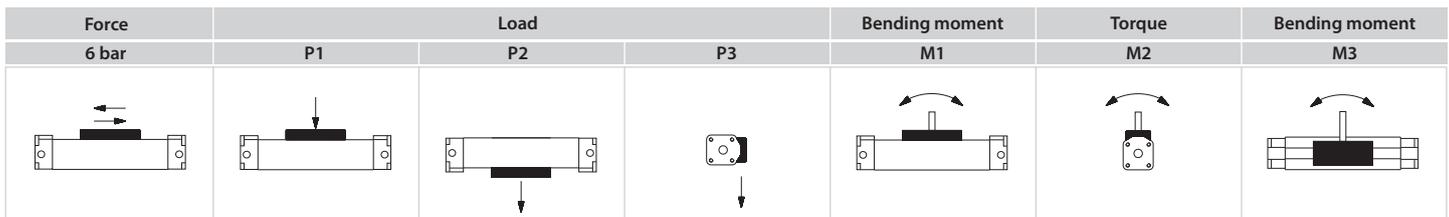
Cylinder mass  
Long carriage

Ø	Cylinder - stroke 0		Cylinder - stroke 0	
	g	Increase for 100 mm stroke	g	Increase for 100 mm stroke
16	310	104	-	-
25	750	210	840	1050
32	1310	325	1480	1930
40	2600	555	2910	3800
50	4785	955	5550	7330

Theoretical forces (N) at different working pressure (bar)  
Static load value (N) and torque (Nm)

Please note that in dynamic conditions, the load must be reduced due to effects associated with the speed.

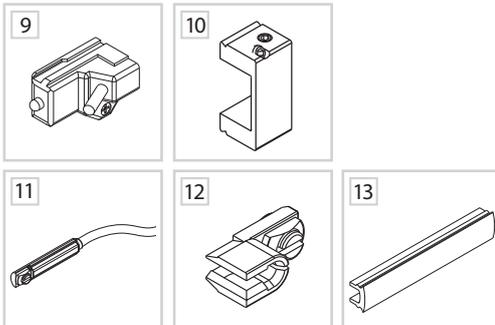
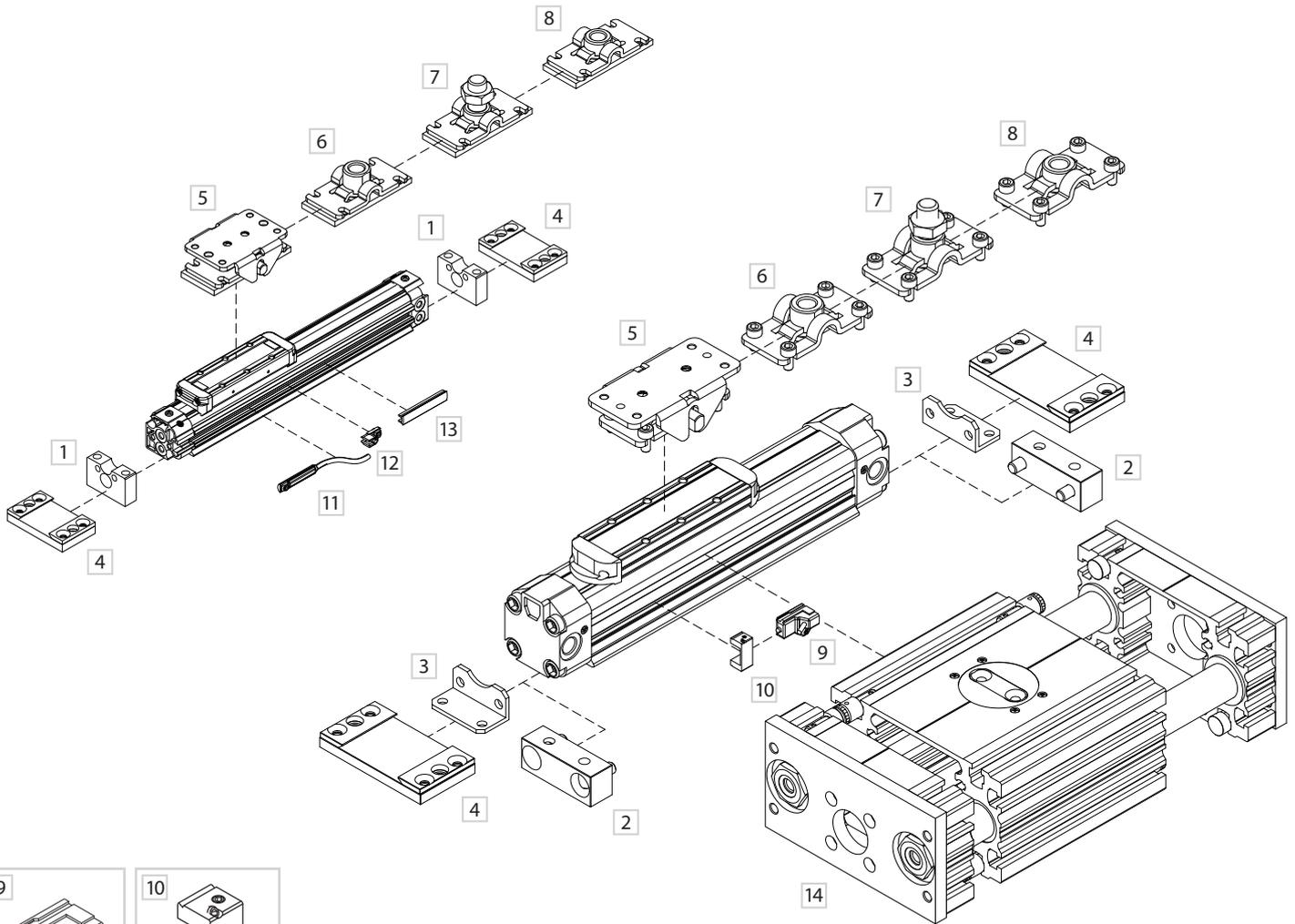
A moment is the product of the load (Newton) and the arm (meters), i.e the distance between the centre of gravity of the load and the longitudinal axis of the piston.



Ø	Force F (N)	Load			Standard carriage			Medium carriage			Long carriage		
		P1 (N)	P2 (N)	P3 (N)	M1 (Nm)	M2 <sup>(a)</sup> (Nm)	M3 (Nm)	M1 (Nm)	M2 <sup>(a)</sup> (Nm)	M3 (Nm)	M1 (Nm)	M2 (Nm)	M3 (Nm)
16	125	100	100	25	5	0,2	0,8	-	-	-	-	-	-
25	250	200	200	50	8	2	3	14	3	5	15	6	9
32	420	250	250	65	9	3	4	15	4	7	28	8	12
40	640	350	350	90	11	9	14	16	14	20	31	27	39
50	1050	500	500	125	19	13	19	29	20	30	52	36	53

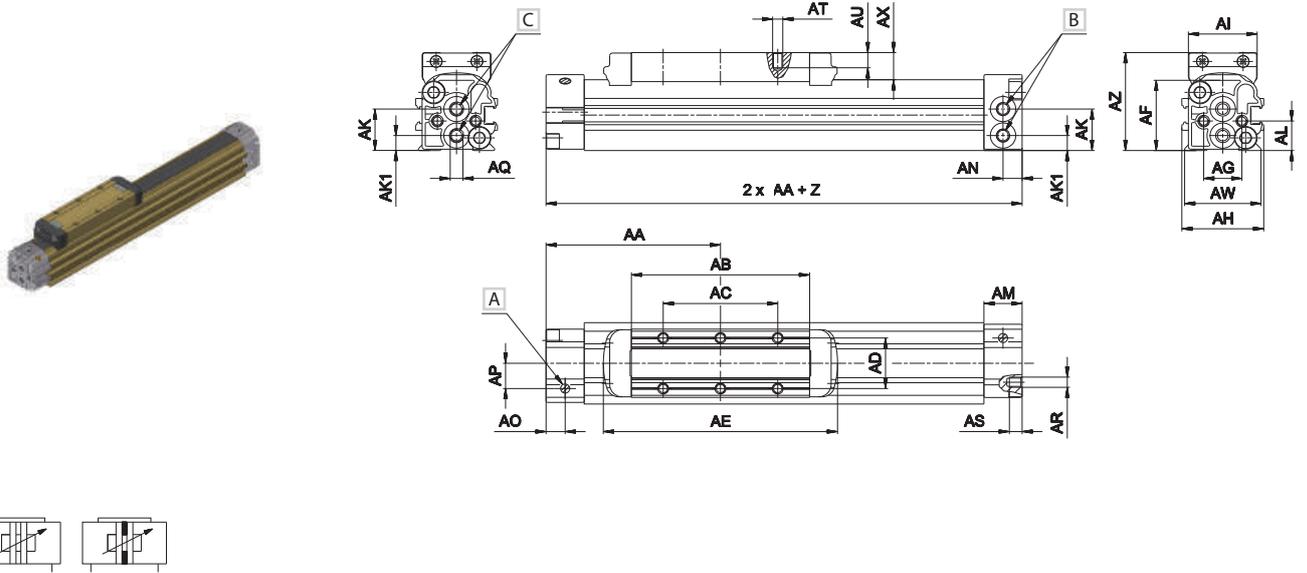
(a) = Using the cylinder with heavy stress is not recommended

Fixing elements and accessories

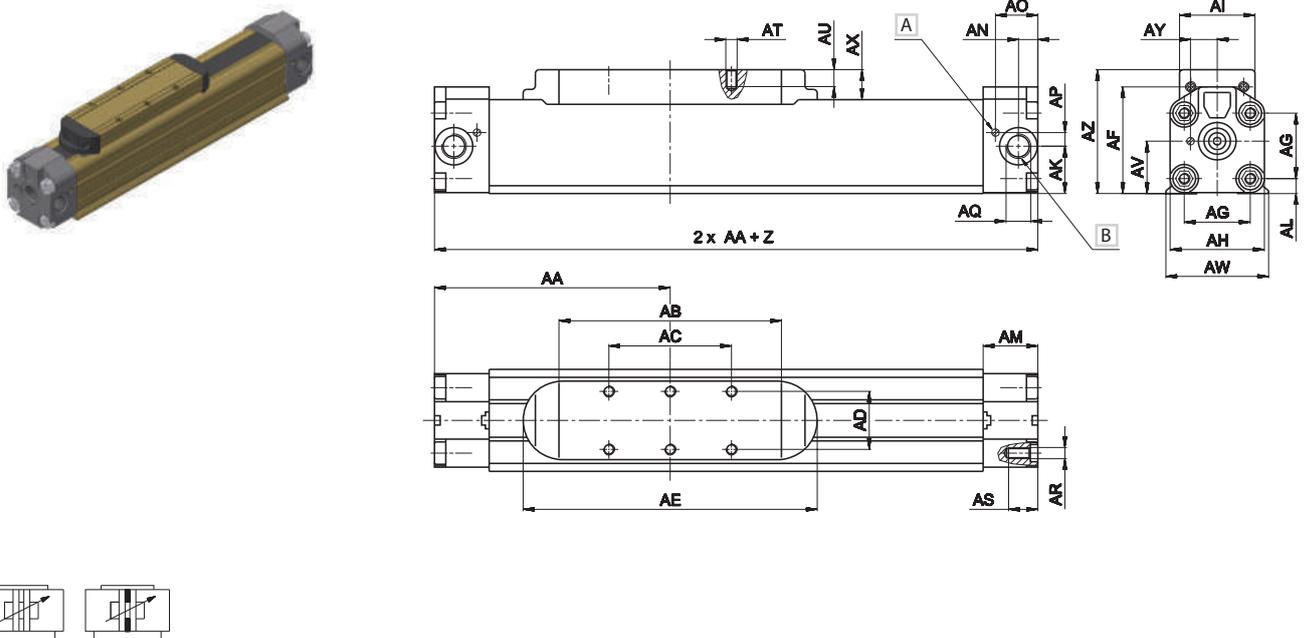


DESCRIPTION	NOTE	PART NO.
1 Bracket Ø16	Anodized aluminium	SF-13_ _ _
2 Bracket Ø40-50	Anodized aluminium	SF-13_ _ _
3 Angle bracket Ø25-32	Zinc-plated steel	SF-13_ _ _
4 Fixing plate	Zinc-plated steel	SF-12_ _ _
5 Oscillating bracket	Zinc-plated steel	SF-24_ _ _
6 Female threaded connection	Zinc-plated steel	SF-26_ _ _
7 Male threaded pin	Zinc-plated steel	SF-27_ _ _
8 Female connection without thread	Zinc-plated steel	SF-28_ _ _
9 DH sensor	-	DH- _ _ _
10 DH sensor fixing plate	-	DH-S_ _ _
11 DF sensor (Ø16 only)	-	DF- _ _ _
12 Cable clamping for DF sensor (Ø16 only)	-	DF-001
13 DHF covering strip (Ø16 only)	Nitrile rubber (NBR)	DHF-0020100
14 Slide unit J30_31	-	J30A530050A

Rodless cylinder with standard carriage - 6 fixing holes Ø 16 mm



Rodless cylinder with standard carriage - 6 fixing holes Ø 25 ÷ 50 mm



1  
CYLINDERS

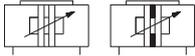
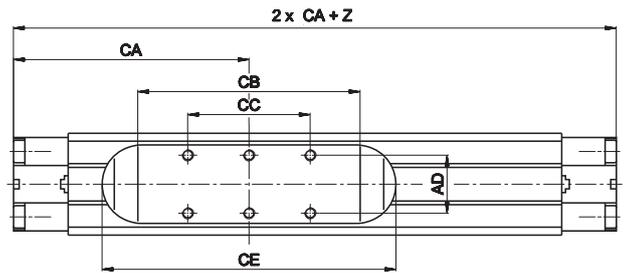
Z = Stroke

Ø	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK	AK1	AL	AM
16	68,5	70	45	20	92	30	18	32	27	16,5	6	11,5	15
25	100	95	50	24	130	48,3	28	40,5	33	20,2	-	7	24
32	125	118	65	31	156	57	35	50	40	25,3	-	8	29
40	150	134	65	31	177	74	44	64	44	33,8	-	11,8	33
50	175	164	105	39	211	90,7	55	80	54	41,4	-	14,7	33

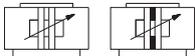
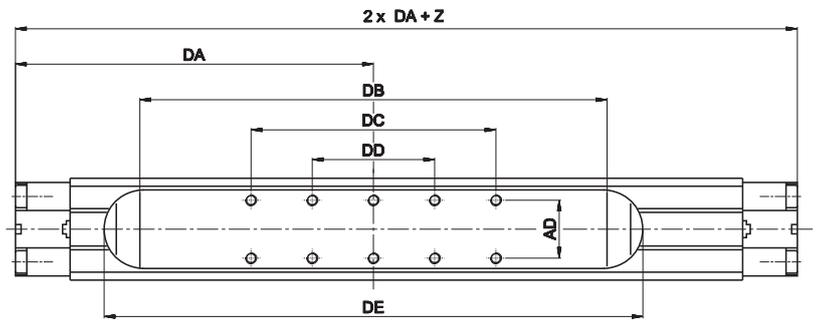
Ø	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
16	7,5	7,5	10	M5	M4	5	M4	6	-	30	11	-	39
25	7,4	18,2	5,7	G1/8	M5	12	M5	9	22,8	42,8	16	12,2	57,6
32	10,3	22,5	7,3	G1/4	M6	15,5	M6	9	28	54,5	16	14,2	66,2
40	12,5	26,5	8,7	G3/8	M8	20	M6	11	37	67	19,5	16,5	85,8
50	14,2	25,7	11,8	G3/8	M10	20	M8	12	47,7	86	20,5	19,1	103

- A Pneumatic cushioning adjusting screw
- B Side supply port
- C Rear supply port

Rodless cylinder with medium carriage - 6 fixing holes  $\varnothing 25 \div 50$  mm



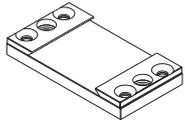
Rodless cylinder with long carriage - 10 fixing holes  $\varnothing 25 \div 50$  mm



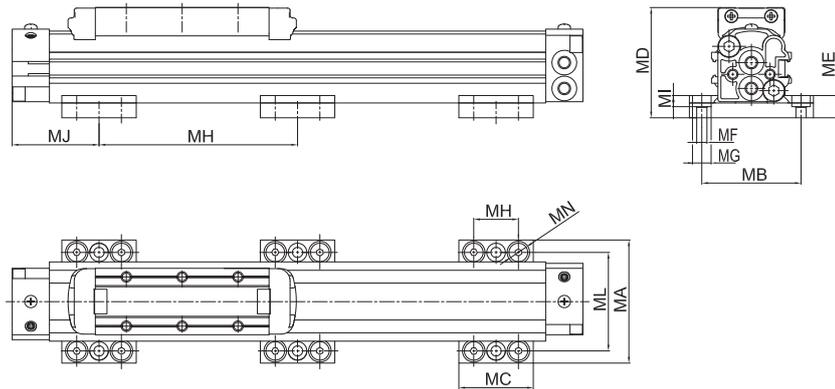
Z = Stroke

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

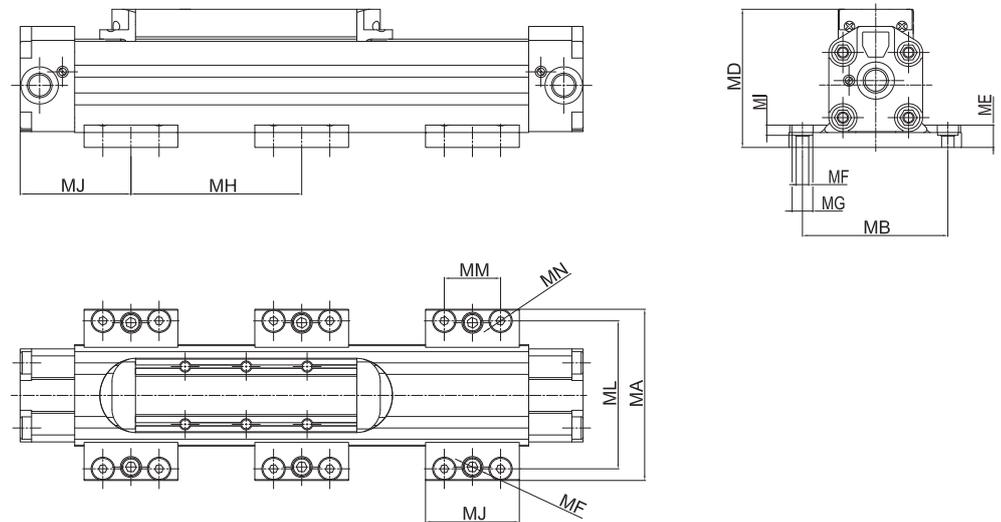
Fixing plate



Ø 16 mm



Ø 25÷50 mm



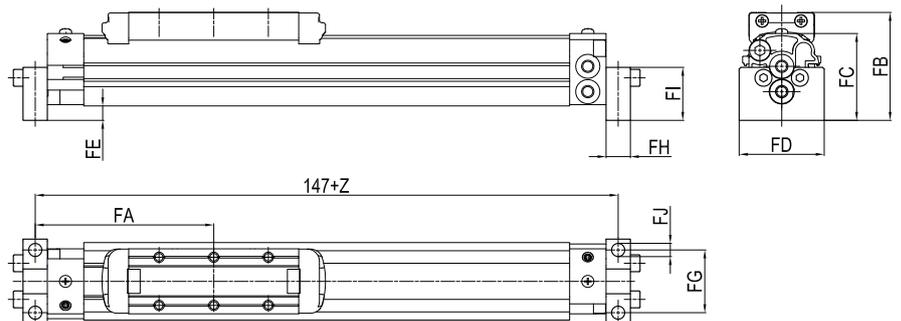
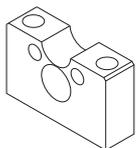
Material: zinc-plated steel

Cylinder Ø	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	ML <sup>(b)</sup>	MM	MN	Mass g	Part no.
16	50	40	30	44,8	9	M5	8	400 (a)	4,5	35	40	-	M6	83	SF-12016
25	78,5	63,5	50	65,6	12	M8	11	500 (a)	6,5	55	65,5	30	M6	310	SF-12025
32	92	77,5	50	74,2	12	M8	11	600 (a)	8,5	60	79,5	30	M6	340	SF-12032
40	117	96	60	95,8	15	M10	14	700 (a)	8	70	96	37,5	M8	660	SF-12040
50	136	115	60	113	15	M10	14	800 (a)	8	70	115	37,5	M8	700	SF-12050

(a) = Max allowable dimension to limit the bending of the cylinder according to the stroke and to provide a correct fixing

(b) = For Ø 16 - 40 - 50 mm, MB and ML dimensions are the same

Bracket

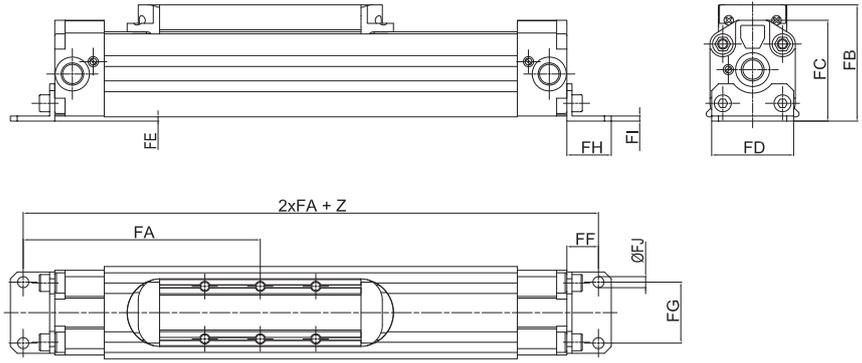
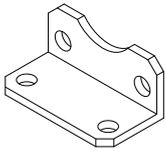


Material: Anodized aluminium

Cylinder Ø	FA	FB	FC	FD	FE	FG	FH	FI	FJ	Mass g	Part no.
16	73,5	45	36	35	6	26	10	22	5,5	15	SF-13016

Subject to change

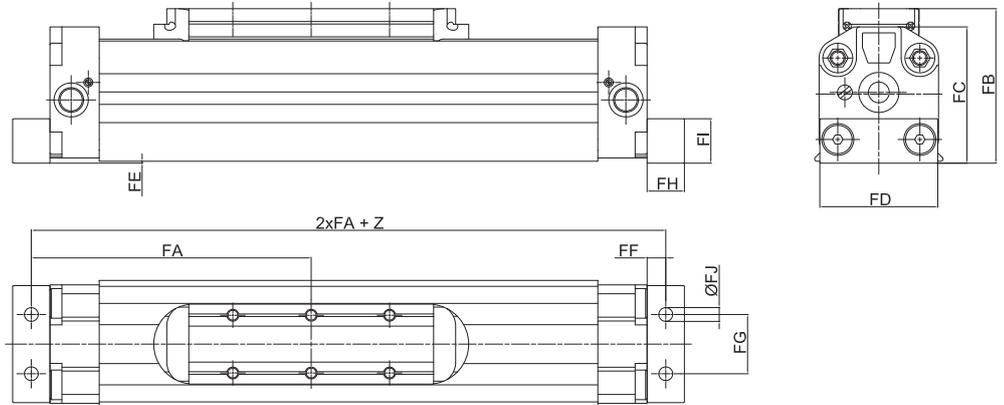
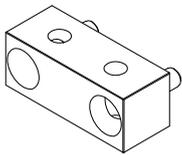
Angle bracket



Material: Zinc-plated steel

Cylinder Ø	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	Mass g	Part no.
25	116	58,1	48,8	40	0,5	16	27	22	2,5	5,5	34	SF-13025
32	143,5	68,7	59,2	48	2,5	18,5	36	26	3	6,5	53	SF-13032

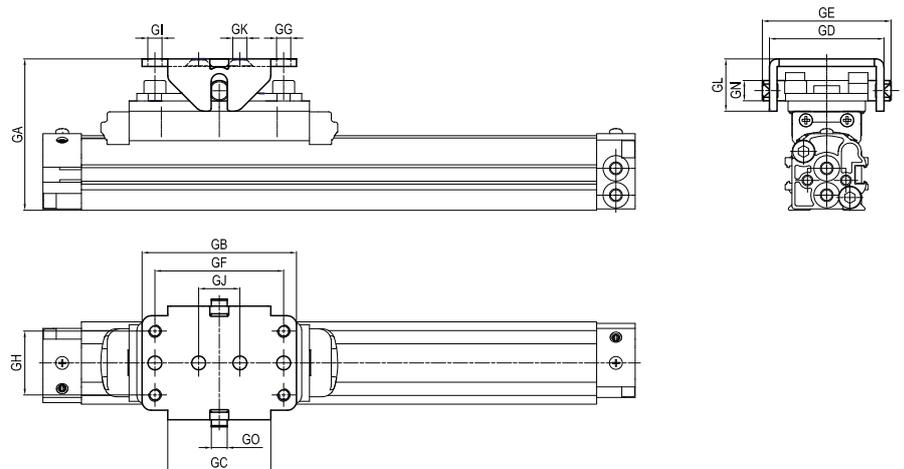
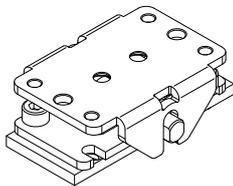
Bracket



Material: Anodized aluminium

Cylinder Ø	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	Mass g	Part no.
40	162,5	86,5	74,9	63	0,7	12,5	30	25	25	9	116	SF-13040
50	187,5	104,3	92,4	79	1,3	12,5	40	25	30	9,3	170	SF-13050

Oscillating bracket

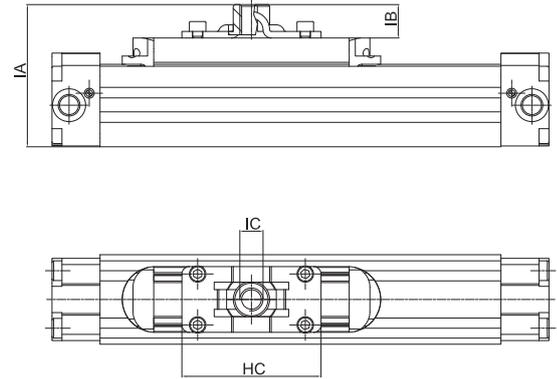
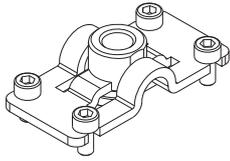


Material: Zinc-plated steel

Cylinder Ø	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	Mass g	Part no.
16	58	60	40	44,5 ± 0,25	50	50	5,5	25	M5	16	5,5	20,5	3	8	6	195	SF-24016
25	73,5 ± 2,5	60	40	44,5 ± 2,5	50	50	5,5	25	M5	16	5,5	20,5	3	8	6,15	142	SF-24025
32	89 ± 4	100	60	56 ± 4	64	80	5,5	30	M6	40	6,5	30	4	12	8,2	362	SF-24032
40	108,5 ± 4	100	60	56 ± 4	64	80	5,5	30	M6	40	6,5	30	4	12	8,2	362	SF-24032
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Use in case of external guide

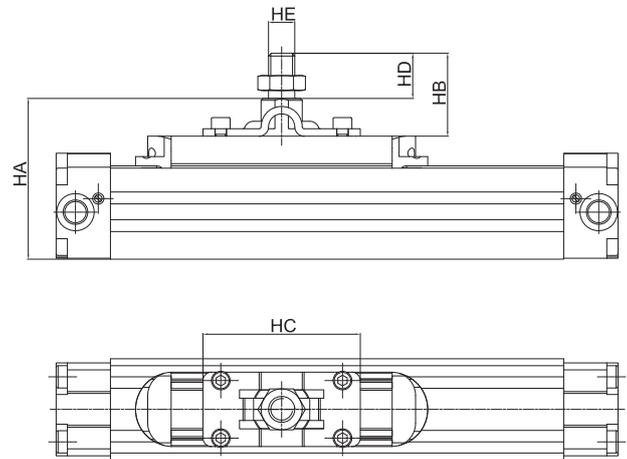
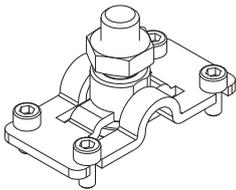
**Female threaded connection**



Material: Zinc-plated steel

Cylinder Ø	IA	IB	IC	HC	Mass g	Part no.
16	61	22	M12	64	132	SF-26016
25	75,6	18	M12	64	76	SF-26025
32	87,2	21	M14	84	157	SF-26032
40	106,8	21	M14	84	157	SF-26032
50	-	-	-	-	-	-

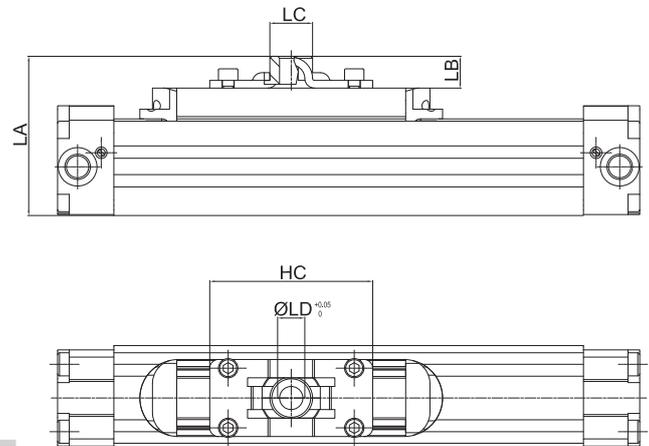
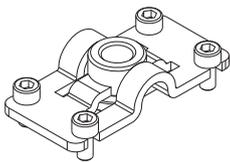
**Male threaded pin**



Material: Zinc-plated steel

Cylinder Ø	HA	HB	HC	HD Ø	HE	Mass g	Part no.
16	76,5	37,5	64	22	M12	160	SF-27016
25	91,1	33,5	64	22	M12	105	SF-27025
32	107,7	41,5	84	24,3	M14	260	SF-27032
40	127,3	41,5	84	24,3	M14	260	SF-27032
50	-	-	-	-	-	-	-

**Female connection without thread**



Material: Zinc-plated steel

Cylinder Ø	LA	LB	LC	LD Ø	LH	Mass g	Part no.
16	56	17	18	10	64	129	SF-28016
25	70,6	13	18	10	64	73	SF-28025
32	83,4	17,2	22	12	84	152	SF-28032
40	103	17,2	22	12	84	152	SF-28032
50	-	-	-	-	-	-	-



# S5

## Rodless cylinders with integrated slide - Ø 25÷50 mm Technopolymer sliding guide

- Extruded aluminium profile Ø 25÷50 mm
- Stroke length up to 6m
- Flexible guiding system
- Sliding of carriage by means of plastic slides on steel rods
- Translation speed 0,2÷1,5 m/sec
- Version with locking unit available upon request



### TECNICAL CHARACTERISTICS

Ambient temperature	-20÷80 °C
Fluid	filtered air, with or without lubrication
Working pressure	3÷10 bar
Bores	Ø 25 - 32 - 40 - 50 mm
Cushionings	adjustable on both sides

### CONSTRUCTIVE CHARACTERISTICS

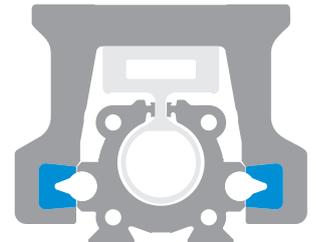
End-cap	die-cast aluminium
Barrel	anodized aluminium
Piston	aluminium
Guide slide	acetalic resin
Piston seal	double lip nitrile rubber (NBR)
Shock absorber seals	nitrile rubber (NBR) on both sides

### CODIFICATION KEY

S	5	0	1	1	2	5	0	8	5	0	
1	2	3	4	5	6						

<b>1 Series</b> S5 = Ø 25÷50 mm - Rodless cylinders with integrated guides Technopolymer sliding guide	<b>2 Carriage type</b> 0 = Standard carriage (except Ø 40 - 50 mm) 2 = Medium carriage 3 = Long carriage	<b>3 Left end-cap supply port</b> 0 = No supply port (both chambers are supplied from the right end-cap) 1 = Side supply port 2 = Bottom supply port 3 = Rear supply port
<b>4 Right end-cap supply port</b> 1 = Side supply port 2 = Bottom supply port 3 = Rear supply port 4 = Rear supply ports for both chambers on the right end-cap	<b>5 Bore (mm)</b> 25 = Ø25 32 = Ø32 40 = Ø40 50 = Ø50	<b>6 Stroke (mm)</b> Up to <b>6000</b>

### Technopolymer sliding guide



### S5 with L6 locking unit



Stroke tolerances

Ø	mm
25	+2,5 - 0
32	+3,2 - 0
40	+3,2 - 0
50	+3,2 - 0

Cylinder mass  
Standard carriage

Cylinder mass  
Medium carriage

Cylinder mass  
Long carriage

Ø	Cylinder - stroke 0		Increase for 100 mm stroke		Cylinder - stroke 0		Cylinder - stroke 0	
	g		g		g		g	
25	1625		365		1930		264	
32	2775		495		3265		465	
40	-		920		6095		860	
50	-		1280		10030		14040	

Theoretical forces (N) at different working pressure (bar)

Static load value (N) and torque (Nm)

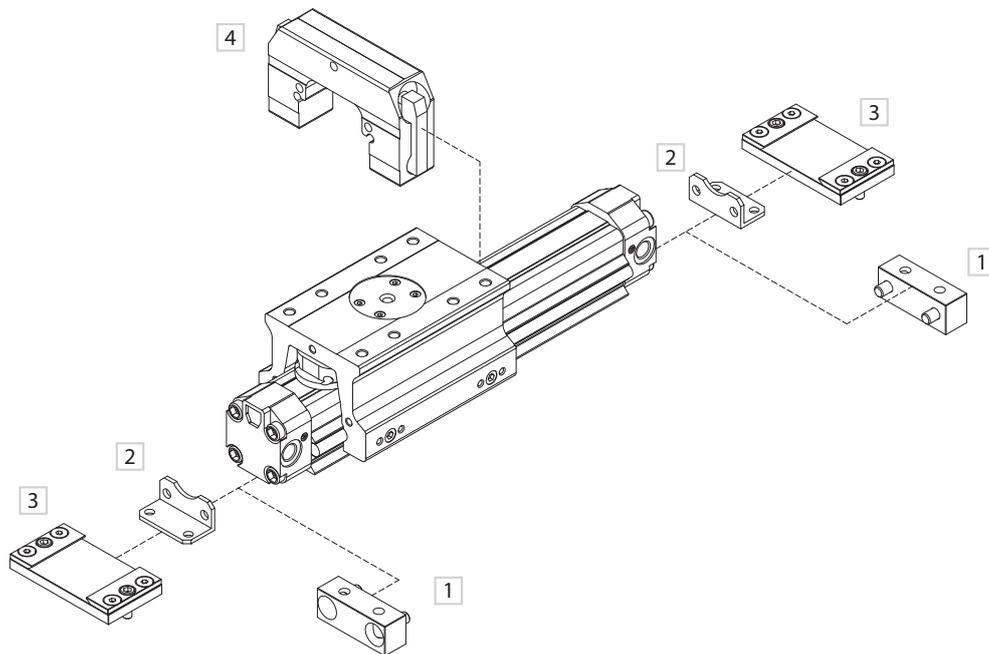
Please note that in dynamic conditions, the load must be reduced due to effects associated with the speed.

A moment is the product of the load (Newton) and the arm (meters), i.e the distance between the centre of gravity of the load and the longitudinal axis of the piston.

1

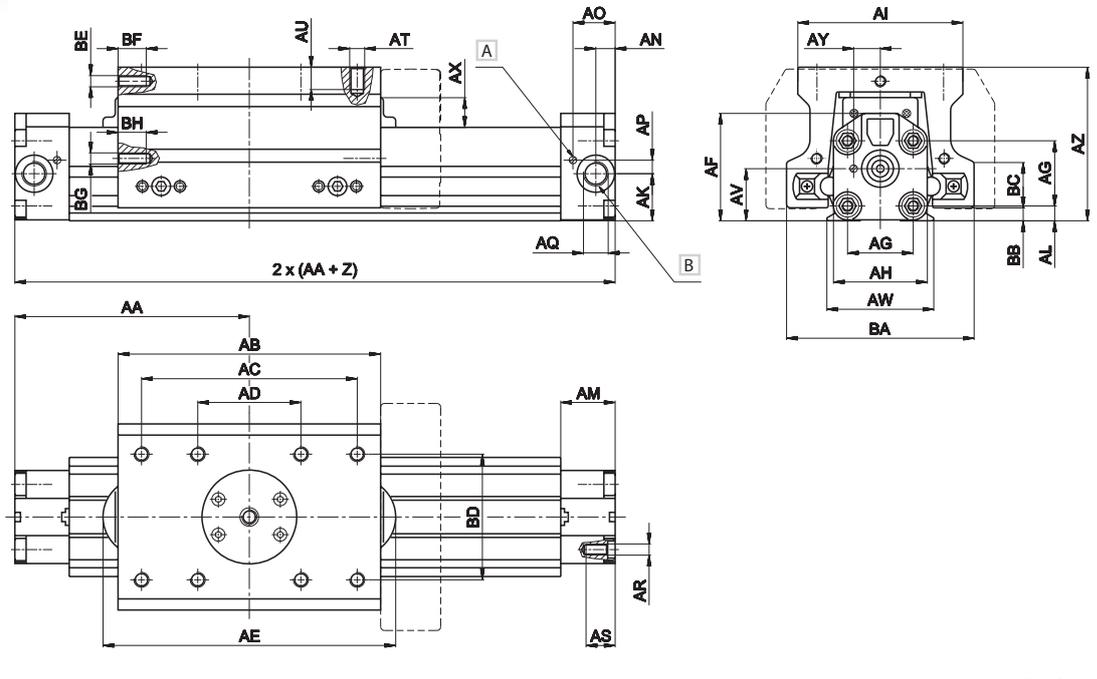
Force 6 bar	Load			Bending moment	Torque	Bending moment							
	P1	P2	P3	M1	M2	M3							
Ø	Force	Load			Standard carriage			Medium carriage			Long carriage		
	F (N)	P1 (N)	P2 (N)	P3 (N)	M1 (Nm)	M2 (Nm)	M3 (Nm)	M1 (Nm)	M2 (Nm)	M3 (Nm)	M1 (Nm)	M2 (Nm)	M3 (Nm)
25	250		400		13	8	16	20	10	25	40	15	50
32	420		400		20	9	27	30	12	40	55	18	75
40	640		600		-	-	-	60	30	80	110	45	150
50	1050		800		-	-	-	85	50	110	150	75	210

Fixing elements and accessories



DESCRIPTION	NOTE	PART NO.
1 Bracket Ø40-50	Anodized aluminium	SF-13 _ _ _
2 Angle bracket Ø25-32	Zinc-plated steel	SF-13 _ _ _
3 Fixing plate	Zinc-plated steel	SF-12 _ _ _
4 L6 locking unit	-	L6-S5 _ _ _

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



Z = Stroke

Ø	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK	AL	AM	AN	AO	AP	AQ	AR
25	100	106	90	50	130	48,3	28	40,5	70	20,2	7	24	7,4	18,2	5,7	G1/8	M5
32	125	140	115	55	156	57	35	50	88	25,3	8	29	10,3	22,5	7,3	G1/4	M6
40	-	-	-	-	-	-	44	64	90	33,8	11,8	33	12,5	26,5	8,7	G3/8	M8
50	-	-	-	-	-	-	55	80	100	41,4	14,7	33	14,2	25,7	11,8	G3/8	M10

Ø	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH
25	12	M6	10	22,8	42,8	16	12,2	71,8	85	5,7	24	50	15	M6	M6	15
32	15,5	M6	12	28	57	16	14,2	82,5	100	7	24,5	67,5	15	M6	M6	15
40	20	M8	14	37	67	19,5	16,5	106,6	135	7	39	65	15	M6	M6	15
50	20	M8	16	47,7	86	20,5	19,1	123,7	149	7,2	41	76,5	16	M8	M6	15

Dimensions of the L6 locking unit are indicated by dotted lines; for the fixing holes of the locking unit, see dedicated chapter.

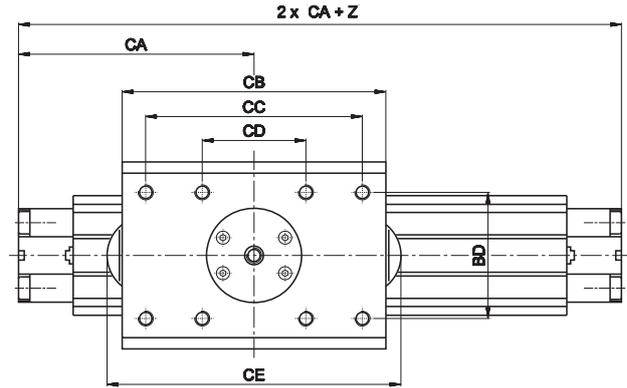
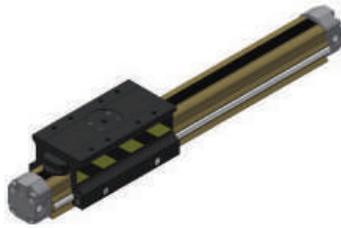
For Ø 40 - 50 the standard carriage is not available

**A** Pneumatic cushioning adjusting screw

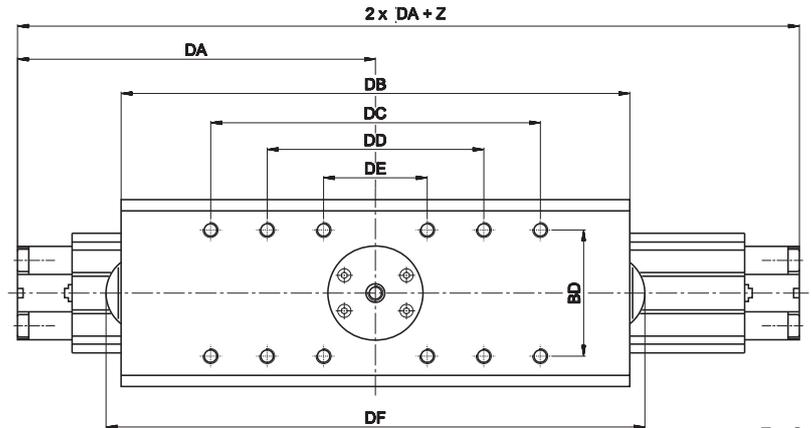
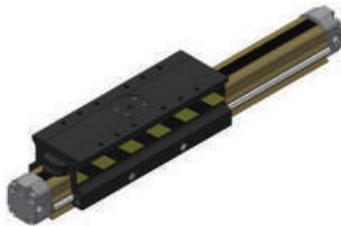
**B** Side supply port

1

Rodless cylinder with integrated guides and medium carriage - 8 fixing holes



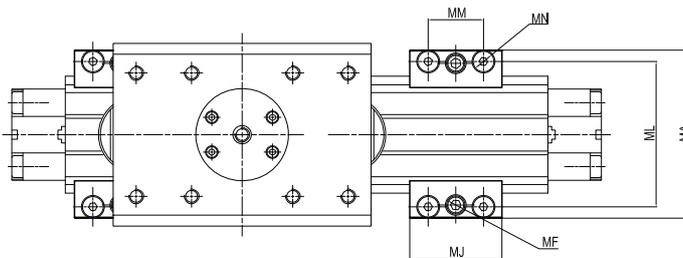
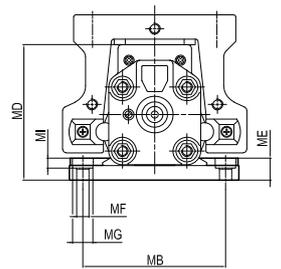
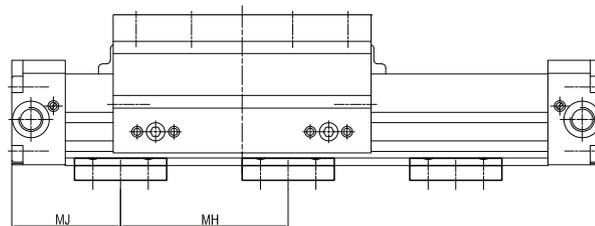
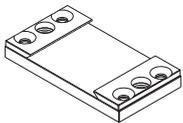
Rodless cylinder with integrated guides and long carriage - 12 fixing holes



Z = Stroke

Ø	BD	CA	CB	CC	CD	CE	DA	DB	DC	DD	DE	DF
25	50	114,5	136	90	50	160	147,5	201	130	90	50	225
32	67,5	142,5	175	115	55	191	190	270	175	115	55	286
40	65	169	205	180	75	215	225	317	280	185	75	327
50	76,5	205	258	190	80	271	277	398	320	200	80	411

Fixing plate



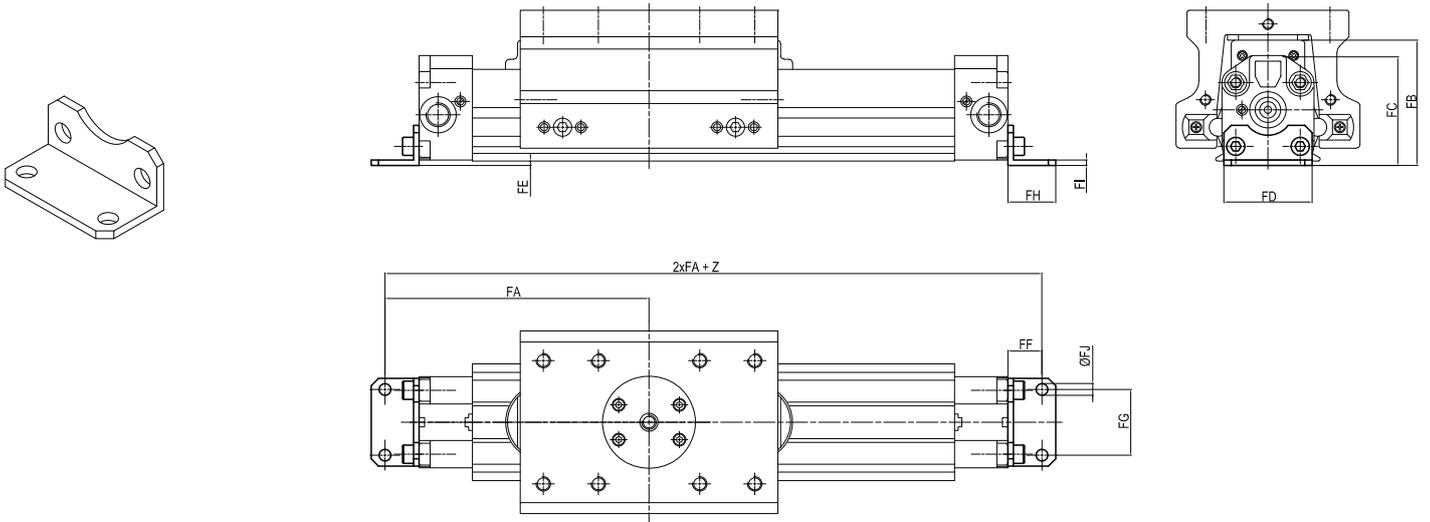
Material: Zinc-plated steel

Cylinder Ø	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	ML <sup>(b)</sup>	MM	MN	Mass g	Part no.
25	78,5	63,5	50	79,8	12	M8	11	500 (a)	6,5	55	65,5	30	M6	310	SF-12025
32	92	77,5	50	90,5	12	M8	11	600 (a)	8,5	60	79,5	30	M6	340	SF-12032
40	117	96	60	116,6	15	M10	14	700 (a)	8	70	96	37,5	M8	660	SF-12040
50	136	115	60	133,7	15	M10	14	800 (a)	8	70	115	37,5	M8	700	SF-12050

(a) = Max allowable dimension to limit the bending of cylinder according to the stroke and to provide a correct fixing

(b) = For Ø 40 - 50 mm, MB and ML dimensions are the same

Angle bracket

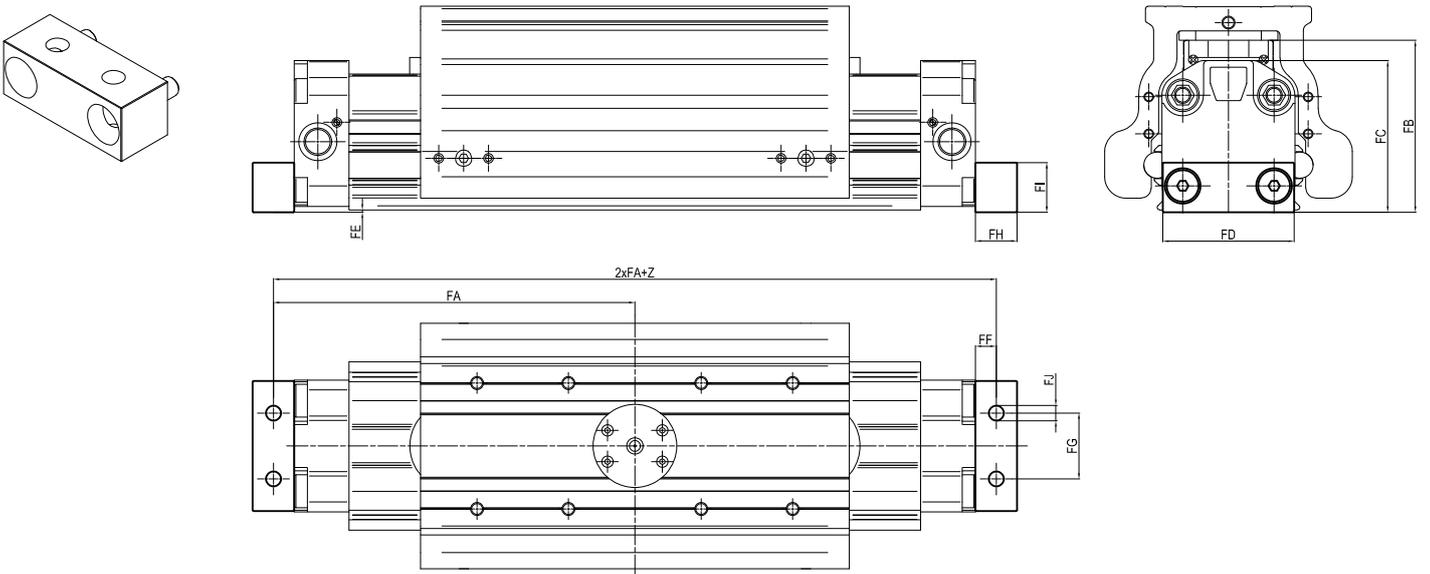


Material: Zinc-plated steel

Cylinder Ø	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	Mass g	Part no.
25	116	58,1	48,8	40	0,5	16	27	22	2,5	5,5	34	SF-13025
32	143,5	68,7	59,2	48	2,5	18,5	36	26	3	6,5	53	SF-13032

1

Bracket



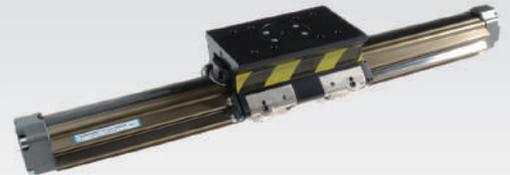
Material: Anodized aluminium

Cylinder Ø	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	Mass g	Part no.
40	162,5	86,5	74,9	63	0,7	12,5	30	25	25	9	116	SF-13040
50	187,5	104,3	92,4	79	1,3	12,5	40	25	30	9,3	170	SF-13050

# VL1

## Rodless cylinders with 90° integrated guides - Ø 25÷50 mm Sliding on ball bearings

- Extruded aluminium profile Ø 25÷50 mm
- Stroke length up to 6m
- Heavy duty precision series
- Rigid ball bearing system
- Sliding of carriage by means of ball bearings
- Translation speed 0,2 ÷ 2,0 m/sec
- Version with locking unit available upon request



### TECNICAL CHARACTERISTICS

Ambient temperature	-20÷80 °C
Fluid	filtered air, with or without lubrication
Working pressure	3÷10 bar
Bores	Ø 25 - 32 - 40 - 50 mm
Cushionings	adjustable on both sides

### CONSTRUCTIVE CHARACTERISTICS

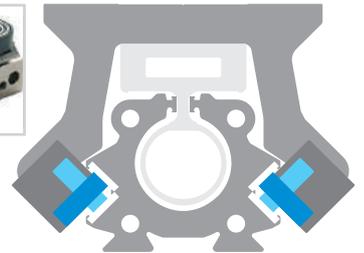
End-caps	die-cast aluminium
Barrel	anodized aluminium
Piston	aluminium
Guide slide	acetalic resin
Piston seal	double lip nitrile rubber (NBR)
Shock absorber seals	nitrile rubber (NBR) on both sides

### CODIFICATION KEY

V	L	1	2	2	1	1	3	2	0	8	5	0
1		2	3	4	5	6					7	

<b>1 Series</b> <b>VL1</b> = Ø 25÷50 mm - Rodless Cylinders with 90° integrated guides Sliding on ball bearings	<b>2 Carriage type</b> <b>2</b> = Medium carriage <b>3</b> = Long carriage	<b>3 No. of ball bearing pairs standard supplied</b> <table border="0"> <tr> <td><b>Medium carriage</b></td> <td><b>Long carriage</b></td> </tr> <tr> <td><b>2</b> = Ø 25÷40</td> <td><b>3</b> = Ø 25÷40</td> </tr> <tr> <td><b>3</b> = Ø 50</td> <td><b>4</b> = Ø 50</td> </tr> </table>	<b>Medium carriage</b>	<b>Long carriage</b>	<b>2</b> = Ø 25÷40	<b>3</b> = Ø 25÷40	<b>3</b> = Ø 50	<b>4</b> = Ø 50
<b>Medium carriage</b>	<b>Long carriage</b>							
<b>2</b> = Ø 25÷40	<b>3</b> = Ø 25÷40							
<b>3</b> = Ø 50	<b>4</b> = Ø 50							
<b>4 Left end-cap supply port</b> <b>0</b> = No supply port (both chambers are supplied from the right end-cap) <b>1</b> = Side supply port <b>2</b> = Bottom supply port <b>3</b> = Rear supply port	<b>5 Right end-cap supply port</b> <b>1</b> = Side supply port <b>2</b> = Bottom supply port <b>3</b> = Rear supply port <b>4</b> = Rear supply ports for both chambers on the right end-cap	<b>6 Bore (mm)</b> <b>25</b> = Ø25 <b>32</b> = Ø32 <b>40</b> = Ø40 <b>50</b> = Ø50	<b>7 Stroke (mm)</b> Up to <b>6000</b>					

### Sliding on ball bearings



### VL1 with L6 locking unit



Stroke tolerances

Ø	mm
25	+2,5 - 0
32	+3,2 - 0
40	+3,2 - 0
50	+3,2 - 0

Cylinder mass  
Medium carriage

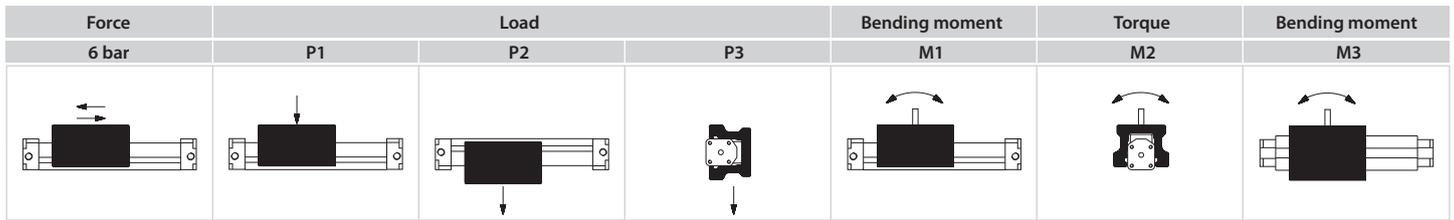
Cylinder mass  
Long carriage

Ø	Cylinder - stroke 0		Increase for 100 mm stroke		Cylinder - stroke 0	
	g		g		g	
25	2095		300		2855	
32	3125		415		4410	
40	6340		670		8955	
50	10850		1020		15365	

Theoretical forces (N) at different working pressure (bar)  
Static load value (N) and torque (Nm)

Please note that in dynamic conditions, the load must be reduced due to effects associated with the speed.

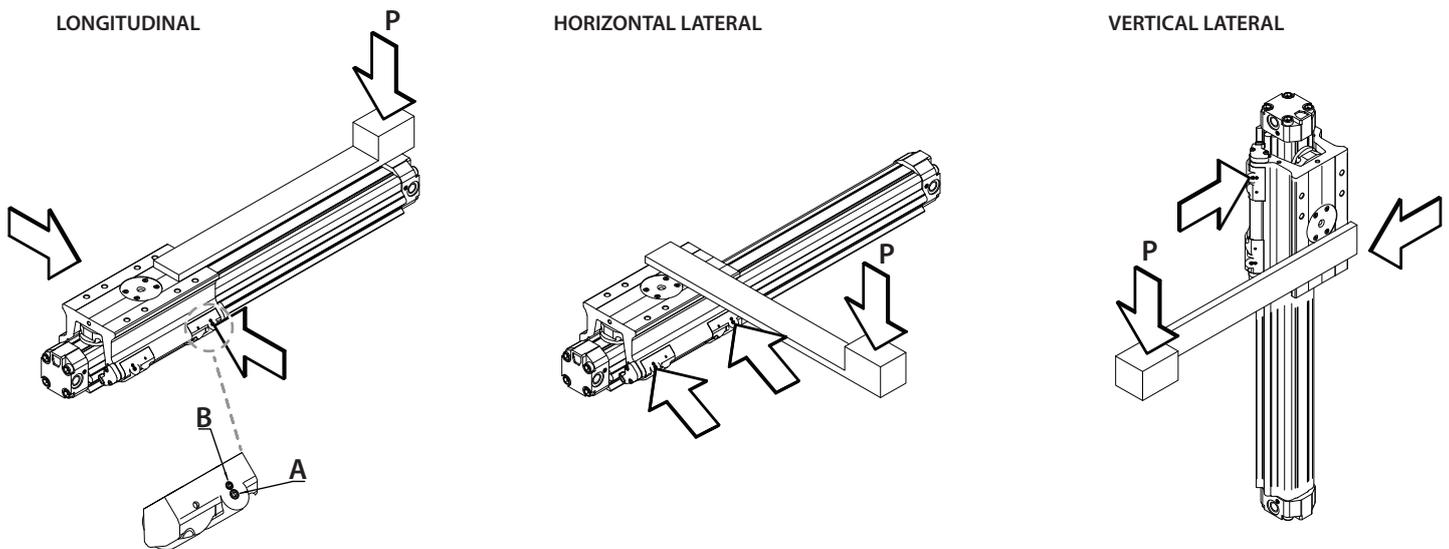
A moment is the product of the load (Newton) and the arm (meters), i.e the distance between the centre of gravity of the load and the longitudinal axis of the piston.



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

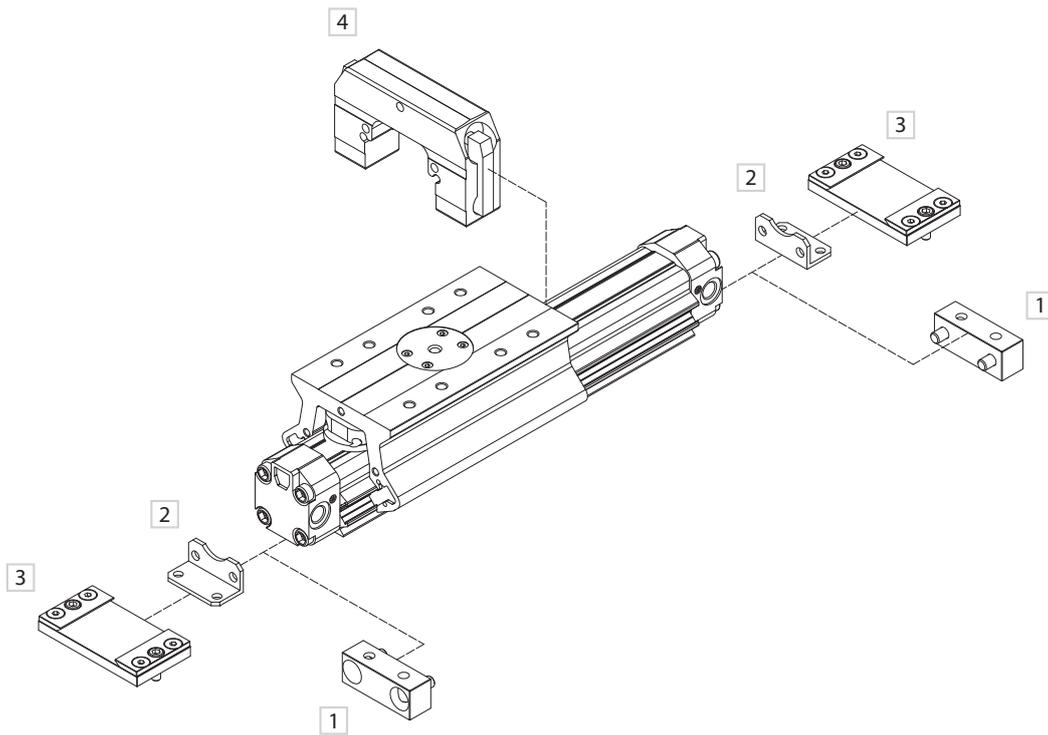
**CARRIAGE ADJUSTMENT**

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



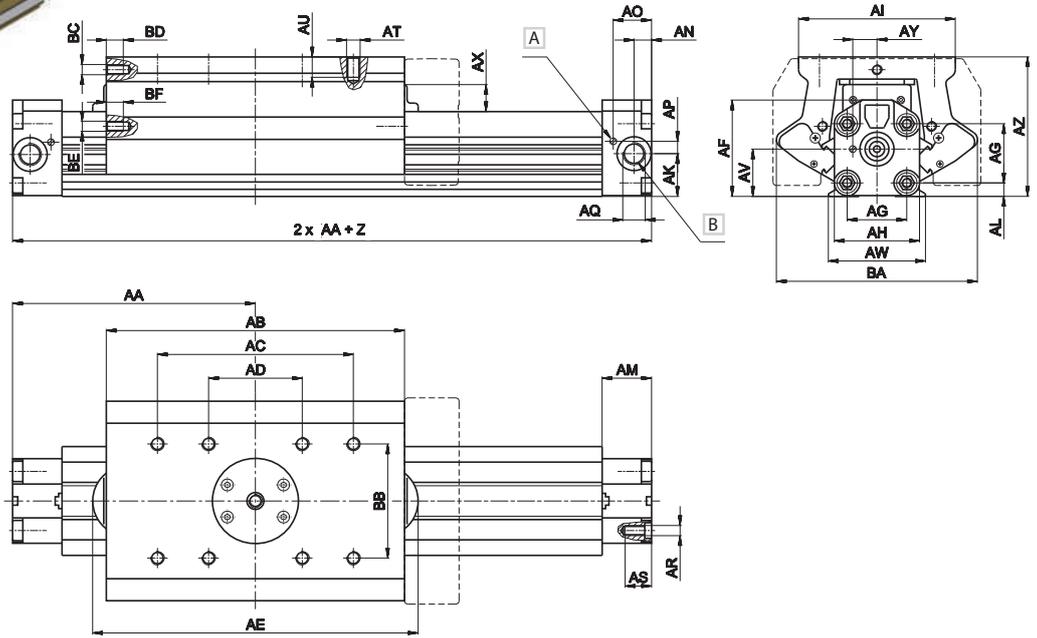
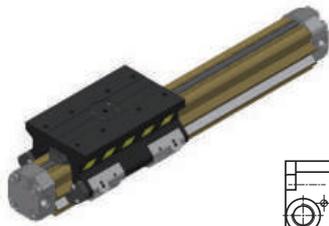
The arrows indicate the screws to be adjusted, based on the position of the load (P). Turn the screw (A) according to the load. Put a drop of Loctite 242 onto the screw (B) and tighten it all the way down. Finally loosen both screws by 90°.

Fixing elements and accessories



DESCRIPTION	NOTE	PART NO.
1 Bracket Ø40-50	Anodized aluminium	SF-13 ___
2 Angle bracket Ø25-32	Zinc-plated steel	SF-13 ___
3 Fixing plate	Zinc-plated steel	SF-12 ___
4 L6 locking unit	-	L6-V1 ___

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



Z = Stroke

Ø	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK	AL	AM	AN	AO	AP	AQ
25	114,5	136	90	50	160	48,3	28	40,5	83,5	20,2	7	24	7,4	18,2	5,7	G1/8
32	142,5	175	115	55	191	57	35	50	92	25,3	8	29	10,3	22,5	7,3	G1/4
40	169	205	180	75	215	74	44	64	125	33,8	11,8	33	12,5	26,5	8,7	G3/8
50	207	258	190	80	271	90,7	55	80	140	41,4	14,7	33	14,2	25,7	11,8	G3/8

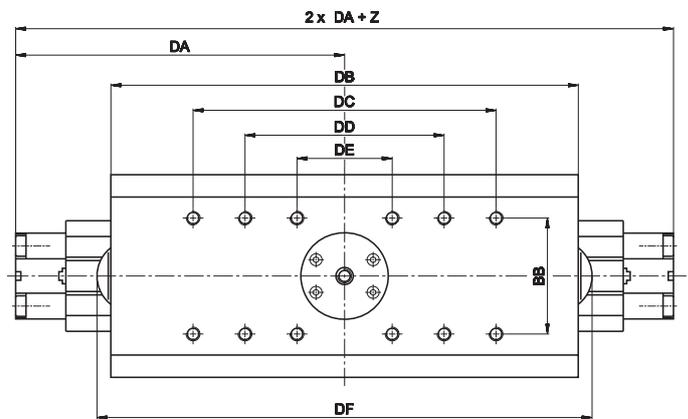
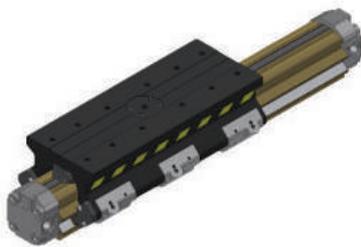
Ø	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF
25	M5	12	M6	12	22,8	42,8	16	12,2	74,3	111	50	M6	10	10	M6
32	M6	15,5	M8	12	28	57	16	14,2	82,5	118	67,5	M6	10	10	M6
40	M8	20	M8	14	37	67	19,5	16,5	106	158	65	M6	15	15	M6
50	M10	20	M8	15	47,7	86	20,5	19,1	126,2	173	100	-	-	12	M6

The dimensions of the L6 locking unit are indicated by dotted lines; for the fixing holes of the locking unit, see dedicated chapter.

A Pneumatic cushioning adjusting screw

B Side supply port

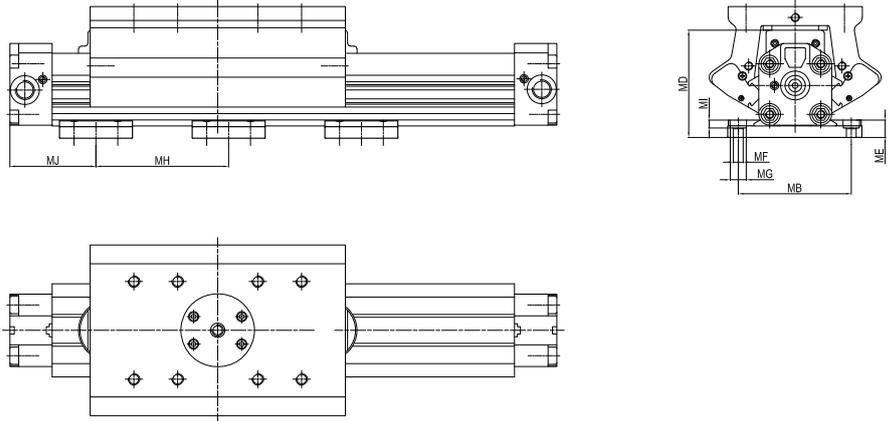
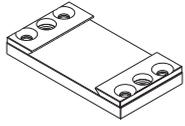
Rodless cylinders with 90° integrated guides with long carriage - 12 fixing holes



Z = Stroke

Ø	BB	DA	DB	DC	DD	DE	DF
25	50	147,5	201	130	90	50	225
32	67,5	190	270	175	115	55	286
40	65	225	317	280	185	75	327
50	100	277	398	320	200	80	411

**Fixing plate**

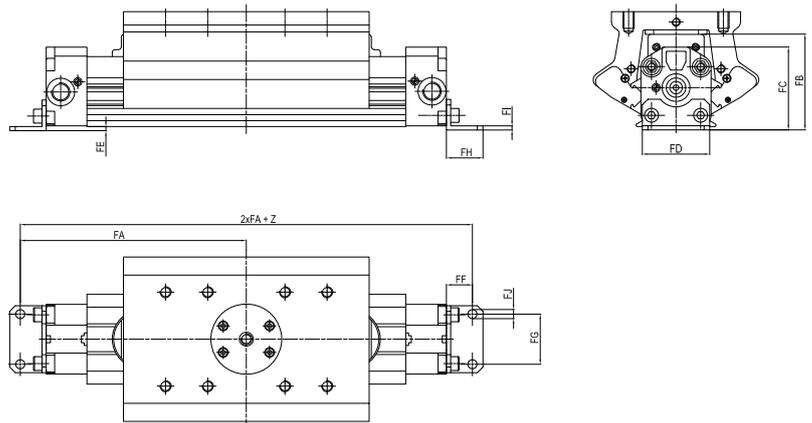
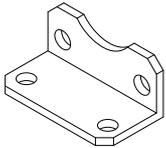


Material: Zinc-plated steel

Cylinder Ø	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	ML <sup>(b)</sup>	MM	MN	Mass g	Part no.
25	78,5	63,5	50	79,8	12	M8	11	500 (a)	6,5	55	65,5	30	M6	310	SF-12025
32	92	77,5	50	90,5	12	M8	11	600 (a)	8,5	60	79,5	30	M6	340	SF-12032
40	117	96	60	116,6	15	M10	14	700 (a)	8	70	96	37,5	M8	660	SF-12040
50	136	115	60	133,7	15	M10	14	800 (a)	8	70	115	37,5	M8	700	SF-12050

(a) = Max allowable dimension to limit the bending of the cylinder according to the stroke and to provide a correct fixing  
 (b) = For Ø 40 - 50 mm, MB and ML dimensions are the same

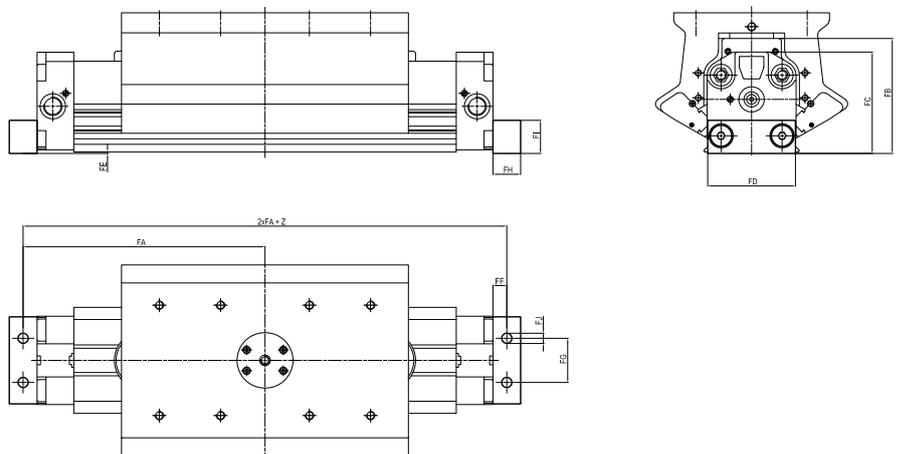
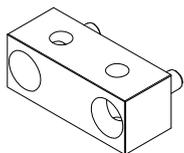
**Angle bracket**



Material: Zinc-plated steel

Cylinder Ø	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	Mass g	Part no.
25	116	58,1	48,8	40	0,5	16	27	22	2,5	5,5	34	SF-13025
32	143,5	68,7	59,2	48	2,5	18,5	36	26	3	6,5	53	SF-13032

**Bracket**



Material: Anodized aluminium

Cylinder Ø	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	Mass g	Part no.
40	162,5	86,5	74,9	63	0,7	12,5	30	25	25	9	116	SF-13040
50	187,5	104,3	92,4	79	1,3	12,5	40	25	30	9,3	170	SF-13050

Subject to change

## EXAMINATION AND VERIFICATION OF THE CUSHIONING

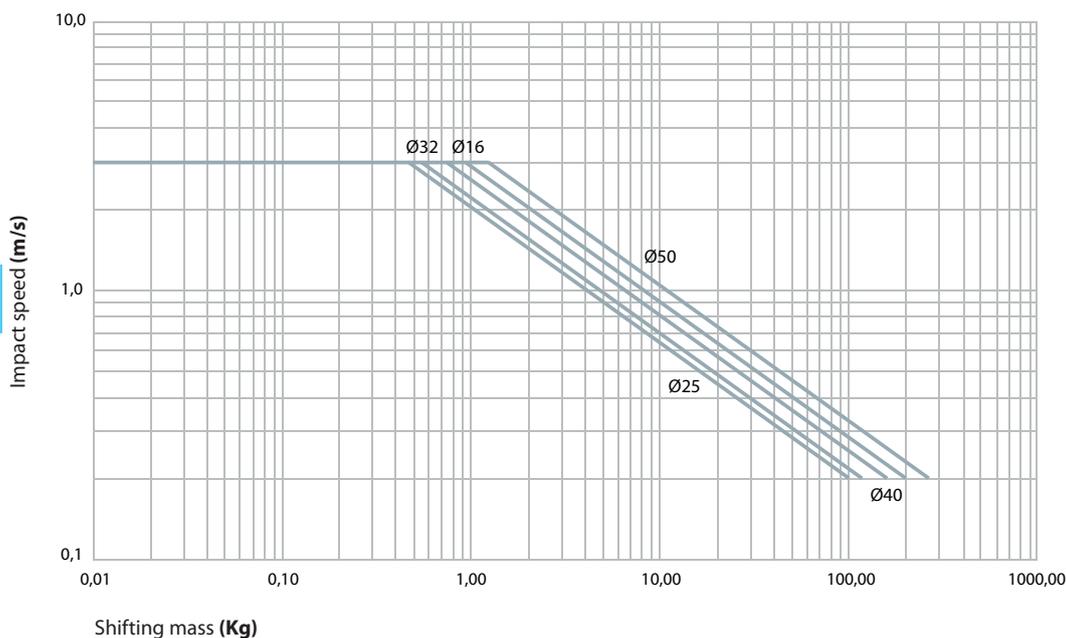
In a system with moving masses, as in the case of rodless cylinders, it is essential to control the dissipation of the system's kinetic energy as it is brought to a stop. First of all, it is necessary to establish and verify the most suitable method for cushioning the system, in order to avoid the moving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

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

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

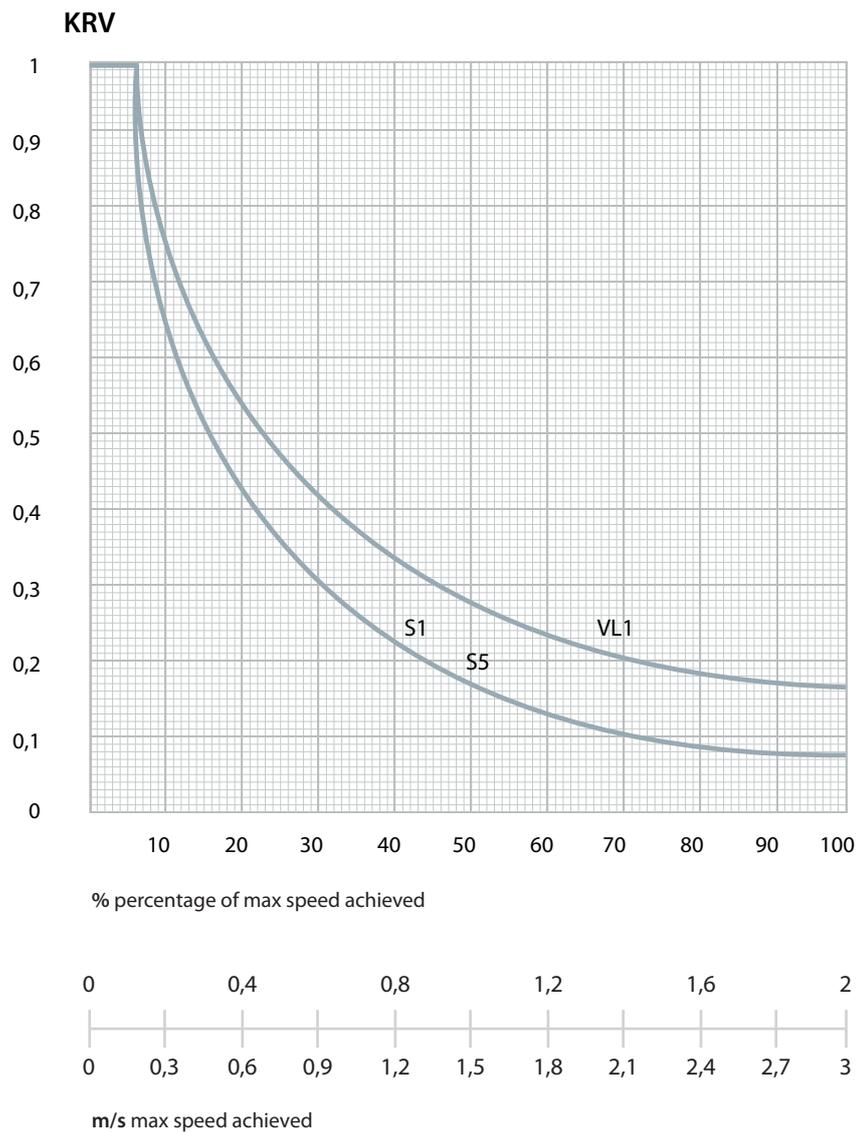
- decrease the load and maintain the translation speed
- decrease the speed and maintain the load
- select a cylinder with a bigger bore or with twin chambers

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



As a result, if cushionings can not absorb the kinetic energy and changing the working parameters is not possible, it is necessary to provide an additional hydraulic shock absorber (YDA / YDR series) to reduce the load speed before the cushionings operate.

## DYNAMIC LOAD CAPACITY



1) Calculation of the operational speed percentage in relation to the max allowable speed:

$$\% = \frac{\text{Operational speed (m/s)}}{\text{Max. allowable speed (m/s)}} \cdot 100$$

2) Apply the following formula for the calculation of the max. dynamic load:

$$CD = CM \cdot KRV$$

**CD** = Max. dynamic load (N)

**CM** = Max. static load (N). See relevant load tables for the various series

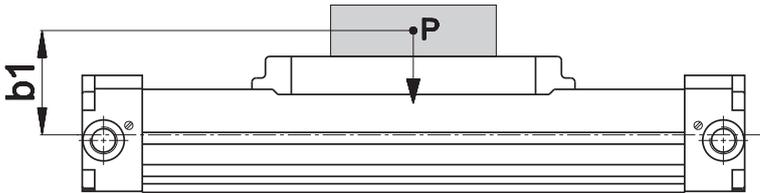
**KRV** = System coefficient (which acts to reduce the max. load based on the system speed)

## CYLINDER SELECTION

As previously discussed, it is necessary to produce (for a correct use of the cylinder) a gradual deceleration of the moving mass.

### CYLINDER WITH LOAD MOUNTED DIRECTLY ON THE CARRIAGE (picture A)

Let us consider the case of a S1 series cylinder with a load of 50 N placed on the carriage, at the max. translation speed of 1,2 m/s., as shown in the picture. Verify the cushioning capacity and calculate the capacity of the dynamic load and of the torque and bending moments.



$$\begin{aligned} P &= 50 \text{ N} \\ V &= 1,2 \text{ m/s.} \\ b1 &= 110 \text{ mm} \end{aligned}$$

### VERIFICATION OF THE CUSHIONING CAPACITY

According to the graph shown on page 22 a 50 bore size cylinder is able to absorb the developed kinetic energy developed by the application in the picture above, since the intersection point corresponding to the speed and load lies beneath the cushioning curve.

1

### VERIFICATION AND CALCULATION OF THE DYNAMIC LOAD CAPACITY

Using the equation 1, we can calculate the percentage between the operation speed and allowable speed.

$$\% = \frac{\text{Operation speed (m/s)}}{\text{Allowable speed (m/s)}} \cdot 100 = \frac{1,2 \text{ m/s.}}{3 \text{ m/s.}} \cdot 100 = 40\%$$

From the graph given on page 23 we can determine the KRV (coefficient of speed reduction)

$$\text{KRV} = 0,24$$

Applying the equation 2 on page 23 we can determine the max. permitted dynamic load.

$$\text{CD} = \text{CM} \cdot \text{KRV}$$

CD = Dynamic load

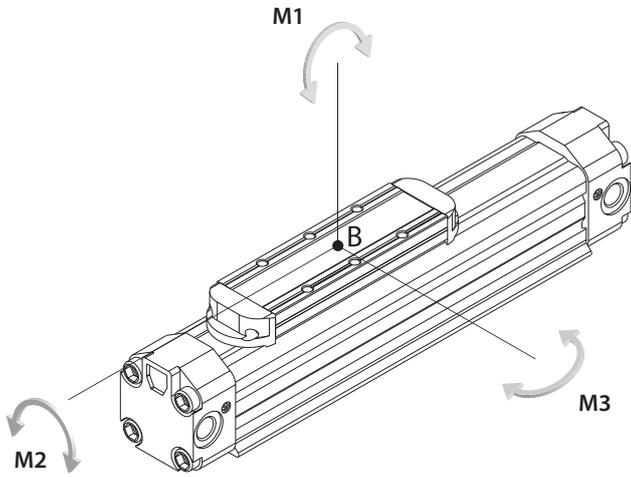
CM = Static load 500 N (see table for S1 50mm cylinder series - P1 page 3)

$$\text{CD} = 500 \cdot 0,24 = 120 \text{ N}$$

As  $P (50 \text{ N}) < CD (120 \text{ N})$  the S1 series 50 bore cylinder is suitable for the application

### CARRIAGE STRESSES

Different load applications have different moments M1 - M2 - M3, which directly influence the life of the cylinder. By selecting a cylinder that can support off-set loads, we can avoid compromising the cylinder life. Load must be applied, if possible, so that it acts through the centre point B (see picture).



### CALCULATION OF THE TORQUE M1 - M2 - M3

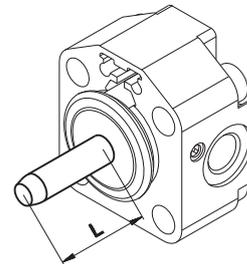
In order to calculate the various moments, which act on the carriage, we must calculate the force, generated by the load, when it is subjected to accelerations and decelerations.

$$a = \frac{V^2}{2L \cdot 10^{-3}} = (\text{m/sec.}^2)$$

a = Acceleration/deceleration  
 V = Speed in m/s.  
 L = Cushion length in mm

CUSHION LENGTH

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



$$a = \frac{1,2^2}{2 \cdot 52 \cdot 10^{-3}} = 13,8 (\text{m/sec.}^2)$$

$$F = m \cdot a$$

F = Force      m = Mass (P/9,81)

$$F = \frac{50}{9,81} \cdot 13,8 = 70 \text{ N}$$

$$M1 = F \cdot b1$$

The example A on page 24 is subjected to the moment M1 as the load decelerates through the cushion.

**M1** = Torque

**b1** = Distance between the centre of gravity of load P and the centre of gravity through the cylinder centre line (see picture A on page 24)

$$M1 = 70 \cdot 110 = 7700 \text{ Nmm} = 7,7 \text{ Nm}$$

The equation gives the following result:

$$M1 = 7,7 \text{ Nm} < 19 \text{ Nm} \text{ (see table for S1 50mm cylinder series - M1 page 3)}$$

Thus S1 series, bore size 50, with standard carriage is suitable for the movement of the load in the given conditions. If the calculated value is equal to or higher than the value given in the table, it is necessary to select a different size of carriage, or a different type of rodless cylinder (e.g with integrated slide)

1

### ATTENTION!

If the translation speed of example A is 2 m/s instead of 1,2 m/s, the cushioning capacity of the cylinder, given in the example, will not be enough to absorb the kinetic energy generated by the moving load.

Therefore it is necessary to reduce the translation speed before reaching the cushion, by means of shock absorbers until the value is 1,2 m/s (for example).

### SIZING OF A POSSIBLE HYDRAULIC SHOCK ABSORBER

The hydraulic shock absorber must be mounted, so as to strike the centre of gravity of the load.

$$E_c = \frac{1}{2} \cdot m \cdot V^2$$

$E_c$  = Kinetic energy

$m$  = Mass (P/9,81)

$V$  = Translation speed (2 m/s)

$P$  = Weight 50 N

9,81 = Acceleration of the centre of gravity

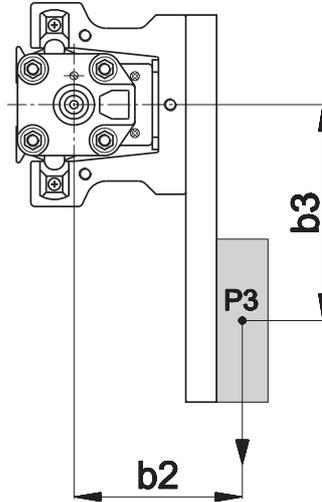
$$E_c = \frac{1}{2} \cdot \frac{50}{9,81} \cdot 2^2 = \frac{200}{19,62} = 10 \text{ Nm}$$

In this case the hydraulic shock absorber must have a capacity greater than or equal to 10 Nm.

## CYLINDER WITH MISALIGNED LOAD (picture B)

Let us suppose that we want to move a load of 50 N displaced at a distance B3 from the central axis, at a maximum translation speed of 1,2 m/s. Due to the misaligned load a cylinder with an external carriage is required and we must verify if a S5 cylinder with integrated slide is suitable for this application.

$P3 = 50 \text{ N}$   
 $V = 1,2 \text{ m/s}$   
 $b2 = 150 \text{ mm}$   
 $b3 = 200 \text{ mm}$



### VERIFICATION OF THE CUSHIONING CAPACITY

The S5 series cylinder (graph on page 22), 40 mm bore, can absorb the kinetic energy developed by the 50 N load at a speed of 1,2 m/s.

### VERIFICATION AND CALCULATION OF THE CARRIAGE MOMENTS

Using the equation we can calculate the percentage of the max. speed as follows.

$$\% = \frac{\text{Operational speed (m/s)}}{\text{Allowable speed (m/s)}} \cdot 100 = \frac{1,2 \text{ m/s}}{3 \text{ m/s}} \cdot 100 = 40\%$$

From the graph given on page 23 we can determine the KRV coefficient.

$$\text{KRV} = 0,24$$

Applying the equation 2 on page 23 we can determine the max. allowable dynamic load.

$$\text{CD} = \text{CM} \cdot \text{KRV}$$

$\text{CD} =$  Dynamic load  
 $\text{CM} =$  Static load 600 N (see table for S5 50mm cylinder series - P3 page 12)

$$\text{CD} = 600 \cdot 0,24 = 144 \text{ N}$$

As  $P3 (50 \text{ N}) < \text{CD} (144 \text{ N})$  the S5 series 40 bore cylinder is suitable for the application.

### CALCULATION AND VERIFICATION OF THE CARRIAGE MOMENTS

As load P is misaligned (B3) from the central axis of the cylinder, the carriage is acted on by a significant moment M3, so that it is necessary to use a cylinder with an external carriage.

### CALCULATION OF THE MOMENTS M1 - M2 - M3 AND CARRIAGE SELECTION

$$a = \frac{V^2}{2L \cdot 10^{-3}} = (\text{m/sec.}^2)$$

a = Acceleration/deceleration

m = Mass (P/9,81)

F = Force

P = Weight in N

9,81 = Centre of gravity acceleration

L = Length in mm of the internal cushion (see on page 25)

V = Speed in m/s

$$a = \frac{1,2^2}{2 \cdot 41,5 \cdot 10^{-3}} = 17,3 (\text{m/sec.}^2)$$

$$F = m \cdot a = \frac{P}{9,81} \cdot 17,3 = \frac{50}{9,81} \cdot 17,3 = 88 \text{ N}$$

1

The example is subjected to moments M1 - M2 - M3

$$M1 = F \cdot b2 = 88 \cdot 150 = 13200 \text{ Nmm} = 13,2 \text{ Nm} \quad (M1 \text{ max } 60 \text{ Nm})$$

$$M2 = P \cdot b2 = 50 \cdot 150 = 7500 \text{ Nmm} = 7,5 \text{ Nm} \quad (M2 \text{ max } 30 \text{ Nm})$$

$$M3 = F \cdot b3 = 88 \cdot 200 = 17600 \text{ Nmm} = 17,6 \text{ Nm} \quad (M3 \text{ max } 80 \text{ Nm})$$

By comparing the calculated values to the max values on page 12, it can be deducted that the medium carriage is suitable for this application.

### CYLINDER WITH MISALIGNED LOAD IN VERTICAL POSITION

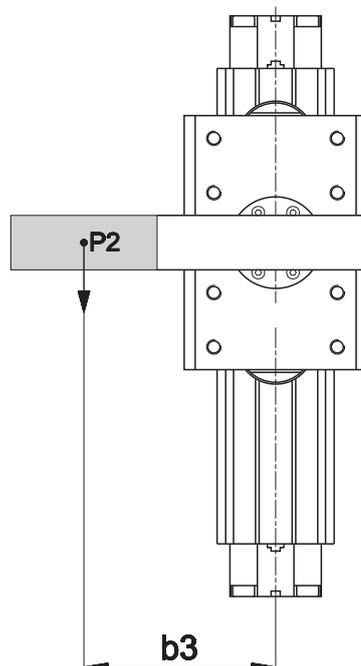
In this instance let us suppose to verify if a 40 mm bore VL1 series cylinder, in the vertical plane, is sufficient to move a 50 N load misaligned at a distance b3, at a speed of 1,2 m/s.

P = 50 N

V = 1,2 m/s

b1 = 110 mm (see picture A)

b3 = 200 mm



**ATTENTION!**

If the cylinder is vertically mounted, the cushioning capacity is reduced by 40%.

By checking the data given in the example, we note that the cylinder, in the vertical position, is not able to cushion the load and it is therefore necessary to use a 50 mm bore cylinder or an external shock absorber (see on page 26). Now we must calculate the dynamic load capacity and the developed moments. To obtain the value of the KRV coefficient follow the procedure as given in the examples, which will result in a coefficient of KRV 0,24 (see pictures A and B).

$$CD = CM \cdot KRV = 1100 \cdot 0,24 = 264 \text{ N}$$

$$P < CD$$

The cylinder is therefore able to move the applied load.

In this application the moment M2 is not generated, as no force is acting transversally to the moving axis; therefore we must calculate only the moments M1 and M3.

$$F = m \cdot a$$

$$a = \frac{V^2}{2L \cdot 10^{-3}} = 17,3 \text{ (m/sec.}^2\text{)} \quad \text{(picture B)}$$

$$F = m \cdot a = 88 \text{ N} \quad \text{(picture B)}$$

$$M1 = F \cdot b1 = 88 \cdot 110 = 9680 \text{ Nmm} = 9,68 \text{ Nm} \quad \text{(M1 max 120 Nm)}$$

$$M3 = F \cdot b3 = 88 \cdot 200 = 17600 \text{ Nmm} = 17,6 \text{ Nm} \quad \text{(M3 max 120 Nm)}$$

By comparing the obtained values with the maximum values in table at page 18, we can verify that the cylinder is proper, but in order to cushion the vertical load, we must either use an external cushion, increase the cylinder bore size or use another cylinder series.

**FOR A CORRECT USE SEE THE FOLLOWING INSTRUCTIONS:**

1. For a longer life of the cylinder it is suggested to use the cylinder at a speed of 1 m/s
2. If the cushioning value is in proximity to the max. value, please apply an additional shock absorber
3. If the cylinder is used vertically, the cushioning capacity is reduced by 40%.
4. Maintain a correct and constant lubrication.

# J

## Slide Units for pneumatic cylinders

Slide units suitable for:

- ISO 6432 cylinders M series  $\varnothing 16\div 25$  and ISO 15552 cylinders K/KD/KE series  $\varnothing 32\div 100$
- Rodless cylinders S1 series  $\varnothing 25\div 50$
- STRONG compact cylinders RS series  $\varnothing 32\div 100$
- 2 stage telescopic cylinders RT2 series  $\varnothing 32\div 63$



### TECHNICAL CHARACTERISTICS

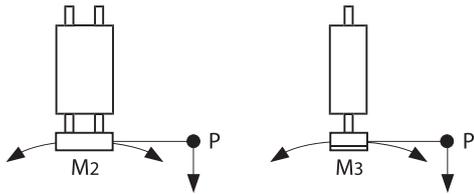
<b>Ambient temperature</b>	-20 ÷ 80 °C			
<b>Fluid</b>	filtered air, with or without lubrication			
	<b>M - K - KD - KE</b>	<b>S1</b>	<b>RS</b>	<b>RT2</b>
<b>Working pressure</b>	2 ÷ 10 bar	3 ÷ 10 bar	2 ÷ 10 bar	2 ÷ 10 bar
<b>Size</b>	16 ÷ 100	40 ÷ 80	32 ÷ 63	32 ÷ 63
<b>Standard strokes</b>	25 ÷ 1000 mm	Max 800 mm	15 ÷ 800 mm	120 ÷ 1200 mm

**For min. and max. strokes refer to related codification key**

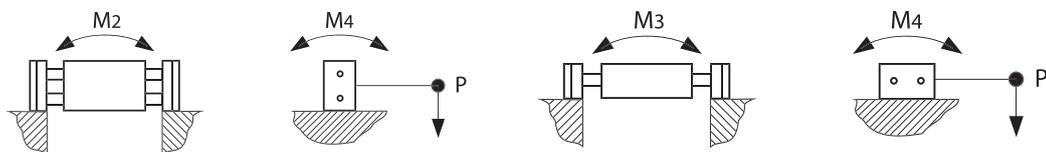
### CONSTRUCTIVE CHARACTERISTICS

<b>Body</b>	extruded anodized aluminium
<b>Shafts</b>	hollow, chromium-plated steel
<b>Guide bush for shafts</b>	self-lubricating in special steel
<b>Shaft scraper seals</b>	polyurethane
<b>Flange</b>	steel
<b>Accident prevention stopping space</b>	25 mm for all models (according to European standards EN 349)

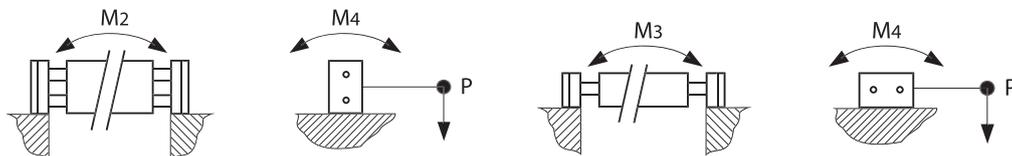
Maximum moment of resistance (Nm)



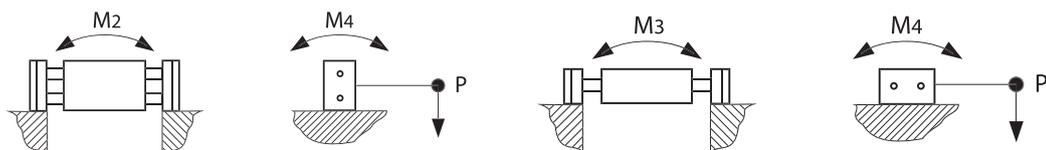
Size	J10	J11	J12	J14	J16	J64
	M2 = M3					
16	3,2	6,4	11	7,4	11	-
25	6	13,2	23,6	17,8	23,6	-
32	12,2	27,2	49	37,4	49	37,4
40	17,8	36,8	73,6	51	73,6	51
50	24,8	56	107,8	78	107,8	78
63	35,2	85,6	156,8	114	156,8	114
80	52	136	248	173,2	248	173,2
100	52	160	298	173,2	298	173,2



Size	J16		J18		J19		J16 = J18 - J19
	M2	M3	M2	M3	M2	M3	M4
16	12,8	8,8	10,4	4,4	12,8	8,8	9,4
25	28	19	22,2	8,6	28	19	20,4
32	55,6	38,8	45,2	17	55,6	38,8	39,8
40	80	59,4	58,5	22,6	80	59,4	53,8
50	121	75,2	92	33,4	121	75,2	85,6
63	173,6	122,6	135,2	52	173,6	122,6	123,4
80	270,2	196	204,2	84	270,2	196	186
100	318,6	245,6	230,8	109,2	318,6	245,6	203,2



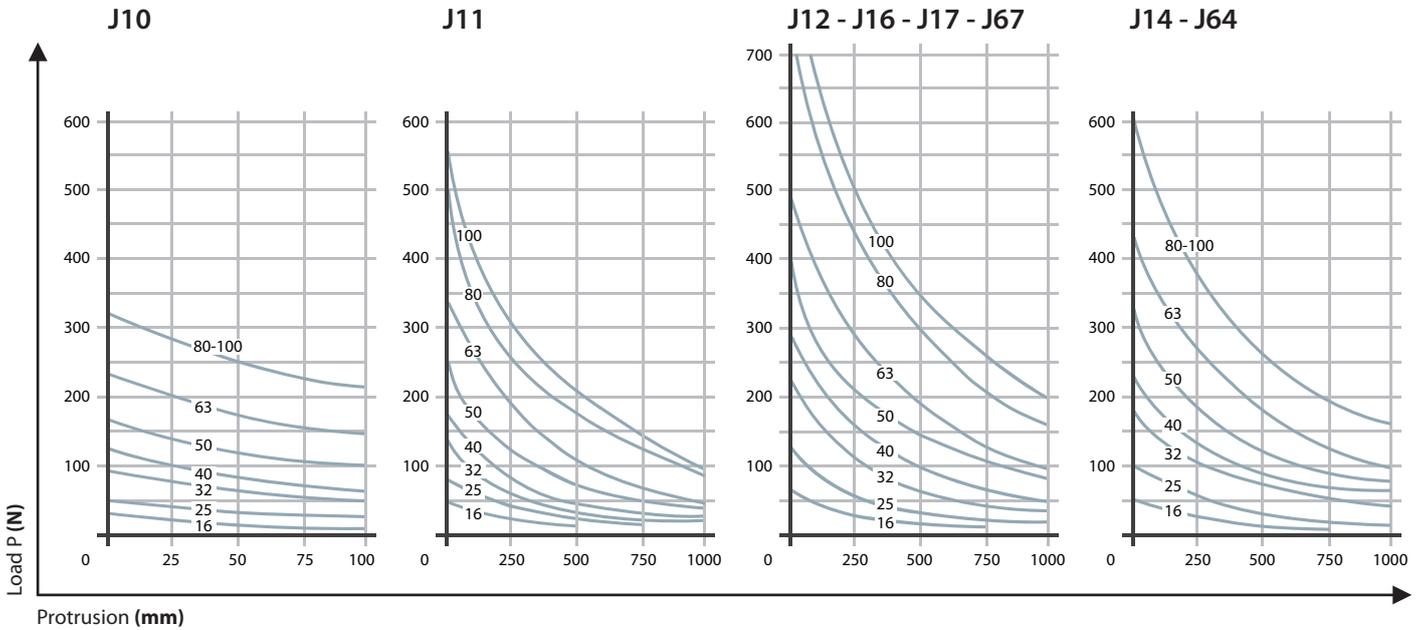
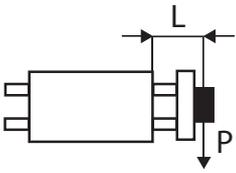
Size	J17 = J67														J17 = J67
	M2							M3							M4
	Stroke (mm)														Stroke (mm)
	100	200	300	400	500	750	1000	100	200	300	400	500	750	1000	100 ÷ 1000
16	30,4	48,4	58	84,8	103	148,8	194,8	29	47,4	70	84,2	102,6	148,6	194,6	9,4
25	56,8	114	114	143,2	172,4	246	320	53	82,6	112	141,8	171,4	245,4	320	20,4
32	89,4	133	178	222	270	386	502	80	126,8	173,6	220	267,2	384	500	39,8
40	117	169,2	223,6	279	334,4	474,8	616	104	160,6	217,4	274	330	472	614	53,8
50	161,4	230	301,4	373,2	446	630	816	138	212,8	287,2	361,6	436	622	808	85,6
63	228	312	402	493	586	818	1102	192,8	288	383	478	573	810	1048	123,4
80	328,6	434	550,4	668	788,8	1091,2	1398	270	394	518	642	766	1076	1386	186
100	349,6	456	570	687	806	1108,6	1414	284	408	532	656	780	1090	1400	203,2



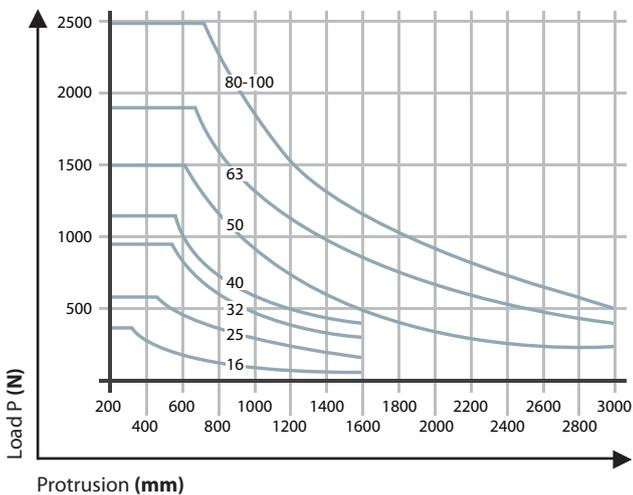
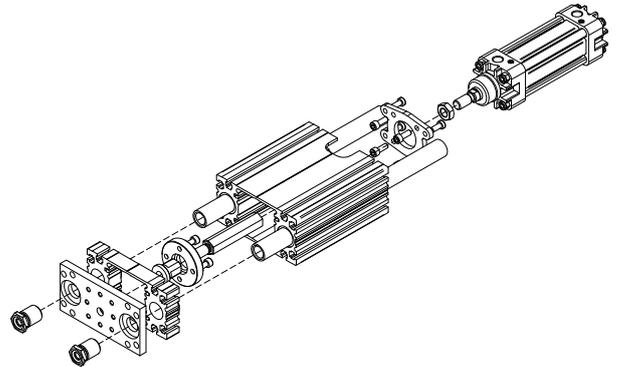
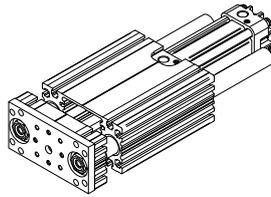
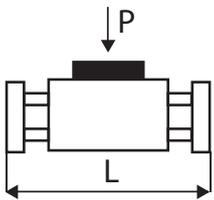
Size	Ø	Rodless Cylinders Nm				Rodless Cylinders Nm	
		Standard carriage J30		Long carriage J31		Standard carriage J30 / Long carriage J31	
		M2	M3	M2	M3	M4	
40	25	68,4	42,4	110,2	96,2	53,8	
50	32	118,4	81,8	198	178,6	85,6	
63	40	192,2	147,2	315	289,8	123,4	
80	50	298,2	233,2	516	481,2	186	

Payload diagrams based on slide unit length

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



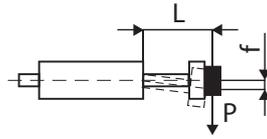
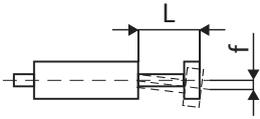
J16 - J18 - J19 - J67



P = Payload center of gravity

L = Protrusion

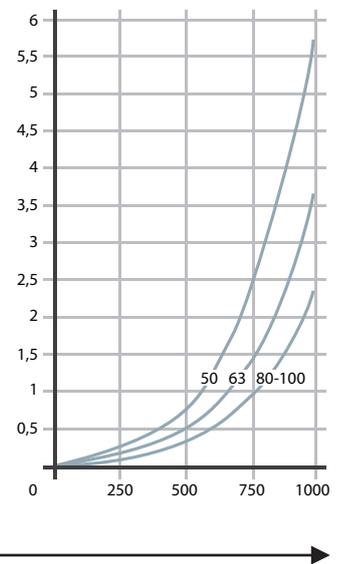
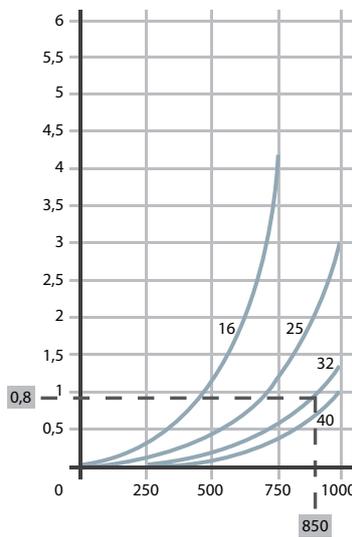
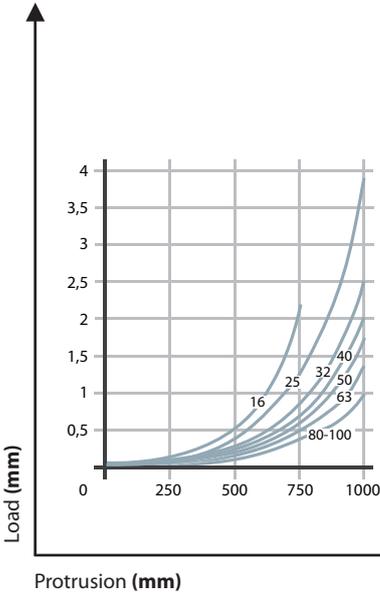
Payload diagram based on slide unit length  
 J10 - J11 - J12 - J14 - J16 - J17 - J64



Deflection under its own weight

Deflection with 10 N load

Deflection with 100 N load



CYLINDERS 1

## Examples of application

### How to calculate deflection

The total deflection of the slide units is calculated by summing deflection under its own weight to deflection caused by the load.  
 For loads other than 10 or 100 N (as stated in the charts) deflection is calculated by multiplying the figure of chart (K) by the following formula:

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

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

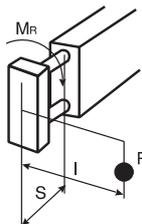
$$f = 0,8 \cdot \frac{25}{10} = 2 \text{ mm}$$

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

### Example:

Slide unit Ø 63 Mod. J11  
 S = 500 mm (load protrusion)  
 Max allowed load =  $100 \cdot 0,75 = 75 \text{ N}$   
 Max allowed torque =  $61,7 \cdot 0,75 = 46,3 \text{ Nm}$

### Max moment of resistance MR



Ø	MR	Ø	MR
	Nm		Nm
16	4,7	50	42,8
25	10,2	63	61,7
32	19,9	80	93
40	26,9	100	101,6

### How to calculate torque

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

$$MR = P \cdot I$$

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

Slide units with M - K cylinder

Slide unit mass J10..A, J11..A, J12..A, J12..B, J16..A, J16..B, J18..A, J19..A

Slide unit	Cylinder	Mass at 0 stroke g								
Size	Ø	Slide unit								Increase
		J10..A	J11..A	J12..A	J12..B	J16..A	J16..B	J18..A	J19..A	mm
16	16	501	593	658	-	758	-	709	773	1,53
25	25	828	958	1108	1500	1230	1566	1112	1252	3,07
32	32	1570	1810	2112	3033	2495	3406	2195	2478	4,87
40	40	2270	2610	3100	4078	3222	4198	2920	3415	6,05
50	50	3670	4220	4985	6725	5030	6760	4650	5415	8,46
63	63	5350	6630	8220	10127	8510	10779	7070	8560	10,48
80	80	8140	9420	11010	14988	11300	15618	9965	11350	14,16
100	100	10000	11300	12890	19605	13170	20240	11830	13215	15,92

Slide unit mass J14..A, J14..B, J17..A, J17..B

Slide unit	Cylinder	Mass at 0 stroke g				
Size	Ø	Slide unit				Increase
		J14..A	J14..B	J17..A	J17..B	mm
16	16	693	-	788	-	4,13
25	25	1155	1809	1451	2012	7,07
32	32	2090	3496	2435	4031	10,87
40	40	2940	4703	3004	5043	13,05
50	50	4690	6696	4600	7720	19,46
63	63	6820	11089	7730	10569	24,08
80	80	9610	15928	10530	15413	32,16
100	100	11520	20540	12420	20155	35,92

Slide units with KE cylinder

Slide unit mass J10..C, J11..C, J12..C, J12..D, J16..C, J16..D, J18..C, J19..C

Slide unit	Cylinder	Mass at 0 stroke g								
Size	Ø	Slide unit								Increase
		J10..C	J11..C	J12..C	J12..D	J16..C	J16..D	J18..C	J19..C	mm
32	32	1563	1798	2100	3021	2483	3394	2183	2466	4,57
40	40	2268	2602	3092	4070	3214	4190	2912	3407	5,87
50	50	3657	4199	4964	6704	5009	6739	4629	5394	7,99
63	63	5318	6588	8178	10085	8468	10737	7028	8518	9,61
80	80	8074	9341	10931	14909	11221	15539	9886	11271	12,72
100	100	9875	11161	12751	19466	13031	20101	11691	13076	13,52

Slide unit mass J14..C, J14..D, J17..C, J17..D

Slide unit	Cylinder	Mass at 0 stroke g				
Size	Ø	Slide unit				Increase
		J14..C	J14..D	J17..C	J17..D	mm
32	32	2078	3484	2423	4019	10,57
40	40	2932	4695	2996	5035	12,87
50	50	4669	6675	4579	7699	18,99
63	63	6778	11047	7688	10527	23,21
80	80	9531	15849	10451	15334	30,72
100	100	11381	20401	12281	20016	33,52

## Slide Units with KD cylinder

### Slide units mass J10..E, J11..E, J12..E, J12..F, J16..E, J16..F, J18..E, J19..E

Slide unit	Cylinder	Mass at 0 stroke g								
Size	Ø	Slide unit								Increase
		J10..E	J11..E	J12..E	J12..F	J16..E	J16..F	J18..E	J19..E	mm
32	32	1595	1830	2132	3053	2515	3426	2215	2498	5,32
40	40	2307	2640	3130	4108	3252	4228	2950	3445	6,81
50	50	3740	4280	5045	6785	5090	6820	4710	5475	9,71
63	63	5381	6650	8240	10147	8530	10799	7090	8580	10,90
80	80	8276	9540	11130	15108	11420	15738	10085	11470	16,32
100	100	10189	11470	13060	19775	13340	20410	12000	13385	18,92

### Slide units mass J14..E, J14..F, J17..E, J17..F

Slide unit	Cylinder	Mass at 0 stroke g				
Size	Ø	Slide unit				Increase
		J14..E	J14..F	J17..E	J17..F	mm
32	32	2110	3516	2455	4051	11,32
40	40	2970	4733	3034	5073	13,81
50	50	4750	6756	4660	7780	20,71
63	63	6840	11109	7750	10589	24,50
80	80	9730	16048	10650	15533	34,32
100	100	11690	20710	12590	20325	38,92

## 1 Slide Units with STRONG cylinder

### Slide units mass J64/65, J64B, J67/66, J67B

Slide unit	Cylinder	Mass at 0 stroke g				
Size	Ø	Slide unit				Increase
		J64/65	J64B	J66/67	J67B	mm
32	32	1327	3274	1395	3525	11,17
40	40	1808	4261	1911	4548	13,81
50	50	2898	6734	3003	7142	20,31
63	63	4152	10043	4286	10590	24,85

## Slide Units with Telescopic cylinder

### Slide unit mass J64RT

Slide unit	Cylinder	Mass at 0 stroke g	
Size	Ø	Slide unit	Increase*
		J64RT	mm 1/2 stroke
32	32	1227	11,53
40	40	1665	13,56
50	50	2573	19,92
63	63	3885	24,62

\* = If stroke is 1000 mm, consider 500 mm

## Slide Units with Rodless cylinder

### Slide unit mass J30A, J31A

Slide unit	Cylinder	Mass at 0 stroke g		
Size	Ø	Slide unit		Increase
		J30A	J31A	mm
32	32	3640	4660	4,91
40	40	6123	4336	6,96
50	50	9140	11820	10,25
63	63	15825	21650	15,07

Slide Units for M, KE/K, KD series cylinders

■ J1



**CODIFICATION KEY**

J	1	0	A	5	5	0	0	5	0	A
1	2	3	4	5	6				7	

1 Series	2 Type	3 Accessories
J = Slide Unit	10 = Protruding shafts and short housing (recommended for strokes up to 50 mm) 11 = Protruding shafts and medium housing 12 = Protruding shafts and long housing 14 = Fully protected cylinder 16 = Central mounting (semi-external cylinder) 17 = Central mounting (fully protected cylinder) 18 = Medium moving housing (external cylinder) 19 = Long moving housing (external cylinder)	A = Shaft scrapers standard supplied

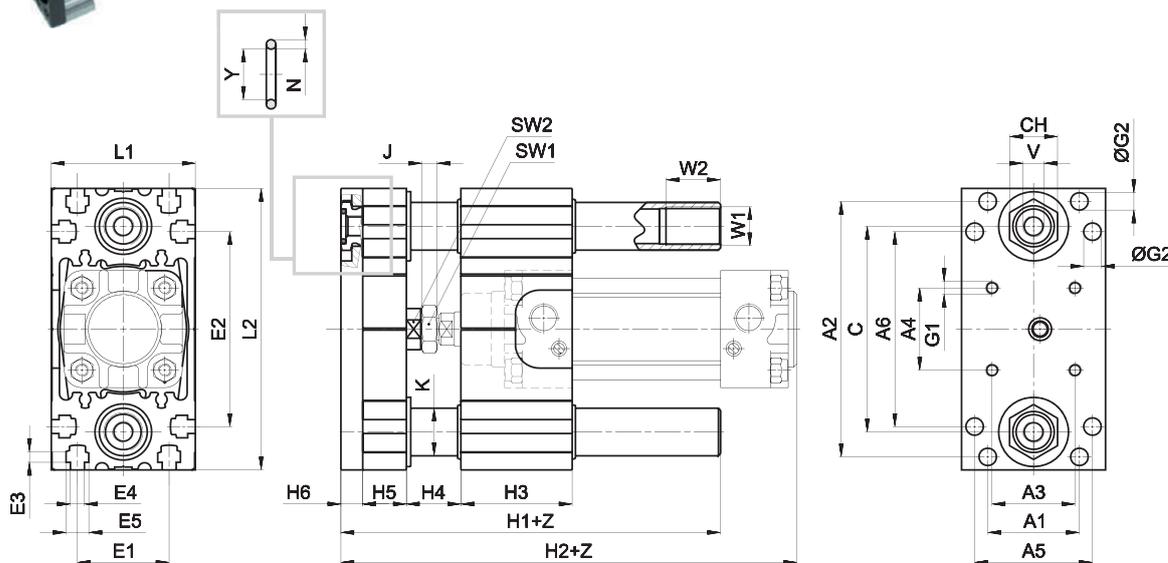
  

4 Slide unit size	5 Cylinder bore (mm)	6 Cylinder stroke (mm)	7 Cylinder option
0 = 16 for Ø16 cylinders	0 = Ø16	M	A = M150 series Ø16÷25 microcylinders K200 series Ø32÷100 cylinders
2 = 25 for Ø25 cylinders	2 = Ø25	0025 - 0030 - 0040 - 0050 - 0075	B = M250 series Ø16÷25 microcylinders with locking unit
3 = 32 for Ø32 cylinders	3 = Ø32	0100 - 0125 - 0150 - 0160 - 0175	K200 series Ø32÷100 cylinders with locking unit
4 = 40 for Ø40 cylinders	4 = Ø40	0200 - 0250 - 0300 - 0400 - 0500	(only for J12, J14, J16, J17)
5 = 50 for Ø50 cylinders	5 = Ø50	KE/K - KD	C = KE200 series Ø 32÷100 cylinders
6 = 63 for Ø63 cylinders	6 = Ø63	0025 - 0050 - 0075 - 0080 - 0100	D = KE200 series Ø 32÷100 cylinders with locking unit (only for J12, J14, J16, J17)
7 = 80 for Ø80 cylinders	7 = Ø80	0125 - 0150 - 0160 - 0175 - 0200	E = KD200 series Ø32÷100 cylinders
8 = 100 for Ø100 cylinders	8 = Ø100	0250 - 0300 - 0320 - 0400 - 0450	F = KD200 series Ø32÷100 cylinders with locking unit (only for J12, J14 and J16)
		0500 - 0600 - 0700 - 0800 - 0900	
		1000	

The slide units are supplied with safety distance (+25 mm) for accident prevention according to the European EN 349 specifications. Slide units are supplied with cushioned cylinders, which in the case of J10/J11/J12/J18/J19 are magnetic.

Slide units with protruding shafts

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

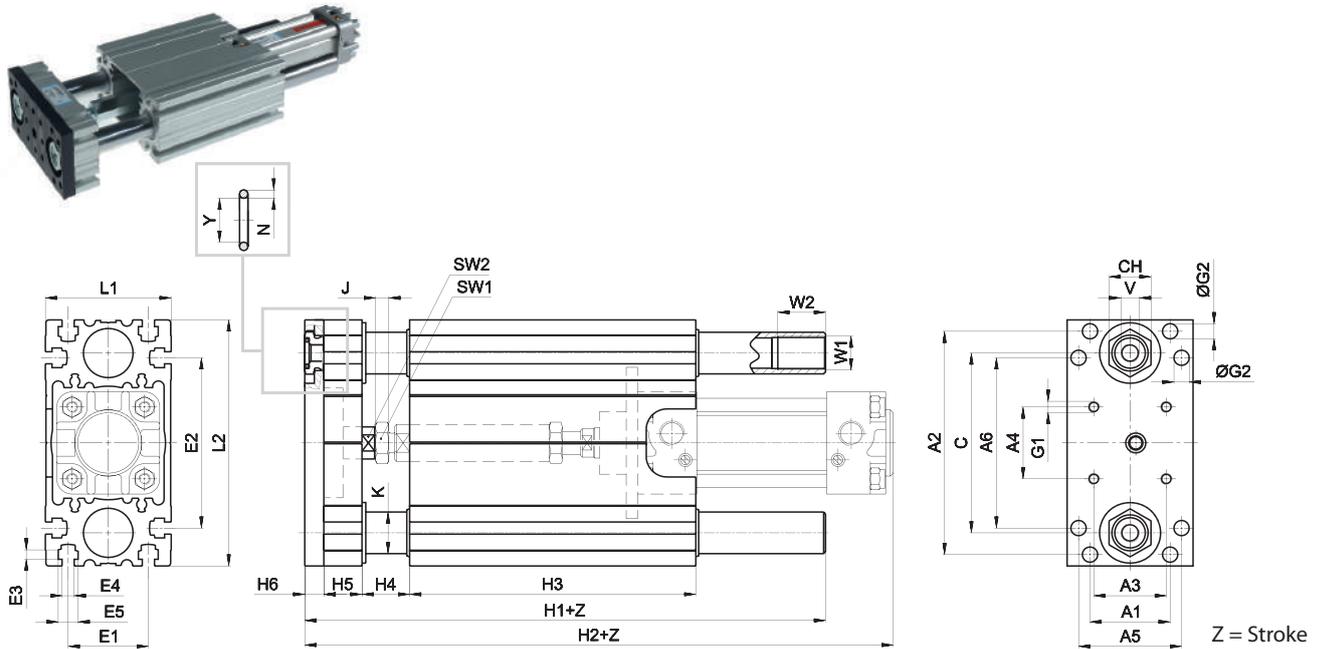


Z = Stroke

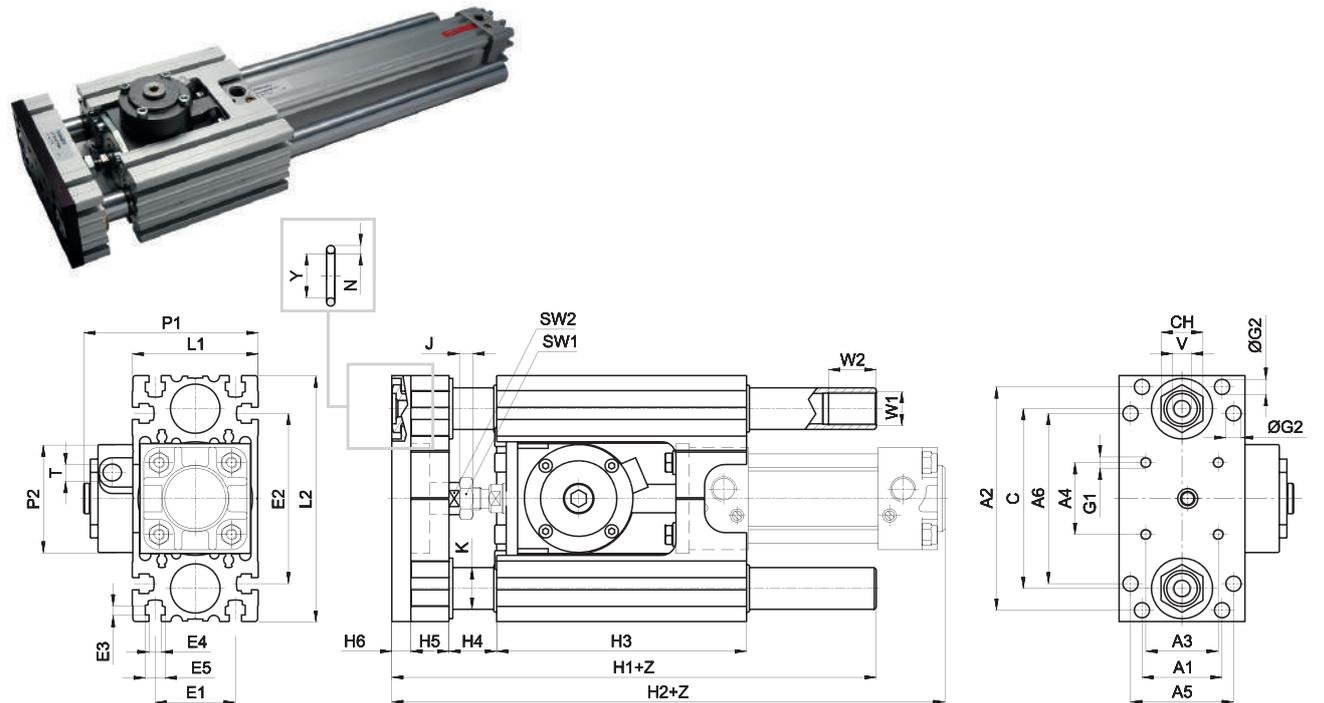
Slide unit	Cylinder	J10...						J11...					
Size	$\varnothing$	H1	H2	H3	H4	H5	H6	H1	H2	H3	H4	H5	H6
16	16	124	141	32	25	18	8	147	168	55	25	18	8
25	25	130	164	38	25	18	8	157	192	65	25	18	8
32	32	141	168	43	25	20	10	176	203	78	25	20	10
40	40	149	184	51	25	20	10	183	218,5	85	25	20	10
50	50	165	196	57	25	25	10	203	234,5	95	25	25	10
63	63	171,5	213	62,5	25	25	12	219,5	260,5	110	25	25	12
80	80	198,5	242	78,5	25	30	12	249,5	293,5	130	25	30	12
100	100	205,5	246	85	25	30	12	269,5	321	150	25	30	12

For missing standard dimensions look at the table at page 13

**Slide units with protruding shafts**  
**J12...with long housing (2 bearings)**



**Slide units with protruding shafts**  
**J12...B with long housing, 2 bearings, with locking unit**

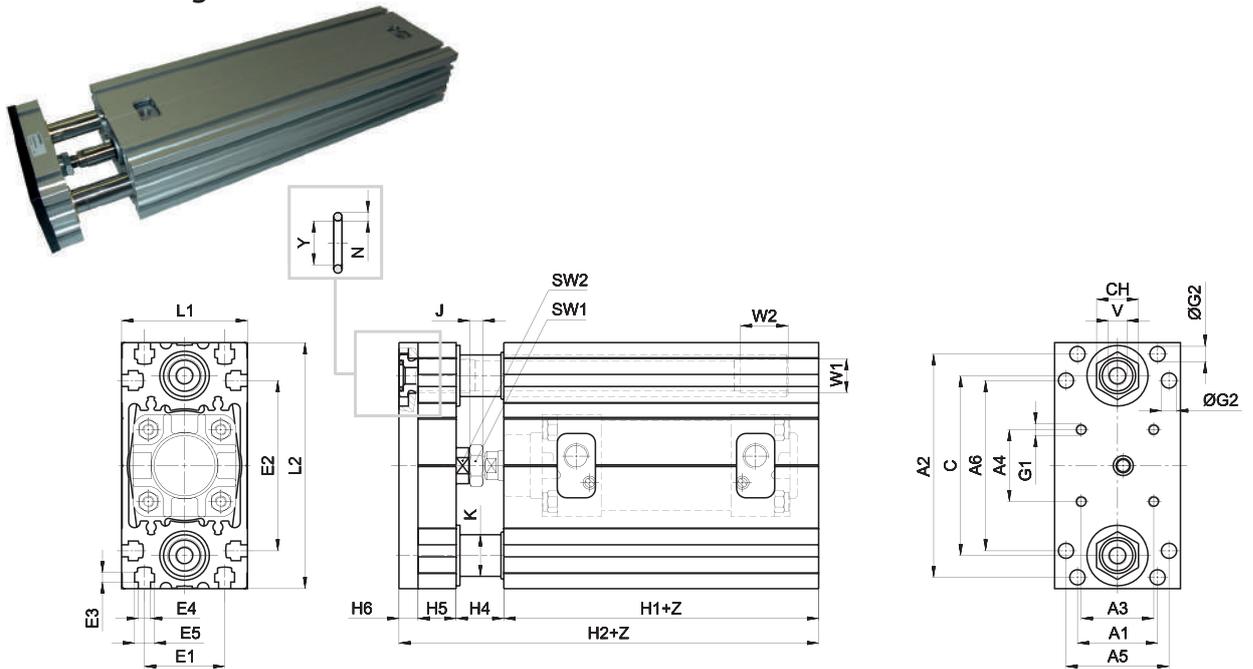


Slide unit	Cylinder	J12...						J12...B								
Size	Ø	H1	H2	H3	H4	H5	H6	H1	H2	H3	H4	H5	H6	P1	P2	T
16	16	172	193	80	25	18	8	-	-	-	-	-	-	-	-	-
25	25	192	227	100	25	18	8	186	220	94	25	18	8	77,5	40	G1/8
32	32	223	250	125	25	20	10	220	247	122	25	20	10	83,5	50	G1/8
40	40	248	283,5	150	25	20	10	229	265	131	25	20	10	91,5	58	G1/8
50	50	273	304,5	165	25	25	10	252	283	144	25	25	10	106,5	70	G1/8
63	63	294,5	329,5	185	25	25	12	271,5	313,5	163	25	25	12	129	85	G1/8
80	80	339,5	383,5	220	25	30	12	299,5	343	180	25	30	12	150	100	G1/8
100	100	379,5	431	260	25	30	12	339,5	385	220	25	30	12	185,5	116	G1/8

For missing standard dimensions look at the table at page 13

Slide unit with fully protected cylinder

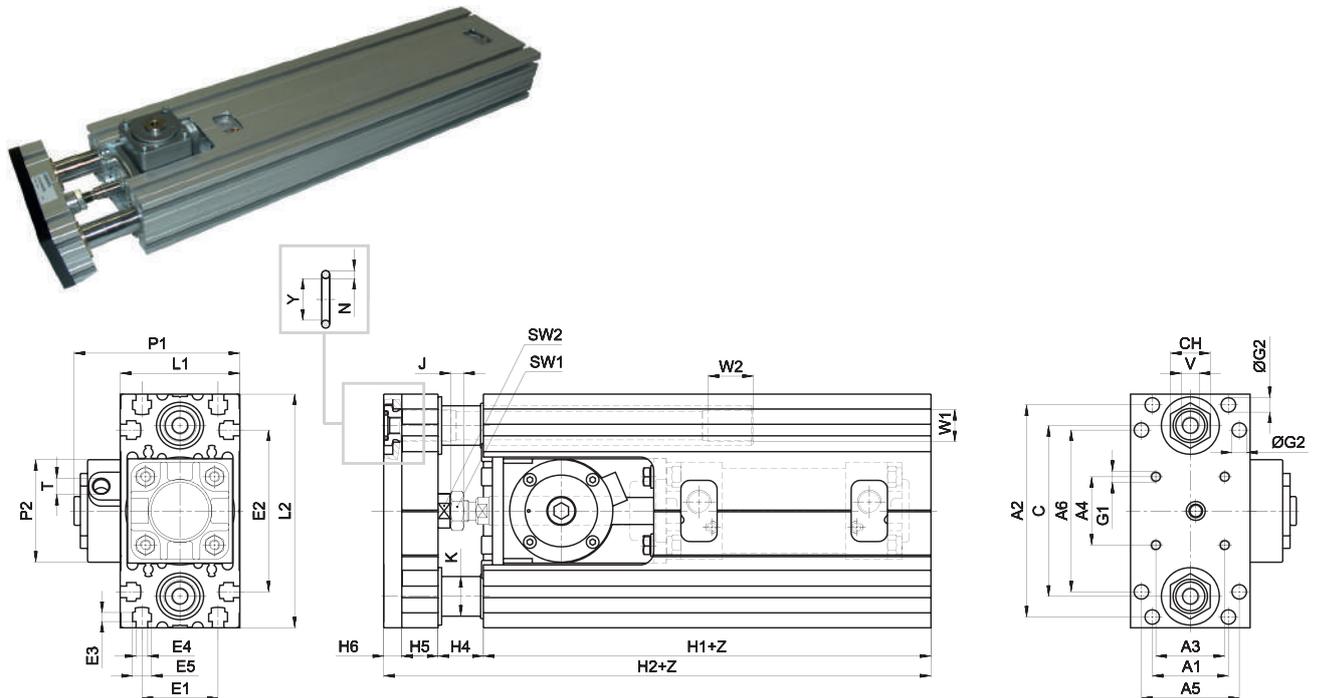
J14... 2 bearings



Z = Stroke

Slide unit with fully protected cylinder

J14...B 2 bearings with locking unit

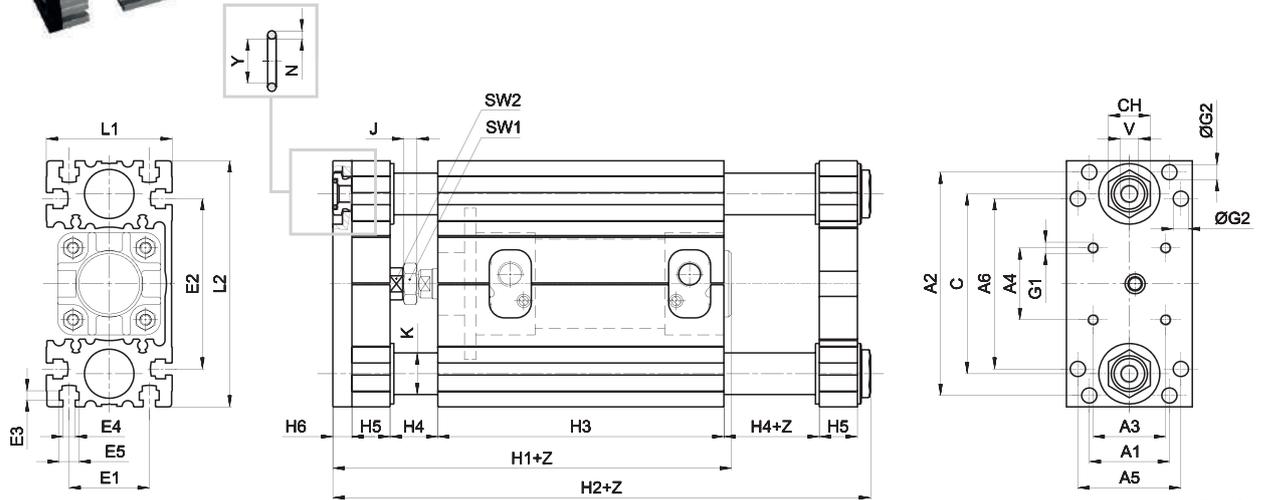


Z = Stroke

Slide unit	Cylinder	J14...						J14...B						
Size	Ø	H1	H2	H4	H5	H6	H1	H2	H4	H5	H6	P1	P2	T
16	16	100	151	25	18	8	-	-	-	-	-	-	-	-
25	25	120	171	25	18	8	179	230	25	18	8	77,5	40	G1/8
32	32	130	185	25	20	10	209	264	25	20	10	83,5	50	G1/8
40	40	140	195	25	20	10	222	277	25	20	10	91,5	58	G1/8
50	50	150	210	25	25	10	236	296	25	25	10	106,5	70	G1/8
63	63	165	227	25	25	12	250	312	25	25	12	129	85	G1/8
80	80	180	247	25	30	12	285	352	25	30	12	150	100	G1/8
100	100	195	262	25	30	12	335	402	25	30	12	185,5	116	G1/8

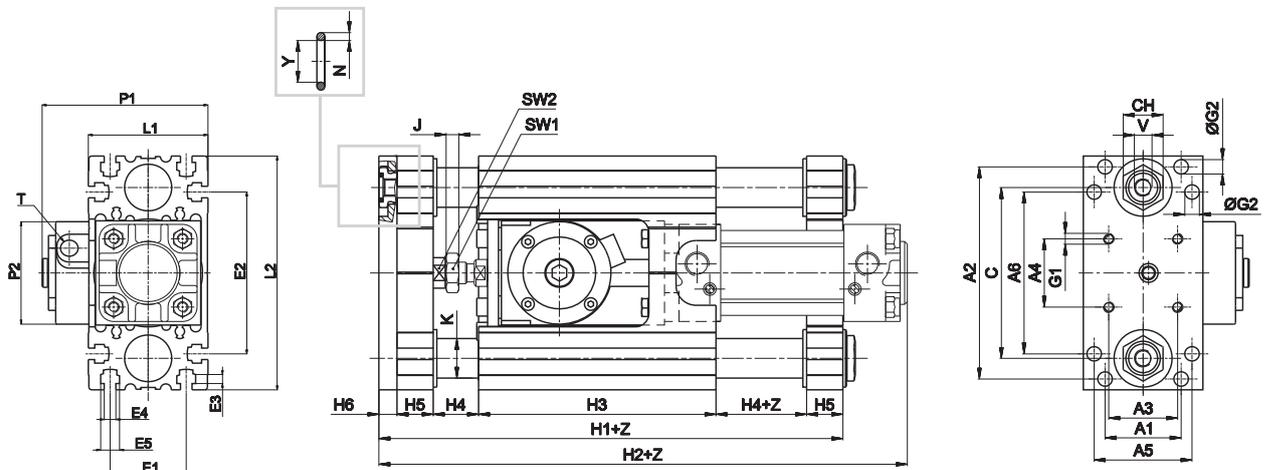
For missing standard dimensions look at the table at page 13

**Slide unit with central mounting, semi-external cylinder  
J16... 2 bearings**



Z = Stroke

**Slide unit with central mounting, semi-external cylinder  
J16...B 2 bearings with locking unit**



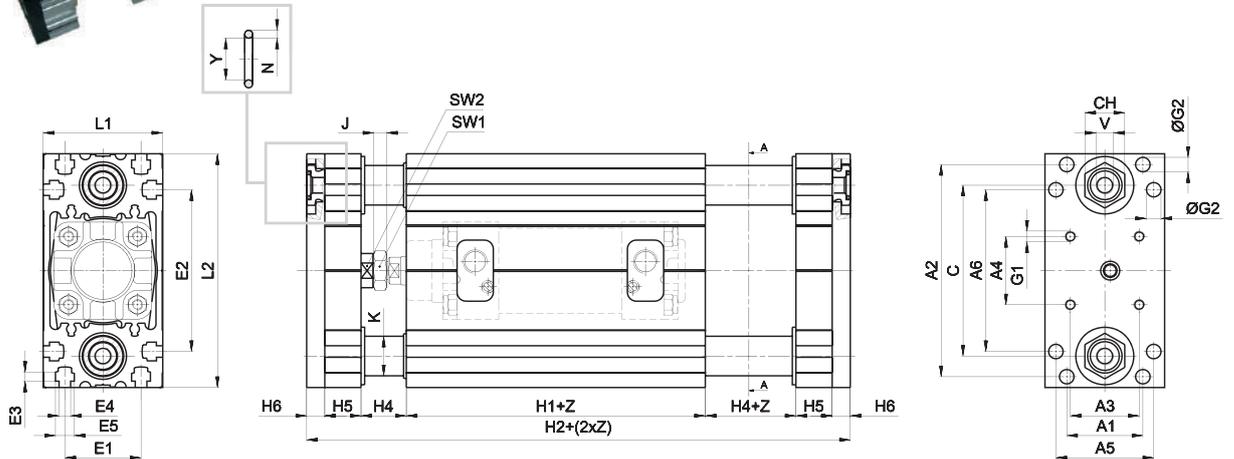
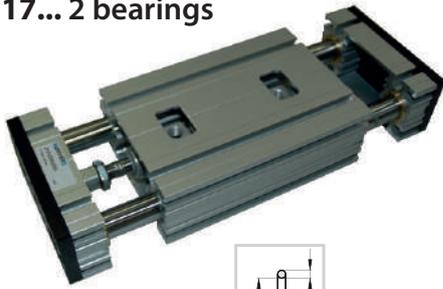
Z = Stroke

Slide unit	Cylinder	J16...						J16...B								
		H1	H2	H3	H4	H5	H6	H1	H2	H3	H4	H5	H6	P1	P2	T
16	16	137	182	80	25	18	8	-	-	-	-	-	-	-	-	-
25	25	156	202	100	25	18	8	188	220	94	25	18	8	77,5	40	G1/8
32	32	168	235	125	25	20	10	222	247	122	25	20	10	83,5	50	G1/8
40	40	184	260	150	25	20	10	231	265	131	25	20	10	91,5	58	G1/8
50	50	195	285	165	25	25	10	254	283	144	25	25	10	106,5	70	G1/8
63	63	213	309	185	25	25	12	275	313,5	163	25	25	12	129	85	G1/8
80	80	244	354	220	25	30	12	302	343	180	25	30	12	150	100	G1/8
100	100	256	394	260	25	30	12	342	385	220	25	30	12	185,5	116	G1/8

For missing standard dimensions look at the table at page 13

Slide unit with central mounting, fully protected cylinder

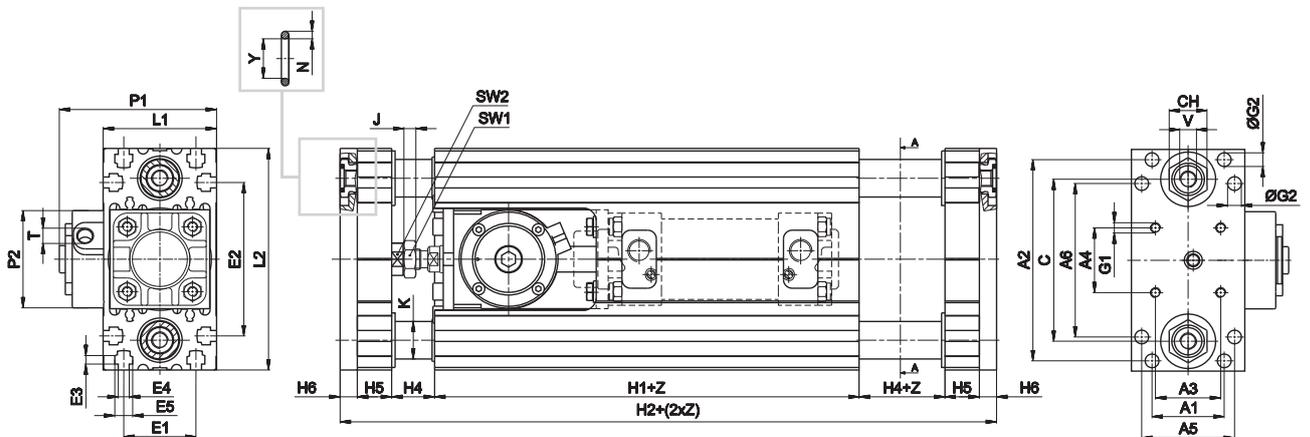
J17... 2 bearings



Z = Stroke

Slide unit with central mounting, fully protected cylinder

J17...B 2 bearings with locking unit



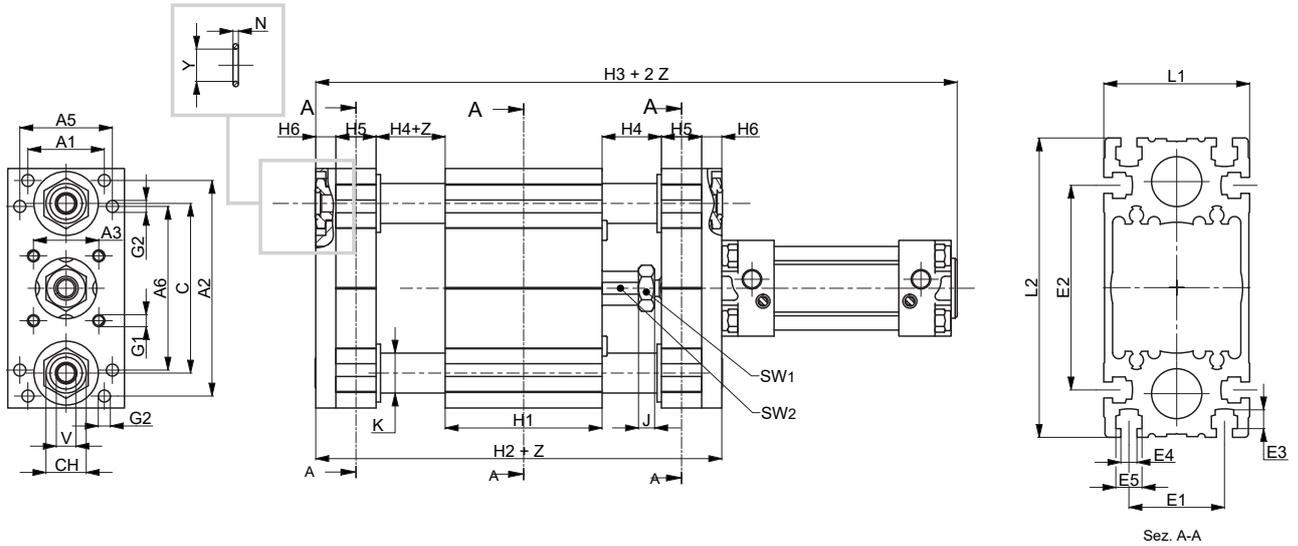
Z = Stroke

Slide unit	Cylinder	J17...					J17...B							
Size	Ø	H1	H2	H4	H5	H6	H1	H2	H4	H5	H6	P1	P2	T
16	16	100	202	25	18	8	-	-	-	-	-	-	-	-
25	25	120	222	25	18	8	179	281	25	18	8	77,5	40	G1/8
32	32	130	240	25	20	10	209	319	25	20	10	83,5	50	G1/8
40	40	140	250	25	20	10	222	332	25	20	10	91,5	58	G1/8
50	50	150	270	25	25	10	236	356	25	25	10	106,5	70	G1/8
63	63	165	289	25	25	12	250	374	25	25	12	129	85	G1/8
80	80	180	314	25	30	12	285	419	25	30	12	150	100	G1/8
100	100	195	329	25	30	12	335	469	25	30	12	185,5	116	G1/8

For missing standard dimensions look at the table at page 13

Slide unit with moving housing

J18... 2 bearings with medium housing  
J19... 2 bearings with long housing



Z = Stroke

1  
CYLINDERS

Slide unit	Cylinder	J18...						J19...					
Size	Ø	H1	H2	H3	H4	H5	H6	H1	H2	H3	H4	H5	H6
16	16	55	157	230	25	18	8	80	182	255	25	18	8
25	25	65	167	258	25	18	8	100	202	293	25	18	8
32	32	78	188	285	25	20	10	125	235	332	25	20	10
40	40	85	195	304	25	20	10	150	260	369	25	20	10
50	50	95	215	325	25	25	10	165	285	395	25	25	10
63	63	110	234	359	25	25	12	185	309	434	25	25	12
80	80	130	264	397	25	30	12	220	354	487	25	30	12
100	100	150	284	428	25	30	12	260	394	538	25	30	12

Plates of all slide units of size 63 - 80 - 100 have 4 chamfered sides (α).

Slide unit	α
Size	α
63	20°
80	35°
100	40°

> Common overall dimensions for slide unit series J10 - J11 - J12 - J12B - J14 - J14B - J16 - J16B - J17 - J17B - J18 - J19

Slide unit	Cylinder	A1	A2	A3	A4	A5	A6	C	CH	E1	E2	E3	E4	E5
16	16	19,9	70,6	24	30	-	-	51	13	20	46	3,5	4,4	7,4
25	25	32	85	27	27	36	62	69	14	32	62	5	5,4	8,4
32	32	38	108	32,5	32,5	46	82	85	22	38	82	5	6,4	10,4
40	40	42	118	38	38	54	90	95	22	42	90	5	6,4	10,4
50	50	48,1	140	46,5	46,5	69	110	115	27	48	110	6,5	8,4	13,4
63	63	56	157,5	56,5	56,5	79,5	120	130	30	56	120	7,5	10,5	17,5
80	80	65	178	72	72	95	142	150	32	65	142	8,5	10,5	18
100	100	72	194	89	89	113	156	164	32	72	156	8,5	10,5	18

Slide unit	Cylinder	G1	ØG2*	J	K	L1	L2	N	SW1	SW2	V	Y	W1	W2
16	16	M4	4	4	12	32	77	1,78	10	9	M5	5,28	M10	12
25	25	M5	6	6	16	47	96	1,78	17	12	M5	5,28	M12	12
32	32	M6	6	6	20	58	120	2,62	17	17	G1/8	10,78	M16x1,5	20
40	40	M6	8	7	22	66	130	2,62	19	17	G1/8	10,78	M18x1,5	20
50	50	M8	8	8	25	84	155	2,62	24	22	G1/8	10,78	M20x1,5	25
63	63	M8	8	8	28	98	176	2,62	24	22	G1/8	10,78	M22x1,5	25
80	80	M10	8	9	32	117	200	2,62	30	30	G1/8	10,78	M27x2	30
100	100	M10	8	9	32	133	214	2,62	30	30	G1/8	10,78	M27x2	30

\* = For use with locating pin tolerance M6

Slide Units for S1 series rodless cylinders

J3



CODIFICATION KEY

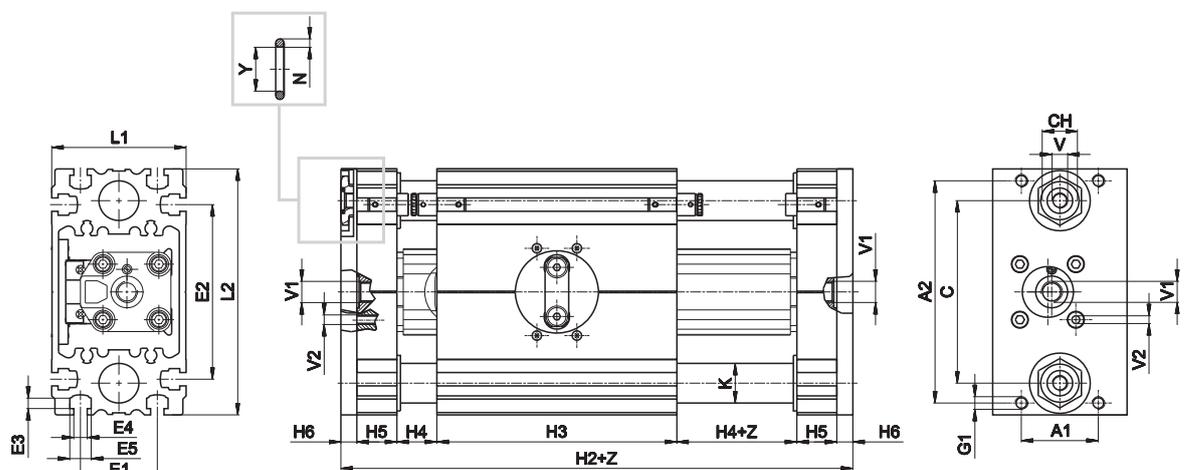
J	3	0	A	5	3	0	1	0	0	A
1	2	3	4	5			6			7

<b>1 Series</b> J = Slide Unit	<b>2 Type</b> 30 = Fully protected cylinder (2 bearings - standard carriage) 31 = Fully protected cylinder (2 bearings - long carriage)	<b>3 Accessories</b> A = Shaft scrapers standard supplied
<b>4 Slide unit size</b> 4 = 40 for Ø25 cylinders 5 = 50 for Ø32 cylinders 6 = 63 for Ø40 cylinders 7 = 80 for Ø50 cylinders	<b>5 Cylinder bore (mm)</b> 2 = Ø25 3 = Ø32 4 = Ø40 5 = Ø50	<b>6 Slide unit stroke (mm)</b> Up to 0800
		<b>7 Supply port option</b> A = Supply ports on both end-caps B = Supply ports on the right end-cap only

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

CYLINDERS

**Slide unit with fully protected cylinder**  
**J30... 2 bearings with standard carriage**  
**J31... 2 bearings with long carriage**

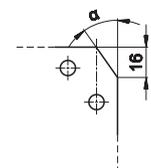


Z = Stroke

Slide unit	Cylinder											Carriage type				
		A1	A2	C	CH	E1	E2	E3	E4	E5	G1	H2	H3		H4	
40	40	42	118	95	22	42	90	5	6,4	10,4	M6	Standard	Long	Standard	Long	25
50	50	48,1	140	115	27	48	110	6,5	8,4	13,4	M8	220	315	110	205	25
63	63	56	157,5	130	30	56	120	7,5	10,5	17,5	M8	270	400	150	280	25
80	80	65	178	150	32	65	142	8,5	10,5	18	M10	324	474	200	350	25
												374	574	240	440	25

Slide unit	Cylinder										
Size	Ø	H5	H6	K	L1	L2	N	Y	V	V1	V2
40	40	20	10	22	66	130	2,62	10,78	M5	G1/8	G1/8
50	50	25	10	25	84	155	2,62	10,78	G1/8	G1/4	G1/4
63	63	25	12	28	98	176	2,62	10,78	G1/8	G3/8	G3/8
80	80	30	12	32	117	200	2,62	10,78	G1/8	G3/8	G3/8

Plates of all slide units of size 63 - 80 have 4 chamfered sides (α).



Slide unit	α
63	20°
80	35°

Slide Units for RS series STRONG compact cylinders

■ J64RS



CODIFICATION KEY

J	6	4	R	S	3	3	0	0	5	0	B
1	2	3	4	5	6				7		

**1 Series**

J = Slide Unit

**2 Slide unit type**

64 = Fully protected cylinder (stroke longer than 50 mm)  
 65 = Fully protected cylinder, through opening  
 66 = Fully protected cylinder, through opening, two plates  
 67 = Fully protected cylinder, two plates (stroke longer than 50 mm)  
 Shaft scrapers standard supplied

**3 Cylinder type**

RS = STRONG cylinder (RS22J... series) with long piston and tube with sensor grooves on the same side as supply ports to allow mounting of magnetic sensors

**4 Slide unit size**

3 = 32 for Ø32 cylinders  
 4 = 40 for Ø40 cylinders  
 5 = 50 for Ø50 cylinders  
 6 = 63 for Ø63 cylinders

**5 Cylinder bore (mm)**

3 = Ø32  
 4 = Ø40  
 5 = Ø50  
 6 = Ø63

**6 Slide unit stroke (mm)**

0015 ÷ 0800 mm

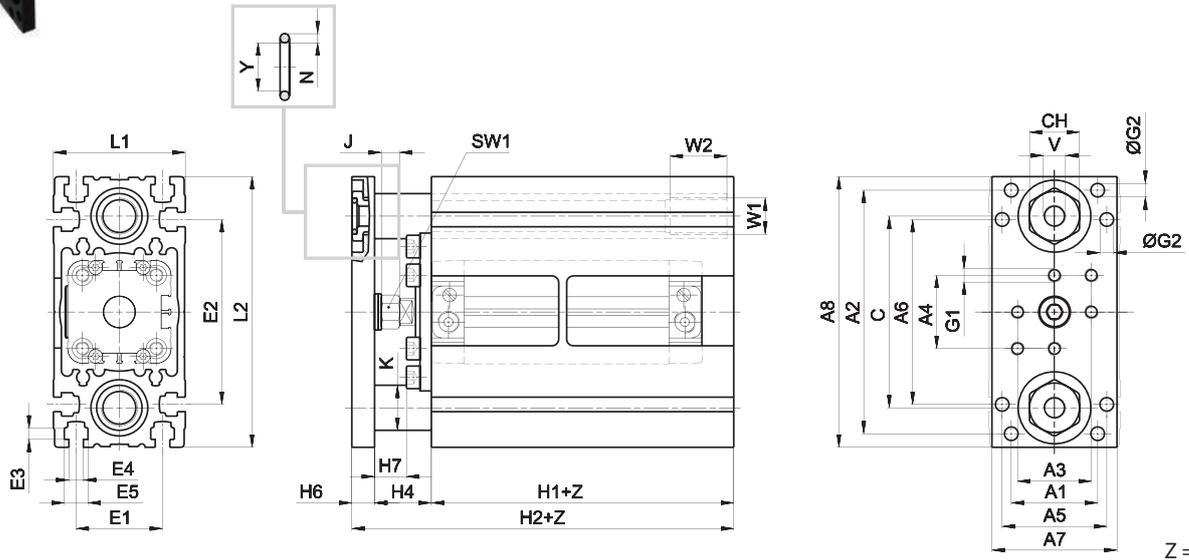
**7 Cylinder option**

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

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

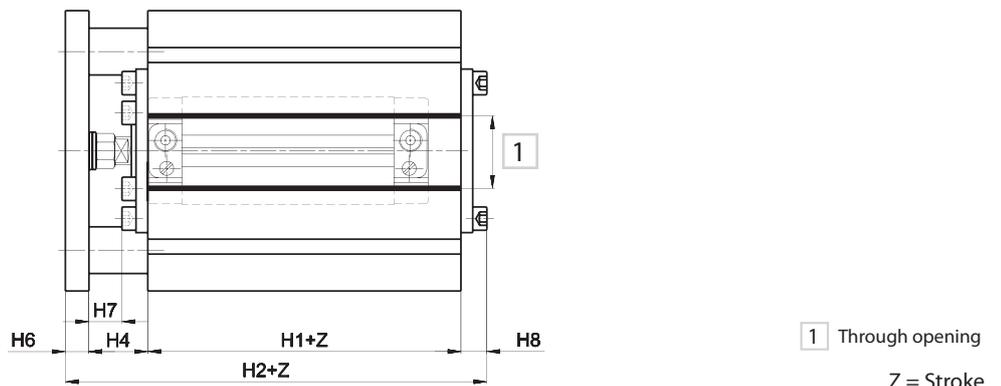
Slide unit with fully protected cylinder

J64... bearings



Slide unit with fully protected cylinder

J65... through opening



Slide unit	Cylinder	J64...					J65...					
Size	Ø	H1	H2	H4	H6	H7	H1	H2	H4	H6	H7	H8
32	32	78	113	25	10	14	78	124	25	10	14	11
40	40	82	117	25	10	13	82	129	25	10	13	12
50	50	91	128	25	12	11	91	142	25	12	11	14
63	63	98	135	25	12	11	98	149	25	12	11	14

H2 dimension of slide units with through opening will increase by the value of H8 dimensions.

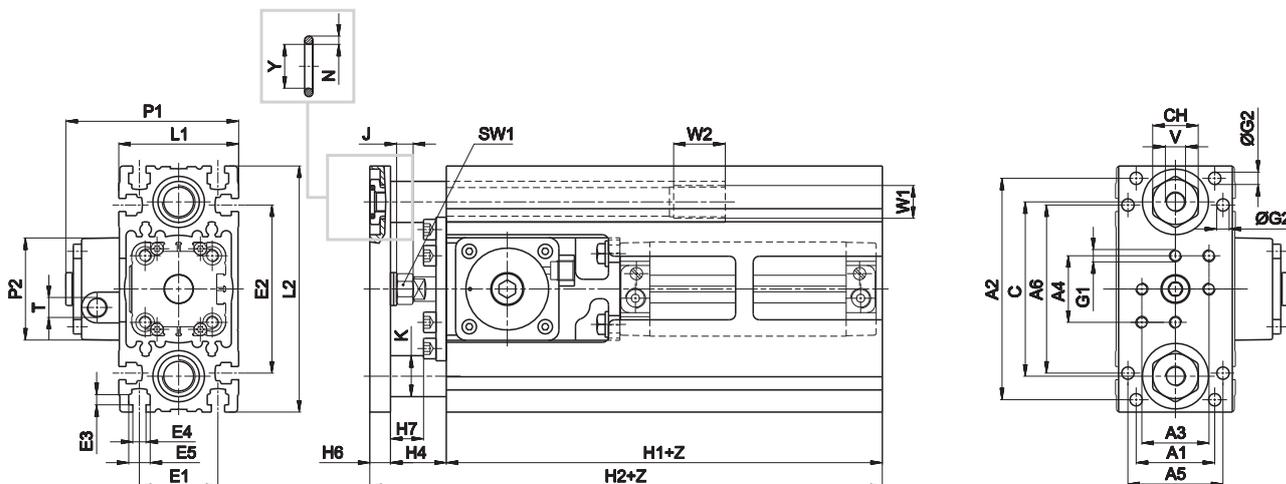
Magnetic cylinder minimum stroke: for size 32 and 40 = 20 mm, for size 50 and 63 = 15 mm.

Upon request: strokes exceeding 50 mm slide units with through opening for placing the magnetic sensor in intermediate positions.

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

For missing standard dimensions look at the table at page 24

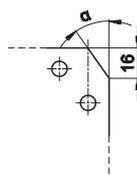
### Slide unit with fully protected cylinder J64...B 2 bearings with locking unit



Z = Stroke

Slide unit	Cylinder	J64...B							
Size	Ø	H1	H2	H4	H6	H7	P1	P2	T
32	32	151	188	27	10	16	83,5	50	G1/8
40	40	158	194	26	10	14	91,5	58	G1/8
50	50	173	209	24	12	10	106,5	70	G1/8
63	63	187	223	24	12	10	129	85	G1/8

Plates of all slide units of size 63 have 4 chamfered sides (α).



Slide unit	α
Size 63	20°

#### > Common overall dimensions for slide unit series J64 - J65 - J64B

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

Slide unit	Cylinder	E5	G1	ØG2 *	J	K	L1	L2	N	SW1	V	W1	W2	Y
32	32	10,4	M6	6	11	20	58	120	2,62	13	G1/8	M16x1,5	20	10,78
40	40	10,4	M6	8	11	22	66	130	2,62	16	G1/8	M18x1,5	20	10,78
50	50	13,4	M8	8	7	25	84	155	2,62	18	G1/8	M20x1,5	25	10,78
63	63	17,5	M8	8	7	28	98	176	2,62	18	G1/8	M22x1,5	25	10,78

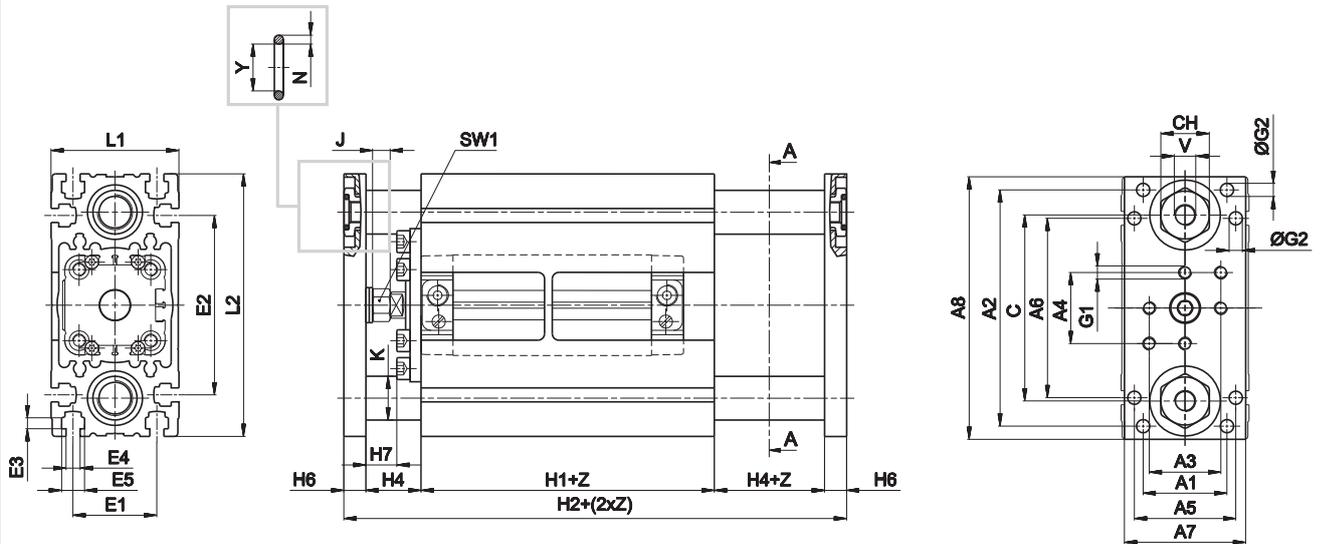
\* = For use with locating pin tolerance M6.

Magnetic cylinder minimum stroke: for size 32 and 40 = 20 mm, for size 50 and 63 = 15 mm.

Upon request: strokes exceeding 50 mm slide units with through opening for placing the magnetic sensor in intermediate positions.

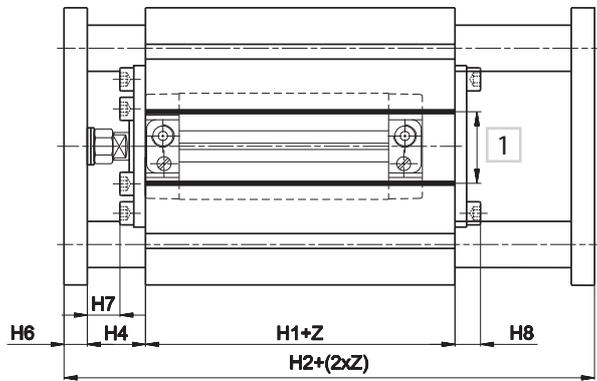
For all sizes up to 50 mm stroke the opening of the extrusion in accordance with the supply ports is of the through type.

**Slide unit with central mounting, fully protected cylinder  
J67... 2 bearings and 2 plates**



Z = Stroke

**Slide unit with central mounting, fully protected cylinder  
J66... through opening and 2 plates**



1 Through opening

Z = Stroke

Slide unit	Cylinder	J67...					J66...					
		H1	H2	H4	H6	H7	H1	H2	H4	H6	H7	H8
32	32	78	148	25	10	14	78	159	25	10	14	11
40	40	82	152	25	10	13	82	164	25	10	13	12
50	50	91	165	25	12	11	91	179	25	12	11	14
63	63	98	172	25	12	11	98	186	25	12	11	14

H2 dimension of slide units with through opening will increase by the value of H8 dimensions.

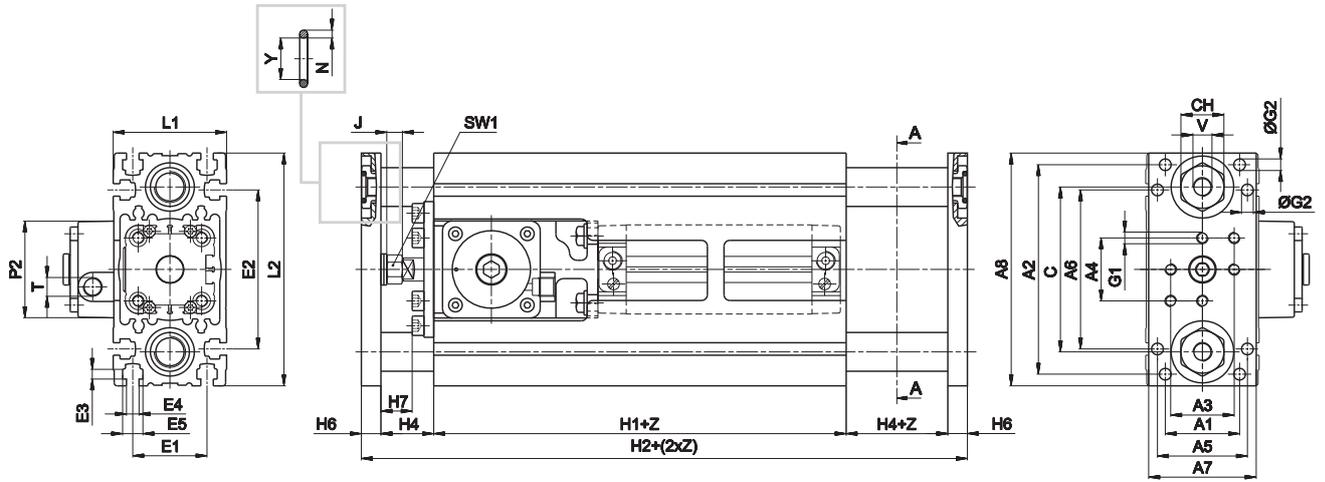
Magnetic cylinder minimum stroke: for size 32 and 40 = 20 mm, for size 50 and 63 = 15 mm.

Upon request: strokes exceeding 50 mm slide units with through opening for placing the magnetic sensor in intermediate positions.

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

For missing standard dimensions look at the table at page 24

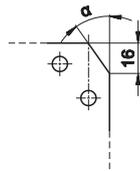
**Slide unit with central mounting, fully protected cylinder  
J67...B 2 bearings and 2 plates, with locking unit**



Z = Stroke

Slide unit	Cylinder	J64...B							
Size	Ø	H1	H2	H4	H6	H7	P1	P2	T
32	32	151	188	27	10	16	83,5	50	G1/8
40	40	158	194	26	10	14	91,5	58	G1/8
50	50	173	209	24	12	10	106,5	70	G1/8
63	63	187	223	24	12	10	129	85	G1/8

Plates of all slide units of size 63 have 4 chamfered sides (α).



Slide unit	
Size	α
63	20°

> Common overall dimensions for slide unit series J67 - J66 - J67B

Slide unit	Cylinder	A1	A2	A3	A4	A5	A6	A7	A8	C	CH	E1	E2	E3
32	32	38	108	32,5	32,5	46	82	55	120	85	22	38	82	5
40	40	42	118	38	38	54	90	65	130	95	22	42	90	5
50	50	48,1	140	46,5	46,5	69	110	80	155	115	27	48	110	6,5
63	63	56	157,5	56,5	56,5	79,5	120	95	175	130	30	56	120	7,5

Slide unit	Cylinder	E4	E5	G1	ØG2 *	J	K	L1	L2	N	SW1	V	Y
32	32	6,4	10,4	M6	6	11	20	58	120	2,62	13	G1/8	10,78
40	40	6,4	10,4	M6	8	11	22	66	130	2,62	16	G1/8	10,78
50	50	8,4	13,4	M8	8	7	25	84	155	2,62	18	G1/8	10,78
63	63	10,5	17,5	M8	8	7	28	98	176	2,62	18	G1/8	10,78

\* = For use with locating pin tolerance M6.

Magnetic cylinder minimum stroke: for size 32 and 40 = 20 mm, for size 50 and 63 = 15 mm.

Upon request: strokes exceeding 50 mm slide units with through opening for placing the magnetic sensor in intermediate positions.

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

Slide Units for RT2 series telescopic cylinders

J64RT2



J	6	4	R	T	2	4	4	0	8	0	0	A
1	2	3	4	5	6	7						

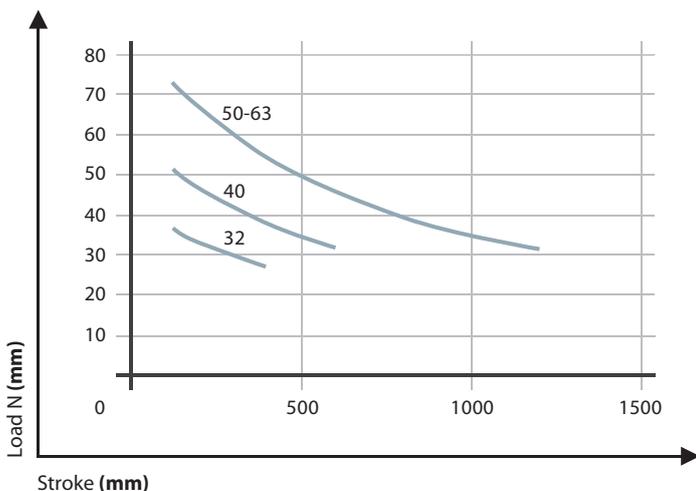
<b>1 Series</b> J = Slide Unit - Shaft scrapers standard supplied	<b>2 Slide unit type</b> 64 = Fully protected telescopic cylinder Shaft scrapers standard supplied	<b>3 Cylinder type</b> RT2 = 2 stage telescopic cylinders
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<b>4 Slide unit size</b> 3 = 32 for Ø32 cylinders 4 = 40 for Ø40 cylinders 5 = 50 for Ø50 cylinders 6 = 63 for Ø63 cylinders	<b>5 Cylinder bore (mm)</b> 3 = Ø32 4 = Ø40 5 = Ø50 6 = Ø63	<b>6 Slide unit stroke (mm)</b> Standard stroke 0120 - 0160 - 0180 - 0200 - 0300 - 0400 - 0500 0600 - 0700 - 0800 - 0900 - 1000 - 1100 - 1200  Min - Max stroke 0160 ÷ 0400 (Ø32) 0160 ÷ 0600 (Ø40) 0120 ÷ 0900 (Ø50) 0120 ÷ 1200 (Ø63)	<b>7 Cylinder option</b> A = 2 stage telescopic cylinders
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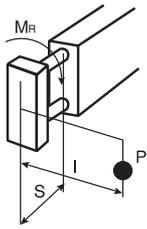
1 CYLINDERS

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

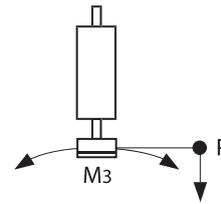
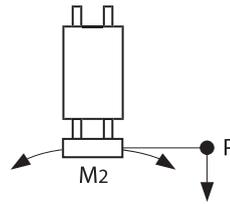
> Payload diagram based on slide unit length



### > Resistant moment values M2, M3 and torque MR



∅	MR Nm
32	4,7
40	7,8
50	10,2
63	10,2



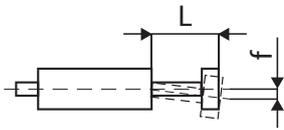
∅	M2 = M3 Nm
32	7,4
40	12
50	17,8
63	17,8

#### How to calculate torque MR

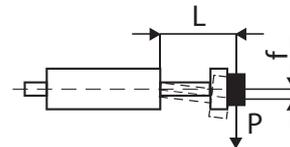
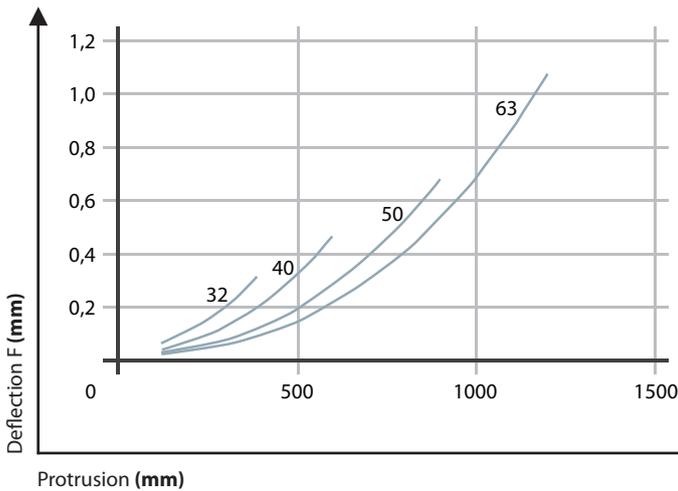
To calculate torque MR the load P(N) must be multiplied by the arm I (mm).

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

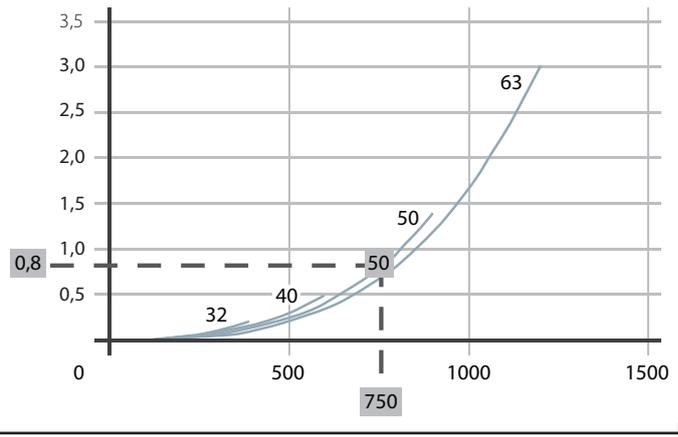
### > Diagram deflection per slide unit length J64RT2



Deflection under its own weight



Deflection with 10N load



### Examples of application

#### How to calculate deflection

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

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

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

**Example:** slide unit size 50, length L 750 mm and load Q of 25 N.

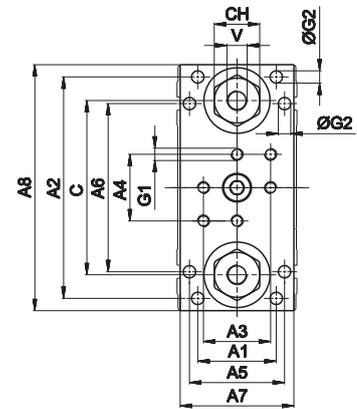
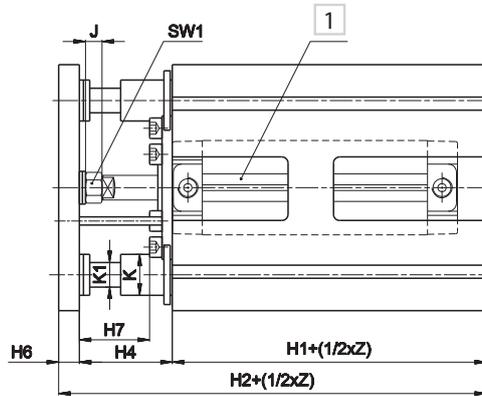
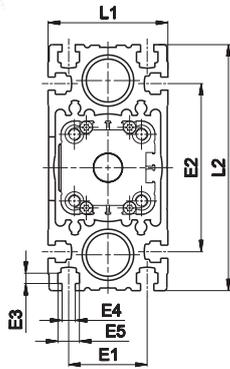
On the chart showing deflection with 10 N, we get coefficient 0,8 (marked with negative print) then:

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

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

Slide unit with fully protected cylinder

J64RT2...



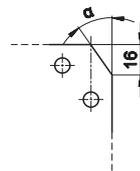
1 Groove for sensor

Z = Stroke

CYLINDERS

Slide unit	Cylinder	J64RT2...				
Size	Ø	H1	H2	H4	H6	H7
32	32	72	107	25	10	16
40	40	78	113	25	10	15
50	50	92	129	25	12	14
63	63	95	132	25	12	14

Plates of all slide units of size 63 have 4 chamfered sides ( $\alpha$ ).



Slide unit	
Size	$\alpha$
63	20°

Slide unit	Cylinder													
Size	Ø	A1	A2	A3	A4	A5	A6	A7	A8	C	CH	E1	E2	E3
32	32	38	108	32,5	32,5	46	82	55	120	85	22	38	82	5
40	40	42	118	38	38	54	90	65	130	95	22	42	90	5
50	50	48,1	140	46,5	46,5	69	110	80	155	115	27	48	110	6,5
63	63	56	157,5	56,5	56,5	79,5	120	95	175	130	30	56	120	7,5

Slide unit	Cylinder													
Size	Ø	E4	E5	G1	ØG2*	J	K	K1	L1	L2	N	SW1	V	Y
32	32	6,4	10,4	M6	6	12	20	12	58	120	2,62	13	G1/8	10,78
40	40	6,4	10,4	M6	8	13	22	14	66	130	2,62	16	G1/8	10,78
50	50	8,4	13,4	M8	8	10	25	16	84	155	2,62	18	G1/8	10,78
63	63	10,5	17,5	M8	8	10	28	16	98	176	2,62	18	G1/8	10,78

\* = For use with locating pin tolerance M6.

Magnetic cylinder minimum stroke: for size 32 and 40 = 160 mm (80+80), for size 50 and 63 = 120 mm (60+60).

Slide Units for RP series compact cylinders

■ J65

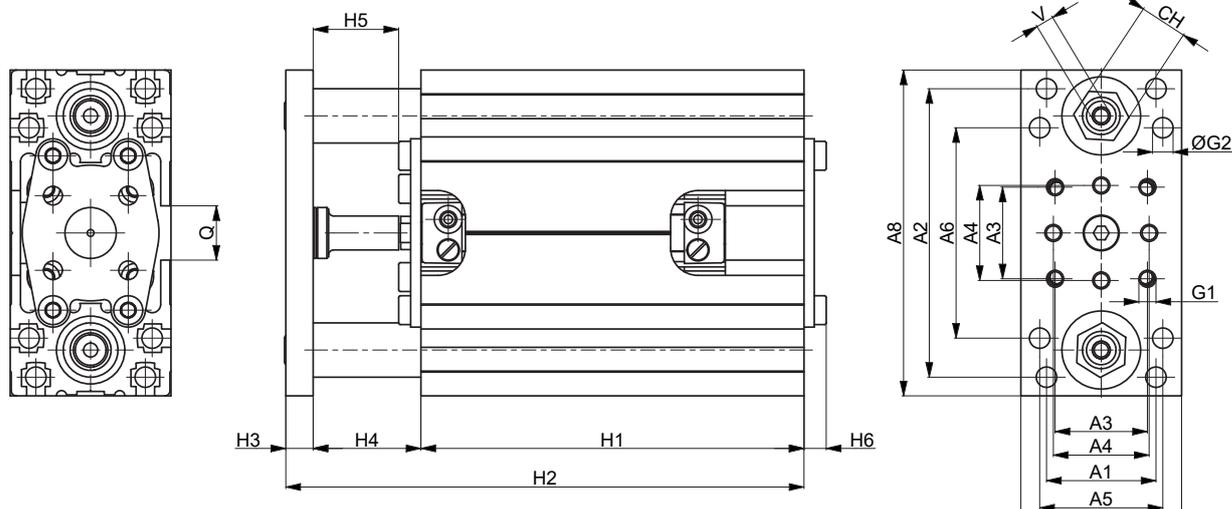


CODIFICATION KEY

J	6	5	R	P	2	2	0	0	5	0	A
1	2	3	4	5	6	7					

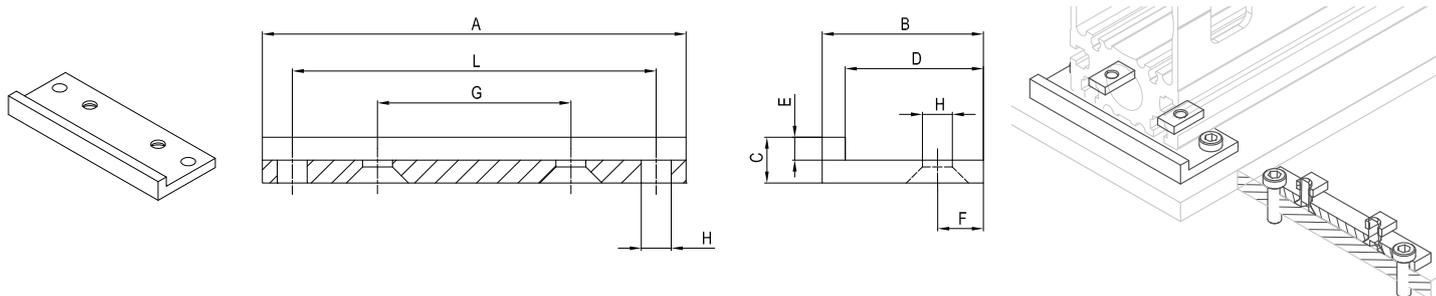
<b>1 Series</b> J = Slide Unit	<b>2 Slide unit type</b> 65 = Fully protected cylinder, through opening Shaft scrapers standard supplied	<b>3 Cylinder type</b> RP = UNITOP Ø25 mm compact cylinder
<b>4 Slide unit size</b> 2 = 25 for Ø25 cylinders	<b>5 Cylinder bore (mm)</b> 2 = Ø25	<b>6 Slide unit stroke (mm)</b> 0050 ÷ 0200
		<b>7 Cylinder option</b> A = Cylinder with long piston

Slide unit with fully protected cylinder  
J65RP... through opening



A1	A2	A3	A4	A5	A6	A7	A8	CH	G1	G2	H1	H2	H3	H4	H5	H6	Q	V
32	85	27	28	36	62	47	96	14	M5	6	112	151,5	8	31,5	25	6,5	16	M5

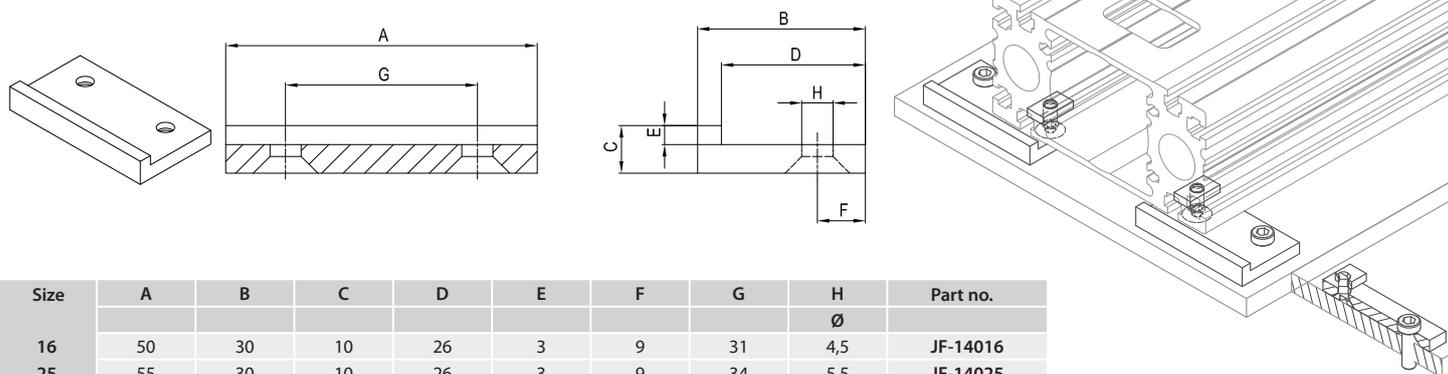
Aluminium foot brackets



Size	A	B	C	D	E	F	G	H	L	Part no.
16	52	30	10	26	4	9	20	4,5	43	JF-13016
25	70	30	10	26	4	9	32	5,5	57	JF-13025
32	85	35	10	30	5	10	38	6,5	72	JF-13032
40	92	35	10	30	5	10	42	6,5	79	JF-13040
50	118	40	15	35	5	12,5	48	8,5	102	JF-13050
63	135	45	15	40	5	15	56	10,5	112	JF-13063
80	160	45	15	40	5	15	65	10,5	135	JF-13080
100	175	45	15	40	5	15	72	10,5	151	JF-13100

Package consists of 2 pcs. including mounting accessories.

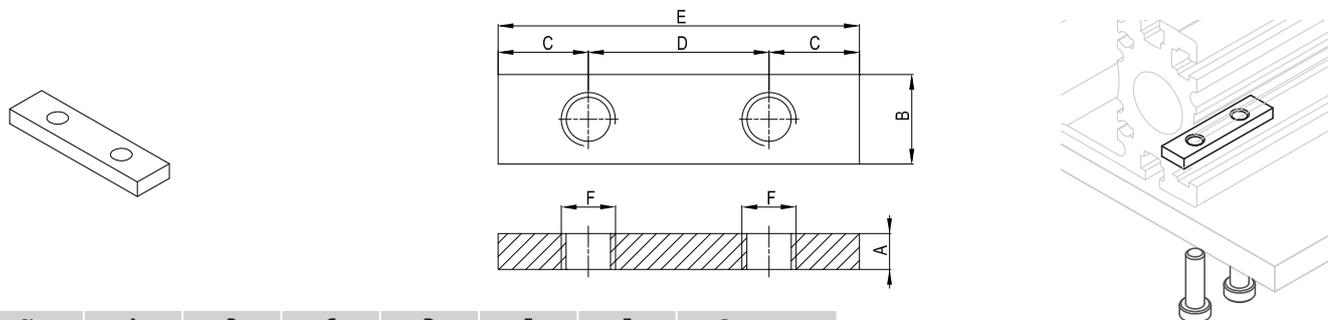
1 CYLINDERS



Size	A	B	C	D	E	F	G	H	Part no.
16	50	30	10	26	3	9	31	4,5	JF-14016
25	55	30	10	26	3	9	34	5,5	JF-14025
32	60	35	10	30	4	10	38	6,5	JF-14032
40	65	35	10	30	4	10	40	6,5	JF-14040
50	70	40	15	35	4	12,5	45	8,5	JF-14050
63	85	45	15	40	4	15	56	10,5	JF-14063
80 - 100	90	45	15	40	4	15	58	10,5	JF-14100

Package consists of 4 pcs. including mounting accessories.

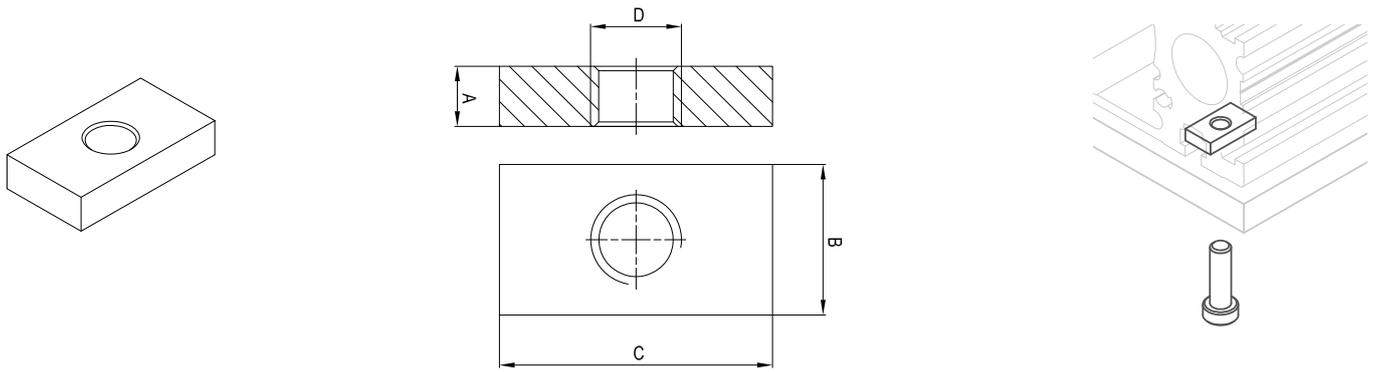
Fixing plates in steel



Size	A	B	C	D	E	F	Part no.
16	3	7	7,5	15	30	M4	JF-42016
25	4	8	10	15	35	M5	JF-42025
32 - 40	4	10	10	20	40	M6	JF-42040
50	6	13	10	30	50	M8	JF-42050
63	6	16	12,5	35	60	M10	JF-42063
80 - 100	8	16	15	40	70	M10	JF-42100

Package consists of 2 pcs. including mounting accessories.

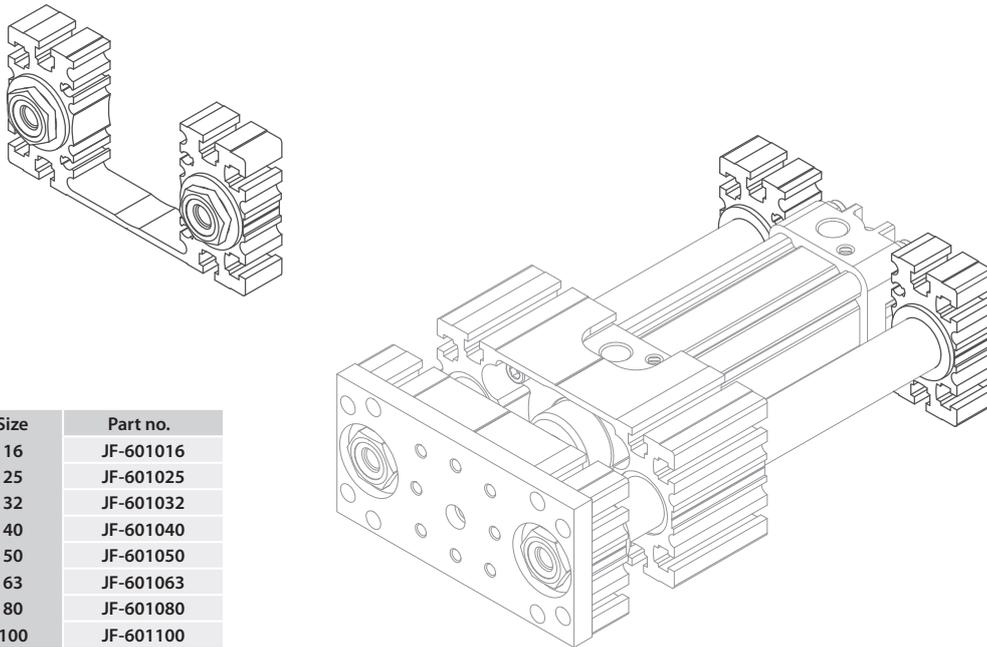
Aluminium foot brackets



Size	A	B	C	D	Part no.
16	3	7	16	M4	JF-43016
25	4	8	16	M5	JF-43025
32 - 40	4	10	18	M6	JF-43040
50	6	13	18	M8	JF-43050
63	6	16	22	M10	JF-43063
80 - 100	8	16	25	M10	JF-43100

Package consists of 2 pcs. including mounting accessories.

Shaft support for slide units J10/J11/J12 Series



Size	Part no.
16	JF-601016
25	JF-601025
32	JF-601032
40	JF-601040
50	JF-601050
63	JF-601063
80	JF-601080
100	JF-601100

# JLE

## Guided compact cylinders

The JLE series guided compact cylinders are studied for applications requiring reduced dimensions and in case anti-rotation has to be guaranteed.

**Bores:** 12 - 16 - 20 - 25 - 32 - 40 - 50 - 63

**Strokes:** until 200 mm

**Versions:** guide on bearings (JLES) ideal for high side loads, guide on ball bushing (JLEV) suitable for high precision applications and uniform speed

**Fixing:** 3 fixing type (top, bottom and rear fixing)

**Connections:** on two sides

**Sensors:** T-grooves on two sides



### TECHNICAL CHARACTERISTICS

Ambient temperature	-20 ÷ +80 °C
Fluid	compressed air with or without lubrication
Max. pressure	10 bar
Bores	Ø 12 - 16 - 20 - 25 - 32 - 40 - 50 - 63
Cushionings	standard supplied

### CONSTRUCTIVE CHARACTERISTICS

Body	aluminium alloy
Shafts	C40 chromium-plated steel (JLES) C40 hardened steel (JLEV)
Piston	aluminium alloy
Piston rod	C40 chromium-plated steel
Guide bearings	bearings (JLES) ball bushing (JLEV)
Piston seals	polyurethane
Flange	steel
Cushioning seals	polyurethane
Magnet	standard supplied

### CODIFICATION KEY

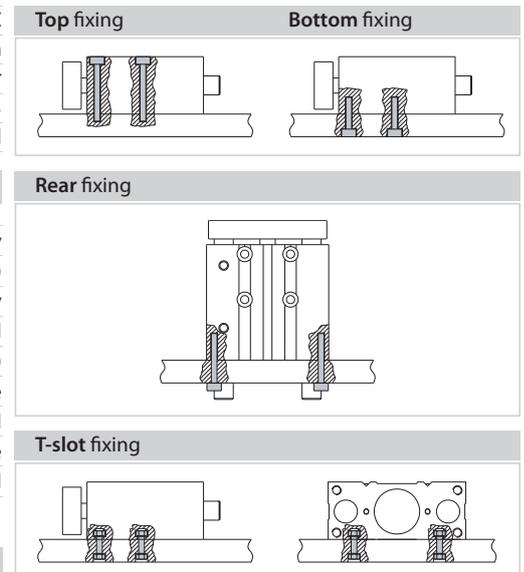
J	L	E	S	0	1	2	0	0	3	0
1		2		3			4			

1 Series	2 Slide bearings	3 Bore (mm)	4 Standard strokes (mm)
JLE = Guided compact cylinders	S = Bearings V = Ball bushing	012 = Ø12    032 = Ø32 016 = Ø16    040 = Ø40 020 = Ø20    050 = Ø50 025 = Ø25    063 = Ø63	0010 = 10    0040 = 40    0125 = 125 0020 = 20    0050 = 50    0150 = 150 0025 = 25    0075 = 75    0175 = 175 0030 = 30    0100 = 100    0200 = 200

Ø	Standard strokes (mm)											
	10	20	25	30	40	50	75	100	125	150	175	200
12	█	█	█	█	█	█	█	█	█	█	█	█
16	█	█	█	█	█	█	█	█	█	█	█	█
20	█	█	█	█	█	█	█	█	█	█	█	█
25	█	█	█	█	█	█	█	█	█	█	█	█
32	█	█	█	█	█	█	█	█	█	█	█	█
40	█	█	█	█	█	█	█	█	█	█	█	█
50	█	█	█	█	█	█	█	█	█	█	█	█
63	█	█	█	█	█	█	█	█	█	█	█	█

\* Extra strokes upon request

### Fixing schemes



### DF-T magnetic sensor

ELECTROMECHANICAL  
DF-T200L03  
DF-T200M08

ELECTRONIC (PNP)  
DF-T700L03  
DF-T700M08

SLOT ADAPTER  
DF-R002 (Ø12 mm)  
DF-R003 (Ø16 ÷ 63 mm)



Special versions upon request: metal rods scrapers, pneumatic cushioning, high temperature (+120°)

Theoretical forces (N) at working pressure (bar)

Cylinder Ø	Working surface area (mm <sup>2</sup> )		Working pressure (bar)									
	Thrust	Traction	Thrust					Traction				
			2	4	6	8	10	2	4	6	8	10
12	113	85	23	45	68	90	113	17	34	51	68	85
16	201	173	40	80	121	161	201	35	69	104	138	173
20	314	264	63	126	189	251	314	53	106	158	211	264
25	491	412	98	196	294	393	491	82	165	247	330	412
32	804	691	161	322	482	643	804	138	276	415	553	691
40	1257	1056	251	503	754	1006	1257	211	422	634	845	1056
50	1963	1649	393	785	1178	1570	1963	330	660	989	1319	1649
63	3117	2803	623	1247	1870	2494	3117	561	1121	1682	2242	2803

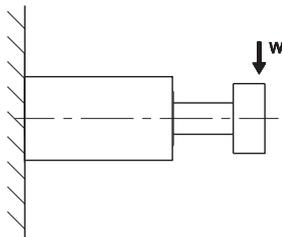
Cylinder mass

JLES/JLEV

Cylinder Ø	Strokes (mm)											
	10	20	25	30	40	50	75	100	125	150	175	200
	g											
12	220	250	-	290	330	360	460	550	-	-	-	-
16	352	402	-	452	502	552	752	902	-	-	-	-
20	-	689	-	830	910	990	1310	1510	1625	1740	1855	1970
25	-	870	-	990	1080	1260	1680	2100	2500	2900	3300	3700
32	-	-	1770	-	-	2120	2770	3080	3408	3737	4066	4395
40	-	-	1990	-	-	2390	2940	3050	3460	3880	4300	4720
50	-	-	3355	-	-	3955	4755	5355	5955	6555	7155	7755
63	-	-	4030	-	-	5070	5786	6505	7224	7943	8662	9380

## OPERATING CONDITIONS

### Allowable lateral load (N)



Guide with bearings - JLES

Ø	Strokes (mm)											
	10	20	25	30	40	50	75	100	125	150	175	200
12	28	25	-	23	20	18	33	25	-	-	-	-
16	67	61	-	57	50	43	58	51	-	-	-	-
20	-	74	-	67	63	59	91	83	75	69	61	57
25	-	125	-	116	110	102	125	114	102	93	86	80
32	-	-	198	-	-	170	190	171	156	140	127	115
40	-	-	198	-	-	170	190	171	156	140	127	115
50	-	-	292	-	-	269	305	280	253	229	198	177
63	-	-	292	-	-	269	305	280	253	229	198	177

Guide with ball bushings - JLEV

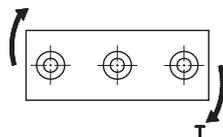
Ø	Strokes (mm)											
	10	20	25	30	40	50	75	100	125	150	175	200
12	28	23	-	20	33	29	24	20	-	-	-	-
16	49	43	-	39	85	77	68	60	-	-	-	-
20	-	82	-	74	110	101	91	79	64	55	46	41
25	-	118	-	105	125	114	98	90	83	75	67	59
32	-	-	158	-	-	141	194	163	146	122	107	93
40	-	-	158	-	-	141	194	163	146	122	107	93
50	-	-	225	-	-	187	223	207	184	162	143	125
63	-	-	225	-	-	187	223	207	184	162	143	125

It shows the dynamic allowable value when the cylinder is working with lateral load W at the top of the guide rods (vertical load against the guide rods).

# 1

## CYLINDERS

### Allowable moment (Nm)



Guide with bearings- JLES

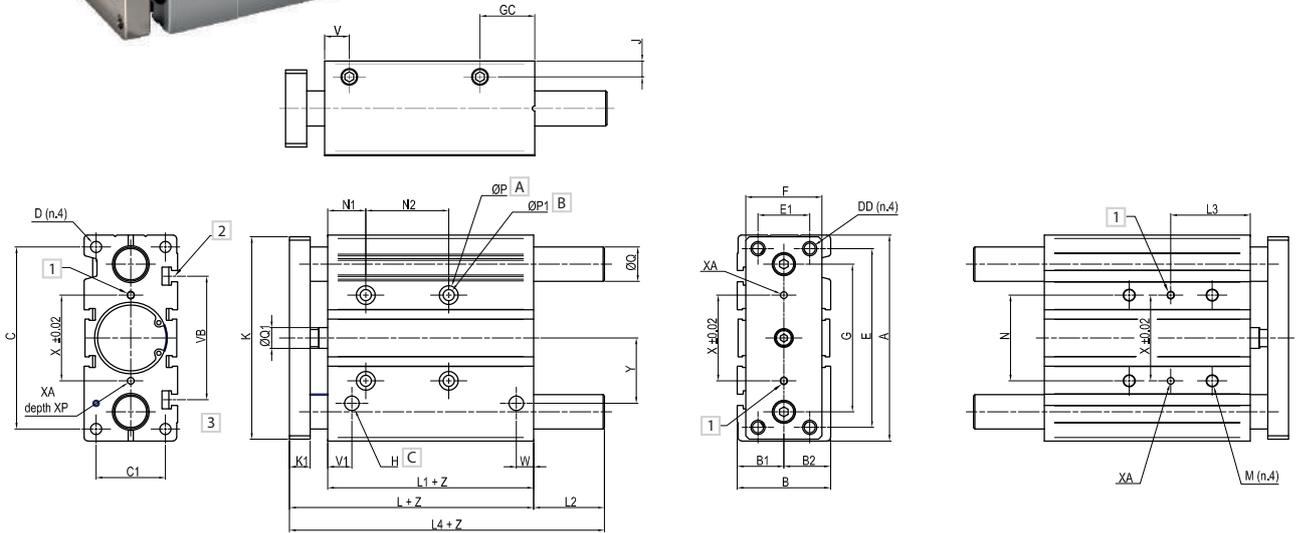
Ø	Strokes (mm)											
	10	20	25	30	40	50	75	100	125	150	175	200
12	0,60	0,50	-	0,45	0,65	0,60	0,47	0,41	-	-	-	-
16	1,45	1,32	-	1,17	1,68	1,55	1,29	1,15	-	-	-	-
20	-	1,84	-	1,69	1,50	1,32	2,90	2,75	2,6	2,3	2,1	1,9
25	-	3,90	-	3,75	3,65	3,50	4,20	4,00	3,80	3,30	2,85	2,50
32	-	-	6,80	-	-	6,50	7,40	7,00	6,60	5,60	4,80	4,20
40	-	-	7,50	-	-	6,90	9,10	8,30	7,90	7,00	4,90	5,90
50	-	-	14,30	-	-	12,50	13,10	12,85	11,20	10,80	10,00	8,9
63	-	-	15,90	-	-	13,30	14,50	13,10	14,10	13,50	12,30	10,70

Guide with ball bushings - JLEV

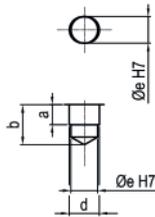
Ø	Strokes (mm)											
	10	20	25	30	40	50	75	100	125	150	175	200
12	0,88	0,72	-	0,61	0,81	0,72	0,57	0,49	-	-	-	-
16	2,20	1,80	-	1,52	2,90	2,63	2,05	1,78	-	-	-	-
20	-	2,00	-	1,85	3,20	2,90	2,5	2,3	1,90	1,60	1,30	1,20
25	-	3,60	-	2,90	5,80	5,00	4,50	3,90	3,00	2,70	2,50	2,00
32	-	-	8,80	-	-	6,80	7,70	6,80	6,00	5,20	4,40	3,90
40	-	-	9,70	-	-	8,60	8,00	7,50	6,30	5,50	4,90	4,00
50	-	-	12,00	-	-	13,80	14,90	13,90	12,10	11,50	10,20	9,90
63	-	-	11,30	-	-	16,50	15,50	14,30	13,80	12,00	11,60	10,10

It shows the dynamic allowable value when the cylinder is working with a rotating torque T at the top of the guide rods.

JLES/JLEV Ø 12 ÷ 63 mm

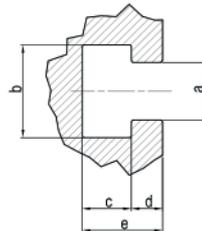


1 Detail



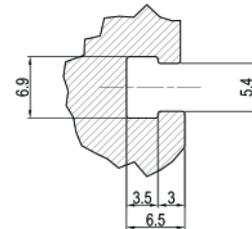
Ø	a	b	d	e
12	3	6	3,5	3
16	3	6	3,5	3
20	3	6	3,5	3
25	3	6	4,5	4
32	3	6	4,5	4
40	3	8	4,5	4
50	4	8	6	5
63	4	8	6	5

2 Detail (T-slot)



Ø	a	b	c	d	e
12	4,4	7,4	3,7	2,5	6,2
16	4,4	7,4	3,7	2,5	6,2
20	5,5	8,4	4,5	2,8	7,3
25	5,5	8,4	4,5	3	7,5
32	6,5	10,5	5,5	3,5	9
40	6,5	10,5	5,5	4	9
50	8,5	13,5	7,5	4,5	12
63	11	17,8	10	7	16,5

3 Detail (sensor groove)



- A N. 4 Spot-facings
- B N. 4 Through holes
- C N. 4 Supply ports

Z = Stroke

Ø	A	B	B1	B2	C	C1	D	DD	E	E1	F	G	GC	J	H	K	K1
12	58	26	13	13	50	18	M4 x 10	M4	48	14	22	41	18	5	M5	56	7
16	64	30	15	15	56	22	M5 x 12	M5	54	16	25	46	18	5	M5	62	8
20	83	36	17	19	72	24	M5 x 13	M5	70	18	30	54	24,5	6,5	G1/8	81	10
25	93	42	21	21	82	30	M6 x 15	M6	78	26	38	64	25	7,5	G1/8	91	10
32	112	48	26	25	98	34	M8 x 20	M8	96	30	44	78	30,5	9	G1/8	110	12
40	120	54	27	27	106	40	M8 x 20	M8	104	30	44	86	31	9	G1/8	118	44
50	148	64	32	32	130	46	M10 x 22	M10	130	40	60	110	35	9,5	G1/4	146	44
63	162	78	39	39	142	58	M10 x 22	M10	130	50	70	124	35	11	G1/4	158	49

Ø	L	L1	M	N	N1	P	P1	Q1	S	V	V1	VB	W	X	X1	XA	XP	Y	Q (JLES)	Q (JLEV)
12	42	29	M4 x 10	23	5	8 x 4,5	4,3	6	5	10	-	-	7	23	8,5	3	6	18	8	6
16	46	33	M5 x 10	24	5	8 x 4,5	4,3	8	3	11	-	-	8	24	10	3	6	19	10	8
20	53	37	M6 x 12	28	17	9,5 x 5,5	5,6	10	6	10,5	-	-	8,5	28	11,5	3	6	25	12	10
25	53,5	37,5	M6 x 12	34	17	9,5 x 5,5	5,6	10	6	11,5	-	-	9	34	13,5	4	6	28,5	16	13
32	59,5	37,5	M8 x 16	42	21	11 x 7,5	6,6	12	10	12,5	-	-	9	42	16	4	6	34	20	16
40	66	44	M8 x 16	50	22	11 x 7,5	6,6	12	12	14	14	72	10	50	18	4	6	38	20	20
50	72	44	M8 x 20	66	24	14 x 9	8,6	16	12	12	12	92	11	66	21,5	5	8	47	25	25
63	77	49	M8 x 20	80	24	14 x 9	8,6	16	12	16,5	16,5	110	13,5	80	28	5	8	55	25	25

Ø	JLES			
	L4		L2	
	Z=10÷50	Z=75÷100	Z=10÷50	Z=75÷100
12	42	60,5	0	18,5
	Z=10÷50	Z=75÷100	Z=10÷50	Z=75÷100
16	46	64,5	0	18,5
	Z=20÷50	Z=75÷200	Z=20÷50	Z=75÷200
20	53	84,5	0	31,5
	Z=20÷50	Z=75÷200	Z=20÷50	Z=75÷200
25	53,5	85	0	31,5
	Z=25÷50	Z=75÷200	Z=25÷50	Z=75÷200
32	97	107	37,5	47,5
	Z=25÷50	Z=75÷200	Z=25÷50	Z=75÷200
40	97	107	31	41
	Z=25÷50	Z=75÷200	Z=25÷50	Z=75÷200
50	106,5	118	34,5	46
	Z=25÷50	Z=75÷200	Z=25÷50	Z=75÷200
63	106,5	118	29,5	41

Ø	JLEV					
	L4		L2			
	Z=10÷30	Z=40÷100	Z=10÷30	Z=40÷100		
12	43	55	1	13		
	Z=10÷30	Z=40÷100	Z=10÷30	Z=40÷100		
16	46	66	0	20		
	Z=20÷30	Z=40÷200	Z=20÷30	Z=40÷200		
20	53	85,5	0	32,5		
	Z=20÷30	Z=40÷200	Z=20÷30	Z=40÷200		
25	53,5	86	0	32,5		
	Z=25÷50	Z=75÷200	Z=25÷50	Z=75÷200		
32	97	107	37,5	47,5		
	Z=25÷50	Z=75÷200	Z=25÷50	Z=75÷200		
40	97	107	31	41		
	Z=25	Z=50	Z=75÷200	Z=25	Z=50	Z=75÷200
50	106,5	114	118	34,5	42	46
	Z=25	Z=50	Z=75÷200	Z=25	Z=50	Z=75÷200
63	106,5	114	118	29,5	37	41

Ø	JLES/JLEV					
	N2			L3		
	Z=10÷30	Z=40÷100	-	Z=10÷30	Z=40÷100	-
12	20	40	-	15	25	-
	Z=10÷30	Z=40÷100	-	Z=10÷30	Z=40÷100	-
16	24	44	-	17	27	-
	Z=20÷30	Z=40÷100	Z=125÷200	Z=20÷30	Z=40÷100	Z=125÷200
20	24	44	120	29	39	77
	Z=20÷30	Z=40÷100	Z=125÷200	Z=20÷30	Z=40÷100	Z=125÷200
25	24	44	120	29	39	77
	Z=25	Z=50÷100	Z=125÷200	Z=25	Z=50÷100	Z=125÷200
32	24	48	124	33	45	83
	Z=25	Z=50÷100	Z=125÷200	Z=25	Z=50÷100	Z=125÷200
40	24	48	124	34	46	84
	Z=25	Z=50÷100	Z=125÷200	Z=25	Z=50÷100	Z=125÷200
50	24	48	124	36	48	86
	Z=25	Z=50÷100	Z=125÷200	Z=25	Z=50÷100	Z=125÷200
63	28	52	128	38	50	88

CYLINDERS 1

# JTE

## Ø 6 ÷ 32 mm - Twin Rod Guided Cylinder

- Compact in width and length with precision guidance
- High lateral loads can be applied on both unit models
- Non rotation
- Magnetic as standard



### TECHNICAL CHARACTERISTICS

Ambient temperature	-5 ÷ 60 °C		
Fluid	filtered air, with or without lubrication		
Working pressure	Ø6	Ø10-15	Ø20-25-32
	1,5 ÷ 7 bar	1 ÷ 7 bar	0,5 ÷ 7 bar
Bores	Ø 6 - 10 - 15 - 20 - 25 - 32 mm		
Cushionings	elastic buffers		

### CONSTRUCTIVE CHARACTERISTICS

Body	aluminium
Piston	aluminium
Piston rod	chromium-plated steel C45
	chromium-plated stainless steel AISI 303 (JTEV Ø6-10-15-20)
Guide bearing	bearings (JTES) ball bushing (JTEV)
Piston seals	nitrile rubber
Plate	aluminium
Shock absorber seals	nitrile rubber in both sides
Magnet	standard supplied

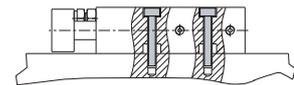
### CODIFICATION KEY

J	T	E	S	0	1	0	0	0	1	0
1		2		3			4			

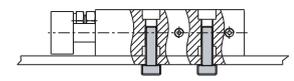
1 Series	2 Type	3 Bore (mm)			4 Stroke (mm)		
JTE = Ø 6 ÷ 32 mm - Twin Rod Guided Cylinder	S = Bearings V = Ball bushing	006 = Ø6	020 = Ø20	0010 = 10	0035 = 35	0070 = 70	
		010 = Ø10	025 = Ø25	0015 = 15	0040 = 40	0075 = 75	
		015 = Ø15	032 = Ø32	0020 = 20	0045 = 45	0080 = 80	
				0025 = 25	0050 = 50	0090 = 90	
				0030 = 30	0060 = 60	0100 = 100	

### Fixing schemes

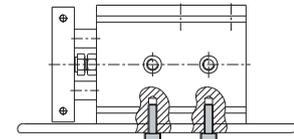
#### Top fixing



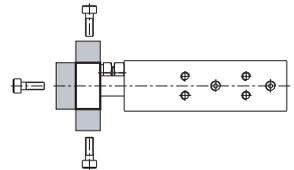
#### Bottom fixing



#### Side fixing



#### on the plate



Ø	Strokes (mm)														
	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100
6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
32	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Stroke adjustment: 0 ÷ 5 mm

Magnetic sensor DF-T series, see chapter 5 accessories.

Subject to change

### Theoretical forces (N)

Cylinder Ø	Working surface area (mm <sup>2</sup> )		Working pressure (bar)															
	Thrust	Traction	Thrust								Traction							
			1	1,5	2	3	4	5	6	7	1	1,5	2	3	4	5	6	7
6	57	31	-	9	11	17	23	28	34	40	-	5	6	9	13	16	19	22
10	226	170	23	-	45	68	90	113	136	158	17	-	34	51	68	85	102	119
15	402	301	40	-	80	121	161	201	241	281	30	-	60	90	121	151	181	211
20	628	471	63	-	126	188	251	314	377	440	47	-	94	141	188	236	283	330
25	981	755	98	-	196	294	393	491	589	687	76	-	151	227	302	378	453	529
32	1608	1206	161	-	322	482	643	804	965	1125	121	-	241	362	482	603	723	844

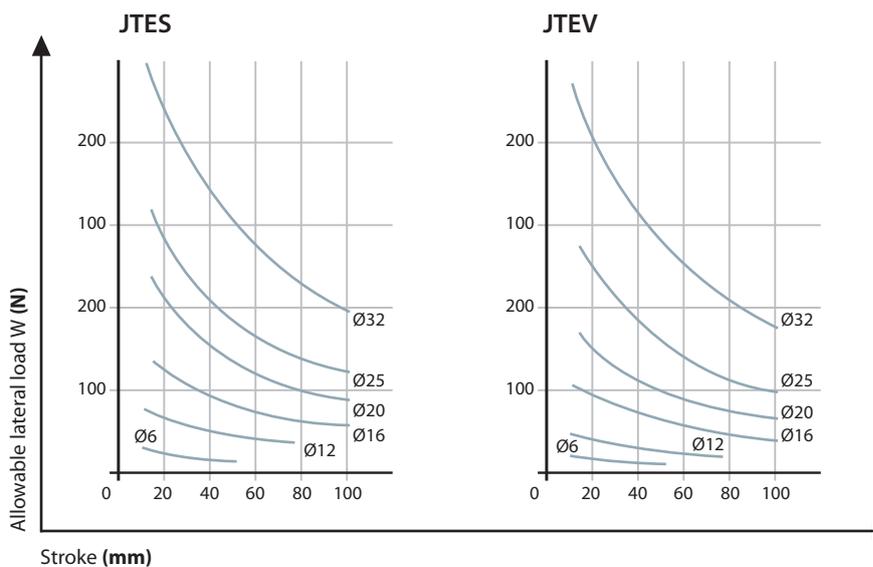
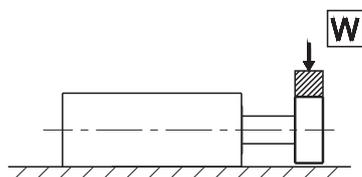
### Cylinder mass

Cylinder Ø	Cylinder Stroke 0	Increase per 5 mm stroke
	g	g
6	67	7
10	150	8
15	222	13
20	376	18
25	557	27
32	1105	42

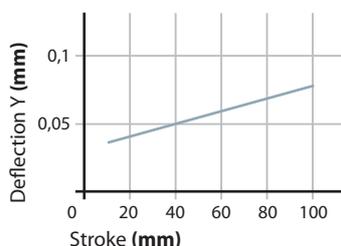
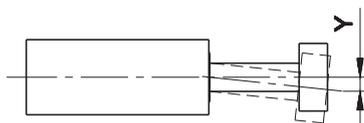
## OPERATING CONDITIONS

### 1 Allowable lateral load (N)

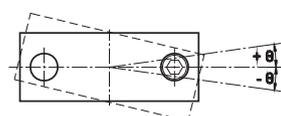
CYLINDERS



### Deflection under its own weight

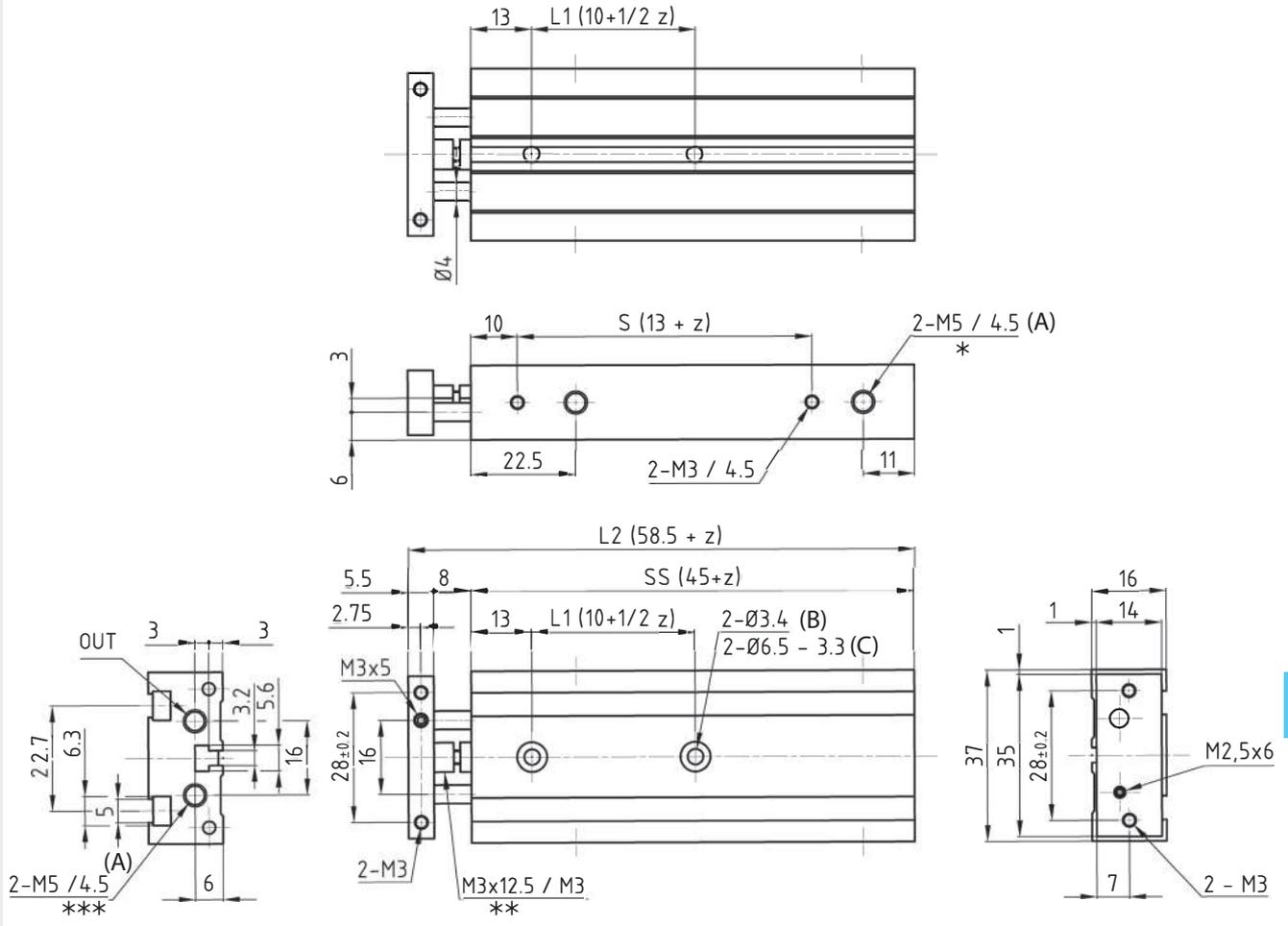


### Precision



Cylinder Ø	Precision θ	Part no.
6 - 32	± 0,1°	JTES
	± 0,15°	JTEV

Ø6



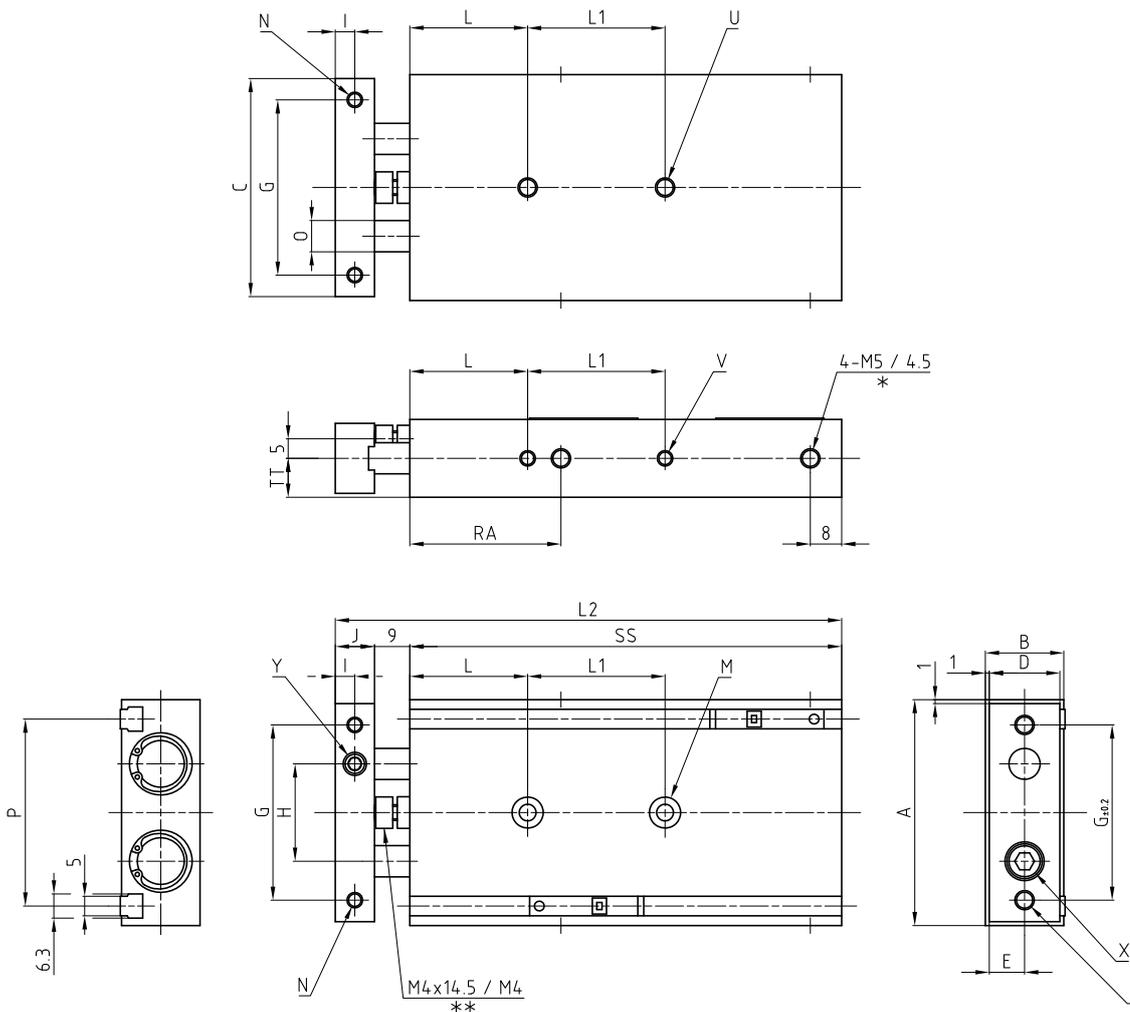
\* = Connection thread, same as opposite side  
 \*\* = Hex screw/hex nut dimension  
 \*\*\* = Connection thread "IN"

(A) = Depth 4,5  
 (B) = Through  
 (C) = Counterhole depth 3,3

Z = Stroke

Part No.	S	SS	Z	ZZ	Stroke
JTE_0060010	23	55	15	68,5	10
JTE_0060020	33	65	20	78,5	20
JTE_0060030	43	75	25	88,5	30
JTE_0060040	53	85	30	98,5	40
JTE_0060050	63	95	35	108,5	50

Ø10 - 15



\* = Connection thread, same as opposite side  
 \*\* = Hex screw/hex nut dimension

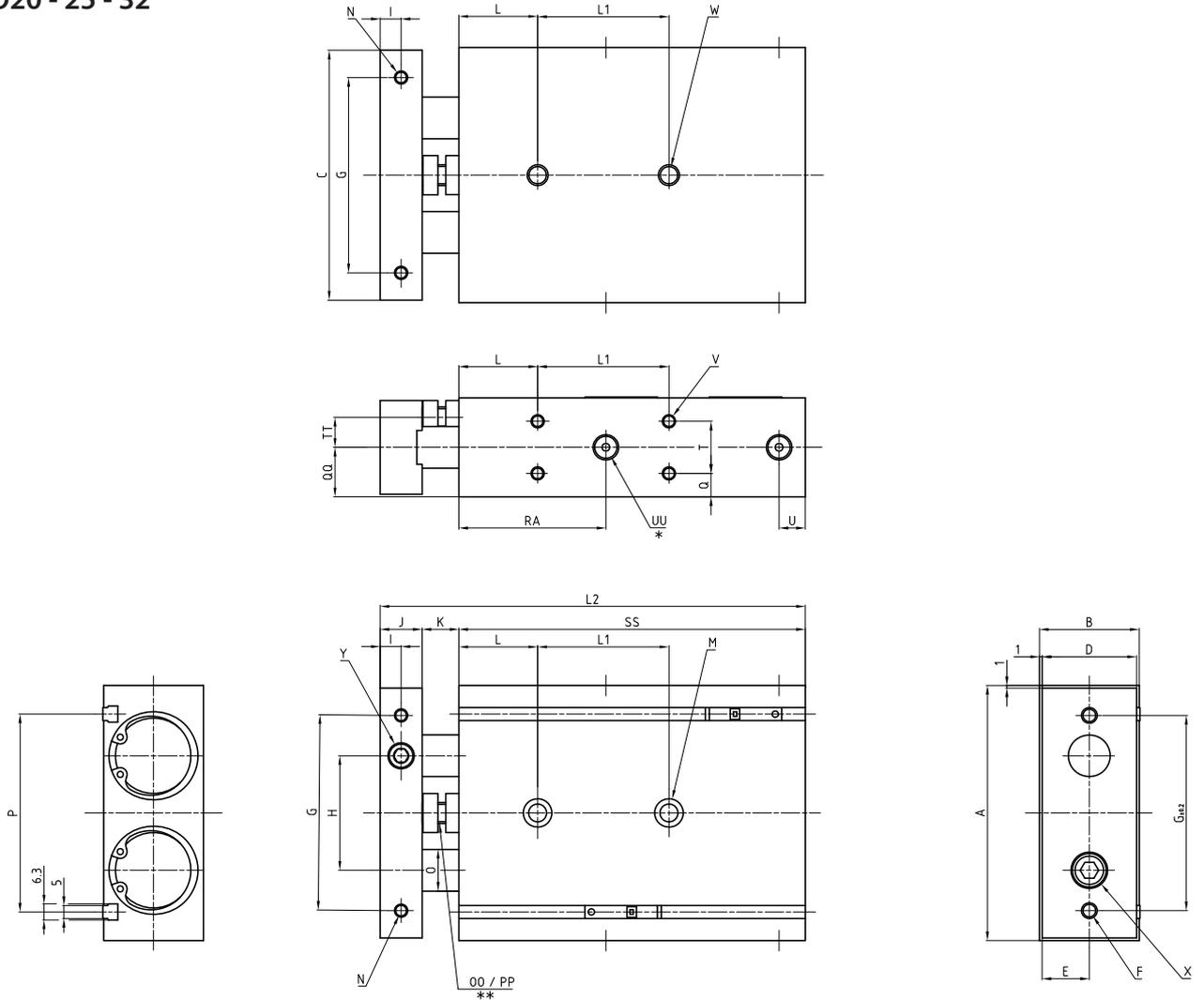
Part No.	A	B	C	D	E	F	G	H	I	J	L	M	N	O	P	RA	TT	U	V	X	Y
JTE_010	46	17	44	15	7,5	2-M4	35	20	4	8	20	2-Ø3,4 2-Ø6,5x3,3	2-M3x5	Ø6	33,6	30	7	2-M4x7	4-M3x4,5	M3x10	M5x5L
JTE_015	58	20	56	18	9	2-M5	45	25	5	10	30	2-Ø4,3 2-Ø8x4,4	2-M4x6	Ø8	48	38,5	10	2-M5x8	4-M4x5	M5x10	M6x6L

Part No.	Stroke														
	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100
JTE_010	65	70	75	80	85	90	95	100	105	115	125	130	-	-	-
JTE_015	70	75	80	85	90	95	100	105	110	120	130	135	140	150	160

Part No.	Stroke				
	10 - 15 - 20 - 25	30 - 35 - 40 - 45 - 50	60 - 70 - 75	80	90 - 100
	L1				
JTE_010	30	40	50	-	-
JTE_015	25	35	45	45	55

Part No.	Stroke														
	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100
	L2														
JTE_010	82	87	92	97	102	107	112	117	122	132	142	147	-	-	-
JTE_015	89	94	99	104	109	114	119	124	129	139	149	154	159	169	179

Ø20 - 25 - 32



\* = Connection thread, same as opposite side  
 \*\* = Hex screw/hex nut dimension

Part No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	OO	P	PP	Q	QQ	RA	T
JTE_020	64	25	62	23	11,5	2-M5	50	28	6	12	12	30	2-Ø5,5 2-Ø9,5x5,3	2-M4x6	Ø10	M6x18,5L	53	M6	7,75	12,5	45	9,5
JTE_025	80	30	78	28	14	2-M6	60	35	6	12	12	30	2-Ø6,9 2-Ø11x6,3	2-M5x7,5	Ø12	M6x18,5L	64	M6	8,5	15	46	13
JTE_032	98	38	96	36	18	2-M6	75	44	8	16	14	30	2-Ø6,9 2-Ø11x6,3	2-M5x8	Ø16	M8x23L	76	M8	9	19	56	20

Part No.	TT	U	UU	V	W	X	Y
JTE_020	6,5	8	4-M5x4,5	8-M4x5,5	2-M6x10	M6x12	M8x6L
JTE_025	9	9	4-G1/8x6,5	8-M5x7,5	2-M8x12	M6x14	M8x6L
JTE_032	11,5	10	4-G1/8x6,5	8-M5x7,5	2-M8x12	M8x16	M10x8L

Part No.	Stroke														
	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100
	SS														
JTE_020	80	85	90	95	100	105	110	115	120	130	140	145	150	160	170
JTE_025	82	87	92	97	102	107	112	117	122	132	142	147	152	162	172
JTE_032	92	97	102	107	112	117	122	127	132	142	152	157	162	172	182

Part No.	Stroke		
	10 - 15 - 20 - 25	30 - 35 - 40 - 45 - 50	60 - 70 - 75 - 80 - 90 - 100
	L1		
JTE_020	30	40	60
JTE_025	30	40	60
JTE_032	40	50	70

Part No.	Stroke														
	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100
	L2														
JTE_020	104	109	114	119	124	129	134	139	144	154	164	169	174	184	194
JTE_025	106	111	116	121	126	131	136	141	146	156	166	171	176	186	196
JTE_032	122	127	132	137	142	147	152	157	162	172	182	187	192	202	212

# JX1

## Ø 6 ÷ 20 mm - Pneumatic Mini Slide Unit

- High rigidity, linearity, non-rotation precision
- Long strokes up to 60mm
- Cylinder table suitable for short assembly
- Connections from 3 sides
- Fixing holes in 4 positions



### TECHNICAL CHARACTERISTICS

Ambient temperature	-5 ÷ 60 °C		
Fluid	filtered air, with or without lubrication		
Working pressure	Ø6	Ø10-16	Ø20
	1,2 ÷ 7 bar	0,6 ÷ 7 bar	0,5 ÷ 7 bar
Piston speed	50 ÷ 500 mm/s		
Bores	Ø 6 - 10 - 16 - 20 mm		
Cushionings	elastic buffers		

### CONSTRUCTIVE CHARACTERISTICS

Body	aluminium
Piston	aluminium
Piston rod	chromium-plated stainless steel AISI 303
Piston seals	nitrile rubber
Table	aluminium
Linear guide	stainless steel
Shock absorber seals	nitrile rubber in both sides
Magnet	standard supplied

### CODIFICATION KEY

J	X	1	0	1	6	0	0	1	0
1		2		3					

1 Series	2 Bore (mm)	3 Stroke (mm)	
JX1 = Ø 6 ÷ 20 mm - Pneumatic Mini Slide Unit	006 = Ø6	0005 = 5	0030 = 30
	010 = Ø10	0010 = 10	0040 = 40
	016 = Ø16	0015 = 15	0050 = 50
	020 = Ø20	0020 = 20	0060 = 60
		0025 = 25	

Magnetic sensor DF-T series, see chapter 5 accessories.

Stroke tolerances      Theoretical forces (N)

Cylinder Ø	Nominal tolerances	Working surface area (mm <sup>2</sup> )		Working pressure (bar)					
	mm	Thrust	Traction	Thrust			Traction		
				3	5	7	3	5	7
6	+ 1/0	28,3	21,2	8,5	14,2	19,8	6,4	10,6	14,8
10	+ 1/0	78,5	66	23,6	39,3	55	19,8	33	46,2
16	+ 1/0	201	172	60,3	101	141	51,6	86	121
20	+ 1/0	314	264	94,2	157	220	79,2	132	185

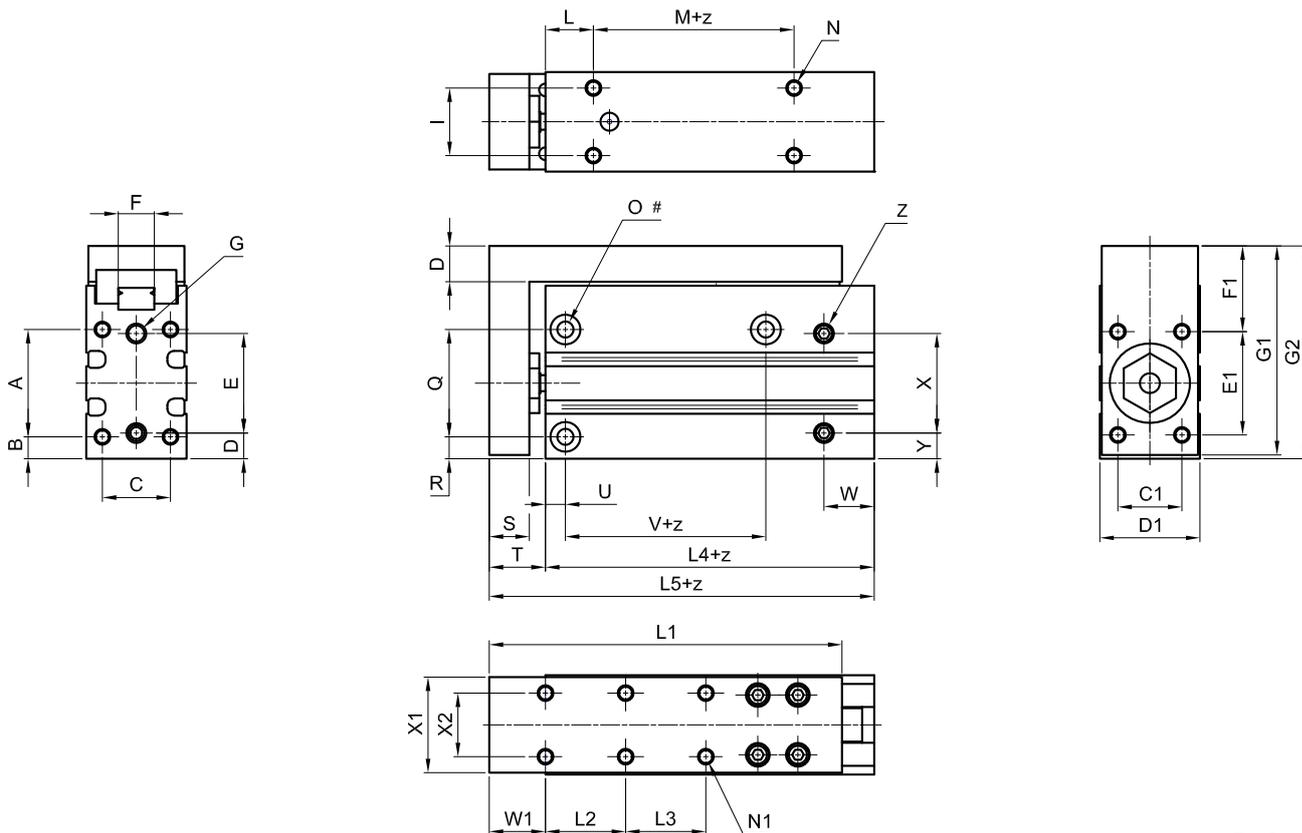
Allowable kinetic energy

Cylinder Ø	Allowable kinetic energy (J)
6	0,0125
10	0,025
16	0,05
20	0,1

Cylinder mass

Cylinder Ø	Mass (g)								
	Strokes (mm)								
	5	10	15	20	25	30	40	50	60
6	62	67	76	81	91	96	111	125	140
10	117	125	140	148	162	170	192	215	238
16	216	227	247	258	279	290	323	353	386
20	437	455	486	505	542	560	597	656	700

JX1



Z = Stroke

Part No.	A	B	C	C1	D	D1	E	E1	F	F1	G	G1	G2	H	H1	L	L4	L5	M	N
JX1006	19	5	10,5	9	5,5	16	18	15	5	17	M3x0,5x8	38	39	M5x0,8	M3x0,5x5	10	31	39,5	5	M3x0,5x4,8
JX1010	23	5	13	11	6,5	20	20,5	18	7	21,5	M4x0,7x7,5	46	47	M5x0,8	M4x0,7x7,5	12	35	46,5	5	M4x0,7x6
JX1016	27	5,5	17	16	6,5	25	25	26	9	21,5	M4x0,7x6	52,5	53,5	M5x0,8	M4x0,7x10	12	42	56	10	M4x0,7x6
JX1020	34	6	20	20	7	32	32	34	12	24,5	M5x0,8x8	63,5	64,5	M5x0,8	M5x0,8x11	15	52,5	68	10	M5x0,8x8

Part No.	N1	O#	P	Q	R	S	T	U	W	W1	X	X1	X2	Z
JX1006	M3x0,5x6,5	M4x0,7	6,5	19	5	5,5	8,5	4	10	8	18	15	9	M5x0,8x4
JX1010	M4x0,7x8	M5x0,8	8	23	5	7,5	11,5	5	12,5	11	20	19	11	M5x0,8x4
JX1016	M4x0,7x9	M5x0,8	9	27	5,5	10	14	5	12,5	14	25	24	16	M5x0,8x4
JX1020	M5x0,8x9,5	M6x1	9,5	34	6	11	15,5	6	15	14	32	31	20	M5x0,8x4

Ø6				
Stroke	L1	L2	L3	V
5	42	10	-	14
10	42	10	-	14
15	52	20	-	24
20	52	20	-	24
25	62	30	-	30
30	62	30	-	30
40	72	20	20	45
50	82	25	25	55
60	92	30	30	60

Ø10				
Stroke	L1	L2	L3	V
5	49	10	-	14
10	49	10	-	14
15	59	20	-	24
20	59	20	-	24
25	69	30	-	30
30	69	30	-	30
40	79	20	20	45
50	89	25	25	55
60	99	30	30	60

Ø16				
Stroke	L1	L2	L3	V
5	58	10	-	20
10	58	10	-	20
15	68	20	-	30
20	68	20	-	30
25	78	30	-	40
30	78	30	-	40
40	88	20	20	50
50	98	25	25	60
60	108	30	30	60

Ø20				
Stroke	L1	L2	L3	V
5	64	10	-	20
10	64	10	-	20
15	74	20	-	25
20	74	20	-	25
25	84	30	-	40
30	84	30	-	40
40	94	20	20	50
50	104	25	25	60
60	114	30	30	70

Ø	O#
6	3-M4 through / through hole Ø3,3 / Ø6 counterhole depth 3,3
10	3-M5 through / through hole Ø4,3 / Ø7,5 counterhole depth 4,4
16	3-M5 through / through hole Ø4,3 / Ø7,5 counterhole depth 4,4
20	3-M6 through / through hole Ø5,1 / Ø9,3 counterhole depth 8

# JX2

## Ø 6 ÷ 25 mm - Slide Table Actuator

- Slide table actuator with integrated cross rollers and pneumatic cylinder
- Suitable for precision assembly by means of tolerance centering holes
- High positioning repeatability of the piece
- Version with stroke adjustment screw on both sides
- Version with hydraulic shock absorbers on both sides



### TECHNICAL CHARACTERISTICS

Ambient temperature	-10 ÷ 60 °C
Fluid	filtered air, with or without lubrication
Working pressure	1 ÷ 7 bar
Piston speed	50 ÷ 500 mm/s
Bores	Ø 6 - 8 - 12 - 16 - 20 - 25 mm
Cushionings	elastic buffers

### CONSTRUCTIVE CHARACTERISTICS

Body	aluminium
Piston	aluminium
Piston rod	stainless steel
Piston seals	nitrile rubber
Table	aluminium
Front plate	aluminium
Linear guide	carbon steel
Shock absorber seals	nitrile rubber in both sides
Magnet	standard supplied

### CODIFICATION KEY

J	X	2	0	2	0	1	5	0	
1		2		3		4			

1 Series	2 Bore (mm)	3 Stroke (mm)	4 Version
JX2 = Ø 6 ÷ 25 mm - Slide Table Actuator	006 = Ø6 008 = Ø8 012 = Ø12 016 = Ø16 020 = Ø20 025 = Ø25	010 = 10    075 = 75 020 = 20    100 = 100 030 = 30    125 = 125 040 = 40    150 = 150 050 = 50	D = Hydraulic shock absorbers (Ø8 ÷ 25 mm) R = Stroke adjusting screw (0 ÷ 5 mm each side)

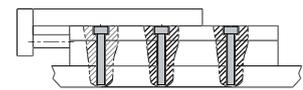
Ø	Strokes (mm)									
	10	20	30	40	50	75	100	125	150	
6	[Progressive bar chart showing stroke availability for bore 6]									
8	[Progressive bar chart showing stroke availability for bore 8]									
12	[Progressive bar chart showing stroke availability for bore 12]									
16	[Progressive bar chart showing stroke availability for bore 16]									
20	[Progressive bar chart showing stroke availability for bore 20]									
25	[Progressive bar chart showing stroke availability for bore 25]									

Magnetic sensor DF-T series, see chapter 5 accessories.

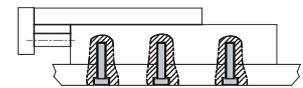
Subject to change

### Fixing schemes

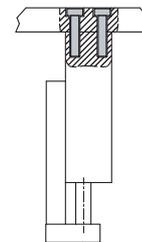
#### Top fixing



#### Bottom fixing



#### Vertical fixing



### Theoretical forces (N)

Cylinder Ø	Working surface area (mm <sup>2</sup> )		Working pressure (bar)											
	Thrust	Traction	Thrust						Traction					
			2	3	4	5	6	7	2	3	4	5	6	7
6	57	42	10	15	20	25	30	40	8	12	16	20	24	28
8	100	75	20	30	40	50	60	70	14	21	28	35	42	53
12	220	170	44	66	88	110	132	154	34	51	68	85	102	119
16	400	300	80	120	160	200	240	280	60	90	120	150	180	210
20	620	470	124	186	248	310	372	434	94	141	188	235	282	329
25	980	750	196	294	392	490	585	686	150	225	300	375	450	525

### Cylinder mass (standard version)

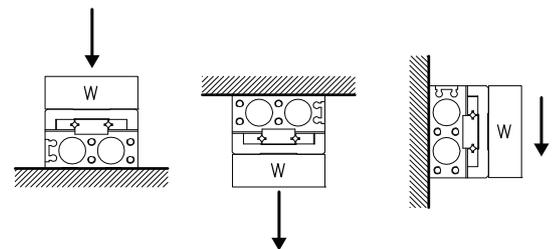
Cylinder Ø	Mass (g)								
	Strokes (mm)								
	10	20	30	40	50	75	100	125	150
6	80	100	115	155	180	-	-	-	-
8	150	160	190	235	285	410	-	-	-
12	325	325	325	385	480	660	890	-	-
16	570	570	580	640	760	1100	1370	1700	-
20	960	980	1010	1100	250	1630	2150	2670	3200
25	1660	1680	1700	1840	2100	2650	3270	4140	4710

### Max kinetic energy (Nm)

Cylinder Ø	Max absorb function	Shock absorbers
6	0,018	-
8	0,027	0,045
12	0,055	0,11
16	0,11	0,22
20	0,16	0,32
25	0,24	0,48

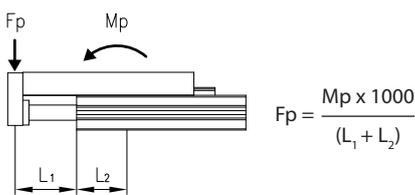
### Maximum allowable load weight (Kg)

Cylinder Ø	Max load W
6	0,6
8	1
12	2
16	4
20	6
25	9



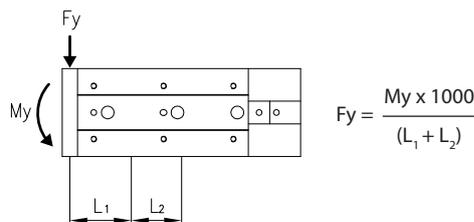
CYLINDERS

### Motionless allowable torque (Nm) - Calculation method

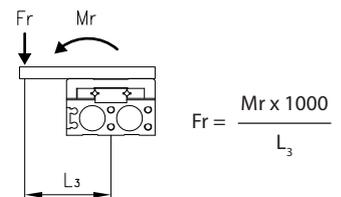


**Mp** = Bending moment

- L<sub>1</sub> Distance from the body to the point of load.
- L<sub>2</sub> Distance from the center of the body to his side.
- L<sub>3</sub> Distance from the center of the guide to the point of load.



**My** = Bending moment

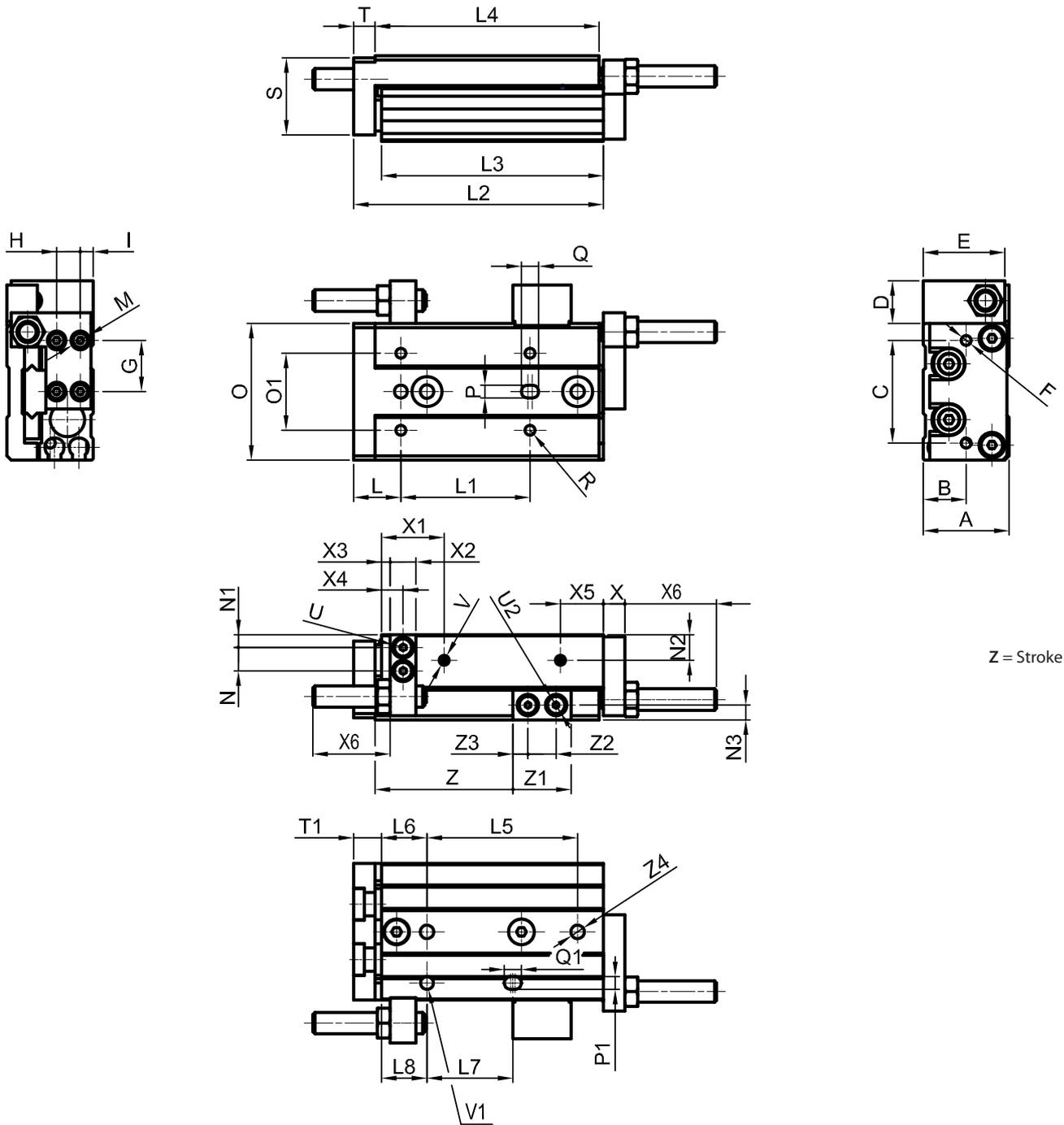


**Mr** = Torque

Cylinder Ø	Strokes (mm)								
	10	20	30	40	50	75	100	125	150
6	0,7	1	1,2	1,2	1,2	-	-	-	-
8	2	2	2,8	3,6	4,2	4,2	-	-	-
12	4,2	4,2	4,2	5,8	7	10	10	-	-
16	11,3	11,3	11,3	11,3	15,9	25	34,1	34,1	-
20	19,4	19,4	19,4	19,4	27,2	35	50,5	50,5	50,5
25	30,6	30,6	30,6	30,6	42,8	55,1	67,3	67,3	67,3

- Do not exceed load limit. Loads exceeding the limits may affect the slide precision
- Avoid impacts
- Inertial load must be within 1/10 of the allowable motionless load.

JX2



Z = Stroke

Part No.	A	B	C	D	E	F	G	H	I	L	L6	L8	M	N	N1	N2	N3	O	O1	P	P1
JX2006	20	10	24	10	18,5	M3x0,5x6	12	5,5	3	11	10,5	10,5	M2,5x0,4x3	5,5	3	6	3,5	32	18	3	3
JX2008	24	12	30	14,5	23,5	M4x0,7x6	15	6,5	3,5	12	11,5	11,5	M3x0,5x4	6,5	4	7	7	40	23	3	3
JX2012	32	15,5	38	15	31,5	M5x0,8x8	20	9	5	16	15	15	M4x0,7x6	10	5	10	8	50	28	4	4
JX2016	40	19,5	48	18	37,5	M6x1,0x10	26	12	6	21	19	19	M5x0,8x7	12	6	12	9,5	62	35	5	5
JX2020	50	25	58	24,5	47,5	M6x1,0x13	30	18	6	27	21,5	21,5	M5x0,8x6	14	8	15	14	76	46	5	5
JX2025	62	31	70	24,5	54,5	M8x1,25x15	38	22	7	30	23,5	23,5	M6x1,0x10	16	10	18	19	92	56	6	6

Part No.	Q	Q1	R	S	T	T1	U	U2	V	V1	X	X1
JX2006	4	4	M3x0,5x5	18	5	6,5	M2,5x0,45x3	M3x0,5x4	M3x0,5	Ø3x3	5	14,5
JX2008	4	4	M3x0,5x5	22	6	7,5	M3x0,5x4	M3x0,5x4	M5x0,8	Ø3x3	6	15
JX2012	5	5	M4x0,7x5	28,5	8	10	M4x0,7x6	M4x0,7Px6,5	M5x0,8	Ø4x3,5	8	19
JX2016	6	6	M5x0,8x8	36,5	10	12	M5x0,8x5,5	M5x0,8x5,5	M5x0,8	Ø5x4	10	24
JX2020	6	6	M5x0,8x10	45,5	13	15,5	M6x1,0x6,5	M6x1,0x6,5	G1/8	Ø5x5	12	27,5
JX2025	6	6	M6x1,0x13	55	15	17,5	M8x1,25x8,5	M8x1,25x8,5	G1/8	Ø6x6	15	30

Part No.	X2	X3	X4	X5	X6	Z1	Z2	Z3	Z4
JX2006	6	2	5	10	18	12,5	6,5	3	M4x0,7x8
JX2008	7	2	5,5	8,5	19	14,6	7	3,8	M4x0,7x8
JX2012	9,5	2	4,75	11	19	18,5	8,5	5	M5x0,8x10
JX2016	11	3	8,5	11	22	21	10	5,5	M6x1,0x12
JX2020	13	3	6,5	10	36	25	12	6,5	M6x1,0x12
JX2025	16	4	8	12	34	31	15	8	M8x1,25x16

Stroke	JX2006						
	L1	L2	L3	L4	L5	L7	Z
10	20	48	41,5	42	25	20	22,5
20	30	58	51,5	52	35	20	32,5
30	20	68	61,5	62	20	20	42,5
40	28	90	53,5	84	30	30	52,5
50	38	106	99,5	100	24	48	62,5

Stroke	JX2008						
	L1	L2	L3	L4	L5	L7	Z
10	25	56	48,5	49	28	20	23,5
20	25	61	53,5	54	30	30	33,5
30	40	72	64,5	65	20	20	43,5
40	50	90	82,5	83	28	28	53,5
50	38	108	100,5	101	23	50	63,5
75	50	158	150,5	151	28	56	88,5

Stroke	JX2012						
	L1	L2	L3	L4	L5	L7	Z
10	35	80	70	71	40	40	26,5
20	35	80	70	71	40	40	36,5
30	35	80	70	71	40	40	46,5
40	50	92	82	83	25	25	56,5
50	35	112	102	103	36	36	66,5
75	55	158	148	149	36	72	91,5
100	65	212	202	203	38	76	116,5

Stroke	JX2016						
	L1	L2	L3	L4	L5	L7	Z
10	35	87	75	76	40	40	29
20	35	87	75	76	40	40	39
30	35	87	75	76	40	40	49
40	50	97	85	86	50	50	59
50	35	112	100	101	30	30	69
75	55	162	150	151	35	70	94
100	65	210	198	199	35	70	119
125	70	260	248	249	35	70	144

Stroke	JX2008						
	L1	L2	L3	L4	L5	L7	Z
10	50	97	81,5	83	45	35	31
20	50	97	81,5	83	45	35	41
30	50	97	81,5	83	45	35	51
40	60	107	91,5	93	55	35	61
50	35	122	106,5	108	35	35	71
75	60	161	145,5	147	35	70	96
100	70	214	198,5	200	35	70	121
125	80	268	252,5	254	38	75,5	146
150	80	320	304,5	306	44	87,5	171

Stroke	JX2012						
	L1	L2	L3	L4	L5	L7	Z
10	50	108	90,5	92	45	45	35
20	50	108	90,5	92	45	45	45
30	50	108	90,5	92	45	45	55
40	60	118	100,5	102	55	55	65
50	35	131	113,5	115	35	35	75
75	60	172	154,5	156	35	70	100
100	70	213	195,5	197	35	70	125
125	75	271	253,5	255	38	76	150
150	80	311	293,5	295	44	80	175

1  
CYLINDERS

# JX2

## Ø 6 ÷ 25 mm - Slide Table Actuator

- Slide table actuator with integrated cross rollers and pneumatic cylinder
- Suitable for precision assembly by means of tolerance centering holes
- High positioning repeatability of the piece
- Version with stroke adjustment screw on both sides
- Version with hydraulic shock absorbers on both sides



### TECHNICAL CHARACTERISTICS

Ambient temperature	-10 ÷ 60 °C
Fluid	filtered air, with or without lubrication
Working pressure	1 ÷ 7 bar
Piston speed	50 ÷ 500 mm/s
Bores	Ø 6 - 8 - 12 - 16 - 20 - 25 mm
Cushionings	elastic buffers

### CONSTRUCTIVE CHARACTERISTICS

Body	aluminium
Piston	aluminium
Piston rod	stainless steel
Piston seals	nitrile rubber
Table	aluminium
Front plate	aluminium
Linear guide	carbon steel
Shock absorber seals	nitrile rubber in both sides
Magnet	standard supplied

### CODIFICATION KEY

J	X	2	0	2	0	1	5	0	
1		2		3		4			

1 Series	2 Bore (mm)	3 Stroke (mm)	4 Version
JX2 = Ø 6 ÷ 25 mm - Slide Table Actuator	006 = Ø6 008 = Ø8 012 = Ø12 016 = Ø16 020 = Ø20 025 = Ø25	010 = 10    075 = 75 020 = 20    100 = 100 030 = 30    125 = 125 040 = 40    150 = 150 050 = 50	D = Hydraulic shock absorbers (Ø8 ÷ 25 mm) R = Stroke adjusting screw (0 ÷ 5 mm each side)

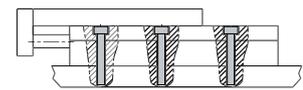
Strokes (mm)	
Ø	10 20 30 40 50 75 100 125 150
6	10 20 30 40 50
8	10 20 30 40 50 75
12	10 20 30 40 50 75 100
16	10 20 30 40 50 75 100 125
20	10 20 30 40 50 75 100 125 150
25	10 20 30 40 50 75 100 125 150

Magnetic sensor DF-T series, see chapter 5 accessories.

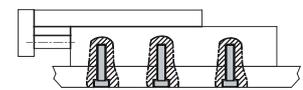
Subject to change

### Fixing schemes

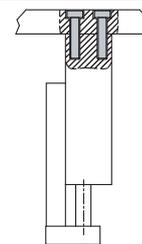
#### Top fixing



#### Bottom fixing



#### Vertical fixing



Theoretical forces (N)

Cylinder Ø	Working surface area (mm <sup>2</sup> )		Working pressure (bar)											
	Thrust	Traction	Thrust							Traction				
			2	3	4	5	6	7	2	3	4	5	6	7
6	57	42	10	15	20	25	30	40	8	12	16	20	24	28
8	100	75	20	30	40	50	60	70	14	21	28	35	42	53
12	220	170	44	66	88	110	132	154	34	51	68	85	102	119
16	400	300	80	120	160	200	240	280	60	90	120	150	180	210
20	620	470	124	186	248	310	372	434	94	141	188	235	282	329
25	980	750	196	294	392	490	585	686	150	225	300	375	450	525

Cylinder mass (standard version)

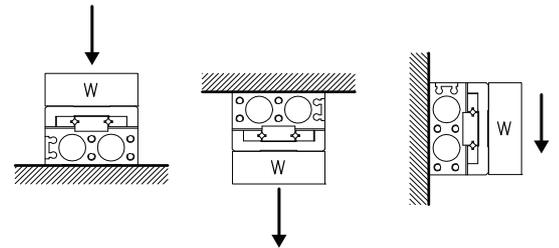
Cylinder Ø	Mass (g)									
	Strokes (mm)									
	10	20	30	40	50	75	100	125	150	
6	80	100	115	155	180	-	-	-	-	
8	150	160	190	235	285	410	-	-	-	
12	325	325	325	385	480	660	890	-	-	
16	570	570	580	640	760	1100	1370	1700	-	
20	960	980	1010	1100	250	1630	2150	2670	3200	
25	1660	1680	1700	1840	2100	2650	3270	4140	4710	

Max kinetic energy (Nm)

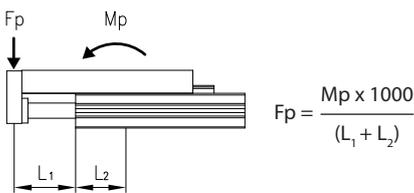
Cylinder Ø	Max absorb function	Shock absorbers
6	0,018	-
8	0,027	0,045
12	0,055	0,11
16	0,11	0,22
20	0,16	0,32
25	0,24	0,48

Maximum allowable load weight (Kg)

Cylinder Ø	Max load W
6	0,6
8	1
12	2
16	4
20	6
25	9

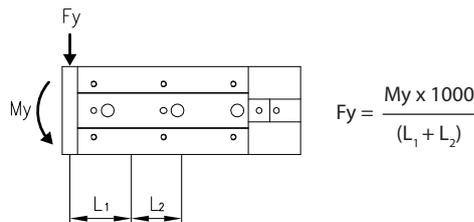


Motionless allowable torque (Nm) - Calculation method

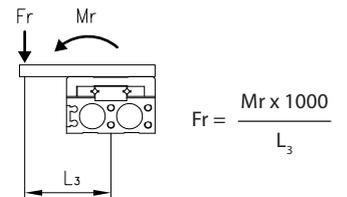


**Mp** = Bending moment

- L<sub>1</sub> Distance from the body to the point of load.
- L<sub>2</sub> Distance from the center of the body to his side.
- L<sub>3</sub> Distance from the center of the guide to the point of load.



**My** = Bending moment

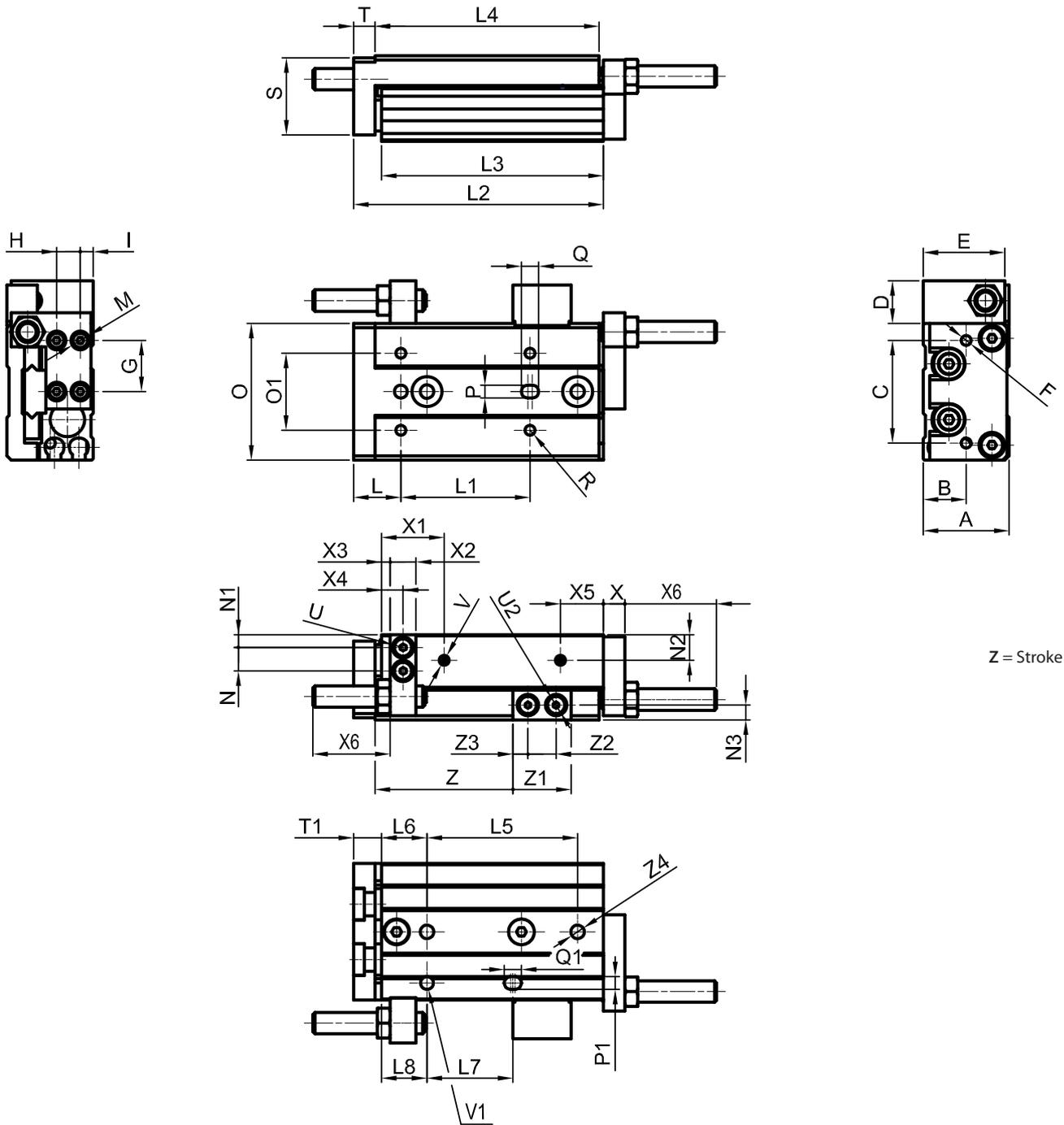


**Mr** = Torque

Cylinder Ø	Strokes (mm)									
	10	20	30	40	50	75	100	125	150	
6	0,7	1	1,2	1,2	1,2	-	-	-	-	
8	2	2	2,8	3,6	4,2	4,2	-	-	-	
12	4,2	4,2	4,2	5,8	7	10	10	-	-	
16	11,3	11,3	11,3	11,3	15,9	25	34,1	34,1	-	
20	19,4	19,4	19,4	19,4	27,2	35	50,5	50,5	50,5	
25	30,6	30,6	30,6	30,6	42,8	55,1	67,3	67,3	67,3	

- Do not exceed load limit. Loads exceeding the limits may affect the slide precision
- Avoid impacts
- Inertial load must be within 1/10 of the allowable motionless load.

JX2



Z = Stroke

Part No.	A	B	C	D	E	F	G	H	I	L	L6	L8	M	N	N1	N2	N3	O	O1	P	P1
JX2006	20	10	24	10	18,5	M3x0,5x6	12	5,5	3	11	10,5	10,5	M2,5x0,4x3	5,5	3	6	3,5	32	18	3	3
JX2008	24	12	30	14,5	23,5	M4x0,7x6	15	6,5	3,5	12	11,5	11,5	M3x0,5x4	6,5	4	7	7	40	23	3	3
JX2012	32	15,5	38	15	31,5	M5x0,8x8	20	9	5	16	15	15	M4x0,7x6	10	5	10	8	50	28	4	4
JX2016	40	19,5	48	18	37,5	M6x1,0x10	26	12	6	21	19	19	M5x0,8x7	12	6	12	9,5	62	35	5	5
JX2020	50	25	58	24,5	47,5	M6x1,0x13	30	18	6	27	21,5	21,5	M5x0,8x6	14	8	15	14	76	46	5	5
JX2025	62	31	70	24,5	54,5	M8x1,25x15	38	22	7	30	23,5	23,5	M6x1,0x10	16	10	18	19	92	56	6	6

Part No.	Q	Q1	R	S	T	T1	U	U2	V	V1	X	X1
JX2006	4	4	M3x0,5x5	18	5	6,5	M2,5x0,45x3	M3x0,5x4	M3x0,5	Ø3x3	5	14,5
JX2008	4	4	M3x0,5x5	22	6	7,5	M3x0,5x4	M3x0,5x4	M5x0,8	Ø3x3	6	15
JX2012	5	5	M4x0,7x5	28,5	8	10	M4x0,7x6	M4x0,7Px6,5	M5x0,8	Ø4x3,5	8	19
JX2016	6	6	M5x0,8x8	36,5	10	12	M5x0,8x5,5	M5x0,8x5,5	M5x0,8	Ø5x4	10	24
JX2020	6	6	M5x0,8x10	45,5	13	15,5	M6x1,0x6,5	M6x1,0x6,5	G1/8	Ø5x5	12	27,5
JX2025	6	6	M6x1,0x13	55	15	17,5	M8x1,25x8,5	M8x1,25x8,5	G1/8	Ø6x6	15	30

Part No.	X2	X3	X4	X5	X6	Z1	Z2	Z3	Z4
JX2006	6	2	5	10	18	12,5	6,5	3	M4x0,7x8
JX2008	7	2	5,5	8,5	19	14,6	7	3,8	M4x0,7x8
JX2012	9,5	2	4,75	11	19	18,5	8,5	5	M5x0,8x10
JX2016	11	3	8,5	11	22	21	10	5,5	M6x1,0x12
JX2020	13	3	6,5	10	36	25	12	6,5	M6x1,0x12
JX2025	16	4	8	12	34	31	15	8	M8x1,25x16

Stroke	JX2006						
	L1	L2	L3	L4	L5	L7	Z
10	20	48	41,5	42	25	20	22,5
20	30	58	51,5	52	35	20	32,5
30	20	68	61,5	62	20	20	42,5
40	28	90	53,5	84	30	30	52,5
50	38	106	99,5	100	24	48	62,5

Stroke	JX2008						
	L1	L2	L3	L4	L5	L7	Z
10	25	56	48,5	49	28	20	23,5
20	25	61	53,5	54	30	30	33,5
30	40	72	64,5	65	20	20	43,5
40	50	90	82,5	83	28	28	53,5
50	38	108	100,5	101	23	50	63,5
75	50	158	150,5	151	28	56	88,5

Stroke	JX2012						
	L1	L2	L3	L4	L5	L7	Z
10	35	80	70	71	40	40	26,5
20	35	80	70	71	40	40	36,5
30	35	80	70	71	40	40	46,5
40	50	92	82	83	25	25	56,5
50	35	112	102	103	36	36	66,5
75	55	158	148	149	36	72	91,5
100	65	212	202	203	38	76	116,5

Stroke	JX2016						
	L1	L2	L3	L4	L5	L7	Z
10	35	87	75	76	40	40	29
20	35	87	75	76	40	40	39
30	35	87	75	76	40	40	49
40	50	97	85	86	50	50	59
50	35	112	100	101	30	30	69
75	55	162	150	151	35	70	94
100	65	210	198	199	35	70	119
125	70	260	248	249	35	70	144

Stroke	JX2008						
	L1	L2	L3	L4	L5	L7	Z
10	50	97	81,5	83	45	35	31
20	50	97	81,5	83	45	35	41
30	50	97	81,5	83	45	35	51
40	60	107	91,5	93	55	35	61
50	35	122	106,5	108	35	35	71
75	60	161	145,5	147	35	70	96
100	70	214	198,5	200	35	70	121
125	80	268	252,5	254	38	75,5	146
150	80	320	304,5	306	44	87,5	171

Stroke	JX2012						
	L1	L2	L3	L4	L5	L7	Z
10	50	108	90,5	92	45	45	35
20	50	108	90,5	92	45	45	45
30	50	108	90,5	92	45	45	55
40	60	118	100,5	102	55	55	65
50	35	131	113,5	115	35	35	75
75	60	172	154,5	156	35	70	100
100	70	213	195,5	197	35	70	125
125	75	271	253,5	255	38	76	150
150	80	311	293,5	295	44	80	175

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# MP

## Clamping cylinder

Clamping cylinders are the ideal solution for clamping pieces, mainly on cutting machines.

- Two versions available (short and long type)
- Single acting with front spring
- Non-rotating
- Easy construction
- Clean profile
- Possibility to supply special versions upon request
- Accessories: buffers, long and short brackets, blocking valve



### TECHNICAL CHARACTERISTICS

Ambient temperature	Max. 60° C
Fluid	filtered air with or without lubrication
Working pressure	2 ÷ 10 bar
Bore	Ø 35 mm
Supply air ports	G 1/8
Fixing	with brackets
Version	single acting, front spring

### CONSTRUCTIVE CHARACTERISTICS

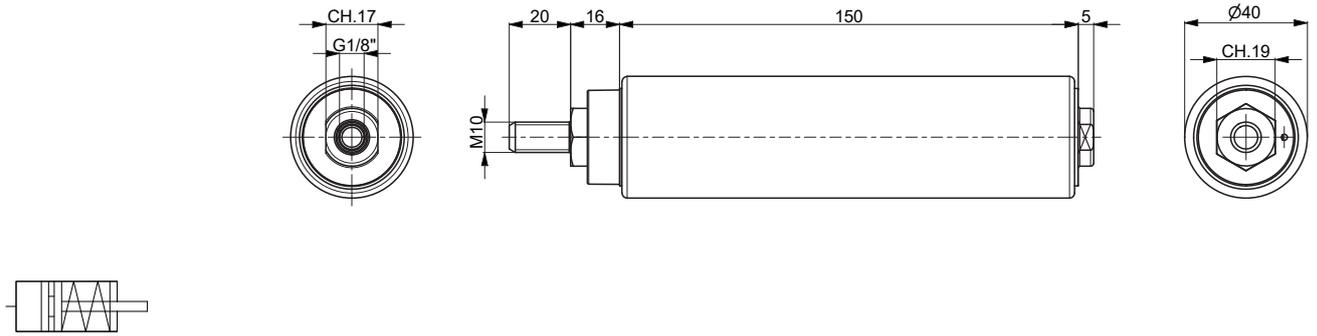
End-caps	technopolymer
Barrel	anodized aluminium
Piston rod	zinc-plated steel
Piston seals	NBR
Spring	steel

### CODIFICATION KEY

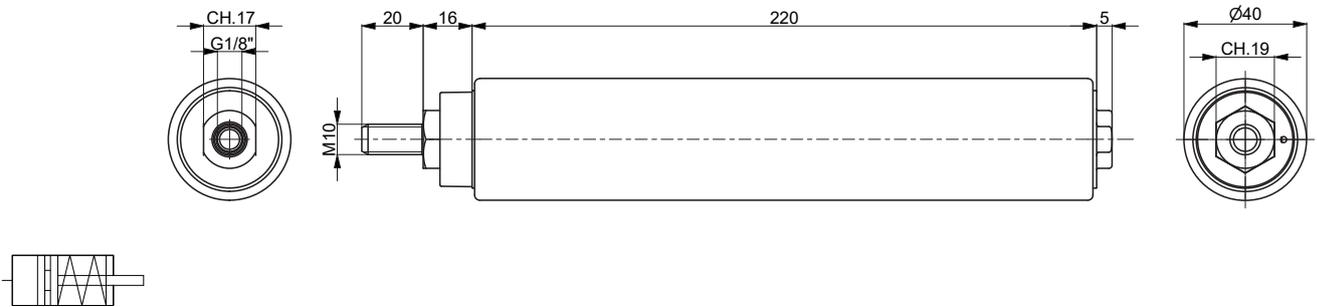
M	P	0	3	5	0	0	7	5	T
1	2	3			4				

1 Series	2 Bore (mm)	3 Stroke (mm)	4 Option
MP = Clamping cylinder	035 = Ø35 040 = Ø40 (upon request)	0075 = 75 0115 = 115 Other strokes available upon request	A = orange buffer N = black buffer T = transparent buffer _ = without buffer

**Short type - Stroke 75 mm**



**Long type - Stroke 115 mm**



For other bores and strokes please contact our Sales Department.

Tampone



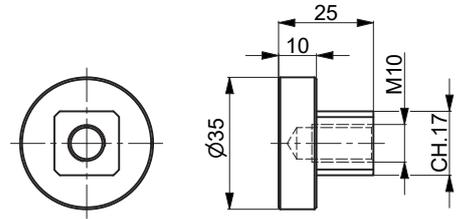
MPF-300035A  
orange



MPF-300035N  
black



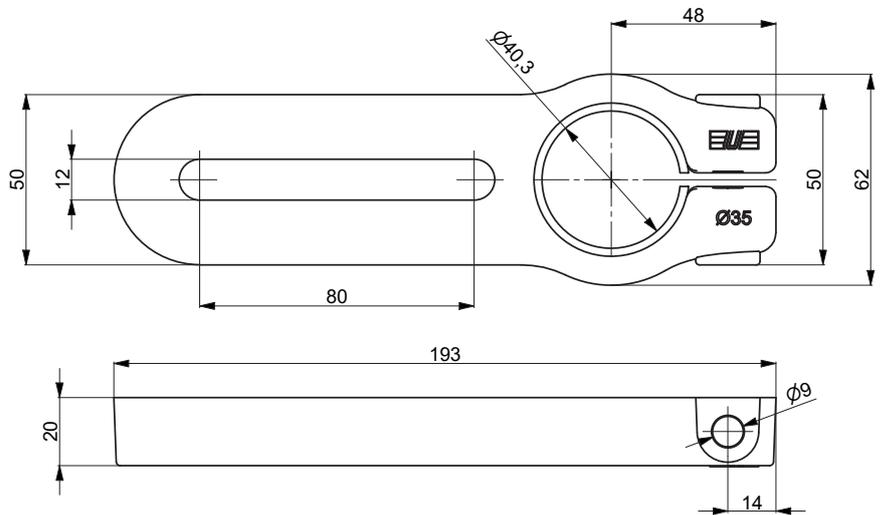
MPF-300035T  
transparent



Short bracket



MPF-310035C



1  
CYLINDERS

Long bracket



MPF-310035L

