

Cylinders

Product family	Series	Page
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Cylinders Ø 32 ÷ 200 mm according to ISO 6431 / VDMA 24562 standard	K KD	10 - 19
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High-Tech

Valves

Air Preparation Equipment - FRL

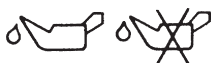
Accessories



Thanks to the accurate rounded design and the overall linearity, these cylinders are used in those industrial sectors (food & beverages, pharmaceuticals) where technological reliability and easy cleaning are required.

TECHNICAL CHARACTERISTICS

Working pressure: 1,5 ÷ 10 bar
 Ambient temperature: -20 ÷ 80°C
 Fluid: filtered air, lube or non lube
 Barrel: stainless steel with crimped heads, and piston rod in stainless steel.
 Standard strokes (see table page 4)
 Type M160 ... up to 50 mm stroke max
 Type M170 ... up to 25 mm stroke max
 Max speed: up to 2 m/sec. without adjustable cushion
 up to 5 m/sec. with adjustable pneumatic cushion

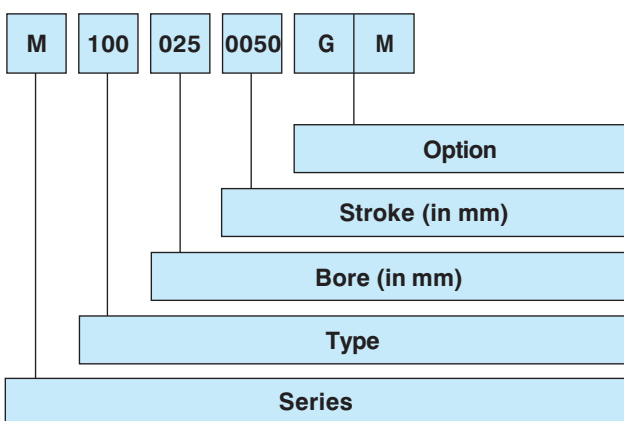


Upon request

- Magnetic version Ø 10 ÷ 25 mm. Magnetic sensor series DH-... (section accessories page 2) (for Ø 16 mm only with chromium-plated rod magnetic switch DH-500).
- Locking device Ø 16 ÷ 25 mm (section High-Tech page 3) to be coupled **only** with chromium-plated rod M2...series
- Slide unit from Ø 16 (section High-Tech page 31).



Codification key



- 1. 0. 0 D.A. Standard version.
- 1. 0. 1 D.A. Through piston rod
- 1. 5. 0 D.A. With adjustable limit switch cushioning from Ø 16 ÷ 25 mm
- 1. 5. 1 D.A. Through rod with adjustable limit switch cushioning from Ø 16 ÷ 25 mm
- 1. 6. 0 S.A. Retracted piston rod Ø 10 ÷ 25 mm, max. stroke 50 mm.
- 1. 7. 0 S.A. Extended piston rod Ø 16 ÷ 25 mm, max. stroke 50 mm.

SERIES

M = microcylinders Ø 8 ÷ 25 mm

TYPE

- 1. -. -. - Stainless steel rod standard version.
- 2. -. -. - Chromium-plated steel rod to be used only with locking unit.
- 3. -. -. - Stainless steel rod reduced version.
- 5. -. -. - Stainless steel rod reduced version with rear supply.

BORE

Ø 008 - 010 - 012 - 016 - 020 - 025

STROKE

0010-0020-0025-0030-0040-0050-0075-0080-0100-0125-0150-0160-0175-0200-0250-0300-0320-0400-0500

OPTION

F = For use with locking unit with "reduced dimensions"
 M = Magnetic version from Ø 10 ÷ 25

Main construction features

- Stainless steel barrel AISI 304.
- Anodized aluminium extrusion heads, crimped on the barrel
- Mechanical rubber shock absorbers standard mounted on heads (M100... series) \varnothing 12 ÷ 25 mm
- Adjustable pneumatic cushioning with adjustment screw (M150...series) \varnothing 16-20-25 mm
- Seals in self-lubricating nitrile
- Piston bearing in acetalic resin: \varnothing 16 - 20 - 25 mm
- Rolled rod in stainless steel X10CrNi S 18.09 (AISI 303)
- \varnothing 20 ÷ 25 mm aluminium piston
 \varnothing 8 ÷ 16 mm brass piston
- Microcylinders are supplied with nut on the rod (MF - 16 + \varnothing) and nut on the front head (MF - 20 + \varnothing)



Cyl. \varnothing	Max absorbable kinetic energy (Nm)	
	with adjustable cushions	without adjustable cushions
16	0,9	0,12
20	1,3	0,16
25	1,8	0,22

Single-acting microcylinder

Cyl. \varnothing	Standard strokes (preferable values according to UNI 4393 in black)		Thrust force (min-max) of the spring (N)								Mass of moving parts		Cylinder mass	
	160	170	Stroke 10	Stroke 25	Stroke 40	Stroke 50	Stroke 0	Increase by mm (g)	Stroke 0	Increase by mm (g)				
10	10 - 25 40 - 50		6,9	7,6	5,8	7,6	4,7	7,6	4	7,6	0,009	0,1	0,038	0,23
12	10 - 25 40 - 50		8,1	8,7	7,3	8,7	6,5	8,7	5,9	8,7	0,023	0,22	0,079	0,38
16	10 - 25 40 - 50	10 - 25	14,4	16	11,9	16	9,4	16	7,8	16	0,026	0,22	0,085	0,43
20	10 - 25 40 - 50	10 - 25	18,6	20	16,5	20	14,4	20	13	20	0,045	0,4	0,167	0,66
25	10 - 25 40 - 50	10 - 25	21,8	23,5	19,3	23,5	16,7	23,5	15	23,5	0,08	0,62	0,238	0,95

Double-acting microcylinder


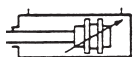
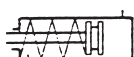

Cyl. \varnothing	Standard strokes (preferable values according to UNI 4393 in black)	Thrust force (min) at 6 bar (N)	Traction force at 6 bar (N)	Mass of moving parts		Cylinder mass		Length of decel. mm (g)
				Stroke 0 (kg)	Increase by mm (g)	Stroke 0 (kg)	Increase by mm (g)	
8	10 20 25 30 40 50 75 80 100 125 150 160	20	16	0,007	0,1	0,037	0,21	-
10	10 20 25 30 40 50 75 80 100 125 150 160	35	32	0,009	0,1	0,038	0,23	-
12	10 20 25 30 40 50 75 80 100 125 150 160 175 200 250	50	38	0,023	0,22	0,078	0,38	-
16	10 20 25 30 40 50 75 80 100 125 150 160 175 200 250	90	87	0,023	0,22	0,085	0,43	16
•16	25 30 40 50 75 80 100 125 150 160 175 200 250 300 320 400 500			0,025		0,087		
20	10 20 25 30 40 50 75 80 100 125 150 160 175 200 250 300	148	140	0,045	0,4	0,167	0,66	18
•20	25 30 40 50 75 80 100 125 150 160 175 200 250 300 320 400 500			0,048		0,17		
25	10 20 25 30 40 50 75 80 100 125 150 160 175 200 250 300 320 400 500	250	220	0,080	0,62	0,237	0,95	22
•25	25 30 40 50 75 80 100 125 150 160 175 200 250 300 320 400 500			0,088		0,245		

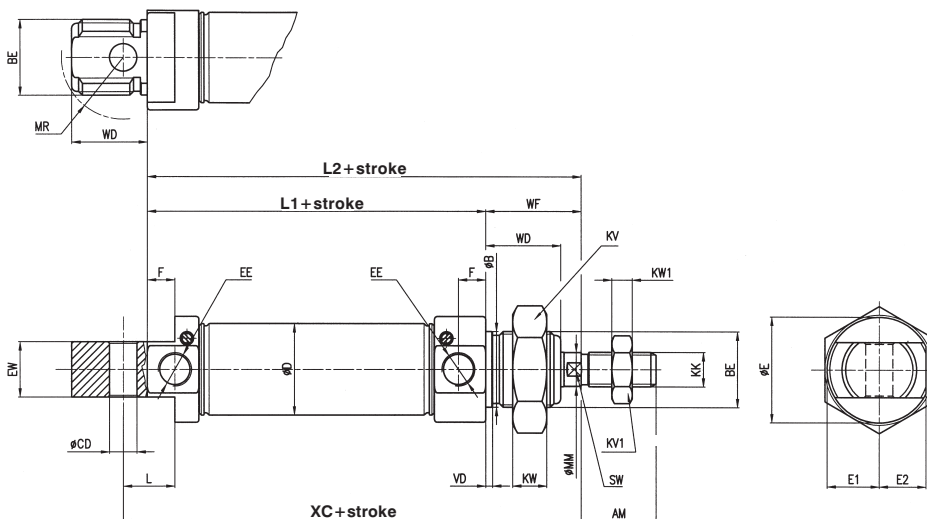
● Version with pneumatic cushioning

UNIVER is able to supply the cylinders with stroke variations of one millimeter (intermediate strokes) or strokes exceeding the standard stroke.

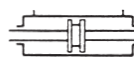


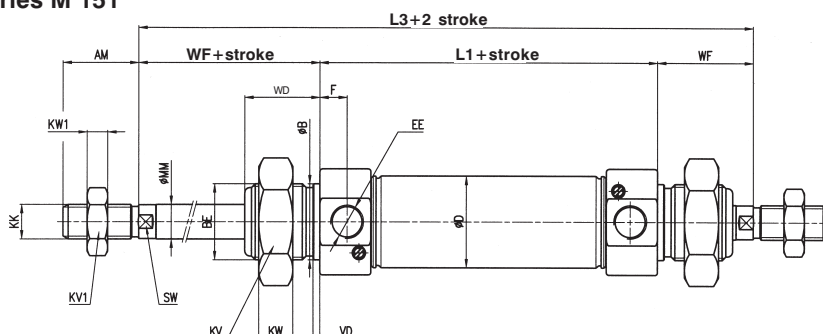
Double/single-acting cylinder

-  Series M 100
-  Series M 150
-  Series M 160
-  Series M 170




Double-acting through rod cylinder

-  Series M 101
-  Series M 151



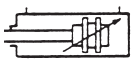
Cyl. Ø	AM	B	Ø BA	BE	CD	D	Ø E	E1	E2	* EE	EW	KV	KV1
		h 10			H9						d 13		
8	12	12		M12 x 1,25	4	9,3	14	8	8,5	M5 x 0,8	8	19	7
10	12	12		M12 x 1,25	4	11,3	14	8	8,5	M5 x 0,8	8	19	7
12	16	16		M16 x 1,5	6	13,3	17	9,5	10	M5 x 0,8	12	24	10
16	16	16	16	M16 x 1,5	6	17,3	20,8	10,4	9,6	M5 x 0,8	12	24	10
20	20	22	22	M22 x 1,5	8	21,6	27,7	13,85	12	G 1/8	16	32	13
25	22	22	22	M22 x 1,5	8	26,6	30,7	15,35	13,75	G 1/8	16	32	17

Cyl. Ø	F	KK	KW	KW1	L	L1	L2	L3	MM	MR	SW	VD	WA	WD	WF	XC
															± 1,2	± 1
8	5	M4 x 0,7	7	2,8	7	46	62	78	4	12	3	1,5		12	16	64
10	5	M4 x 0,7	7	2,8	7	46	62	78	4	12	3	1,5		12	16	64
12	5	M6 x 1	8	4	9	50	72	94	6	16	5	1,5		17	22	75
16	5,5	M6 x 1	8	4	8	56	78	100	6	16	5	1,5	5,5	17	22	82
20	8	M8 x 1,25	10	5	11	68	92	116	8	18	7	2	5,5	19	24	95
25	8	M10 x 1,25	10	6	15	69	97	125	10	18	9	2	7,5	22	28	104

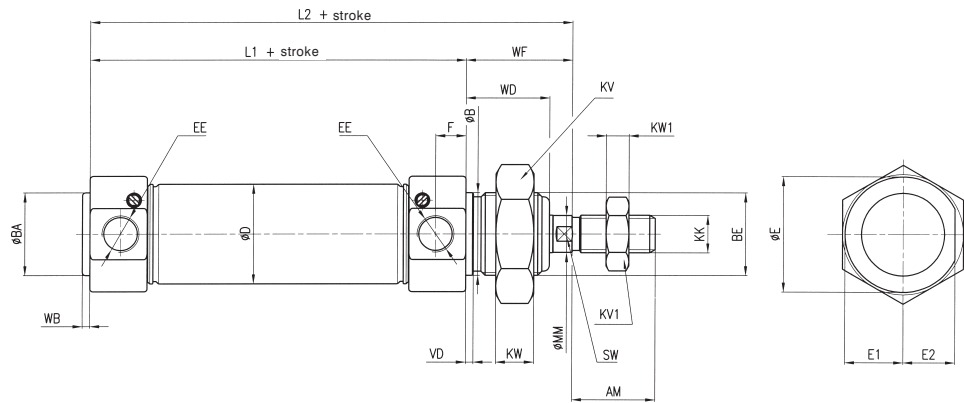
* The series with dimensions in inches is chosen in compliance with UNI-ISO 228/1 standard



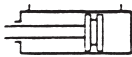
Double-acting cylinder Series 350 with cushioning \varnothing 16-20-25 mm



Series M 350

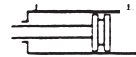


Double acting cylinder with standard air supply \varnothing 10 ÷ 25 mm



Series M 300

Double-acting cylinder with rear supply \varnothing 10 ÷ 25 mm



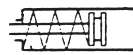
Series M 500

Single-acting cylinders retracted piston rod \varnothing 10 ÷ 25 mm; single-acting extended piston rod \varnothing 16-25 mm, both with standard supply.



Series M 360

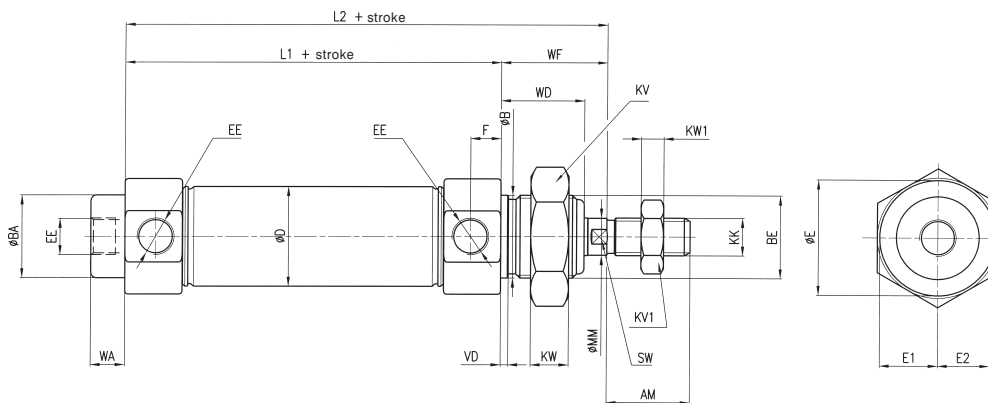
Single-acting cylinder retracted piston-rod with rear supply \varnothing 10 ÷ 25 mm



Series M 560



Series M 370

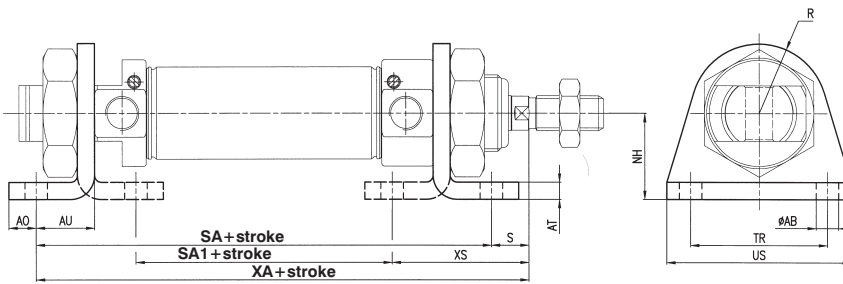


Cyl. \varnothing	AM	B h10	BA \varnothing	BE	D	E \varnothing	E1	E2	*EE	KV	KV1
10	12	12	12	M12 x 1,25	11,3	15,8	7,9	7,2	M5 x 0,8	19	7
12	16	16	16	M16 x 1,5	13,3	18,8	9,4	8,7	M5 x 0,8	24	10
16	16	16	16	M16 x 1,5	17,3	20,8	10,4	9,6	M5 x 0,8	24	10
20	20	22	22	M22 x 1,5	21,6	27,7	13,85	12	G 1/8	32	13
25	22	22	22	M22 x 1,5	26,6	30,7	15,35	13,75	G 1/8	32	17

Cyl \varnothing	F	KK Z	KW	KW1	L1	L2	MM	SW	VD	WA	WB	WD	WF $\pm 1,2$
10	5	M4 x 0,7	7	2,8	46	62	4	3	1,5	4		12	16
12	5	M6 x 1	8	4	50	72	6	5	1,5	4,5		17	22
16	5,5	M6 x 1	8	4	56	78	6	5	1,5	5,5	1,5	17	22
20	8	M8 x 1,25	10	5	68	92	8	7	2	5,5	2	19	24
25	8	M10 x 1,25	10	6	69	97	10	9	2	9	2	22	28

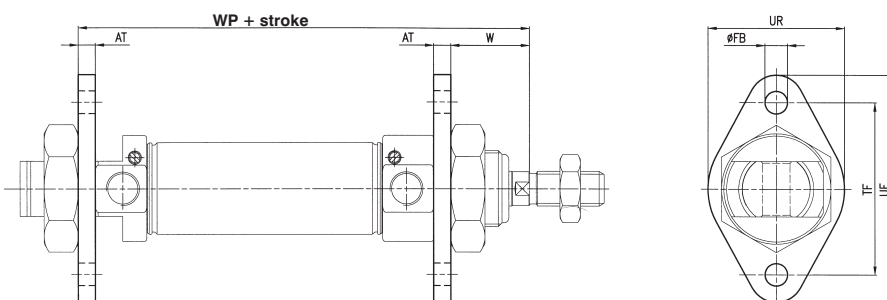
* The series in inches is according to UNI-ISO 228/1

Foot bracket in zinc-plated steel for $\varnothing 8 \div 25$ mm (MS 3)



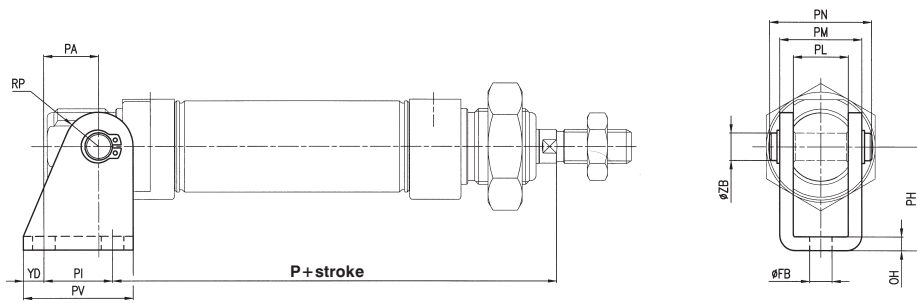
Cyl. \varnothing	AB	AO	AT	AU	NH	R	S	SA	SA1	TR	US	XA	XS	Mass kg	Part number
	H13			+0,3 0	$\pm 0,3$					Js14			$\pm 1,4$		
8-10	4,5	5	3	11	16	10	5	68	30	25	35	73	24	0,02	MF-13008
12	5,5	6	4	14	20	13	8	78	30	32	42	86	32	0,04	MF-13012
16	5,5	6	4	14	20	13	8	84	36	32	42	92	32	0,04	MF-13012
20	6,6	8	5	17	25	20	7	102	44	40	54	109	36	0,09	MF-13020
25	6,6	8	5	17	25	20	11	103	45	40	54	114	40	0,09	MF-13020

Flange in zinc-plated steel for $\varnothing 8 \div 25$ mm (MF8)



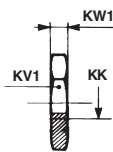
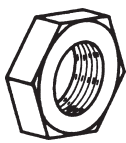
Cyl. \varnothing	AT	FB	TF	UF	UR	W	WP	Mass kg	Part number
		H13	Js14			$\pm 1,4$			
8-10	3	4,5	30	40	25	13	65	0,012	MF-12008
12	4	5,5	40	53	30	18	76	0,025	MF-12012
16	4	5,5	40	53	30	18	82	0,025	MF-12012
20	5	6,6	50	66	40	19	97	0,049	MF-12020
25	5	6,6	50	66	40	23	102	0,049	MF-12020

Rear female hinge in zinc-plated steel $\varnothing 8 \div 25$ mm with pin and 2 circlips



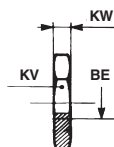
Cyl. Ø	Ø FB	OH	P	PA	PH	PI	PL	PM	PN	PV	RP	YD	ZB	Mass kg	Part number
	H13					E9							f8		
8-10	4,5	2,5	62,5	11	24	12,5	8,1	13,1	17	20	5,3	3,8	4	0,019	MF - 21008
12	5,5	3	73	13	27	15	12,1	18,1	23	25	7	5	6	0,037	MF - 21012
16	5,5	3	80	13	27	15	12,1	18,1	23	25	7	5	6	0,037	MF - 21012
20	6,6	4	91	16	30	20	16,1	24,1	30	32	10	6	8	0,08	MF - 21020
25	6,6	4	100	16	30	20	16,1	24,1	30	32	10	6	8	0,08	MF - 21020

Nut for zinc-plated steel rod



Cyl. Ø	KK	KW1	KW1	Part number
8-10	M4 x 0,7	7	2,8	MF - 16008
12-16	M6 x 1	10	4	MF - 16012
20	M8 x 1,25	13	5	MF - 16020
25	M10 x 1,25	17	6	KF - 16032

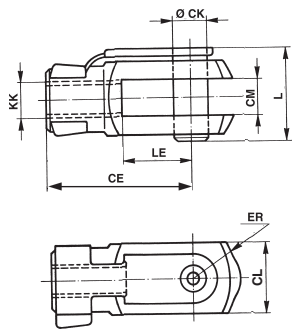
Nut for zinc-plated steel head



Cyl. Ø	BE	KV	KW	Part number
8-10	M12 x 1,25	19	7	MF - 20008
12-16	M16 x 1,5	24	8	MF - 20012
20-25	M22 x 1,5	32	10	MF - 20020

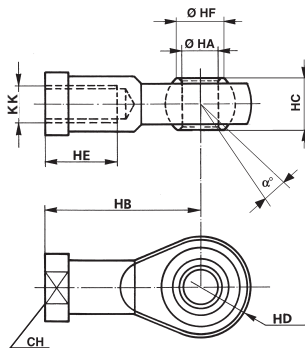



Double hinge in zinc-plated steel with pin for ISO 8140 rod



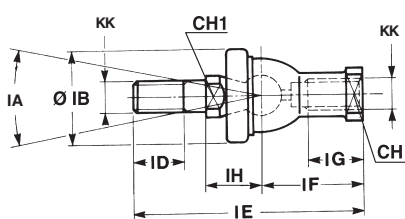
Cyl. Ø	CE	CK	CL	CM B12 B12	ER	KK	L	LE	Mass kg	Part number
8-10	16	4	8	4	5	M4 x 0,7	11	8	0,007	MF - 15008
12-16	24	6	12	6	7	M6 x 1	16	12	0,019	MF - 15012
20	32	8	16	8	10	M8 x 1,25	22	16	0,046	MF - 15020
25	40	10	20	10	16	M10 x 1,25	26	20	0,09	KF - 15032



Articulated self-lubricating fork in zinc-plated steel



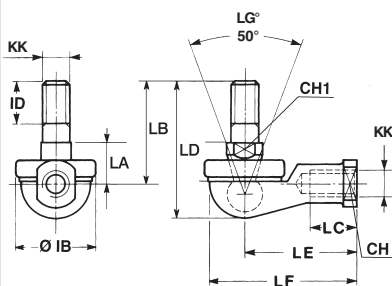
Cyl. Ø	a	CH	KK	HA	HB	HC	HD	HE	HF	Mass kg	Part number
				H7			0 -0,12				
8-10	13°	9	M4 x 0,7	5	27	8	9	10	7,7	0,018	MF - 17008
12-16	13°	11	M6 x 1	6	30	9	10	12	9	0,026	MF - 17012
20	14°	14	M8 x 1,25	8	36	12	12	16	10,4	0,046	MF - 17020
25	13°	17	M10 x 1,25	10	43	14	14	20	12,9	0,076	KF - 17032



Fork with axially mounted articulated pin



Cyl. Ø	CH	CH1	IA	KK	IH	IB	ID	IE	IF	IG	Mass kg	Part number
					±0,3							
12-16	11	8	30°	M6 x 1	12,2	22	11	55,2	28	15	0,04	MF - 22016
20	14	10	30°	M8 x 1,25	16	28	12	65	32	16	0,075	MF - 22020
25	17	11	30°	M10 x 1,25	19,5	32	15	74,5	35	18	0,12	KF - 22025

Fork with angle-mounted articulated pin



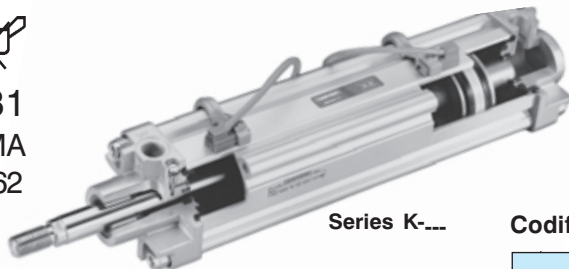
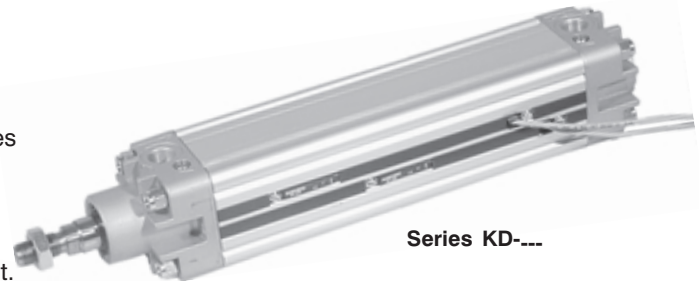
Cyl. Ø	CH	CH1	LG	KK	IB	ID	LA	LB	LC	LD	LE	LF	Mass kg	Part number
							±0,3							
12-16	11	8	50°	M6 x 1	22	11	11	26	14	35,5	30	40	0,037	MF - 23012
20	14	10	50°	M8 x 1,25	28	12	14	31	17	42,5	36	48	0,067	MF - 23020
25	17	11	50°	M10 x 1,25	32	15	17	37	21	50,5	43	57	0,11	KF - 23025



UNIVER pneumatic cylinders which comply with ISO 6431 and VDMA 24562 standards, take advantage of the improvements arising from the research of the last years; infact, they can fully satisfy the most demanding users. The operation with non-lubricated air is worth mentioning, since it allows their use in many industrial sectors while protecting the environment. The strong construction and the selected components contribute to giving them excellent operating features and a very long life.

TECHNICAL CHARACTERISTICS

Working pressure: 1,5 ÷ 10 bar
 Ambient temperature: -20 ÷ 80°C.
 Fluid: filtered air, with or without lubrication.
 Barrel: internal/external anodised aluminium and piston rod in chromium-plated steel standard.
 Bores: series KD 32 ÷ 125 aluminium barrel with profiles for flush-mounted sensors, magnetic version standard.
 series K 32 ÷ 200 aluminium barrel;
 Ø160 ÷ 200 mm with round aluminium barrel and steel tie-rods, magnetic version upon request.



Flush-mounted magnetic sensors DF-... series for KD series.
 Wire protection strap magnetic sensor for KD series part no. DHF-002100.
 Magnetic sensor DH-... Series for K series.
 (Section Accessories page 2)
 Accessories as from page 15.

Upon request

- Magnetic rings in plastroferrite
- Locking units Ø 32 ÷ 125 mm to be coupled **only** with chromium-plated steel rod series KD2-... (section High-Tech page 3)
- Slide units Ø 32 ÷ 100 mm (section High-Tech page 36)
- Cylinders with rigid bushing, in tandem, multiple position and opposed version (page 13).

Construction details

Clean line barrel produced from extruded aluminium alloy with ribbed "anti-twist" design. Internal and external surfaces anodised to 15 micron.

Die-cast end-caps in aluminium alloy mounted on the barrel holes with self-tapping steel screws.

Pneumatic adjustable cushions provide efficient piston deceleration.

Synthetic rubber shock absorbers avoid mechanical stress and reduce machinery noise (lower than 50 dB).

Die-cast aluminum alloy piston and guide shoe in acetalic resin with a permanent plastroferrite magnetic ring (upon request for the magnetic version).

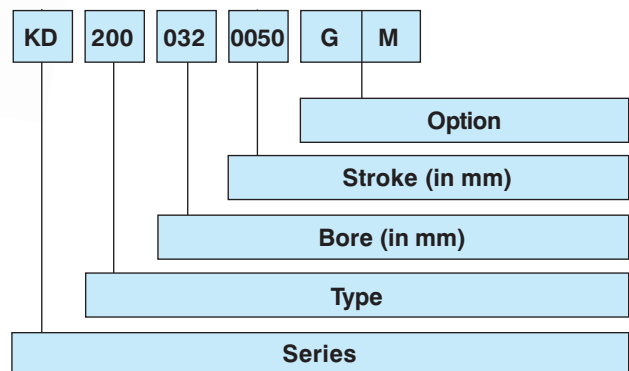
The piston and cushion seals are made of a wear-resistant nitrile rubber compound suitable for applications with or without lubrication. The double lip seal design automatically self-compensates against wear.

Hardened stainless steel rod (K-KD...100 series) or chromium-plated (K-KD...200 series) with 2 micron Ra.; supplied with nut.

UNIVER original self-lubricating and self-aligning piston rod bush. For special applications, rigid bushings are supplied upon request.

Cylinders Ø 125-160-200 with rigid piston rod bushing standard supplied.

Codification key



SERIES

KD = Ø 32 ÷ 125 mm magnetic version standard.
K = Ø 32 ÷ 200 mm magnetic version upon request.

TYPE

- 1.0.0 D.A. Stainless steel rod
- 1.0.1 D.A. Stainless steel through rod
- 1.6.0 S.A. Stainless steel retracted rod, max. stroke 50 mm
- 1.7.0 S.A. Stainless steel extended rod, max. stroke 50 mm
- 2.0.0 D.A. Chromium-plated rod
- 2.0.1 D.A. Chromium-plated through rod
- 2.6.0 S.A. Chromium-plated retracted rod, max stroke 50 mm
- 2.7.0 S.A. Chromium-plated extended rod, max stroke 50 mm

BORE

Ø 032 - 040 - 050 - 063 - 080 - 0100 - 0125 - 0160 - 0200

STROKE

Standard strokes in mm: 0025 - 0050 - 0075 - 0080 - 0100 - 0125 - 0150 - 0160 - 0175 - 0200 - 0250 - 0300 - 0320 - 0350 - 0400 - 0450 - 0500 - 0600 - 0700 - 0800 - 0900 - 1000

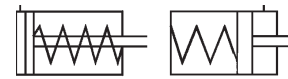
OPTION

- F** = For use with locking unit with "reduced dimensions"
- G** = For use with locking unit with ISO dimensions
- M** = Magnetic version

Cyl. Ø	Resultant forces in N at different working pressures (bar). 1 bar = 0,1 MPa							Cushion	
	Working surface area (mm ²)	Working pressure (bar)					length (mm)	Max kinetic energy absorption (J)	
		2	4	6	8	10			
32	thrust traction	804 691	161 138	322 276	482 414	643 553	804 691	18	1,8
40	thrust traction	1256 1056	251 211	502 422	754 633	1005 844	1256 1055	24	2,5
50	thrust traction	1962 1649	393 330	785 660	1178 990	1570 1320	1963 1650	24	4,5
63	thrust traction	3116 2802	623 560	1246 1120	1869 1680	2493 2240	3116 2800	30	8
80	thrust traction	5024 4533	1005 907	2010 1814	3014 2722	4019 3629	5024 4536	30	12
100	thrust traction	7850 7359	1570 1472	3140 2944	4710 4416	6280 5888	7850 7360	35	21
125	thrust traction	12266 11462	2453 2294	4906 4588	7359 6882	9812 9176	12266 11470	35	36
160	thrust traction	20096 18840	4019 3770	8038 7540	12058 11310	16077 15080	20096 18850	45	52
200	thrust traction	31400 30144	6280 6029	12560 12058	18840 18086	25120 24115	31400 30144	45	95

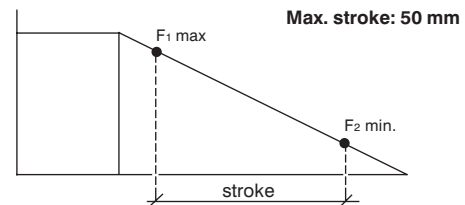
For through rod cylinders the theoretical force is equal in both directions and its value is the one given "in traction" as per table.
The values given are theoretical and in practice must take account of weight and friction of the moving element and may be reduced by (~10%)

Single-acting cylinders

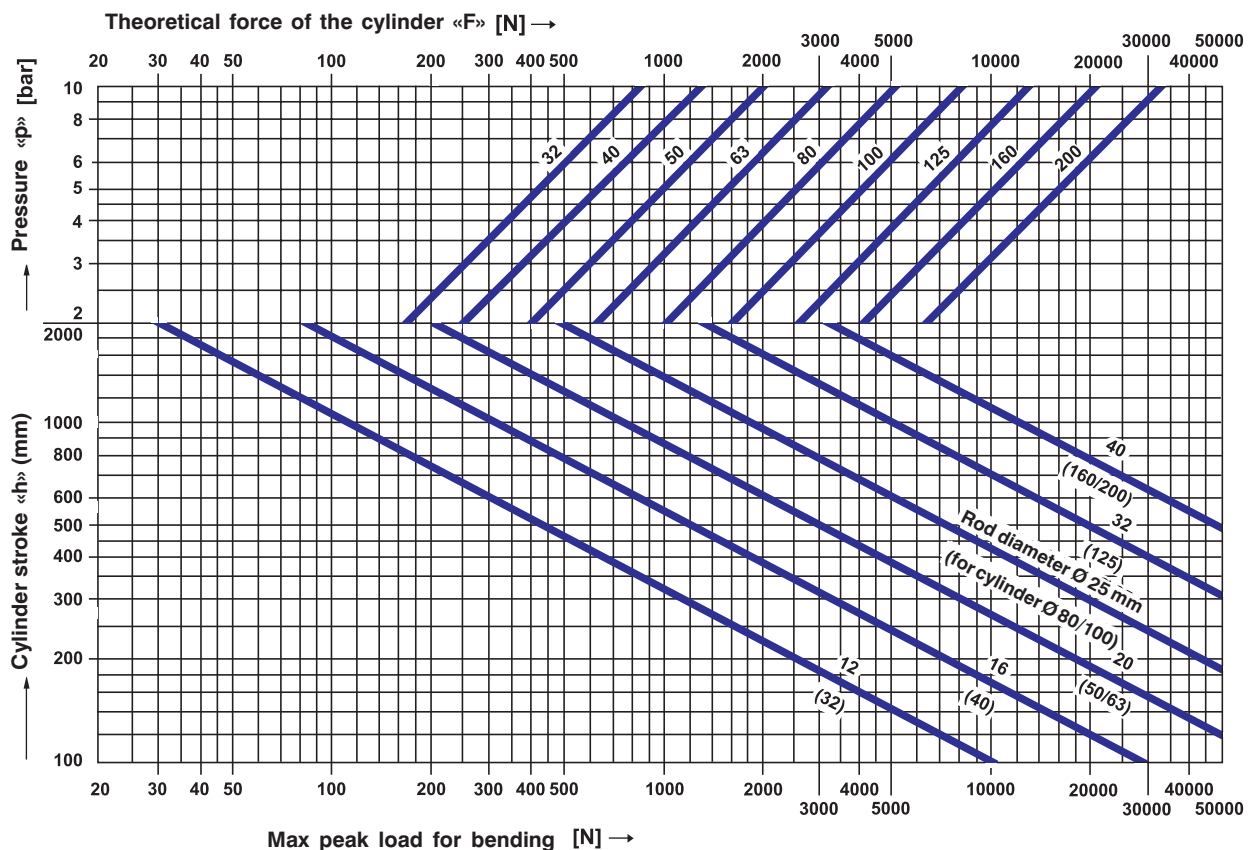


Theoretical forces (N) for return stroke

Cyl. Ø	F ₁ (N) Max spring force at 0 stroke	F ₂ (N) Minimum spring force at stroke 50
32	52	28
40	70	42,5
50	98	48
63	98	48
80	140	80
100	140	80
125	235	175

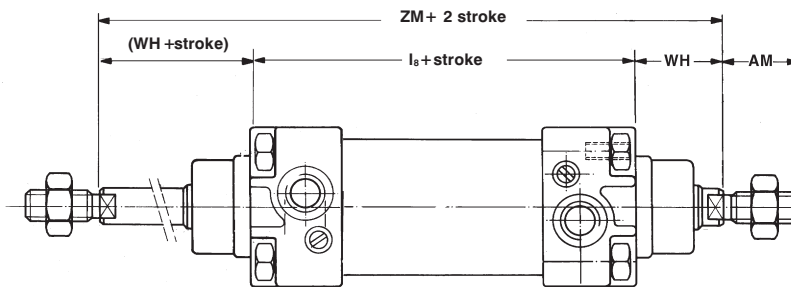
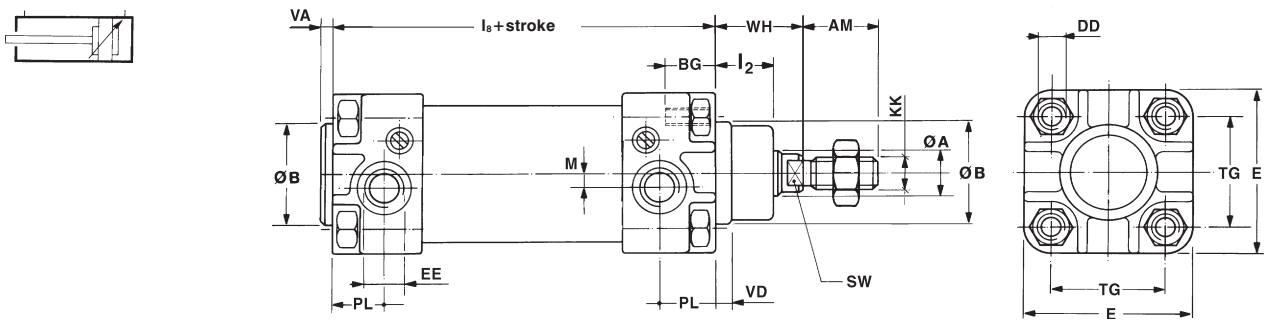


Graph showing theoretical forces/pressures and acceptable strokes depending on maximum peak load





Cylinder with pneumatic cushioning Ø 32 ÷ 200



Stroke tolerances

Cyl. Ø	Stroke (m)	
32	up to 500	+2
		0
40	from 501 to 1.250	+3,2
		0
50	up to 500	+2,5
		0
63	from 501 to 1.250	+4
		0
80	up to 500	+4
		0
100	from 501 to 1.250	+5
		0
125	up to 500	+4
		0
160	from 501 to 1.250	+5
		0
200	up to 500	+4
		0

Cyl. Ø	A	AM (Note 1)		B e11	BG	DD	E	EE (Note 2)		I ₂	I ₈		KK (Note 1)		M	PL	SW	TG		VD	VA	WH	ZM
		Nom.	Toll.					Nom.	Toll.		Nom.	Toll.	Nom.	Toll.									
32	12	22	30	14	M6	48	G 1/8	16	94	±0,4	M10 x 1,25	4,5	15	10	32,5	±0,5	5	3	26	146			
40	16	24	35	14	M6	54	G 1/4	20	105	±0,7	M12 x 1,25	5	18	13	38	±0,5	6	4	30	165			
50	20	32	40	16	M8	67	G 1/4	26	106	±0,7	M16 x 1,5	6	18	17	46,5	±0,6	6	4	37	180			
63	20	32	45	16	M8	78	G 3/8	26	121	±0,8	M16 x 1,5	8	21,5	17	56,5	±0,7	6	4	37	195			
80	25	40	45	16	M10	97	G 3/8	32	128	±0,8	M20 x 1,5	7,5	21,5	22	72	±0,7	8	5	46	220			
100	25	40	55	16	M10	115	G 1/2	35	138	±1	M20 x 1,5	9	21,5	22	89	±0,7	8	6	51	240			
125	32	54	60	20	M12	140	G 1/2	45	160	±1	M27 x 2	11	24,5	27	110	±1,1	10	7	65	290			
160*	40	72	65	25	M16	180	G 3/4	50	180	±1,1	M36 x 2	14	29	36	140	±1,1	10	6	80	340			
200*	40	72	75	25	M16	220	G 3/4	60	180	±1,1	M36 x 2	14	29	36	175	±1,1	12	6	95	370			

NOTE 1: "KK" and "AM" dimensions correspond to ISO 4359 "long" type
 ■ Dimensions to specifications, upon request
 * Ø 160 and Ø 200 cyl., execution with aluminum tube and steel tie-rods

NOTE 2: "EE" dimensions are in inches and are chosen according to ISO 228/1 standard

K series cylinder mass

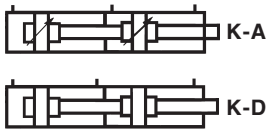
Cyl. Ø	Cyl. stroke 0 (kg)	Increm. per mm stroke (g)	Moving element stroke=0 (kg)	Increm. per mm stroke (g)	Cylinder stroke 0 (kg)	Increm. per mm stroke (g)	Moving element stroke=0 (kg)	Increm. per mm stroke (g)
32	0,51	2,35	0,13	0,9	0,64	3,24	0,20	1,8
40	0,77	3,24	0,24	1,6	0,92	4,80	0,37	3,2
50	1,21	4,75	0,43	2,5	1,51	7,22	0,64	5,0
63	1,74	5,78	0,47	2,5	2,03	8,25	0,75	5,0
80	2,74	8,64	0,95	3,9	3,26	12,50	1,37	7,8
100	3,78	10,4	1,18	3,9	4,38	14,30	1,60	7,8
125	6,59	14,8	2,18	6,3	7,80	21,10	3,20	12,6
160	14,60	16,9	4,02	9,9	16,85	26,80	5,94	19,8
200	16,50	18,5	4,78	9,9	19,90	28,40	6,80	19,8

KD series cylinder mass

Cyl. Ø	Cyl. stroke 0 (kg)	Increm. per mm stroke (g)	Moving element stroke=0 (kg)	Increm. per mm stroke (g)	Cylinder stroke 0 (kg)	Increm. per mm stroke (g)	Moving element stroke=0 (kg)	Increm. per mm stroke (g)
32	0,53	2,8	0,13	0,9	0,66	3,7	0,20	1,8
40	0,80	4,0	0,24	1,6	0,95	5,5	0,37	3,2
50	1,27	6,0	0,43	2,5	1,57	8,5	0,64	4,9
63	1,76	6,2	0,47	2,5	2,05	8,7	0,75	4,9
80	2,86	10,8	0,95	3,9	3,38	14,7	1,37	7,7
100	3,95	13,4	1,18	3,9	4,55	17,3	1,60	7,7
125	6,87	18,6	2,18	6,3	8,08	24,9	3,20	12,6

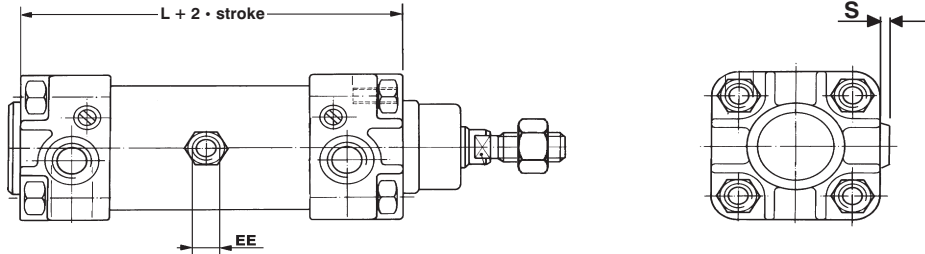


Tandem cylinder -

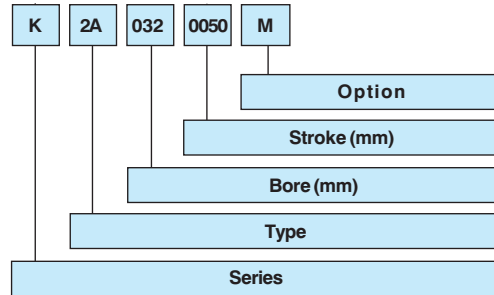


Tandem cylinders are constructed using two pistons coupled together which provide double the force in forward movement compared to the traditional ISO cylinders of the same bore size (refer to tables on page 11).

Cyl. Ø*	EE	L (mm)	S (max)
32	G 1/8	169	3
40	G 1/4	189	5
50	G 3/8	175	4
63	G 3/8	195	7
80	G 1/2	211	6
100	G 1/2	224	9
125	G 1/2	251	9



Codification key



SERIES

- K** = pneumatic cylinders ISO 6431 and VDMA 24562 standard
- KD** = pneumatic cylinders ISO 6431 and VDMA 24562 magnetic version standard

TYPE

- Stainless steel rod**
- 1A** double thrust only for forward movement
- 1D** double thrust only for reverse movement
- Chromium-plated rod**
- 2A** double thrust only for forward movement
- 2D** double thrust only for reverse movement

OPTION

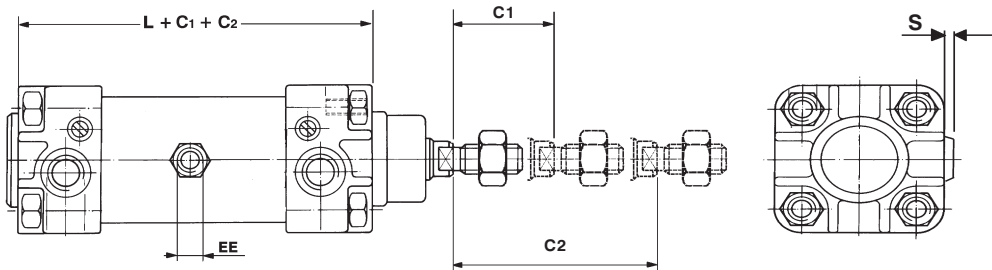
- M** = magnetic version upon request for K series

Two-position tandem cylinder -

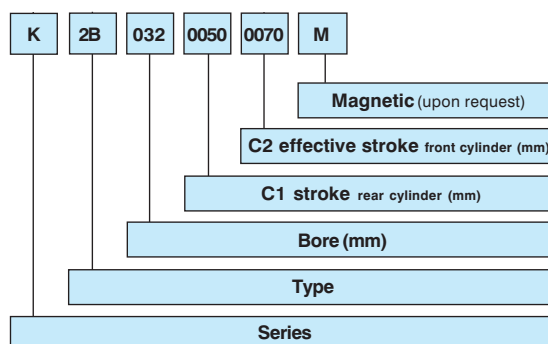
Two-position cylinders with two independent piston-rods which allow to realize a double positioning in which the thrust forces are the same as those of an ISO cylinder of the same bore (see tables on page 11).



Cyl. Ø*	EE	L (mm)	S (max)
32	G 1/8	166	3
40	G 1/4	186	5
50	G 1/4	172	4
63	G 3/8	192	7
80	G 3/8	208	6
100	G 1/2	221	9
125	G 1/2	248	9



Codification key



SERIES

- K** = pneumatic cylinders ISO 6431 and VDMA 24562 standard
- KD** = pneumatic cylinders ISO 6431 and VDMA 24562 magnetic version standard

TYPE

- 1B** double-acting two position tandem cylinder male rod in stainless steel
- 2B** double-acting two position tandem cylinder male rod in chromium-plated steel

OPTION

- M** = magnetic version upon request for K series

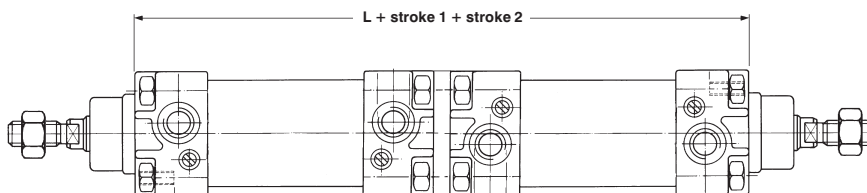
Opposed cylinder -

K-C

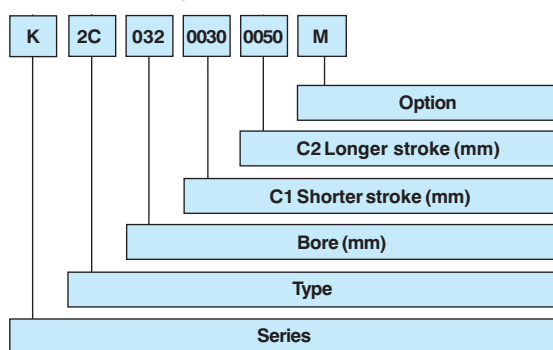


Type of cylinder characterized by the coupling of two and whose piston rods move in opposite directions. The values of the thrust force are the same as those of the traditional cylinders (see tables on page 11).

Cyl. Ø*	L
32	194
40	220
50	222
63	252
80	266
100	288
125	334
160	378
200	382



Codification key



SERIES

- K** = pneumatic cylinder ISO 6431 and VDMA 24562 standard
- KD** = pneumatic cylinder ISO 6431 and VDMA 24562 magnetic version standard

TYPE

- 1C** Double-acting opposed cylinder male rod in stainless steel
- 2C** Double-acting opposed cylinder male rod in chromium-plated steel

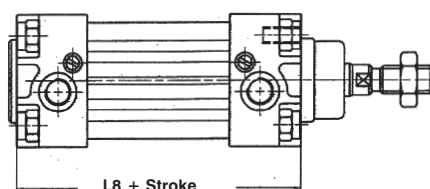
OPTION

- M** = magnetic version upon request for K series

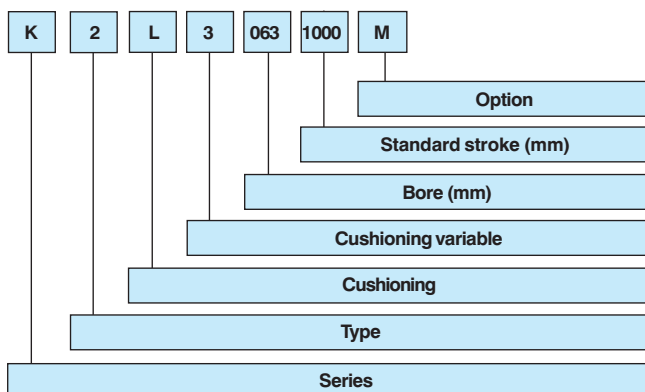
Pneumatic cylinders - with long cushioning

Type of cylinders Ø 40-50-63 mm deriving from K and KD series supplied with long internal cushionings to be used for opening and closing bulkheads or in those sectors in which is needed, at the end of the stroke, a gradual and constant deceleration with a higher control than that of a traditional cylinder. Dimensions (except those indicated) and accessories don't change.

Ø	Cushioning length			
	75	100	150	200
	L8 + Stroke			
40	182	232	332	432
50	178	228	328	428
63	185	235	335	435
80	190	240	340	440



Codification key



TYPE

- 1** = double-acting stainless steel rod
- 2** = double-acting chromium-plated steel rod

CUSHIONING

L = Long

CUSHIONING VARIABLE

- 1** = 075 mm
- 2** = 100 mm
- 3** = 150 mm
- 4** = 200 mm

BORE

040-050-063-080 mm

STROKE

A minimum stroke three times the length of the cushioning indicated in the table is recommended.

OPTION

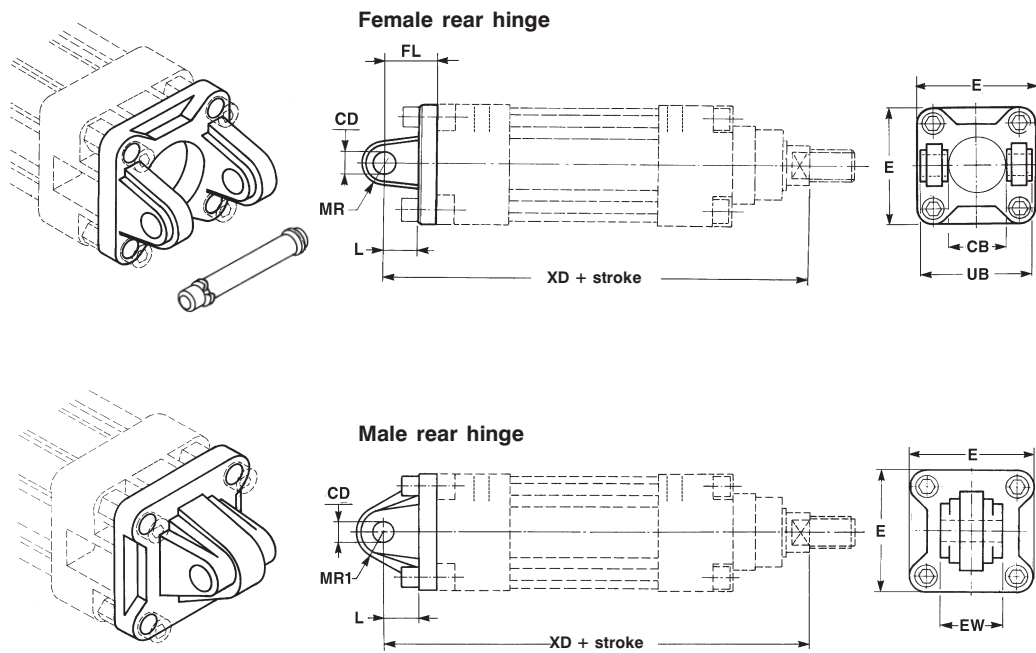
- M** = magnetic version upon request for K series

SERIES

- K** = pneumatic cylinders ISO 6431 and VDMA 24562 standard
- KD** = pneumatic cylinders ISO 6431 and VDMA 24562 magnetic version standard



Hinge (female) in die-cast aluminium ISO MP2 with pin, MP4 (male) without pin



Cyl. Ø	Part number	Mass kg
32	KF-10032A	0,06
40	KF-10040A	0,08
50	KF-10050A	0,15
63	KF-10063A	0,25
80	KF-10080A	0,36
100	KF-10100A	0,6
125	KF-10125A	1,8
160	KF-10160A	2,4
200	KF-10200A	3,5

Cyl. Ø	Part number	Mass kg
32	KF-11032	0,08
40	KF-11040	0,1
50	KF-11050	0,17
63	KF-11063	0,25
80	KF-11080	0,42
100	KF-11100	0,66
125	KF-11125	1,5
160	KF-11160	2,3
200	KF-11200	3,5

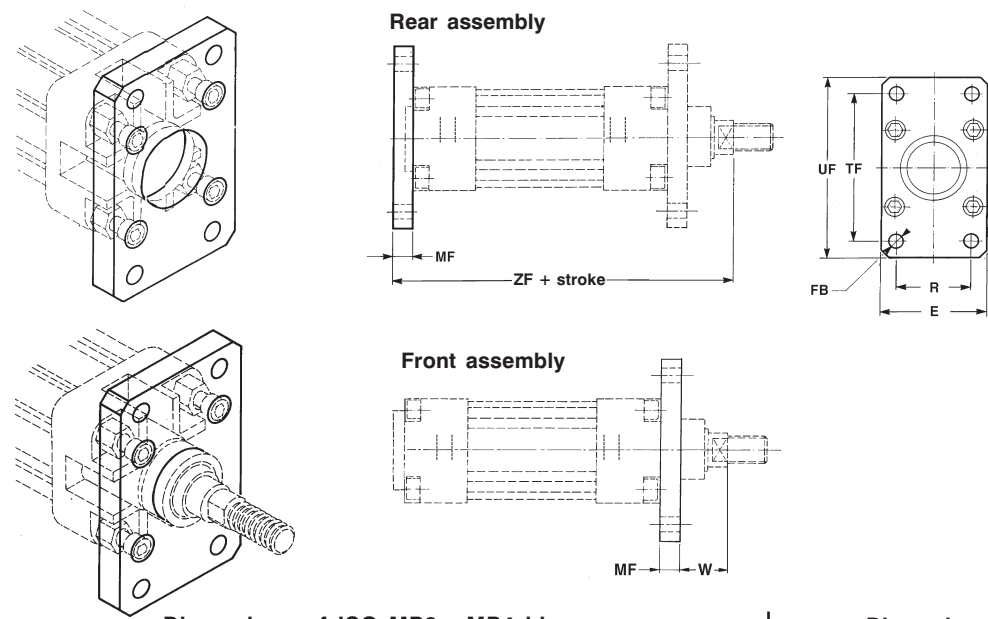
Pin see page 18-I.

Fixing screws see page 18



6431
VDMA
24562

Front/rear flange in zinc-plated steel, ISO MF1-MF2 (VDMA standard upon request)



Cyl. Ø	Part number	Mass kg
32	KF-12032	0,2
40	KF-12040	0,25
50	KF-12050	0,5
63	KF-12063	0,65
80	KF-12080	1,5
100	KF-12100	2,2
125	KF-12125	4,1
160	KF-12160	7
200	KF-12200	12,4

Dimensions of ISO MP2 - MP4 hinge

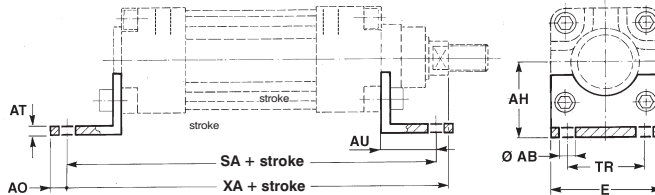
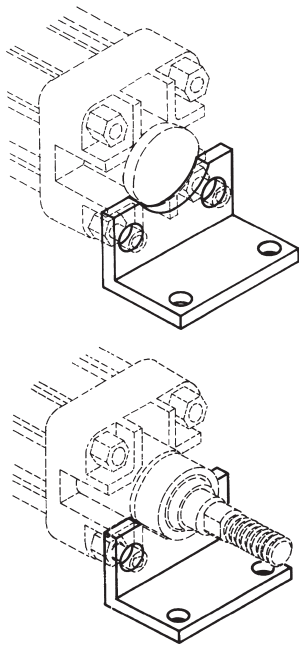
Dimensions of ISO MF1-MF2 flange

Cyl. Ø	CB H14	CD H9	E	EW		FL ±0,2	L (min)	MR (max)	MR1*	UB h14	XD		E	FB H13	MF ±0,2	R JS14	TF JS14	UF	W		ZF	
				Nom.	Tol.						Nom.	Tol.							Nom.	Tol.	Nom.	Tol.
32	26	10	48	26		22	12	11	15*	45	142	±1,25	45	7	10	32	64	80	16	±1,6	130	±1,25
40	28	12	54	28		25	15	13	18*	52	160	±1,25	52	9	10	36	72	90	20	±1,6	145	±1,25
50	32	12	65	32	-0,2	27	15	13	20*	60	170	±1,25	65	9	12	45	90	110	25	±1,6	155	±1,25
63	40	16	75	40	-0,6	32	20	17	23*	70	190	±1,6	75	9	12	50	100	120	25	±2	170	±1,6
80	50	16	95	50		36	20	17	27*	90	210	±1,6	95	12	16	63	126	150	30	±2	190	±1,6
100	60	20	115	60		41	25	21	29,5*	110	230	±1,6	115	14	16	75	150	170	35	±2	205	±1,6
125	70	25	140	70	-0,5	50	30	26	26	130	275	±2	140	16	20	90	180	205	45	±2,5	245	±2
160	90	30	180	90	-1,2	55	35	31	30*	170	315	±2	180	18	20	115	230	260	60	±2,5	280	±2
200	90	30	220	90		60	35	31	30*	170	335	±2	220	22	25	135	270	300	70	±2,5	300	±2

* Non-standard dimension

Angle bracket in zinc-plated steel ISO MS1

Fixing screws see page 18

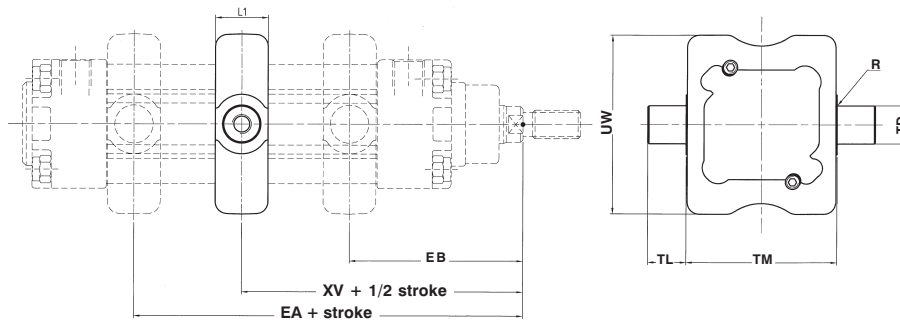


Cyl. Ø	Part number	Mass kg
32	KF-13032	0,2
40	KF-13040	0,25
50	KF-13050	0,5
63	KF-13063	0,65
80	KF-13080	1,5
100	KF-13100	2,2
125	KF-13125	4,1
160	KF-13160	7
200	KF-13200	12,4



6431
VDMA
24562

Intermediate hinge ISO MT4 with fixing grub screws
only for "K" cylinders
(bores 160/200 assembled on tie-rods)



Cyl. Ø	Part number	Mass kg
32	KF-14032	0,13
40	KF-14040	0,24
50	KF-14050	0,32
63	KF-14063	0,61
80	KF-14080	0,93
100	KF-14100	1,6
125	KF-14125	2,2
160	KF-14160	4,3
200	KF-14200	7,5

NOTE: the dimension XV + 1/2 stroke indicates the position of the hinge between the end-caps of the cylinder.

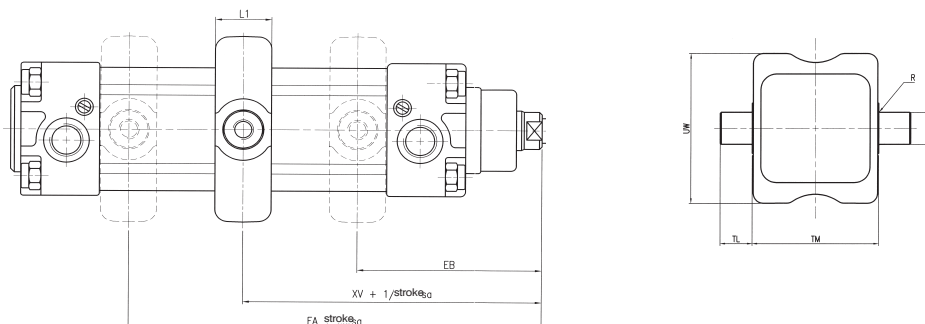
Dimensions of ISO MS1 angle bracket

Dimensions of ISO MT4 hinge for K series

Cyl. Ø	AB H13	AH JS15	AO	AT	AU ±0,2	E	SA		TR JS14	XA		EA (max)	EB (min)	I1 (max)	R (max)	TD e9	TL h14	TM h14	UW (max)	XV	
							Nom.	Tol.		Nom.	Tol.									Nom.	Tol.
							32	7		32	6									4	24
40	9*	36	8	4	28	52	161	±1,25	36	163	±1,25	94	71	20	1,5	16	16	63	59	82,5	±2
50	9*	45	10	5	32	64	170	±1,25	45	175	±1,25	102	78	20	1,6	16	16	75	71	90	±2
63	9*	50	12	5	32	74	185	±1,6	50	190	±1,6	108	87	26	1,6	20	20	90	84	97,5	±2
80	12	63	15	6	41	94	210	±1,6	63	215	±1,6	124	96	26	1,6	20	20	110	105	110	±2
100	14*	71	20	6	41	114	220	±1,6	75	230	±1,6	132	108	32	2	25	25	132	129	120	±2
125	16*	90	15	8	45	140	250	±2	90	270	±2	165	125	33	2	25	25	160	154	145	±2,5
160	18*	115	20	10	60	180	300	±2	115	320	±2	190	150	40	2,5	32	32	200	190	170	±2,5
200	22*	135	30	10	70	220	320	±2	135	345	±2	205	165	40	2,5	32	32	250	240	185	±2,5

* Non-standard dimension

**Intermediate hinge ISO MT4
with grub screws for cylinders KD series**



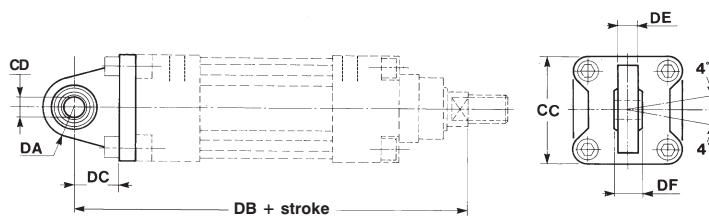
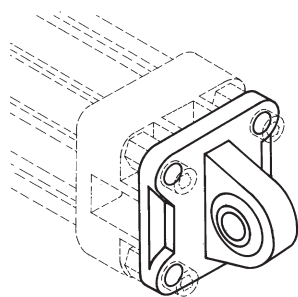
Dimensions ISO MT4 hinge for KD Series

Cyl. Ø	EA (max)	EB (min)	EI (max)	R (max)	TD (e9)	TL (h14)	TM (h14)	UW (max)	XV	
									Nom.	Tol.
32	82	64	22	0,5	12	12	50	65	73	±2
40	93	72	22	0,5	16	16	63	75	82,5	±2
50	101	79	22	1	16	16	75	95	90	±2
63	107	88	28	1	20	20	90	105	97,5	±2
80	123	97	28	1	20	20	110	130	110	±2
100	131	109	34	1	25	25	132	145	120	±2
125	164	126	34	1,5	25	25	160	175	145	±2,5

Cyl. Ø	Part number	Mass Kg
32	KDF-14032	0,12
40	KDF-14040	0,24
50	KDF-14050	0,32
63	KDF-14063	0,47
80	KDF-14080	0,80
100	KDF-14100	1,50
125	KDF-14125	1,92

Min. stroke of the cylinder: 10 mm
 XV+1/2 stroke: hinge between cylinder end-caps.

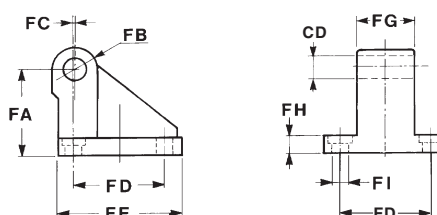
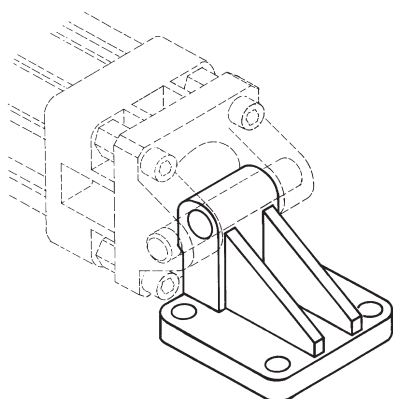
Articulated rear hinge in die-cast aluminum



Cyl. Ø	Part number	Mass kg
32	KF-11032S	0,1
40	KF-11040S	0,2
50	KF-11050S	0,3
63	KF-11063S	0,35
80	KF-11080S	1,6
100	KF-11100S	0,7

Counter-hinge 90° in die-cast aluminium

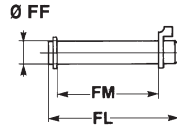
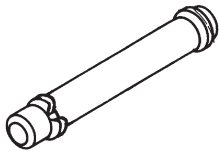
Fixing screws see page 18



Cyl. Ø	Part number	Mass kg
32	KF-19032	0,09
40	KF-19040	0,12
50	KF-19050	0,20
63	KF-19063	0,32
80	KF-19080	0,58
100	KF-19100	0,91



Pin in zinc-plated steel with 2 circlips



Cyl. Ø	Part number	Mass kg
32	KF-18032	0,03
40	KF-18040	0,05
50	KF-18050	0,05
63	KF-18063	0,12
80	KF-18080	0,15
100	KF-18100	0,29
125*	KF-18125	1,53
160*-200*	KF-18160	1

* Pin for part nos. KF10...

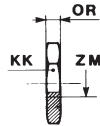
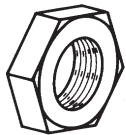
Dimension of articulated male hinge

Dimension of 90° counter-hinge

Dimension of pin

Cyl. Ø	Dimension of articulated male hinge							Dimension of 90° counter-hinge									Dimension of pin		
	CC	CD H9	DA	DB	DC	DE	DF	CD H9	FA	FB	FC	FD	FE	FG	FH	FI	FF f8	FL	FM
32	48	10	15	142	14	10,5	14	10	32	10	1,2	32,5	49	26	10	6,4	10	53	46
40	54	12	18	160	16,5	12	16	12	36	12	2,6	38	55	28	10	6,4	12	61,3	53
50	65	12	20	170	17,5	12	16	12	45	12	0,3	46,5	67	32	12	8,4	12	69	61
63	75	16	21	190	21,5	15	21	16	50	16	3,3	56,5	73	40	12	8,4	16	80,5	71
80	95	16	27	210	24	15	21	16	63	16	1,0	72	97	50	14	10,5	16	100,5	91
100	115	20	29,5	230	28	18	25	20	73	20	2,5	89	115	60	16	10,5	20	122,5	111
125																	25	140	131
160																	30	205	171
200																	30	205	171

Piston rod locknut (zinc-plated steel)



Cyl. Ø	ZM	KK	OR	Part number
32	M10 x 1,25	17	6	KF - 16032
40	M12 x 1,25	19	7	KF - 16040
50 ÷ 63	M16 x 1,5	24	8	KF - 16050
80 ÷ 100	M20 x 1,5	30	9	KF - 16080
125	M27 x 2	41	12	KF - 16125
160 ÷ 200	M36 x 2	55	14	KF - 16160

Fixing screws for accessories

Cylindrical screw UNI 5931
Part n. AZ4-VN... suitable for
mounting elements
series KF-10.../ KF-11...
KF-11...S

Cylindrical screw UNI 5931 and
DIN 7984 Part n. AZ4-VN.../AZ4-
VPA... suitable for mounting
elements series KF-19...

Cylindrical screw UNI 5931
Part n. AZ4-VN... suitable
for mounting elements
Series KF-12.../KF-13...

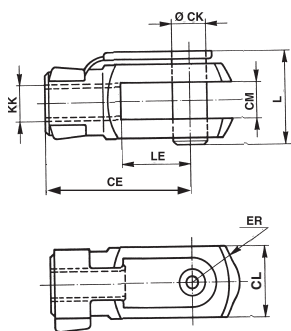
Cyl. Ø	Screw	Part number
32-40	M6 x 18	AZ4-VN0618
50-63	M8 x 22	AZ4-VN0822
80-100	M10 x 25	AZ4-VN1025
125	M12 x 35	AZ4-VN1235

Cyl. Ø	Screw 2 pcs. each type	Part number
32-40	M6 x 14	AZ4-VN0614
	M6 x 18	AZ4-VN0618
50-63	M8 x 16	AZ4-VPA0816
	M8 x 22	AZ4-VPA0822
80-100	M10 x 20	AZ4-VPA1020
	M10 x 25	AZ4-VPA1025

Cyl. Ø	Screw	Part number
32-40	M6 x 14	AZ4-VN0614
50-63	M8 x 16	AZ4-VN0816
80-100	M10 x 20	AZ4-VN1020
125	M12 x 25	AZ4-VN1225

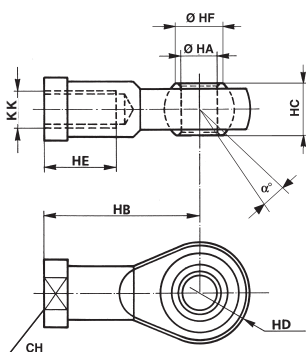


Female fork with clips in zinc-plated steel for piston rod according to ISO 8140 standard with pin



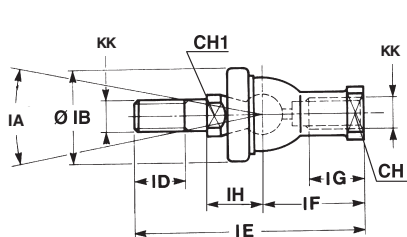
Cyl. Ø	CE	CK	CL	CM B12 B12	ER	KK	L	LE	Mass kg	Part number
32	40	10	20	10	16	M10 x 1,25	26	20	0,09	KF - 15032
40	48	12	24	12	19	M12 x 1,25	32	24	0,015	KF - 15040
50-63	64	16	32	16	25	M16 x 1,5	40	32	0,34	KF - 15050
80-100	80	20	40	20	32	M20 x 1,5	50	40	0,67	KF - 15080
125	110	30	55	30	45	M27 x 2	65	54	1,79	KF - 15125
160-200	144	35	70	35	57	M36 x 2	81	72	3,87	KF - 15160

Articulated self-lubricating fork in zinc plated steel



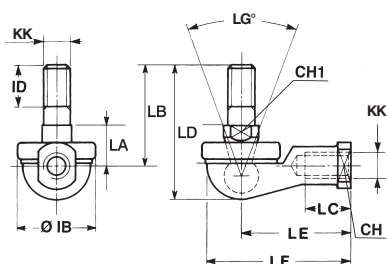
Cyl. Ø	a	CH	KK	HA	HB	HC	HD	HE	HF	Mass kg	Part number
32	13°	17	M10 x 1,25	10	43	14	14	20	12,9	0,076	KF - 17032
40	13°	19	M12 x 1,25	12	50	16	16	22	15,4	0,11	KF - 17040
50-63	15°	22	M16 x 1,5	16	64	21	21	28	19,3	0,22	KF - 17050
80-100	14°	30	M20 x 1,5	20	77	25	25	33	24,3	0,4	KF - 17080

Fork with axially mounted articulated pin



Cyl. Ø	CH	CH1	IA	KK	IH	IB	ID	IE	IF	IG	Mass kg	Part number
32	17	11	30°	M10 x 1,25	±0,3	32	15	74,5	35	18	0,12	KF - 22025
40	19	17	30°	M12 x 1,25	22	36	17	84	40	20	0,185	KF - 22040
50-63	22	19	22°	M16 x 1,5	27,5	47	23	112	50	27	0,36	KF - 22050
80-100	30	24	15°	M20 x 1,5	31,5	58	25	133	63	38	0,57	KF - 22080

Fork with angle-mounted articulated pin



Cyl. Ø	CH	CH1	LG	KK	IB	ID	LA ±0,3	LB	LC	LD	LE	LF	Mass kg	Part number
32	17	11	50°	M10 x 1,25	32	15	17	37	21	50,5	43	57	0,11	KF - 23025
40	19	17	50°	M12 x 1,25	36	17	19	42	27	57,5	50	66	0,165	KF - 23040
50-63	22	19	40°	M16 x 1,5	47	23	23,5	60	33	79,5	64	84	0,33	KF - 23050
80-100	30	24	32°	M20 x 1,5	58	25	27	68	40	90	77	99	0,54	KF - 23080

The UNIVER rotary actuator incorporates several technology features which provide a higher degree of accuracy and reliability. The robust mechanical design expands application possibilities within modern day automation.

TECHNICAL CHARACTERISTICS

Working pressure: 1,5 ÷ 10 bar
Ambient temperature: -20° ÷ +80°C
Fluid: filtered air with or without lubrication
Cylinder barrel: aluminium extrusion, internally and externally anodized
15 - 18 microns
Rack backlash recovery
Rotating pinion supported by ball bearings



Theoretical torque at 1 bar

Multiply the value in the table by the operating pressure

Cyl. \varnothing	32	40	50	63	80	100	125
M: (Nm)	1,2	2,25	3,9	7,3	15,7	26,5	51

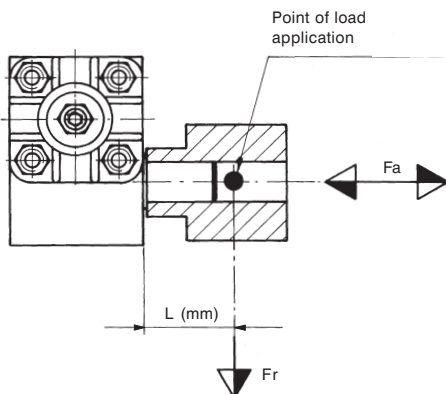
Maximum kinetic energy absorbable by cushioning

The adjustment of the rotation angle reduces the effect of cushioning (R12 - R14)

Cyl. \varnothing	32	40	50	63	80	100	125
E_c (Nm)	1,8	2,5	4,5	8	12	21	36

Magnetic sensor DH- Series (Section accessories see page 2).

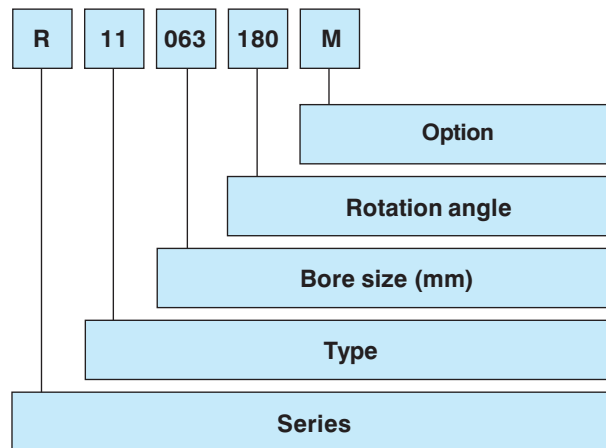
Static loads acceptable for the pinion



F_a = Axial loads max (N) with $F_r = 0$

Cyl. \varnothing	32	40	50	63	80	100	125
F_a	100	100	120	120	200	250	300

Codification Key



TYPES

- 11 Male pinion without adjustment (positional accuracy $\pm 3^\circ$)
- 12 Male pinion with adjustment $\pm 5^\circ$
- 13 Female pinion without adjustment (positional accuracy $\pm 3^\circ$)
- 14 Female pinion with adjustment $\pm 5^\circ$

BORE

032 - 040 - 050 - 063 - 080 - 100 - 125 mm

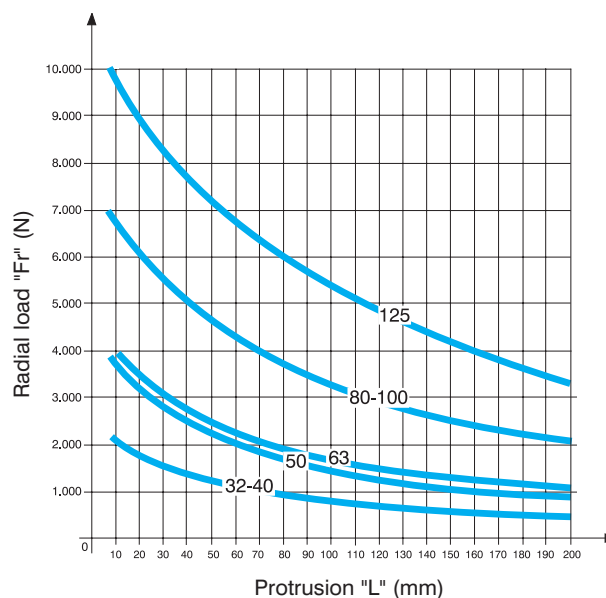
ROTATION ANGLE

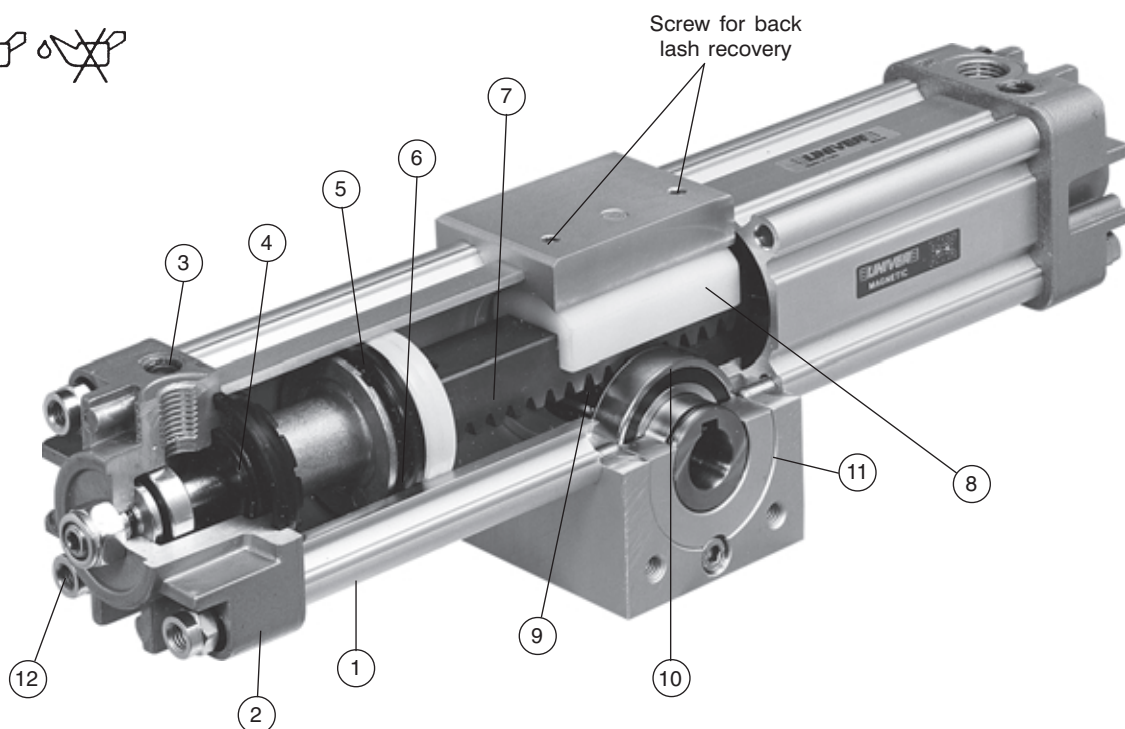
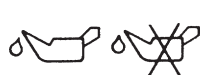
90° - 180° - 270° - 360°

OPTION

M = Magnetic version

F_r = Radial loads max (N) with $F_a=0$ based on L protrusion





Construction details

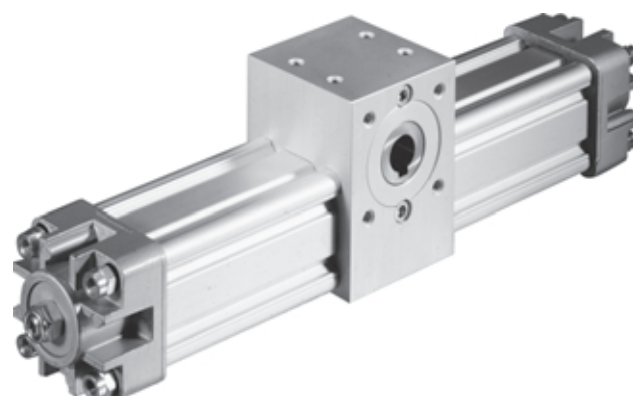
- ① Cylinder barrel in extruded aluminium alloy with ribbed design for rigidity and without stagnation points. Internally and externally anodized up to 18 micron.
- ② Light aluminium alloy die-cast end-caps are fixed to the body by means of tie rods and bushings.
- ③ Pneumatic adjustable cushioning provides an efficient piston deceleration.
- ④ Mechanical barrel/end-cap seal.
- ⑤ Aluminium alloy articulated piston and acetalic-resin slide with permanent plastoferrite magnetic ring (upon request).
- ⑥ Piston seals and cushions are made of a wear resistant nitrilic rubber compound, suitable for applications with or without lubrication, the double lip shape allows the constant wear recovery.
- ⑦ Square rack made of stainless steel reduces backlash in the mechanism.
- ⑧ Rack guiding slide with self adjusting backlash.
- ⑨ Pinion of nitrided steel.
- ⑩ Pinion supported by ball-race bearings (bronze/teflon bearing fitted to Ø 32 version).
- ⑪ Anodized aluminium body.
- ⑫ Rotation angle adjustment screw, with a rotation angle $\pm 5^\circ$ Series R12 - 14. (It is advisable not to make adjustments while the cylinder is under pressure)

Rotating cylinders with:

male pinion



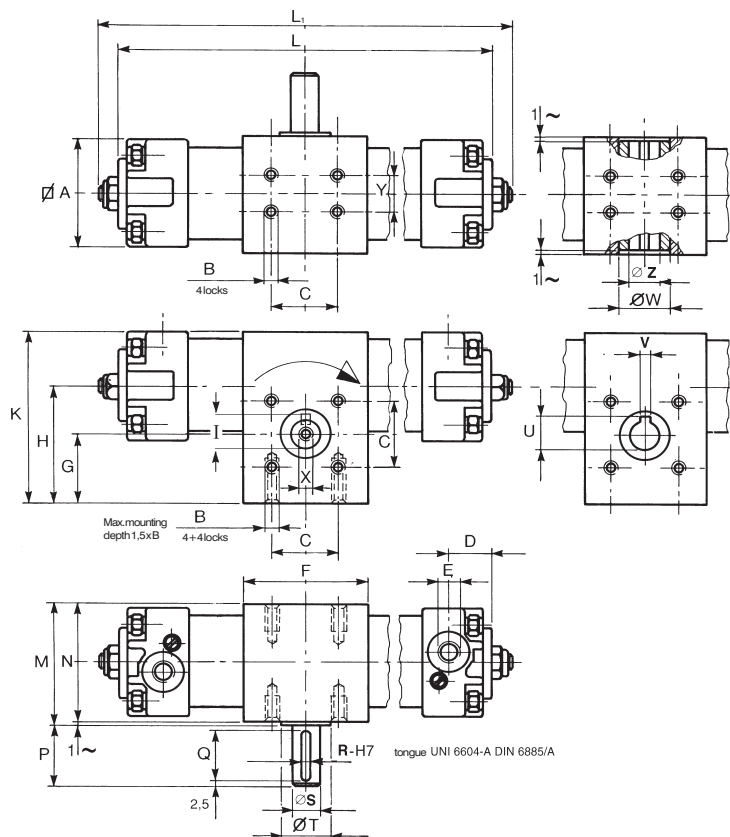
female pinion





Basic overall dimensions

Cyl. Ø	A	B	C	D	E	F	G	H	I	K	M	N	P	Q	R	S	T	U	V	W	X	Y	Z
			±0,1													g 6			M7			±0,1	H7
32	48	M6	33	18	G1/8	50	25	46,5	16	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	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	94	66	65	40	35	6	19	30	21,8	6	30	M6	25	19
63	78	M8	60	25,5	G3/8	75	37	70,8	27	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	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	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	188	141	140	50	45	10	38	60	31,3	8	60	M10	70	28



Overall dimensions L-L₁ and weights with standard rotations

L₁ : overall dimensions with stroke regulation (R12 - R14)

L : overall dimensions without stroke regulation (R11 - R13)

Cyl. Ø	Rotation 90°				Rotation 180°				Rotation 270°				Rotation 360°			
	L ₁	L	Mass (kg)		L ₁	L	Mass (kg)		L ₁	L	Mass (kg)		L ₁	L	Mass (kg)	
			Male pinion	Female pinion			Male pinion	Female pinion			Male pinion	Female pinion			Male pinion	Female pinion
32	234	206	1,300	1,200	282	254	1,420	1,320	330	302	1,540	1,440	378	348	1,660	1,560
40	278	246	2,010	1,900	336	304	2,210	2,900	394	360	2,390	2,280	450	418	2,580	2,470
50	308	268	3,070	2,840	372	332	3,340	3,110	436	394	3,610	3,380	498	458	3,880	3,650
63	356	310	4,990	4,640	432	386	5,500	5,170	508	460	6,010	5,700	582	536	6,520	6,230
80	426	376	9,840	9,220	526	476	10,840	10,230	626	574	11,840	11,240	726	674	12,840	12,250
100	456	404	13,650	12,680	564	512	14,860	13,870	672	618	16,070	15,060	778	726	17,280	16,250
125	520	474	23,370	22,220	654	606	25,720	24,520	786	738	28,070	26,820	918	870	30,420	29,120

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.

Cylinders Ø	32	40	50	63	80	100	125
Reduction mm	0,262	0,315	0,350	0,415	0,550	0,594	0,733

The left-hand piston housing maintains standard dimensions $\left(\frac{L}{2}, \frac{L_1}{2}\right)$

Cylinders Ø 16 ÷ 63 mm with compact overall dimensions in accordance with UNITOP recommendations (RP/RO series) and with ISO inter-axes (RM/RN series) are available also in non-rotating version and with extended piston. This product, **the first one realized with adjustable pneumatic cushioning without chngement of dimensions in comparison with an equivalent cylinder without cushioning**, allows a considerably higher speed and reduces noise level.

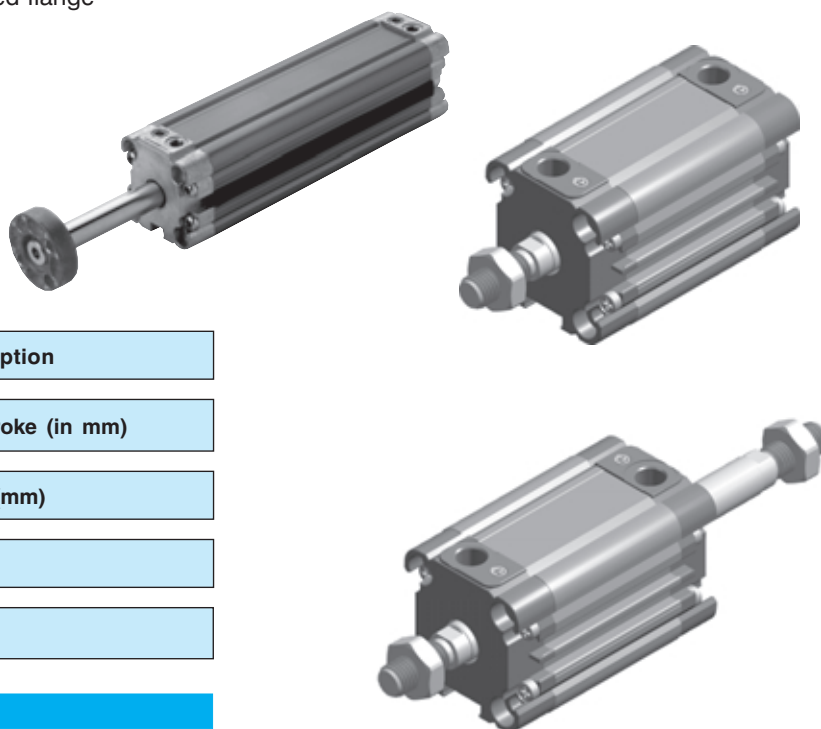
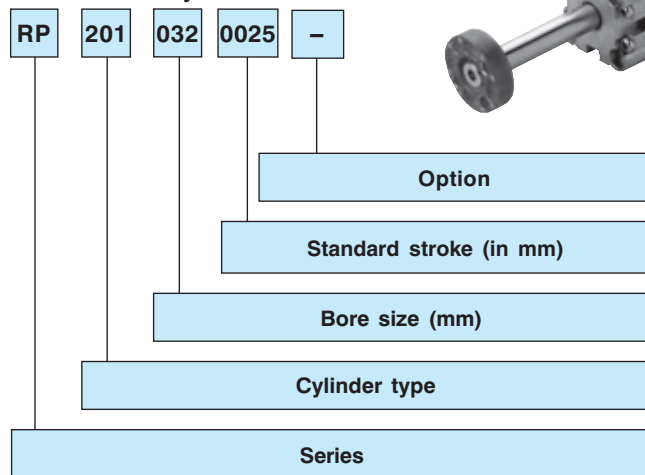
TECHNICAL CHARACTERISTICS

Working pressure: 1,5 ÷ 10 bar
Ambient temperature: -20 ÷ +80°C
Fluid: lubricated or non lubricated air
Barrel: extruded aluminium alloy with piston rod in chromium-plated steel or stainless steel
Magnetic version
The octagonal version with female piston rod is standard supplied with assembled flange
Max. speed: 1 m/s

Upon request

- Hollow piston rod only for through piston rod versions.
- Magnetic sensor DF-series (section accessories page 2)
- Wire protection strap for magnetic sensor, part n. DHF-002100.

Codification Key



SERIES

Round cylinder barrel

RP series – compact UNITOP RU – P/7 Ø 16 ÷ 63 mm

RM series – compact ISO 21287 Ø 16 ÷ 63 mm

Octagonal cylinder barrel

RO series – compact UNITOP RU - P/7 Ø 16 ÷ 63 mm

RN series – compact ISO 21287 Ø 16 ÷ 63 mm

TYPE

1... with female piston rod in stainless steel RP – RO series

2... with female piston rod in chromium-plated steel RP – RO series

-00 D.A.

-01 D.A. through rod

-10 D.A. non-rotating rod (only RP series)

-11 D.A. non-rotating through rod (only RP series)

-20 D.A. extended piston (32 ÷ 63 mm)

-60 S.A. retracted rod (only RP series)

-70 S.A. extended rod (only RP series)

3... with male piston rod in stainless steel RM – RN series

4... with male piston rod in chromium-plated steel RM – RN series

-00 D.A.

-01 D.A. through rod

-20 D.A. extended piston (32 ÷ 63 mm)

-60 S.A. retracted rod (only RM series)

-70 S.A. extended rod (only RM series)

BORE

016 – 020 – 025 – 032 – 040 – 050 – 063 mm

STANDARD STROKE

Single acting

0005-0010 mm (16 ÷ 25 mm)

0015-0020-0025 mm (Ø 32 ÷ 63 mm)

Double acting

0005-0010-0015-0020-0025-0030-0040-0050-0060-0080 mm

Max. standard stroke

Ø 16 0040 mm

Ø 20-25 0050 mm

Ø 32-63 0080 mm

Max. stroke with guided piston rod (upon request)

Ø 16 0100 mm

Ø 20-25 0200 mm

Ø 32-40 0400 mm

Ø 50-63 0500 mm

OPTION

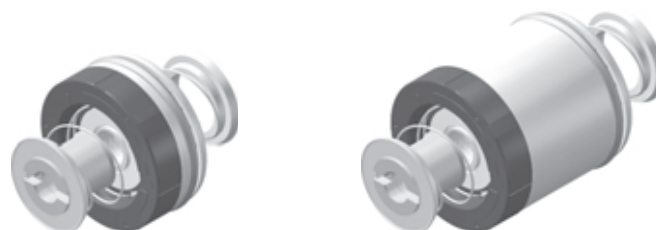
C = with flange for RP series versions 200/201/260/270 and 100/101/160/170

H = hollow rod only for versions with through rod, without flange

Construction details

- Barrel in extruded aluminium alloy, externally and internally anodized 15 μm , plain profile, for flush-mounted sensors
- Die-cast end-caps in zamac ($\varnothing 16 \div 25 \text{ mm}$); in aluminium alloy ($\varnothing 32 \div 63 \text{ mm}$)
- Self-tapping screws in zinc-plated steel
- Chromium-plated steel rod
- Stainless steel rod
- Piston in aluminium
- Acetal resin slide
- Piston seals in nitrile rubber
- Rod seals in polyurethane
- Piston in aluminium D.A.

- Extended piston D.A. for supporting a higher radial load ($\varnothing 32 \div 63 \text{ mm}$)



Nominal tolerances on stroke

Cyl. \varnothing	Tolerance mm
16 \div 25	+ 1,5/0
32 \div 50	+ 2/0
63	+ 2,5/0

- Adjustable pneumatic cushioning for efficient deceleration of the piston and reduced noise level.
- Cushioning length 8 mm ($\varnothing 16 \div 25 \text{ mm}$); 10 mm ($\varnothing 32 \div 63 \text{ mm}$).

Theoretical forces [N] developed at the working pressure [bar]

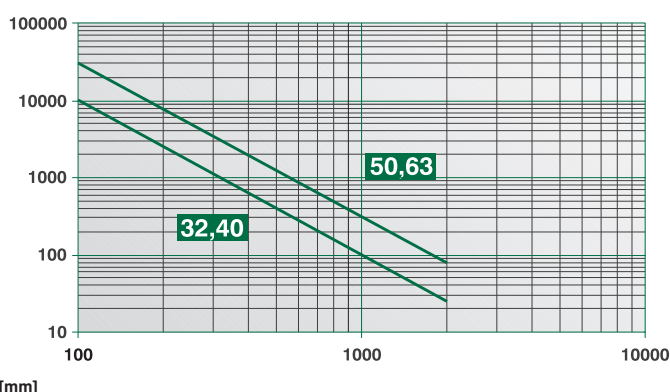
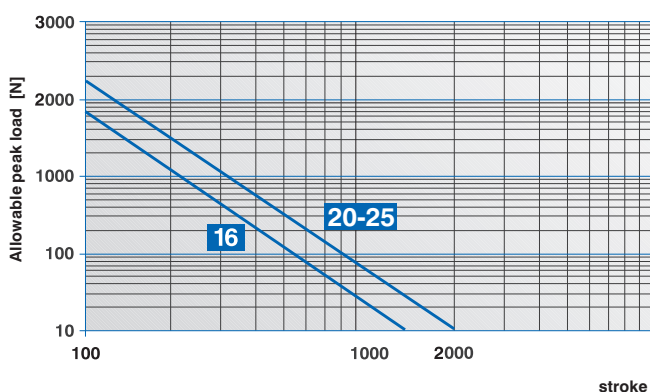
Cyl. \varnothing	Working area [mm ²]	Working pressure [bar]					
		2	4	6	8	10	
16	Thrust	201	40	80	121	161	201
	traction	151	30	60	91	121	151
20	Thrust	314	63	126	188	251	314
	traction	236	47	94	142	189	236
25	Thrust	491	98	196	295	393	491
	traction	412	82	165	247	330	412
32	Thrust	804	161	322	482	643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

Max. applicable torque [Nm] for RO/RN series with non-rotating rod

Cyl. \varnothing	Torque [Nm]
16	0,5
20	0,8
25	1
32	2
40	3
50	5
63	8

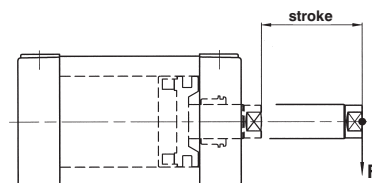
In case of pneumatic cylinders with through rod, the theoretical force to be considered, in both directions, is always equal to the “traction” value indicated in the table.

For practical purposes these values should be reduced taking into account the weight and sliding friction of the mobile equipment (~ -10%).

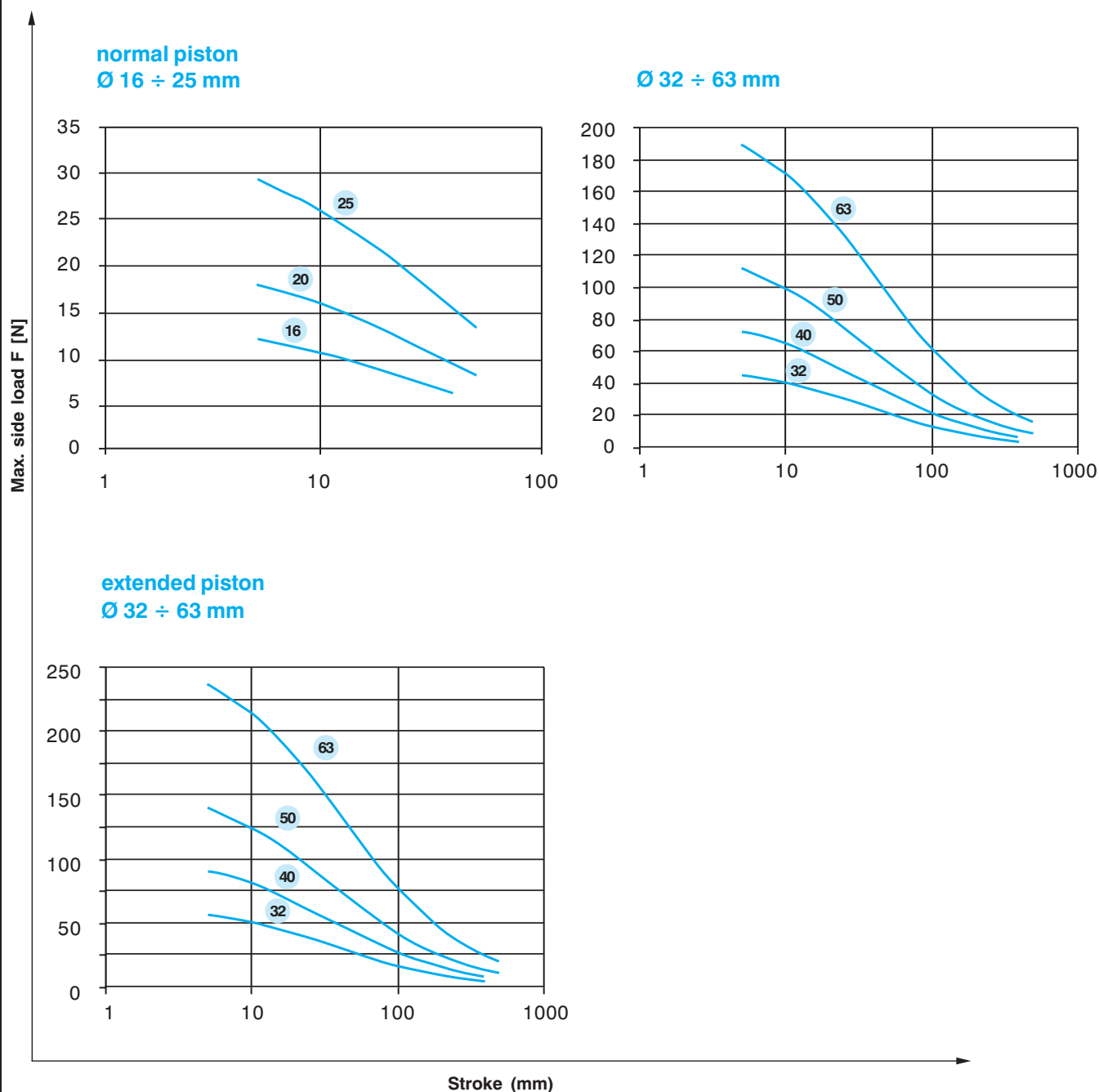


Theoretical forces of spring traction for single-acting cylinder types ___260___/___270___

Cyl. Ø	Max. force (N)	Min. force (N)	Max. stroke (mm)	Decrease per mm stroke (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



Graph side load on piston rod

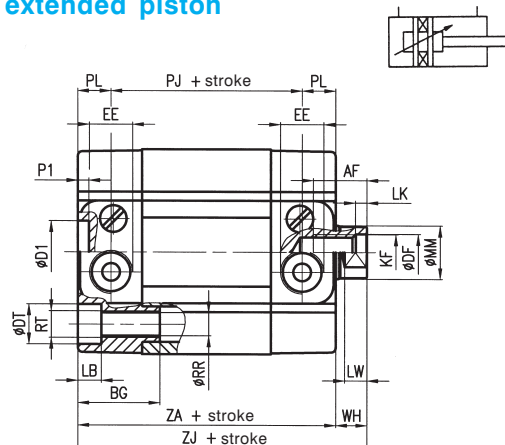
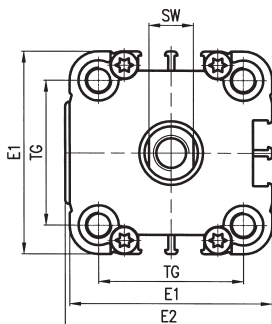
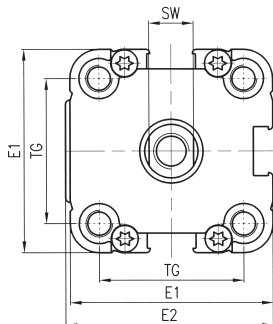




Double-acting cylinder RP 200... / RP 220...* series with extended piston

Ø 16 ÷ 25 mm

Ø 32 ÷ 63 mm



Mass RP 200...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
16	103	1,05	15,5	0,39
20	135	1,45	24,5	0,62
25	203	1,65	34,5	0,62

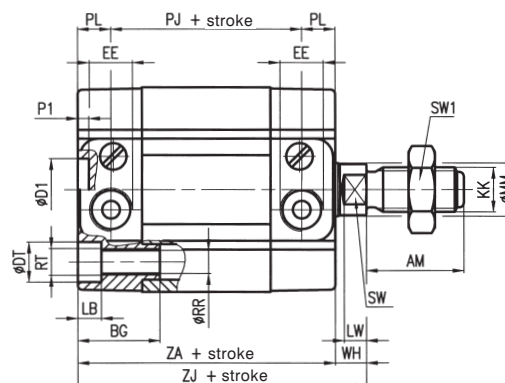
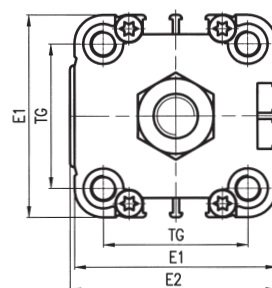
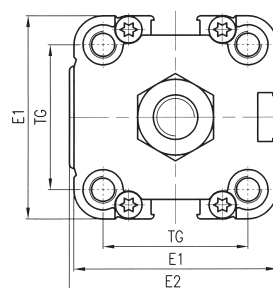
Mass RP 200.../RP 220...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
32	205/291,5	2,65	60/115,5	0,9
40	305/426	3,3	75/148	0,9
50	450/676,5	4,7	125/274	1,6
63	735/1063,5	5,65	200/427	1,6

Double-acting cylinder male piston rod RM 400.../RM 420...* series with extended piston

Ø 16 ÷ 25 mm

Ø 32 ÷ 63 mm



Mass RM 400...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
16	115	1,05	27,5	0,39
20	157	1,45	46,5	0,62
25	225	1,65	56,5	0,62

Mass RM 400.../RM 420...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
32	240/326,5	2,65	95/146,5	0,9
40	340/461	3,3	110/183	0,9
50	505/731,5	4,7	180/329	1,6
63	790/1198,5	5,65	255/482	1,6

▲ Only for RM series: dimensional variants for end-caps with ISO inter-axes: Ø 40 - 38 mm / Ø 50 - 46,5 mm / Ø 63 - 56,5 mm

Cyl. Ø	AF	AM	BG	ØD1 H11	Ø DF	Ø DT	E1	E2	EE	KF	KK	LB	LK	LW	Ø MM	P1	PJ	PL	Ø RR	RT	SW	SW1	TG	WH	ZA	ZJ
16	8	12	16	2	4,1	5,8	28	30	M5	M4	M6x1	3,2	1	4,5	8	2	21	8	3,2	M4	7	10	18	5	37	42
20	10	16	16	2	6,1	7,3	32	34	M5	M6	M8x1,25	4,2	1	4,5	10	2	21	8	4,2	M5	8	13	22	6	37	43
25	10	16	16	2	6,1	8	37	39	M5	M6	M8x1,25	4,5	1	4,5	10	2	23	8	4,2	M5	8	13	26	6	39	45
32	12	19	18	14	8,2	9	46	47	G1/8	M8	M10x1,25	5,3	2	5	12	2,5	29	7,5	5,2	M6	10	17	32,5	7	44	51
40	12	19	18	14	8,2	9	56	57	G1/8	M8	M10x1,25	5,3	2	5	12	2,5	30	7,5	5,2	M6	10	17	42	7	45	52
50	16	22	24	18	10,2	11	66	67	G1/8	M10	M12x1,25	6,5	2	6	16	2,5	30	7,5	6,5	M8	13	19	50	8	45	53
63	16	22	24	18	10,2	11	79	80	G1/8	M10	M12x1,25	6,5	2	6	16	2,5	34	7,5	6,5	M8	13	19	62	8	49	57

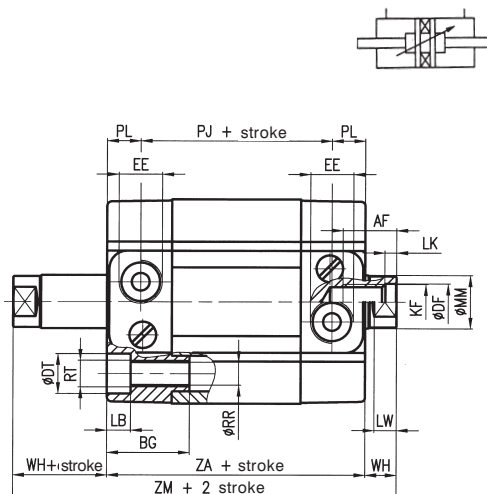
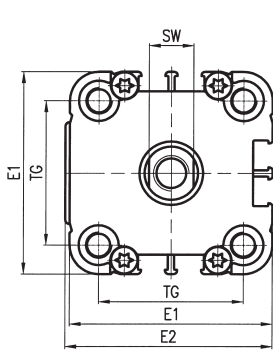
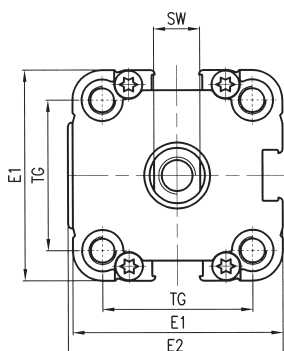
* For cylinder types with extended piston, dimensions PJ, ZA and ZJ will be increased by 20 mm (Ø 32-40 mm), and 25 mm (Ø 50-63 mm).



Double-acting cylinder, through rod RP 201 series

Ø 16 ÷ 25 mm

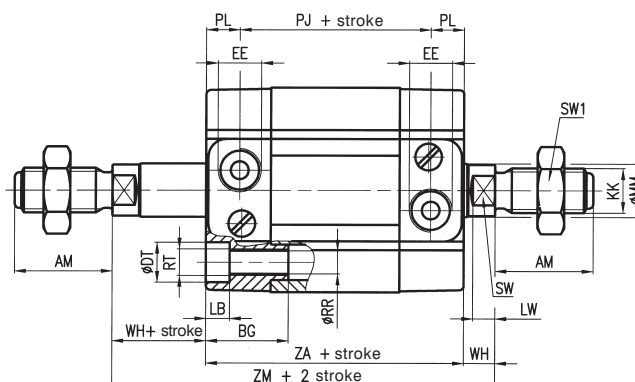
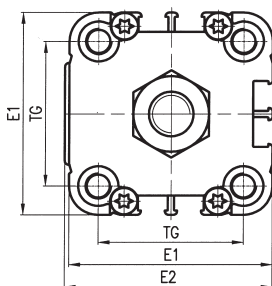
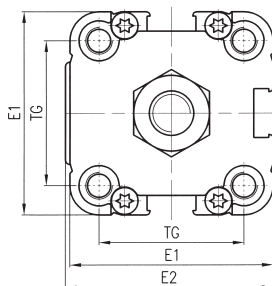
Ø 32 ÷ 63 mm



Double-acting cylinder with male through piston rod RP 401 series

Ø 16 ÷ 25 mm

Ø 32 ÷ 63 mm



Series RP 201...

For version with hollow through piston rod, variant H in codification key:

Cyl. Ø	Hole mm
16	3,2
20-25	3,8
32-40	4,5
50-63	6

Mass RP 201...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
16	105	1,45	17,5	0,78
20	138	2,07	24,8	1,24
25	206	2,27	34,8	1,24
32	230	3,55	85	1,8
40	325	4,2	100	1,8
50	490	6,3	165	3,2
63	775	7,25	245	3,2

Mass RM 401...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
16	129	1,45	41,5	0,78
20	182	2,07	68,8	1,24
25	250	2,27	78,8	1,24
32	290	3,55	125	1,8
40	390	4,2	140	1,8
50	570	6,3	225	3,2
63	855	7,25	300	3,2

▲ Only for RM series: dimensional variants for end-caps with ISO inter-axes: Ø 40 - 38 mm / Ø 50 - 46,5 mm / Ø 63 - 56,5 mm

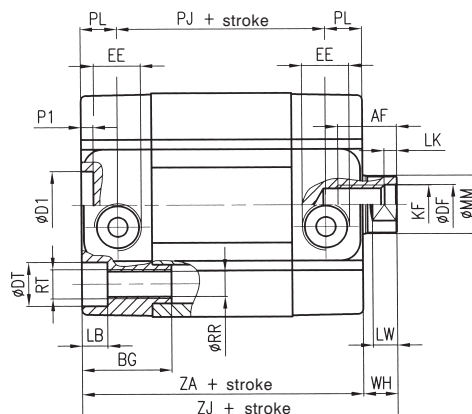
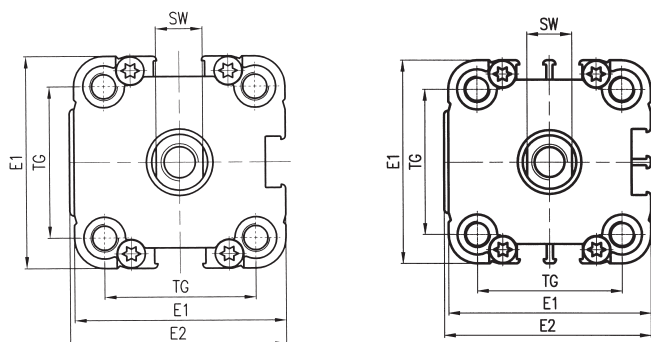
Cyl. Ø	AF	AM	BG	Ø DF	Ø DT	E1	E2	EE	KF	KK	LB	LK	LW	Ø MM	PJ	PL	Ø RR	RT	SW	SW1	TG	WH	ZA	ZM
16	8	12	16	4,1	5,8	28	30	M5	M4	M6X1	3,2	1	4,5	8	21	8	3,2	M4	7	10	18	5	37	47
20	10	16	16	4,1	7,3	32	34	M5	M6	M8X1,25	4,2	1	4,5	10	21	8	4,2	M5	8	13	22	6	37	49
25	10	16	16	4,1	8	37	39	M5	M6	M8X1,25	4,5	1	4,5	10	23	8	4,2	M5	8	13	26	6	39	51
32	12	19	18	8,2	9	46	47	G1/8	M8	M10x1,25	5,3	2	5	12	29	7,5	5,2	M6	10	17	32,5	7	44	58
40	12	19	18	8,2	9	56	57	G1/8	M8	M10x1,25	5,3	2	5	12	30	7,5	5,2	M6	10	17	42	7	45	59
50	16	22	24	10,2	11	66	67	G1/8	M10	M12x1,25	6,5	2	6	16	30	7,5	6,6	M8	13	19	50	8	45	61
63	16	22	24	10,2	11	79	80	G1/8	M10	M12x1,25	6,5	2	6	16	35	7,5	6,6	M8	13	19	62	8	50	66



Single-acting cylinder with retracted piston rod RP 260 ... series

Ø 16 ÷ 25 mm

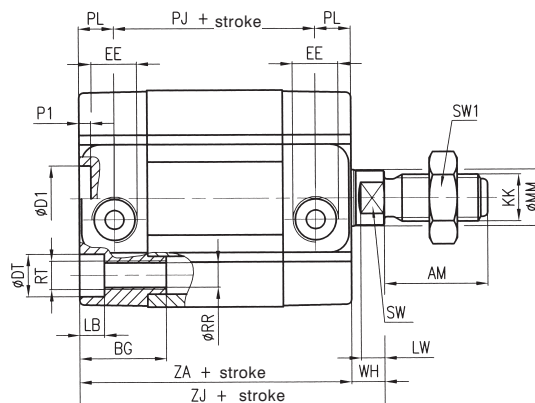
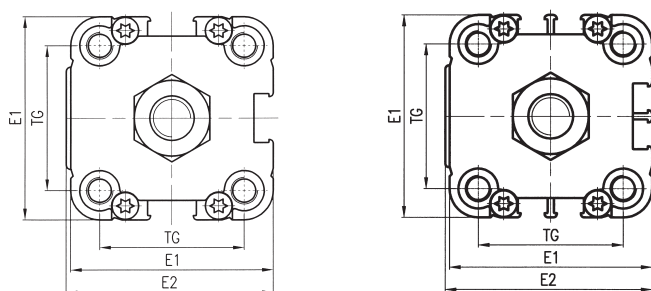
Ø 32 ÷ 63 mm



Single-acting cylinder with retracted male piston rod RP 460 ... series

Ø 16 ÷ 25 mm

Ø 32 ÷ 63 mm



Mass RP 260...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
16	103	1,05	15,5	0,39
20	135	1,45	24,5	0,62
25	203	1,65	34,5	0,62
32	215	2,65	63	0,9
40	315	3,3	81	0,9
50	468	4,7	137	1,6
63	753	5,65	212	1,6

Mass RM 460...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
16	115	1,05	27,5	0,39
20	157	1,45	46,5	0,62
25	225	1,65	56,5	0,62
32	250	2,65	98	0,9
40	350	3,3	116	0,9
50	523	4,7	192	1,6
63	808	5,65	267	1,6

▲ Only for RM series: dimensional variants for end-caps with ISO inter-axes: Ø 40 - 38 mm / Ø 50 - 46,5 mm / Ø 63 - 56,5 mm

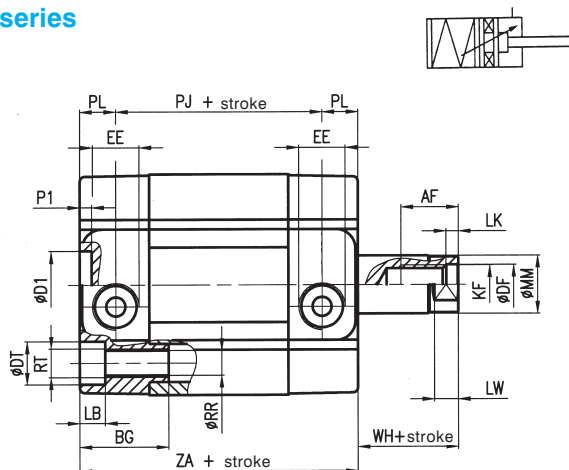
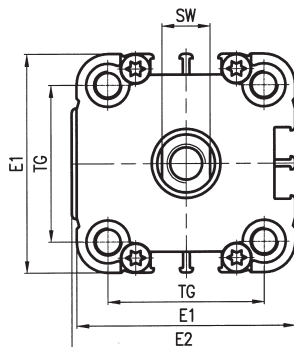
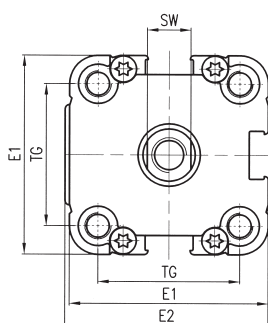
Cyl. Ø	AF	AM	BG	ø D1 D11	ø DF	ø DT	E1	E2	EE	KF	KK	LB	LK	LW	ø MM	P1	PJ	PL	ø RR	RT	SW	SW1	TG	WH	ZA	ZJ
16	8	12	16	2	4,1	5,8	28	30	M5	M4	M6X1	3,2	1	4,5	8	2	21	8	3,2	M4	7	10	18	5	37	42
20	10	16	16	2	6,1	7,3	32	34	M5	M6	M8X1,25	4,2	1	4,5	10	2	21	8	4,2	M5	8	13	22	6	37	43
25	10	16	16	2	6,1	8	37	39	M5	M6	M8X1,25	4,5	1	4,5	10	2	23	8	4,2	M5	8	13	26	6	39	45
32	12	19	18	14	8,2	9	46	47	G1/8	M8	M10x1,25	5,3	2	5	12	2,5	29	7,5	5,2	M6	10	17	32,5	7	44	51
40	12	19	18	14	8,2	9	56	57	G1/8	M8	M10x1,25	5,3	2	5	12	2,5	30	7,5	5,2	M6	10	17	42	7	45	52
50	16	22	24	18	10,2	11	66	67	G1/8	M10	M12x1,25	6,5	2	6	16	2,5	30	7,5	6,5	M8	13	19	50	8	45	53
63	16	22	24	18	10,2	11	79	80	G1/8	M10	M12x1,25	6,5	2	6	16	2,5	35	7,5	6,5	M8	13	19	62	8	50	58



Single-acting cylinder with extended piston rod RP 270 ... series

Ø 16 ÷ 25 mm

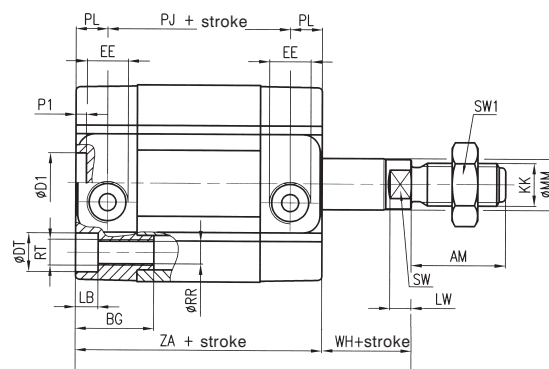
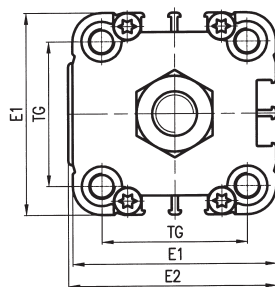
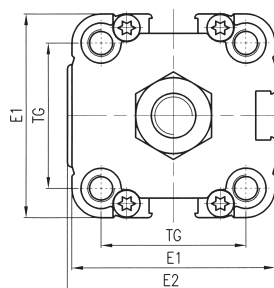
Ø 32 ÷ 63 mm



Single-acting cylinder with extended male piston rod RM 470 ... series

Ø 16 ÷ 25 mm

Ø 32 ÷ 63 mm



Mass RP 270...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
16	103	1,05	15,5	0,39
20	135	1,45	24,5	0,62
25	203	1,65	34,5	0,62
32	203	2,65	63	0,9
40	302	3,3	81	0,9
50	445	4,7	137	1,6
63	730	5,65	212	1,6

Mass RM 470...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
16	115	1,05	27,5	0,39
20	157	1,45	46,5	0,62
25	225	1,65	56,5	0,62
32	238	2,65	98	0,9
40	337	3,3	116	0,9
50	500	4,7	192	1,6
63	785	5,65	267	1,6

▲ Only for RM series: dimensional variants for end-caps with ISO inter-axes: Ø 40 - 38 mm / Ø 50 - 46,5 mm / Ø 63 - 56,5 mm

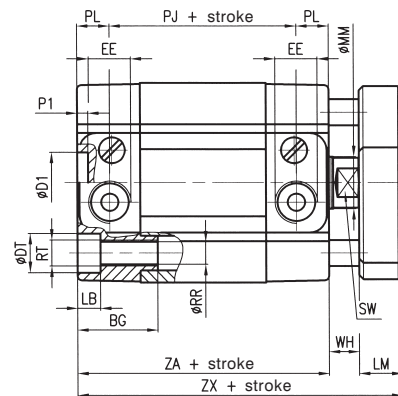
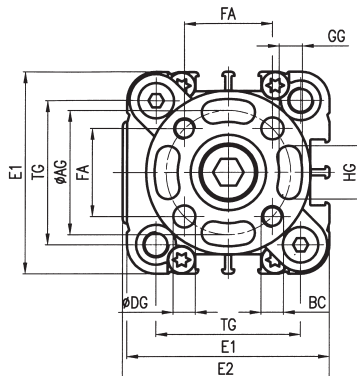
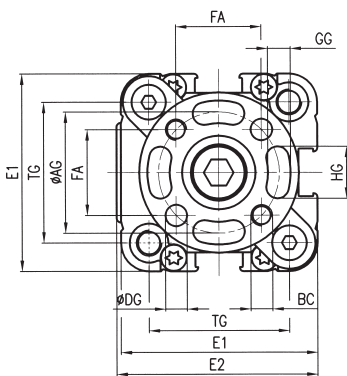
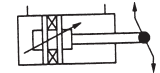
Cyl. Ø	AF	AM	BG	Ø D1 D11	Ø DF	Ø DT	E1	E2	EE	KF	KK	LB	LK	LW	Ø MM	P1	PJ	PL	Ø RR	RT	SW	SW1	TG	WH	ZA
16	8	12	16	2	4,1	5,8	28	30	M5	M4	M6X1	3,2	1	4,5	8	2	21	8	3,2	M4	7	10	18	5	37
20	10	16	16	2	6,1	7,3	32	34	M5	M6	M8X1,25	4,2	1	4,5	10	2	21	8	4,2	M5	8	13	22	6	37
25	10	16	16	2	6,1	8	37	39	M5	M6	M8X1,25	4,5	1	4,5	10	2	23	8	4,2	M5	8	13	26	6	39
32	12	19	18	14	8,2	9	46	47	G1/8	M8	M10x1,25	5,3	2	5	12	2,5	29	7,5	5,2	M6	10	17	32,5	7	44
40	12	19	18	14	8,2	9	56	57	G1/8	M8	M10x1,25	5,3	2	5	12	2,5	30	7,5	5,2	M6	10	17	42	7	45
50	16	22	24	18	10,2	11	66	67	G1/8	M10	M12x1,25	6,5	2	6	16	2,5	30	7,5	6,5	M8	13	19	50	8	45
63	16	22	24	18	10,2	11	79	80	G1/8	M10	M12x1,25	6,5	2	6	16	2,5	35	7,5	6,5	M8	13	19	62	8	50



Double-acting cylinder with non-rotating device RP 210 ... series

Ø 16 ÷ 25 mm

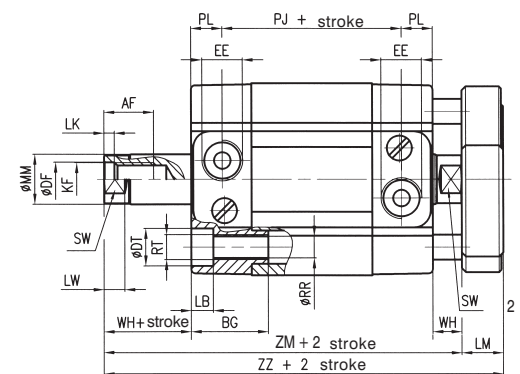
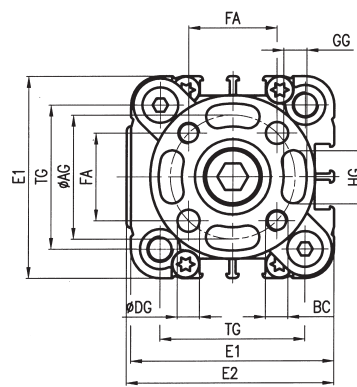
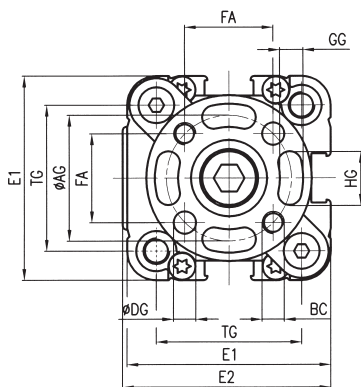
Ø 32 ÷ 63 mm



Double-acting cylinder, through rod with non-rotating device RP 211... series

Ø 16 ÷ 25 mm

Ø 32 ÷ 63 mm



Mass RP 210...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
16	122	1,25	34,5	0,59
20	165	1,75	54,5	0,93
25	240	1,95	71,5	0,93
32	245	3,09	100	1,34
40	372	4,1	142	1,7
50	545	5,5	220	2,4
63	875	6,89	340	2,84

Mass RP 211...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
16	124	1,64	36,7	0,98
20	168	2,37	57,5	1,55
25	243	2,57	74,5	1,55
32	270	3,99	125	2,24
40	392	5	167	2,6
50	585	7,1	260	4
63	915	8,49	385	4,44

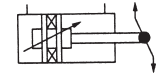
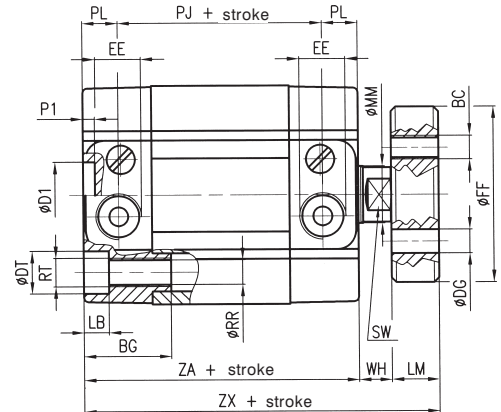
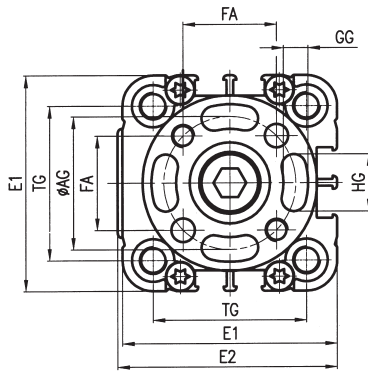
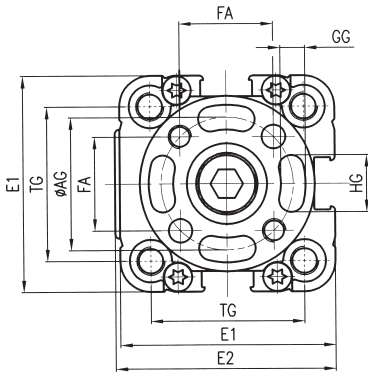
Cyl. Ø	AF	AG	BC	BG	Ø D1 D11	Ø DF	Ø DG	Ø DT	E1	E2	EE	FA	GG	HG	KF	LB	LM	LK	LW	Ø MM	P1	PJ	PL	RR	RT	SW	SW2	TG	WH	ZA	ZM	ZX	ZZ
16	8	14	M3	16	2	4,1	3	5,8	28	30	M5	9,9	3	5	M4	3,2	6	1	4,5	8	2	21	8	3,2	M4	7	-	18	5	37	47	48	53
20	10	17	M4	16	2	6,1	4	7,3	32	34	M5	12	4	7	M6	4,2	8	1	4,5	10	2	21	8	4,2	M5	8	-	22	6	37	49	51	57
25	10	22	M5	16	2	6,1	5	8	37	39	M5	15,6	5	9	M6	4,5	8	1	4,5	10	2	23	8	4,2	M5	8	-	26	6	39	51	53	59
32	12	28	M5	18	14	8,2	5	9	46	47	G1/8	19,8	5,2	11	M8	5,3	10	2	5	12	2,5	29	7,5	5,2	M6	10	17	32,5	7	44	58	61	68
40	12	33	M5	18	14	8,2	5	9	56	57	G1/8	23,3	5,2	15	M8	5,3	10	2	5	12	2,5	30	7,5	5,2	M6	10	19	42	7	45	59	62	69
50	16	42	M6	24	18	10,2	6	11	66	67	G1/8	29,7	6,2	19	M10	6,5	12	2	6	16	2,5	30	7,5	6,6	M8	13	24	50	8	45	61	65	73
63	16	50	M6	24	18	10,2	6	11	79	80	G1/8	35,4	6,2	25	M10	6,5	12	2	6	16	2,5	35	7,5	6,6	M8	13	24	62	8	50	66	70	78



Double-acting cylinder with non-rotating piston rod RO 200... / RO 220...* series extended piston

Ø 16 ÷ 25 mm

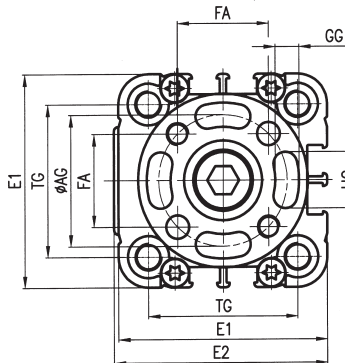
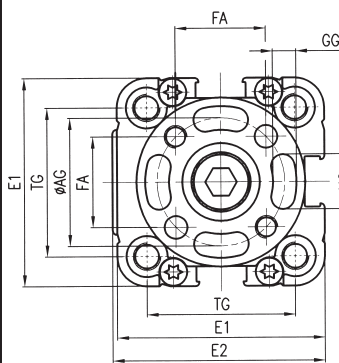
Ø 32 ÷ 63 mm



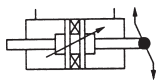
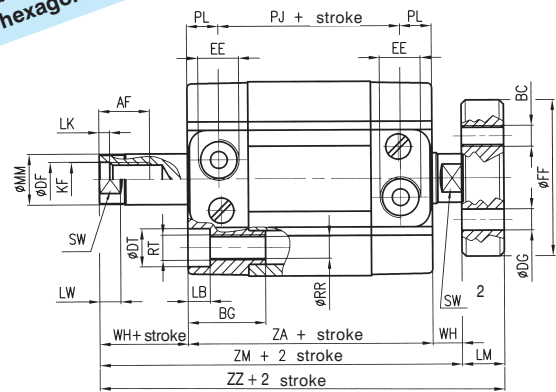
Double-acting cylinder non-rotating through rod RO 201... series

Ø 16 ÷ 25 mm

Ø 32 ÷ 63 mm



If it is necessary to remove the flange from the rod, oppose the force needed to unscrew it by using exclusively the hexagon wrench SW2.



Mass RO 200.../RO 220...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
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 RO 201...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
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

▲ Only for RN series: dimensional variants for end-caps with ISO inter-axes: Ø 40 - 38 mm / Ø 50 - 46,5 mm / Ø 63 - 56,5 mm

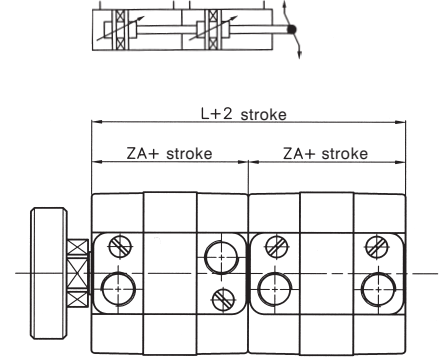
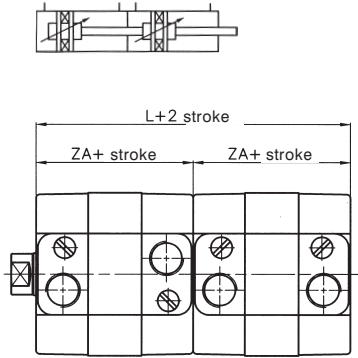
Cyl. Ø	AF	AG	BC	BG	Ø D1	Ø D11	Ø DF	Ø DG	Ø DT	E1	E2	EE	FA	Ø FF	GG	HG	KF	LB	LM	LK	LW	Ø MM	P1	PJ	PL	RR	RT	SW	SW2	TG	WH	ZA	ZM	ZX	ZZ
16	8	14	M3	16	2	4,1	3	5,8	28	30	M5	9,9	19	3	5	M4	3,2	6	1	4,5	8	2	21	8	3,2	M4	7	-	18	5	37	47	48	53	
20	10	17	M4	16	2	6,1	4	7,3	32	34	M5	12	24	4	7	M6	4,2	8	1	4,5	10	2	21	8	4,2	M5	8	-	22	6	37	49	51	57	
25	10	22	M5	16	2	6,1	5	8	37	39	M5	15,6	30	5	9	M6	4,5	8	1	4,5	10	2	23	8	4,2	M5	8	-	26	6	39	51	53	59	
32	12	28	M5	18	14	8,2	5	9	46	47	G1/8	19,8	37	5,2	11	M8	5,3	10	2	5	12	2,5	29	7,5	5,2	M6	10	17	32,5	7	44	58	61	61	
40	12	33	M5	18	14	8,2	5	9	56	57	G1/8	23,3	42	5,2	15	M8	5,3	10	2	5	12	2,5	30	7,5	5,2	M6	10	19	42	7	45	59	62	62	
50	16	42	M6	24	18	10,2	6	11	66	67	G1/8	29,7	52	6,2	19	M10	6,5	12	2	6	16	2,5	30	7,5	6,6	M8	13	24	50	8	45	61	65	65	
63	16	50	M6	24	18	10,2	6	11	79	80	G1/8	35,4	64	6,2	25	M10	6,5	12	2	6	16	2,5	35	7,5	6,6	M8	13	24	62	8	50	68	70	70	

* For cylinder types with extended piston, dimensions PJ, ZA and ZJ will be increased by 20 mm (Ø 32-40 mm) and by 25 mm (Ø 50-63 mm).

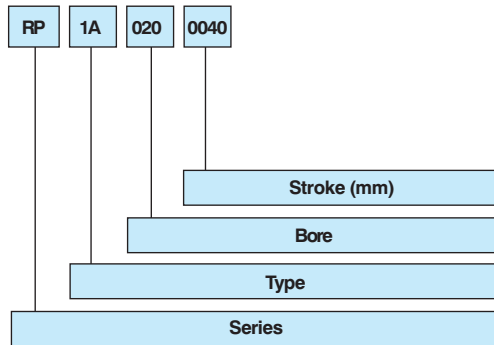


**Tandem cylinder
(double thrust and
traction force)**

Cyl. Ø*	ZA	L
16	37	74
20	37	74
25	39	78
32	44	88
40	45	90
50	45	90
63	50	100



Codification key



SERIES

- RP Round UNITOP cylinder
- RO Octagonal UNITOP cylinder

TYPE

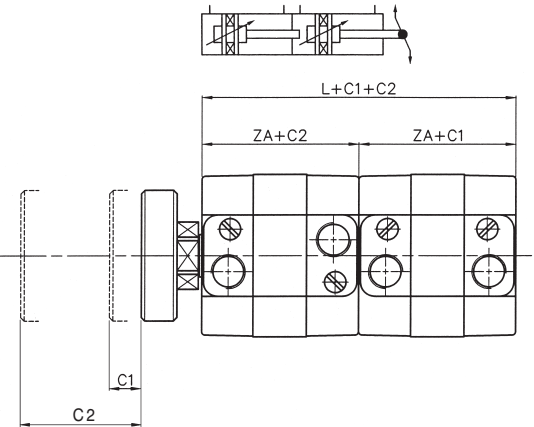
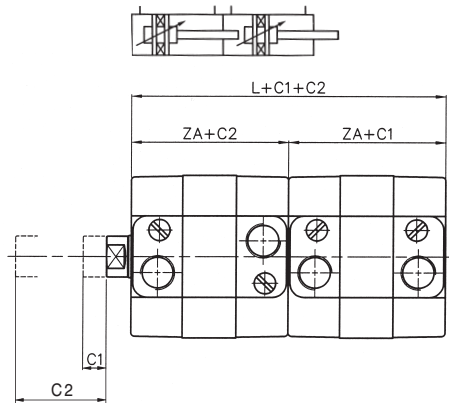
- 1A Tandem cylinder female piston rod in stainless steel
- 2A Tandem cylinder female piston rod in chromium-plated steel

BORE

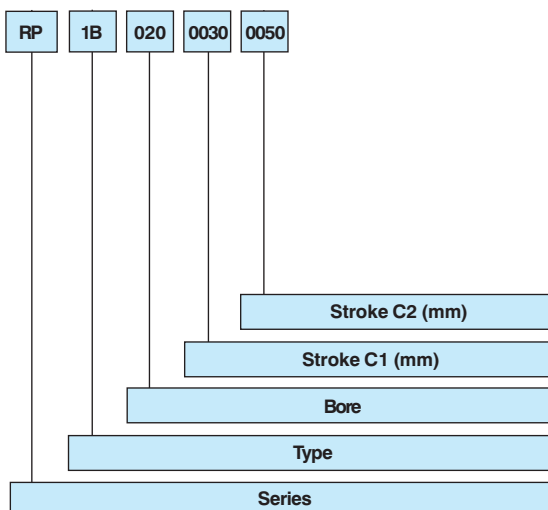
016-020-025-032-040-050-063 mm

**Cylinder with independent rods
(multiple position cylinder)**

Cyl. Ø*	ZA	L
16	37	74
20	37	74
25	39	78
32	44	88
40	45	90
50	45	90
63	50	100



Codification key



SERIES

- RP Round UNITOP cylinder
- RO Octagonal UNITOP cylinder

TYPE

- 1B Cylinder with independent piston rods female piston rod in stainless steel
- 2B Cylinder with independent piston rods female piston rod in chromium-plated steel

BORE

016-020-025-032-040-050-063 mm

STROKE C1

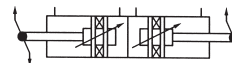
Stroke of the rear cylinder.

STROKE C2

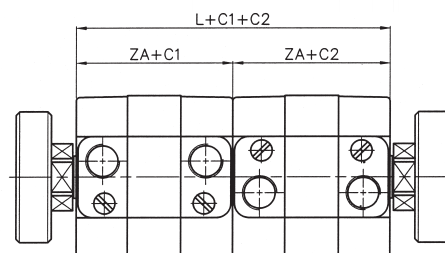
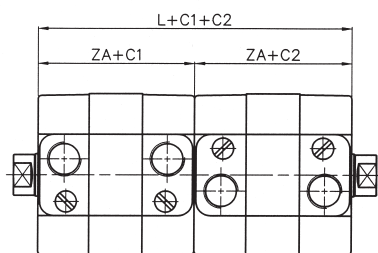
Stroke of the front cylinder.

* For all other dimensions please refer to the standard version on pages 26 and 31. For other types of cylinders kindly contact our sales office.

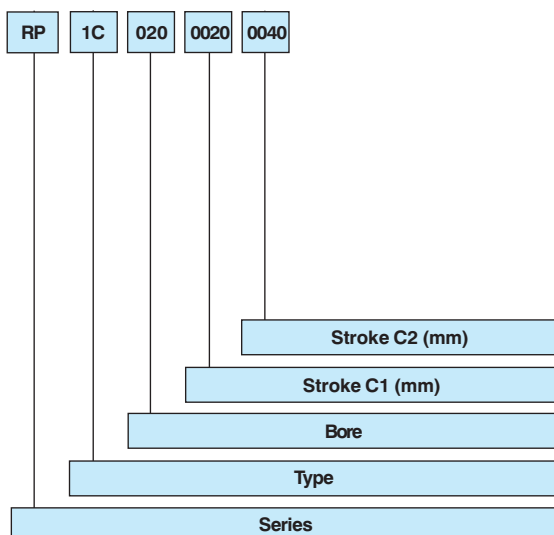
Opposed cylinder



Cyl. Ø*	ZA	L
16	37	74
20	37	74
25	39	78
32	44	88
40	45	90
50	45	90
63	50	100



Codification key



SERIES

RP Round UNITOP cylinder
RO Octagonal UNITOP cylinder

TYPE

1C Cylinder with opposed piston rods
female piston rod in stainless steel
2C Cylinder with opposed piston rods
female piston rod in chromium-plated steel

BORE

016-020-025-032-040-050-063 mm

STROKE C1

Cylinder stroke

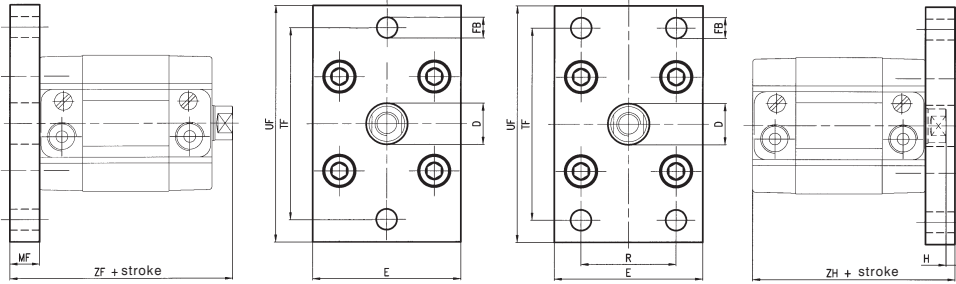
STROKE C2

Cylinder stroke

* For all other dimensions please refer to the standard version on pages 26 and 31.
For other types of cylinders kindly contact our sales office.

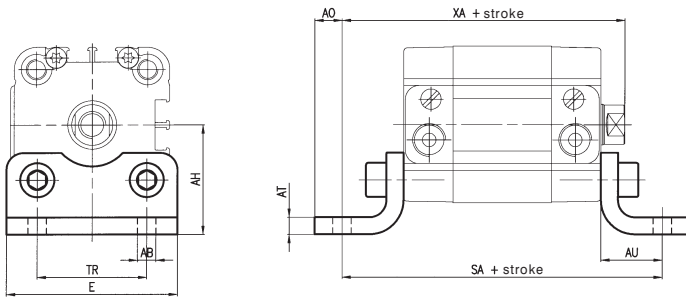


Front or rear flange in zinc-plated steel



Cyl. Ø	Part num. / Mass for...	
	UnitopRU-P/7/Kg	ISO21287/Kg
16	RPF-12016/0,10	
20	RPF-12020/0,16	
25	RPF-12025/0,20	
32	RPF-12032/0,26	KF-12032/0,20
40	RPF-12040/0,42	KF-12040/0,25
50	RPF-12050/0,60	KF-12050/0,50
63	RPF-12063/1,20	KF-12063/0,65

Angle bracket in zinc-plated steel

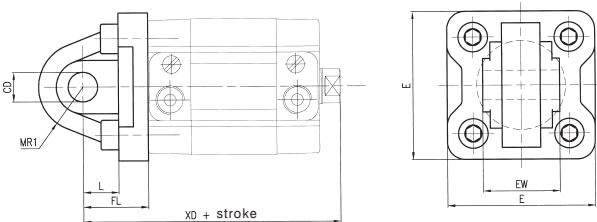


Fixing screws page 36

Cyl. Ø	Part num. / Mass for...	
	UnitopRU-P/7/Kg	ISO21287/Kg
16	RPF-13016/0,02	
20	RPF-13020/0,03	
25	RPF-13025/0,04	
32	RPF-13032/0,07	KF-13032/0,07
40	RPF-13040/0,10	KF-13040/0,10
50	RPF-13050/0,15	KF-13050/0,15
63	RPF-13063/0,25	KF-13063/0,25

Cyl. Ø	Flange										Bracket								
	Ø D H11	E	Ø FB H13	H	MF	R Js14	TF Js14	UF	ZF	ZH	Ø AB H13	Ø AN Js15	AO	AT	AU	E	SA	TR	XA
16	10	29	5,5	5	10	-	43	55	52	47	5,5	22	4,5	3	13	30	63	18	55
20	12	36	6,6	4	10	-	55	70	53	47	6,6	27	6	4	16	36	69	22	59
25	12	40	6,6	4	10	-	60	76	55	49	6,6	30	6	4	16	40	71	26	61
32	14/30	50/45	7	3	10	32	65/64	80	61	54	6.6/7	32.25/32	8/6	5/4	18/24	50/45	80/92	32	69/75
40	14/35	60/52	9	3	10	36	82/72	102/90	62	55	6.6/9	42.5/36	8	5/4	20/28	60/52	85/101	42/36	72/80
50	18/40	68/65	9	4	12	45	90	110	65	57	9	47/45	8/10	6/5	24/32	68/64	93/109	50/45	77/85
63	18/45	87/75	9	7/4	15/12	50	110/100	130/120	73/70	65/63	9	59.5/50	12	6/5	27/32	84/74	104/114	62/50	85/93

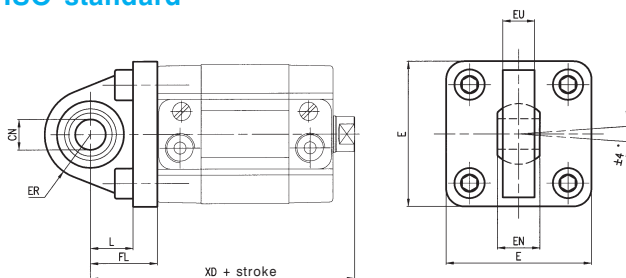
Male rear hinge in die-cast aluminium, ISO MP4 without pin



Cyl. Ø	Ø CD H7	Male rear hinge						Part num. / Mass for...	
		E ±0,5	EW h14	FL ±0,2	L	MR1	XD	UnitopRU-P/7/Kg	ISO21287/Kg
16	6	27	12	16	10	6	58	RPF-11016/0,017	
20	8	34	16	20	14	8	63	RPF-11020/0,021	
25	8	38	16	20	14	8	65	RPF-11025/0,027	
32	10	48	26	22	12	15	73	RPF-11032/0,080	
40	12	54	28	25	15	18	77	-	KF-11040/0,100
50	12	65	32	27	15	20	80	-	KF-11050/0,170
63	16	75	40	32	20	23	89	-	KF-11063/0,250

• It is possible to use the male hinge together with the female hinge MF-21 + Ø of microcylinders ISO 6432.

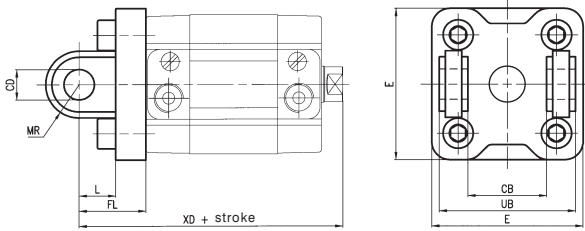
Male articulated hinge in die-cast aluminium Ø 32 ÷ 63 mm for compact cylinder according to ISO standard



Cyl. Ø	CN H9	Male articulated hinge						Part num. / Mass for...		
		E	EN	ER	EU	FL	L	XD	UnitopRU-P/7/Kg	ISO21287/Kg
32	10	48	14	15	10,5	22	14	73	KF-11032S/0,10	
40	12	54	16	18	12	25	16,5	77	KF-10040S/0,20	
50	12	65	16	20	12	27	17,5	80	KF-10050S/0,30	
63	16	75	21	21	15	32	21,5	90	KF-10063S/0,35	



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

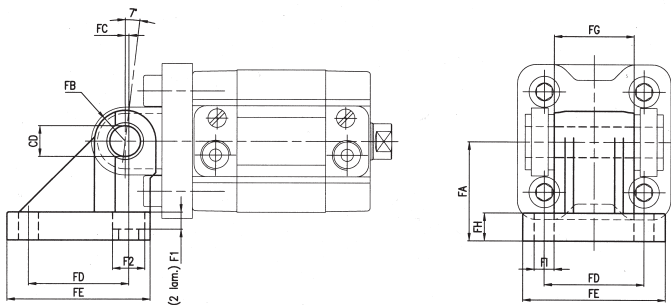


Hinge with pin									Part num. / Mass for...
Cyl. Ø	CB H14	C H9	E	FL ±0,2	L	MR	UB h14	XD	Unitop RU-P/7/Kg
32	26	10	48	22	12	11	45	73	KF-10032A/0,060
40	28	12	58	25	16	12,5	52	77	RPF-10040/0,104
50	32	12	66	27	16	12,5	60	80	RPF-10050/0,142
63	40	16	83	32	21	15	70	90	RPF-10063/0,240

Hinge with pin									Part num. / Mass for...
Cyl. Ø	CB H14	C H9	E	FL ±0,2	L	MR	UB h14	XD	ISO 21287/Kg
32	26	10	48	22	12	11	45	73	KF-10032A/0,10
40	28	12	58	25	15	13	52	77	KF-10040A/0,20
50	32	12	66	27	15	13	60	80	KF-10050A/0,30
63	40	16	83	32	20	17	70	90	KF-10063A/0,35

• Removing the pin it is possible to use the female hinge also in front.

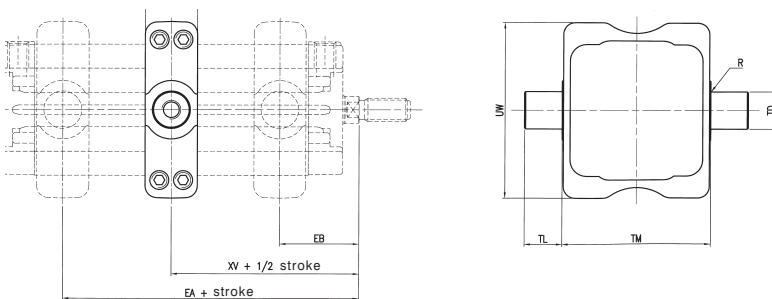
Counter-hinge 90° in die-cast aluminium



Cyl. Ø	Ø CD H9	FA Js15	FB	FC	FD	FE	FG -0.2/-0.6	FH	FI	F1	F2
32	10	32	10	1,2	32,5	46,5	26	9	6,4	5,5	10,5
40	12	36	12	2,6	38	51,5	28	9	6,4	5,5	10,5
50	12	45	12	0,3	46,5	63,5	32	9	8,4	5	13,5
63	16	50	16	3,3	56,5	73,5	40	10,5	8,4	5	13,5

Cyl. Ø	Part num.	Mass Kg
32	KF-19032	0,09
40	KF-19040	0,12
50	KF-19050	0,20
63	KF-19063	0,32

Intermediate hinge with fixing grub screw

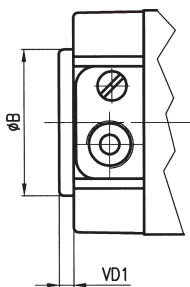


Cyl. Ø	EA (max)	EB (min)	I1 (max)	R (max)	TD (e9)	TL (h14)	TM (h14)	UW (max)	XV	
									Nom.	Toll.
32	24	34	22	0,5	12	12	50	65	29	±2
40	25	34	22	0,5	16	16	63	75	29,5	±2
50	26	35	22	1	16	16	75	95	30,5	±2
63	27	38	28	1	20	20	90	105	32,5	±2

Cyl. Ø	Part num.	Mass Kg
32	KDF-14032	0,13
40	RPF-14040	0,24
50	RPF-14050	0,32
63	RPF-14063	0,47

Min. cylinder stroke: 10 mm
 V+1/2 stroke: hinge in the middle of the end-caps

Adaptor ring for rear centering ISO (upon request)



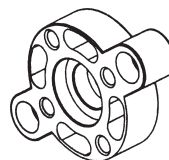
Cyl. Ø	Adaptor ring		Part number
	ØB	VD1	
32	30	3	RSF-09032
40	35	3	RSF-09040
50	40	3	RSF-09050
63	45	3	RSF-09063

Flange for female piston rod in zamac (Ø 16 ÷ 25 mm); in die-cast aluminium (Ø 32 ÷ 63 mm) (complete with fixing screw, standard supplied with octagonal cylinder types RO-RN series). If mounted on cylinder types RP-RM dimensions are the same as those of RO-RN series.

Flange for piston-rod with antirotation device in zamac (Ø 16 ÷ 25 mm); in die-cast aluminium (Ø 32 ÷ 63 mm) for RP 210... - RP 211... series (with fixing screws)



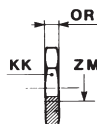
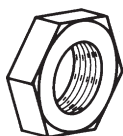
Cyl. Ø	Part number	Mass kg
16	RPF-28016	0,007
20	RPF-28020	0,018
25	RPF-28025	0,020
32	RPF-28032	0,024
40	RPF-28040	0,035
50	RPF-28050	0,057
63	RPF-28063	0,094



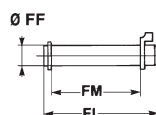
Cyl. Ø	Part number	Mass kg
16	RPF-29016	0,010
20	RPF-29020	0,018
25	RPF-29025	0,025
32	RPF-29032	0,026
40	RPF-29040	0,036
50	RPF-29050	0,065
63	RPF-29063	0,100

Piston rod nut in zinc-plated steel

Pin in zinc-plated steel with 2 circlips



Cyl. Ø	ZM	KK	OR	Part number
16	M6 x 1	10	4	MF-16012
20-25	M8 x 1,25	13	5	MF-16020
32-40	M10 x 1,25	17	6	KF-16032
50-63	M12 x 1,25	19	7	KF-16040



Cyl. Ø	FF f8	FL	FM	Mass kg	Part number
32	10	53	46	0,03	KF-18032
40	12	61,3	53	0,05	KF-18040
50	12	69	61	0,05	KF-18050
63	16	80,5	71	0,12	KF-18063

Fixing screws accessories

Cylindrical screw UNI 5931 (packing 100 pcs.) Part n° AZ4-VN... suitable for mounting elements RPF-12... and RPF-13... series

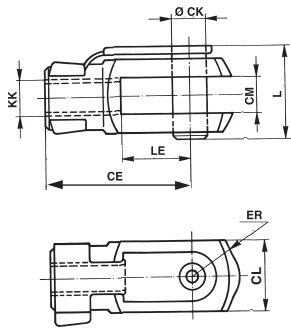
Cylindrical screw UNI 5931 Part n° AZ4-VN... suitable for mounting elements KF-10032/RPF-10... series

Cyl. Ø	Screw	Part number
16	M4 x 18	AZ4-VN0418
20-25	M5 x 18	AZ4-VN0518
32-40	M6 x 20	AZ4-VN0620
50-63	M8 x 25	AZ4-VN0825

Cyl. Ø	Screw	Part num.
32-40	M6 x 25	AZ4-VN0625
50-63	M8 x 30	AZ4-VN0830

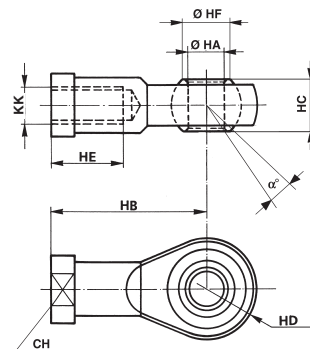


Female fork with clips in zinc-plated steel for piston rod according to ISO 8140 standard with pin



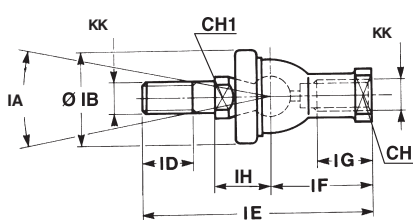
Cyl. Ø	CE	CK	CL	CM B12	ER	KK	L	LE	Masse kg	Part number
16	24	6	12	6	7	M6 x 1	16	12	0,019	MF-15016
20÷25	32	8	16	8	10	M8 x 1,25	22	16	0,046	MF-15020
32-40	40	10	20	10	16	M10 x 1,25	26	20	0,090	KF-15032
50-63	48	12	24	12	19	M12 x 1,25	32	24	0,15	KF-15040

Self-lubricating articulated fork in zinc-plated steel



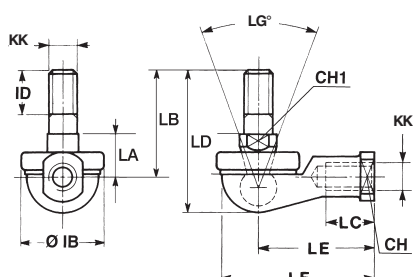
Cyl. Ø	a	CH	KK	HA H7	HB	HC	HD	HE	HF	Masse kg	Part number
16	13°	11	M6 x 1	6	30	9	10	12	9	0,026	MF-17012
20÷25	13°	14	M8 x 1,25	8	36	12	12	16	10,4	0,046	MF-17020
32-40	13°	17	M10 x 1,25	10	43	14	14	20	12,9	0,076	KF-17032
50-63	13°	19	M12 x 1,25	12	50	16	16	22	15,4	0,110	KF-17040

Fork with axially mounted articulated pin



Cyl. Ø	CH	CH1	IA	KK	IH 0 ±0,3	IB	ID	IE	IF	IG	Masse kg	Part number
16	11	8	30°	M6 x 1	12,2	22	11	55,2	28	15	0,04	MF-22016
20÷25	14	10	30°	M8 x 1,25	16	28	12	65	32	16	0,075	MF-22020
32-40	17	11	30°	M10 x 1,25	19,5	32	15	74,5	35	18	0,120	KF-22025
50-63	19	11	30°	M12 x 1,25	22	36	17	84	40	20	0,185	KF-22040

Fork with angle-mounted articulated pin



Cyl. Ø	CH	CH1	LG	KK	IB	ID	LA 0 ±0,3	LB	LC	LD	LE	LF	Masse kg	Part number
16	11	8	50°	M6 x 1	22	11	11	26	14	35,5	30	40	0,037	MF-23012
20÷25	14	10	50°	M8 x 1,25	28	12	14	31	17	42,5	36	48	0,067	MF-23020
32-40	17	11	50°	M10 x 1,25	32	15	17	37	21	50,5	43	57	0,110	KF-23025
50-63	19	17	50°	M12 x 1,25	36	17	19	42	27	57,5	50	66	0,165	KF-23040



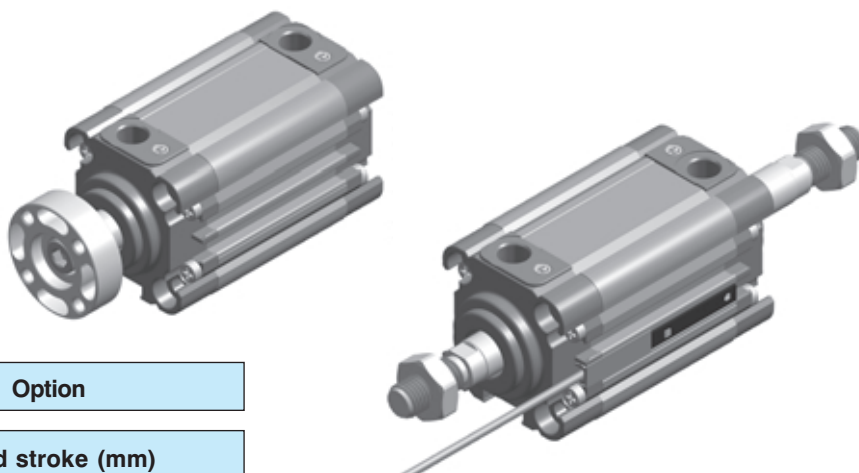
A new series of compact cylinders for long strokes and heavy-duty applications standard supplied with oversized guides and rods, **the first one with adjustable pneumatic cushioning without variations in size**. The inter-axes, centering diameters and rods are in accordance with ISO 6431 and VDMA 24562 specifications.

TECHNICAL CHARACTERISTICS

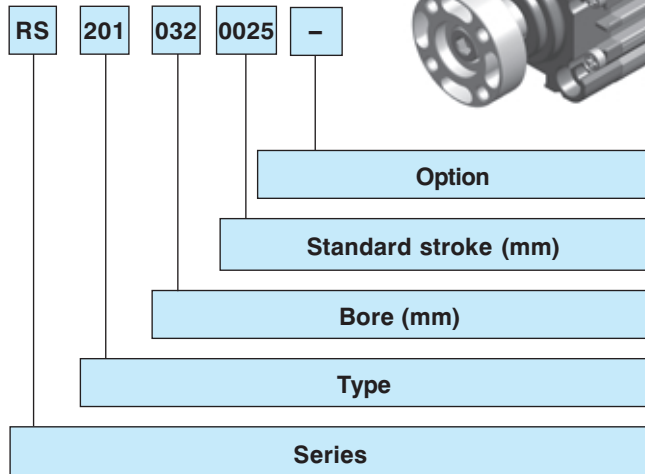
Working pressure: 1,5 ÷ 10 bar
 Ambient temperature: -20°C ÷ 80°C
 Fluid: filtered air, lubricated or not
 Barrel profile of extruded aluminium alloy with chromium-plated piston rod.
 Oversized guides.
 Adjustable cushioning (10 mm ~).
 The version with non-rotating piston rod (RQ-...series) is standard supplied with assembled flange on the female rod.
 Max. operating speed: 1 m/s.
 Magnetic version.

Upon request

- Magnetic sensor DF-... (Section accessories page 2)
- Wire protection strap for magnetic sensor part no.DHF-002100.
- Flange for RS series types 200-201-260-270.
- Hollow piston rod only for through piston rod version.
- Suitable for locking unit **only** with chromium-plated rod. (section High-Tech page 4)
- Cylinder STRONG series with integrated safety locking unit (section High-Tech page 61)
- Slide units **only** for cylinder with extended piston. (section High-Tech page 51)



Codification Key



SERIES

Compact cylinders STRONG Ø 032 ÷ 063 mm, magnetic version, with cushioning and oversized guides standard supplied:

- Round barrel:**
RS series - compact STRONG
Octagonal barrel
RQ series - compact STRONG non-rotating piston rod with flange.

TYPE

- RS series**
1... with stainless steel piston rod
2... with chromium-plated steel piston rod
 -00 D.A.
 -01 D.A. through piston rod
 -10 D.A. non-rotating piston rod
 -11 D.A. non-rotating through piston rod
 -20 D.A. long piston
 -60 S.A. retracted piston rod
 -70 S.A. extended piston rod
3... with male piston rod in stainless steel
4... with male piston rod in chromium-plated steel
 -00 D.A.
 -01 D.A. through piston rod
 -20 D.A. long piston
 -60 S.A. retracted piston rod
 -70 S.A. extended piston rod

RQ series

- 1... with piston rod in stainless steel**
2... with piston rod in chromium-plated steel
 -00 D.A.
 -01 D.A. through piston rod
 -20 D.A. long piston

BORE

032 - 040 - 050 - 063 mm

STANDARD STROKE

Single acting
 0005-0010-0015-0020-0025 mm

Double acting
 0005-0010-0015-0020-0025-0030-0040-0050-0060-0080 mm

Max stroke with guided piston rod (upon request):
 Ø 32-40 **0400 mm**
 Ø 50 **0500 mm**
 Ø 63 **0800 mm**

Version with extended piston (upon request):
 Ø 32-40 **0800 mm**
 Ø 50-63 **1000 mm**

OPTION

- C** = with flange for RS series versions 100/101/160/170 and 200/201/260/270
H = hollow piston rod only for versions with through piston rod
G = prearranged for locking unit with the exception of single-acting cylinders and only with piston rod in chromium-plated steel.

Construction details

- Barrel in extruded aluminium alloy, externally and internally anodized 15 µm, plain profile, flush-mounted sensors.
- Die-cast end-caps in aluminium alloy.
- Self-tapping screws in zinc-plated steel.
- Chromium-plated steel rod; stainless steel upon request.
- Aluminium piston.
- Acetal resin slide.
- Oversized bearings.
- Piston seals in nitrile rubber.
- Polyurethane rod seals.
- Adjustable pneumatic cushioning for efficient deceleration of the piston and reduced sound pollution.

- D.A. piston in aluminium

- D.A. extended piston for supporting higher radial load



- Locking unit L1-N... series with chromium-plated piston rod except for versions with non-rotating device (RS-210...-RS-211...).

Nominal tolerance on stroke

Cyl. Ø	Tolerance mm
32 ÷ 50	+ 2/0
63	+ 2,5/0

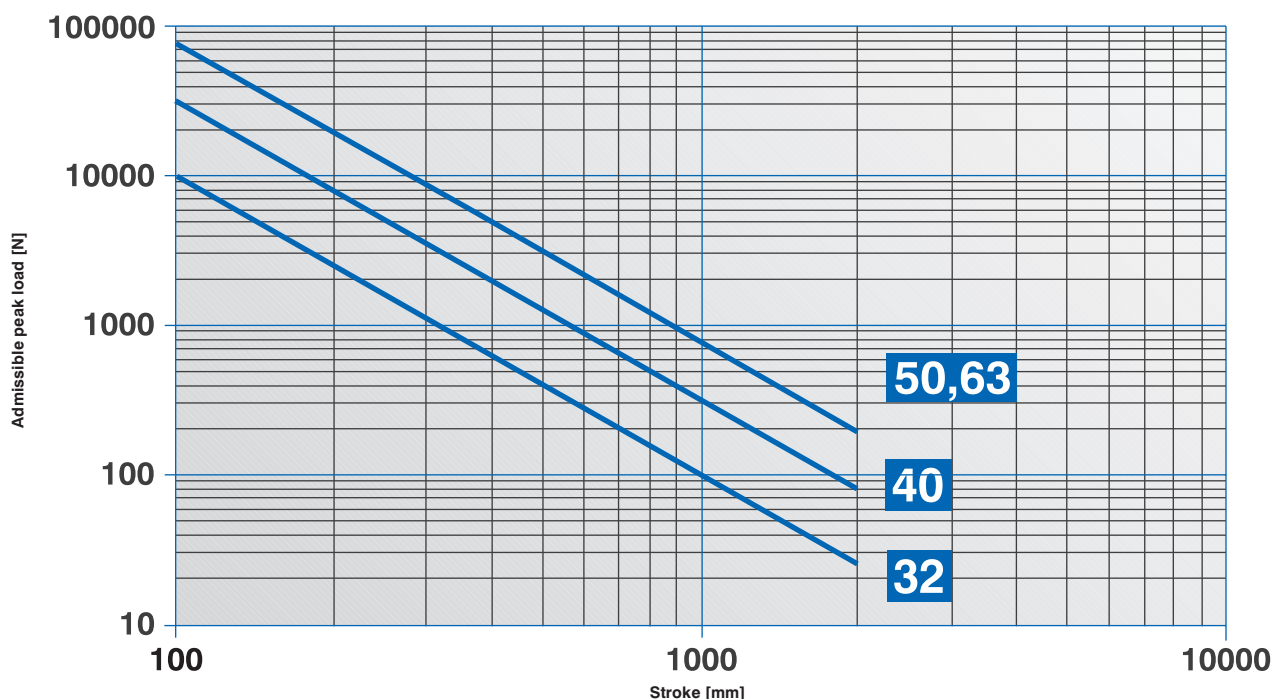
Theoretical forces [N] developed at the working pressure [bar]

Cyl. Ø	Working area [mm²]	Working pressure [bar]					
		2	4	6	8	10	
32	Thrust	804	161	322	482	643	804
	traction	691	138	276	414	553	691
40	Thrust	1256	251	502	754	1005	1256
	traction	1056	211	422	633	844	1055
50	Thrust	1962	393	785	1178	1570	1963
	traction	1649	330	660	990	1320	1650
63	Thrust	3116	623	1246	1869	2493	3116
	traction	2802	560	1120	1680	2240	2800

Maximum applicable torque [Nm] for RQ series non-rotating rod

Cyl. Ø	Torque [Nm]
32	2
40	3
50	5
63	8

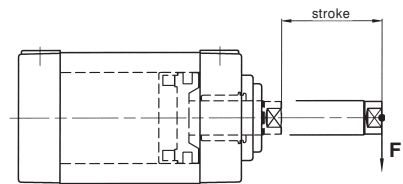
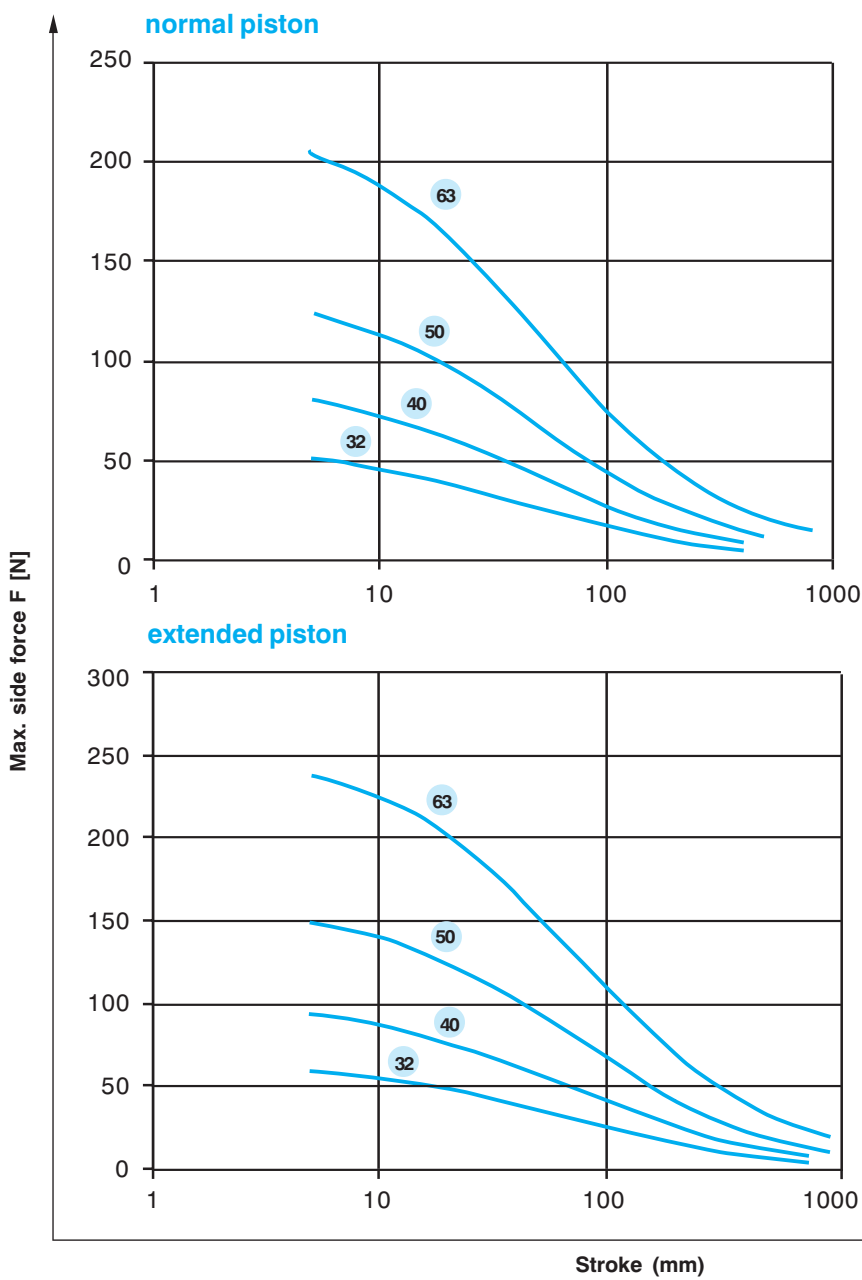
In the case of pneumatic cylinders with a through rod, the theoretical force to be considered, in both directions, is always equal to the "traction" value indicated in the table. For practical purposes these values should be reduced taking into account the weight and sliding friction of the mobile equipment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



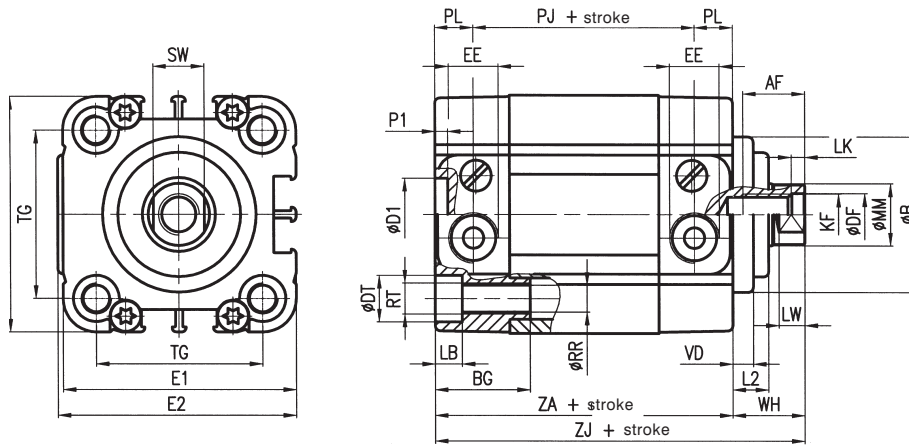
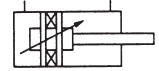
Theoretical forces of spring traction for cylinder types ___260___/___270___

Cyl. Ø	Max. force (N)	Min. force (N)	Max. stroke (mm)	Decrease per mm stroke (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

Graph side load on piston rod



Double-acting cylinder RS 200... / RS 220...* series extended piston



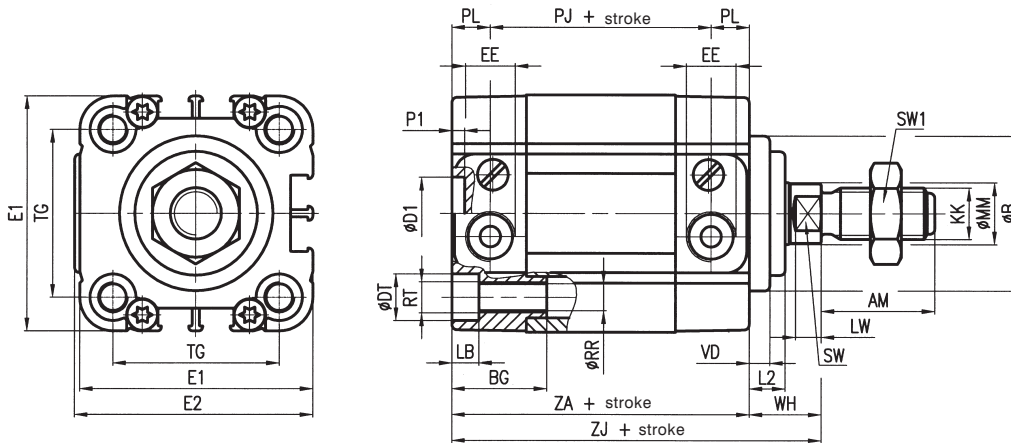
Mass RS 200...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	215	2,65	70	0,9
40	347	4	110	1,6
50	520	5,6	180	2,5
63	800	6,55	260	2,5

Mass RS 220...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	301,5	2,65	121,5	0,9
40	482	4	197	1,6
50	769	5,6	327	2,5
63	1151,5	6,55	485	2,5

Double-acting cylinder with male rod RS 400... / RS 420...* series extended piston



Mass RS 400...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	245	2,65	100	0,9
40	392	4	155	1,6
50	600	5,6	260	2,5
63	880	6,55	340	2,5

Mass RS 420...

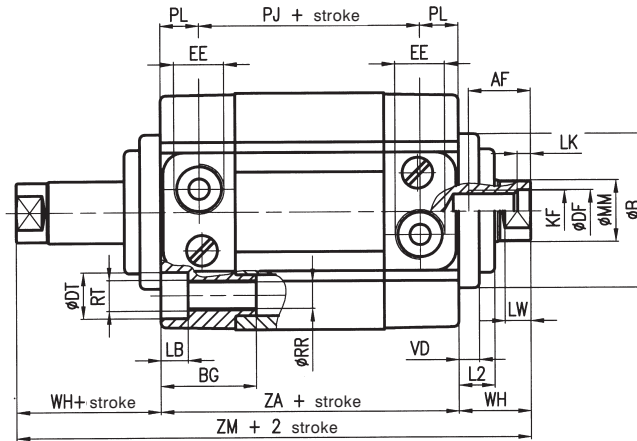
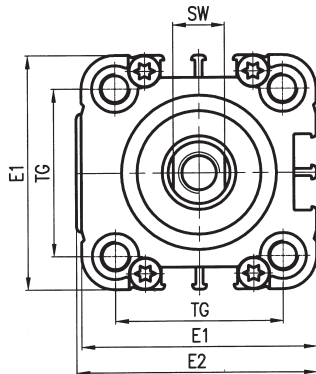
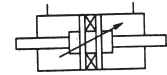
Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	331,5	2,65	151,5	0,9
40	527	4	242	1,6
50	849	5,6	407	2,5
63	1231,5	6,55	565	2,5

Cyl. Ø	AF	AM	B	BG	ØD1 H11	Ø DF	Ø DT	E1	E2	EE	KF	KK	L2	LB	LK	LW	Ø MM	P1	PJ	PL	Ø RR	RT	SW	SW1	TG	VD	WH	ZA	ZJ
32	12	22	30	18	14	8,2	9	46	47	G1/8	M8	M10x1,25	7	5,3	2	5	12	25	29	7,5	5,2	M6	10	17	32,5	4	14	44	58
40	16	24	35	18	14	10,2	9	56	57	G1/8	M10	M12x1,25	7	5,3	2	5	16	25	30	7,5	5,2	M6	13	19	38	4	14	45	59
50	20	32	40	24	18	12,2	11	66	67	G1/8	M12	M16x1,5	10	6,5	2	6	20	25	30	7,5	6,5	M8	17	24	46,5	5	18	45	63
63	20	32	45	24	18	12,2	11	79	80	G1/8	M12	M16x1,5	10	6,5	2	6	20	25	34	7,5	6,5	M8	17	24	56,5	5	18	49	67

* For cylinder types with extended piston, dimensions PJ, ZA and ZJ will be increased by 20 mm (Ø 32-40 mm) and 25 mm (Ø 50-63 mm).



Double-acting cylinder, through piston rod RS 201 ... series



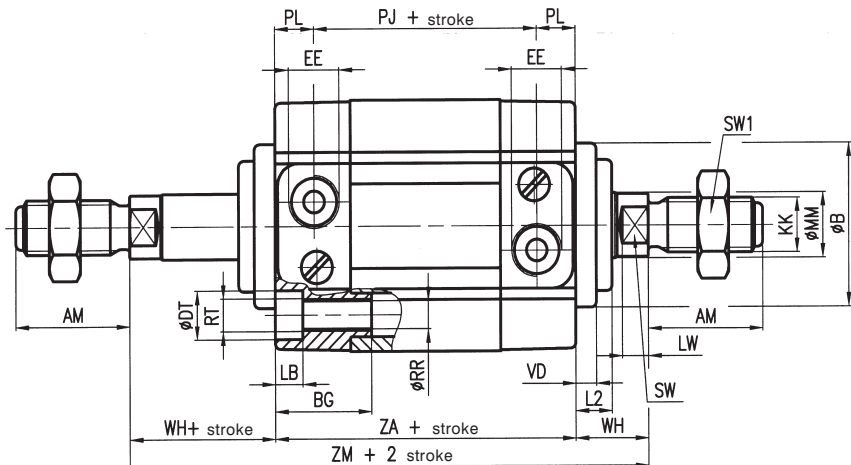
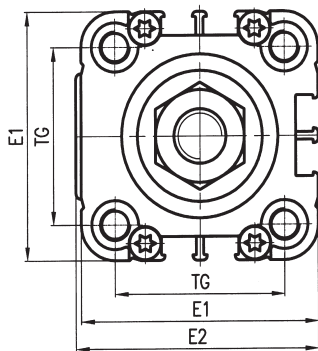
For version with hollow through piston rod, option H in codification key:

Cyl. Ø	Hole mm
32-40	4,5
50-63	6

Mass

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	245	3,55	96	1,8
40	392	5,6	151	3,2
50	596	8,1	250	5
63	875	9,05	330	5

Double-acting cylinder, through male piston rod RS 401 ... series



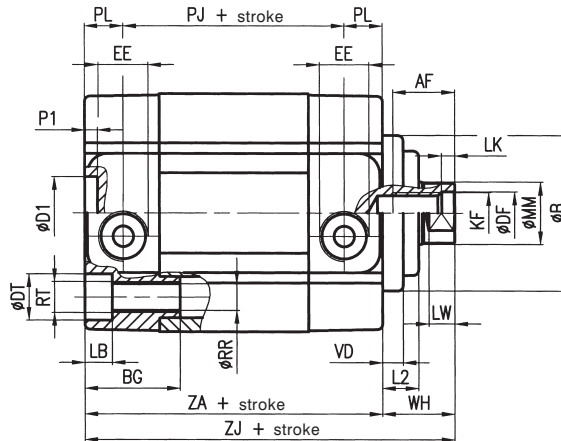
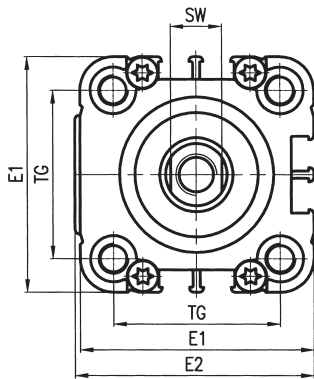
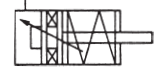
Mass

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	305	3,55	156	1,8
40	482	5,6	241	3,2
50	756	8,1	410	5
63	1035	9,05	490	5

Cyl. Ø	AF	AM	Ø B	BG	Ø DF	Ø DT	E1	E2	EE	KF	KK	L2	LB	LK	LW	Ø MM	PJ	PL	Ø RR	RT	SW	SW1	TG	VD	WH	ZA	ZM
32	12	22	30	18	8,2	9	46	47	G1/8	M8	M10x1,25	7	5,3	2	5	12	29	7,5	5,2	M6	10	17	32,5	4	14	44	72
40	16	24	35	18	10,2	9	56	57	G1/8	M10	M12x1,25	7	5,3	2	5	16	30	7,5	5,2	M6	13	19	38	4	14	45	73
50	20	32	40	24	12,2	11	66	67	G1/8	M12	M16x1,5	10	6,5	2	6	20	30	7,5	6,5	M8	17	24	46,5	5	18	45	81
63	20	32	45	24	12,2	11	79	80	G1/8	M12	M16x1,5	10	6,5	2	6	20	35	7,5	6,5	M8	17	24	56,5	5	18	50	86



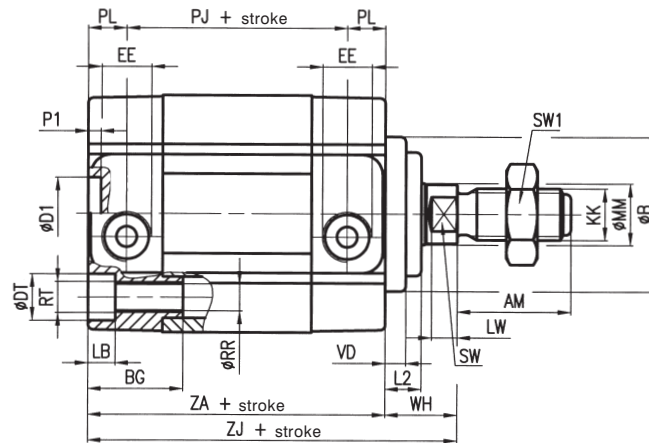
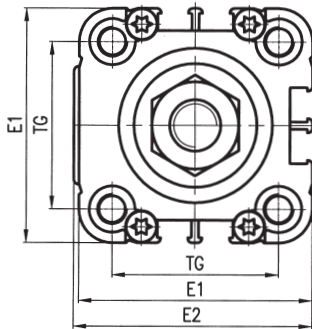
Single-acting cylinder, retracted piston rod, RS 260 ... series



Mass

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	217	2,65	73	0,9
40	350	4	116	1,6
50	525	5,6	192	2,5
63	805	6,55	272	2,5

Single-acting cylinder retracted male piston rod RS 460 ... series



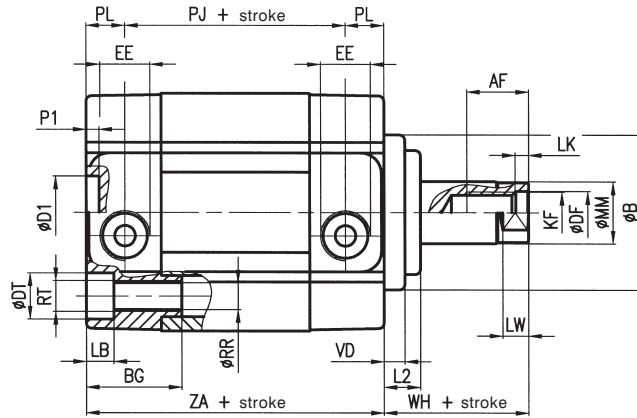
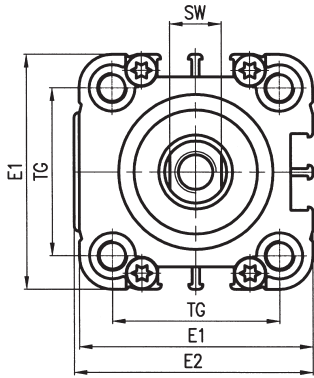
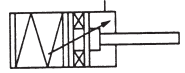
Mass

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	247	2,65	103	0,9
40	395	4	161	1,6
50	605	5,6	272	2,5
63	885	6,55	352	2,5

Cyl. Ø	AF	AM	Ø B	BG	ØD1 H11	Ø DF	Ø DT	E1	E2	EE	KF	KK	L2	LB	LK	LW	Ø MM	P1	PJ	PL	Ø RR	RT	SW	SW1	TG	VD	WH	ZA	ZJ
32	12	22	30	18	14	8,2	9	46	47	G1/8	M8	M10x1,25	7	5,3	2	5	12	25	29	7,5	5,2	M6	10	17	32,5	4	14	44	58
40	16	24	35	18	14	10,2	9	56	57	G1/8	M10	M12x1,25	7	5,3	2	5	16	25	30	7,5	5,2	M6	13	19	38	4	14	45	59
50	20	32	40	24	18	12,2	11	66	67	G1/8	M12	M16x1,5	10	6,5	2	6	20	25	30	7,5	6,5	M8	17	24	46,5	5	18	45	63
63	20	32	45	24	18	12,2	11	79	80	G1/8	M12	M16x1,5	10	6,5	2	6	20	25	35	7,5	6,5	M8	17	24	56,5	5	18	50	68



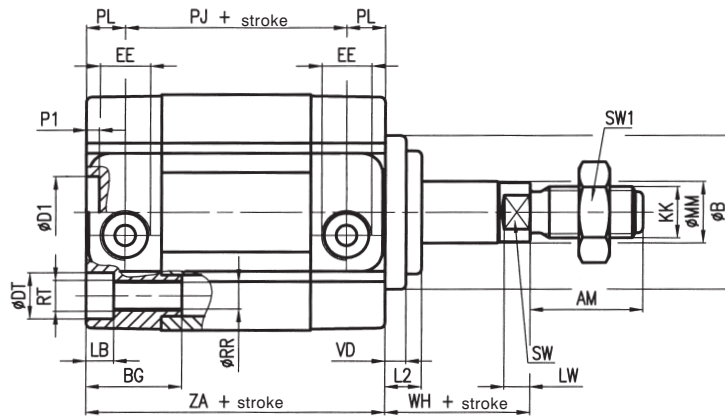
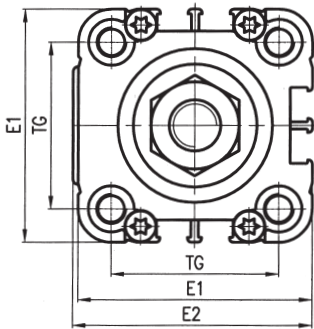
Single-acting cylinder, extended piston rod, RS 270...series



Mass

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	213	2,65	73	0,9
40	344	4	116	1,6
50	515	5,6	192	2,5
63	795	6,55	272	2,5

Single-acting cylinder, extended male piston rod, RS 470...series



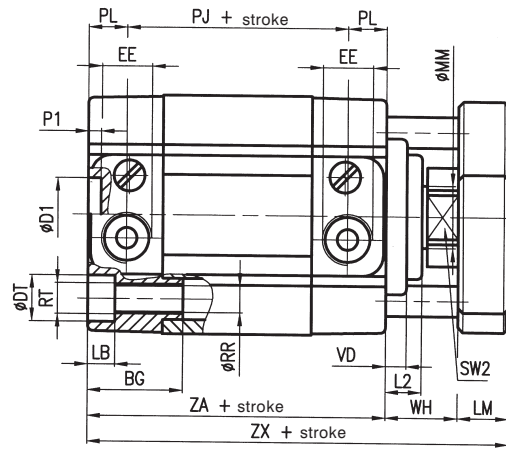
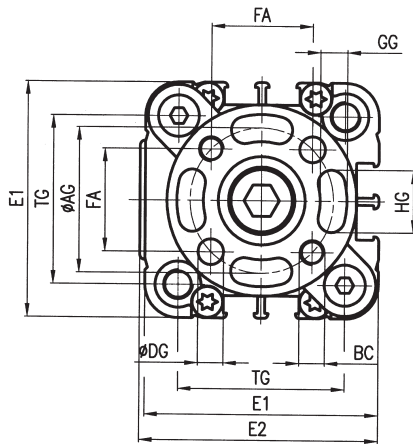
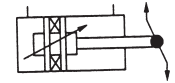
Mass

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	243	2,65	103	0,9
40	398	4	161	1,6
50	595	5,6	272	2,5
63	875	6,55	352	2,5

Cyl. Ø	AF	AM	Ø B	BG	ØD1 H11	Ø DF	Ø DT	E1	E2	EE	KF	KK	L2	LB	LK	LW	Ø MM	P1	PJ	PL	Ø RR	RT	SW	SW1	TG	VD	WH	ZA
32	12	22	30	18	14	8,2	9	46	47	G1/8	M8	M10x1,25	7	5,3	2	5	12	25	29	7,5	5,2	M6	10	17	32,5	4	14	44
40	16	24	35	18	14	10,2	9	56	57	G1/8	M10	M12x1,25	7	5,3	2	5	16	25	30	7,5	5,2	M6	13	19	38	4	14	45
50	20	32	40	24	18	12,2	11	66	67	G1/8	M12	M16x1,5	10	6,5	2	6	20	25	30	7,5	6,5	M8	17	24	46,5	5	18	45
63	20	32	45	24	18	12,2	11	79	80	G1/8	M12	M16x1,5	10	6,5	2	6	20	25	35	7,5	6,5	M8	17	24	56,5	5	18	50



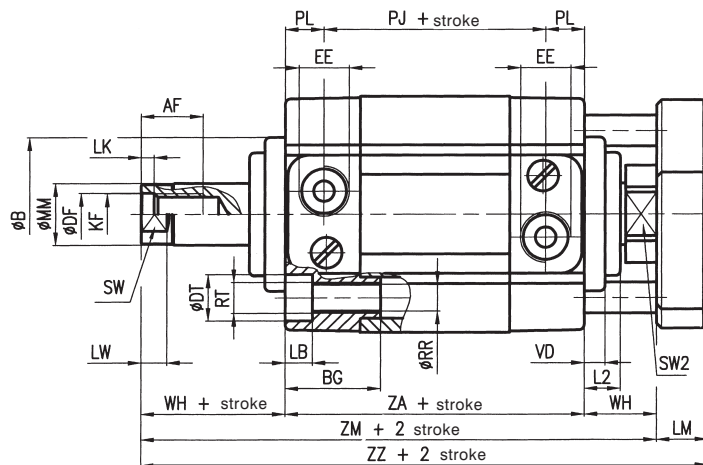
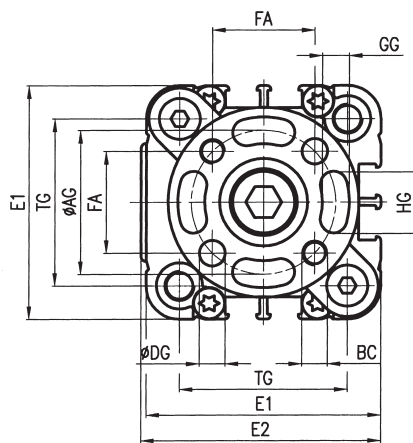
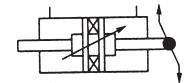
Double-acting cylinder with non-rotating device RS 210 ... series



Mass

Cyl. ϕ	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	255	3,09	110	1,34
40	414	4,8	177	2,4
50	622	6,4	282	3,3
63	952	7,79	412	3,7

Double-acting cylinder, through piston rod with non-rotating device RS 211 ... series



Mass

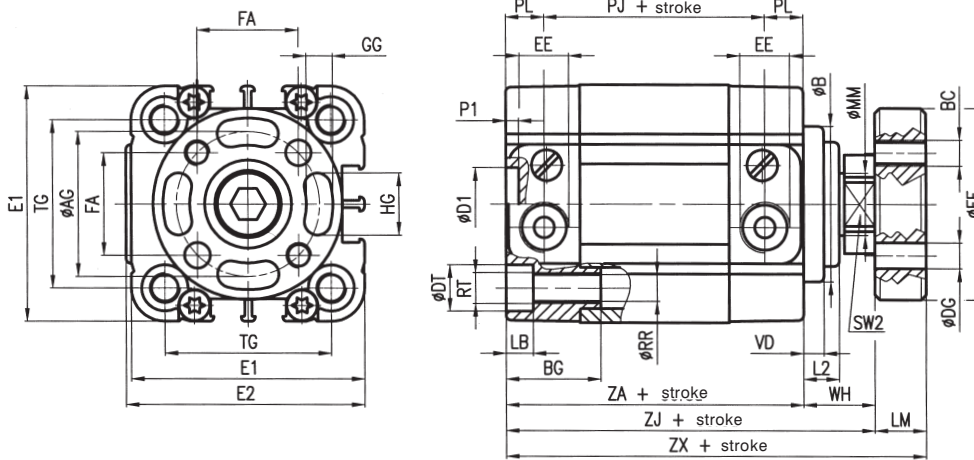
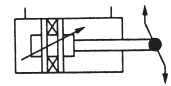
Cyl. ϕ	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	285	3,99	136	2,24
40	459	6,4	218	4
50	698	8,9	352	5,8
63	1025	10,29	482	6,24

Cyl. ϕ	AF	ϕAG	ϕB	BC	BG	$\phi D1$ H11	ϕDF	ϕDG	ϕDT
32	12	28	30	M5	18	14	8,2	5	9
40	16	33	35	M5	18	14	10,2	5	9
50	20	42	40	M6	24	18	12,2	6	11
63	20	50	45	M6	24	18	12,2	6	11

Cyl. ϕ	E1	E2	EE	FA	GG	HG	KF	L2	LB	LM	LK	LW	ϕMM	P1	PJ	PL	ϕRR	RT	SW	SW2	TG	VD	WH	ZA	ZM	ZX	ZZ
32	46	47	G1/8	19,8	5,2	11	M8	7	5,3	10	2	5	12	2,5	29	7,5	5,2	M6	10	17	32,5	4	14	44	72	68	82
40	56	57	G1/8	23,3	5,2	15	M10	7	5,3	10	2	5	16	2,5	30	7,5	5,2	M6	13	19	38	4	14	45	73	69	83
50	66	67	G1/8	29,7	6,2	19	M12	10	6,5	12	2	6	20	2,5	30	7,5	6,6	M8	17	24	46,5	5	18	45	81	75	93
63	79	80	G1/8	35,4	6,2	25	M12	10	6,5	12	2	6	20	2,5	35	7,5	6,6	M8	17	24	56,5	5	18	50	86	80	98



Double-acting cylinder with non-rotating rod RQ 200... / RQ 220...* series extended piston



If it is necessary to remove the flange from the rod, oppose the force needed to unscrew it by using exclusively the hexagon wrench SW2.

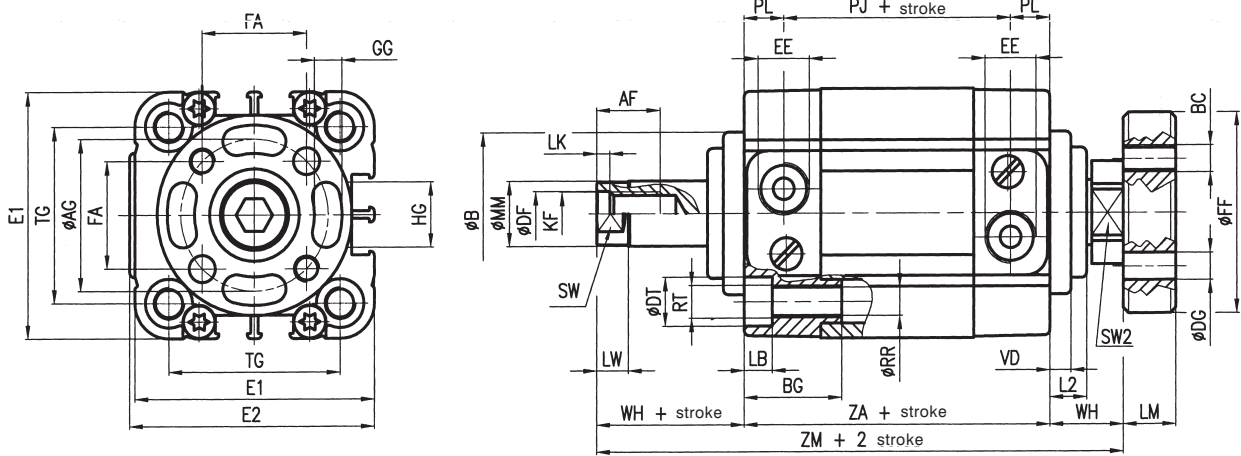
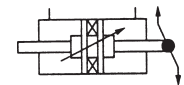
Mass RQ 200...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	240	2,65	94	0,9
40	386	4	148,5	1,6
50	587	5,6	247	2,5
63	894	6,55	354	2,5

Mass RQ 220...

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	326,5	2,65	146,5	0,9
40	522	4	237	1,6
50	839	5,6	397	2,5
63	1249,5	6,55	583	2,5

Double-acting cylinder non rotating through rod RQ 201... series



Mass

Cyl. Ø	AF	Ø AG	Ø B	BC	BG	ØD1 H11	Ø DF	Ø DG	Ø DT	E1	E2	EE	FA	Ø FF
32	12	28	30	M5	18	14	8,2	5	9	46	47	G1/8	19,8	37
40	16	33	35	M5	18	14	10,2	5	9	56	57	G1/8	23,3	42
50	20	42	40	M6	24	18	12,2	6	11	66	67	G1/8	29,7	52
63	20	50	45	M6	24	18	12,2	6	11	79	80	G1/8	35,4	64

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
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

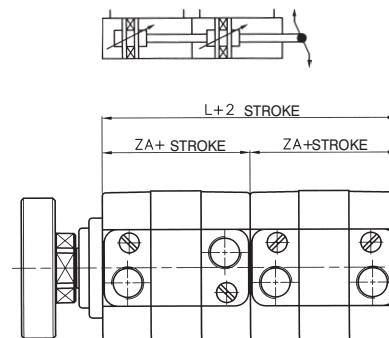
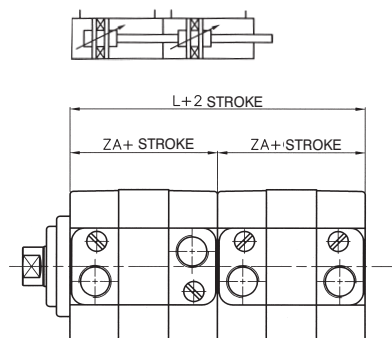
Cyl. Ø	GG	HG	KF	L2	LB	LM	LK	LW	Ø MM	P1	PJ	PL	Ø RR	RT	SW	SW2	TG	VD	VD 1	WH	ZA	ZM	ZJ	ZX
32	5,2	11	M8	7	5,3	10	2	5	12	2,5	29	7,5	5,2	M6	10	17	32,5	4	3	14	44	72	58	68
40	5,2	15	M10	7	5,3	10	2	5	16	2,5	30	7,5	5,2	M6	13	19	38	4	3	14	45	73	59	69
50	6,2	19	M12	10	6,5	12	2	6	20	2,5	30	7,5	6,6	M8	17	24	46,5	5	3	18	45	81	63	75
63	6,2	25	M12	10	6,5	12	2	6	20	2,5	34	7,5	6,6	M8	17	24	56,5	5	3	18	49	85	67	79

* For cylinder types with extended piston, dimensions PJ, ZA and ZJ, ZX will be increased by 20 mm (Ø 32-40 mm), and 25 mm (Ø 50-63 mm).

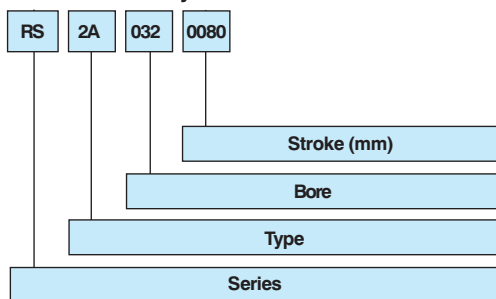


**Tandem cylinder
(double thrust
and traction force)**

Cyl. Ø*	ZA	L
32	44	88
40	45	90
50	45	90
63	49	98



Codification key



SERIES

RS Round tandem cylinder
RO Octagonal tandem cylinder

TYPE

Stainless steel rod

1A Female rod
3A Male rod

Chromium-plated steel rod

2A Female rod
4A Male rod

BORE

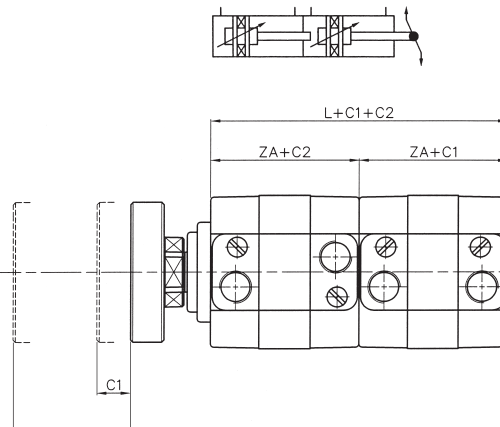
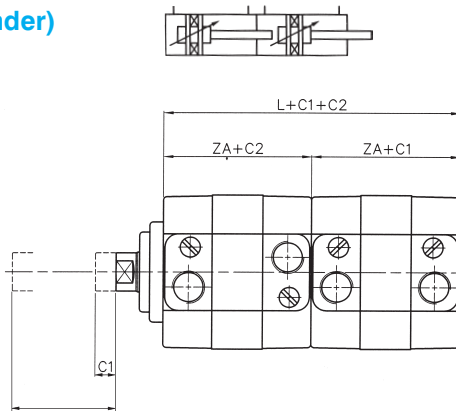
032-040-050-063 mm

STROKE

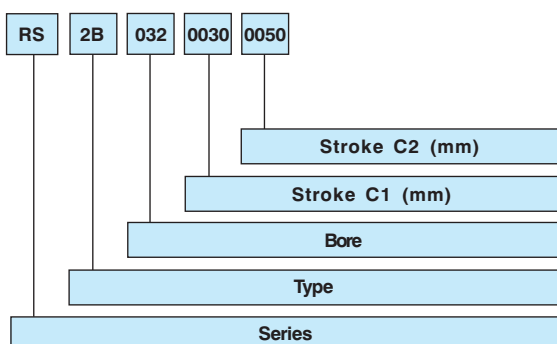
Page 38-I

**Cylinder with independent rods
(multiple position cylinder)**

Cyl. Ø*	ZA	L
32	44	88
40	45	90
50	45	90
63	49	98



Codification key



SERIES

RS Round cylinder with independent rods
RO Octagonal cylinder with independent rods

TYPE

Stainless steel rod

1B Female rod
3B Male rod

Chromium-plated steel rod

2B Female rod
4B Male rod

BORE

032-040-050-063 mm

STROKE 1

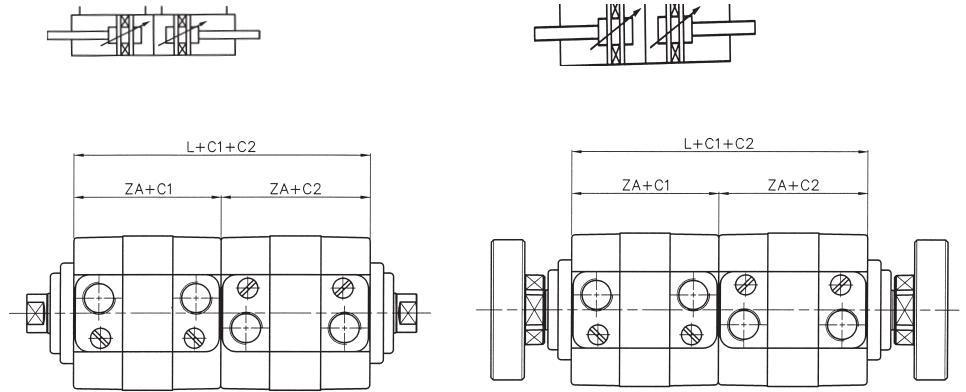
Stroke rear cylinder (page 38-I).

STROKE 2

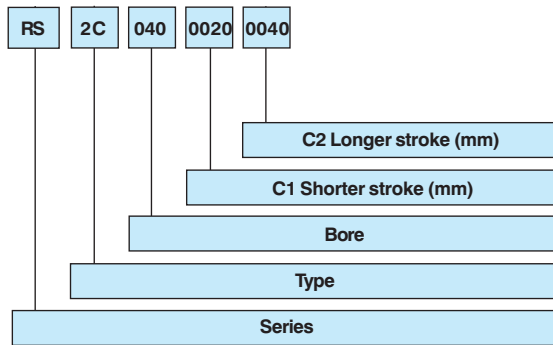
Effective stroke front cylinder (page 38-I).

Opposed cylinder

Cyl. Ø*	ZA	L
32	44	88
40	45	90
50	45	90
63	49	98



Codification key



SERIES

- RS** Round cylinder with opposed rods
- RO** Octagonal cylinder with opposed rods

TYPE

- Stainless steel rod**
- 1C** Female rod
 - 3C** Male rod
- Chromium-plated steel rod**
- 2C** Female rod
 - 4C** Male rod

BORE

032-040-050-063 mm

STROKE 1

Page 38-I

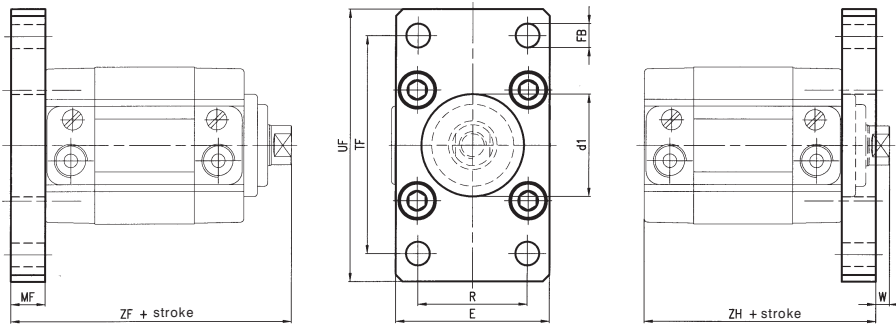
STROKE 2

Page 38-I

* For all other dimensions please refer to the standard version on pages 41 and 46.



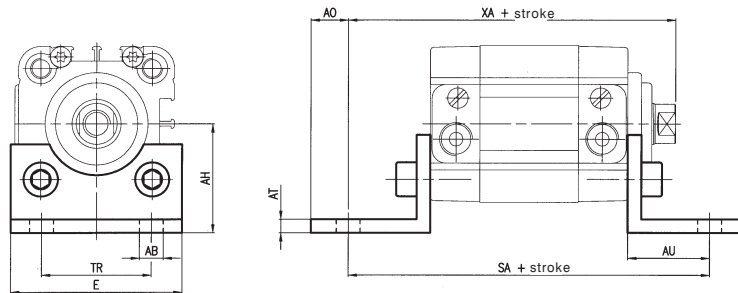
Front and rear flange in zinc-plated steel, ISO MF1-MF2



Cyl. Ø	Part number	Mass kg
32	KF-12032	0,20
40	KF-12040	0,25
50	KF-12050	0,50
63	KF-12063	0,65

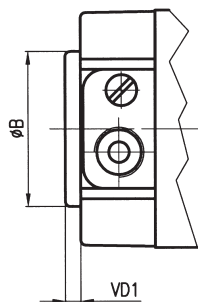
Angle bracket in zinc-plated steel, ISO MS1

Fixing screws page 51



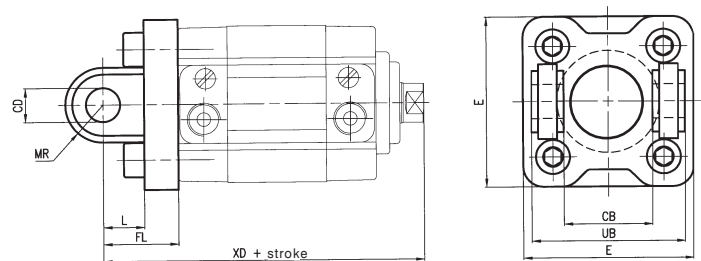
Cyl. Ø	Part number	Mass kg
32	KF-13032	0,07
40	KF-13040	0,09
50	KF-13050	0,20
63	KF-13063	0,20

Adaptor ring for rear centering ISO (upon request)



Cyl. Ø	Part number
32	RSF-09032
40	RSF-09040
50	RSF-09050
63	RSF-09063

Rear female hinge in die-cast aluminium with pin in zinc-plated steel ISO MP2



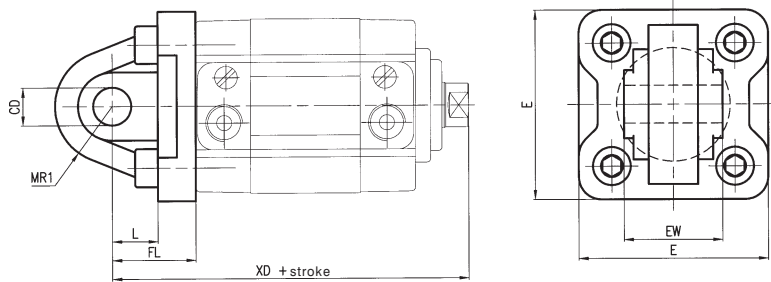
Cyl. Ø	Part number	Mass kg
32	KF-10032A	0,06
40	KF-10040A	0,08
50	KF-10050A	0,15
63	KF-10063A	0,25

By removing the pin it is possible to use the female hinge also in front.

Flange												Bracket						Adaptor ring		Female hinge with pin									
Cyl. Ø	Ød1 H11	E	ØFB H13	W	MF	R Js14	TF Js14	UF	ZF	ZH	ØAB H13	AH Js15	AO	AT	AU ± 0.2	E	SA	TR	XA	ØB	VD1	CB H14	ØCD H9	E	FL	L	MR	UB h14	XD
32	30	45	7	4	10	32	64	80	68	54	7	32	6	4	24	45	92	32	82	30	3	26	10	48	22	12	11	45	80
40	35	52	9	4	10	36	72	90	69	55	9	36	8	4	28	52	101	36	87	35	3	28	12	54	25	15	13	52	84
50	40	65	9	6	12	45	90	110	75	57	9	45	10	5	32	64	109	45	95	40	3	32	12	65	27	15	13	60	90
63	45	75	9	6	12	50	100	120	79	61	9	50	12	5	32	74	113	50	99	45	3	40	16	75	32	20	17	70	99

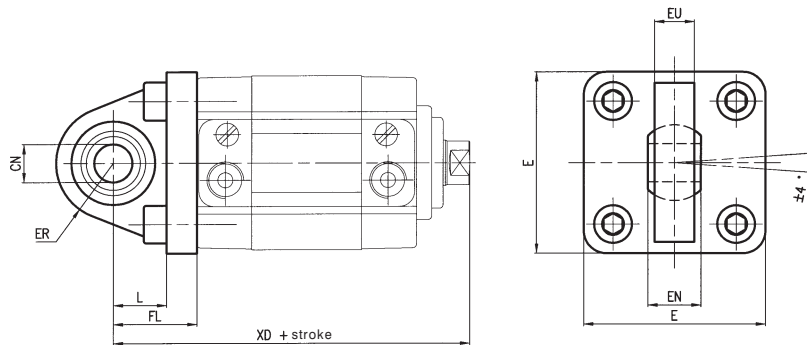


Rear male hinge in die-cast aluminium ISO MP4 without pin



Cyl. Ø	Part number	Mass kg
32	KF-11032	0,20
40	KF-11040	0,25
50	KF-11050	0,50
63	KF-11063	0,65

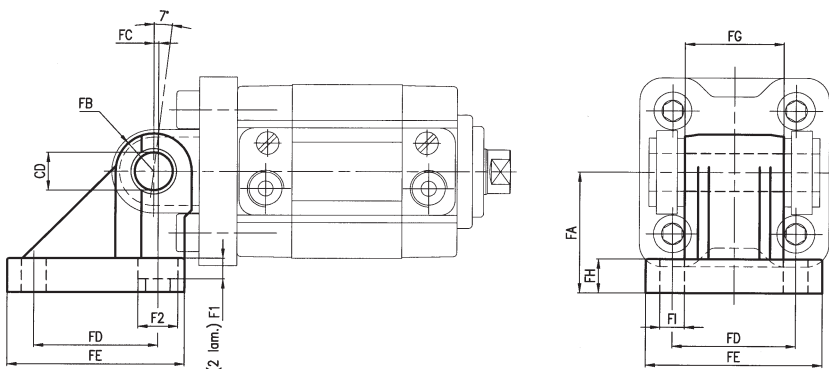
Articulated male hinge in die-cast aluminium



Cyl. Ø	Part number	Mass kg
32	KF-11032S	0,10
40	KF-11040S	0,20
50	KF-11040S	0,30
63	KF-11063S	0,35

Counter-hinge 90° in die-cast aluminium

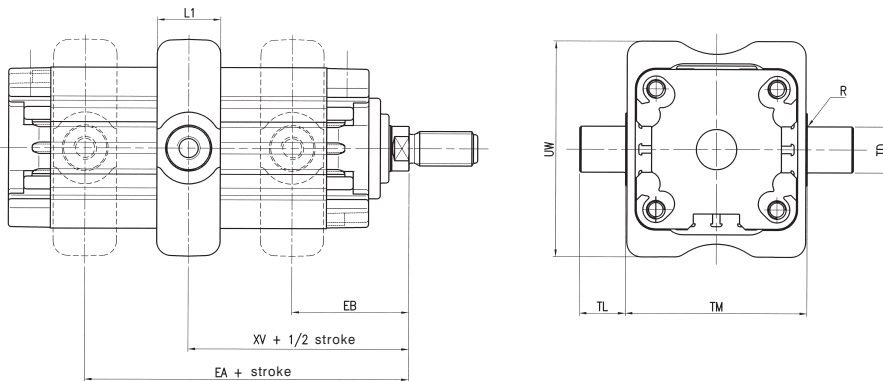
Fixing screws page 51



Cyl. Ø	Part number	Mass kg
32	KF-19032	0,09
40	KF-19040	0,12
50	KF-19050	0,20
63	KF-19063	0,32

Rear male hinge								Articulated male hinge								Counter-hinge										
Cyl. Ø	ØCD H9	E	EW toll. -0.2/-0.6	FL	L	MR1	XD	ØCN H9	E	EN	ER	EU	FL	L	XD	ØCD H9	FA Js15	FB	FC	FD	FE	FG -0.2/-0.6	FH	FI	F1	F2
32	10	48	26	22	12	15	80	10	48	14	15	10.5	22	14	80	10	32	10	1.2	32.5	46.5	26	9	6.4	5.5	10.5
40	12	54	28	25	15	18	84	12	54	16	18	12	25	16.5	84	12	36	12	2.6	38	51.5	28	9	6.4	5.5	10.5
50	12	65	32	27	15	20	90	12	65	16	20	12	27	17.5	90	12	45	12	0.3	46.5	63.5	32	9	8.4	5	13.5
63	16	75	40	32	20	23	99	16	75	21	23	15	32	21.5	99	16	50	16	3.3	56.5	73.5	40	10.5	8.4	5	13.5

Intermediate hinge with grub screws



Cyl. Ø	EA (max)	EB (min)	I1 (max)	R (max)	TD (e9)	TL (h14)	TM (h14)	UW (max)	XV	
									Nom.	Tol.
32	31	41	22	0,5	12	12	50	65	36	±2
40	32	41	22	0,5	16	16	63	75	36,5	±2
50	36	45	22	1	16	16	75	95	40,5	±2
63	37	48	28	1	20	20	90	105	42,5	±2

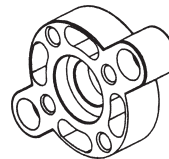
Cyl. Ø	Part number	Mass kg
32	KDF-14032	0,13
40	KDF-14040	0,24
50	KDF-14050	0,32
63	KDF-14063	0,47

Flange for female rod in die-cast aluminium, (with fixing screw standard supplied with octagonal cylinders RQ series)



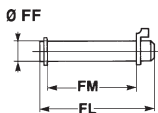
Cyl. Ø	Part number	Mass kg
32	RPF-28032	0,024
40	RSF-28040	0,035
50	RSF-28050	0,057
63	RSF-28063	0,094

Flange for rod with non-rotating device in die-cast aluminium for RS210.../RS211... series (fixing screws included)



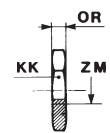
Cyl. Ø	Part number	Mass kg
32	RPF-29032	0,026
40	RSF-29040	0,036
50	RSF-29050	0,065
63	RSF-29063	0,100

Pin in zinc-plated steel with 2 circlips



Cyl. Ø	FF f8	FL	FM	Mass kg	Part number
32	10	53	46	0,03	KF-18032
40	12	61,3	53	0,05	KF-18040
50	12	69	61	0,05	KF-18050
63	16	80,5	71	0,12	KF-18063

Rod nut in zinc-plated steel



Cyl. Ø	ZM	KK	OR	Part number
32	M10x1,25	17	6	KF-16032
40	M12x1,25	19	7	KF-16040
50-63	M16x1,5	24	8	KF-16050

Fixing screws for accessories

Cylindrical screw UNI 5931 Part n° AZ4-VN... suitable for mounting elements KF-12... and KF-13... series

Cyl. Ø	Screw	Part number
32-40	M6 x 20	AZ4-VN0620
50-63	M8 x 25	AZ4-VN0825

Cylindrical screw UNI 5931 Part n° AZ4-VN... suitable for mounting elements KF-10... KF-11... series

Cyl. Ø	Screw	Part number
32-40	M6 x 25	AZ4-VN0625
50-63	M8 x 30	AZ4-VN0830

Cylindrical screw UNI 5931 Part n° AZ4-VN... suitable for mounting elements KF-19... series (Ø 32-40)

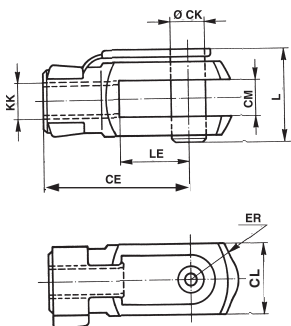
Cyl. Ø	Screw 2 pcs. per type	Part number
32-40	M6 x 20	AZ4-VN0620
	M6 x 25	AZ4-VN0625

Cylindrical screw UNI 5931 Part n° AZ4-VN... suitable for mounting elements KF-19... series (Ø 50-63)

Cyl. Ø	Screw 2 pcs. per type	Part number
50-63	M8 x 25	AZ4-VPA0825
	M8 x 30	AZ4-VPA0830

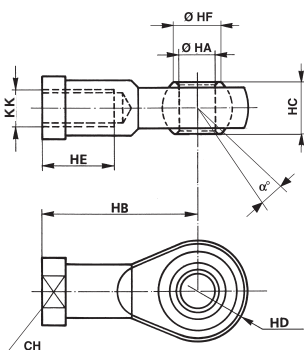


Female fork with clips in zinc-plated steel for piston rod according to ISO 8140 standard with pin



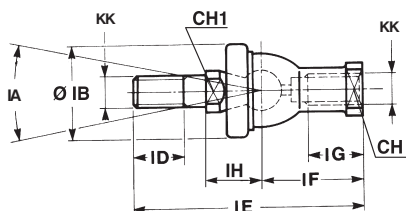
Cyl. Ø	CE	CK	CL	CM B12 B12	ER	KK	L	LE	Mass kg	Part number
	32	40	10	20	10	16	M10 x 1,25	26		
40	48	12	24	12	19	M12 x 1,25	32	24	0,015	KF - 15040
50-63	64	16	32	16	25	M16 x 1,5	39	32	0,34	KF - 15050

Articulated self-lubricating fork in zinc-plated steel



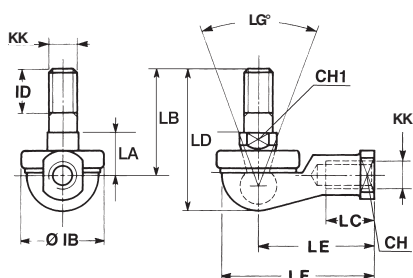
Cyl. Ø	a	CH	KK	HA	HB	HC	HD	HE	HF	Mass kg	Part number
	32	13°	17	M10 x 1,25	10	43	14	14	20		
40	13°	19	M12 x 1,25	12	50	16	16	22	15,4	0,11	KF - 17040
50-63	15°	22	M16 x 1,5	16	64	21	21	28	19,3	0,22	KF - 17050

Fork with axially mounted articulated pin



Cyl. Ø	CH	CH1	IA	KK	IH	IB	ID	IE	IF	IG	Mass kg	Part number
					±0,3							
32	17	11	30°	M10 x 1,25	19,5	32	15	74,5	35	18	0,12	KF - 22025
40	19	17	30°	M12 x 1,25	22	36	17	84	40	20	0,185	KF - 22040
50-63	22	19	22°	M16 x 1,5	27,5	47	23	112	50	27	0,36	KF - 22050

Fork with angle-mounted articulated pin



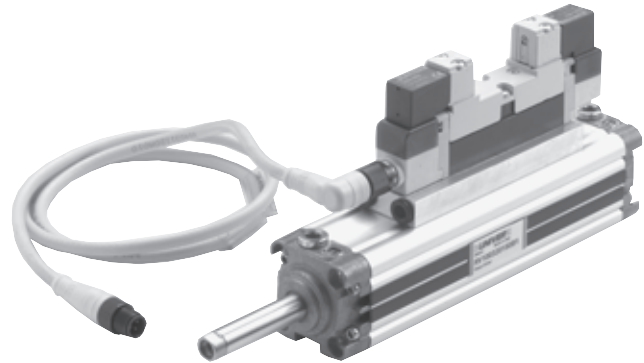
Cyl. Ø	CH	CH1	LG	KK	IB	ID	LA	LB	LC	LD	LE	LF	Mass kg	Part number
							±0,3							
32	17	11	50°	M10 x 1,25	32	15	17	37	21	50,5	43	57	0,11	KF - 23025
40	19	17	50°	M12 x 1,25	36	17	19	42	27	57,5	50	66	0,165	KF - 23040
50-63	22	19	40°	M16 x 1,5	47	23	23,5	60	33	79,5	64	84	0,33	KF - 23050



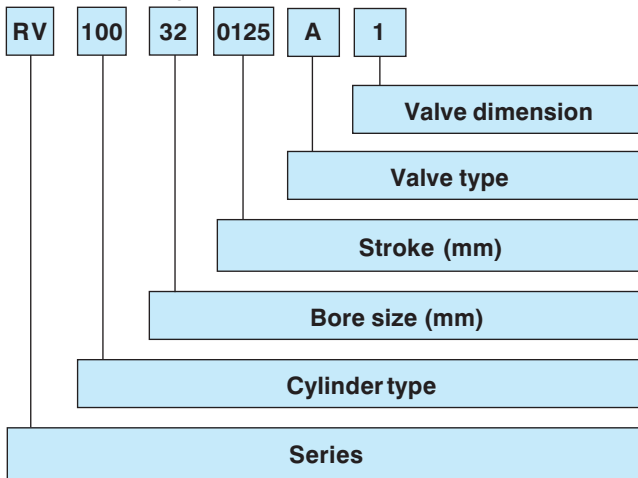
Compact cylinders RV series with integrated 5/2-5/3 solenoid valve VDMA series 18 or 26 mm. Pressure and exhaust take place directly from the connection plate between valve and cylinder with the possibility to regulate the exhausts. It is possible to operate the electrical connection M12 also from a PLC.

TECHNICAL CHARACTERISTICS

Working pressure: 1,5 ÷ 10 bar
 Ambient temperature: - 20 ÷ 80°C
 Fluid: filtered air, lubricated or not
 Barrel profile of extruded aluminium alloy with chromium-plated piston rod
 Oversized guides
 Adjustable cushioning (10 mm)
 Max. speed: 1 m/s
 Magnetic version



Codification key



Technical characteristics of valves from page 72-III (section valves)

BORE SIZE

032 - 040 - 050 - 063 mm

STROKE

Minimum stroke: 125 mm for \varnothing 32-40-50 mm
 135 mm for \varnothing 63 mm

VALVE TYPE

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

VALVE DIMENSIONS

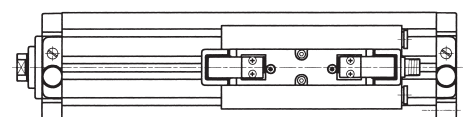
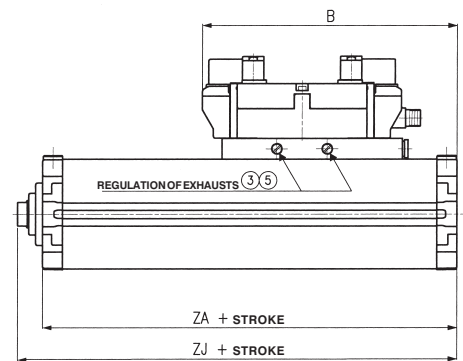
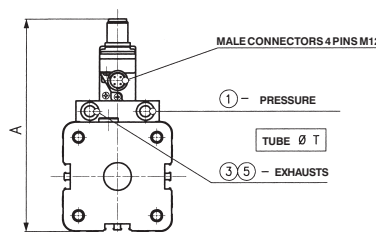
- 1** = VDMA 18 mm for \varnothing 32-40-50 mm
- 2** = VDMA 26 mm for \varnothing 63 mm

SERIES

RV = STRONG cylinder with integrated valve

CYLINDER TYPE

- RV series**
- 100 double-acting stainless steel rod
 - 101 double-acting stainless steel through rod
 - 200 double-acting chromium-plated steel rod
 - 201 double-acting chromium-plated steel through rod



Cyl. \varnothing	A	B	T	min. stroke	ZA	ZJ
32	107,5	169	6	125	169	182,5
40	117,5	169	6	125	169	183
50	127,5	169	6	125	169	187
63	153	184	8	135	183,5	201,5

As far as lacking dimensions are concerned please refer to standard version on page 41-I; mounting elements and accessories see page 49-I.



The wide product range and unique design make Univer "Short stroke cylinders W series" essential for all applications where compact overall dimensions and short strokes are required. This product, thanks to its versatility, the vast variety of accessories, the various bore sizes combined with mechanical shock-absorbers, complies perfectly with the requirements of the industry.

TECHNICAL CHARACTERISTICS

Operating pressure: 1,5 ÷ 10 bar
 Ambient temperature: - 20 ÷ 80°C
 Fluid: Filtered air, with or without lubrication

Construction details

Barrel profile of extruded aluminium alloy, internally and externally anodized (15 - 18 µ).
 Removable end-caps for easy inspection.
 Piston fitted with permanent plastoferrite magnetic ring (upon request; bore sizes 16 ÷ 100)
 Piston seals produced in a special nitrile compound self-compensate against wear.
 Rolled stainless steel rod (AISI 303) with female thread (male thread upon request).
 Self-lubricating guide bearings.
 With mechanical end stroke shock-absorbers
 Magnetic switch Series DH... or flush-mounted magnetic sensor DF... series (Section Accessories page 2-3)

Nominal tolerance on stroke

Cyl. Ø	Tolerance mm
12 ÷ 25	+ 1,5/0
32 ÷ 50	+ 2/0
63 ÷ 100	+ 2,5/0

Upon request

- Rear trunnion (page 64)
- Nipple
- Non-rotating piston rod (bore sizes Ø 16 ÷ 100) (page 60-61)
- Hollow through piston rod (bore sizes Ø 20 ÷ 100)
- Magnetic option (bore sizes Ø 16 ÷ 100)
- Tandem cylinders (page 64)
- Slide units, bore sizes Ø 20 ÷ 80 (Section High-Tech page 47)

Developed forces

Calculated by applying the following formula:

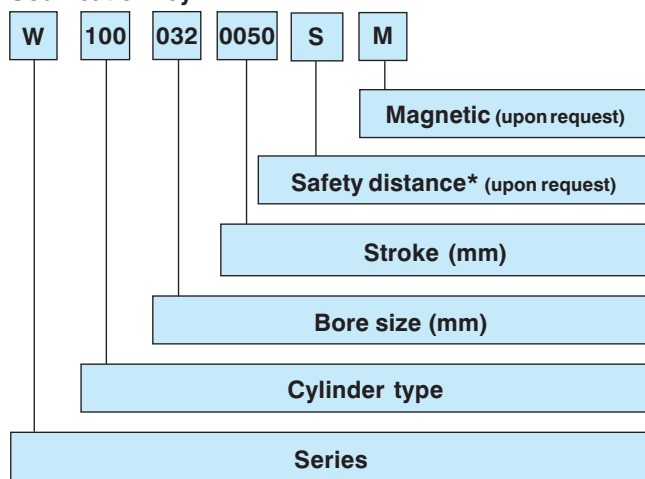
Thrust force	Traction force
$Thf = S \cdot p - a$	$Tf = s \cdot p - a$

where: p = supply pressure
 S = piston push surface (cm²)
 s = piston pull surface (cm²)
 a = friction (10%)

Cyl. Ø	Piston rod Ø (mm)	S (cm ²)	s (cm ²)	Max. reaction of the springs (N)
12	6	1,1	0,8	6,8
16	6	2	1,7	7,8
20	10	3,1	2,3	13,2
25	10	4,9	4,1	19,6
32	12	8	6,9	35,3
40	16	12,6	10,6	45
50	16	19,6	17,6	70,5
63	20	31,1	28	96
80	25	50,3	54,3	119,5
100	25	78,5	73,6	237,2



Codification key



CYLINDER TYPE

- 100 D.A.** Double-acting cylinder
- 101 D.A.** Double-acting cylinder-through piston rod
- 110 D.A.** Double-acting cylinder-non-rotating piston rod*
- 111 D.A.** Double-acting cylinder-through, non-rotating piston rod*
- 131 D.A.** Double-acting cylinder- hollow through piston rod (min. Ø 20 mm)
- 160 S.A.** Single-acting cylinder-retracted piston rod
- 170 S.A.** Single-acting cylinder-extended piston rod

VERSION WITH REAR MALE HINGE

(except for bore size Ø 12)

- 700 D.A.** Double-acting cylinder
- 760 S.A.** Single-acting cylinder - retracted piston rod
- 770 S.A.** Single-acting cylinder - extended piston rod

BORE

12 - 16 - 20 - 25 - 32 - 40 - 50 - 63 - 80 - 100 mm

STANDARD STROKE

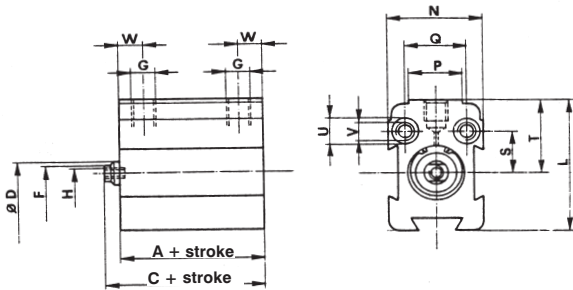
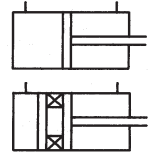
- Ø 12 - 25 S.A.: 5 - 10 mm
- Ø 32 - 100 S.A.: 5 - 10 - 25 mm
- Ø 12 - 16 D.A.: 5 - 10 - 20 - 25 - 30 - 40 - 50 mm
- Ø 20 - 100 D.A.: 5 - 10 - 20 - 25 - 30 - 40 - 50 - 75 mm

* The cylinder types without safety distance requested by the customer have to be installed by the user in accordance with EC rules EN 294 (page 90-91).

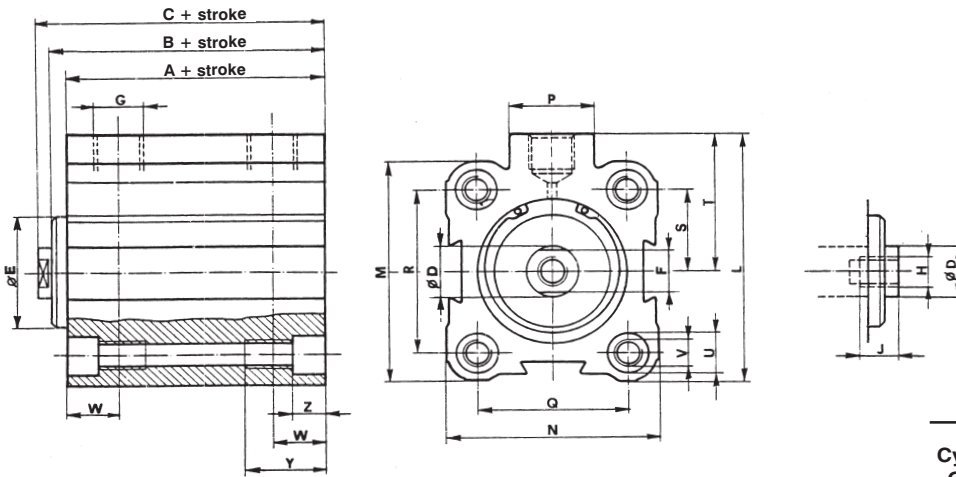


Double-acting cylinder W 100 . . / W 100 . . M Series

Ø 12 mm cylinder



Ø 16 ÷ 100 cylinder



Mass

Cyl. Ø	Stroke 0 non magnetic kg	Stroke 0 magnetic kg	Increase per mm (g)
12	0,045	-	1,2
16	0,074	0,102	1,4
20	0,095	0,12	2
25	0,1355	0,155	2,85
32	0,233	0,292	4,06
40	0,394	0,43	5,47
50	0,39	0,446	6,4
63	0,64	0,772	9,7
80	1,19	1,275	14,85
100	1,72	1,92	19,7

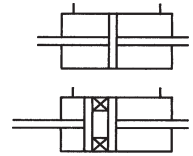
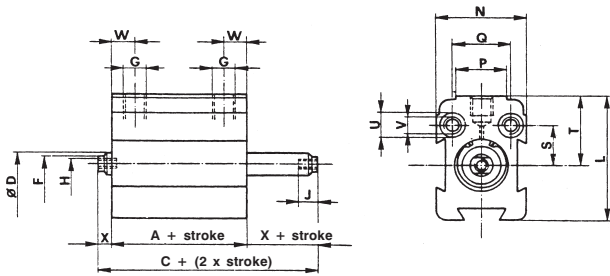
Cyl. Ø	A	B	C	A*	B*	C*	D	E	F	G	H	J	L	M	N	P	Q	R	S	T	U	V		W	Y	Z
																						hole	thread			
12	32	-	35,5	-	-	-	6	-	5	M5	M3	6,5	28,5	-	20	11	13	-	9	16	6	3,7	M4	8,2	9	3,4
16	32	-	35,5	42	-	45,5	6	-	5	M5	M3	6,5	31	28	28	11	20	20	10	17	5,8	3,7	M4	6,5	9	3,4
20	35	-	42	45	-	52	10	-	8	M5	M5	10	35	32	32	11	22	22	11	19	7,5	4,6	M5	7	10	4,6
25	35	-	42	45	-	52	10	-	8	G 1/8	M5	10	44,5	39	37	18	26	28	14	25	7,5	4,6	M5	7,5	10	4,6
32	37	42	49	47	52	59	12	23	10	G 1/8	M6	12	54	48	45	18	32	36	18	30	8,5	5,55	M6	9	16	5,7
40	40	47	55	45	52	60	16	29,5	13	G 1/8	M8	14	60	54,5	54,5	18	40	40	20	33	8,5	5,55	M6	9,5	16	5,7
50	40	46,5	55	45	51,5	60	16	35,5	13	G 1/4	M8	14	72	64	64	22	50	50	25	40	10,5	7,4	M8	10	16	6,8
63	42	50,5	59	47	55,5	64	20	43	17	G 1/4	M10	15	88	80	80	22	62	62	31	48	13,5	9,3	M10	10	20	9
80	52	60	71,5	57	65	76,5	25	50	22	G 3/8	M12	20	110	100	100	26	82	82	41	60	13,5	9,3	M10	15	20	9
100	52	60	71,5	57	65	76,5	25	56	22	G 3/8	M12	20	134	124	124	26	103	103	51,5	72	16,5	11,2	M12	15	25	11

* Magnetic version



Double-acting cylinder with through piston rod W 101 .. / W 101 .. M Series

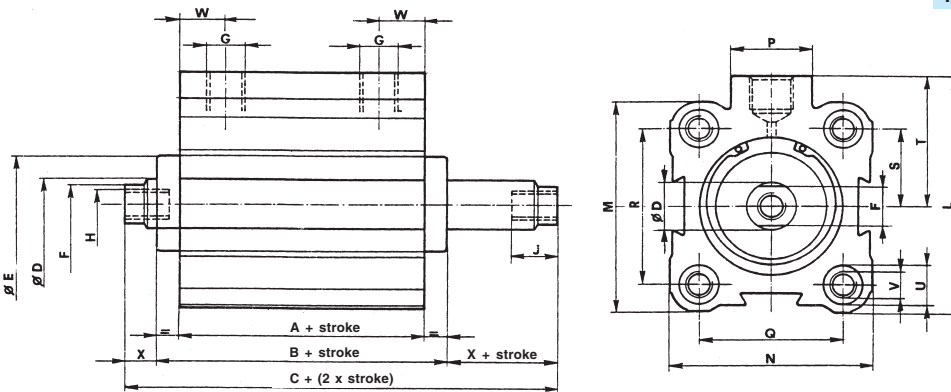
Ø 12 mm cylinder



Mass

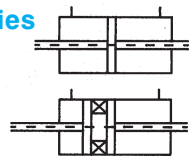
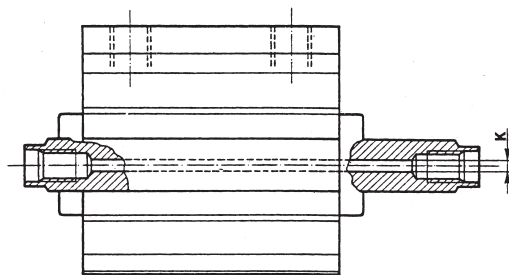
Cyl. Ø	Stroke 0 non magnetic kg	Stroke 0 magnetic kg	Increase per mm (g)
12	0,055	-	1,4
16	0,086	0,114	1,6
20	0,112	0,137	2,65
25	0,165	0,185	3,5
32	0,295	0,354	5
40	0,5	0,536	7
50	0,478	0,534	8
63	0,79	0,922	12,2
80	1,345	1,43	18,7
100	1,875	2,075	23,6

Ø 16 ÷ 100 mm cylinder



Double-acting cylinder with hollow through piston rod W 131 .. / W 131 .. M Series

(from. Ø 20 ÷ 100 mm)



Cyl. Ø	12	16	20	25	32	40	50	63	80	100
K	-	-	2,5	2,5	3	4	4	6	6	6

For weights see table above

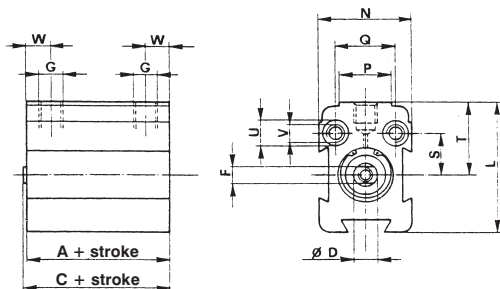
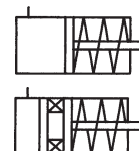
Cyl. Ø	A	B	C	A*	B*	C*	D	E	F	G	H	J	L	M	N	P	Q	R	S	T	U	V		W	X	Y	Z
																						hole	thread				
12	37	-	44	-	-	-	6	-	5	M5	M3	6,5	28,5	-	20	11	13	-	9	16	6	3,7	M4	8,2	3,5	9	3,4
16	37	-	44	47	-	54	6	-	5	M5	M3	6,5	31	28	28	11	20	20	10	17	5,8	3,7	M4	6,5	3,5	9	3,4
20	40	-	54	50	-	64	10	-	8	M5	M5	10	35	32	32	11	22	22	11	19	7,5	4,6	M5	7	7	10	4,6
25	40	-	54	50	-	64	10	-	8	G 1/8	M5	10	44,5	39	37	18	26	28	14	25	7,5	4,6	M5	7,5	7	10	4,6
32	42	52	66	52	62	76	12	23	10	G 1/8	M6	12	54	48	45	18	32	36	18	30	8,5	5,55	M6	9	7	16	5,7
40	45	59	75	50	64	80	16	29,5	13	G 1/8	M8	14	60	54,5	54,5	18	40	40	20	33	8,5	5,55	M6	9,5	8	16	5,7
50	45	58	75	50	63	80	16	35,5	13	G 1/4	M8	14	72	64	64	22	50	50	25	40	10,5	7,4	M8	10	8,5	16	6,8
63	47	64	81	52	69	86	20	43	17	G 1/4	M10	15	88	80	80	22	62	62	31	48	13,5	9,3	M10	10	8,5	20	9
80	52	68	91	57	73	96	25	50	22	G 3/8	M12	20	110	100	100	26	82	82	41	60	13,5	9,3	M10	15	11,5	20	9
100	52	68	91	57	73	96	25	56	22	G 3/8	M12	20	134	124	124	26	103	103	51,5	72	16,5	11,2	M12	15	11,5	25	11

* Magnetic version

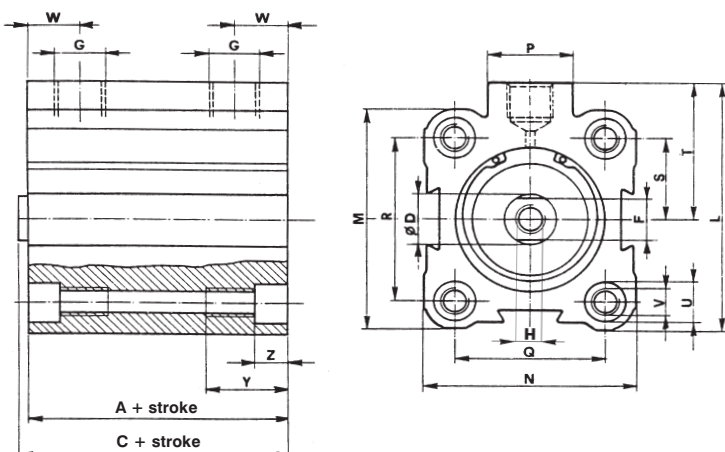


Single-acting cylinder, with retracted piston rod W 160 . . / W 160 . . M series

Ø 12 mm cylinder



Ø 16 ÷ 100 mm cylinder



Mass

Cyl. Ø	Stroke 0 non magnetic kg	Stroke 0 magnetic kg	Increase per mm (g)
16	0,059	0,079	1,4
20	0,07	0,095	2
25	0,096	0,116	2,85
32	0,194	0,253	4,06
40	0,326	0,362	5,47
50	0,322	0,378	6,4
63	0,533	0,715	9,7
80	1,02	1,105	14,85
100	1,49	1,69	19,7

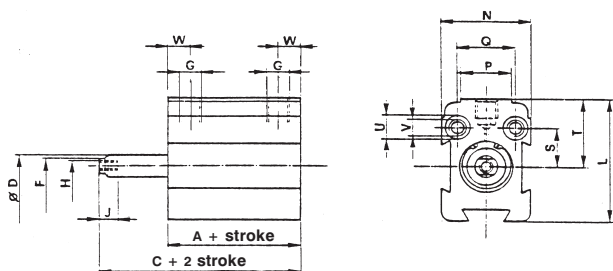
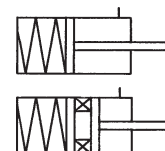
Cyl. Ø	A	C	A*	C*	D	F	G	H	J	L	M	N	P	Q	R	S	T	U	V		W	Y	Z
																			hole	thread			
12	27	28	-	-	6	5	M5	M3	6,5	28,5	-	20	11	13	-	9	16	6	3,7	M4	8,2	9	3,4
16	22	23	37	38	6	5	M5	M3	6,5	31	28	28	11	20	20	10	17	5,8	3,7	M4	6,5	9	3,4
20	25	26	40	41	10	8	M5	M5	10	35	32	32	11	22	22	11	19	7,5	4,6	M5	7	10	4,6
25	25	26	40	41	10	8	G 1/8	M5	10	44,5	39	37	18	26	28	14	25	7,5	4,6	M5	7,5	10	4,6
32	32	33	47	48	12	10	G 1/8	M6	12	54	48	45	18	32	36	18	30	8,5	5,55	M6	9	16	5,7
40	35	36	45	46	16	13	G 1/8	M8	14	60	54,5	54,5	18	40	40	20	33	8,5	5,55	M6	9,5	16	5,7
50	35	36	45	46	16	13	G 1/4	M8	14	72	64	64	22	50	50	25	40	10,5	7,4	M8	10	16	6,8
63	37	39	47	49	20	17	G 1/4	M10	15	88	80	80	22	62	62	31	48	13,5	9,3	M10	10	20	9
80	47	53	57	63	25	22	G 3/8	M12	20	110	100	100	26	82	82	41	60	13,5	9,3	M10	15	20	9
100	47	53	57	63	25	22	G 3/8	M12	20	134	124	124	26	103	103	51,5	72	16,5	11,2	M12	15	25	11

* Magnetic version

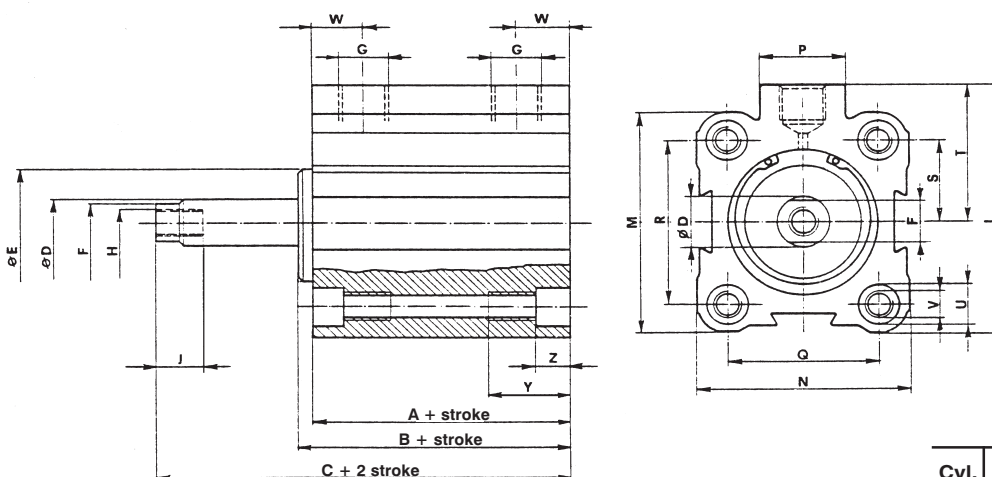


Single-acting cylinder with extended piston rod W 170 .. / W 170 .. M Series

Ø 12 mm cylinder



Ø 16 ÷ 100 mm cylinder



Mass

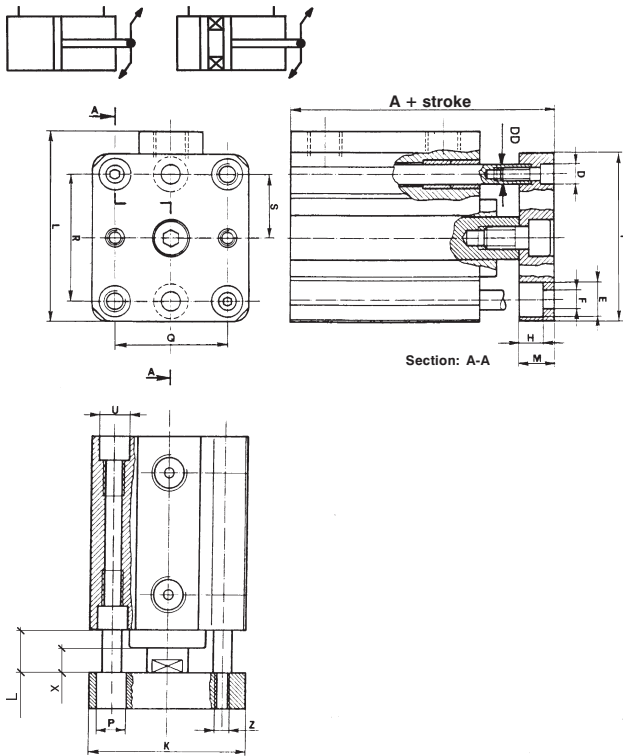
Cyl. Ø	Stroke 0 non magnetic kg	Stroke 0 magnetic kg	Increase per mm (g)
16	0,7	0,098	1,4
20	0,86	0,111	2
25	0,122	0,142	2,85
32	0,212	0,271	4,06
40	0,366	0,402	5,47
50	0,352	0,408	6,4
63	0,59	0,772	9,7
80	1,104	1,189	14,85
100	1,576	1,776	19,7

Cyl. Ø	A	B	C	A*	B*	C*	D	E	F	G	H	J	L	M	N	P	Q	R	S	T	U	V		W	Y	Z
	+ STROKE																					hole	thread			
12	32	-	35,5	-	-	-	6	-	5	M5	M3	6,5	28,5	-	20	11	13	-	9	16	6	3,7	M4	8,2	9	3,4
16	27	-	30,5	42	-	45,5	6	-	5	M5	M3	6,5	31	28	28	11	20	20	10	17	5,8	3,7	M4	6,5	9	3,4
20	30	-	37	45	-	52	10	-	8	M5	M5	10	35	32	32	11	22	22	11	19	7,5	4,6	M5	7	10	4,6
25	30	-	37	45	-	52	10	-	8	G 1/8	M5	10	44,5	39	37	18	26	28	14	25	7,5	4,6	M5	7,5	10	4,6
32	32	37	44	47	52	59	12	23	10	G 1/8	M6	12	54	48	45	18	32	36	18	30	8,5	5,55	M6	9	16	5,7
40	35	42	50	45	52	60	16	29,5	13	G 1/8	M8	14	60	54,5	54,5	18	40	40	20	33	8,5	5,55	M6	9,5	16	5,7
50	35	41,5	50	45	51,5	60	16	35,5	13	G 1/4	M8	14	72	64	64	22	50	50	25	40	10,5	7,4	M8	10	16	6,8
63	37	45,5	54	47	55,5	64	20	43	17	G 1/4	M10	15	88	80	80	22	62	62	31	48	13,5	9,3	M10	10	20	9
80	47	55	66,5	57	65	76,5	25	50	22	G 3/8	M12	20	110	100	100	26	82	82	41	60	13,5	9,3	M10	15	20	9
100	47	55	66,5	57	65	76,5	25	56	22	G 3/8	M12	20	134	124	124	26	103	103	51,5	72	16,5	11,2	M12	15	25	11

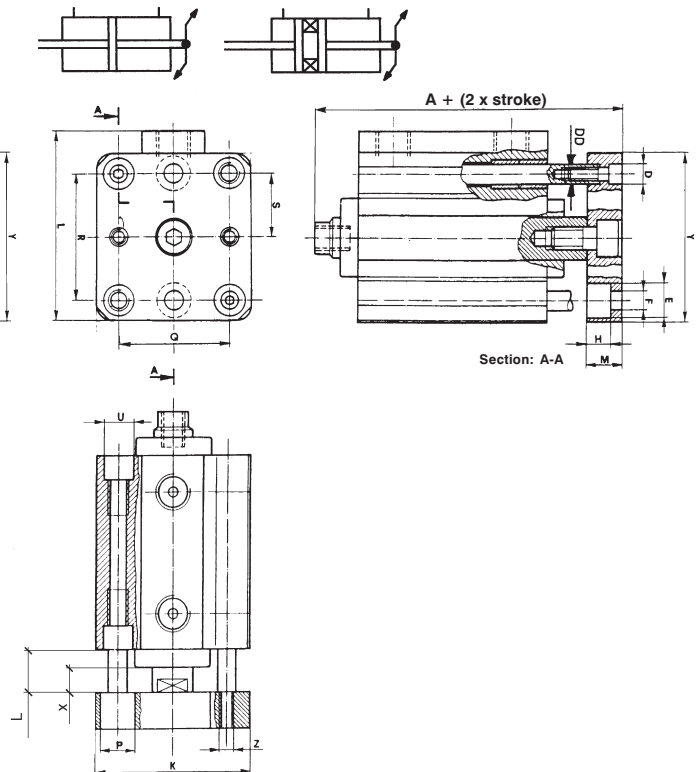
* Magnetic version



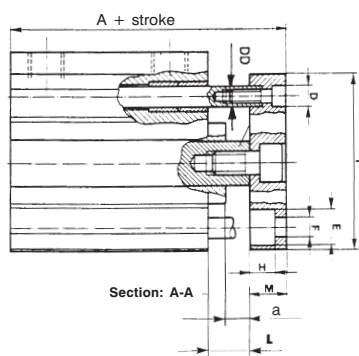
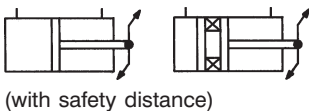
Non-rotating piston rod
W 110 .. / W 110 .. M Series



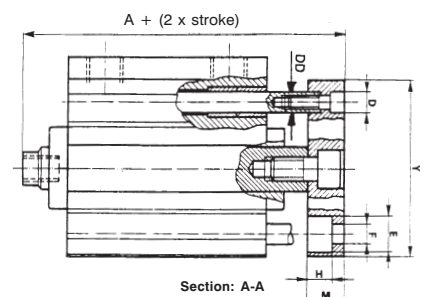
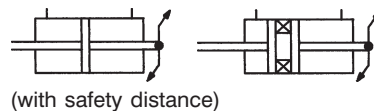
Non-rotating through piston rod
W 111 .. / W 111 .. M Series



Non-rotating piston rod
W 110 .. S / W 110 .. SM Series



Non-rotating through piston rod
W 111 .. S / W 111 .. SM Series



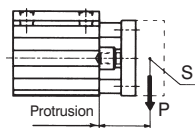
Mass

Cyl. Ø	Stroke 0 non magnetic kg	Stroke 0 magnetic kg	Increase per mm (g)
16	0,092	0,12	1,6
20	0,133	0,158	2,45
25	0,185	0,205	3,3
32	0,33	0,39	4,85
40	0,545	0,58	6,7
50	0,6	0,656	7,6
63	0,96	1,092	11,5
80	1,75	1,835	17,25
100	2,63	2,83	22,8

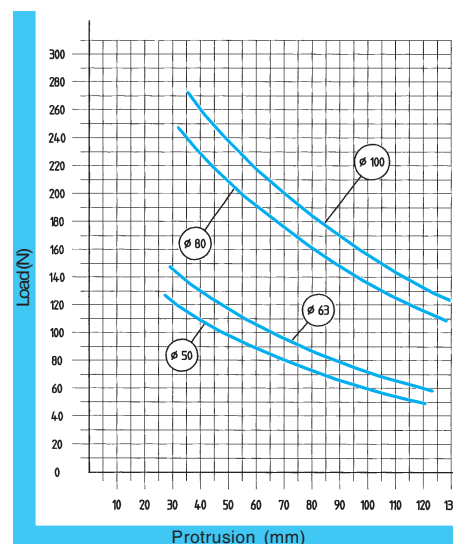
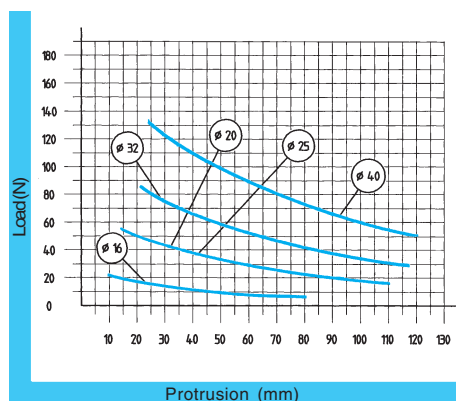
Mass

Cyl. Ø	Stroke 0 non magnetic kg	Stroke 0 magnetic kg	Increase per mm (g)
16	0,104	0,132	1,8
20	0,15	0,175	3,1
25	0,214	0,234	3,95
32	0,392	0,452	5,8
40	0,651	0,686	8,2
50	0,688	0,744	9,2
63	1,11	1,242	14
80	1,905	1,99	21
100	2,785	2,985	26,7

Chart relating to load / protrusion



S = point of application of load
P = load (N)

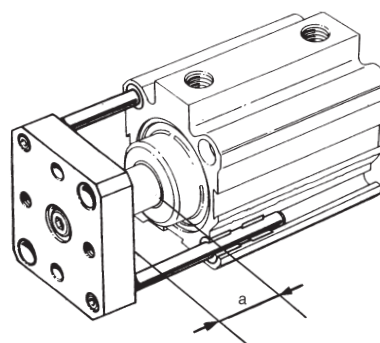


Overall dimensions of non-rotating cylinders

Cyl. Ø	X	L	W110 A + stroke	W111 A + (2 x stroke)	W110M A* + stroke	W111M A* + (2 x stroke)	D	DD	E	F	H	K	M	P	Q	R	S	Y	Z
16	3,5	3,5	42,5	51	52,5	61	6	4	6	3,5	3,5	27,5	7	6	20	20	10	27,5	M3
20	7	7	50	62	60	72	7,5	6	7,5	4,5	4,5	31,5	8	7,5	22	22	11	31,5	M4
25	7	7	50	62	60	72	7,5	6	7,5	4,5	5	36	8	7,5	26	28	14	38	M4
32	7	12	59	76	69	86	9	8	10	5,5	6	44,5	10	10	32	36	18	47,5	M4
40	8	15	65	85	70	90	10,5	10	10	5,5	6	53,5	10	10	40	40	20	53,5	M5
50	8,5	15	67	87	72	92	10,5	10	11	6,5	7	63,5	12	11	50	50	25	63,5	M6
63	8,5	17	71	93	76	98	13,5	12	14	9	9	79,5	12	15	62	62	31	79,5	M6
80	11,5	19,5	85,5	105	90,5	110	13,5	14	14	9	9	99,5	14	15	82	82	41	99,5	M8
100	11,5	19,5	87,5	107	92,5	112	16,5	16	16,5	10,5	10,5	123,5	16	17	103	103	51,5	123,5	M8

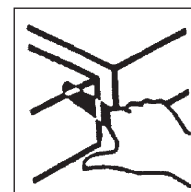
* Magnetic version

Overall dimensions of cylinder with non-rotating piston rod and safety distance option



Cyl. Ø	W110 A + stroke	W111 A + (2 x stroke)	W110M A* + stroke	W111M A* + (2 x stroke)	L	a
16	67,5	76	77,5	86	28,5	28,5
20	70	82	80	92	27	27
25	70	82	80	92	27	27
32	79	96	89	106	32	27
40	85	105	90	110	35	28
50	87	107	92	112	35	28,5
63	91	113	96	118	37	28,5
80	100,5	120	105,5	125	34,5	26,5
100	102,5	122	107,5	127	34,5	26,5

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

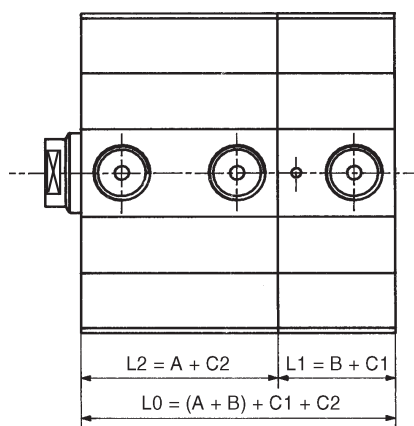
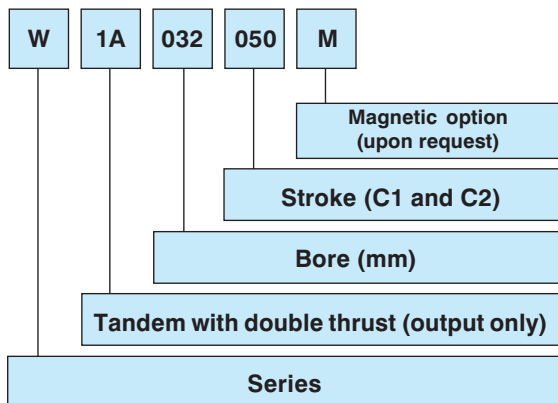
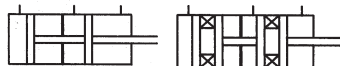


* Magnetic version

NOTE: for additional dimensions, please refer to models without non-rotating device



Tandem cylinder



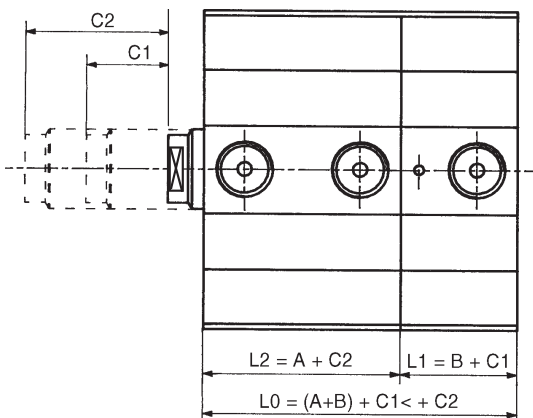
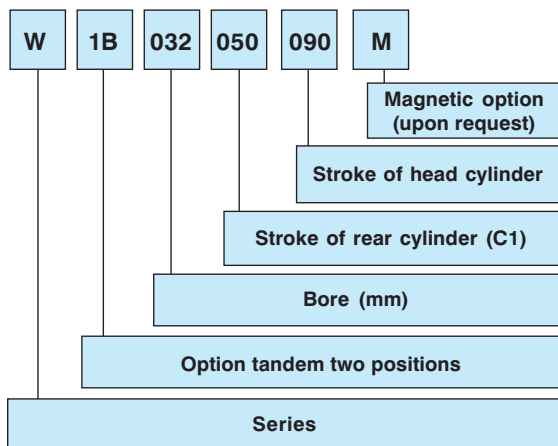
Tandem short stroke "W series"

Vér. Ø	L2 = A + C2	L1 = B + C1	L0 = (A+B) + C1 + C2
16	L2 = 37 + C2	L1 = 22 + C1	L0 = 59 + C1 + C2
20	L2 = 40 + C2	L1 = 25 + C1	L0 = 65 + C1 + C2
25	L2 = 40 + C2	L1 = 25 + C1	L0 = 65 + C1 + C2
32	L2 = 42 + C2	L1 = 23 + C1	L0 = 65 + C1 + C2
40	L2 = 45 + C2	L1 = 26,5 + C1	L0 = 71,5 + C1 + C2
50	L2 = 45 + C2	L1 = 26 + C1	L0 = 71 + C1 + C2
63	L2 = 47 + C2	L1 = 29 + C1	L0 = 76 + C1 + C2
80	L2 = 52 + C2	L1 = 38 + C1	L0 = 90 + C1 + C2
100	L2 = 52 + C2	L1 = 38 + C1	L0 = 90 + C1 + C2

Tandem short stroke "W series" magnetic

Cyl. Ø	L2 = A + C2	L1 = B + C1	L0 = (A+B) + C1 + C2
16	L2 = 47 + C2	L1 = 37 + C1	L0 = 84 + C1 + C2
20	L2 = 50 + C2	L1 = 40 + C1	L0 = 90 + C1 + C2
25	L2 = 50 + C2	L1 = 40 + C1	L0 = 90 + C1 + C2
32	L2 = 52 + C2	L1 = 38 + C1	L0 = 90 + C1 + C2
40	L2 = 50 + C2	L1 = 36.5 + C1	L0 = 86.5 + C1 + C2
50	L2 = 50 + C2	L1 = 36 + C1	L0 = 86 + C1 + C2
63	L2 = 52 + C2	L1 = 39 + C1	L0 = 91 + C1 + C2
80	L2 = 57 + C2	L1 = 48 + C1	L0 = 105 + C1 + C2
100	L2 = 57 + C2	L1 = 48 + C1	L0 = 105 + C1 + C2

Tandem cylinder with two positions



Stroke C1 is always lower than stroke C2

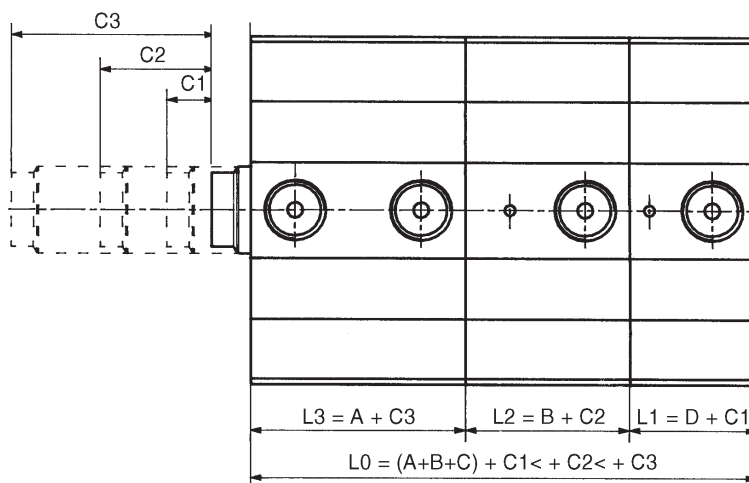
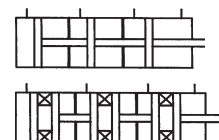
Tandem short stroke two positions "W series"

Cyl. Ø	L2 = A + C2	L1 = B + C1	L0 = (A+B) + C1< + C2
16	L2 = 37 + C2	L1 = 22 + C1	L0 = 59 + C1< + C2
20	L2 = 40 + C2	L1 = 25 + C1	L0 = 65 + C1< + C2
25	L2 = 40 + C2	L1 = 25 + C1	L0 = 65 + C1< + C2
32	L2 = 42 + C2	L1 = 23 + C1	L0 = 65 + C1< + C2
40	L2 = 45 + C2	L1 = 26.5 + C1	L0 = 71.5 + C1< + C2
50	L2 = 45 + C2	L1 = 26 + C1	L0 = 71 + C1< + C2
63	L2 = 47 + C2	L1 = 29 + C1	L0 = 76 + C1< + C2
80	L2 = 52 + C2	L1 = 38 + C1	L0 = 90 + C1< + C2
100	L2 = 52 + C2	L1 = 38 + C1	L0 = 90 + C1< + C2

Tandem short stroke two positions "W series" magnetic

Cyl. Ø	L2 = A + C2	L1 = B + C1	L0 = (A+B) + C1< + C2
16	L2 = 47 + C2	L1 = 37 + C1	L0 = 84 + C1< + C2
20	L2 = 50 + C2	L1 = 40 + C1	L0 = 90 + C1< + C2
25	L2 = 50 + C2	L1 = 40 + C1	L0 = 90 + C1< + C2
32	L2 = 52 + C2	L1 = 38 + C1	L0 = 90 + C1< + C2
40	L2 = 50 + C2	L1 = 36.5 + C1	L0 = 86.5 + C1< + C2
50	L2 = 50 + C2	L1 = 36 + C1	L0 = 87 + C1< + C2
63	L2 = 52 + C2	L1 = 39 + C1	L0 = 91 + C1< + C2
80	L2 = 57 + C2	L1 = 48 + C1	L0 = 105 + C1< + C2
100	L2 = 57 + C2	L1 = 48 + C1	L0 = 105 + C1< + C2

Multiple position cylinder WS (see drawing for references)



Multiple position tandem short stroke "W series"

Cyl. Ø	$L3 = A + C3$	$L2 = B + C2$	$L1 = D + C1$	$L0 = (A+B+D) + C1< + C2< + C3$
16	$L3 = 37 + C3$	$L2 = 27 + C2$	$L1 = 22 + C1$	$L0 = 86 + C1< + C2< + C3$
20	$L3 = 40 + C3$	$L2 = 30 + C2$	$L1 = 25 + C1$	$L0 = 95 + C1< + C2< + C3$
25	$L3 = 40 + C3$	$L2 = 30 + C2$	$L1 = 25 + C1$	$L0 = 95 + C1< + C2< + C3$
32	$L3 = 42 + C3$	$L2 = 28 + C2$	$L1 = 23 + C1$	$L0 = 93 + C1< + C2< + C3$
40	$L3 = 45 + C3$	$L2 = 31.5 + C2$	$L1 = 26.5 + C1$	$L0 = 103 + C1< + C2< + C3$
50	$L3 = 45 + C3$	$L2 = 31 + C2$	$L1 = 26 + C1$	$L0 = 102 + C1< + C2< + C3$
63	$L3 = 47 + C3$	$L2 = 36 + C2$	$L1 = 29 + C1$	$L0 = 112 + C1< + C2< + C3$
80	$L3 = 52 + C3$	$L2 = 38 + C2$	$L1 = 38 + C1$	$L0 = 128 + C1< + C2< + C3$
100	$L3 = 52 + C3$	$L2 = 38 + C2$	$L1 = 38 + C1$	$L0 = 128 + C1< + C2< + C3$

Multiple position tandem short stroke "W series" magnetic

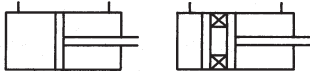
Cyl. Ø	$L3 = A + C3$	$L2 = B + C2$	$L1 = D + C1$	$L0 = (A+B+D) + C1< + C2< + C3$
16	$L3 = 47 + C3$	$L2 = 42 + C2$	$L1 = 37 + C1$	$L0 = 126 + C1< + C2< + C3$
20	$L3 = 50 + C3$	$L2 = 45 + C2$	$L1 = 40 + C1$	$L0 = 135 + C1< + C2< + C3$
25	$L3 = 50 + C3$	$L2 = 45 + C2$	$L1 = 40 + C1$	$L0 = 135 + C1< + C2< + C3$
32	$L3 = 52 + C3$	$L2 = 43 + C2$	$L1 = 38 + C1$	$L0 = 133 + C1< + C2< + C3$
40	$L3 = 50 + C3$	$L2 = 41.5 + C2$	$L1 = 36.5 + C1$	$L0 = 128 + C1< + C2< + C3$
50	$L3 = 50 + C3$	$L2 = 41 + C2$	$L1 = 36 + C1$	$L0 = 127 + C1< + C2< + C3$
63	$L3 = 52 + C3$	$L2 = 44 + C2$	$L1 = 39 + C1$	$L0 = 135 + C1< + C2< + C3$
80	$L3 = 57 + C3$	$L2 = 48 + C2$	$L1 = 48 + C1$	$L0 = 153 + C1< + C2< + C3$
100	$L3 = 57 + C3$	$L2 = 48 + C2$	$L1 = 48 + C1$	$L0 = 153 + C1< + C2< + C3$

NOTE: options with non-rotating rod are possible
Additional dimensions are reported in W100 ... series at page 56

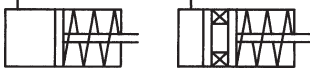


Rear male hinge

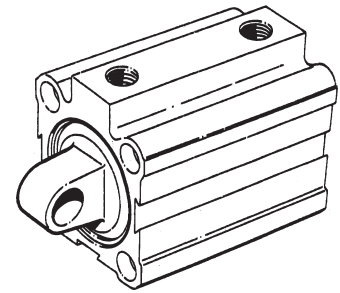
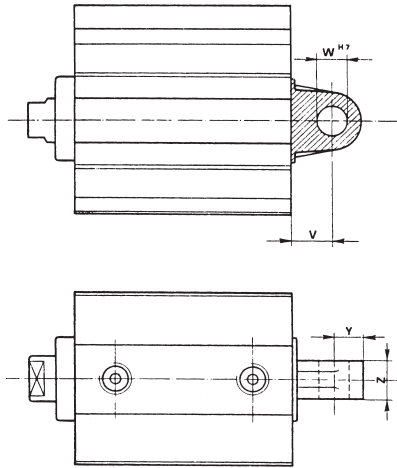
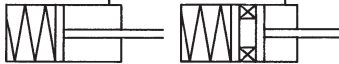
W 700 ... / W 700 ... M series



W 760 ... / W 760 ... M series



W 770 ... / W 770 ... M series

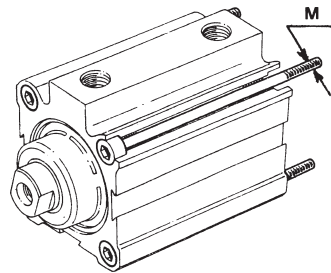


Mass

Cyl. Ø	W700.../W700...M			W760.../W760...M			W770.../W770...M		
	Stroke 0 non magnetic kg	Stroke 0 magnetic kg	Increase per mm (g)	Stroke 0 non magnetic kg	Stroke 0 magnetic kg	Increase per mm (g)	Stroke 0 non magnetic kg	Stroke 0 magnetic kg	Increase per mm (g)
12	-	-	-	-	-	-	-	-	-
16	0,082	0,11	1,4	0,067	0,087	1,4	0,078	0,106	1,4
20	0,1075	0,1325	2	0,0825	0,0975	2	0,0985	0,1235	2
25	0,1585	0,1785	2,85	0,119	0,139	2,85	0,145	0,165	2,85
32	0,2765	0,3355	4,06	0,2375	0,2965	4,06	0,2555	0,3155	4,06
40	0,4705	0,5065	5,47	0,4025	0,4385	5,47	0,442	0,4785	5,47
50	0,417	0,473	6,4	0,349	0,405	6,4	0,379	0,435	6,4
63	0,6815	0,8135	9,7	0,5745	0,7565	9,7	0,6315	0,9135	9,7
80	1,2385	1,3235	14,85	1,0685	1,1535	14,85	1,1525	1,2375	14,85
100	1,775	1,975	19,7	1,545	1,745	19,7	1,631	1,831	19,7

Cyl. Ø	Y	Z	Ø W ^{H7}	v
12	-	-	-	-
16	5,5	9	6 ^{H7}	6,2
20	5,5	9	6 ^{H7}	6,5
25	6	12	6 ^{H7}	8
32	9	14	10 ^{H7}	11
40	10	16	12 ^{H7}	13
50	12	17	12 ^{H7}	16,5
63	14	21	16 ^{H7}	18
80	14	21	16 ^{H7}	16,5
100	17	25	20 ^{H7}	21

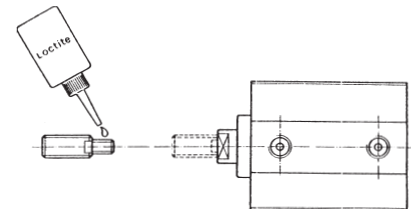
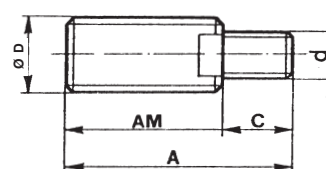
Fixing screws



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

* Magnetic version only for bore 16, the fixing screws have to be of the non magnetic type.

Nipple



Cyl. Ø	A	AM	C	D	d	Part number
12-16	22,5	16	6,5	6 x 1	M 3	WF-50012
20-25	30	20	10	8 x 1,25	M 5	WF-50020
32	34	22	12	10 x 1,25	M 6	WF-50032
40	38	24	14	12 x 1,25	M 8	WF-50040
50	46	32	14	16 x 1,5	M 8	WF-50050
63	47	32	15	16 x 1,5	M 10	WF-50063
80-100	60	40	20	20 x 1,5	M 12	WF-50080



Compact oval cylinder with adjustable pneumatic cushioning and standard magnetic version; its special shape allows the assembly of several coupled cylinders with reduced overall dimensions (in width).

TECHNICAL CHARACTERISTICS

Working pressure: 1,5 ÷ 10 bar
 Ambient temperature: -20°C ÷ 80°C
 Fluid: compressed air, lubricated or not.
 Barrel: extruded barrel in aluminium alloy, anodized externally and internally 15 µm with profile for flush-mounted sensor
 End-caps in aluminium.
 Self-threading screw in zinc-plated steel.
 Piston in aluminium.
 Piston seals in nitrile rubber.
 Rod seals in polyurethane.
 Adjustable pneumatic cushioning which allows an efficient

deceleration of the piston and reduces noise level.
 Piston rod in chromium-plated steel Ø 32 ÷ 80 mm, in stainless steel Ø 18 ÷ 25 mm.
 Magnetic version.
 Max. speed: 1 m/s
 With integrated fixing accessories: front, rear, lower and side.

Executions upon request:

- Versions with stainless steel rod (Ø 32 ÷ 80 mm) or in chromium-plated steel (Ø 18 ÷ 25 mm)
- Magnetic sensor DF-...series.
- Wire cover strap for magnetic sensor part n° DHF-002100.

Theoretical forces (N) developed at the following working pressures (bar) 1

bar = 0,1 MPa

Cyl. Ø		Working pressure [bar]				
		2	4	6	8	10
18	Thrust	54	108	162	216	270
	Traction	41	82	122	163	204
25	Thrust	98	196	295	393	491
	Traction	82	165	247	330	412
32	Thrust	161	322	483	643	804
	Traction	138	276	415	553	691
40	Thrust	251	502	754	1005	1256
	Traction	221	422	633	844	1055
50	Thrust	393	785	1178	1570	1963
	Traction	330	660	990	1320	1650
63	Thrust	623	1246	1870	2493	3116
	Traction	560	1120	1682	2240	2800
80	Thrust	1005	2010	3015	4019	5024
	Traction	942	1884	2826	3770	4711

Maximum applicable torque (Nm) and respective max. rotation

Cyl. Ø	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

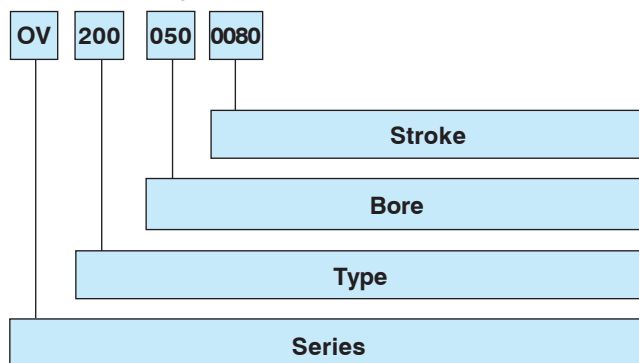
In case of pneumatic cylinders with through rod, theoretical force to be considered, in both direction, is always the same as the "traction" value indicated in the table. In practice these values will have to be reduced taking into account the weight and sliding friction of moving parts (approx. ~ -10%).



Nominal tolerance on the stroke

Cyl. Ø	Tolerance mm
18 ÷ 25	+ 1,5/0
32 ÷ 50	+ 2/0
63 ÷ 80	+ 2,5/0

Codification key



SERIES

OV = Oval Cylinders Ø 18 ÷ 80 mm

TYPE

- 1--- Female rod in stainless steel
- 2--- Female rod in chromium-plated steel (excluded Ø 18 - 25 mm)
- 3--- Male rod in stainless steel
- 4--- Male rod in chromium-plated steel (excluded Ø 18 - 25 mm)
- 00 D.A.
- 01 D.A. through rod
- 02 D.A. hollow through rod

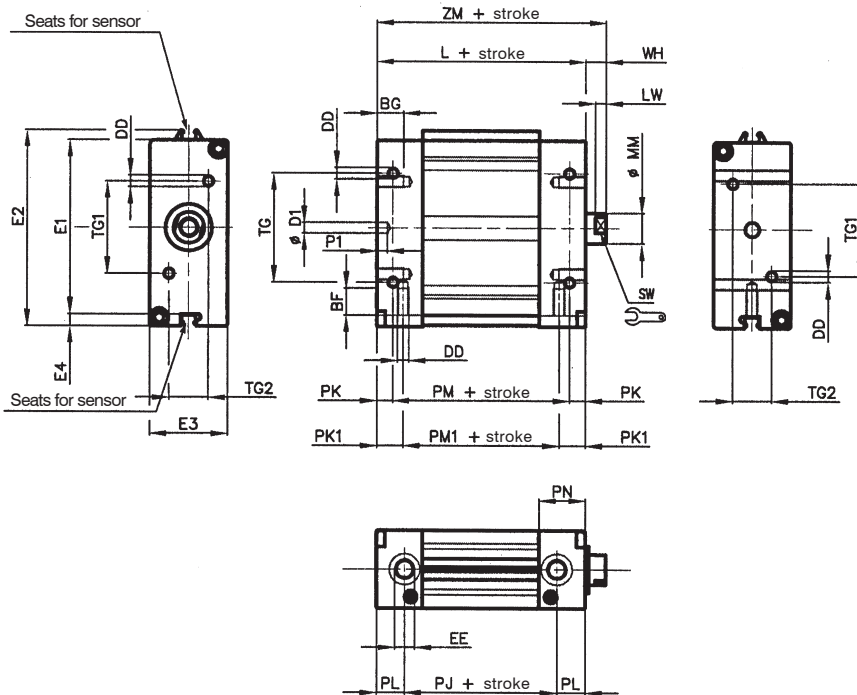
BORE

018 - 025 - 032 - 040 - 050 - 063 - 080 mm

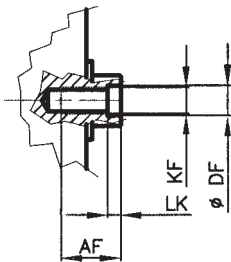
STROKE

0010-0025-0040-0050-0080-0100-0125-0160-0200 (Ø 18 ÷ 80 mm)
 0250-0320 (Ø 32 ÷ 80 mm)

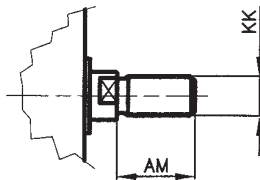
Double-acting cylinders Ø 18 mm



Female rod OV100.../OV200...series



Male rod OV300.../OV400...series

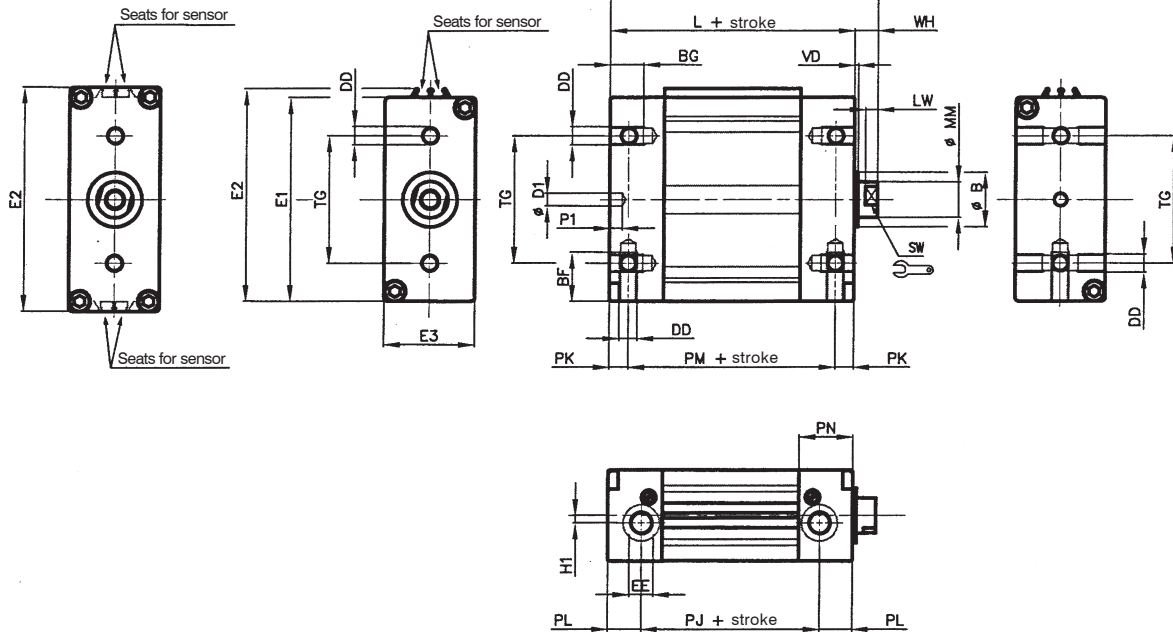


Cyl. Ø	AF min	AM	B f9	BF min	BG min	D1 H9	DD	DF	E1	E2	E3	EE	H1	L	KF	KK	LK
18	8	20		6	6	4	M4	4,1	40,5	50,5	16	M5		60	M4	M8	1
25	12	22	16	8	8	4	M4	5,1	52	57	20	M5		62	M5	M10X1,25	2
32	14	22	20	8	8	4	M5	6,2	61	66	24,5	G1/8	4,5	72	M6	M10X1,25	2,5
40	16	24	25	12	12	4	M5	8,2	61,5	67	38	G1/8	9	76	M8	M12X1,25	3
50	20	32	30	14	14	5	M8	10,5	76	81	40	G1/4	9,5	82	M10	M16X1,5	5
63	20	32	30	14	10,5	5	M10	10,5	92	97	50	G1/4	10,5	82	M10	M16X1,5	5
80	20	32	40	15	15	5	M10	10,5		130	60	G1/4	9	106	M10	M16X1,5	5

Double-acting cylinders Ø 25 ÷ 80 mm

Cyl. Ø 80 mm

Cyl. Ø 25 ÷ 63 mm

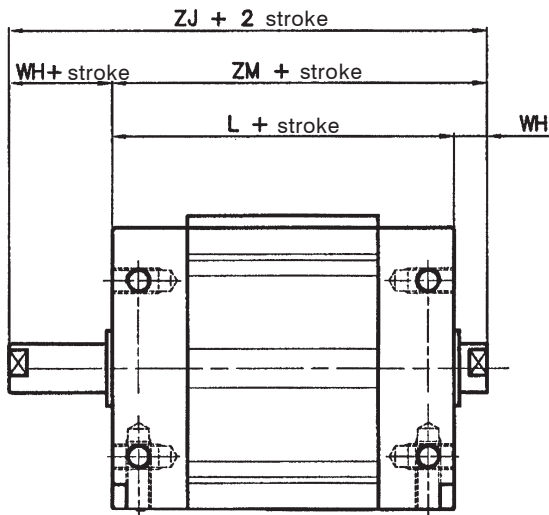


Mass

Cyl. Ø	Cylinder stroke "0" (g)	Increase per mm stroke (g)	Moving parts stroke "0" (g)	Increase per mm stroke (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

NOTE: The cushioning length may vary in comparison with that indicated depending on the different application and operation.

Cyl. Ø	MM	P1	PJ	PK	PL	PM	PN	SW	TG	VD	WH	ZM	Cushioning length
18	8	7	44	4	8	52	16	7	20		7	67	8
25	10	7	38	4	12	54	16	8	32	2	8	70	10
32	12	7	57	5	7,5	62	18	10	36	2	8	80	10
40	16	7	47	7,5	14,5	61	22	13	40	2	9	85	14
50	20	7	41	8,5	20,5	65	30	17	50	2	10	92	Front. 11/Rear 14
63	20	7	41	8,5	20,5	65	30	17	60	2	10	92	Front. 11/Rear 14
80	20	7	66	9	20	88	30	17	75	3	12	118	Front. 20/Rear 27



Mass

Cyl. \varnothing	Cylinder stroke "0" (g)	Increase per mm stroke (g)	Moving parts stroke "0" (g)	Increase per mm stroke (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

NOTE: The cushioning length may vary in comparison with that indicated depending on the different application and operation. For lacking dimensions please refer to pages 4/5.

Female through rod

OV102.../OV202...series

$\varnothing 18 \div 25$ mm max stroke 100 mm

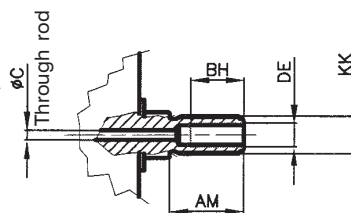
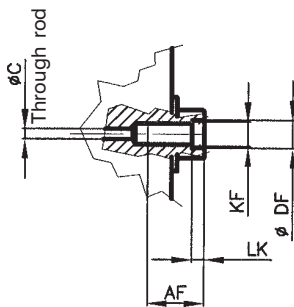
$\varnothing 32 \div 80$ mm max stroke 160 mm

Male through rod

OV302.../OV402...series

$\varnothing 18 \div 25$ mm max stroke 100 mm

$\varnothing 32 \div 80$ mm max stroke 160 mm



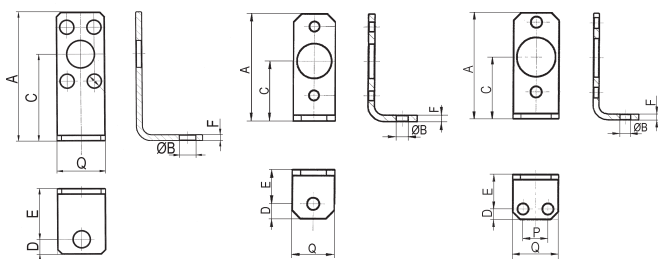
Cyl. \varnothing	AF min	AM	C min	DE	DF	KF	KK	L	LK	WH	ZM	ZJ	Cushioning length
18	8	20	1,5		4,1	M4	M8	60	1	7	67	74	8
25	12	22	2,5		5,1	M5	M10X1,25	62	2	8	70	78	10
32	14	22	3,5		6,2	M6	M10X1,25	72	2,5	8	80	88	10
40	16	24	5		8,2	M8	M12X1,25	76	3	9	85	94	14
50	20	32	7,5	G1/8	10,5	M10	M16X1,5	82	5	10	92	102	11
63	20	32	7,5	G1/8	10,5	M10	M16X1,5	82	5	10	92	102	11
80	20	32	7,5	G1/8	10,5	M10	M16X1,5	106	5	12	118	130	20

Angle bracket in zinc-plated steel

Ø 18 mm

Ø 25 mm

Ø 32 ÷ 80 mm



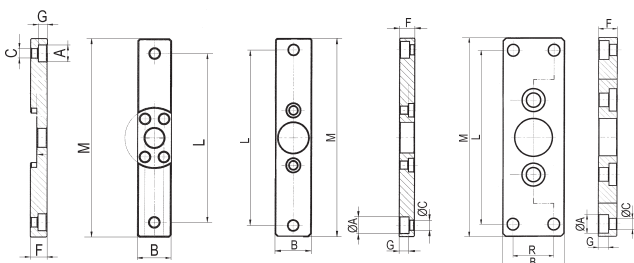
Cyl. Ø	A	ØB	C	D	E	F	P	Q	Part number
18	43	5,5	29	5	17	2	-	16	OVF-13018
25	50	5,5	28	7	16	3	-	20	OVF-13025
32	55	5,5	32	5,5	18	3	13	24	OVF-13032
40	65	5,5	40	7	20	4	16	30	OVF-13040
50	85	6,6	50	8	24	4	22	38	OVF-13050
63	105	9	63	10	27	4	30	50	OVF-13063
80	130	9	80	10	29	6	40	60	OVF-13080

Flange in aluminium alloy

Ø 18 mm

Ø 25 mm

Ø 32 ÷ 80 mm

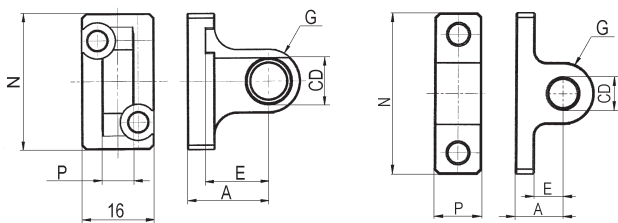


Cyl. Ø	ØA	B	ØC	F	G	L	M	R	Part number
18	8	16	4,5	8	4,3	80	94	-	OVF-12018
25	10	20	5,5	10	5,7	100	115	-	OVF-12025
32	11	24	6,6	10	6,3	115	130	-	OVF-12032
40	11	30	6,6	10	6,3	132	146	-	OVF-12040
50	15	38	9	12	8,3	140	160	21	OVF-12050
63	15	50	9	15	8,3	140	160	33	OVF-12063
80	15	60	9	20	8,3	178	200	40	OVF-12080

Male hinge in aluminium alloy

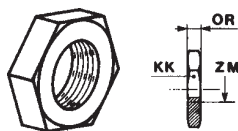
Ø 18 mm

Ø 25 ÷ 80 mm



Cyl. Ø	A	CD ØH7	E	G	N	P H12	Part number
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

Rod nut



Fixing screws

Cylindrical screws UNI5931 (100 pcs.) for OVF-13.. Angle bracket

- Ø 18 AZ4-VN0408 Ø 40 AZ4-VN0514 Ø 80 AZ4-VN1020
- Ø 25 AZ4-VN0410 Ø 50 AZ4-VN0816
- Ø 32 AZ4-VN0510 Ø 63 AZ4-VN1018

Cylindrical screws DIN7984 (100 pcs.) for OVF-12.. Flange

- Ø 18 AZ4-VPA0408 Ø 40 AZ4-VPA0518 Ø 80 AZ4-VPA1025
- Ø 25 AZ4-VPA0414 Ø 50 AZ4-VPA0818
- Ø 32 AZ4-VPA0512 Ø 63 AZ4-VPA1018

Cylindrical screws UNI5931 (100 pcs.) for OVF-11.. Male hinge

- Ø 18 AZ4-VN0410 Ø 40 AZ4-VN0516 Ø 80 AZ4-VN1025
- Ø 25 AZ4-VN0412 Ø 50 AZ4-VN0820
- Ø 32 AZ4-VN0512 Ø 63 AZ4-VN1016

Cyl. Ø	ZM	KK	OR	Part number
18	M8	13	5	MF-16020
25	M10X1,25	17	6	KF-16032
32	M10X1,25	17	6	KF-16032
40	M12X1,25	19	7	KF-16040
50	M16X1,5	24	8	KF-16050
63	M16X1,5	24	8	KF-16050
80	M16X1,5	24	8	KF-16050