Cylinders

Product family	Series	Page
Microcylinders Ø 8 ÷ 25 mm according to ISO 6432	M	3 - 6
Microcylinders with non-rotating rod ∅ 16 ÷ 25 mm according to ISO 6432 standard	Z	7 - 11
Cylinders Ø 32 ÷ 200 mm according to ISO 6431 / VDMA 24562	K KD new	12 - 15
Cylinders with non-rotating rod ∅ 32 ÷ 63 mm according to ISO 6431 / VDMA 24562 standard	Z	16 - 24
Rotating pneumatic cylinders Ø 32 ÷ 125 mm	R	25 - 28
Compact cylinders Ø 32 ÷ 63 mm according to UNITOP recommendations	RP RO new	29 - 44
Compact cylinders STRONG Ø 32 ÷ 63 mm with inter-axes, centering diametrs and rods according to ISO 6431 and VDMA 24562 standard	RS RQ new	45 - 69
2 or 3-stage telescopic pneumatic cylinders ø 32 ÷ 63 mm	RT new	70 - 82
Short-stroke cylinders Ø 12 ÷ 100 mm non-rotating rod versions according to EN 349 standard	W	83 - 95
Oval cylinders Ø 50 mm	OV new	96 - 104

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

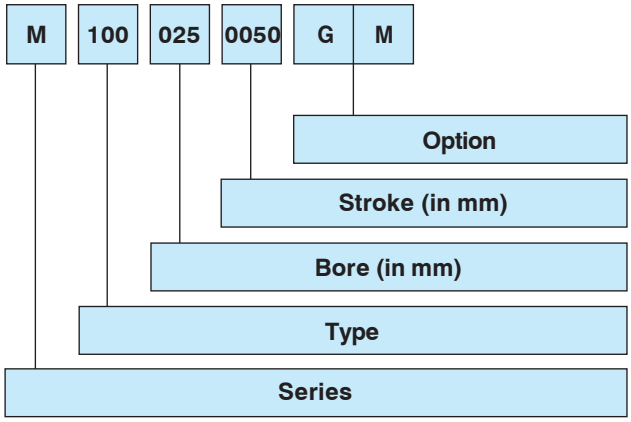
Working pressure: 1,5 ÷ 10 bar
Ambient temperature: -20 ÷ 80°C
Fluid: filtered air, lube or non lube
Barrel: stainless steel with crimped heads,
and piston rod in stainless steel.
Standard strokes (see table page 4)
Type M160 ... up to 50 mm stroke max
Type M170 ... up to 25 mm stroke max
Max speed: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

ISO 6432

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



SERIES

M = microcylinders Ø 8 ÷ 25 mm

TYPE

1 , – , – Stainless steel rod standard version.

2 , – , – Chromium-plated steel to be used only with locking unit.

3 , – , – Stainless steel rod reduced version.

5 , – , – Stainless steel rod reduced version with rear supply.

– , 0 , 0 **D.A.** Standard version.

– , 0 , 1 **D.A.** Through piston rod

– , 5 , 0 **D.A.** With adjustable limit switch cushioning from Ø 16 ÷ 25 mm

– , 5 , 1 **D.A.** Through rod with adjustable limit switch cushioning from Ø 16 ÷ 25 mm

– , 6 , 0 **S.A.** Retracted piston rod Ø 10 ÷ 25 mm, max. stroke 50 mm.

– , 7 , 0 **S.A.** Extended piston rod Ø 16 ÷ 25 mm, max. stroke 50 mm.

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

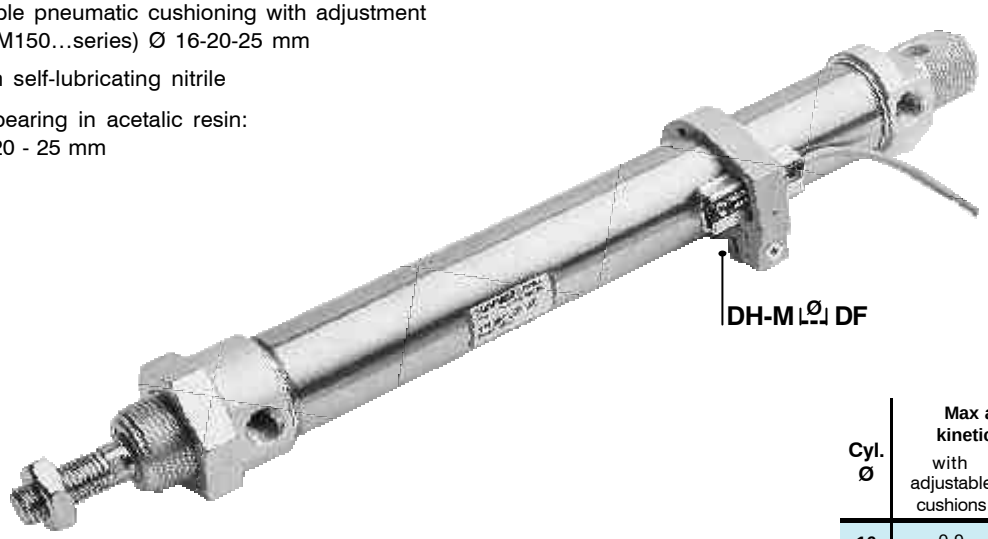
OPTION

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) Ø 12 ÷ 25 mm
- Adjustable pneumatic cushioning with adjustment screw (M150…series) Ø 16-20-25 mm
- Seals in self-lubricating nitrile
- Piston bearing in acetalic resin: Ø 16 - 20 - 25 mm
- Rolled rod in stainless steel X10CrNi S 18.09 (AISI 303)
- Ø 20 ÷ 25 mm aluminium piston
  Ø 8 ÷ 16 mm brass piston
- Microcylinders are supplied with nut on the rod (**MF - 16 + Ø**) and nut on the front head (**MF - 20 + Ø**)



Cyl. Ø	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. Ø	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 kg	Increase by mm (g)	Stroke 0 kg	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

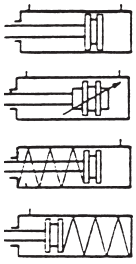
Double-acting microcylinder

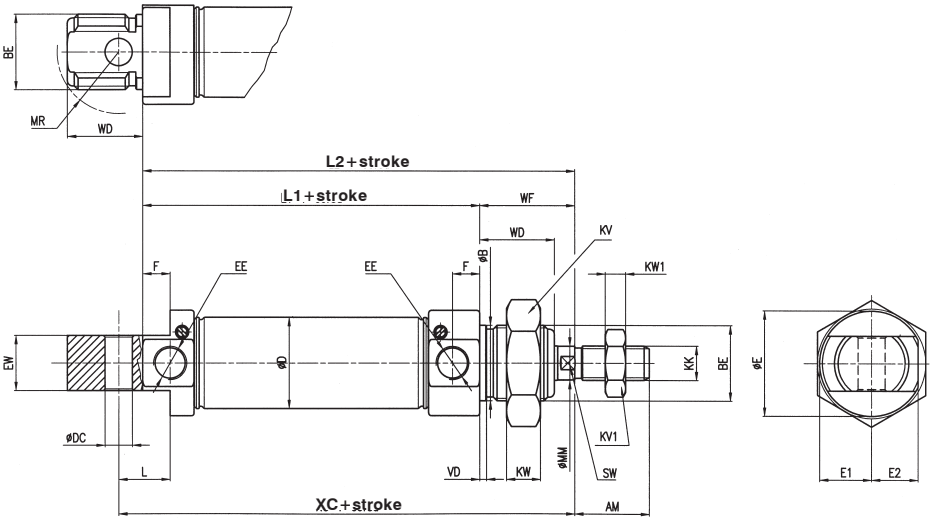
Cyl. Ø	Standard strokes (preferable values according to UNI 4393 in black)	Thrust force (min) at 6 bar N	Traction force at 6 bar N	Mass of moving parts		Cylinder mass		Lenght of decel. mm
				Stroke 0 kg	Increase by mm (g)	Stroke 0 kg	Increase by mm (g)	
8	10 20 **25** 30 40 **50** 75 **80 100 125** 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

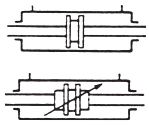
UNIVER is able to supply the cylinders with stroke variations of one millimeter (intermediate strokes) or strokes exceeding the standard stroke.

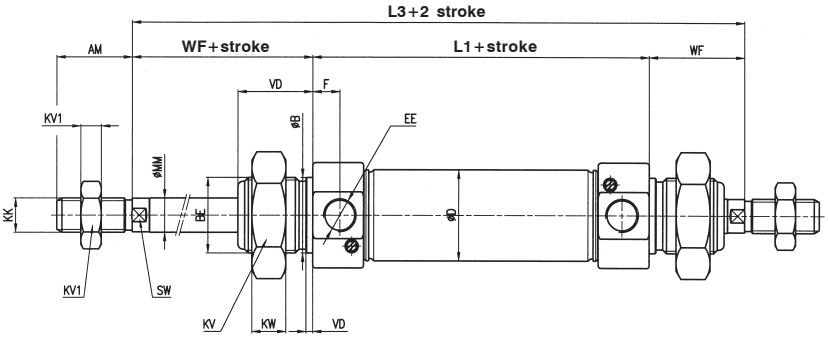
Double/single-acting cylinder





Double-acting through rod cylinder





Cyl. Ø	AM	B h 10	Ø BA	BE	CD H9	D	ø E	E1
8	12	12		M12 x 1,25	4	9,3	14	8
10	12	12		M12 x 1,25	4	11,3	14	8
12	16	16		M16 x 1,5	6	13,3	17	9,5
16	16	16	16	M16 x 1,5	6	17,3	20,8	10,4
20	20	22	22	M22 x 1,5	8	21,6	27,7	13,8
25	22	22	22	M22 x 1,5	8	26,6	30,7	15,3

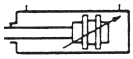
*

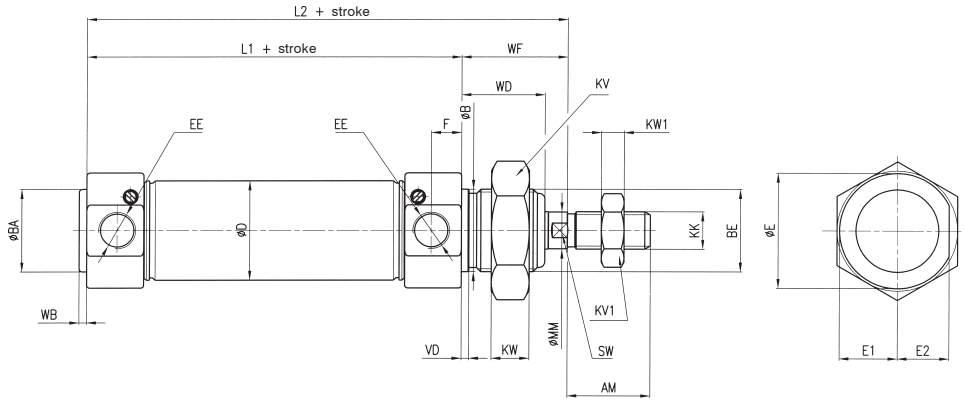
Cyl. Ø	F	KK	KW	KW1	L	L1	L2	L3	M
8	5	M4 x 0,7	7	2,8	7	46	62	78	
10	5	M4 x 0,7	7	2,8	7	46	62	78	
12	5	M6 x 1	8	4	9	50	72	94	
16	5,5	M6 x 1	8	4	8	56	78	100	
20	8	M8 x 1,25	10	5	11	68	92	116	
25	8	M10 x 1,25	10	6	15	69	97	125	

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

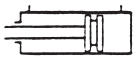
For magnetic Ø 10 mm cylinders , L1-L2-L3-XC are increased by 4 mm compared to dimensions in the table.

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

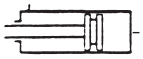




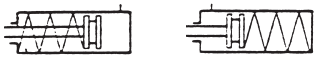
Double acting cylinder with standard air supply Ø 10 ÷ 25 mm Series 300



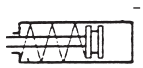
Double-acting cylinder with rear supply Ø 10 ÷ 25 mm Series 500

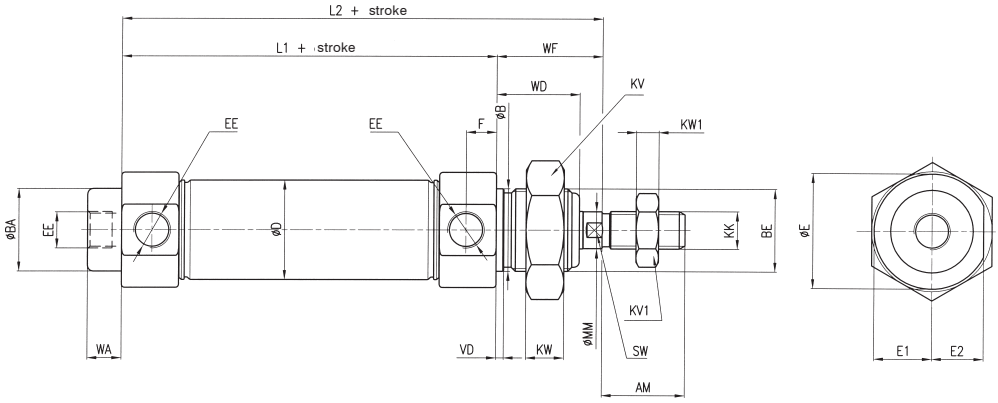


Single-acting cylinders retracted piston rod Ø 10 ÷ 25 mm series 360; single-acting extended piston rod Ø 16-25 mm series 370, both with standard supply.



Single-acting cylinder retracted piston-rod with rear supply Ø 10 ÷ 25 mm Series 560





Cyl. Ø	AM	B h10	BA Ø	BE	D	E Ø	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. Ø	F	KK	KW	KW1	L1	L2	MM	SW	VD	WA	WB	WD	WF ± 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		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

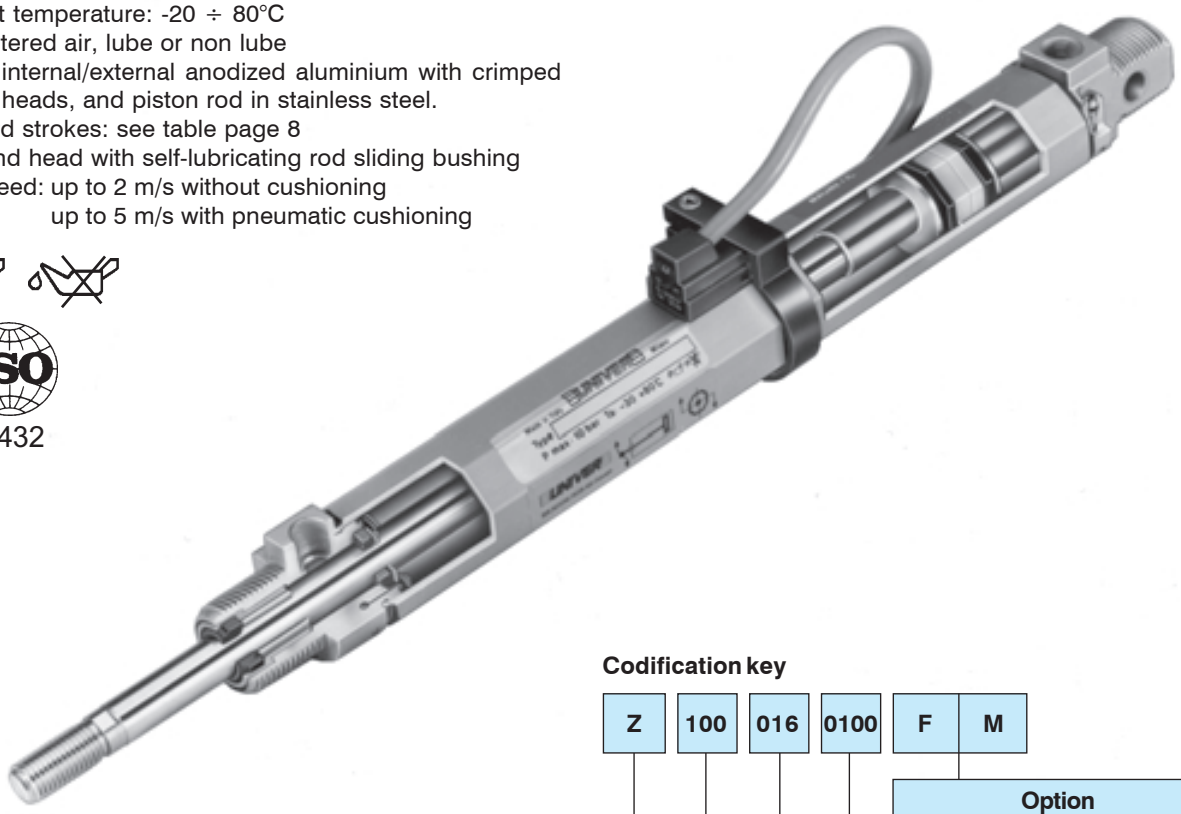
* The series in inches is according to UNI-ISO 228/1

UNIVER microcylinders with non rotating rod offer indisputable benefits with regards to life expectancy and safety in automation, robotics, light mechanics, and precision mechanics sectors, where actuation, positioning and delicate handling are required. **The dimensions of these cylinders comply with ISO 6432 standards**. The operation is guaranteed with or without lubrication.

TECHNICAL CHARACTERISTICS

Working pressure: 1,5 ÷ 10 bar
Ambient temperature: -20 ÷ 80°C
Fluid: filtered air, lube or non lube
Barrel: internal/external anodized aluminium with crimped heads, and piston rod in stainless steel.
Standard strokes: see table page 8
Front end head with self-lubricating rod sliding bushing
Max speed: up to 2 m/s without cushioning
up to 5 m/s with pneumatic cushioning

ISO 6432



Upon request
- Locking unit (page 8) which can be coupled with chromium-plated Z200.../Z201... Series rod **only**.
- Standard magnetic version (for Ø 16 mm with chromium-plated rod, magnetic switch DH-500)

Features of the magnetic switch in section III - Accessories.

Construction details

Barrel in extruded aluminium anodized internally and externally to 10 micron. The octagonal section prevents the rotation of the piston of the same form during translation.

Extruded and anodized aluminium heads, crimped on the jacket.

Adjustable pneumatic cushioning, on request, for a reliable deceleration of the piston.

Shock absorber in synthetic rubber to reduce vibration and noise (lower than 50 dB).

Octagonal piston made of wear-resistant and self-lubricating techno-polymer. Available with permanent plastoferrite magnetic ring.

Piston and cushioning seals are made of wear-resistant nitrile and can be used with or without lubrication. Lip seals compensate against wear.

0,2 micron rolled stainless steel rod with Ra .

Codification key

Z	100	016	0100	F	M

Option
Stroke (in mm)
Bore (in mm)
Type
Series

TYPE

1 – –	**Ø 16 - 20 - 25 mm stainless steel rod**
2 – –	**Ø 16 - 20 - 25 mm stainless steel rod** to be used only with locking unit.
1 0 0	**D.A.** With mechanical shock absorber
1 0 1	**D.A.** Through rod
1 5 0	**D.A.** With pneumatic cushioning
1 5 1	**D.A.** Through rod with pneumatic cushioning

BORE

Ø 016 - 020 - 025 mm.

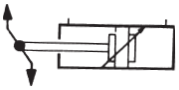
STROKE

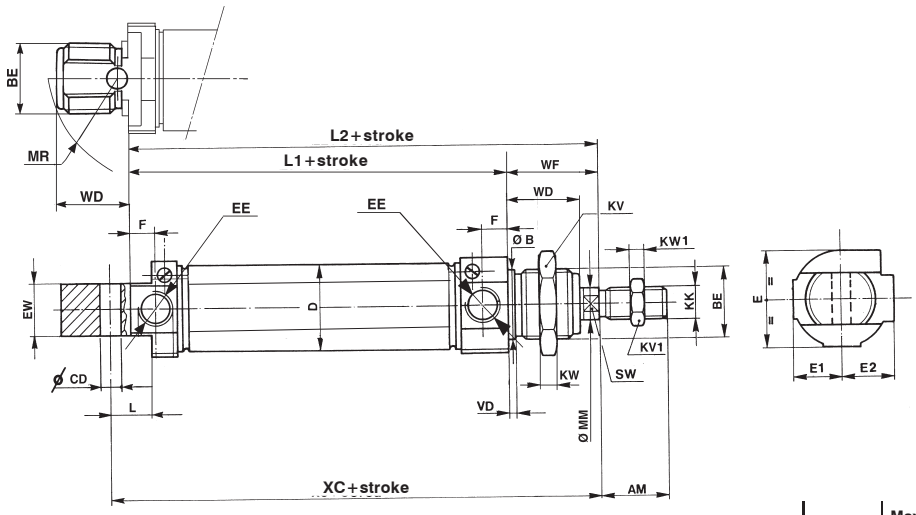
Length in mm.
For standard lengths, see table page 8.

OPTION

F = For use with locking unit with "reduced dimensions".
M = Magnetic version.

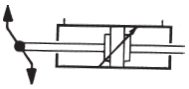
Double-acting cylinder

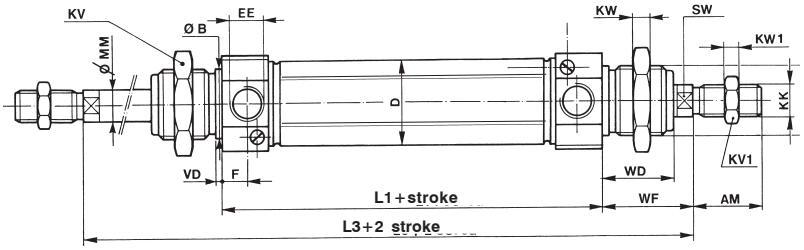




Cyl. Ø (mm)	Maximum torque (Nm)	Maximum absorbable kinetic energy J	
		with adjustable cushions	with mechanical cushions
16	0,05	0,9	0,12
20	0,1	1,3	0,16
25	0,2	1,8	0,22

Double-acting cylinder with through rod





Cyl. Ø	AM	B h 10	BE	CD H9	D	E max	E1	*
16	16	16	M16 x 1,5	6	19	21	10,5	
20	20	22	M22 x 1,5	8	23	26	13	
25	22	22	M22 x 1,5	8	28,5	30	15	

Cyl. Ø	F	KK	KW	KW1	L	L1	L2	L3
16	5,5	M6 x 1	8	4	8	56	78	100
20	8	M8 x 1,25	10	5	11	68	92	116
25	8	M10 x 1,25	10	6	15	69	97	125

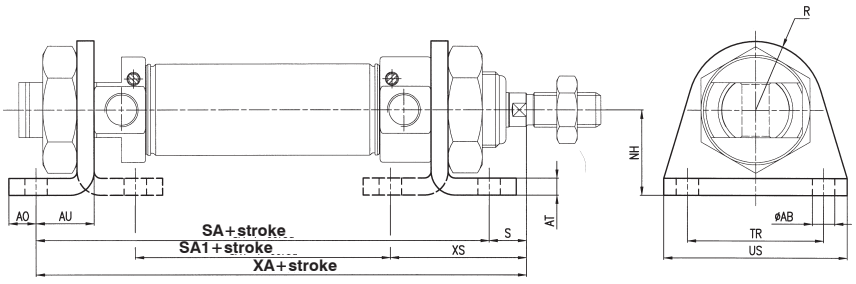
* The series with dimensions in inches is chosen in compliance with UNI-ISO 228/1 standards

Summarizing table of the technical features and the standard strokes

Cyl. Ø	Standard strokes (preferable values according to UNI 4393 in black)	Traction force a 6 bar N
16	10 20 **25** 30 40 **50** 75 **80 100 125** 150 **160** 175 **200 250**	87
● 16	**25** 30 40 **50** 75 **80 100 125** 150 **160** 175 **200 250** 300 **320 400 500**	
20	10 20 **25** 30 40 **50** 75 **80 100 125** 150 **160** 175 **200 250** 300	140
● 20	**25** 30 40 **50** 75 **80 100 125** 150 **160** 175 **200 250** 300 **320 400 500**	
25	10 20 **25** 30 40 **50** 75 **80 100 125** 150 **160** 175 **200 250** 300 **320 400 500**	220
● 25	**25** 30 40 **50** 75 **80 100 125** 150 **160** 175 **200 250** 300 **320 400 500**	

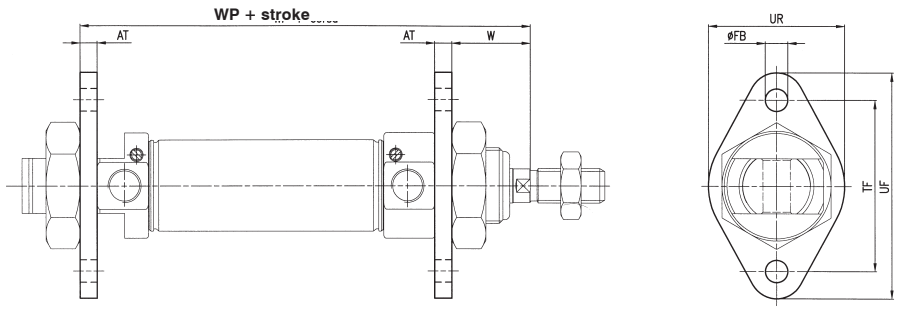
● Version with pneumatic cushioning

Foot bracket in zinc-plated steel for Ø 8 ÷ 25 mm (MS 3)



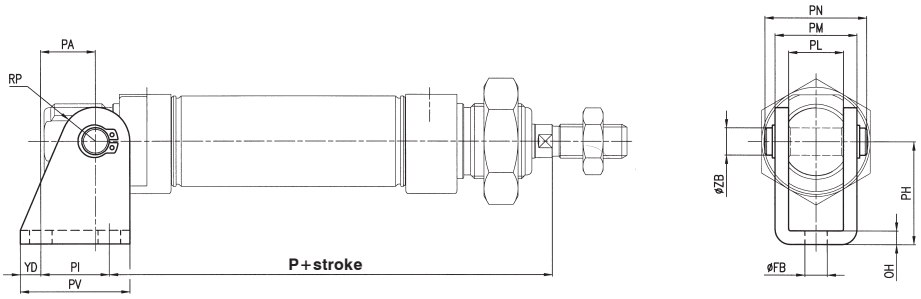
Cyl. Ø	AB	AO	AT	AU	NH	R	S	SA	SA1	TR	US	XA	X
	H13			+0,3 0	±0,3					Js14			±1
8-10	4,5	5	3	11	16	10	5	68	30	25	35	73	2
12	5,5	6	4	14	20	13	8	78	30	32	42	86	3
16	5,5	6	4	14	20	13	8	84	36	32	42	92	3
20	6,6	8	5	17	25	20	7	102	44	40	54	109	3
25	6,6	8	5	17	25	20	11	103	45	40	54	114	4

Flange in zinc-plated steel for Ø 8 ÷ 25 mm (MF8)



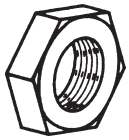
Cyl. Ø	AT	FB	TF	UF	UR	W	WP	Mass kg	Part number
		H13	Js14			±1,4			
8-10	3	4,5	30	40	25	13	65	0,012	MF-12008
12	4	5,5	40	53	30	18	76	0,025	MF-12012
16	4	5,5	40	53	30	18	82	0,025	MF-12012
20	5	6,6	50	66	40	19	97	0,049	MF-12020
25	5	6,6	50	66	40	23	102	0,049	MF-12020

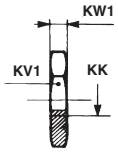
Rear female hinge in zinc-plated steel Ø 8 ÷ 25 mm with pin and 2 circlips



Cyl. Ø	Ø FB	OH	P	PA	PH	PI	PL	PM	PN	PV	RP	YD	ZB	M
	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,
12	5,5	3	73	13	27	15	12,1	18,1	23	25	7	5	6	0,
16	5,5	3	80	13	27	15	12,1	18,1	23	25	7	5	6	0,
20	6,6	4	91	16	30	20	16,1	24,1	30	32	10	6	8	0
25	6,6	4	100	16	30	20	16,1	24,1	30	32	10	6	8	0

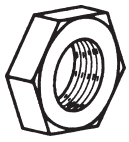
Nut for zinc-plated steel rod

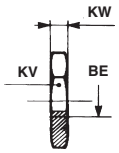




Cyl. Ø	KK	KV1	KW1	Part number
8-10	M4 x 0,7	7	2,8	**MF - 16008**
12-16	M6 x 1	10	4	**MF - 16012**
20	M8 x 1,25	13	5	**MF - 16020**
25	M10 x 1,25	17	6	**KF - 16032**

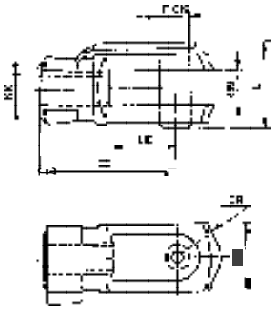
Nut for zinc-plated steel head





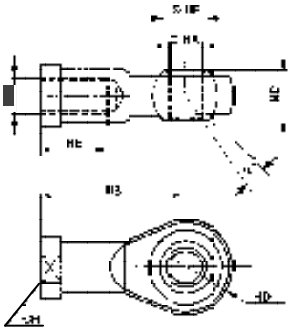
Cyl. Ø	BE	KV	KW	Part number
8-10	M12 x 1,25	19	7	**MF - 20008**
12-16	M16 x 1,5	24	8	**MF - 20012**
20-25	M22 x 1,5	32	10	**MF - 20020**

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



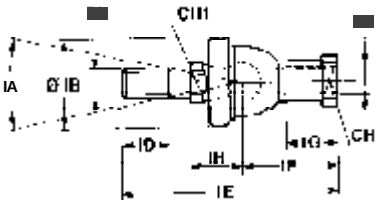
Cyl. Ø	CE	CK	CL	CM B12	ER	KK	L	LE	Mass kg	Part number
8–10	16	4	8	4	5	M4 x 0,7	11	8	0,007	MF - 15008
12–16	24	6	12	6	7	M6 x 1	16	12	0,019	MF - 15016
20	32	8	16	8	10	M8 x 1,25	22	16	0,046	MF - 15020
25	40	10	20	10	16	M10 x 1,25	26	20	0,09	KF - 15032

Articulated self-lubricating fork in zinc-plated steel



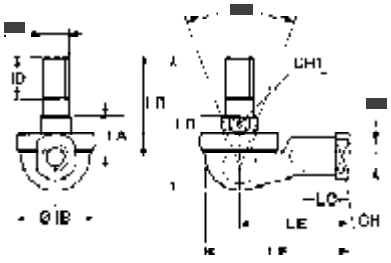
Cyl. Ø	a	CH	KK	HA H7	HB	HC	HD 0 -0,12	HE	HF	Mass kg	Part number
8–10	13°	9	M4 x 0,7	5	27	8	9	10	7,7	0,018	MF - 17008
12–16	13°	11	M6 x 1	6	30	9	10	12	9	0,026	MF - 17012
20	14°	14	M8 x 1,25	8	36	12	12	16	10,4	0,046	MF - 17020
25	13°	17	M10 x 1,25	10	43	14	14	20	12,9	0,076	KF - 17032

Fork with axially mounted articulated pin



Cyl. Ø	CH	CH1	IA	KK	IH ±0,3	IB	ID	IE	IF	IG	Mass kg	Part number
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

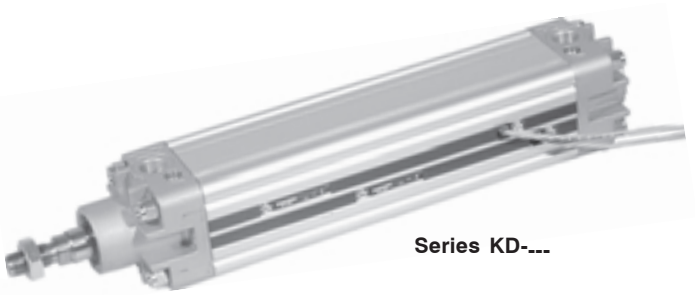


Cyl. Ø	CH	CH1	LG	KK	IB	ID	LA ±0,3	LB	LC	LD	LE	LF	Mass kg	Part number
12–16	11	8	50°	M6 x 1	22	11	11	26	14	35,5	30	40	0,037	MF - 23012
20	14	10	50°	M8 x 1,25	28	12	14	31	17	42,5	36	48	0,067	MF - 23020
25	17	11	50°	M10 x 1,25	32	15	17	37	21	50,5	43	57	0,11	KF - 23025

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.

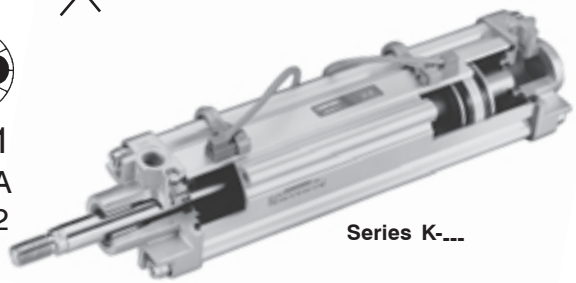
TECHNICAL CHARACTERISTICS

Working pressure: 1,5 ÷ 10 bar
Ambient temperature: -20 ÷ 80°C.
Fluid: filtered air, with or without lubrication.
Barrel: internal/external anodised auminium and stelo in acciaio cromato di serie.
Bores: series KD 32 ÷ 125 aluminium barrel
series K 160 ÷ 200 with round aluminium barrel and steel tie-rods.



Series KD-___

ISO 6431
VDMA 24562



Series K-___

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 20.

Upon request
- Magnetic rings in plastoferrite
- Locking unit Ø 32 ÷ 125 mm to be coupled **only** with chromium-plated steel rod series KD2-… (section High-Tech page 3)
- Slide unit Ø 32 ÷ 100 mm (section High-Tech page 31)
- Cylinders with rigid bushing, in tandem, multiple position and opposed version (page 16).

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 plastoferrite 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 (KD100 Series) or chromium-plated (KD200 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

KD	200	032	0050	G	M

- M: Option
- 0050: Stroke (in mm)
- 032: Bore (in mm)
- 200: Type
- KD: Series

SERIES

KD = Ø 32÷125 mm magnetic version standard.
K = Ø 160÷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

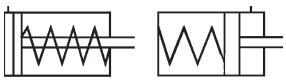
OPTION

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

Cyl. Ø	Working surface area (mm²)		Resultant forces in N at different working pressures (bar). 1 bar = 0,1 MPa — Working pressure (bar) 2	4	6	8	10	Cushion length (mm)	Cushion Max kinetic energy absorption (J)
32	thrust	804	161	322	482	643	804	18	1,8
	traction	691	138	276	414	553	691		
40	thrust	1256	251	502	754	1005	1256	24	2,5
	traction	1056	211	422	633	844	1055		
50	thrust	1962	393	785	1178	1570	1963	24	4,5
	traction	1649	330	660	990	1320	1650		
63	thrust	3116	623	1246	1869	2493	3116	30	8
	traction	2802	560	1120	1680	2240	2800		
80	thrust	5024	1005	2010	3014	4019	5024	30	12
	traction	4533	907	1814	2722	3629	4536		
100	thrust	7850	1570	3140	4710	6280	7850	35	21
	traction	7359	1472	2944	4416	5888	7360		
125	thrust	12266	2453	4906	7359	9812	12266	35	36
	traction	11462	2294	4588	6882	9176	11470		
160	thrust	20096	4019	8038	12058	16077	20096	45	52
	traction	18840	3770	7540	11310	15080	18850		
200	thrust	31400	6280	12560	18840	25120	31400	45	95
	traction	30144	6029	12058	18086	24115	30144		

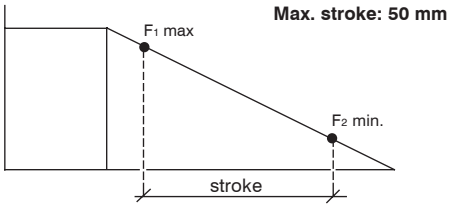
For through rod cylinders the theoretical force is equal in both directions and its value is the one given "in traction" as per table.
The values given are theorical and in pratice must take account of weight and friction of the moving element and may be reduced by (÷-10%)

Single-acting cylinders

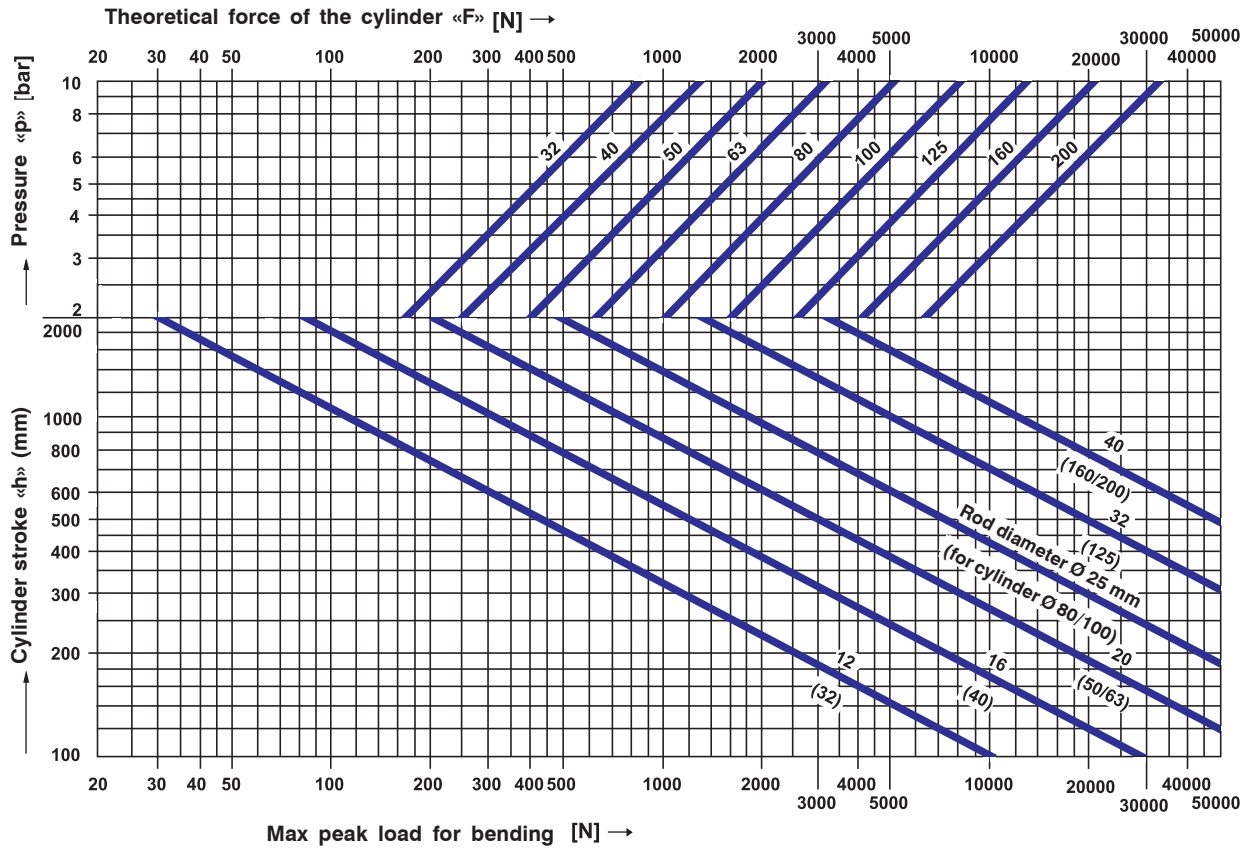


Theoretical forces (N) for return stroke

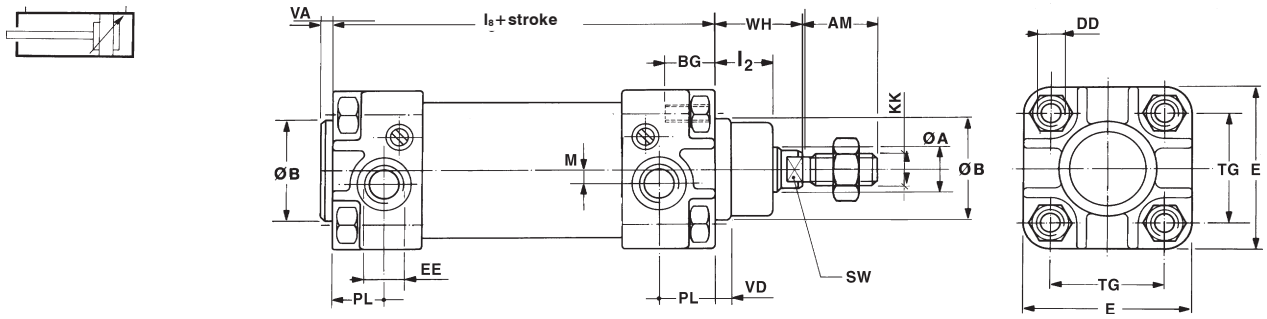
Cyl. Ø	F1 (N) Max spring force at 0 stroke	F2 (N) Minimum spring force at stroke 50
32	52	28
40	70	42,5
50	98	48
63	98	48
80	140	80
100	140	80
125	235	175

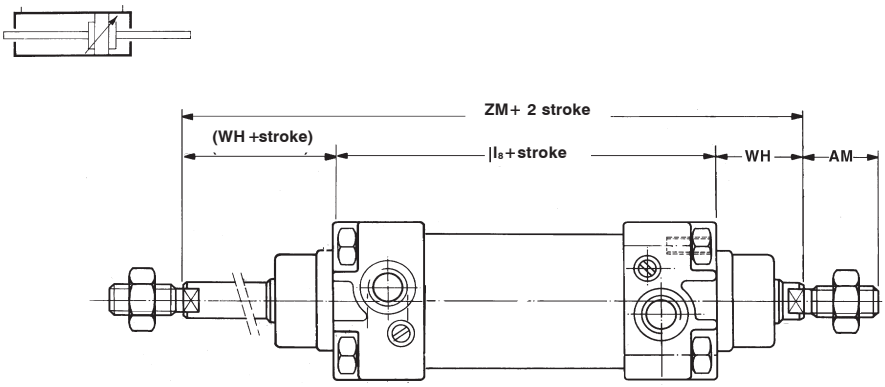


Graph showing theoretical forces/pressures and acceptable strokes depending on maximum peak load



Cylinder with pneumatic cushioning Ø 32 ÷ 200





Stroke tolerances

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

Cyl. Ø	A	AM (Note 1)	B e11	BG	DD	E	EE (Note 2)	l_2	l_8 Nom.	l_8 Toll.	K (No	Nom.	Toll.
32	12	22	30	14	M6	48	G 1/8	16	94	±0,4	M10 ›		
40	16	24	35	14	M6	54	G 1/4	20	105	±0,7	M12 ›		
50	20	32	40	16	M8	67	G 1/4	26	106	±0,7	M16 ›		
63	20	32	45	16	M8	78	G 3/8	26	121	±0,8	M16 ›		
80	25	40	45	16	M10	97	G 3/8	32	128	±0,8	M20 ›		■
100	25	40	55	16	M10	115	G 1/2	35	138	±1	M20 ›		■
125	32	54	60	20	M12	140	G 1/2	45	160	±1	M27 ›		■
160*	40	72	65	25	M16	180	G 3/4	50	180	±1,1	M36 ›		
200*	40	72	75	25	M16	220	G 3/4	60	180	±1,1	M36 ›		

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)	Rate incr. stroke=0 (g)	Moving element stroke=0 (kg)	Rate incr. stroke=0 (g)	Cylinder stroke 0 (kg)	Rate incr. stroke=0 (g)	Moving element stroke=0 (kg)	Rate incr. stroke=0 (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

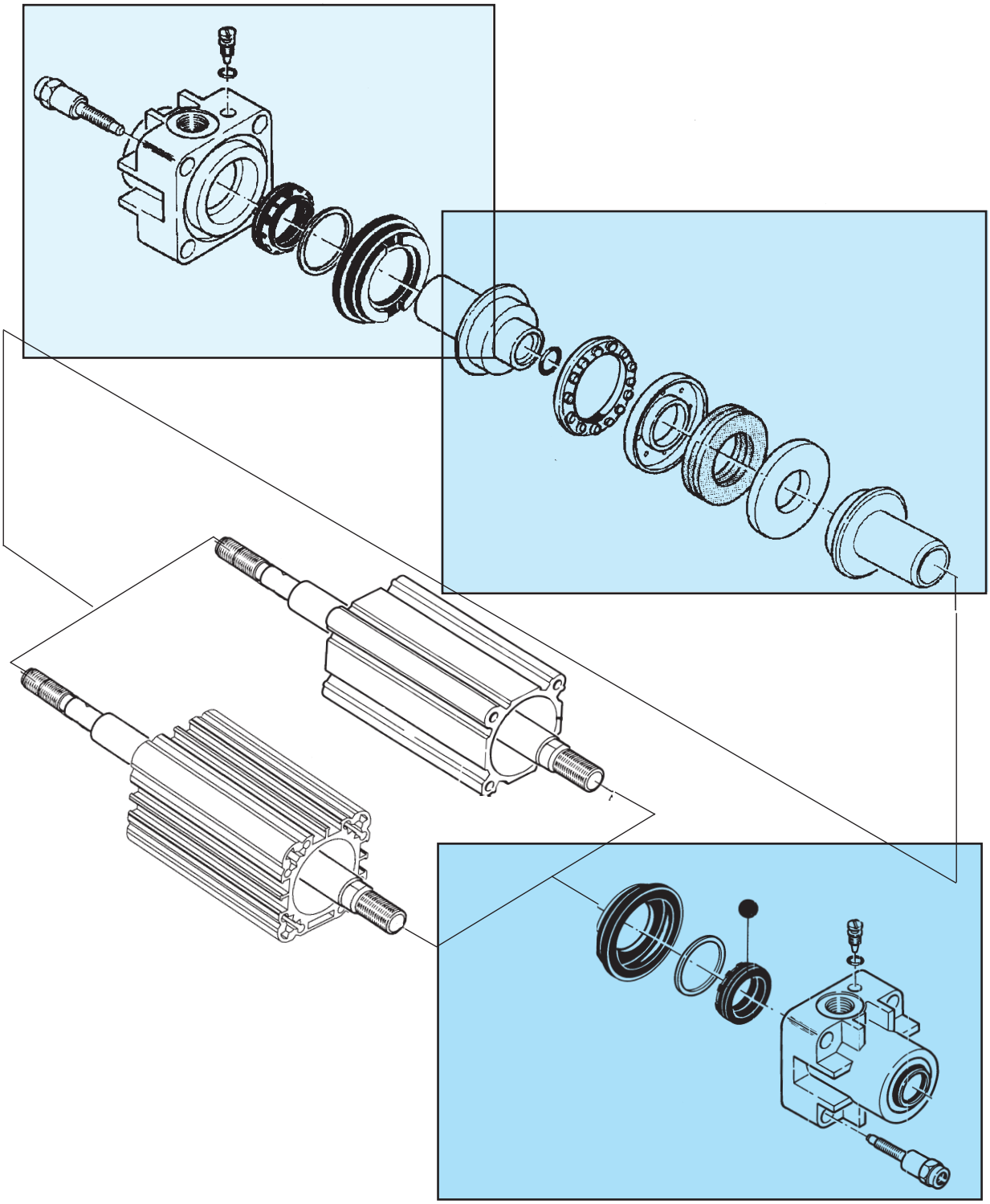
KD series cylinder mass

Cyl. Ø	Cyl. stroke 0 (kg)	Rate incr. stroke=0 (g)	Moving element stroke=0 (kg)	Rate incr. stroke=0 (g)	Cylinder stroke 0 (kg)	Rate incr. stroke=0 (g)	Moving element stroke=0 (kg)	Rate incr. stroke=0 (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

Complete part n° of the groups - rear head, piston, front head - with cylinder bore.

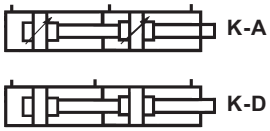
Note: the fixing bushes of the heads are not included in the head groups: they must be ordered separately under part number **KR131** + Ø.

- Seal kit **KG · 01**... + Ø (from 032 ÷ 125)



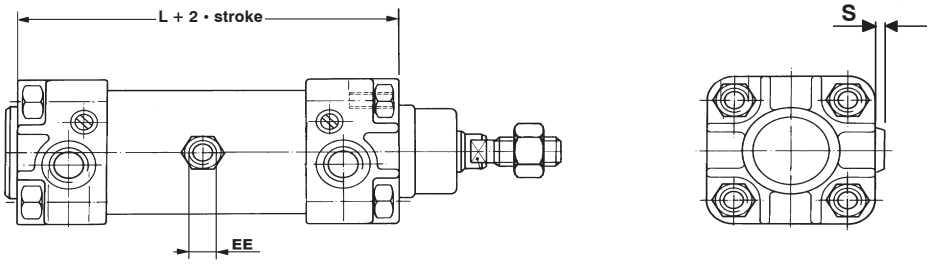
* Heads are supplied assembled and tested

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 13).

Cyl. Ø*	EE	L	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



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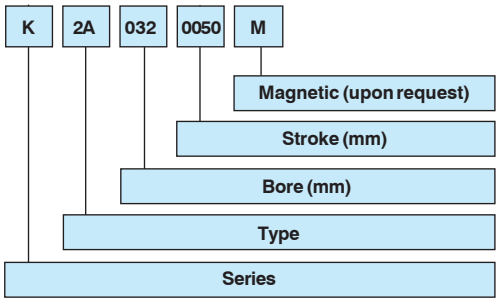


TYPE

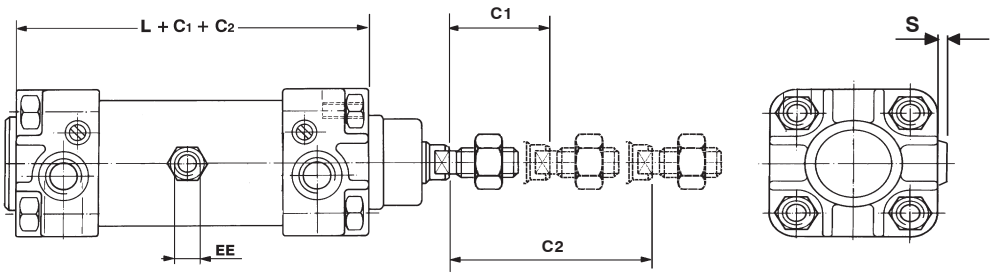
Stainless steel rod
1A Double force for forward movement
1D Double force for reverse movement

Chromium-plated rod
2A Double force for forward movement
2D Double force for reverse movement

Two-position 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 13).

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



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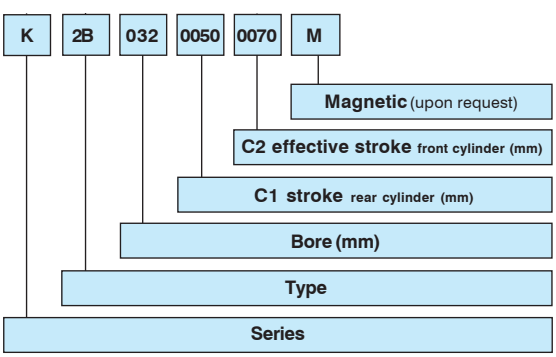


TYPE

1B Double-acting stainless steel rod.

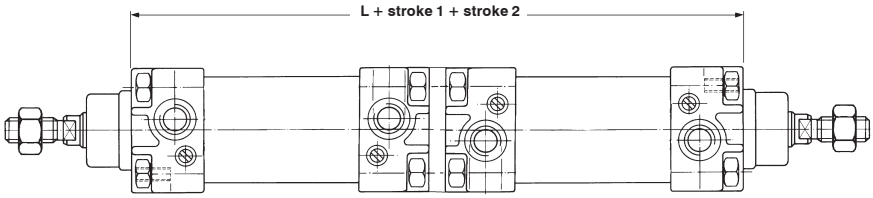
2B Double-acting chromium-plated steel rod.

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 13).

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



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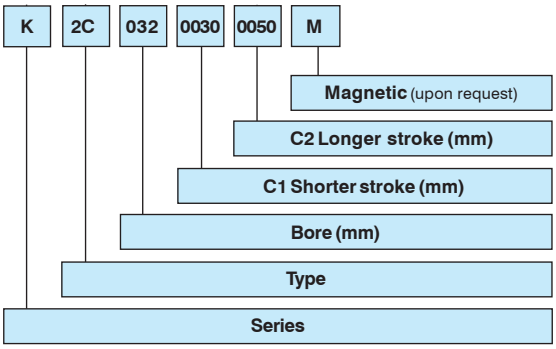


TYPE

1C Double-acting stainless steel rod

2C Double-acting chromium-plated steel rod

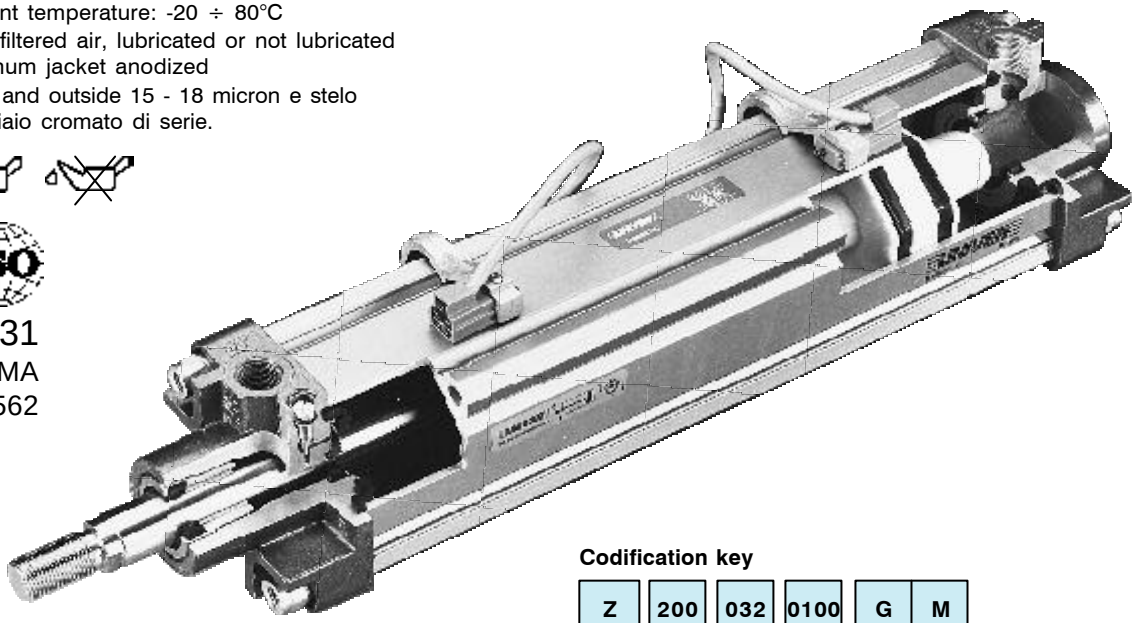
*Refer to page 14 for versions not shown above.

This brand new cylinder is characterized by an octagonal barrel which prevents the rotation of the octagonal piston. The rod resists to torque and represents an effective solution to traditional problems of antirotation and light duty guidance.

TECHNICAL CHARACTERISTICS

Working pressure: 1,5 ÷ 10 bar
Ambient temperature: -20 ÷ 80°C
Fluid: filtered air, lubricated or not lubricated
Aluminum jacket anodized
inside and outside 15 - 18 micron e stelo
in acciaio cromato di serie.

ISO 6431
VDMA 24562



Axis deviation: max 2° after 4000 km (with no radial load on the rod)

Features of the magnetic switch in section III - Accessories mounting devices (pages 20-24)

Upon request
- Plastoferrite magnetic ring
- Locking unit which can be coupled **with** Z2... Series chromium-plated rods only (page 3-II)

Construction details

Jacket in extruded aluminum alloy section bar with internal and external anodizing. The octagonal section does not allow the piston to rotate.

Mazak pressure-cast end caps.

Adjustable pneumatic cushioning.

The bumpers in synthetic material eliminate the mechanical stress and reduce noise (lower than 50 dB).

Octagonal piston in wear-resistant and self-lubricating acetalic resin; with a plastoferrite magnetic ring upon request.

Piston seals and cushioning in a wear-resistant nitrilic compound, which are suitable to function with or without lubrication. The double lip shape allows compensation against wear so that the seal is constant.

Chromium-plated steel (Z800) or, upon request, stainless steel rod (Z100) with 0,2 micron Ra.

Self-lubricating bushing for rod sliding.

Codification key

Z	200	032	0100	G	M

- M: Option
- 0100: Stroke (in mm)
- 032: Bore (in mm)
- 200: Type
- Z: Series

TYPE

1,0,0 **D.A.** Stainless steel rod
1,0,1 **D.A.** Stainless steel through rod
2,0,0 **D.A.** Chromium plated rod
2,0,1 **D.A.** Chromium plated through rod

BORE

ø 032 - 040 - 050 - 063

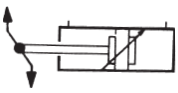
STROKE

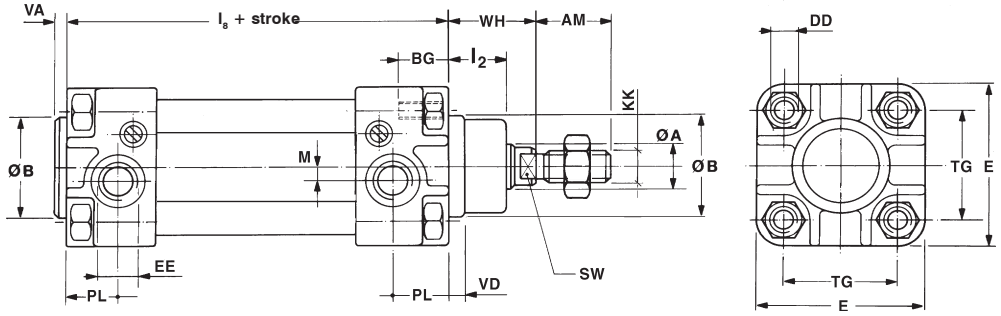
Standard strokes in mm: 0025 - 0050 - 0075 - 0080 - 0100 0125 - 0150 - 0160 - 0175 - 0200 - 0250 - 0300 - 0320 - 0350 0400 - 0450 - 0500 - 0600 - 0700 - 0800 - 0900 - 1000.

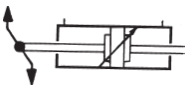
OPTION

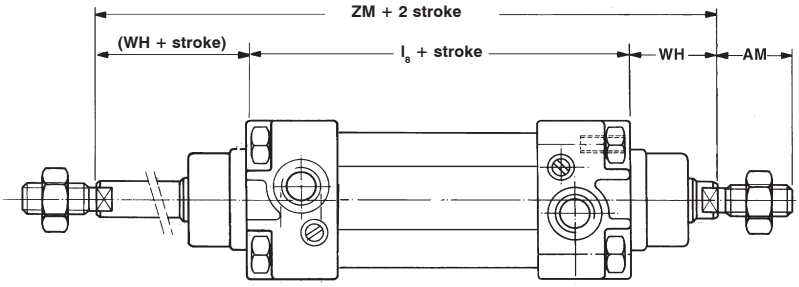
F = Prepared for a rod locking device with reduced protrusion
G = Prepared for a rod locking device with ISO protrusion
M = Magnetic version

Other options

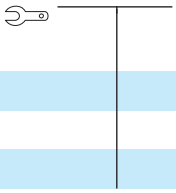








Cil. ∅	A	AM (Note 1)	B e11	BG	DD	E	EE (Note 2)	l_2	l_8 Nom.	l_8 Tol.	K (Nc
32	14	22	30	14	M6	48	G 1/8	16	94	±0,4	M10
40	16	24	35	14	M6	54	G 1/4	20	105	±0,7	M12
50	20	32	40	16	M8	67	G 1/4	26	106	±0,7	M16
63	20	32	45	16	M8	78	G 3/8	26	121	±0,8	M16



NOTE 1: "KK" and "AM" dimensions correspond to the ISO 4395 "long" type

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

Theoretical forces (N) generated at the operating pressures (bar) - 0,1 bar = 0,1 MPa

Cyl. ∅	Useful surface (mm²)		Operating pressure (bar) 2	4	6	8	10
32	thrust	804	161	322	482	643	804
	pull	691	138	276	414	553	691
40	thrust	1256	251	502	754	1005	1256
	pull	1056	211	422	633	844	1055
50	thrust	1962	393	785	1178	1570	1963
	pull	1649	330	660	990	1320	1650
63	thrust	3116	623	1246	1869	2493	3116
	pull	2802	560	1120	1680	2240	2800

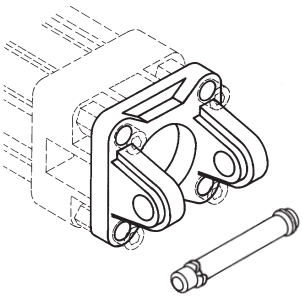
Maximum applicable torque (Nm)

Cyl. ∅	Torque (Nm)
32	0,4
40	0,7
50	1,0
63	1,4

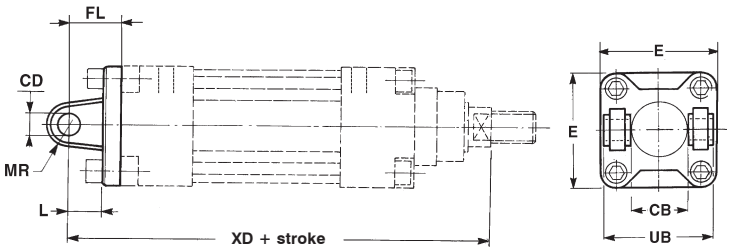
Rated tolerances for the stroke

Cyl. ∅	Stroke	Stroke tolerance (mm)
32	up to 500 mm	+ 2 0
40		
50		
63	up to 500 mm	+ 2,5 0

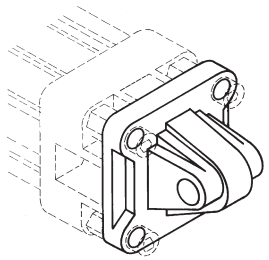
Hinge (female) in die-cast aluminium ISO MP2 with pin, MP4 (male) without pin



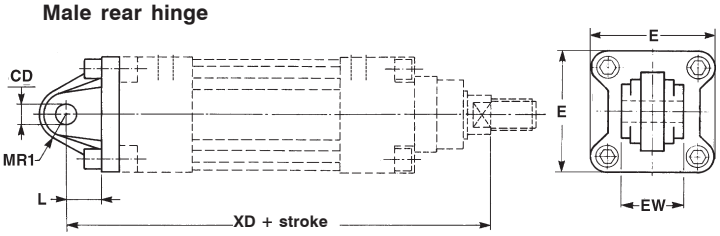
Female rear hinge



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



Male rear hinge



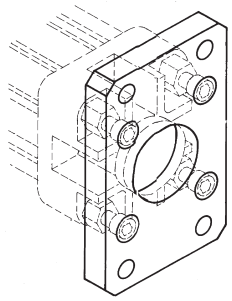
Cyl. Ø	Part number	Mass kg
32	KF-11032	0,08
40	KF-11040	0,1
50	KF-11050	0,17
63	KF-11063	0,25
80	KF-11080	0,42
100	KF-11100	0,66
125	KF-11125	1,5
160	KF-11160	2,3
200	KF-11200	3,5

Pin see page 22-**I**.

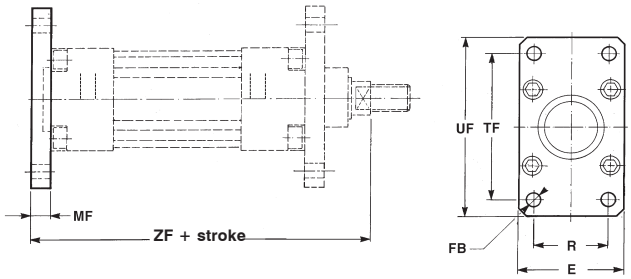
Fixing screws see page 23

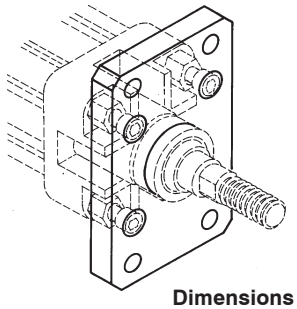
ISO 6431
VDMA 24562

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

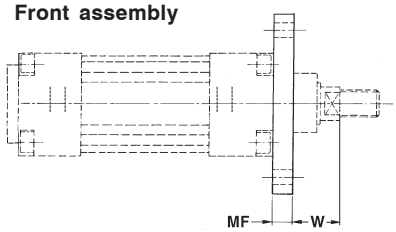


Rear assembly





Front assembly



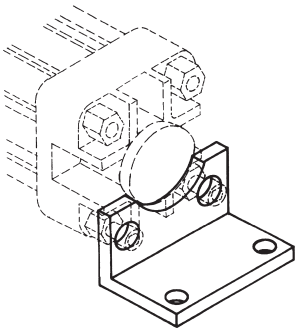
Cyl. Ø	Part number	Mass kg
32	KF-12032	0,2
40	KF-12040	0,25
50	KF-12050	0,5
63	KF-12063	0,65
80	KF-12080	1,5
100	KF-12100	2,2
125	KF-12125	4,1
160	KF-12160	7
200	KF-12200	12,4

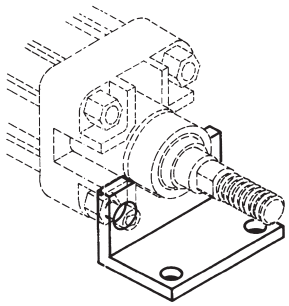
Dimensions of hinge ISO MP2 - MP4 / Dimensions of ISO MF1-MF2 flange

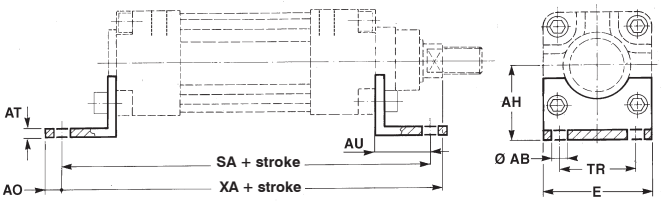
Cil. Ø	CB H14	CD H9	E	EW Nom.	EW Toll.	FL ±0,2	L (min)	MR (max)	MR1*	UB h14	XD Nom.	XD Toll.	E	FB H13	MF ±0,2	R JS14	TF JS14	UF	W Nom.	W Toll.	ZF Nom.	ZF Toll.
32	26	10	48	26		22	12	11	15*	45	142	±1,25	45	7	10	32	64	80	16	±1,6	130	±1,25
40	28	12	54	28		25	15	13	18*	52	160	±1,25	52	9	10	36	72	90	20	±1,6	145	±1,25
50	32	12	65	32	-0,2 -0,6	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		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		50	30	26	26	130	275	±2	140	16	20	90	180	205	45	±2,5	245	±2
160	90	30	180	90	-0,5 -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







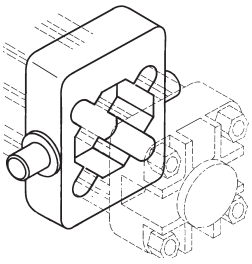
Cyl. Ø	Part number	Mass kg
32	KF-13032	0,07
40	KF-13040	0,09
50	KF-13050	0,2
63	KF-13063	0,2
80	KF-13080	0,4
100	KF-13100	0,6
125	KF-13125	1,2
160	KF-13160	2,4
200	KF-13200	3,4

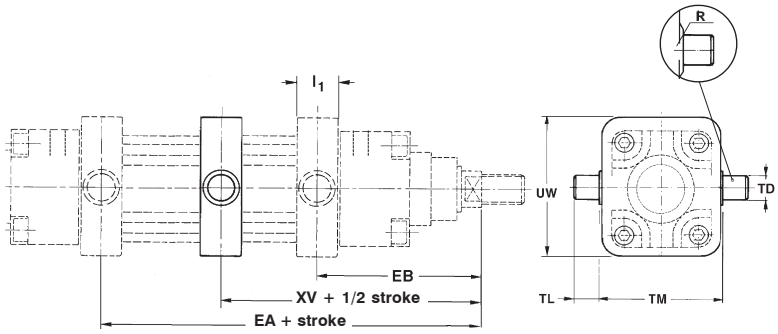
ISO 6431
VDMA 24562

Fixing screws see page 23

Intermediate hinge ISO MT4 with fixing grub screws only for "K" cylinders

(bores 160/200 assembled on tie-rods)





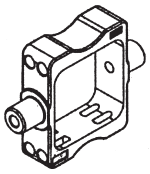
Cyl. Ø	Part number	Mass kg
32	KF-14032	0,13
40	KF-14040	0,24
50	KF-14050	0,32
63	KF-14063	0,61
80	KF-14080	0,93
100	KF-14100	1,6
125	KF-14125	2,2
160	KF-14160	4,3
200	KF-14200	7,5

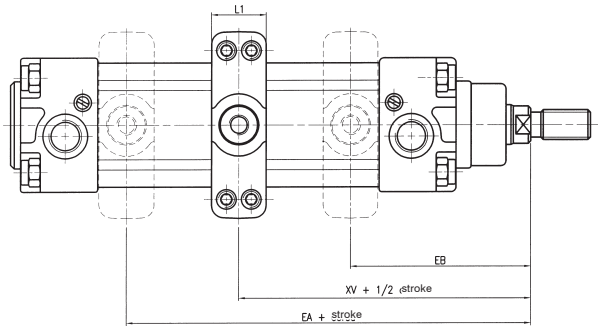
NOTE: the dimension **XV** + 1/2 stroke positions the hinge on the centre line of the cylinder basic body (end cap to end cap).
To assemble the middle hinge for bores 160-200, specify the EB dimension, as this hinge is normally supplied already assembled on the cylinder.

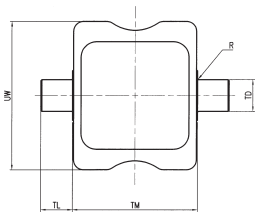
	Dimensions of ISO MS1 angle bracket											Dimensions of hinge ISO MT4 for K series									
Cil. Ø	AB H13	AH JS15	AO	AT	AU ±0,2	E	SA		TR JS14	XA		EA (max)	EB (min)	l1 (max)	R (max)	TD e9	TL h14	TM h14	UW (max)	XV	
							Nom.	Toll.		Nom.	Toll.									Nom.	Toll.
32	7	32	6	4	24	45	142	±1,25	32	144	±1,25	84	62	18	1	12	12	50	48,5	73	±2
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







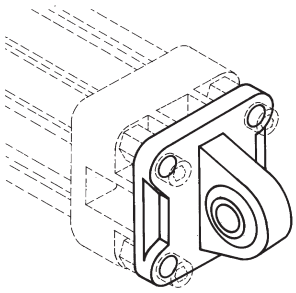
Dimensions hinge ISO MT4 for KD Series

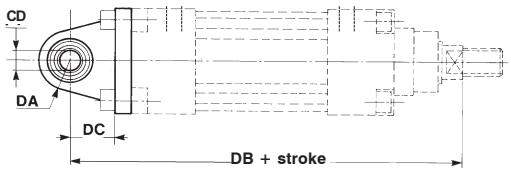
Cyl. ø	EA (max)	EB (min)	I1 (max)	R (max)	TD (e9)	TL (h14)	TM (h14)	UW (max)	XV Nom.	XV Toll.
32	82	64	22	0,5	12	12	50	65	73	±2
40	93	72	22	0,5	16	16	63	75	82,5	±2
50	101	79	22	1	16	16	75	95	90	±2
63	107	88	28	1	20	20	90	105	97,5	±2
80	123	97	28	1	20	20	110	130	110	±2
100	131	109	34	1	25	25	132	145	120	±2
125	164	126	34	1,5	25	25	160	175	145	±2,5

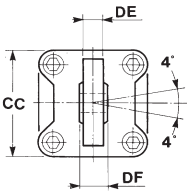
Cyl. Ø	Part number	Mass Kg
32	KDF-14032	0,12
40	KDF-14040	0,24
50	KDF-14050	0,32
63	KDF-14063	0,47
80	KDF-14080	0,80
100	KDF-14100	1,50
125	KDF-14125	1,92

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

Articulated rear hinge in die-cast aluminum



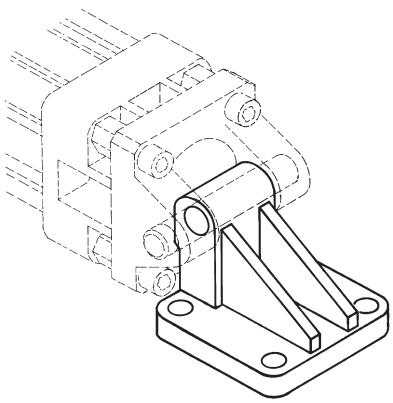


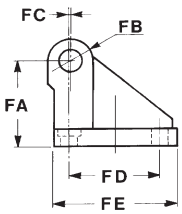


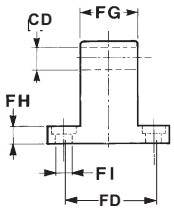
Cyl. Ø	Part number	Mass kg
32	KF-11032S	0,1
40	KF-11040S	0,2
50	KF-11050S	0,3
63	KF-11063S	0,35
80	KF-11080S	1,6
100	KF-11100S	0,7

Counter-hinge 90° in die-cast aluminium

Fixing screws see page 23

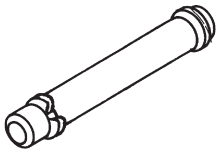


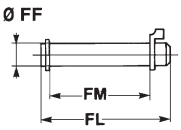




Cyl. Ø	Part number	Mass kg
32	KF-19032	0,09
40	KF-19040	0,12
50	KF-19050	0,20
63	KF-19063	0,32
80	KF-19080	0,58
100	KF-19100	0,91

Pin in zinc-plated steel with 2 circlips



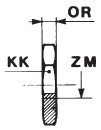


Cyl. Ø	Part number	Mass kg
32	KF-18032	0,03
40	KF-18040	0,05
50	KF-18050	0,05
63	KF-18063	0,12
80	KF-18080	0,15
100	KF-18100	0,29
125*	KF-18125	1,53
160*-200*	KF-18160	1

* Pin for part nos. KF10...

	Dimension of articulated male hinge							Dimension of 90° counter-hinge			Dimension of pin
Cyl. Ø	CC	CD H9	DA	DB	DC	DE	DF	CD H9	FA	FB	
32	48	10	15	142	14	10,5	14	10	32	10	
40	54	12	18	160	16,5	12	16	12	36	12	
50	65	12	20	170	17,5	12	16	12	45	12	
63	75	16	21	190	21,5	15	21	16	50	16	
80	95	16	27	210	24	15	21	16	63	16	
100	115	20	29,5	230	28	18	25	20	73	20	
125											
160											
200											

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	M16 x 1,5	24	8	KF - 16050
63	M16 x 1,5	24	8	
80	M20 x 1,5	30	9	KF - 16080
100	M20 x 1,5	30	9	
125	M27 x 2	41	12	KF - 16125
160	M36 x 2	55	14	KF - 16160
200	M36 x 2	55	14	

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

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

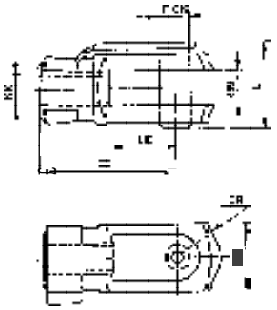
Cylindrical screw UNI 5931 and DIN 7984 Part n. AZ4-VN.../AZ4-VPA... suitable for mounting elements series KF-19...

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

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

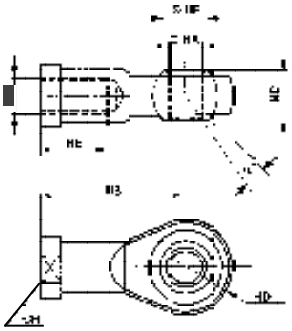
Cyl. Ø	Screw	Part number
32-40	M6 x 14	AZ4-VN0614
50-63	M8 x 16	AZ4-VN0816
80-100	M10 x 20	AZ4-VN1020
125	M12 x 25	AZ4-VN1225

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



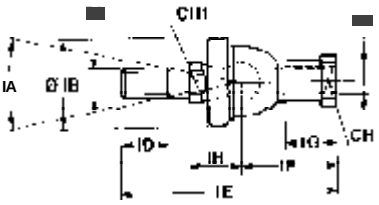
Cyl. Ø	CE	CK	CL	CM B12	ER	KK	L	LE	Mass kg	Part number
32	40	10	20	10	16	M10 x 1,25	26	20	0,09	KF - 15032
40	48	12	24	12	19	M12 x 1,25	32	24	0,015	KF - 15040
50–63	64	16	32	16	25	M16 x 1,5	40	32	0,34	KF - 15050
80–100	80	20	40	20	32	M20 x 1,5	50	40	0,67	KF - 15080
125	110	30	55	30	45	M27 x 2	65	54	1,79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



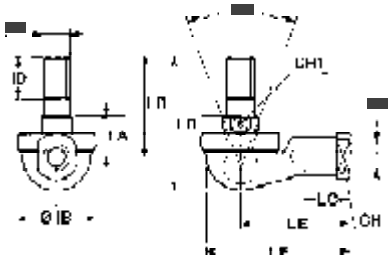
Cyl. Ø	a	CH	KK	HA H7	HB	HC	HD 0 -0,12	HE	HF	Mass kg	Part number
32	13°	17	M10 x 1,25	10	43	14	14	20	12,9	0,076	KF - 17032
40	13°	19	M12 x 1,25	12	50	16	16	22	15,4	0,11	KF - 17040
50–63	15°	22	M16 x 1,5	16	64	21	21	28	19,3	0,22	KF - 17050
80–100	14°	30	M20 x 1,5	20	77	25	25	33	24,3	0,4	KF - 17080

Fork with axially mounted articulated pin



Cyl. Ø	CH	CH1	IA	KK	IH ±0,3	IB	ID	IE	IF	IG	Mass kg	Part number
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
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
Media: 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. Ø	32	40	50	63	80	100	125
M_t (Nm)	1,2	2,25	3,9	7,3	15,7	26,5	51

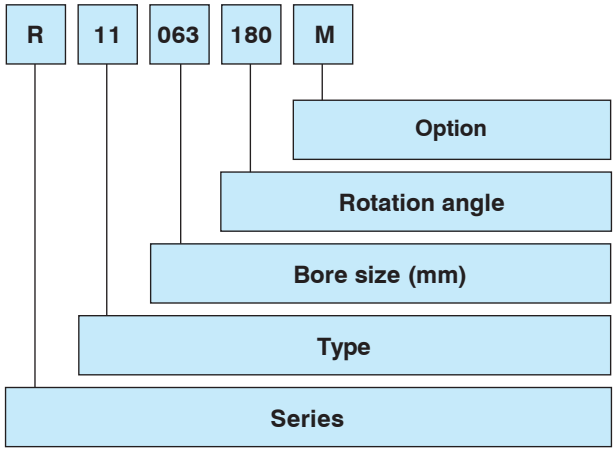
Maximum kinetic energy absorbable by cushioning

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

Cyl. Ø	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).

Codification Key



TYPES

11 Male pinion without adjustment (positional accuracy ± 3°)
12 Male pinion with adjustment ± 5°
13 Female pinion without adjustment (positional accuracy ± 3°)
14 Female pinion with adjustment ±5°

BORE

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

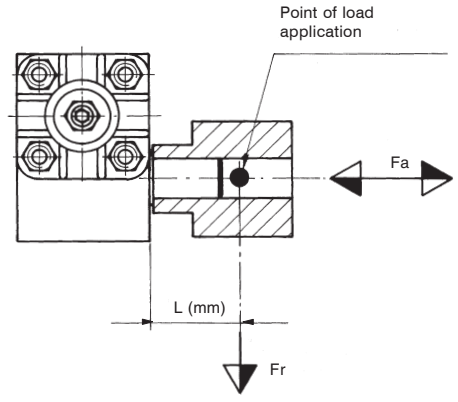
ROTATION ANGLE

90° - 180° - 270° - 360°

OPTION

M = Magnetic version

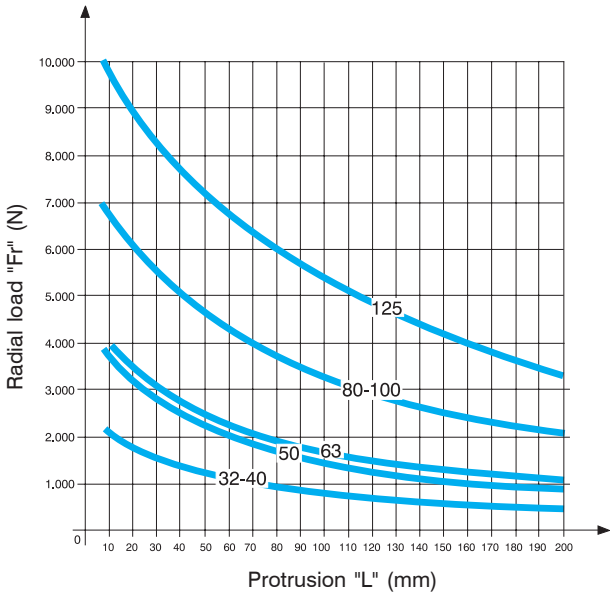
Static loads acceptable for the pinion

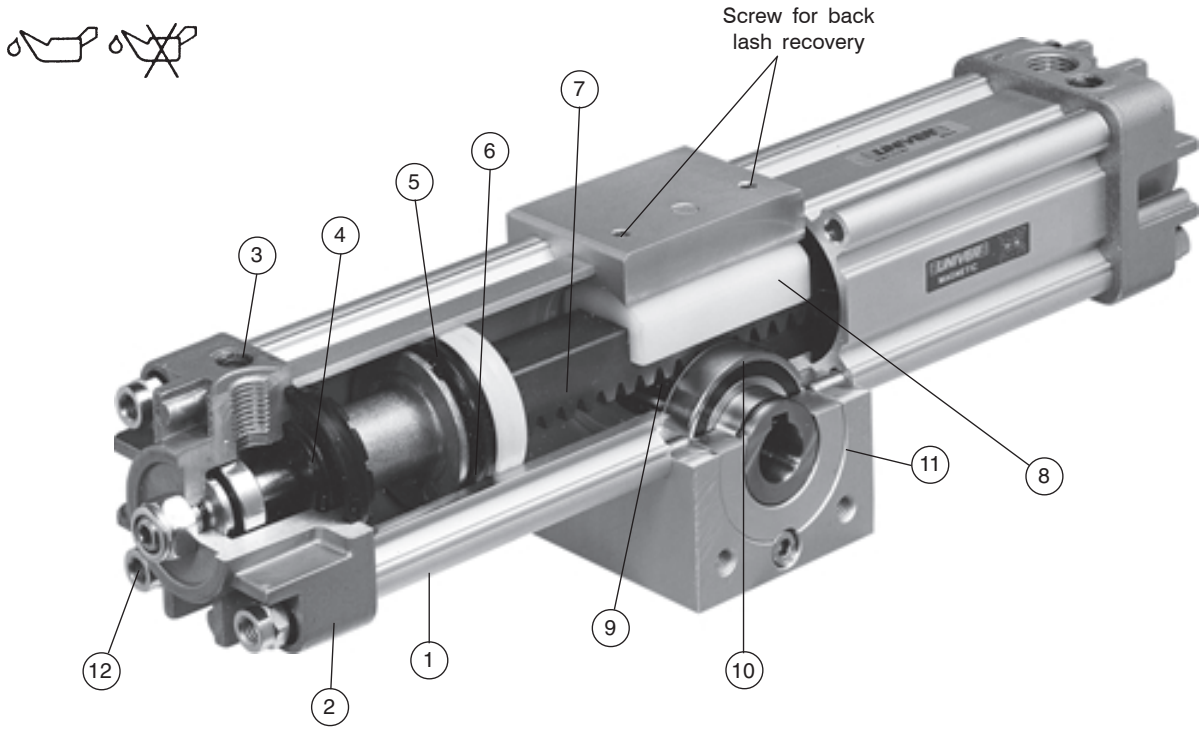


Fa = Radial load max (N) with Fr = 0

Cyl. Ø	32	40	50	63	80	100	125
Fa	100	100	120	120	200	250	300

Fr = Radial loads max (N) with Fa=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 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).

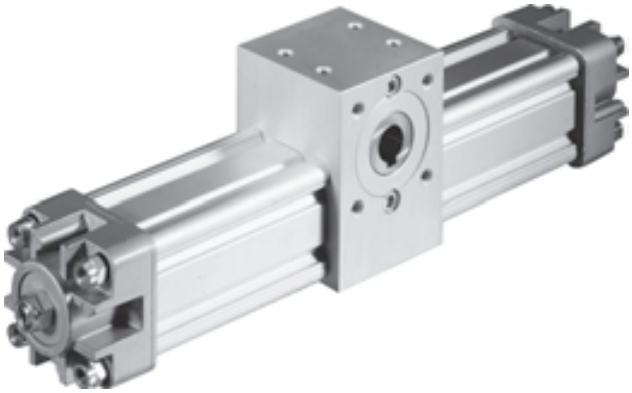
(11) Anodized aluminium body.

(12) Rotation angle adjustment screw, with a rotation angle ±5° Series R12 - 14. (It is advisable not to make adjustments while the cylinder is under pressure)

Rotating cylinders with:

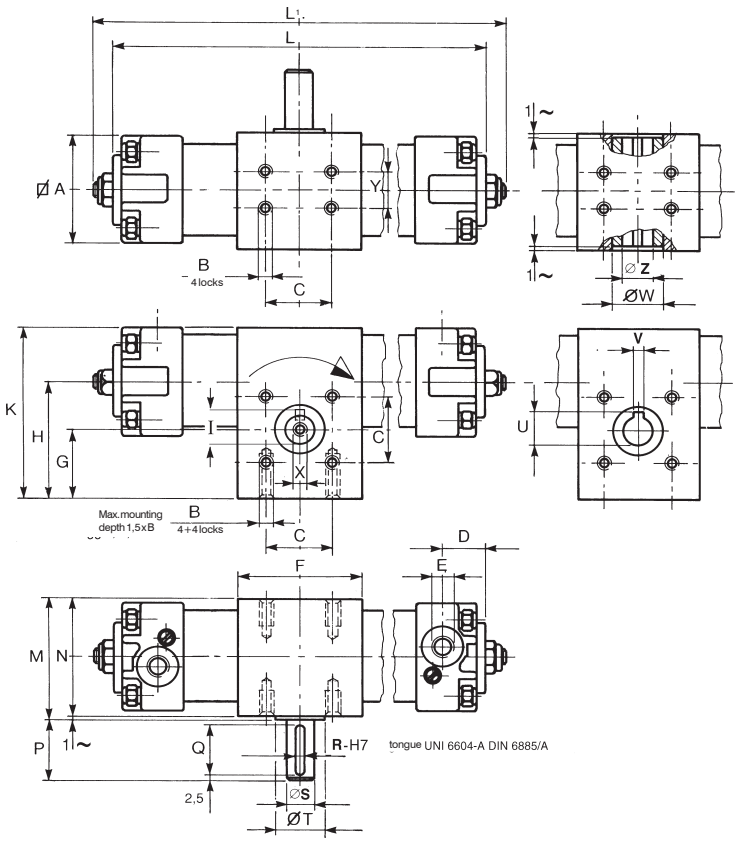
male pinion

female pinion



Basic overall dimensions

Cyl. Ø	A	B	C ±0,1	D	E	F	G	H	I	K	M	N	P	Q	R	S g 6	T	U	V M7	W	X	Y ±0,1	Z 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-L$_1$ and weights with standard rotations

L$_1$: 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°			
			Mass (kg)				Mass (kg)				Mass (kg)				Mass (kg)	
	L$_1$	L	Male pinion	Female pinion	L$_1$	L	Male pinion	Female pinion	L$_1$	L	Male pinion	Female pinion	L$_1$	L	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

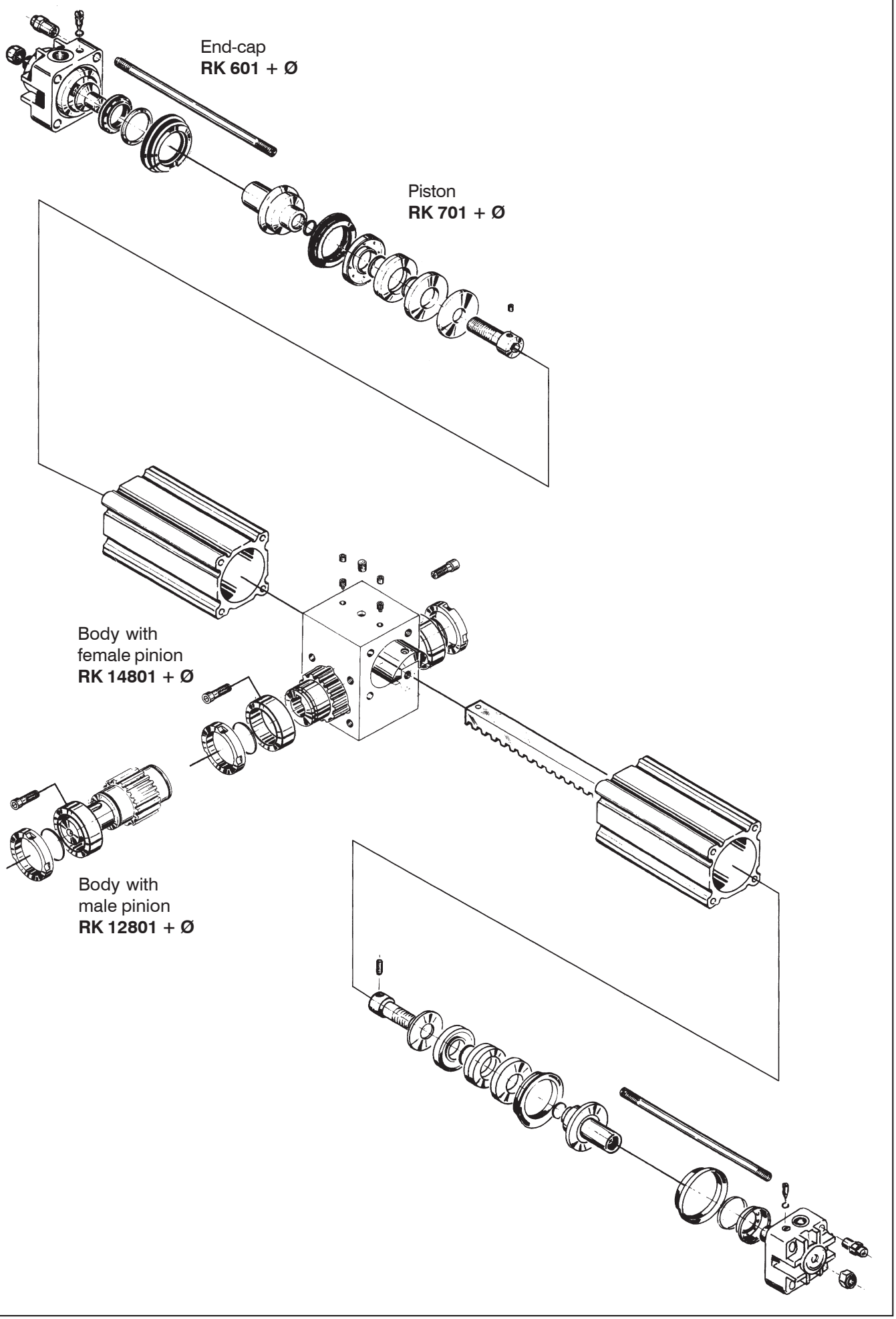
Overall dimensions with intermediate rotations

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-L$_1$ 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 $\left(\frac{L}{2}, \frac{L_1}{2}\right)$


End-cap
RK 601 + Ø
Piston
RK 701 + Ø
Body with
female pinion
RK 14801 + Ø
Body with
male pinion
RK 12801 + Ø

Cylinders Ø 32 ÷ 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 changement of dimensions in comparison with an equivalent cylinder without cushioning**, allows a considerably higher speed and reduces the 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.

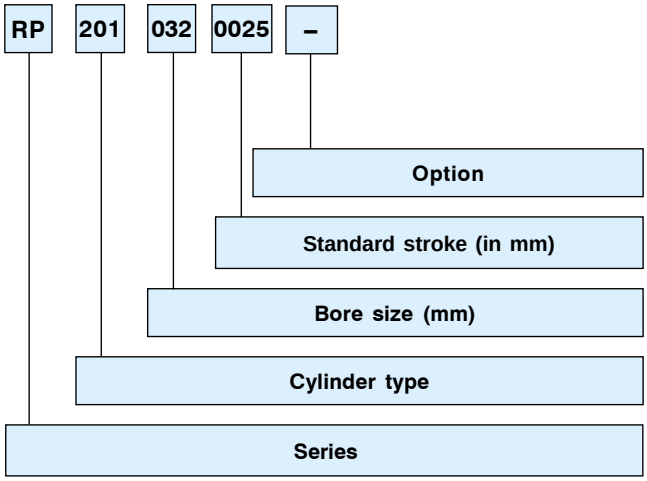
Adjustable pneumatic cushioning (10 mm~)

Magnetic version.

The version with non-rotating piston rod (RO series) is standard supplied with assembled flange.

Max. speed: 1 m/s

Codification Key



SERIES

Compact UNITOP cylinders Ø 032 ÷ 063 mm magnetic version and with cushioning:

Round cylinder barrel:
RP series - compact UNITOP
RM series - compact UNITOP with ISO inter-axes

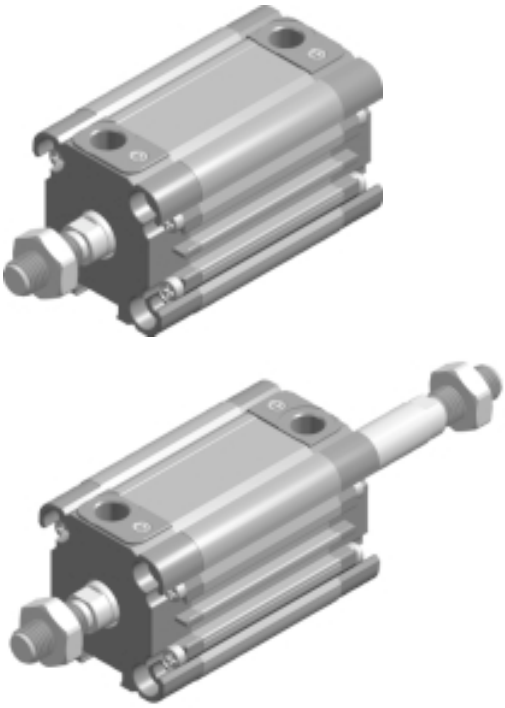
Octagonal cylinder barrel:
RO series - compact UNITOP
RN series - compact UNITOP with ISO inter-axes

TYPE

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

Upon request

- Flange for RP series type 200-201-260-270
- Hollow piston rod only for through piston rod versions
- Magnetic sensor DF-series (section accessories see page 2)
- Wire protection strap for magnetic sensor, DHF-002100 part no.



RO-RN series
1_ with stainless steel rod
2_ with chromium-plated steel ROD
-00 D.A.
-01 D.A. through rod
-20 D.A. long piston
-60 S.A. rectracted rod
-70 S.A. extended rod

BORE

032 - 040 - 050 - 063 mm

STANDARD STROKE

Single acting
0005-0010-0015-0020-0025 mm
Max. stroke: **0025 mm**

Double acting
0005-0010-0015-0020-0025-0030-0040-0050-0060
0080-0100-0125-0150-0160-0175-0200-0250-0300-
0320-0350-0400-0450-0500 mm
Max. stroke: 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.

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.
- NBR piston seals.
- D.A. piston in aluminium

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

- Polyurethane rod seals
- Adjustable pneumatic cushioning for efficient deceleration of the piston and reduced noise pollution.

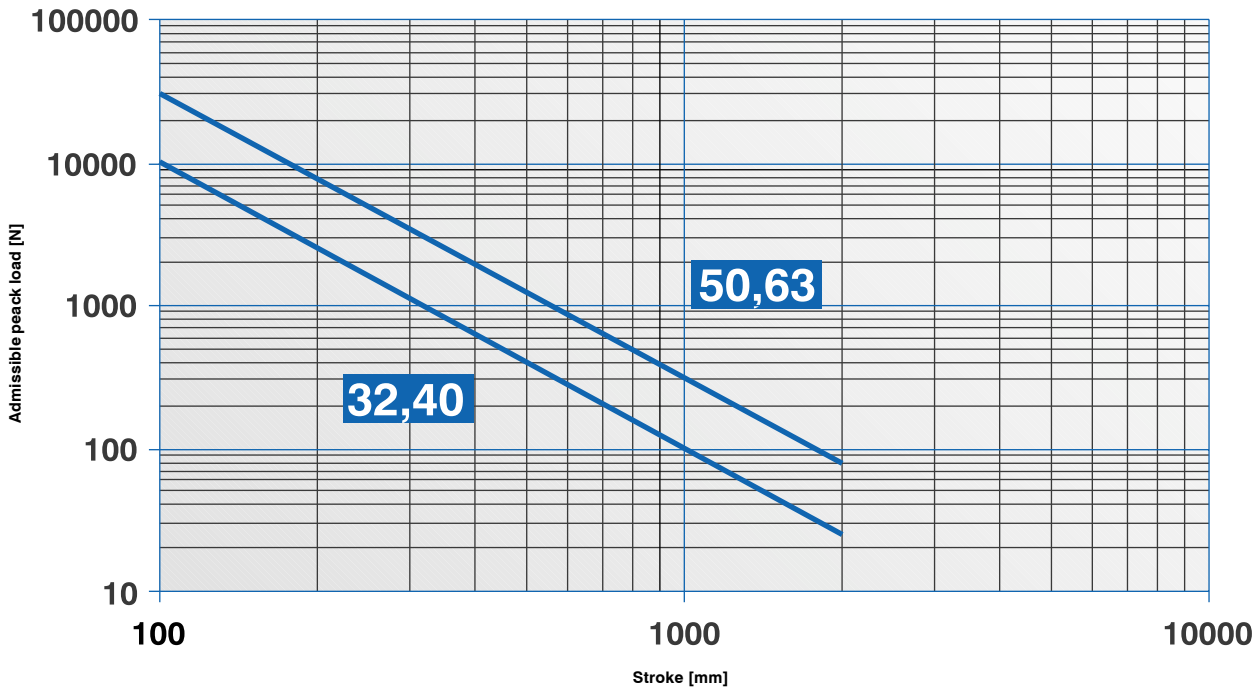
Theoretical forces [N] developed at the working pressure [bar]

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	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

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

Maximum applicable torque [Nm] for RO/RN series non-rotating rod

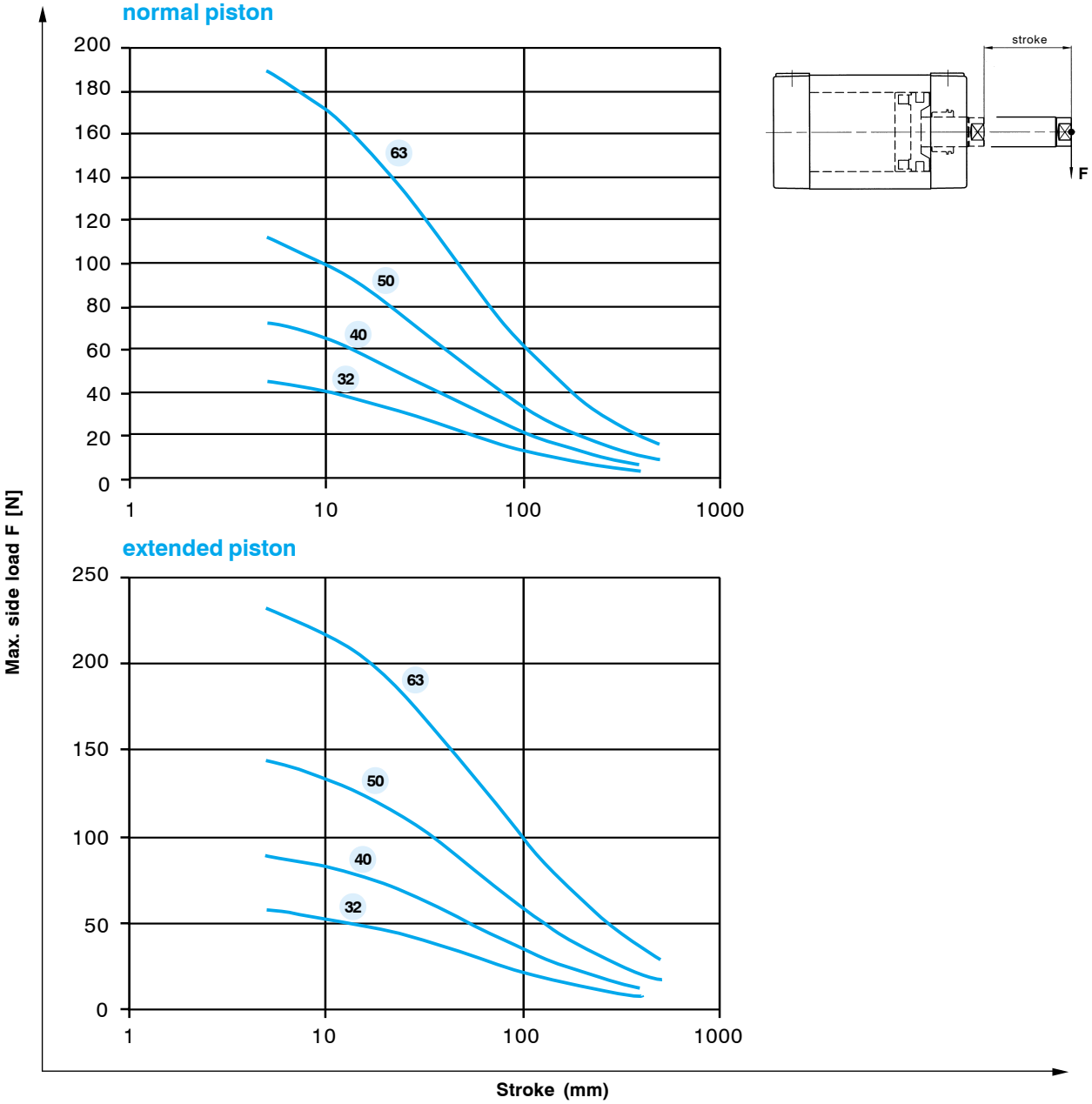
Cyl. Ø	Torque [Nm]
32	2
40	3
50	5
63	8



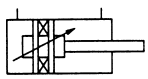
Theoretical forces of spring traction for cylinder types ...260.../...270...

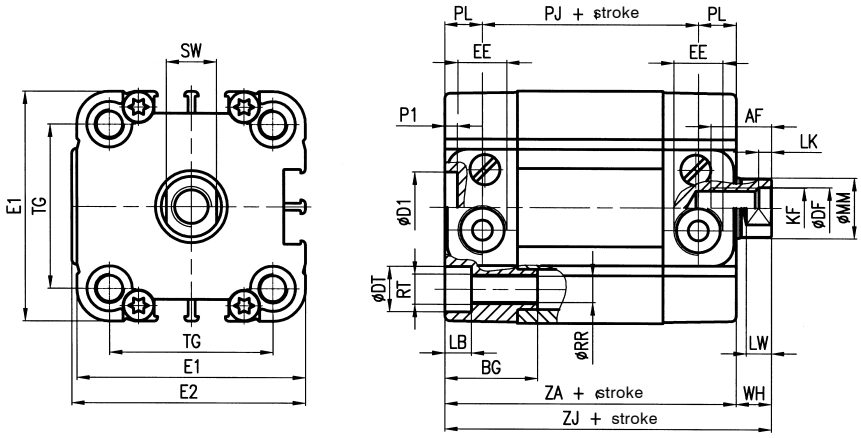
Cyl. Ø	Max. force (N)	Min. force (N)	Max. stroke (mm)	Decrease per mm stroke (N/mm)
32	40	24	25	0,64
40	50	35	25	0,6
50	90	49	25	1,64
63	90	49	25	1,64

Graph side load on piston rod



Double-acting cylinder RP 200___ / RO 220___ series* extended piston





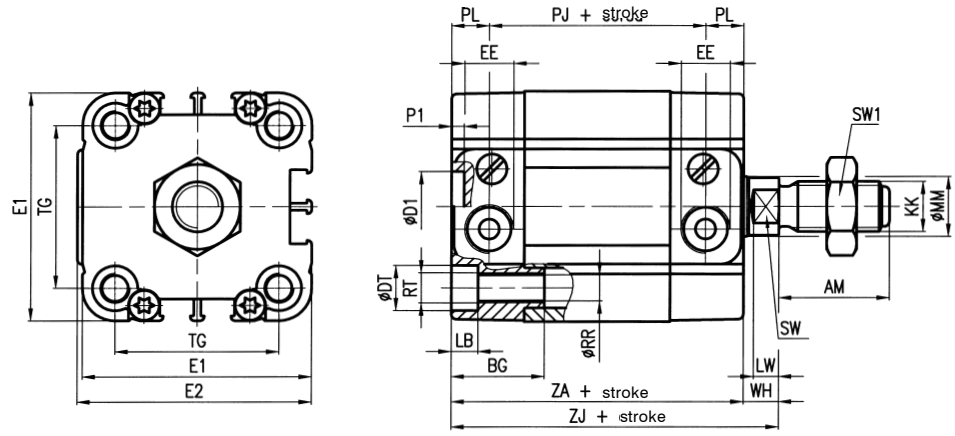
Mass RP 200___

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

Mass RO 220___

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
32	291,5	2,65	111,5	0,9
40	426	3,3	148	0,9
50	676,5	4,7	274	1,6
63	1063,5	5,65	427	1,6

Double-acting cylinder with male rod RP 400___/RP 420___* series extended piston



Mass RP 400___

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

Mass RP 420___

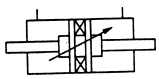
Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
32	326,5	2,65	146,5	0,9
40	461	3,3	183	0,9
50	731,5	4,7	329	1,6
63	1118,5	5,65	482	1,6

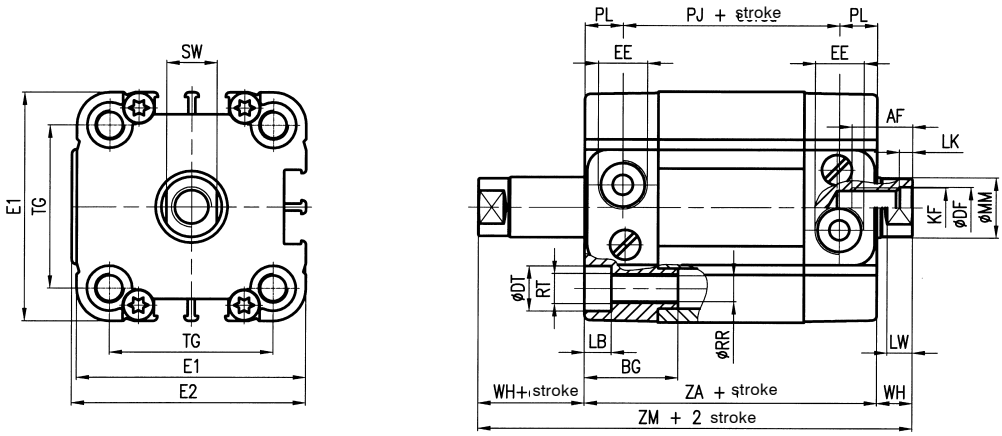
Cyl. Ø	AF	AM	BG	ØD1 H11	Ø DF	Ø DT	E1	E2	EE	KF	KK	LB	LK	LW	Ø MM	P1	PJ	PL	Ø RR	RT	SW	SW1	TG	WH	ZA	ZJ
32	12	22	18	14	8,2	9	46	47	G1/8	M8	M10x1,25	5,3	2	5	12	2,5	29	7,5	5,2	M6	10	17	32,5	7	44	51
40	12	22	18	14	8,2	9	56	57	G1/8	M8	M10x1,25	5,3	2	5	12	2,5	30	7,5	5,2	M6	10	17	42	7	45	52
50	16	24	24	18	10,2	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	24	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).**

The dimensions refer to cylinders with end-caps having UNITOP inter-axes; if end-caps with ISO inter-axes are mounted, TG dimensions vary as follows: Ø 40-38 / Ø 50-46,5 / Ø 63-56,5 with the exception of Ø 32 which has the same inter-axes as UNITOP versions.

Double-acting cylinder, through rod RP 201 series

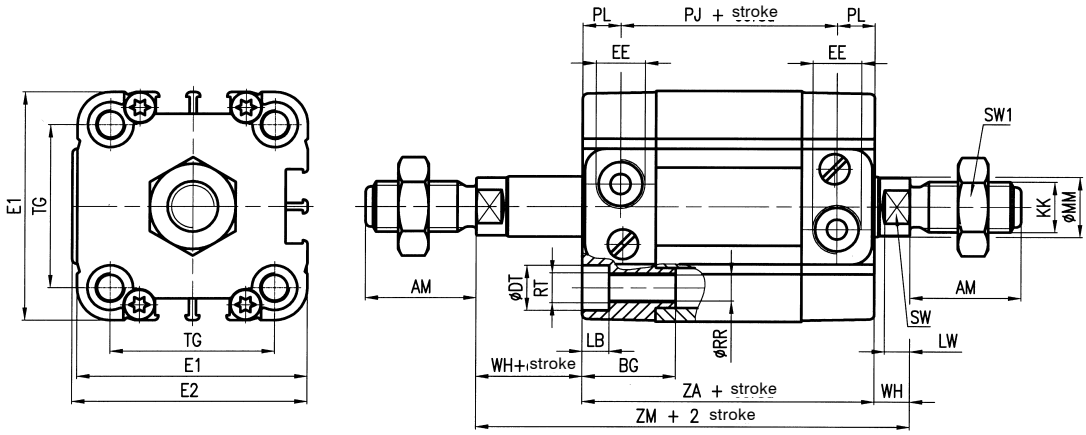




Mass

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

Double-acting cylinder, male through rod RP 401 series



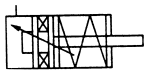
Mass

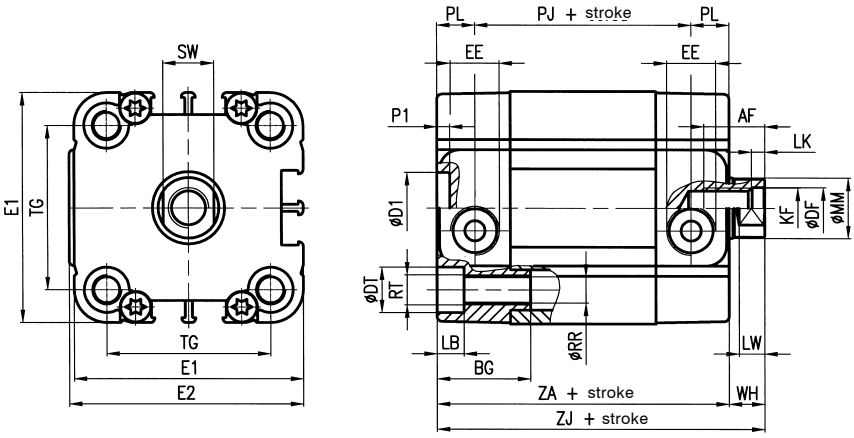
Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
32	290	3,55	125	1,8
40	390	4,2	140	1,8
50	570	6,3	225	3,2
63	855	7,25	300	3,2

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
32	12	22	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	22	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	24	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	24	24	10,2	11	79	80	G1/8	M10	M12x1,25	6,5	2	6	16	34	7,5	6,6	M8	13	19	62	8	49	65

The dimensions refer to cylinders with end-caps having UNITOP inter-axes; if end-caps with ISO inter-axes are mounted, TG dimensions vary as follows: Ø 40-38 / Ø 50-46,5 / Ø 63-56,5 with the exception of Ø 32 which has the same inter-axes as UNITOP versions.

Single-acting cylinder, retracted rod RP 260 ... series

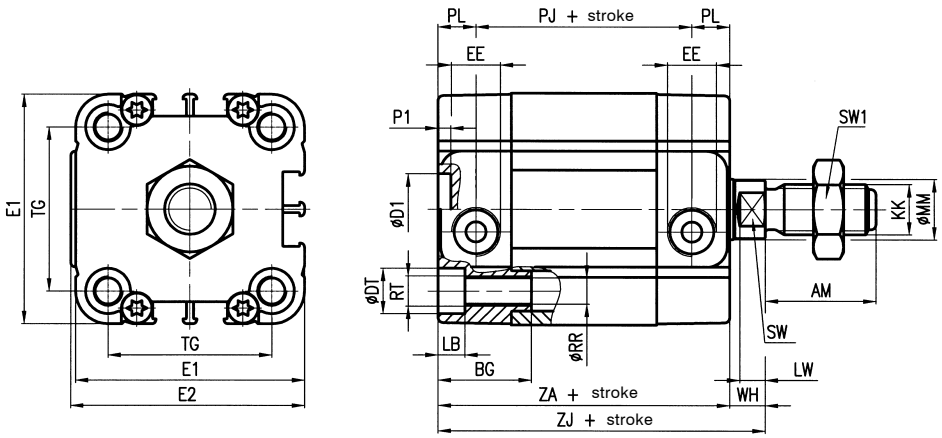




Mass

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

Single-acting cylinder, retracted male rod RP 460 ... series



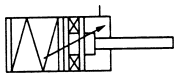
Mass

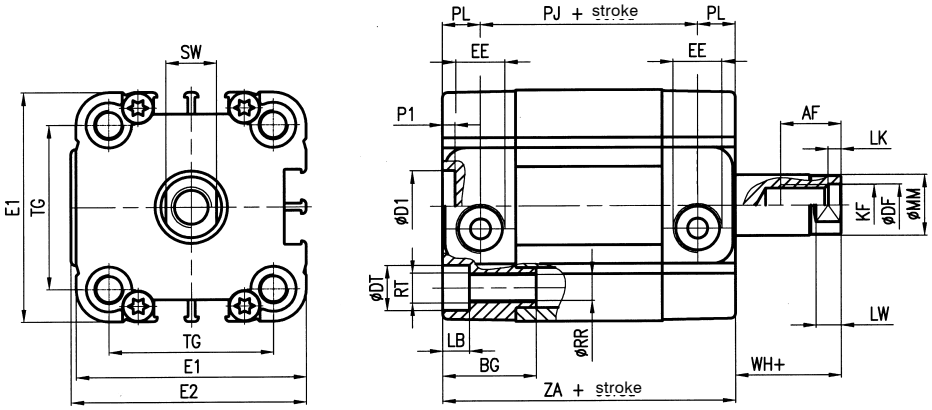
Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
32	250	2,65	98	0,9
40	350	3,3	116	0,9
50	523	4,7	192	1,6
63	808	5,65	267	1,6

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
32	12	22	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	22	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	24	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	24	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

The dimensions refer to cylinders with end-caps having UNITOP inter-axes; if end-caps with ISO inter-axes are mounted, TG dimensions vary as follows: Ø 40-38 / Ø 50-46,5 / Ø 63-56,5 with the exception of Ø 32 which has the same inter-axes as UNITOP versions.

Single-acting cylinder, extended rod RP 270 ... series

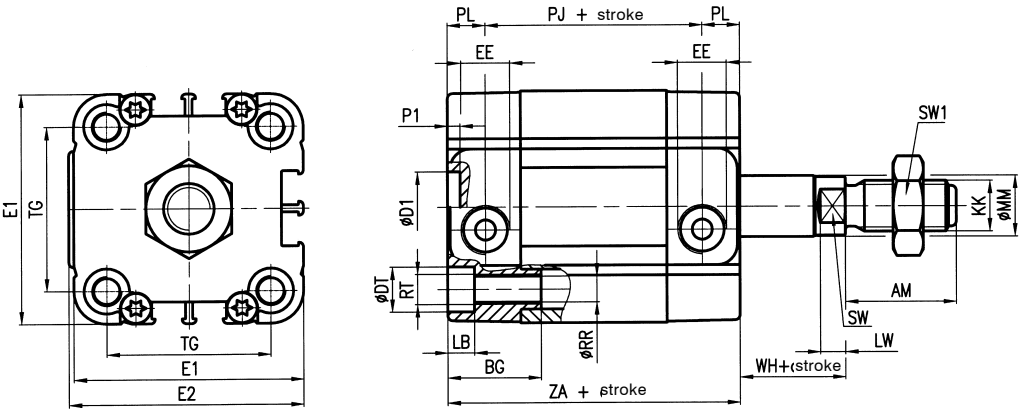




Mass

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

Single-acting cylinder, extended male rod RP 470 ... series



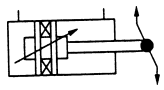
Mass

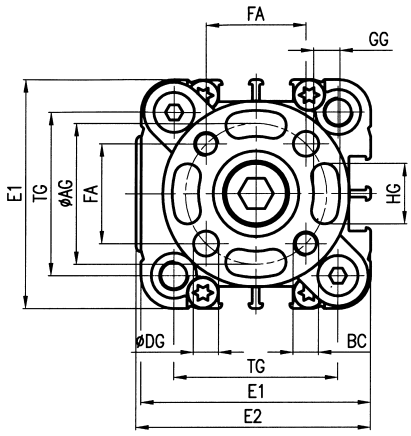
Cyl. ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
32	238	2,65	98	0,9
40	337	3,3	116	0,9
50	500	4,7	192	1,6
63	785	5,65	267	1,6

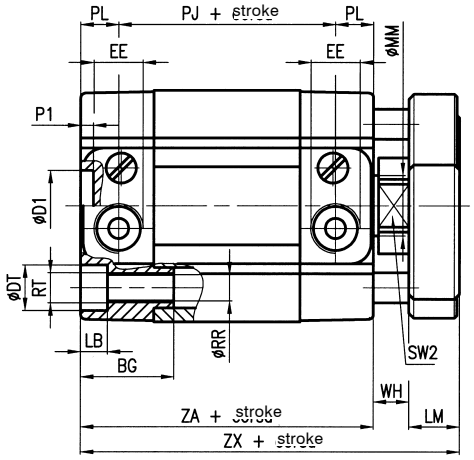
Cyl. Ø	AF	AM	BG	ØD1 H11	Ø DF	Ø DT	E1	E2	EE	KF	KK	LB	LK	LW	Ø MM	P1	PJ	PL	Ø RR	RT	SW	SW1	TG	WH	ZA
32	12	22	18	14	8,2	9	46	47	G1/8	M8	M10x1,25	5,3	2	5	12	2,5	29	7,5	5,2	M6	10	17	32,5	7	44
40	12	22	18	14	8,2	9	56	57	G1/8	M8	M10x1,25	5,3	2	5	12	2,5	30	7,5	5,2	M6	10	17	42	7	45
50	16	24	24	18	10,2	11	66	67	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	24	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

The dimensions refer to cylinders with end-caps having UNITOP inter-axes; if end-caps with ISO inter-axes are mounted, TG dimensions vary as follows: Ø 40-38 / Ø 50-46,5 / Ø 63-56,5 with the exception of Ø 32 which has the same inter-axes as UNITOP versions.

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



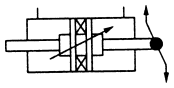


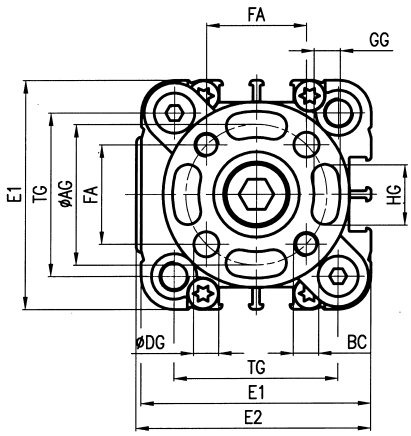


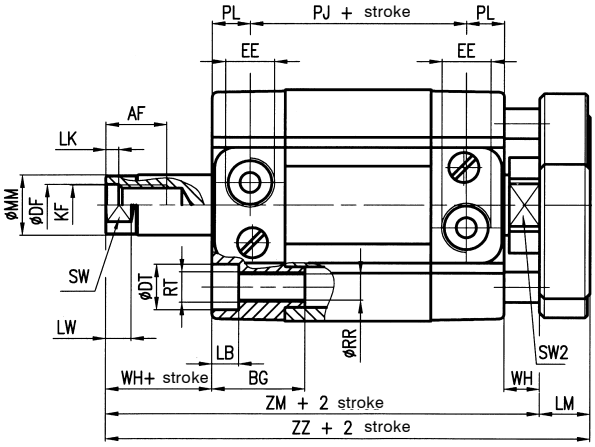
Mass

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

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







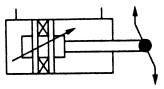
Mass

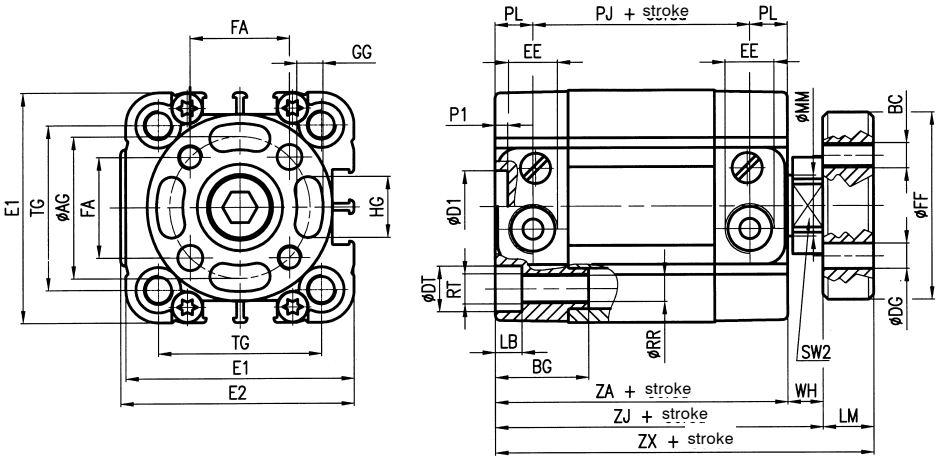
Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
32	270	3,99	125	2,24
40	392	5	167	2,6
50	585	7,1	260	4
63	915	8,49	385	4,44

Cyl. Ø	AF	Ø AG	BC	BG	ØD1 H11	Ø DF	Ø DG	Ø DT	E1	E2	EE	FA	GG	HG	KF	LB	LM	LK	LW	Ø MM	P1	PJ	PL	Ø RR	RT	SW	SW2	TG	WH	ZA	ZM	ZX	ZZ
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	34	7,5	6,6	M8	13	24	62	8	49	65	69	77

The dimensions refer to cylinders with end-caps having UNITOP inter-axes; if end-caps with ISO inter-axes are mounted, TG dimensions vary as follows: Ø 32-32,5 / Ø 40-38 / Ø 50-46,5 / Ø 63-56,5 only on rear end-caps.

Double-acting cylinder with non-rotating rod RO 200___ / RO 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.

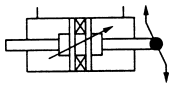
Mass RO 200___

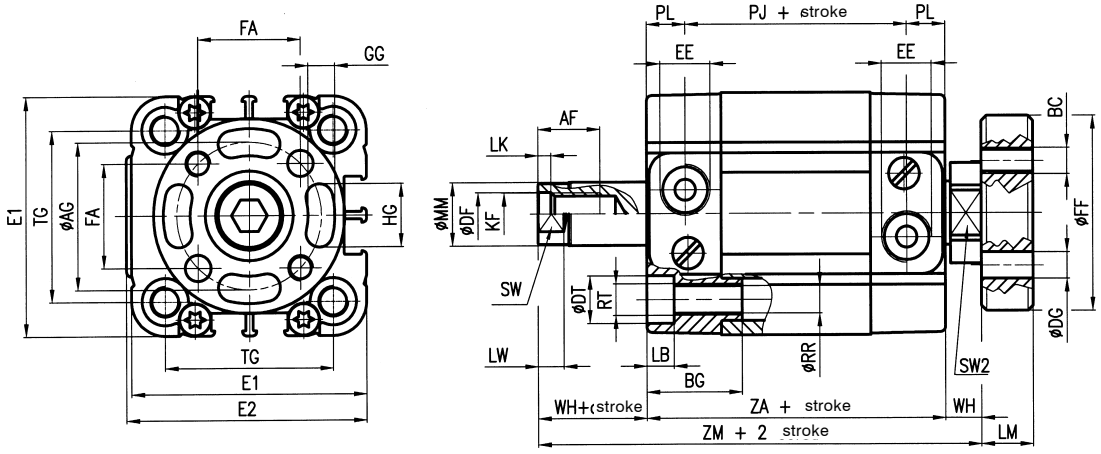
Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
32	229	2,65	84	0,9
40	344	3,3	113,5	0,9
50	517	4,7	192	1,6
63	829	5,65	294	1,6

Mass RO 220___

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
32	316,5	2,65	136,5	0,9
40	466	3,3	188	0,9
50	746,5	4,7	344	1,6
63	1161,5	5,65	525	1,6

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





Mass

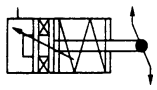
Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
32	254	3,55	109	1,8
40	364	4,2	138,5	1,8
50	557	6,3	232	3,2
63	869	7,25	339	3,2

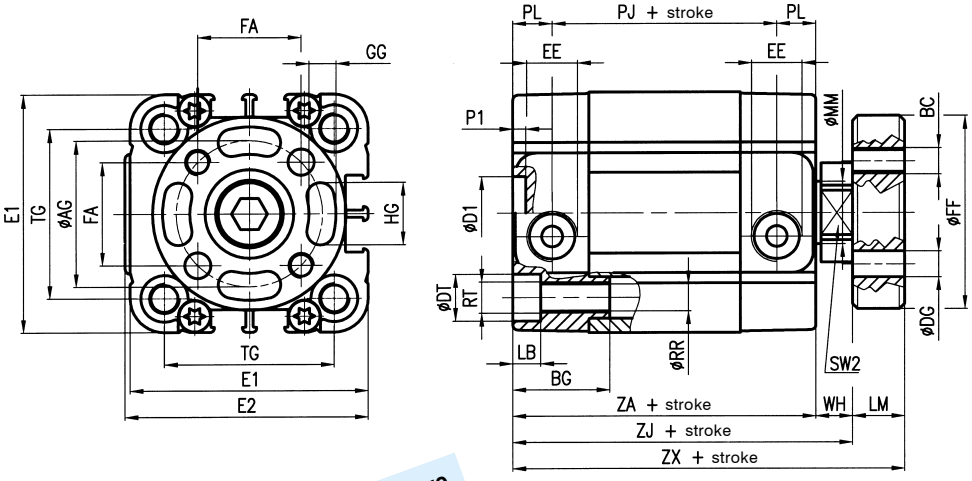
Cyl. Ø	AF	Ø AG	BC	BG	ØD1 H11	Ø DF	Ø DG	Ø DT	E1	E2	EE	FA	Ø FF	GG	HG	KF	LB	LM	LK	LW	Ø MM	P1	PJ	PL	Ø RR	RT	SW	SW2	TG	WH	ZA	ZM	ZJ	ZX
32	12	28	M5	18	14	8,2	5	9	46	47	G1/8	19,8	37	5,2	11	M8	5,3	10	2	5	12	2,5	29	7,5	5,2	M6	10	17	32,5	7	44	58	51	61
40	12	33	M5	18	14	8,2	5	9	56	57	G1/8	23,3	42	5,2	15	M8	5,3	10	2	5	12	2,5	30	7,5	5,2	M6	10	19	42	7	45	59	52	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	53	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	34	7,5	6,6	M8	13	24	62	8	49	65	57	69

*** 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).**

The dimensions refer to cylinders with end-caps having UNITOP inter-axes; if end-caps with ISO inter-axes are mounted, TG dimensions vary as follows: Ø 40-38 / Ø 50-46,5 / Ø 63-56,5 with the exception of Ø 32 which has the same inter-axes as UNITOP versions.

Single-acting cylinder, non-rotating retracted rod RO 260 ... series



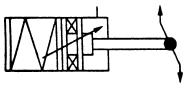


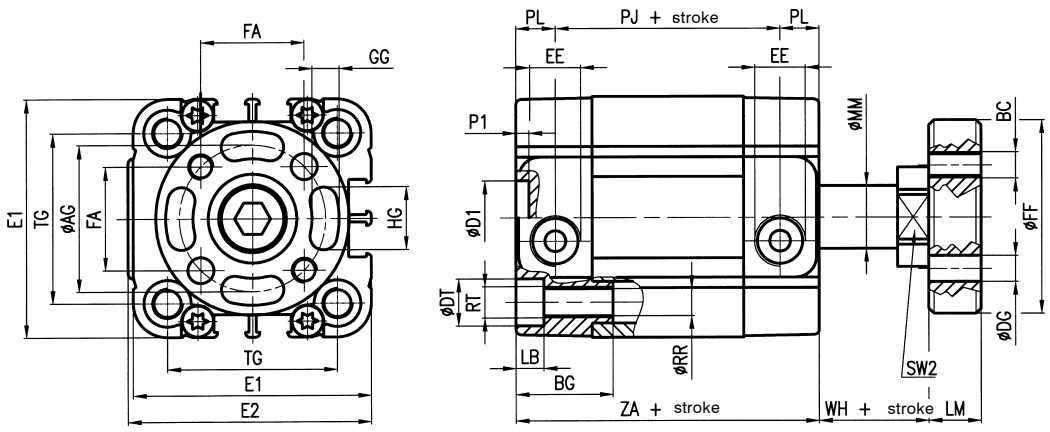
If it is necessary to remove the flange from the rod, oppose the force needed to unscrew it by using exclusively the hexagon wrench SW2.

Mass

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
32	239	2,65	87	0,9
40	354	3,3	119,5	0,9
50	535	4,7	204	1,6
63	847	5,65	306	1,6

Single-acting cylinder, non-rotating extended rod RO 270 ... series





Mass

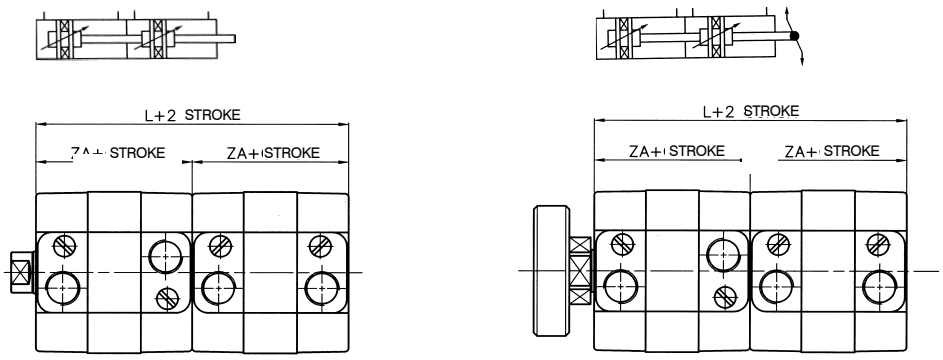
Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving parts stroke "0" (g)	Increase by mm stroke (g)
32	227	2,65	87	0,9
40	341	3,3	119,5	0,9
50	512	4,7	204	1,6
63	824	5,65	306	1,6

Cyl. Ø	Ø AG	BC	BG	ØD1 H11	Ø DG	Ø DT	E1	E2	EE	FA	Ø FF	GG	HG	LB	LM	Ø MM	P1	PJ	PL	Ø RR	RT	SW2	TG	WH	ZA	ZJ	ZX
32	28	M5	18	14	5	9	46	47	G1/8	19,8	37	5,2	11	5,3	10	12	2,5	29	7,5	5,2	M6	17	32,5	7	44	51	61
40	33	M5	18	14	5	9	56	57	G1/8	23,3	42	5,2	15	5,3	10	12	2,5	30	7,5	5,2	M6	19	42	7	45	52	62
50	42	M6	24	18	6	11	66	67	G1/8	29,7	52	6,2	19	6,5	12	16	2,5	30	7,5	6,6	M8	24	50	8	45	53	65
63	50	M6	24	18	6	11	79	80	G1/8	35,4	64	6,2	25	6,5	12	16	2,5	34	7,5	6,6	M8	24	62	8	49	57	69

The dimensions refer to cylinders with end-caps having UNITOP inter-axes; if end-caps with ISO inter-axes are mounted, TG dimensions vary as follows: Ø 40-38 / Ø 50-46,5 / Ø 63-56,5 with the exception of Ø 32 which has the same inter-axes as UNITOP versions.

Tandem cylinder (double thrust and traction force)

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



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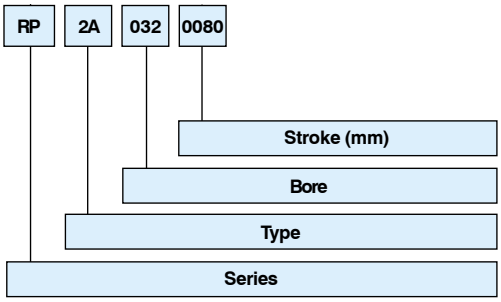

SERIES

RP 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

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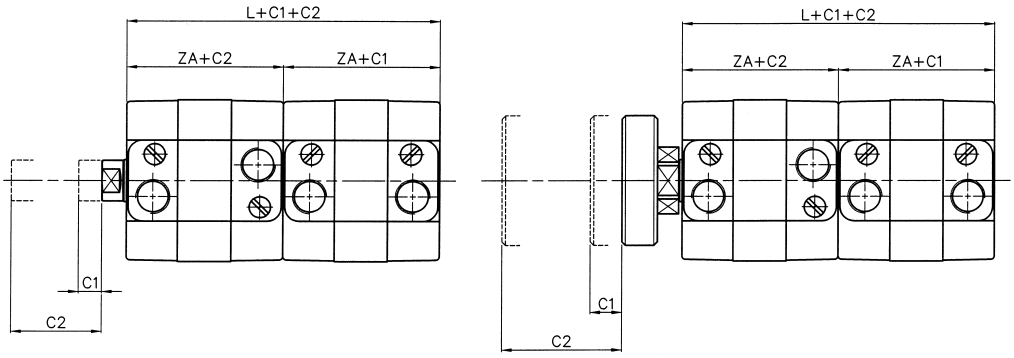
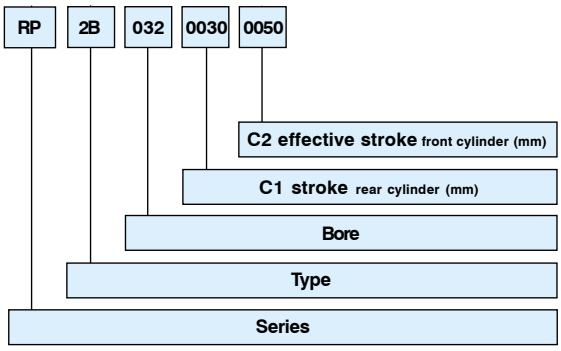
Cylinder with independent rods (multiple position cylinder)

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



Codification key



SERIES

RP 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

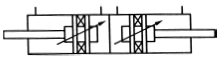
STROKE 1

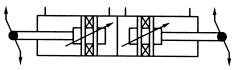
Stroke rear cylinder.

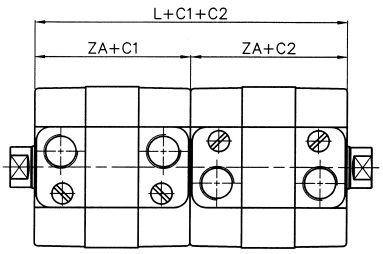
STROKE 2

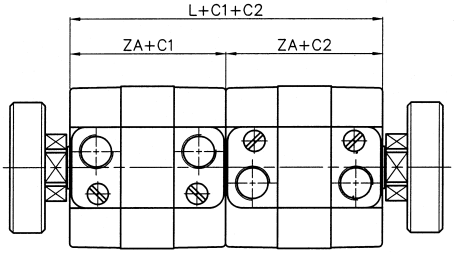
Effective stroke front cylinder.

Opposed cylinder



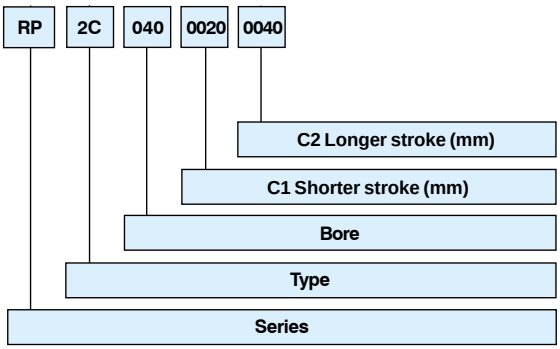






Cyl. Ø*	ZA	L
32	44	88
40	45	90
50	45	90
63	49	98

Codification key



SERIES

RP Round cylinder with opposed rods
RO Octagonal cylinder with opposed rods

TYPE

Stainless steel rod
1C female rod
3C male rod

Chromium-plated rod
2C female rod
4C male rod

BORE

032-040-050-063 mm

STROKE 1

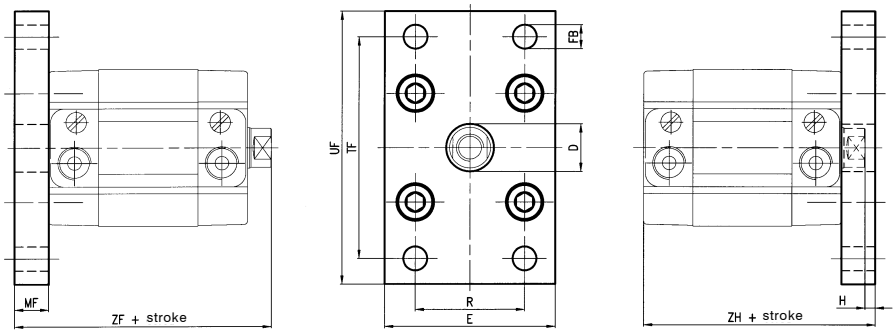
Page 29/I

STROKE 2

Page 29/I

* For all other dimensions please refer to the standard version on pages 32 and 37.

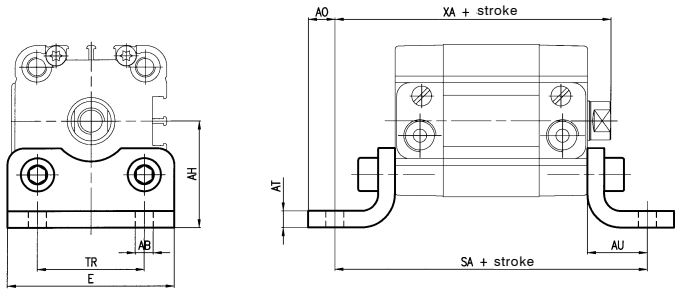
Front and rear flange in zinc-plated steel



Cyl. Ø	Part number	Mass kg
32	RPF-12032	0,26
40	RPF-12040	0,42
50	RPF-12050	0,60
63	RPF-12063	1,20

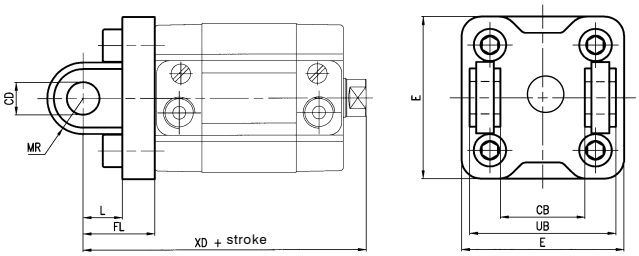
Angle bracket in zinc-plated steel

Fixing screws page 42



Cyl. Ø	Part number	Mass kg
32	RPF-13032	0,07
40	RPF-13040	0,10
50	RPF-13050	0,15
63	RPF-13063	0,25

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



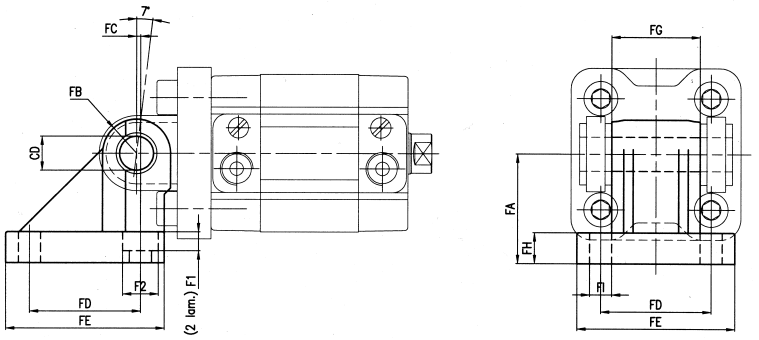
Cyl. Ø	Part number	Mass kg
32	KF-10032A	0,06
40	RPF-10040A	0,104
50	RPF-10050A	0,142
63	RPF-10063A	0,240

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

	Flange										Bracket									Hinge with pin							
Cil. Ø	Ø D H11	E	ØFB H13	H	MF	R	TF	UF	ZF	ZH	ØAB H13	AH Js15	AO	AT	AU	E	SA	TR	XA	CB H14	ØCD H9	E	FL	L	MR	UB h14	XD
32	14	50	7	3	10	32	65	80	61	54	6.6	32.25	8	5	18	50	80	32	69	26	10	48	22	12	11	45	73
40	14	60	9	3	10	36	82	102	62	55	6.6	42.5	8	5	20	60	85	42	72	28	12	58	25	16	12.5	52	77
50	18	68	9	4	12	45	90	110	65	57	9	47	8	6	24	68	93	50	77	32	12	66	27	16	12.5	60	80
63	18	87	9	7	15	50	110	130	72	64	9	59.5	12	6	27	84	103	62	84	40	16	83	32	21	15	70	89

Accessories for compact cylinders with ISO inter-axes see page 57/I.

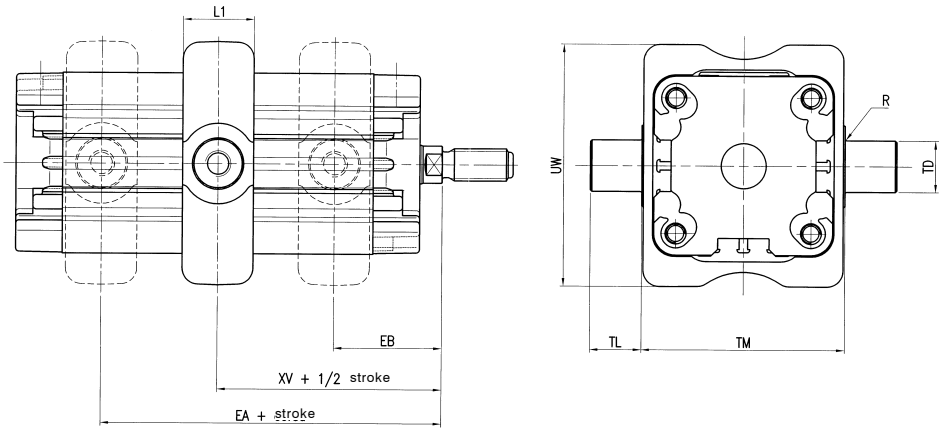
Counter-hinge 90° in die-cast aluminium



Cyl. Ø	ØCD 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 number	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 grub screws

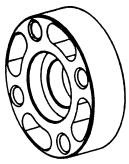


Cyl. ø	EA (max)	EB (min)	I1 (max)	R (max)	TD (e9)	TL (h14)	TM (h14)	UW (max)	XV Nom.	XV Toll.
32	24	34	22	0,5	12	12	50	65	29	±2
40	25	34	22	0,5	16	16	63	75	29,5	±2
50	26	35	22	1	16	16	75	95	30,5	±2
63	27	38	28	1	20	20	90	105	32,5	±2

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

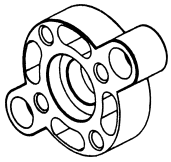
Min. stroke of the cylinder: 10 mm
XV+1/2 stroke: hinge between cylinder end-caps.

Flange for female rod in die-cast aluminium, (with fixing screw standard supplied with octagonal cylinder types of RO-RN series) If assembled on cylinder types RP-RM the dimensions are the same as these of RO-RN series.



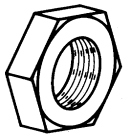
Cyl. Ø	Part number	Mass kg
32	RPF-28032	0,024
40	RPF-28040	0,035
50	RPF-28050	0,057
63	RPF-28063	0,094

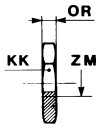
Flange for piston rod with non-rotating device in die-cast aluminium for RP 210---/RP 211--- series (including fixing screws)



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

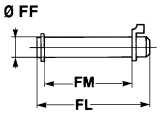
Rod nut in zinc-plated steel





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

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

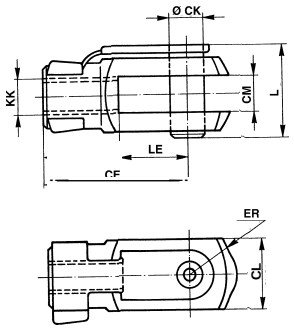
Cylindrical screw UNI 5931 Part n° AZ4-VN--- suitable for mounting elements RPF-12--- and RPF-13--- series

Cyl. Ø	Screw	Part number
32-40	M6x20	AZ4-VN0620
50-63	M8x25	AZ4-VN0825

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

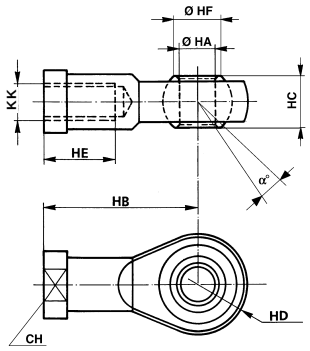
Cyl. Ø	Screw	Part number
32-40	M6x25	AZ4-VN0625
50-63	M8x30	AZ4-VN0830

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



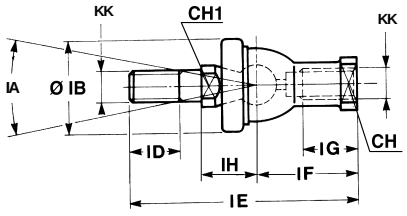
Cyl. Ø	CE	CK	CL	CM B12	ER	KK	L	LE	Mass kg
32-40	40	10	20	10	16	M10 x 1,25	26	20	0,09
50-63	48	12	24	12	19	M12 x 1,25	32	24	0,015

Articulated self-lubricating fork in zinc-plated steel



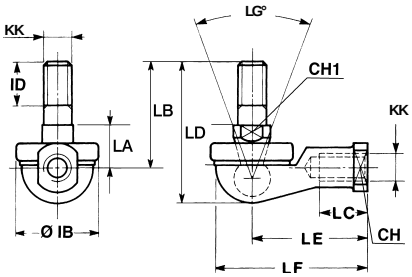
Cyl. Ø	a	CH	KK	HA	HB	HC	HD	HE	HF	Mass kg
		⬡		H7			0 -0,12			
32-40	13°	17	M10 x 1,25	10	43	14	14	20	12,9	0,076
50-63	13°	19	M12 x 1,25	12	50	16	16	22	15,4	0,11

Fork with axially mounted articulated pin



Cyl. Ø	CH ⬡	CH1 ⬡	IA	KK	IH ±0,3	IB	ID	IE	IF	IG	Mass kg
32-40	17	11	30°	M10 x 1,25	19,5	32	15	74,5	35	18	0,12
50-63	19	11	30°	M12 x 1,25	22	36	17	84	40	20	0,185

Fork with angle-mounted articulated pin



Cyl. Ø	CH ⬡	CH1 ⬡	LG	KK	IB	ID	LA ±0.3	LB	LC	LD	LE	LF	Mass kg
32-40	17	11	50°	M10 x 1,25	32	15	17	37	21	50,5	43	57	0,11
50-63	19	17	50°	M12 x 1,25	36	17	19	42	27	57,5	50	66	0,16

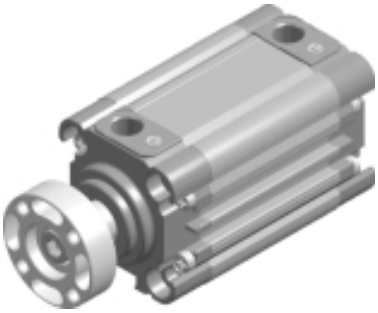
A new series of compact cylinders for long strokes and heavy-duty applications standard supplied with oversized guides and rods, **the first one with adjustable pneumatic cushioning without variations in size.** The inter-axes, centering diameters and rods are in accordance with ISO 6431 and VDMA 24562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

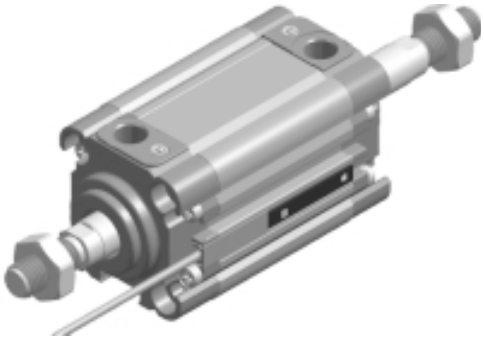
TECHNICAL CHARACTERISTICS

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.
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.
- Slide units **only** for cylinder types with extended piston.

(Vedi pag. 63-I)





Codification Key

RS	201	032	0025	–

- Option
- Standard stroke (mm)
- Bore (mm)
- Type
- Series

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
-60 S.A. rectracted piston rod
-70 S.A. extended piston rod

BORE

032 - 040 - 050 - 063 mm

STANDARD STROKE

Single acting
0005-0010-0015-0020-0025 mm
Max. stroke: **0025 mm**

Double acting
0005-0010-0015-0020-0025-0030-0040-0050-0060
0080-0100-0125-0150-0160-0175-0200-0250-0300
0320-0350-0400-0450-0500-0600-0700-0800 mm
Max stroke: Ø 32-40 **0400 mm**
Ø 50 **0500 mm**
Ø 63 **0800 mm**

Version with extended piston
Max stroke: 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.
- NBR piston seal.
- Polyurethane rod seals.

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

- Adjustable pneumatic cushioning for efficient deceleration of the piston and reduced sound pollution.
- Locking unit L1-N___ series with chromium-plated piston rod except for versions with non-rotating device (RS-210___-RS-211___).

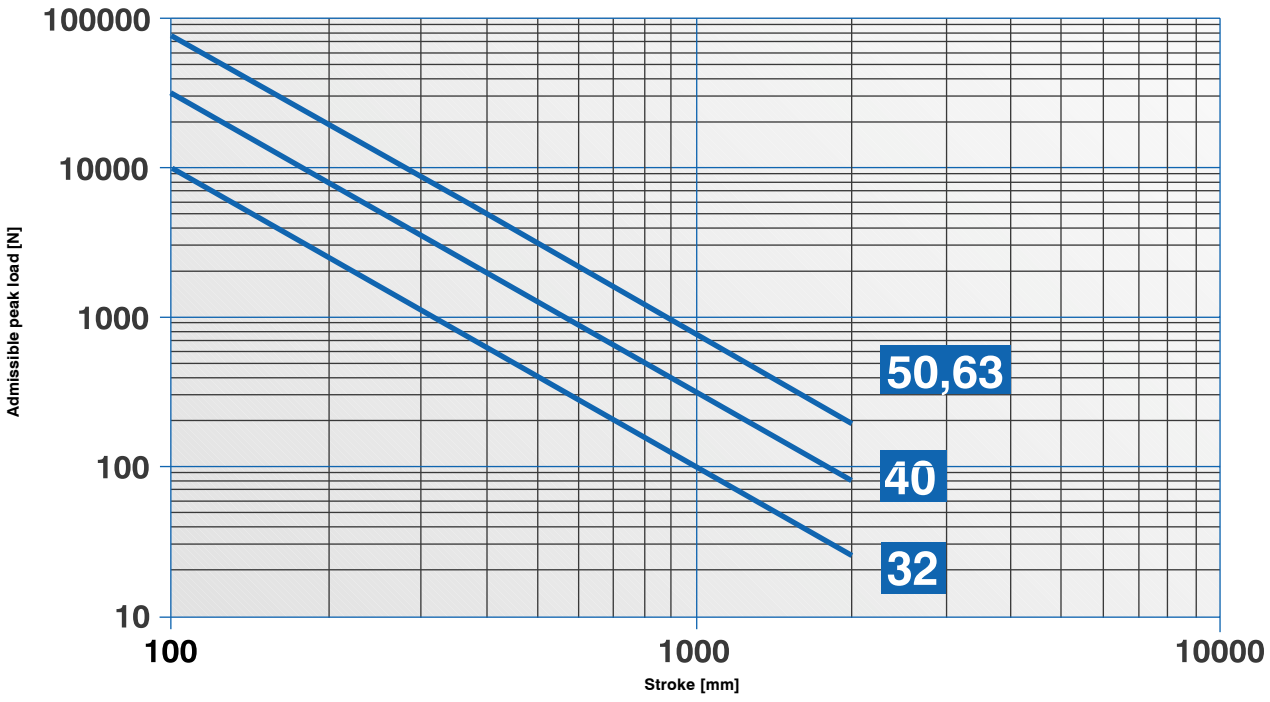
Theoretical forces [N] developed at the working pressure [bar]

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

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%).

Maxumum applicable torque [Nm] for RO/RN series non-rotating rod

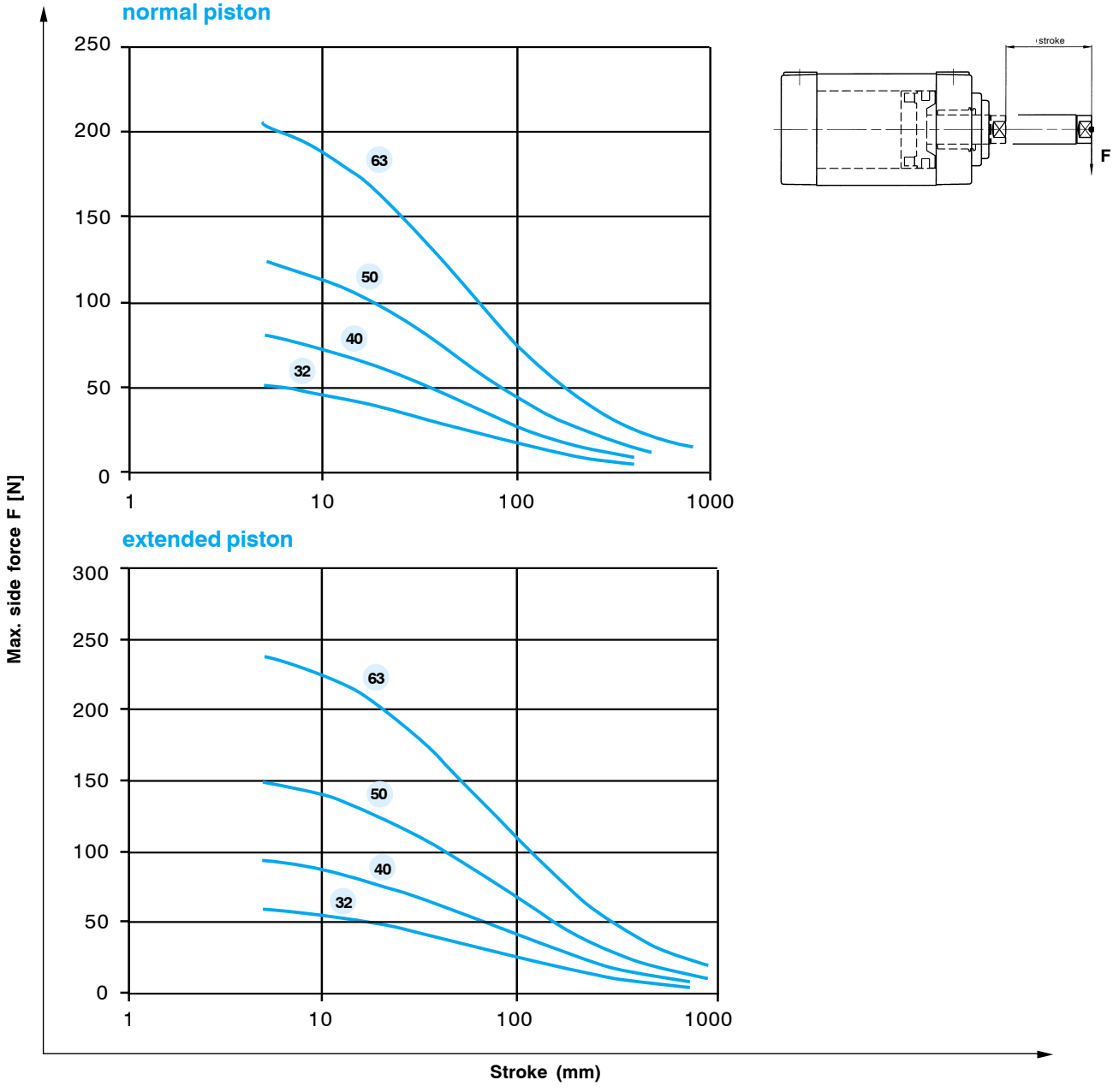
Cyl. Ø	Torque [Nm]
32	2
40	3
50	5
63	8



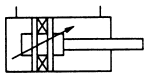
Theoretical forces of spring traction for cylinder types ...260.../...270...

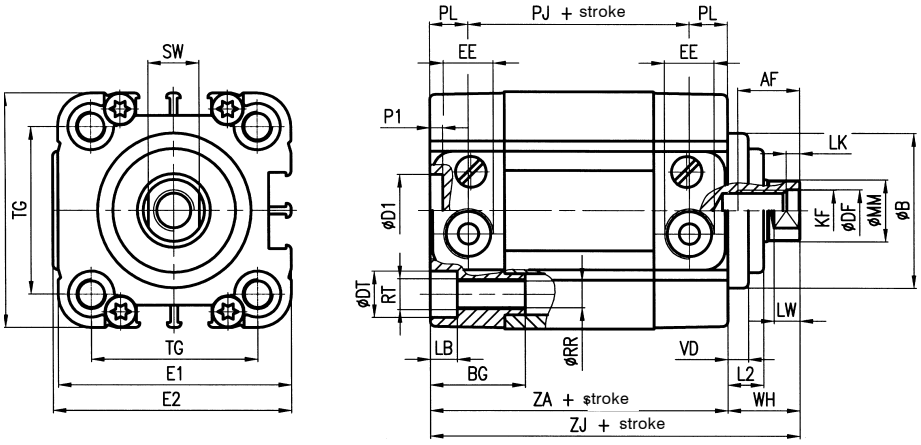
Cyl. Ø	Max. force (N)	Min. force (N)	Max. stroke (mm)	Decrease per mm stroke (N/mm)
32	40	24	25	0,64
40	50	35	25	0,6
50	90	49	25	1,64
63	90	49	25	1,64

Graph side load on piston rod



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





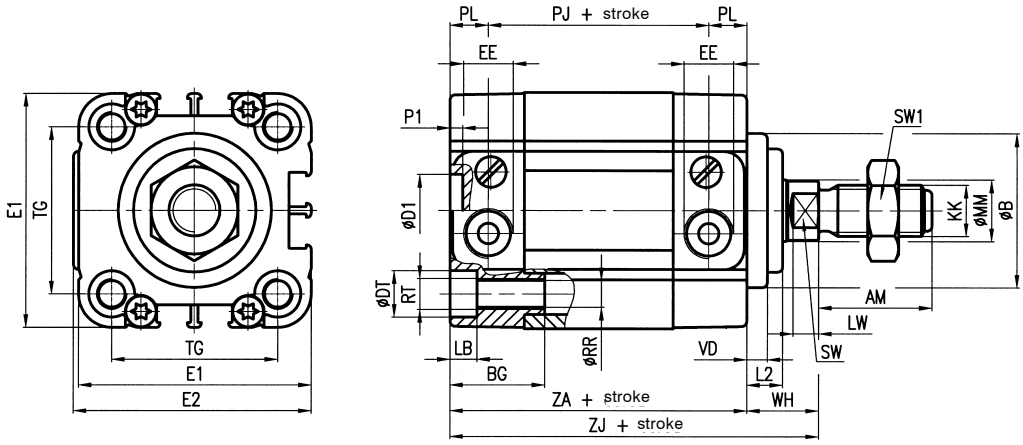
Mass RS 200___

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

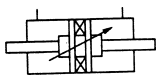
Mass RS 420___

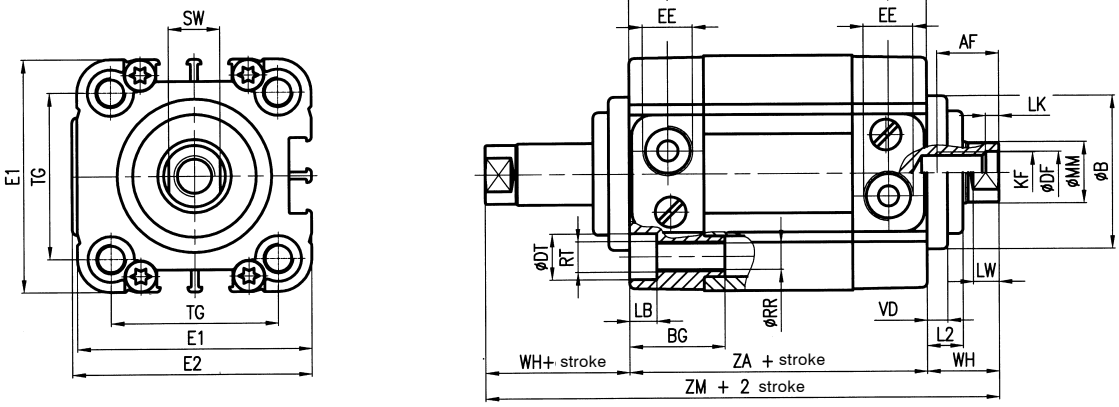
Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	331,5	2,65	151,5	0,9
40	527	4	242	1,6
50	849	5,6	407	2,5
63	1231,5	6,55	565	2,5

Cyl. Ø	AF	AM	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	2,5	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	2,5	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	2,5	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	2,5	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

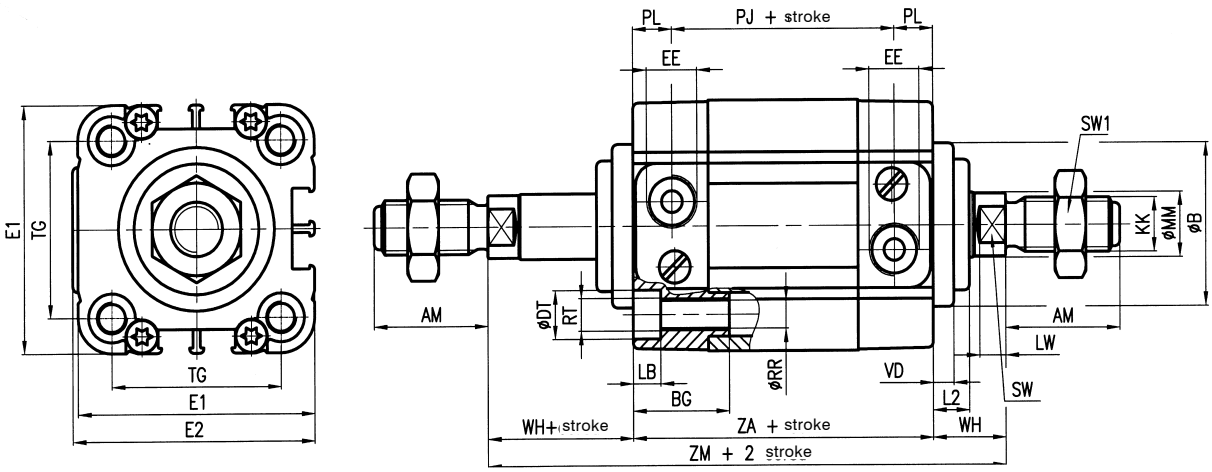




Mass

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

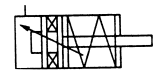


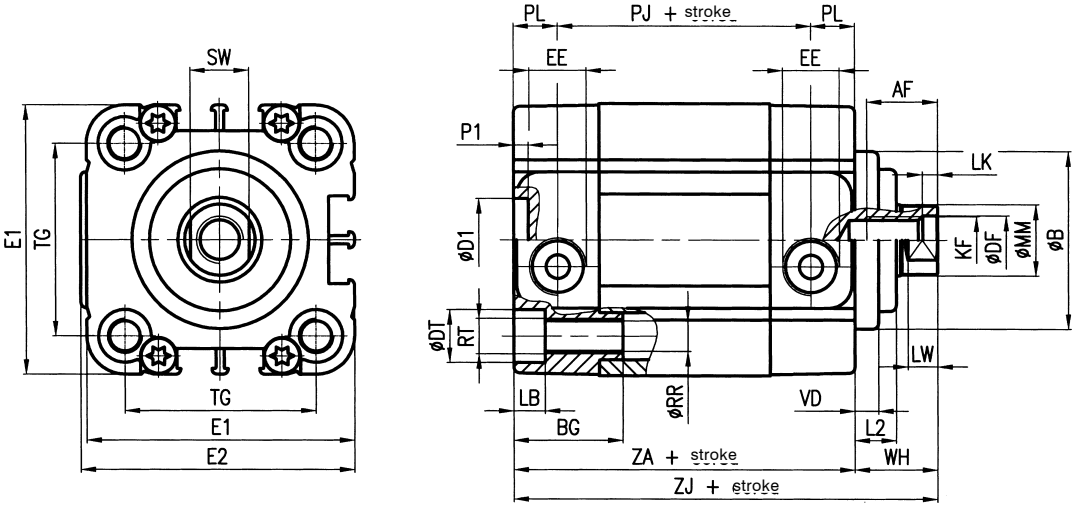
Mass

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	34	7,5	6,5	M8	17	24	56,5	5	18	49	85

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

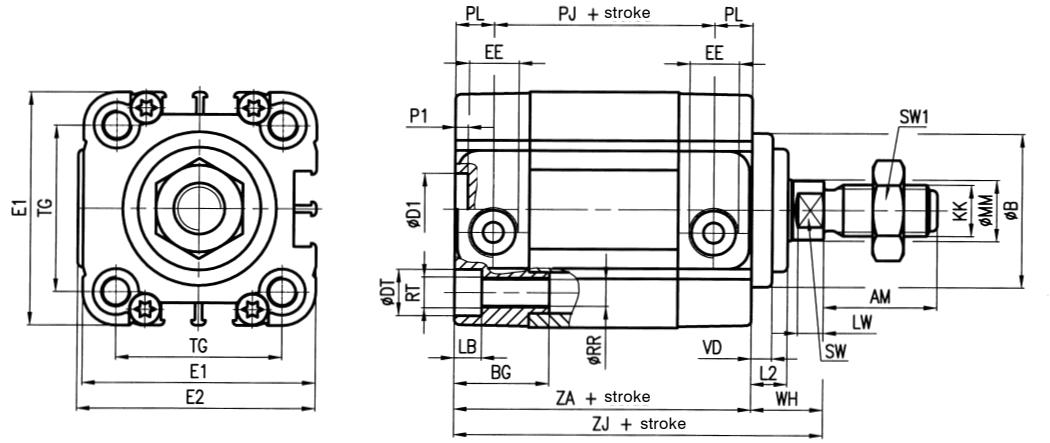




Mass

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

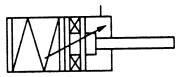


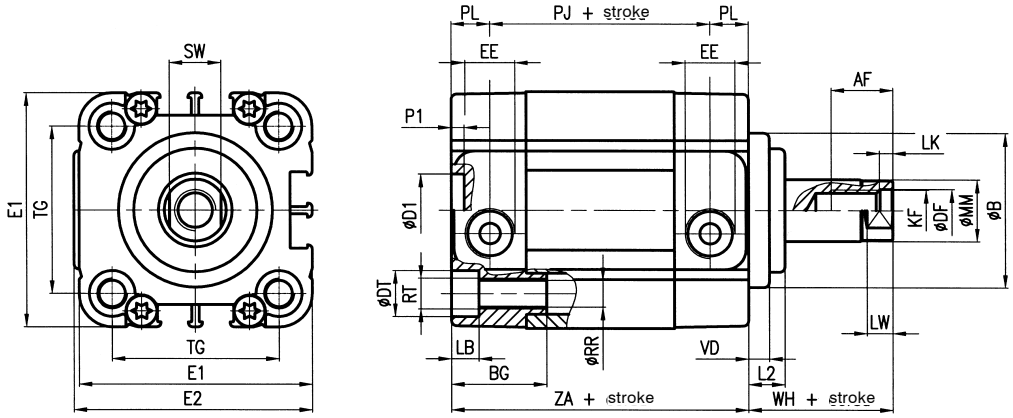
Mass

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	2,5	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	2,5	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	2,5	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	2,5	34	7,5	6,5	M8	17	24	56,5	5	18	49	67

Single -acting cylinder extended piston rod RS 270 ___ series

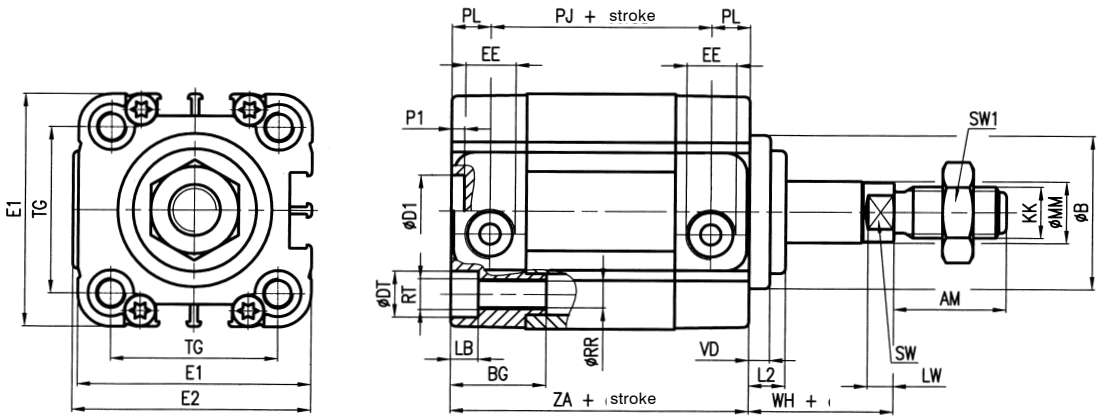




Mass

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

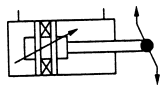


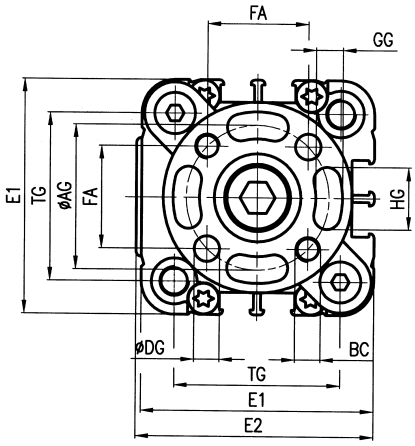
Mass

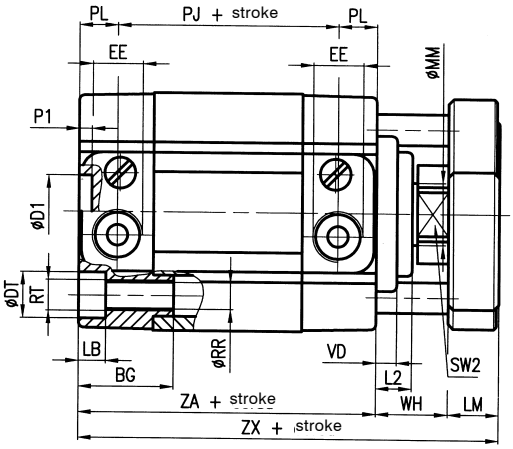
Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	243	2,65	103	0,9
40	398	4	161	1,6
50	595	5,6	272	2,5
63	875	6,55	352	2,5

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	2,5	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	2,5	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	2,5	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	2,5	34	7,5	6,5	M8	17	24	56,5	5	18	49

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



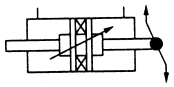


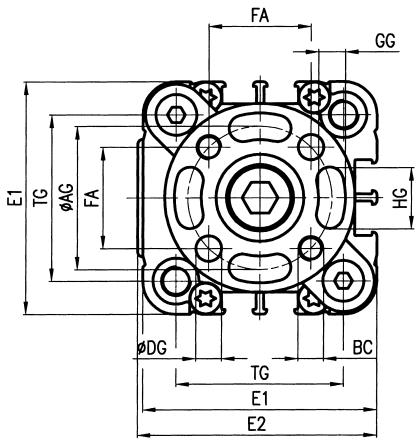


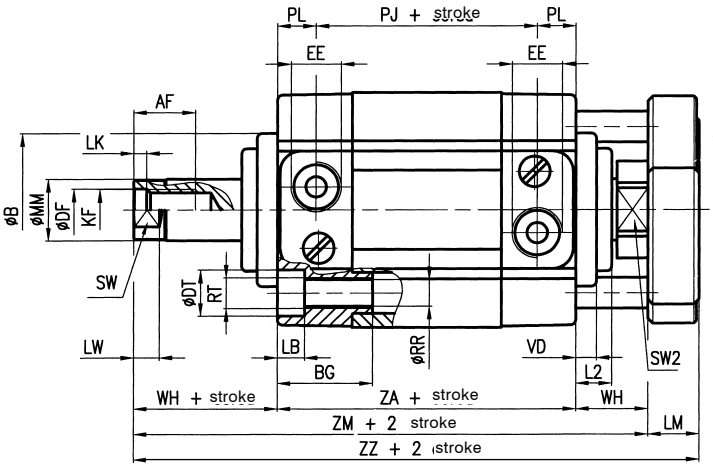
Mass

Cyl. Ø	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







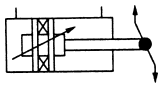
Cyl. Ø	AF	Ø AG	Ø B	BC	BG	ØD1 H11	Ø DF	Ø DG	Ø DT
32	12	28	30	M5	18	14	8,2	5	9
40	16	33	35	M5	18	14	10,2	5	9
50	20	42	40	M6	24	18	12,2	6	11
63	20	50	45	M6	24	18	12,2	6	11

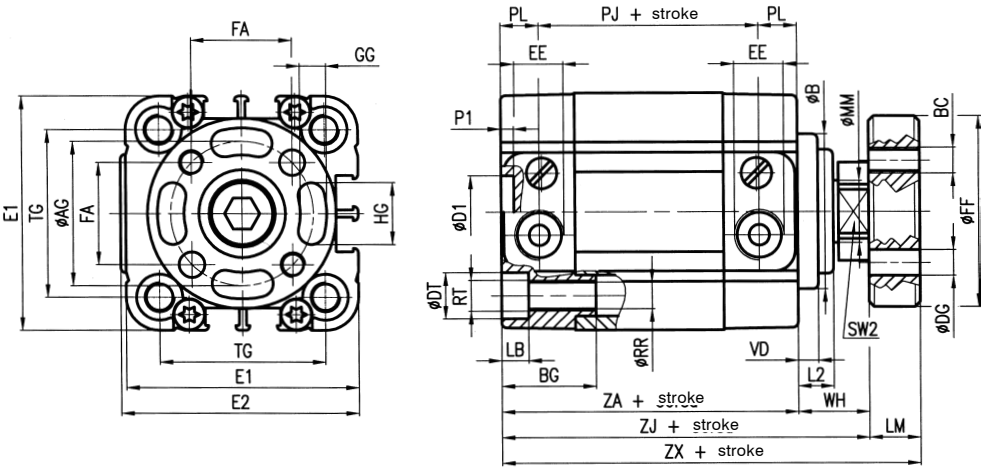
Mass

Cyl. Ø	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. Ø	E1	E2	EE	FA	GG	HG	KF	L2	LB	LM	LK	LW	Ø MM	P1	PJ	PL	Ø RR	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	34	7,5	6,6	M8	17	24	56,5	5	18	49	85	79	97

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.

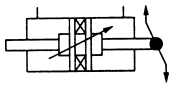
Mass RQ 200___

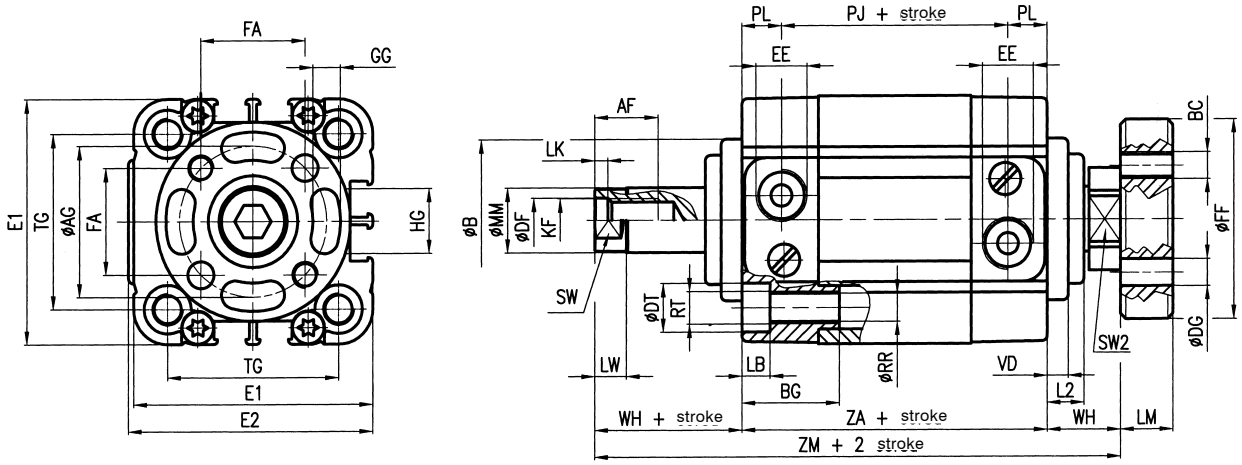
Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	240	2,65	94	0,9
40	386	4	148,5	1,6
50	587	5,6	247	2,5
63	894	6,55	354	2,5

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





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

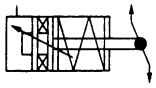
Mass

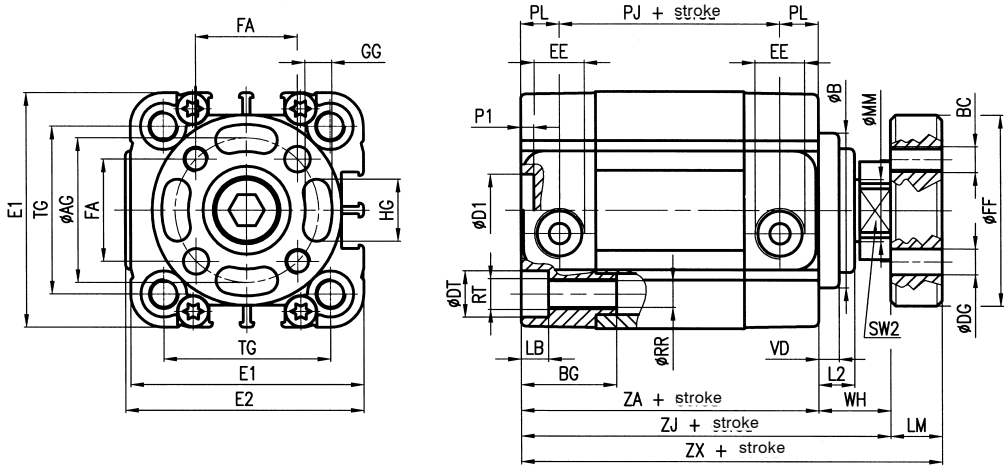
Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	270	3,55	120	1,8
40	431	5,6	189,5	3,2
50	663	8,1	317	5
63	969	9,05	424	5

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).**

Single-acting cylinder, retracted non-rotating piston-rod RQ 260-... series



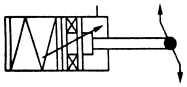


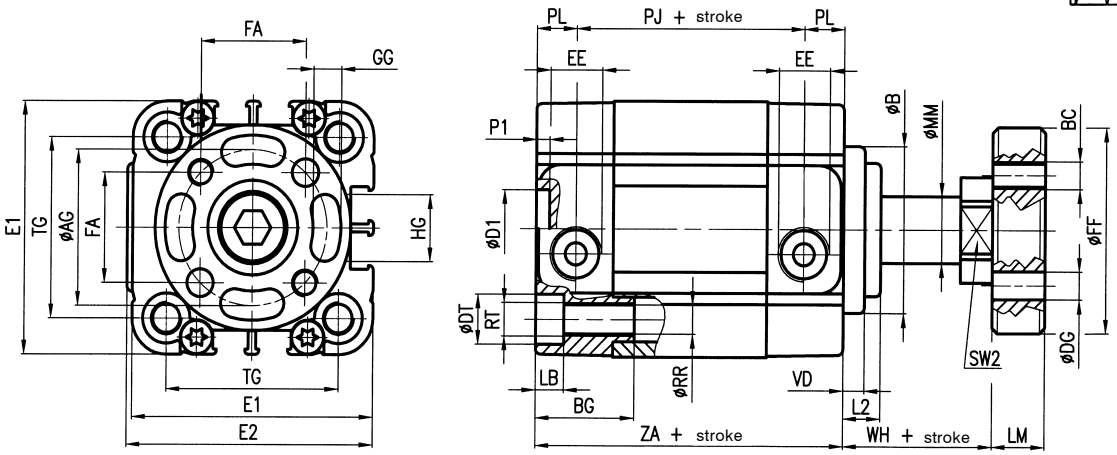
If it is necessary to remove the flange from the rod, oppose the force needed to unscrew it by using exclusively the hexagon wrench SW2.

Mass

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	242	2,65	97	0,9
40	389	4	154,5	1,6
50	592	5,6	259	2,5
63	900	6,55	366	2,5

Cilindro semplice effetto, stelo esteso non rotante Serie RQ 270 ...





Cyl. Ø	Ø AG	Ø B	BC	BG	ØD1 H11	Ø DG	Ø DT	E1
32	28	30	M5	18	14	5	9	46
40	33	35	M5	18	14	5	9	56
50	42	40	M6	24	18	6	11	66
63	50	45	M6	24	18	6	11	79

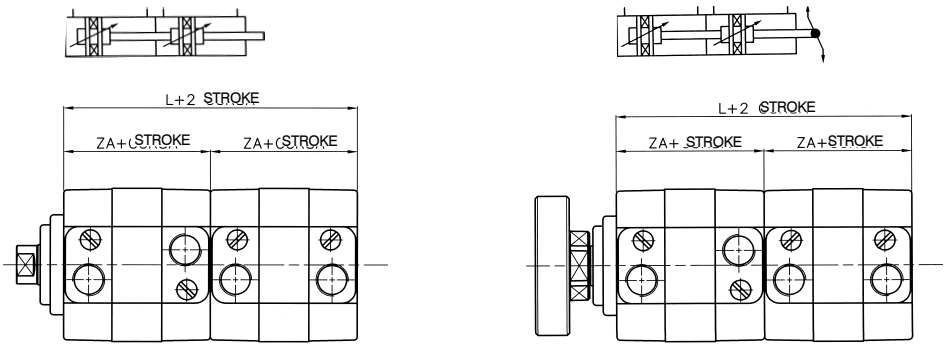
Mass

Cyl. Ø	Cylinder stroke "0" (g)	Increase by mm stroke (g)	Moving part stroke "0" (g)	Increase by mm stroke (g)
32	238	2,65	97	0,9
40	383	4	154,5	1,6
50	582	5,6	259	2,5
63	890	6,55	366	2,5

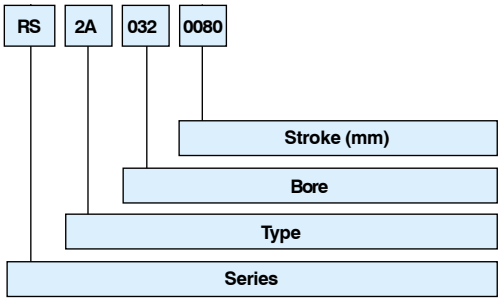
Cyl. Ø	E2	EE	FA	Ø FF	GG	HG	L2	LB	LM	Ø MM	P1	PJ	PL	Ø RR	RT	SW2	TG	VD	WH	ZA	ZJ	ZX
32	47	G1/8	19,8	37	5,2	11	7	5,3	10	12	2,5	29	7,5	5,2	M6	17	32,5	4	14	44	58	68
40	57	G1/8	23,3	42	5,2	15	7	5,3	10	16	2,5	30	7,5	5,2	M6	19	38	4	14	45	59	69
50	67	G1/8	29,7	52	6,2	19	10	6,5	12	20	2,5	30	7,5	6,6	M8	24	46,5	5	18	45	63	75
63	80	G1/8	35,4	64	6,2	25	10	6,5	12	20	2,5	34	7,5	6,6	M8	24	56,5	5	18	49	67	79

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

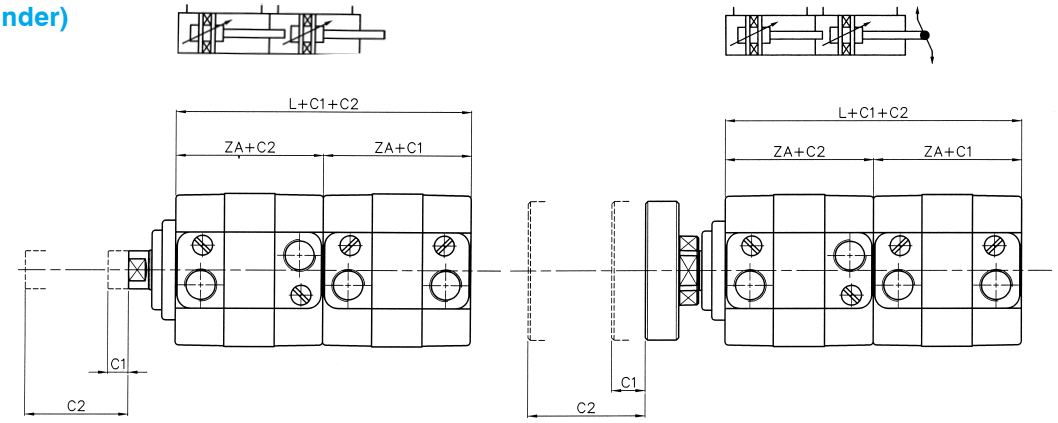
032-040-050-063 mm

STROKE

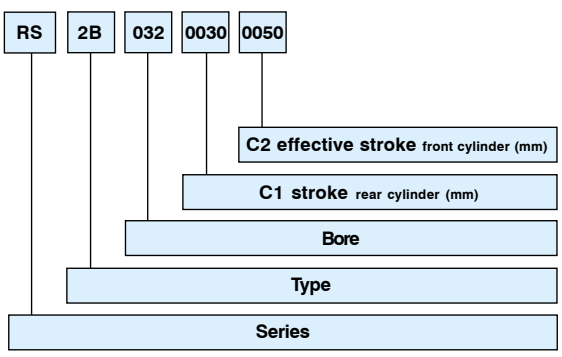
Page 45-I

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

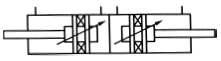
STROKE 1

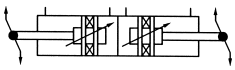
Stroke rear cylinder.

STROKE 2

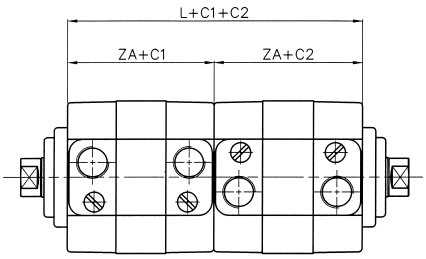
Effective stroke front cylinder.

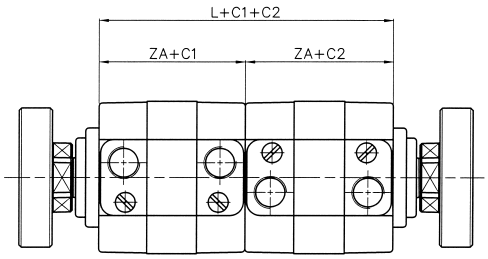
Opposed cylinder



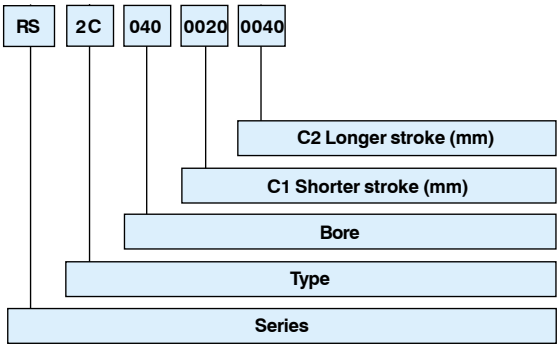


Cyl. Ø*	ZA	L
32	44	88
40	45	90
50	45	90
63	49	98





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

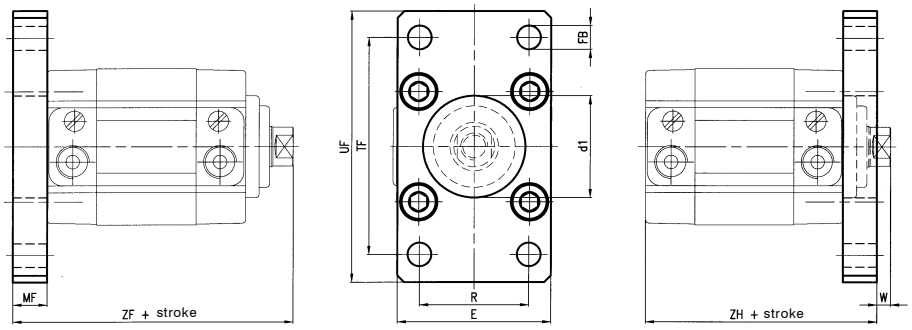
Page 45-I

STROKE 2

Page 45-I

* For all other dimensions please refer to the standard version on pages 48 and 53.

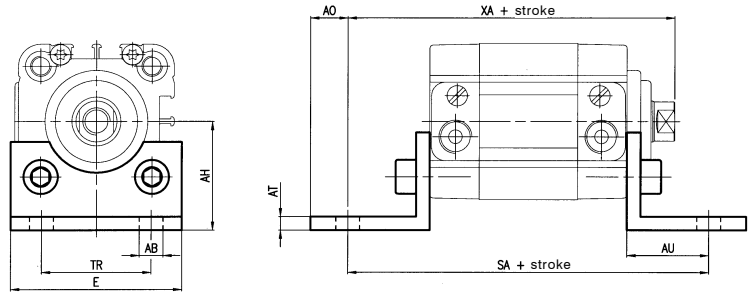
Front and rear flange in zinc-plated steel, ISO MF1-MF2



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

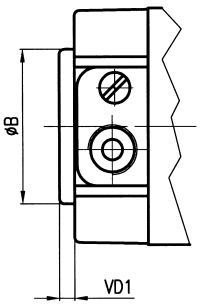
Angle bracket in zinc-plated steel, ISO MS1

Fixing screws page 59



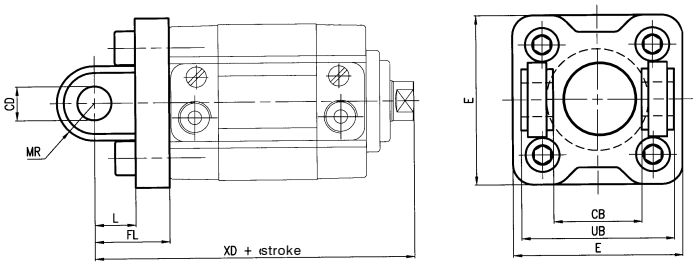
Cyl. Ø	Part number	Mass kg
32	KF-13032	0,07
40	KF-13040	0,09
50	KF-13050	0,20
63	KF-13063	0,20

Adaptor ring for rear centering ISO



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

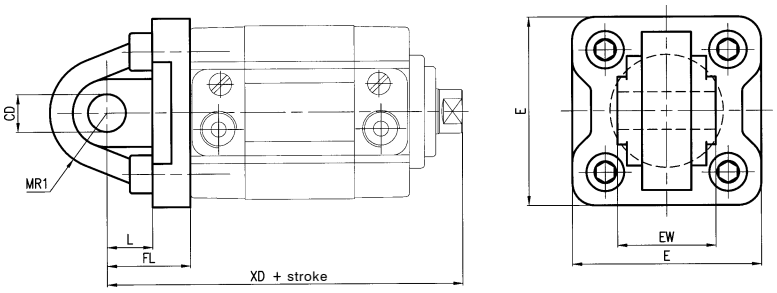


Cyl. Ø	Part number	Mass kg
32	KF-10032A	0,06
40	KF-10040A	0,08
50	KF-10050A	0,15
63	KF-10063A	0,25

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

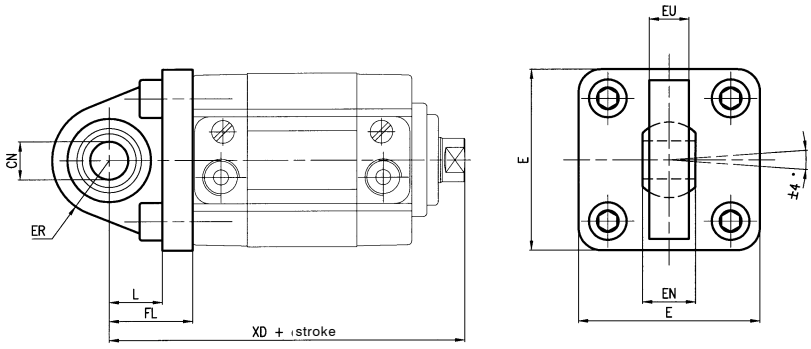
	Flange										Bracket									Adaptor ring		Hinge with pin							
Cyl. Ø	Ød1 H11	E	ØFB H13	W	MF	R Js14	TF Js14	UF	ZF	ZH	ØAB H13	AH Js15	AO	AT	AU ± 0.2	E	SA	TR	XA	ØB	VD1	CB H14	ØCD H9	E	FL	L	MR	UB h14	XD
32	30	45	7	4	10	32	64	80	68	54	7	32	6	4	24	45	92	32	82	30	3	26	10	48	22	12	11	45	80
40	35	52	9	4	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

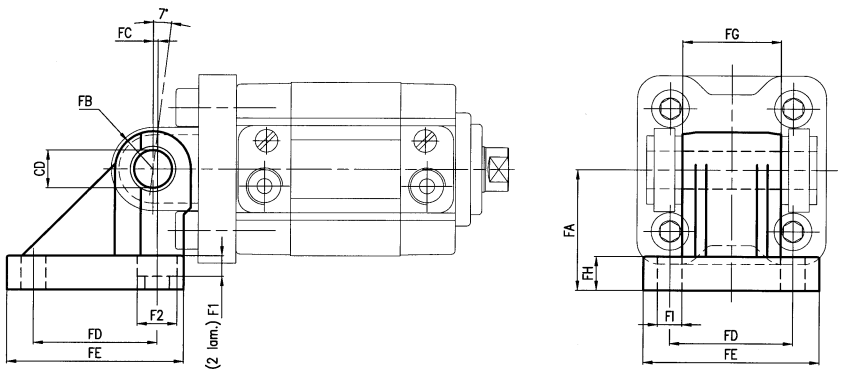
Articulated male hinge in die-cast aluminium



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

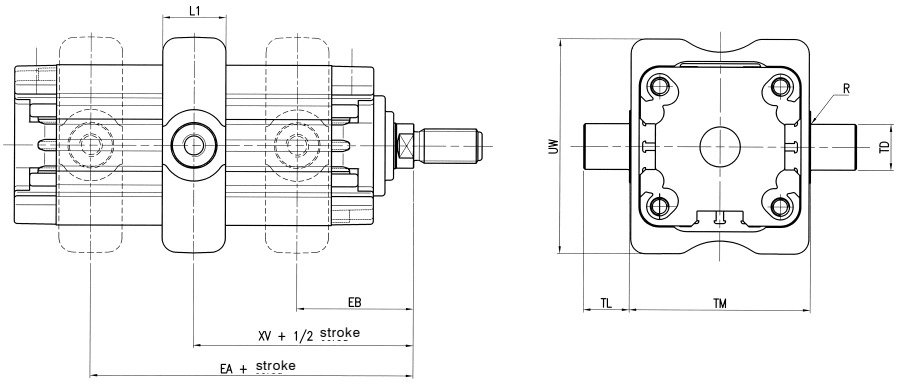
Fixing screws page 59



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

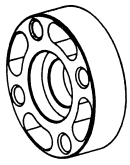
Intermediate hinge with grub screws



Cyl. ø	EA (max)	EB (min)	I1 (max)	R (max)	TD (e9)	TL (h14)	TM (h14)	UW (max)	XV Nom.	XV Toll.
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

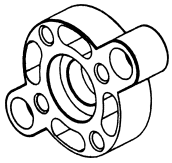
Cyl. Ø	Part number	Mass kg
32	KDF-14032	0,13
40	KDF-14040	0,24
50	KDF-14050	0,32
63	KDF-14063	0,47

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



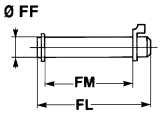
Cyl. Ø	Part number	Mass kg
32	RPF-28032	0,024
40	RSF-28040	0,035
50	RSF-28050	0,057
63	RSF-28063	0,094

Flange for rod with non-rotating device in die-cast aluminium for RS 210.../RS 211... series (fixing screws included)



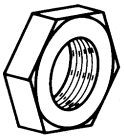
Cyl. Ø	Part number	Mass kg
32	RPF-29032	0,026
40	RSF-29040	0,036
50	RSF-29050	0,065
63	RSF-29063	0,100

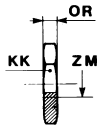
Pin in zinc-plated steel with 2 circlips



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

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	M6x20	AZ4-VN0620
50-63	M8x25	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	M6x25	AZ4-VN0625
50-63	M8x30	AZ4-VN0830

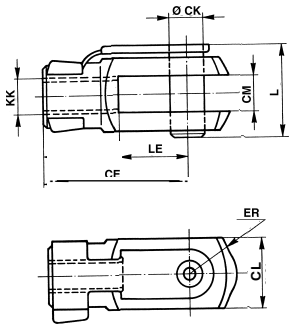
Cylindrical screw UNI 5931 Part n° AZ4-VN... suitable for mounting elements KF-19... series (ø 32-40)

Cyl. Ø	Screw pezzi 2 per tipo	Part number
32-40	M6x20	AZ4-VN0620
	M6x25	AZ4-VN0625

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

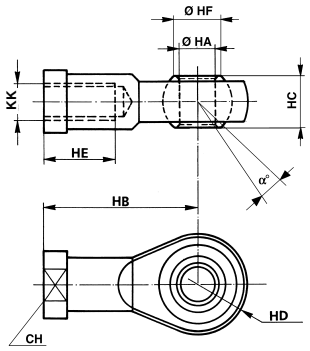
Cyl. Ø	Screw pezzi 2 per tipo	Part number
50-63	M8x25	AZ4-VPA0825
	M8x30	AZ4-VPA0830

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



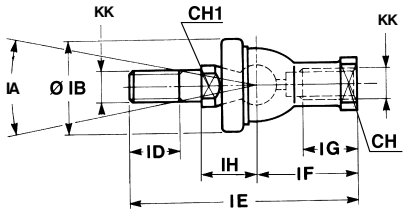
Cyl. Ø	CE	CK	CL	CM B12	ER	KK	L	LE	Mass kg
32	40	10	20	10	16	M10 x 1,25	26	20	0,09
40	48	12	24	12	19	M12 x 1,25	32	24	0,015
50-63	64	16	32	16	25	M16 x 1,5	39	32	0,34

Articulated self-lubricating fork in zinc-plated steel



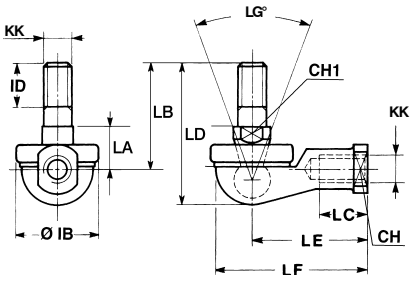
Cyl. Ø	α	CH	KK	HA H7	HB	HC	HD 0 -0,12	HE	HF	Mass kg
32	13°	17	M10 x 1,25	10	43	14	14	20	12,9	0,076
40	13°	19	M12 x 1,25	12	50	16	16	22	15,4	0,11
50-63	15°	22	M16 x 1,5	16	64	21	21	28	19,3	0,22

Fork with axially mounted articulated pin



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

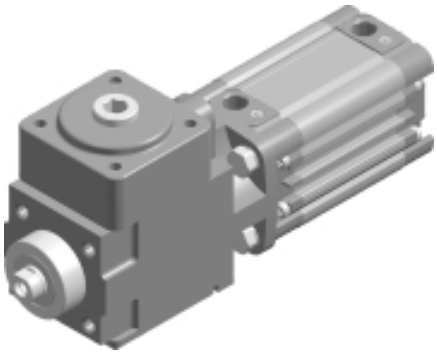
Fork with angle-mounted articulated pin

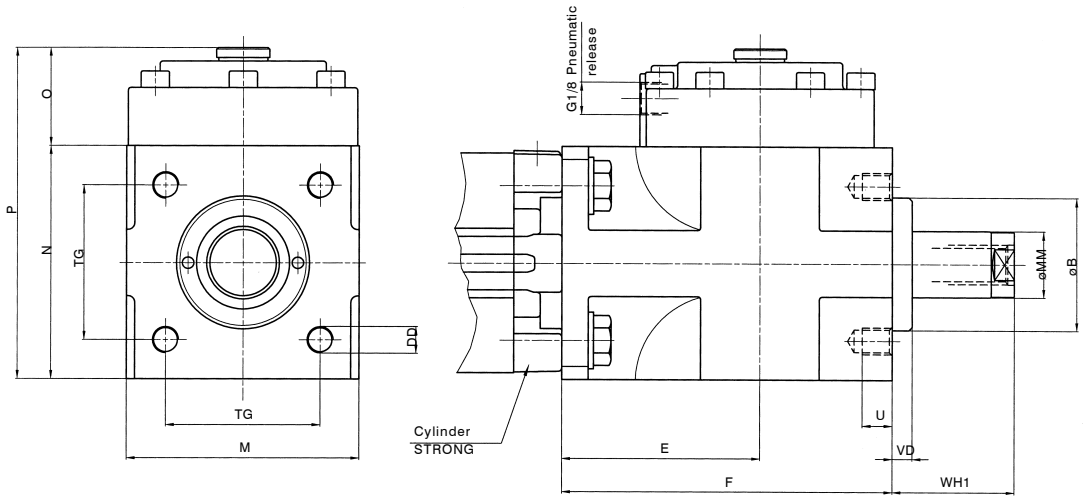


Cyl. Ø	CH	CH1	LG	KK	IB	ID	LA ±0.3	LB	LC	LD	LE	LF	Mass kg
32	17	11	50°	M10 x 1,25	32	15	17	37	21	50,5	43	57	0,11
40	19	17	50°	M12 x 1,25	36	17	19	42	27	57,5	50	66	0,165
50-63	22	19	40°	M16 x 1,5	47	23	23,5	60	33	79,5	64	84	0,33

Locking unit (without fixing screws)

(Technical characteristics section High-Tech page 3)





Ø	Part number
32	L1-N03212
40	L1-N04016
50	L1-N05020
63	L1-N06320

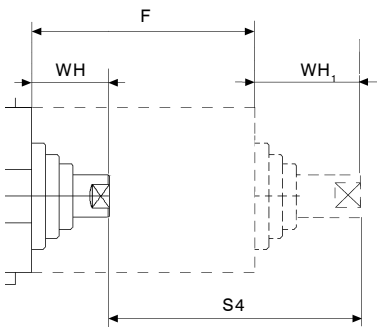
Ø	B	DD	E	F	M	MM	N	O	P	TG	U	VD	WH1
32	30	M6	54,5	84	50	12	50	29,5	79,5	32,5	10	6	26
40	35	M6	58	90	58	16	58	29,5	87,5	38	9	6	30
50	40	M8	60	100	70	20	70	29	99	46,5	10	6	37
63	45	M8	65	110	85	20	85	37	122	56,5	13	6	37

Fixing screws

Grub screws UNI 5923 with washer and nut UNI 5589

Ø				Part number
ø 32	grub screw	4	M 6 x 30	AZ4-VS0630
	washer	4	6,4 x 16	AZ4-SR06,41,6
	nut	4	M 6 x 1	AZ4-SO0064
ø 40	grub screw	4	M 6 x 30	AZ4-VS0630
	washer	4	6,4 x 1,6	AZ4-SR06,41,6
	nut	4	M 6 x 1	AZ4-SO0064
ø 50	grub screw	4	M 8 x 40	AZ4-VS0840
	washer	4	8,4 x 1,6	AZ4-SR841,6
	nut	4	M 8 x 1,25	AZ4-SH08125
ø 63	grub screw	4	M 8 x 40	AZ4-VS0840
	washer	4	8,4 x 1,6	AZ4-SR8,41,6
	nut	4	M 8 x 1,25	AZ4-SH08125

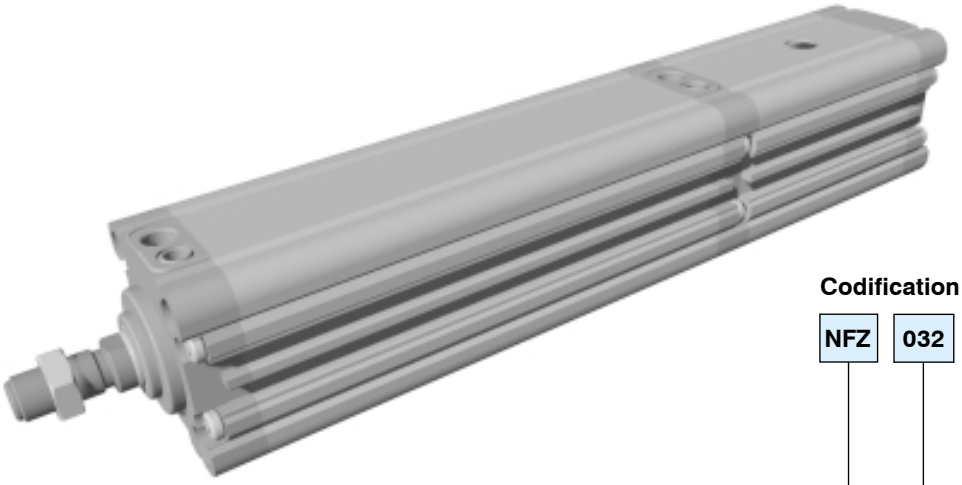
Oversized piston rod S4, ISO protusion



Cyl. Ø	WH	F	WH_1	S4
32	14	84	26	96
40	14	90	30	106
50	18	100	37	119
63	18	110	37	129

Technical characteristics

- Locking system axially arranged to the cylinder and integrated in the rear part of its interior.
- High repeatability and intervention speed (16 m/s).
- Recommended use: Emergency braking at the allowed cylinder speed; for repeated operation as locking unit or braking intervention ≤ 50 m/s.
- Holding force of piston rod without axial play ≥ 3 times the thrust force of the cylinder at 6 bar pressure (see page 46).
- Insensibility to environment pollution.



Working pressure: 3 ÷ 10 bar
Ambient temperature: -10C° ÷ 70°C
Fluid: filtered air 30 µm
Barrel in extruded aluminium alloy with groove for flush-mounted sensors.
Piston rod in chromium-plated steel.
Functioning of the locking unit passive, without signal and/or air supply.
Minimum pressure: ≥ 3 bar.
Helding force of the piston rod: ≥ 3 times the thrust of the cylinder at 6 bar.

Codification key

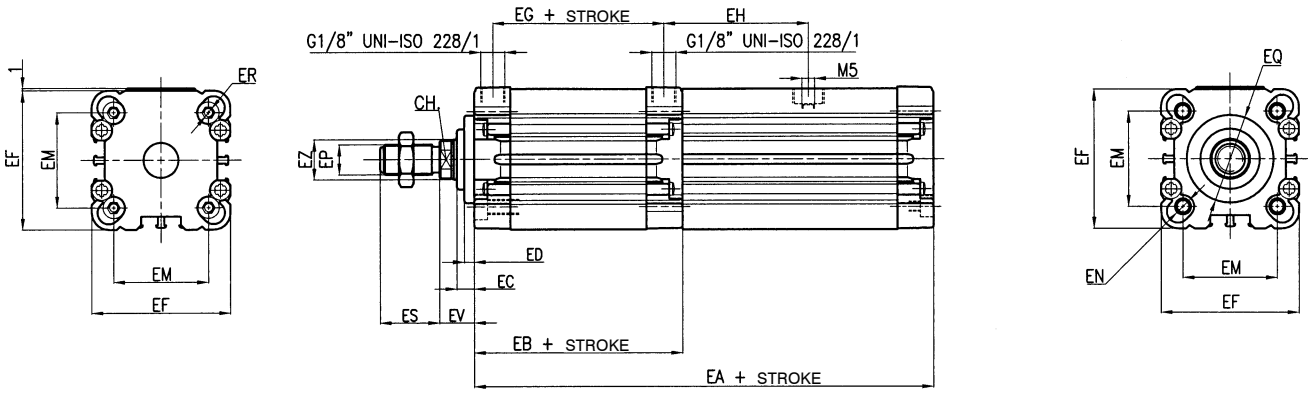
NFZ	032	0 3 5 0
Series	Bore	Stroke

BORE

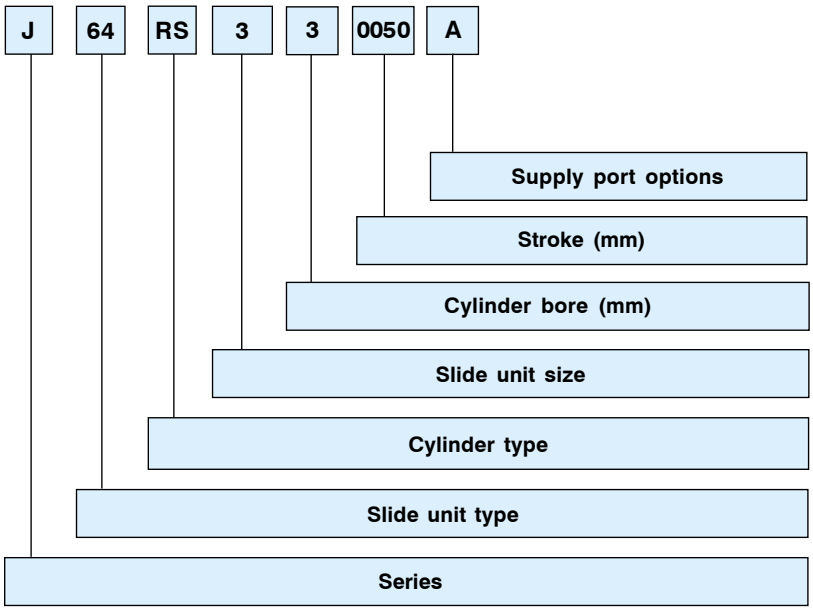
032-040-050-063 mm

STROKE MAX

350 mm for ø 32
450 mm for ø 40
600 mm for ø 50
750 mm for ø 63



Ø	EA	EB	EC	ED	EF	EG	EH	EM	EN	EP	EQ	ER	ES	EV	EZ	CH
32	177	84	7	4	46	68,5	55,5	32,5	M6 x 13	M10 x 1,25	ø 30	M4 x 10	22	14	12	10
40	185	89	7	4	56	74	58	38	M6 x13	M12 x 1,25	ø 35	M6 x 10	24	14	16	13
50	194	94	10	5	66	76	63	46,5	M8 x 17,5	M16 x 1,25	ø 40	M6 x 10	32	18	20	17
63	214	114	10	5	79	99	63	56,5	M8 x 18	M16 x 1,25	ø 45	M6 x 10	32	18	20	17



SERIE

J46RS = Slide units for STRONG Compact Cylinders ø 32÷63 mm

SLIDE UNIT TYPE

64 = Fully protected.
65 = Fully protected with through opening.
66 = Fully protected with through opening.
67 = Fully protected.
Tutte le tipologie con boccole tergiaste di serie.

CYLINDER TYPE

RS = Cylinder Strong with long piston (RS20J___A the barrel of the supplied cylinder is turned by 180° compared with the standard version.

SLIDE UNIT SIZE

3 = 32
4 = 40
5 = 50
6 = 63

BORE SIZE

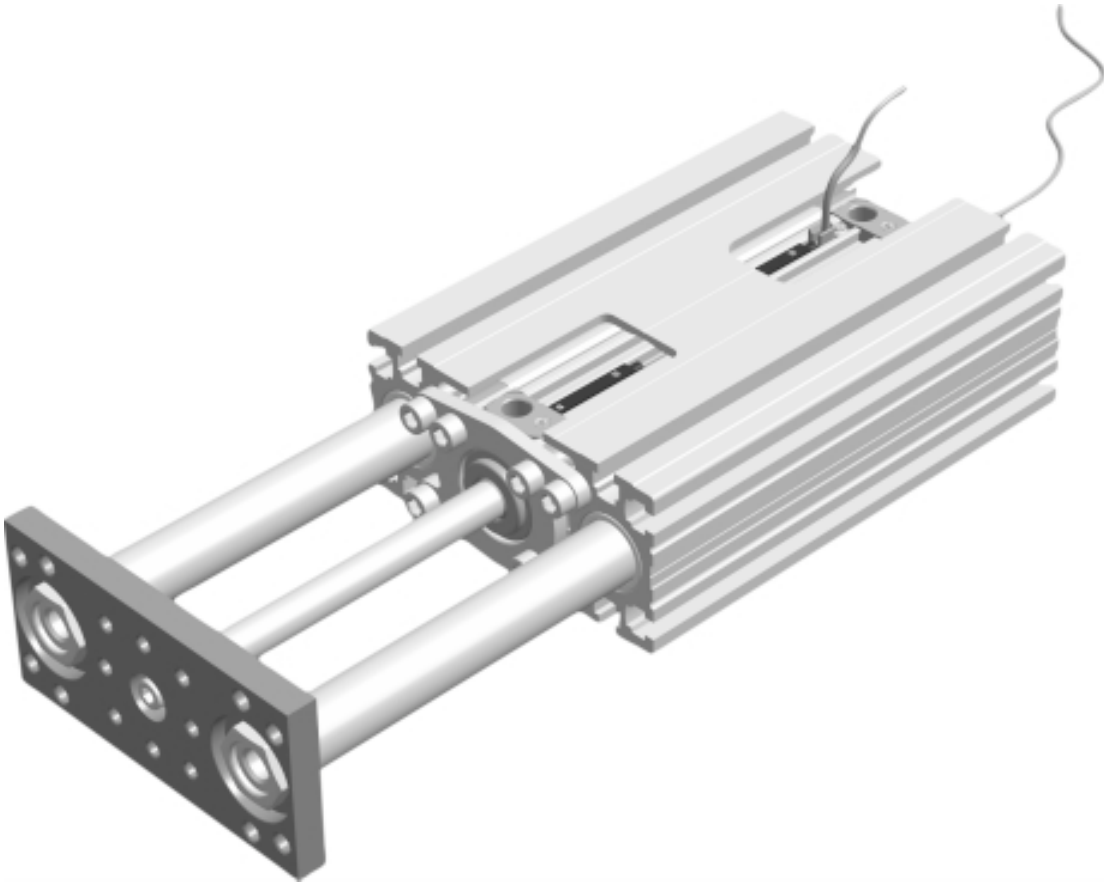
3 = 32
4 = 40
5 = 50
6 = 63

STANDARD STROKE IN MM

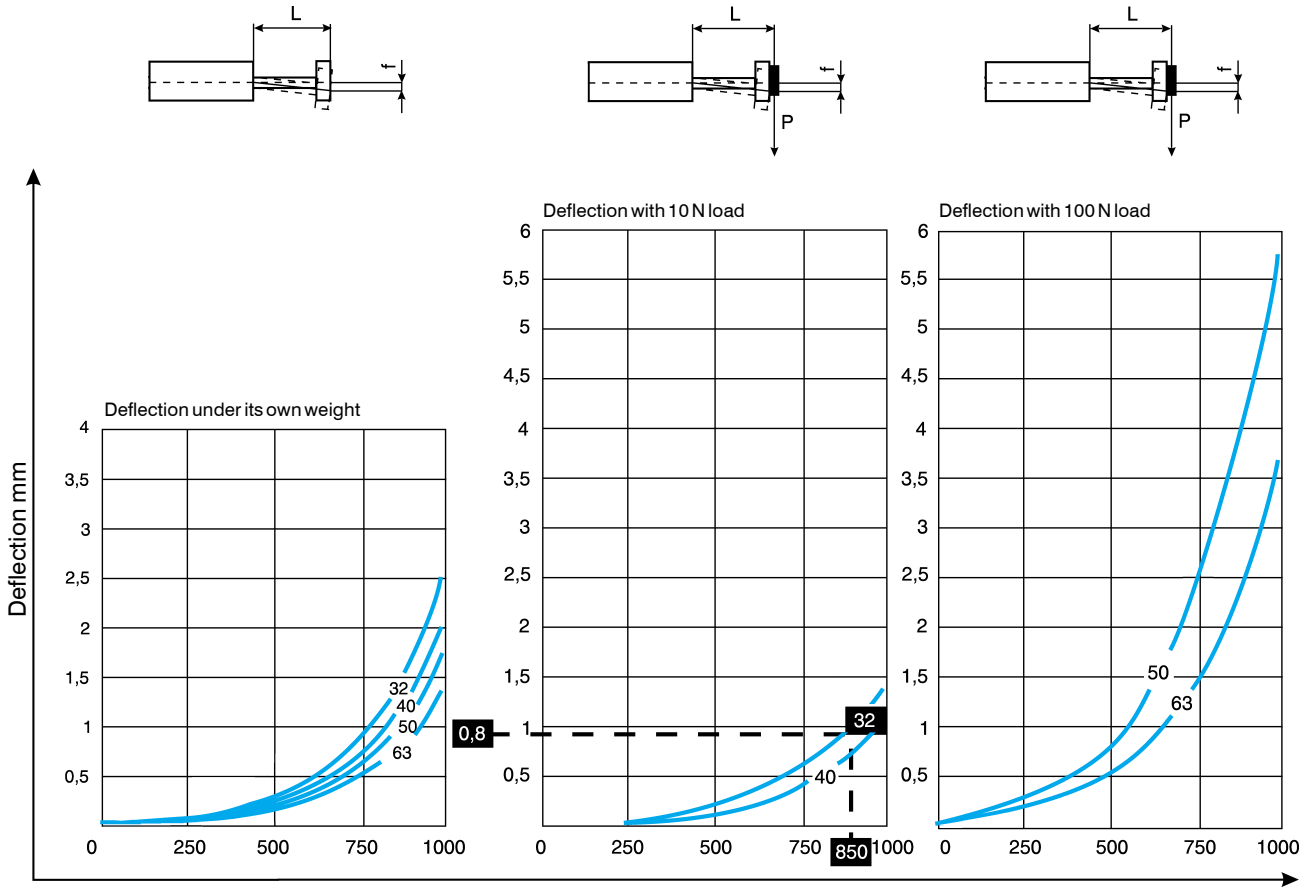
0015 ÷ 0800 mm

SUPPLY PORT OPTIONS

A = Cylinders with long piston.
B = Cylinders with long piston and locking unit.



Mod. J64



Examples of application:

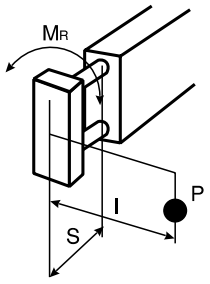
How to calculate deflection

The total deflection of the slide units is calculated by summing deflection under own weight to deflection caused by the load.

For loads other than 10 or 100 N (as stated in the charts) deflection is calculated by multiplying the figure of chart (K) by the following formula:

$$f = K \cdot \frac{Q \text{ (load)}}{10 \text{ N o } 100 \text{ N}}$$

Max resisting moment MR



Size	MR	
32	19.9	Nm
40	26.9	Nm
50	42.8	Nm
63	61.7	Nm

How to calculate torque moment

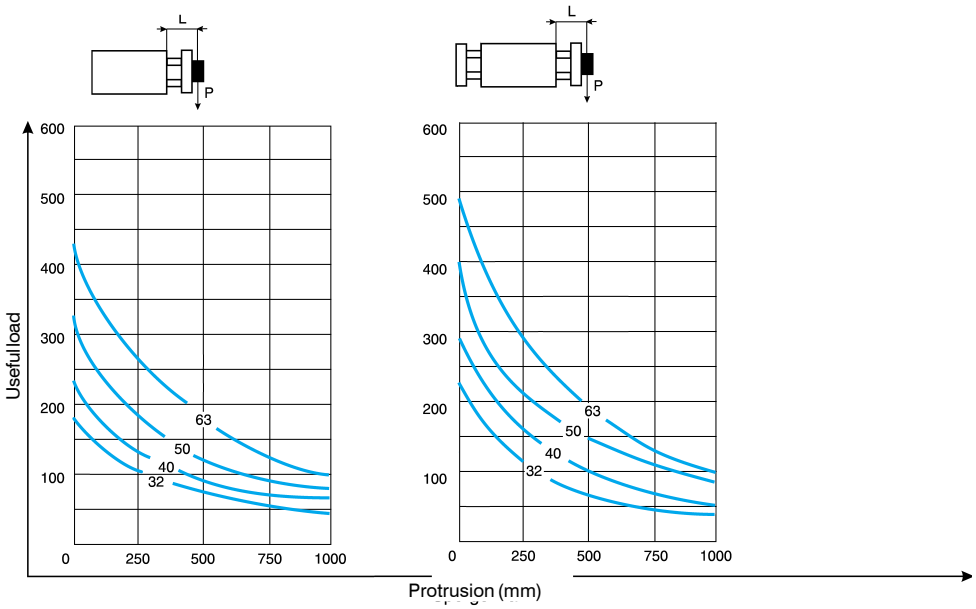
To calculate torque moment M1 the load P(N) must be multiplied by the lenght l (mm):

$$M1 = P \cdot l$$

The figure obtained must be within MR values, as stated above: should it exceed these values, a slide unit of a bigger size must be used.

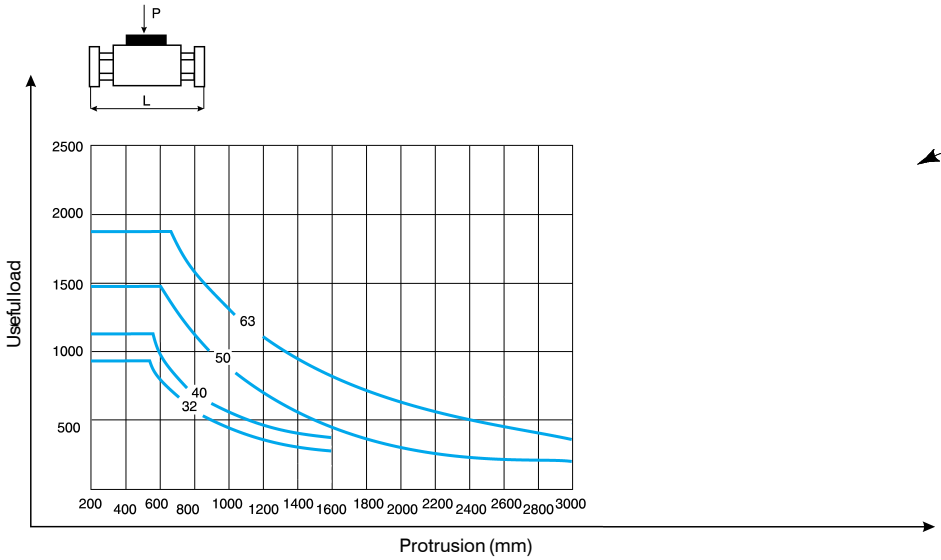
If protruding loads cause torque, the values of the loads and maximum torques must be reduced to 75 %.

Mod. J64

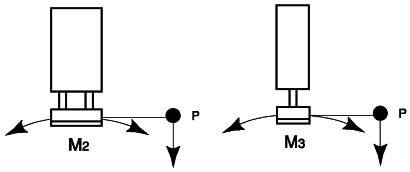


Mod. J67

Mod. J67

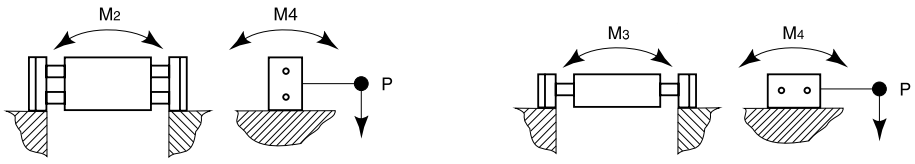


J64 - J64B



Slide unit size	M2 = M3 (Nm)
32	37,4
40	51
50	78
63	114

J67 - J67B

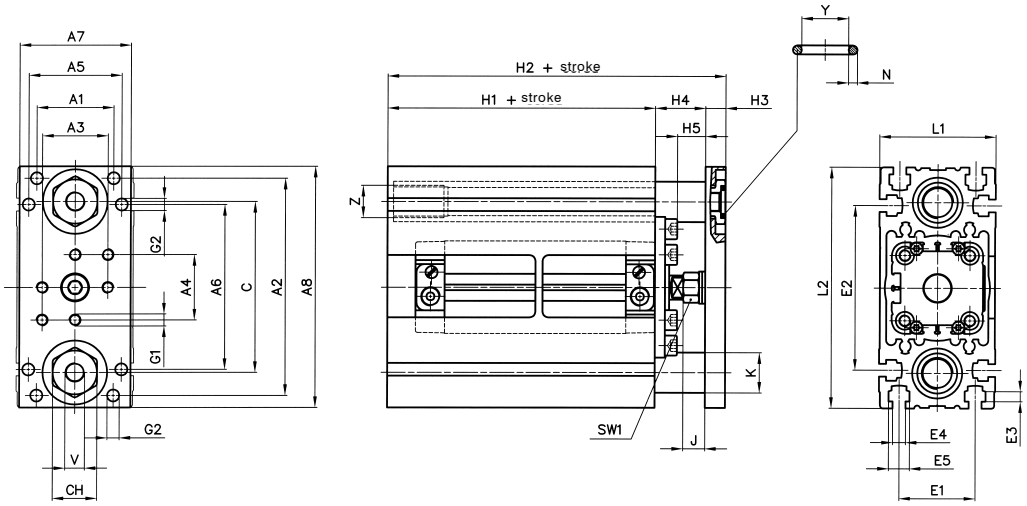


Slide unit size	M2 (Nm)								
	stroke (m/m								
	100	200	300	400	500	750	1000	100	2(
32	89,4	133	178	222	270	386	502	80	12
40	117	169,2	223,6	279	334,4	474,8	616	104	16
50	161,4	230	301,4	373,2	446	630	816	138	21
63	228	312	402	493	586	818	1102	192,8	2(

P = Point of application of the load

J64___, 2 bearings

Size	Mass (gr.) "0" stroke			Mass increase (gr.) per mm stroke		
	Slide unit	Cylinder	Locking unit	Slide unit	Shafts	Cylinder
32	1024	303	-	6	2,5	2,65
40	1325	483	-	7	2,8	4
50	2159	739	-	11	3,7	5,6
63	3025	1127	-	13,6	4,7	6,55



Cyl. Ø	A1	A2	A3	A4	A5	A6	A7	A8	C	CH	E1	E2	E3	E4	E5	G1
32	38	108	32,5	32,5	46	82	55	120	85	22	38	82	5	6,4	10,4	M6
40	42	118	38	38	54	90	65	130	95	22	42	90	5	6,4	10,4	M6
50	48,1	140	46,5	46,5	69	110	80	155	115	27	48	110	6,5	8,4	13,4	M8
63	56	157,5	56,5	56,5	79,5	120	95	175	130	30	56	120	7,5	10,5	17,5	M8

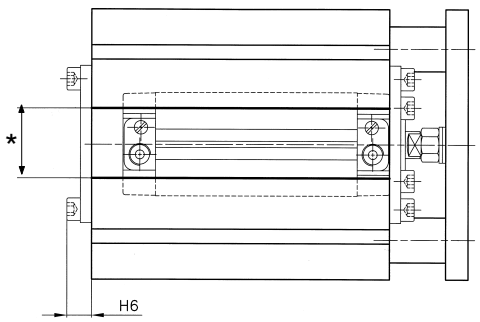
Cyl. Ø	G2(*)	H1 + stroke (**)	H2+ stroke (**)	H3	H4	H5	J	K	L1	L2	N	SW1	V	Y	Z
32	Ø6 H8	78 + stroke (**)	113 + stroke (**)	10	25	14	11	20	58	120	2,62	13	1/8”	10,78	M16x1,5
40	Ø8 H8	82 + stroke (**)	117 + stroke (**)	10	25	13	11	22	66	130	2,62	16	1/8”	10,78	M18x1,5
50	Ø8 H8	91 + stroke (**)	128 + stroke (**)	12	25	11	7	25	84	155	2,62	18	1/8”	10,78	M20x1,5
63	Ø8 H8	108 + stroke (**)	135 + stroke (**)	12	25	11	7	28	98	176	2,62	18	1/8”	10,78	M22x1,5

* For use with locking pin tolerance m6.

** Min. stroke MAGNETIC CYLINDER for bore sizes 32 and 40 = 20 mm / for bore sizes 50 and 63 = 15 mm.

NOTE: for all sizes up to 50 mm stroke, the opening of the drawn body in accordance with the supply ports is of the through type.

J65..., upon request for strokes exceeding 50 mm, slide units with through opening* in order to place the magnetic sensors in intermediate positions.

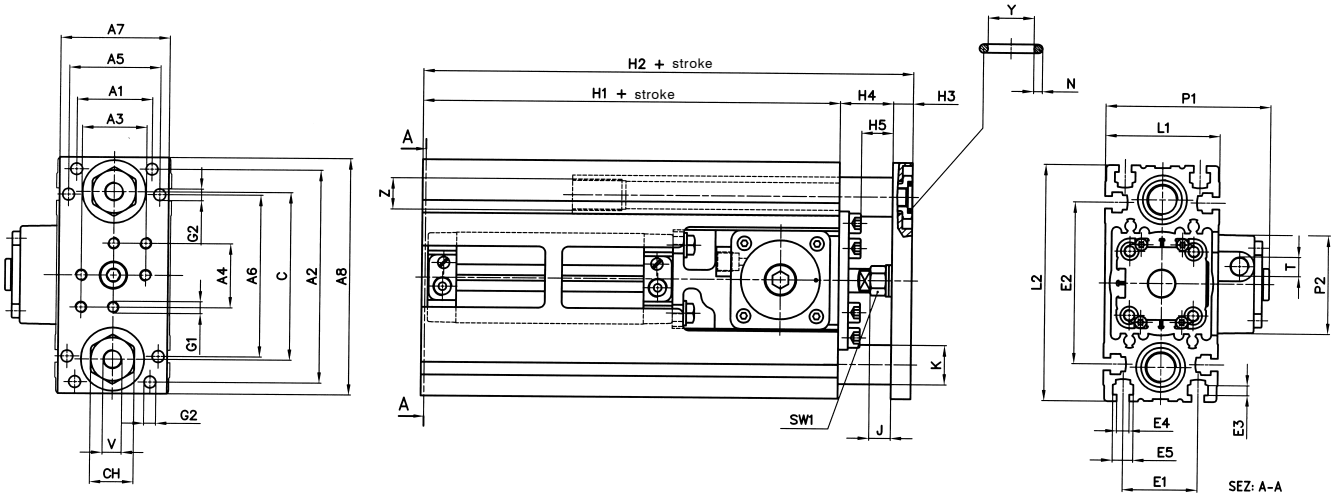


Cyl. Ø	H6
32	11
40	12
50	14
63	14

This version implies the increase of “H2” by the value “H6” indicated in the table.

J64___B, 2 bearings with locking unit

Size	Mass (gr.) "0" stroke			Mass increase (gr.) per mm stroke		
	Slide unit	Cylinder	Locking unit	Slide unit	Shafts	Cylinder
32	2241	303	779	6	2,5	2,65
40	2876	483	992	7	2,8	4
50	4590	739	1528,5	11	3,7	5,6
63	6606	1127	2370	13,6	4,7	6,55



Cyl. Ø	A1	A2	A3	A4	A5	A6	A7	A8	C	CH	E1	E2	E3	E4	E5	G1	G2(*)
32	38	108	32,5	32,5	46	82	55	120	85	22	38	82	5	6,4	10,4	M6	Ø6 H8
40	42	118	38	38	54	90	65	130	95	22	42	90	5	6,4	10,4	M6	Ø8 H8
50	48,1	140	46,5	46,5	69	110	80	155	115	27	48	110	6,5	8,4	13,4	M8	Ø8 H8
63	56	157,5	56,5	56,5	79,5	120	95	175	130	30	56	120	7,5	10,5	17,5	M8	Ø8 H8

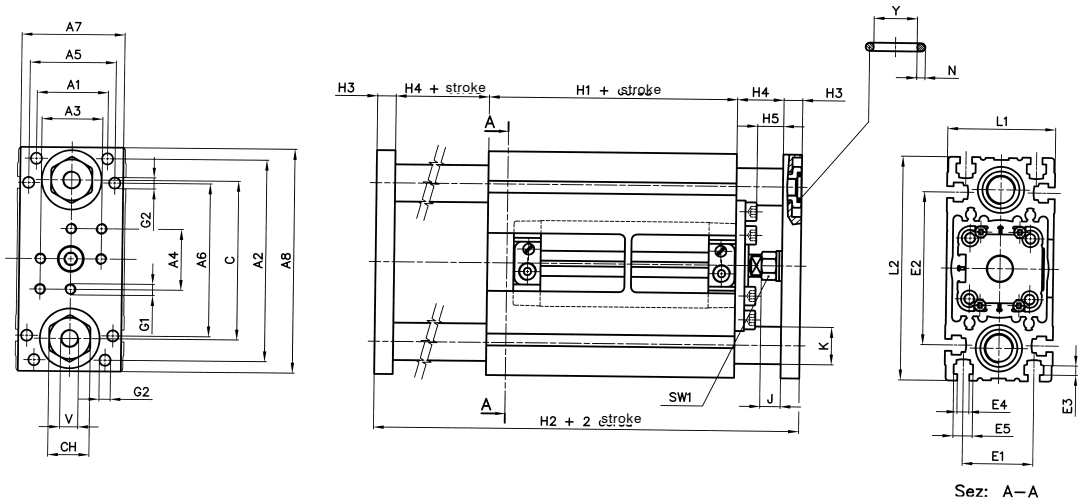
Cyl. Ø	H1 + stroke (**)	H2+ stroke (**)	H3	H4	H5	J	K	L1	L2	N	P1	P2	SW1	T	V	Y	Z
32	151 + stroke (**)	188+ stroke (**)	10	27	16	11	20	58	120	2,62	83,5	50	13	1/8”	1/8”	10,78	M16x1,5
40	158+ stroke (**)	194 + stroke (**)	10	26	14	11	22	66	130	2,62	91,5	58	16	1/8”	1/8”	10,78	M18x1,5
50	173 + stroke (**)	209 + stroke (**)	12	24	10	7	25	84	155	2,62	106,5	70	18	1/8”	1/8”	10,78	M20x1,5
63	187 + stroke(**)	223 + stroke (**)	12	24	10	7	28	98	176	2,62	129	85	18	1/8”	1/8”	10,78	M22x1,5

* For use with locking pin tolerance m6.
** Min. stroke MAGNETIC CYLINDER for bore sizes 32 and 40 = 20 mm / for bore sizes 50 and 63 = 15 mm.

For mounting accessories please refer to section High-Tech page 59-II.

J67___, 2 bearings

Size	Mass (gr.) "0" stroke			Mass increase (gr.) per mm stroke		
	Slide unit	Cylinder	Locking unit	Slide unit	Shafts	Cylinder
32	1092	330	-	6	2,5	2,65
40	1428	483	-	7	2,8	4
50	2264	739	-	11	3,7	5,6
63	3159	1127	-	13,6	4,7	6,55



Cyl. Ø	A1	A2	A3	A4	A5	A6	A7	A8	C	CH	E1	E2	E3	E4	E5	G1
32	38	108	32,5	32,5	46	82	55	120	85	22	38	82	5	6,4	10,4	M6
40	42	118	38	38	54	90	65	130	95	22	42	90	5	6,4	10,4	M6
50	48,1	140	46,5	46,5	69	110	80	155	115	27	48	110	6,5	8,4	13,4	M8
63	56	157,5	56,5	56,5	79,5	120	95	175	130	30	56	120	7,5	10,5	17,5	M8

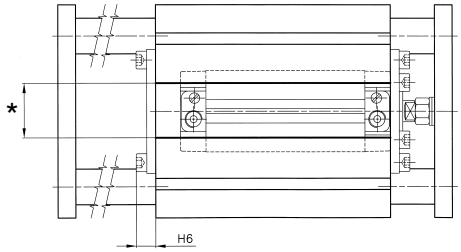
Cyl. Ø	G2(**)	H1 + stroke (**)	H2+ 2 stroke (**)	H3	H4	H5	J	K	L1	L2	N	SW1	V	Y
32	Ø6 H8	78 + stroke (**)	148 + 2 stroke (**)	10	25	14	11	20	58	120	2,62	13	1/8”	10,78
40	Ø8 H8	82 + stroke (**)	152 + 2 stroke (**)	10	25	13	11	22	66	130	2,62	16	1/8”	10,78
50	Ø8 H8	91 + stroke (**)	165 + 2 stroke (**)	12	25	11	7	25	84	155	2,62	18	1/8”	10,78
63	Ø8 H8	98 + stroke (**)	172 + 2 stroke (**)	12	25	11	7	28	98	176	2,62	18	1/8”	10,78

* For use with locking pin tolerance m6.

** Min. stroke MAGNETIC CYLINDER for bore sizes 32 and 40 = 20 mm / for bore sizes 50 and 63 = 15 mm.

NOTE: for all sizes up to 50 mm stroke, the opening of the body in accordance with the supply ports is of the through type.

J66__ B upon request for strokes exceeding 50 mm, slide units with through opening* in order to place the magnetic sensors in intermediate positions.

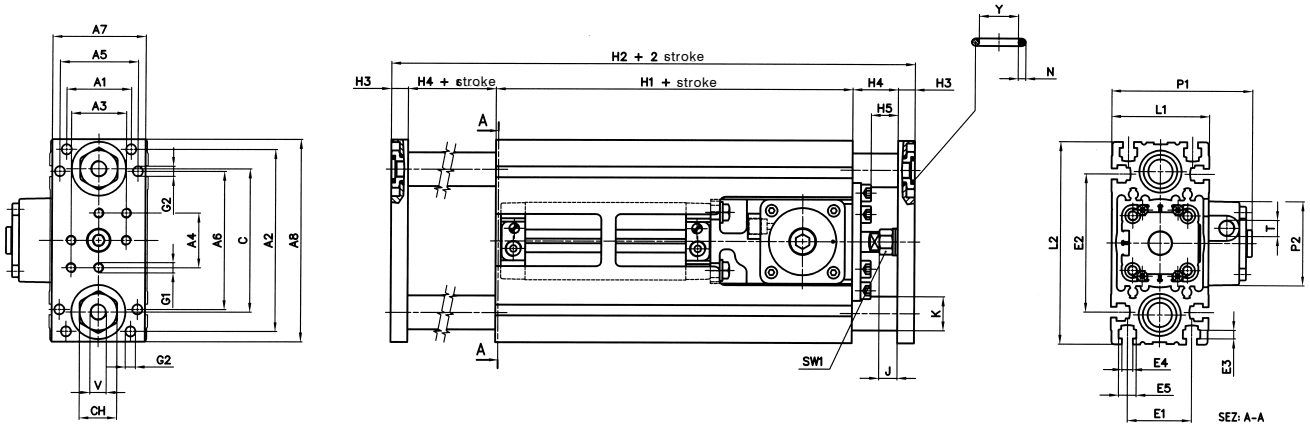


Cyl. Ø	H6
32	11
40	12
50	14
63	14

This version implies the increase of “H2” by the value “H6” indicated in the table.

J67___B, 2 bearings with locking unit

Size	Mass (gr.) "0" stroke			Mass increase (gr.) per mm stroke		
	Slide unit	Cylinder	Locking unit	Slide unit	Shafts	Cylinder
32	2492	303	779	6	2,5	2,65
40	3165	483	992	7	2,8	4
50	4998	739	1528,5	11	3,7	5,6
63	7153	1127	2370	13,6	4,7	6,55



Cyl. Ø	A1	A2	A3	A4	A5	A6	A7	A8	C	CH	E1	E2	E3	E4	E5	G1
32	38	108	32,5	32,5	46	82	55	120	85	22	38	82	5	6,4	10,4	M6
40	42	118	38	38	54	90	75	130	95	22	42	90	5	6,4	10,4	M6
50	48,1	140	46,5	46,5	69	110	80	155	115	27	48	110	6,5	8,4	13,4	M8
63	56	157,5	56,5	56,5	79,5	120	95	175	130	30	56	120	7,5	10,5	17,5	M8

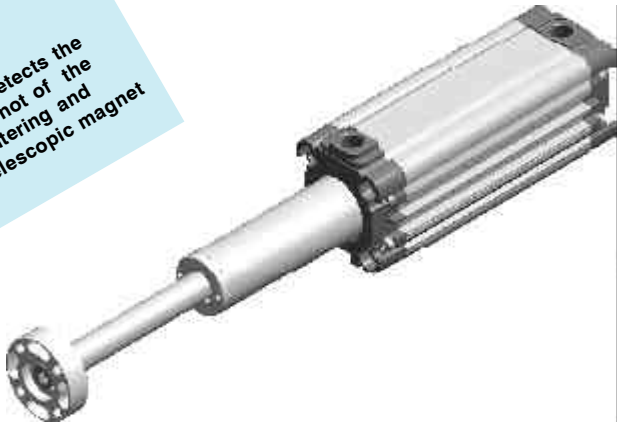
Cyl. Ø	G2(**)	H1 + stroke (**)	H2+ 2 stroke (**)	H3	H4	H5	J	K	L1	L2	N	SW1	V	Y
32	Ø6 H8	151 + stroke (**)	225 + 2 stroke (**)	10	27	14	11	20	58	120	2,62	13	1/8”	10,78
40	Ø8 H8	158 + stroke (**)	230 + 2 stroke (**)	10	26	13	11	22	66	130	2,62	16	1/8”	10,78
50	Ø8 H8	173 + stroke (**)	245 + 2 stroke (**)	12	24	11	7	25	84	155	2,62	18	1/8”	10,78
63	Ø8 H8	187 + stroke (**)	259 + 2 stroke (**)	12	24	11	7	28	98	176	2,62	18	1/8”	10,78

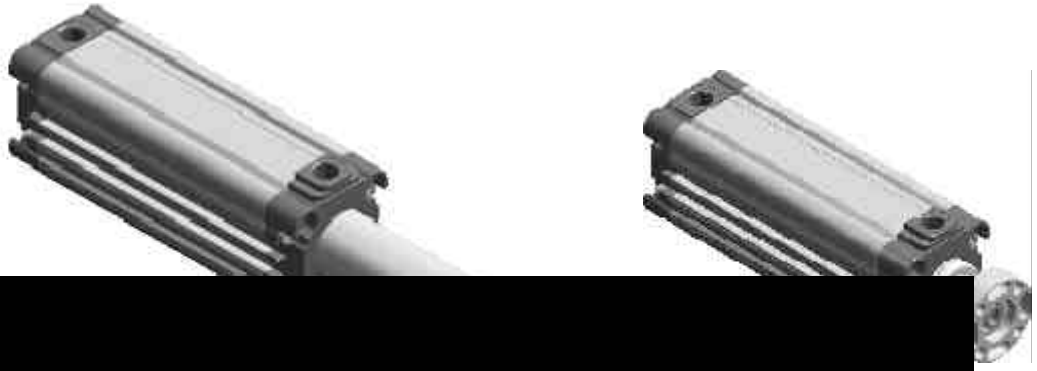
* For use with locking pin tolerance m6.
** Min. stroke MAGNETIC CYLINDER for bore sizes 32 and 40 = 20 mm / for bore sizes 50 and 63 = 15 mm.

For mounting accessories please refer to section High-Tech page 59-II.

Standard supplied with:
non-rotating rod
elastic buffers
flange
magnetic version*

* The sensor mounted on the barrel detects the position only of the first stage and not of the subsequent stages, both when entering and returning (except version with telescopic magnet holder).





Considering its high technological contents, this cylinder series represents without doubt the product with the highest degree of technical research and evolution accomplished by the technicians of the company.
The overall dimensions are one of the most important aspects: in comparison with a traditional ISO cylinder of the same stroke a reduction in size of approx. 45% (with a 3-stage telescopic cylinder) is obtained thus permitting the customer to foresee a considerable reduction of the project and construction of his equipment. The cylinder can be supplied in magnetic version and with slide unit (only for 2-stage version).

TECHNICAL CHARACTERISTICS

Working pressure: 1,5 ÷10 bar
Ambient temperature: -20°C ÷ 80°C
Fluid: filtered air, lubricated or not.
Barrel: in aluminium, internally/externally anodized.
Non-rotating rod in chromium-plated steel with standard supplied flange except for versions with male rod.
Elastic bumpers.
Magnetic version with detection of position of the 1st stage only.

Upon request
- Magnetic sensor DF-… (section accessories page 2).
- Wire protection strap for magnetic sensor.
- Magnetic version 2-3 stages prearranged only for end-stroke reading.
- Slide unit only for 2-stage telescopic cylinder with extended piston.
- Cylinder versions with end-caps according to UNITOP inter-axes.

Codification key

RT	2	2	0	032	0600	L

Option
Standard stroke (mm)
Bore
Type
Stages
Rod
Series

SERIES
Telescopic pneumatic cylinders in magnetic version with non-rotating piston rod, elastic bumpers and flange, Ø 032 ÷ 063 mm

ROD
2_ chromium-plated steel
1_ stainless steel

STAGES
2__ 2 stages
3__ 3 stages

TYPE
0 = D.A. ISO inter-axes female rod
3 = D.A. ISO inter-axes male rod

BORE
2 stages: ø 032-040-050-063 mm
3 stages: ø 040-050-063 mm

STANDARD STROKE
2 Stages
0100-0120-0160-0180-0200-0300-0400-0500-0600-0700
0800-0900-1000-1100-1200
Max stroke: Ø 32 **0400 mm**
Ø 40 **0600 mm**
Ø 50 **0900 mm**
Ø 63 **1200 mm**

3 Stages
0150-0180-0210-0240-0270-0300-0360-0450-0600-0750
0900-1050-1200-1500-1800
Max stroke: Ø 40 **1200 mm**
Ø 50 **1500 mm**
Ø 63 **1800 mm**

OPTION
I = without flange only for female piston rod.
L = freely rotating rod
M = with telescopic magnet holder for 2nd-3rd stage

2-stage telescopic cylinders
Theoretical forces in N (0,102 kg)

2-stage telescopic cylinder	Useful surface (mm²)		Working pressure (bar) 2	4	6	8	10
32	thrust	314	64	128	192	256	320
	traction	201	41	82	123	164	205
40	thrust	490	100	200	300	400	500
	traction	377	77	154	231	308	384
50	thrust	804	164	328	492	656	820
	traction	603	123	246	369	492	615
63	thrust	1256	256	512	769	1025	1281
	traction	1055	215	430	646	861	1076

3-stage telescopic cylinders
Theoretical forces in N (0,102 kg)

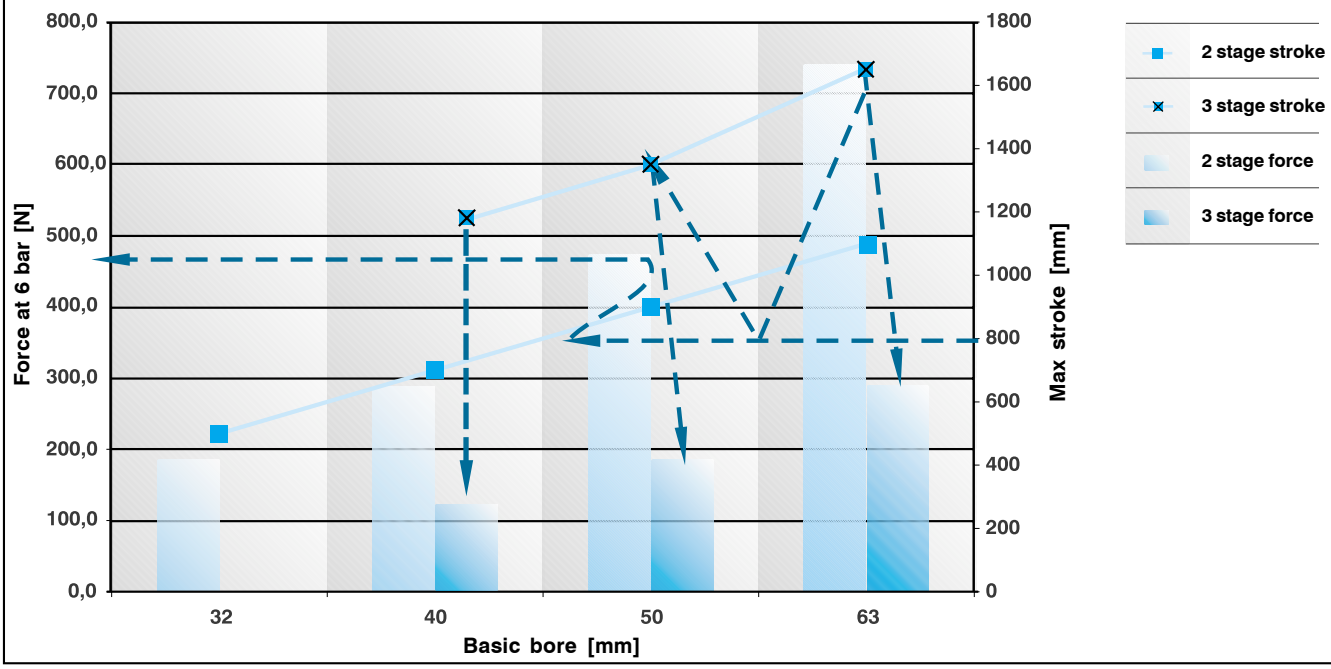
3-stage telescopic cylinder	Useful surface (mm²)		Working pressure (bar) 2	4	6	8	10
40	thrust	201	41	82	123	164	205
	traction	78,5	16	32	48	64	80
50	thrust	314	64	128	192	256	320
	traction	201	41	82	123	164	205
63	thrust	490	100	200	300	400	500
	traction	377	77	154	231	308	384

In telescopic cylinders the force exerted depends not only on pressure, but also on the cylinder bore of the final stage, **the smallest one**. In a two-stage cylinder with rated bore 50, for example, the diameter of the cylinder of the first stage is 50 mm, but that of the cylinder of the second stage is 32 mm. The cylinder thrust should be calculated according to the latter value. With bore 50 at 6 bar the thrust would be 1180 N, with bore 32 the thrust is 480 N A 3-stage cylinder allows a 50% longer stroke compared to a 2-stage cylinder, both “all closed”. However, **the advantage of a longer stroke is counteracted by the disadvantage of a smaller thrust**, with the same bore size of the first stage.This is shown in the diagram below. We shall assume that a stroke of 800 mm, for example, is required. Starting with the value 800 on the right of the diagram, continue horizontally as far as the line of the strokes of the 2-stage cylinders. From the intersection of the horizontal line with that of the strokes, move up along the latter as far as the marker of the corresponding basic bore: 50 mm for the 2-stage cylinder of our example.The force exerted (at 6 bar) by the telescopic cylinder is obtained from the diagram and is equal approximately to 480 N.

The diagram also shows that the stroke of 800 mm can be achieved by both the 50 and 63 mm three-stage telescopic cylinders. The two basic bores correspond to the thrust of 190 N for the 50 mm cylinder (the third stage has a 20 mm bore) or 295 N in the case of the 63 mm cylinder (the third stage is 25 mm).

By choosing two cylinders (with 2 or 3 stages) with the same basic bore of 50 mm, thrusts of 480 and 190 N respectively can be obtained and the two-stage cylinder is therefore to be selected.

If however the stroke to be achieved had been 1200 mm, it would have been essential to use a three-stage cylinder of at least 50 mm bore, naturally to the detriment of the maximum thrust.



Maximum applicable torque [Nm] for non-rotating rod

Cyl. ø	Torque	
	2-stages	3-stages
32	0,8	-
40	1	0,5
50	2	0,8
63	3	1

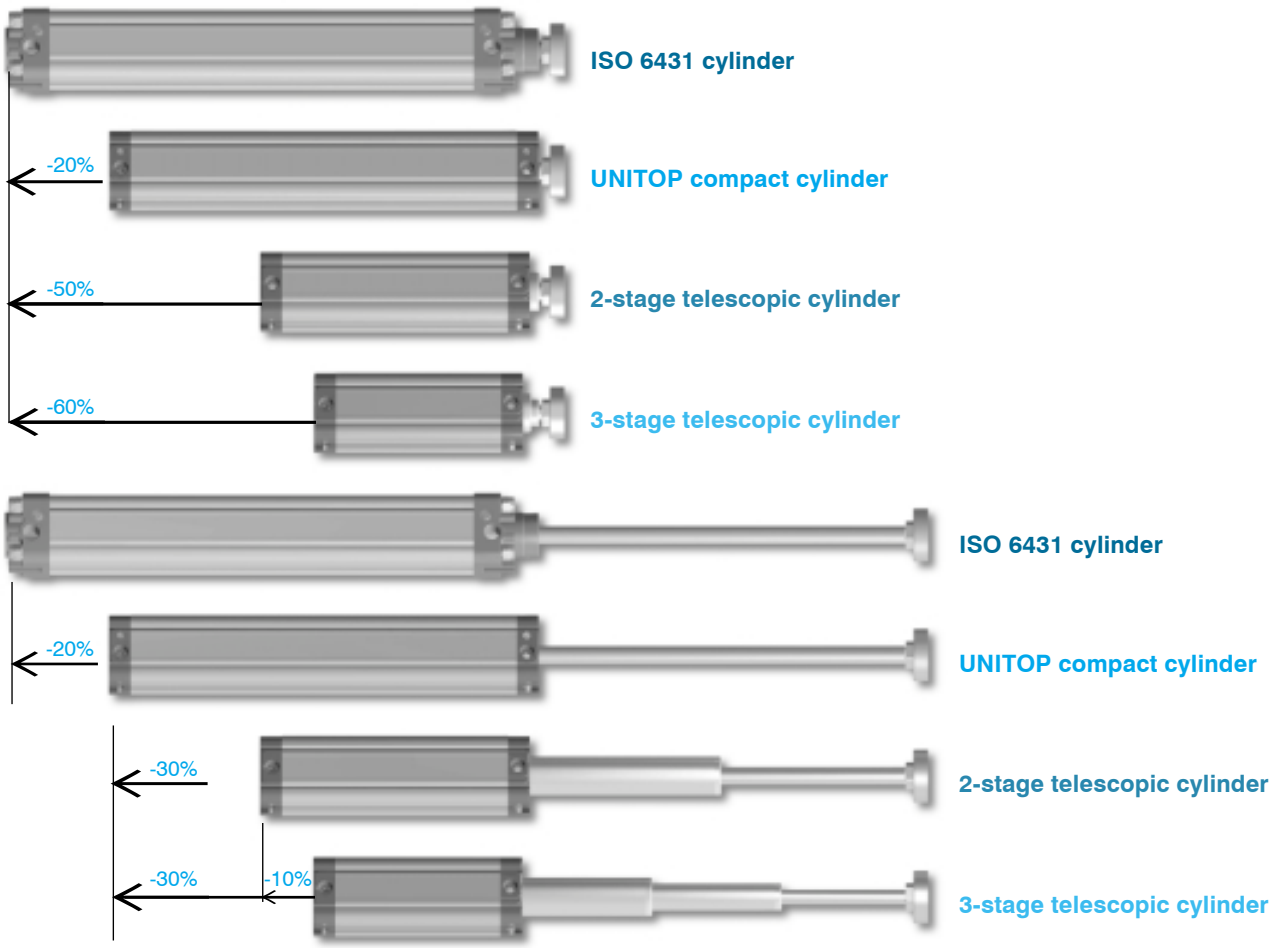
The telescopic cylinder works in optimal conditions when the load is axial, i.e. with the cylinder placed vertically, upwards or downwards.
Naturally it can also work horizontally and cantilevered. However in this case:

- **the maximum strokes have to be reduced by 50% as compared to the maximum rated ones**
- **cylinders with oversized guides should be ordered (slightly to the detriment of axial dimensions)**
- **the radial load has to be supported by other systems (carriages, slides, sliding guides).**

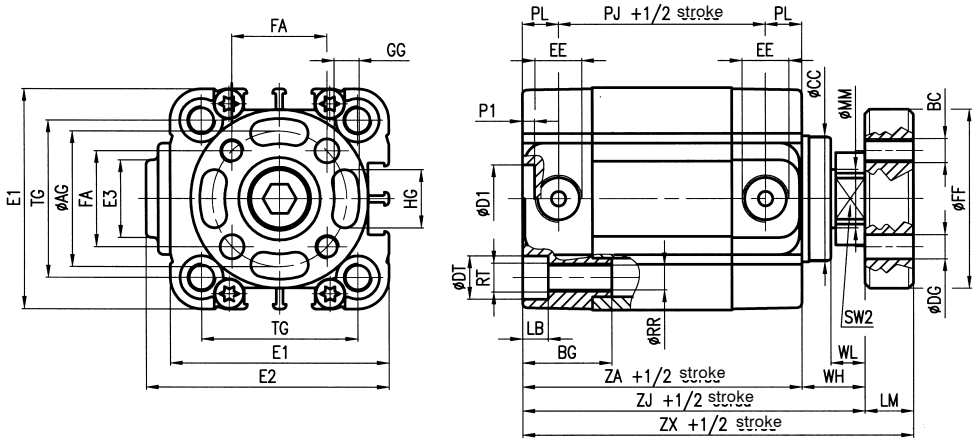
Table summarizing bore combinations

Telescopic cylinder	ø I° stage	ø II° stage	ø III° stage
32	32	20	-
40	40	25	16
50	50	32	20
63	63	40	25

The following example shows the relation of dimensions between the different cylinder types having the same stroke of 300 mm.

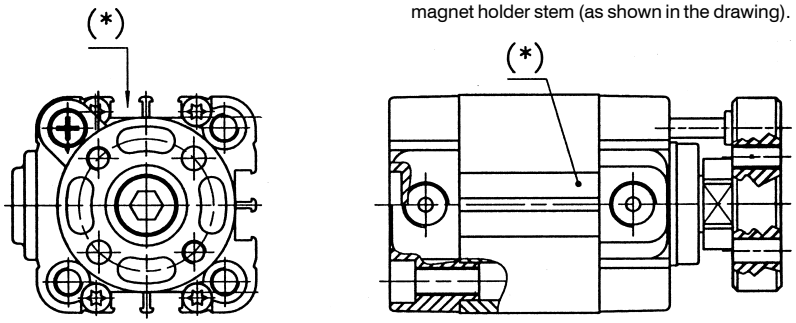


2-stage telescopic cylinder with flange RT220---

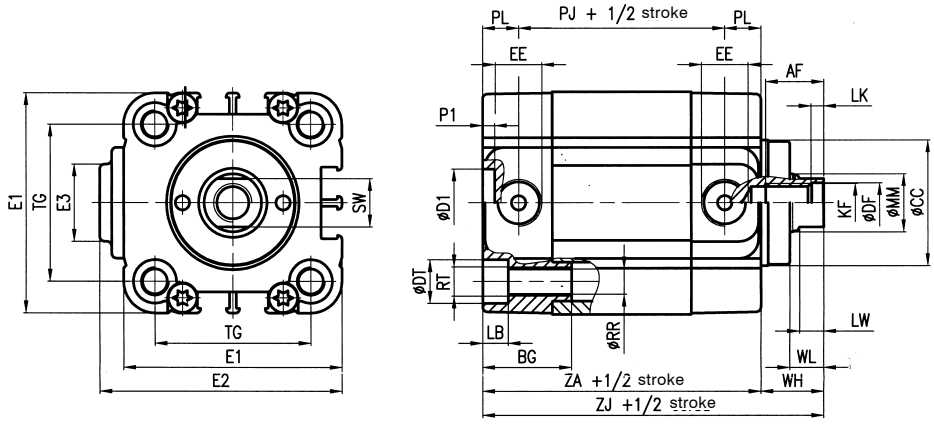


2-stage telescopic cylinder magnetic version RT220---M

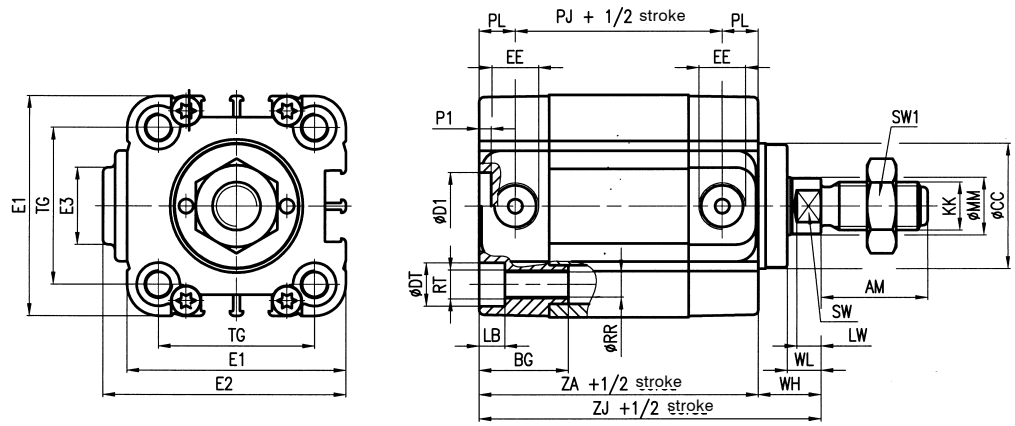
(♦)Note: the magnetic sensors DF--- may only be placed near the telescopic magnet holder stem (as shown in the drawing).



2-stage telescopic cylinder without flange RT220---I



2-stage telescopic cylinder with male rod RT223---



Cyl. Ø	AF	Ø AG	AM	BC	BG	Ø CC	ØD1 H11	Ø DF	Ø DG	Ø DT	E1	E2	E3	EE	FA	Ø FF	GG	HG	KF
32	12	28	22	M5	18	26	14	8,2	5	9	46	50,5	16	G1/8	19,8	37	5,2	11	M8
40	12	33	22	M5	18	32	14	8,2	5	9	56	60,5	16	G1/8	23,3	42	5,2	15	M8
50	16	42	24	M6	24	40	18	10,2	6	11	66	70,5	16	G1/8	29,7	52	6,2	19	M10
63	12	50	24	M6	24	48	18	10,2	6	11	79	83,5	38	G1/8	35,4	64	6,2	25	M10

Cyl. Ø	KK	LB	LK	LM	LW	Ø MM	P1	PJ	PL	Ø RR	RT	SW	SW1	SW2	TG	WH	WL	ZA	ZJ	ZX
32	M10X1,25	5,3	2	10	5	12	2,5	43	7,5	5,2	M6	10	17	17	32,5	13	7	58	71	81
40	M10X1,25	5,3	2	10	5	12	2,5	45	7,5	5,2	M6	10	17	19	38	12	7	60	72	82
50	M12X1,25	6,5	2	12	6	16	2,5	46	7,5	6,6	M8	13	19	24	46,5	15	8	61	76	88
63	M12X1,25	6,5	2	12	6	16	2,5	50	7,5	6,6	M8	13	19	24	56,5	15	8	65	80	92

Mass

RT220___

Cyl. Ø	Cylinder "0" stroke (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
32	270	3,02	124,6	1,4
40	419	3,77	182	1,6
50	640	5,28	314	2,6
63	1005	6,33	480	2,72

RT220___M

Cyl. Ø	Cylinder "0" stroke (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
32	245	3,02	137,6	1,5
40	380	3,77	188,5	1,7
50	572	5,28	318	2,7
63	910	6,33	487	2,8

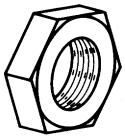
RT220___I

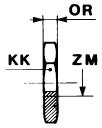
Cyl. Ø	Cylinder "0" stroke (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
32	245	3,02	99,6	1,4
40	380	3,77	142,5	1,6
50	572	5,28	246	2,6
63	910	6,33	385	2,72

RT223___

Cyl. Ø	Cylinder "0" stroke (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
32	275	3,02	129,6	1,4
40	410	3,77	172,5	1,6
50	617	5,28	291	2,6
63	955	6,33	430	2,72

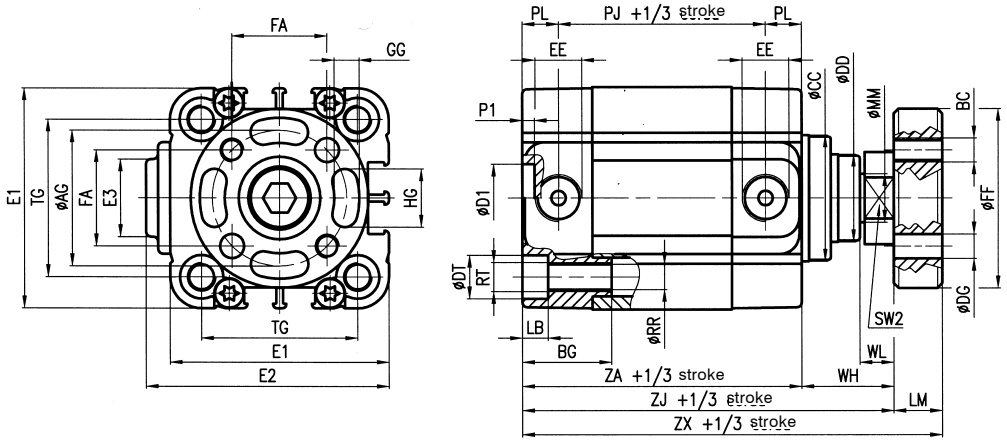
Rod nut in zinc-plated steel



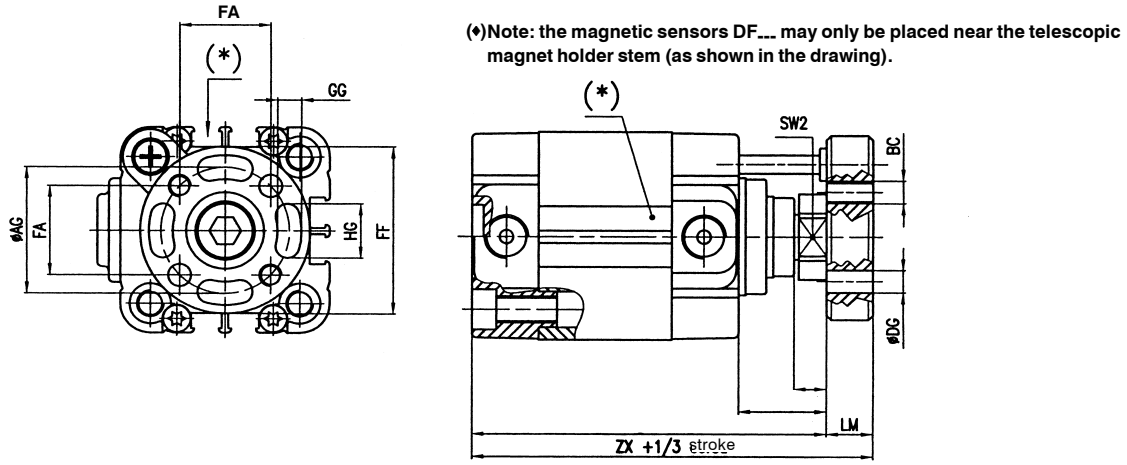


Cyl. Ø	ZM	KK	OR	Part number
32	M10x1,25	17	6	**KF-16032**
40	M12x1,25	19	7	**KF-16040**
50-63	M16x1,5	24	8	**KF-16050**

3-stage telescopic cylinder with flange RT230...

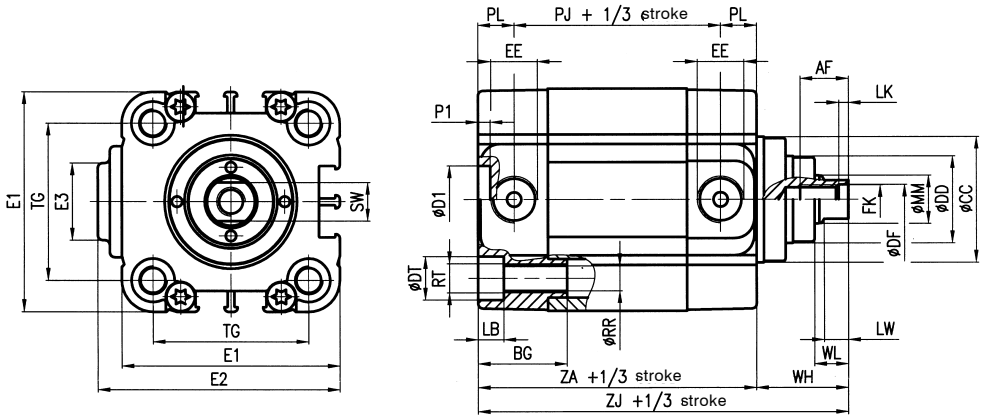


3-stage telescopic cylinder magnetic version RT230...M

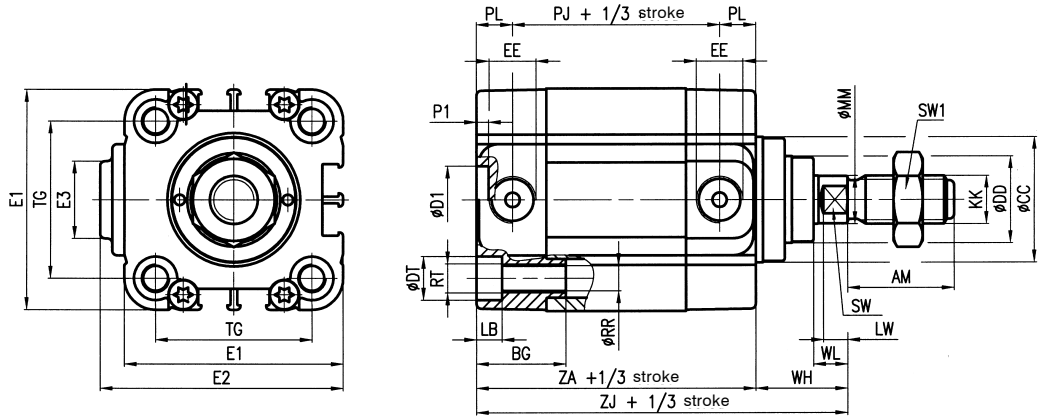


(♦)Note: the magnetic sensors DF... may only be placed near the telescopic magnet holder stem (as shown in the drawing).

3-stage telescopic cylinder without flange RT230...I



3-stage telescopic cylinder with male rod RT233...



Cyl. Ø	AF	Ø AG	AM	BC	BG	Ø CC	ØD1 H11	Ø DD	Ø DF	Ø DG	Ø DT	E1	E2	E3	EE	FA	Ø FF	GG	HG	KF
40	10	28	22	M5	18	32	14	22	6,2	5	9	56	60,5	16	G1/8	19,8	37	5,2	11	M6
50	12	28	22	M5	24	40	18	26	8,2	5	11	66	70,5	16	G1/8	19,8	37	5,2	11	M8
63	12	33	22	M5	24	48	18	32	8,2	5	11	79	83,5	38	G1/8	23,3	42	5,2	15	M8

Cyl. Ø	KK	LB	LK	LM	LW	Ø MM	P1	PJ	PL	Ø RR	RT	SW	SW1	SW2	TG	WH	WL	ZA	ZJ	ZX
40	M10X1,25	5,3	2	10	5	10	2,5	45	7,5	5,2	M6	8	17	17	38	22	7	60	82	92
50	M10X1,25	6,5	2	10	5	12	2,5	46	7,5	6,6	M8	10	17	17	46,5	24	7	61	85	95
63	M10X1,25	6,5	2	10	5	12	2,5	50	7,5	6,6	M8	10	17	19	56,5	25	7	65	90	100

Dimensional variations for RT230...M series

Cyl. Ø	Ø AG	BC	Ø DG	FA	Ø FF	GG	HG	LM	SW2	ZX
40	33	M5	5	23,3	42	5,2	15	10	19	92
50	42	M6	6	29,7	52	6,2	19	12	24	97
63	50	M6	6	35,4	64	6,2	25	12	24	102

Mass

RT230...

Cyl. Ø	Cylinder "0" stroke (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
40	399	3,9	162	1,75
50	591	5,07	265	2,37
63	939	6,34	417	2,75

RT230...M

Cyl. Ø	Cylinder "0" stroke (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
40	374	3,9	191	2
50	553	5,07	306,5	2,62
63	871	6,34	459	3

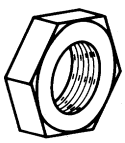
RT230...I

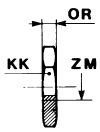
Cyl. Ø	Cylinder "0" stroke (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
40	374	3,9	137	1,75
50	552	5,07	225,5	2,37
63	871	6,34	349	2,75

RT233...

Cyl. Ø	Cylinder "0" stroke (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
40	405	3,9	168	1,75
50	583	5,07	256,5	2,37
63	902	6,34	380	2,75

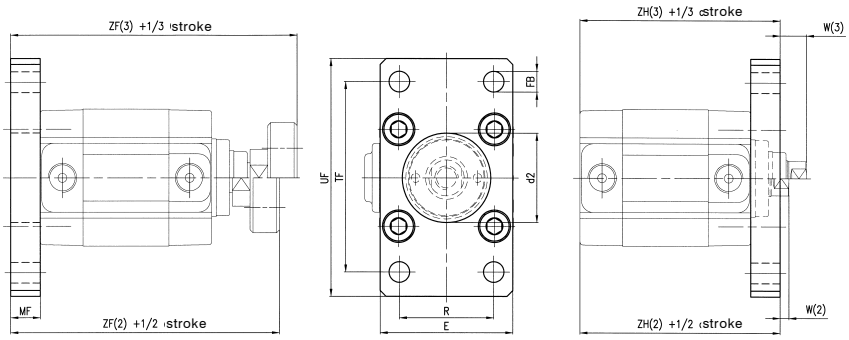
Rod nut in zinc-plated steel





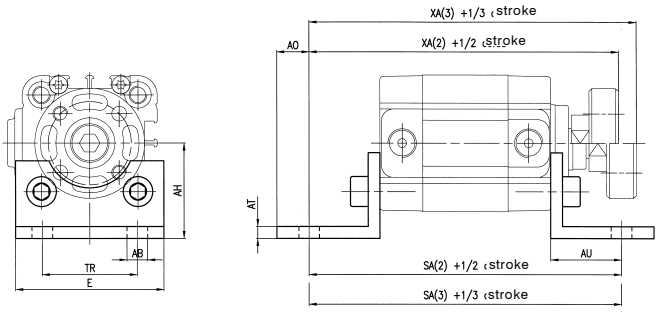
Cyl. Ø	ZM	KK	OR	Part number
32	M10x1,25	17	6	**KF-16032**
40	M12x1,25	19	7	**KF-16040**
50-63	M16x1,5	24	8	**KF-16050**

Front or rear flange in zinc-plated steel



Cyl. Ø	Ød2 H11	E	Ø FB H13	W(2)	W(3)	MF	R JS14	TF JS14	UF	ZF(2)	ZF(3)	ZH(2)	ZH(3)	Mass Kg	Part number
32	30	45	7	3	-	10	32	64	80	91	-	68	-	0,20	**KF-12032**
40	35	52	9	2	12	10	36	72	90	92	102	70	70	0,25	**KF-12040**
50	44	65	9	3	12	12	45	90	110	100	109	73	73	0,50	**RTF-12050**
63	52	75	9	3	13	12	50	100	120	104	114	77	77	0,65	**RTF-12063**

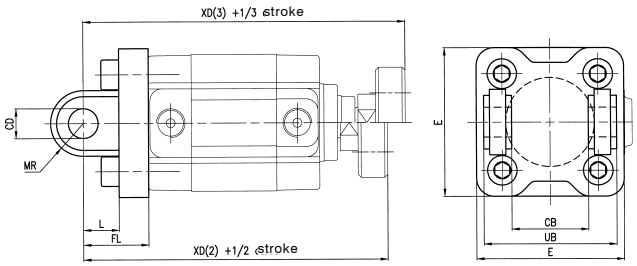
Angle brackets in zinc-plated steel



Fixing screws see page 59

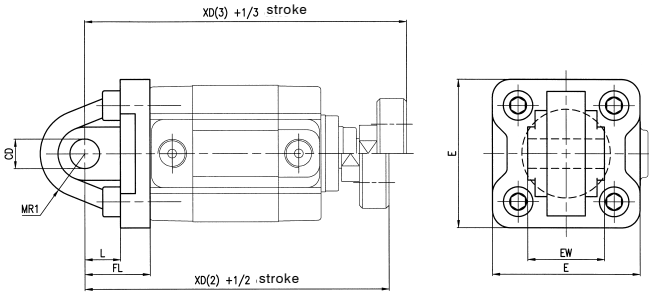
Cyl. Ø	ØAB H13	AH JS15	AO max	AT	AU ±0,2	E max	SA(2)	SA(3)	TR	XA(2)	XA(3)	Mass Kg	Part number
32	7	32	11	4	24	50	106	-	32	105	-	0,07	**KF-13032**
40	9	36	15	4	28	58	116	116	36	110	120	0,09	**KF-13040**
50	9	45	15	5	32	70	125	125	45	120	129	0,20	**RTF-13050**
63	9	50	15	5	32	85	129	129	50	124	134	0,20	**RTF-13063**

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



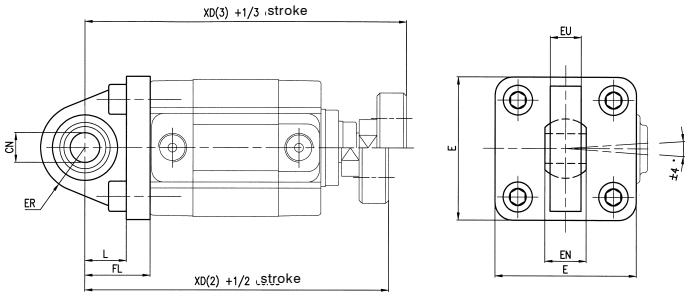
Cyl. Ø	CB H14	ØCD H9	E	FL	L	MR	UB h14	XD(2)	XD(3)	Mass Kg	Part number
32	26	10	48	22	12	11	45	103	-	0,06	**KF-10032A**
40	28	12	54	25	15	13	52	107	117	0,08	**KF-10040A**
50	32	12	65	27	15	13	60	115	124	0,15	**KF-10050A**
63	40	16	75	32	20	17	70	124	134	0,25	**KF-10063A**

Male rear hinge in die-cast aluminium



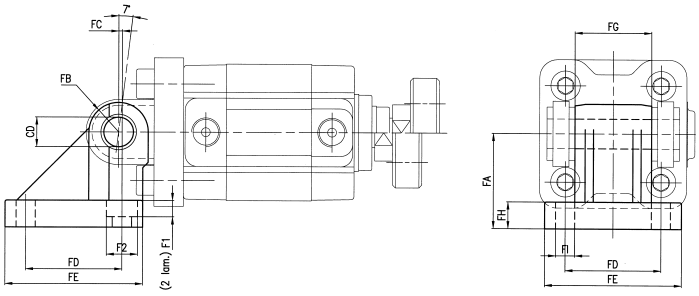
Cyl. Ø	ØCD H9	E	EW tol. ±0,2	FL	L	MR1	XD(2)	XD(3)	Mass Kg	Part number
32	10	48	26	22	12	15	103	-	0,08	**KF-11032**
40	12	54	28	25	15	18	107	117	0,10	**KF-11040**
50	12	65	32	27	15	20	115	124	0,17	**KF-11050**
63	16	75	40	32	20	23	124	134	0,25	**KF-11063**

Articulated male rear hinge in die-cast aluminium



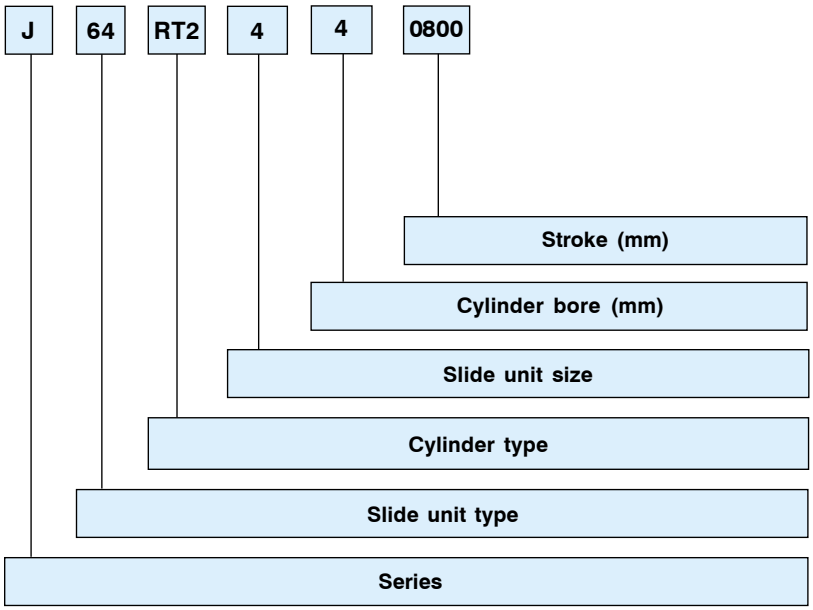
Cyl. Ø	ØCN H9	E	EN	ER	EU	FL	L	XD(2)	XD(3)	Mass kg	Part number
32	10	48	14	15	10,5	22	14	103	-	0,10	**KF-11032S**
40	12	54	16	18	12	25	16,5	107	117	0,20	**KF-11040S**
50	12	65	16	20	12	27	17,5	115	124	0,30	**KF-11050S**
63	16	75	21	23	15	32	21,5	124	134	0,35	**KF-11063S**

Counter-hinge 90° in die-cast aluminium



Fixing screws page 55

Cyl. Ø	ØCD H9	FA Js15	FB	FC	FD	FE	FG ±0,2	FH	Ø FI	F1	Ø F2	Massa kg	Codice
32	10	32	10	1,2	32,5	46,5	26	9	6,4	5,5	10,5	0,10	**KF-19032**
40	12	36	12	2,6	38	51,5	28	9	6,4	5,5	10,5	0,20	**KF-19040**
50	12	45	12	0,3	46,5	63,5	32	9	8,4	5	13,5	0,30	**KF-19050**
63	16	50	16	3,3	56,5	73,5	40	10,5	8,4	5	13,5	0,35	**KF-19063**



SERIES

J = Slide units

SLIDE UNIT TYPE

64 = Slide unit for telescopic cylinder fully protected (2 bearings)

CYLINDER TYPE

RT2 = 2-stage telescopic cylinder

SLIDE UNIT SIZE

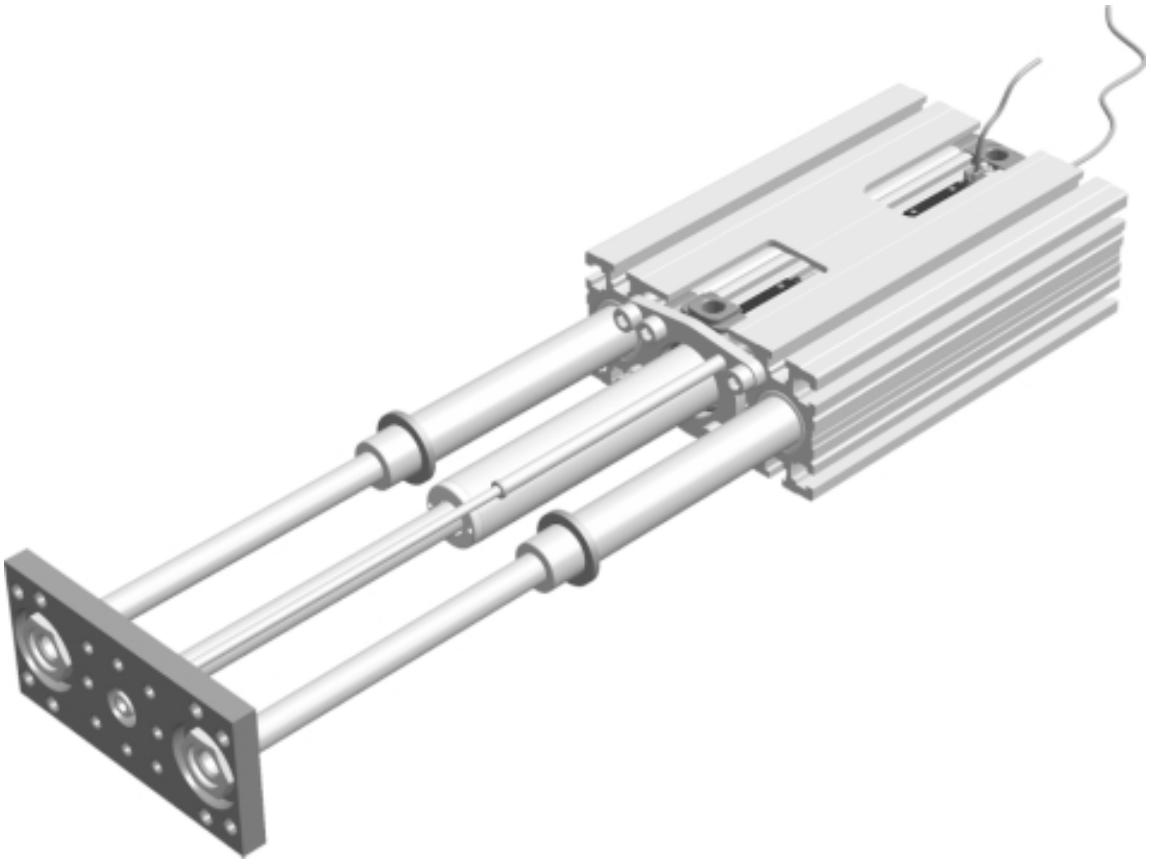
3 = 32 only for cylinder Ø 32
4 = 40 only for cylinder Ø 40
5 = 50 only for cylinder Ø 50
6 = 63 only for cylinder Ø 63

CYLINDER BORE

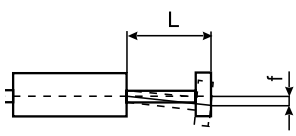
3 = 32
4 = 40
5 = 50
6 = 63

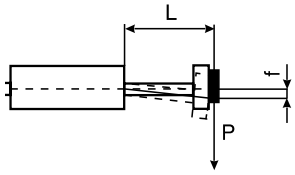
SLIDE UNIT STROKE

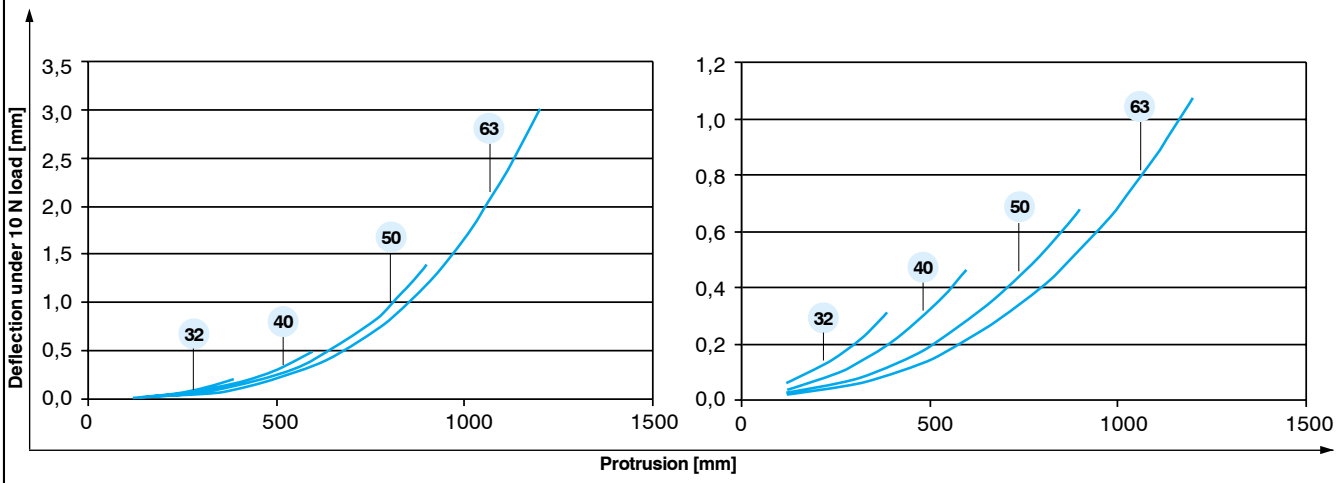
Standard strokes mm:
0120-0160-0180-0200-0300-0400-0500-0600-0700-0800-0900-1000-1100-1200
Min-max strokes:
Ø 32 0160 ÷ 0400 mm
Ø 40 0160 ÷ 0600 mm
Ø 50 0120 ÷ 0900 mm
Ø 63 0120 ÷ 1200 mm



Graph relating to deflection per length of slide unit







Examples of application

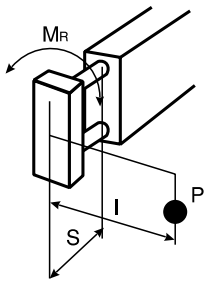
How to calculate deflection

The total deflection of the slide unit is calculated by summing deflection under its own weight to deflection caused by the applied load.

For loads other than 10 N or 100 N (as stated in the graphs) deflection is calculated by multiplying the value of the graph K by the following ratio:

$$f = K \cdot \frac{Q \text{ (applied load)}}{10 \text{ N o } 100 \text{ N}}$$

Max. moment of resistance MR



Size	MR
32	4,7
40	7,8
50	10,2
63	10,2

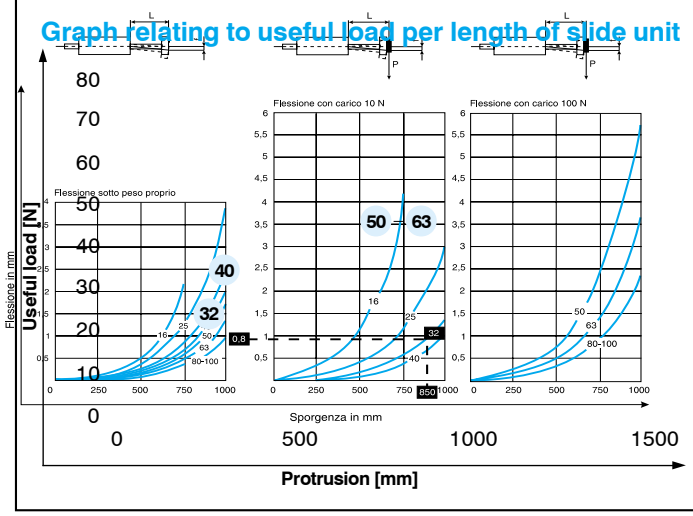
How to calculate torque

To calculate torque M1 the load P (N) must be multiplied by the length l (mm).

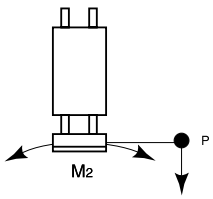
$$M1 = P \cdot l$$

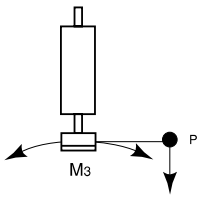
The value obtained must be lower than the MR values shown above: should it exceed these values, a slide unit of bigger size must be used.

Graph relating to useful load per length of slide unit



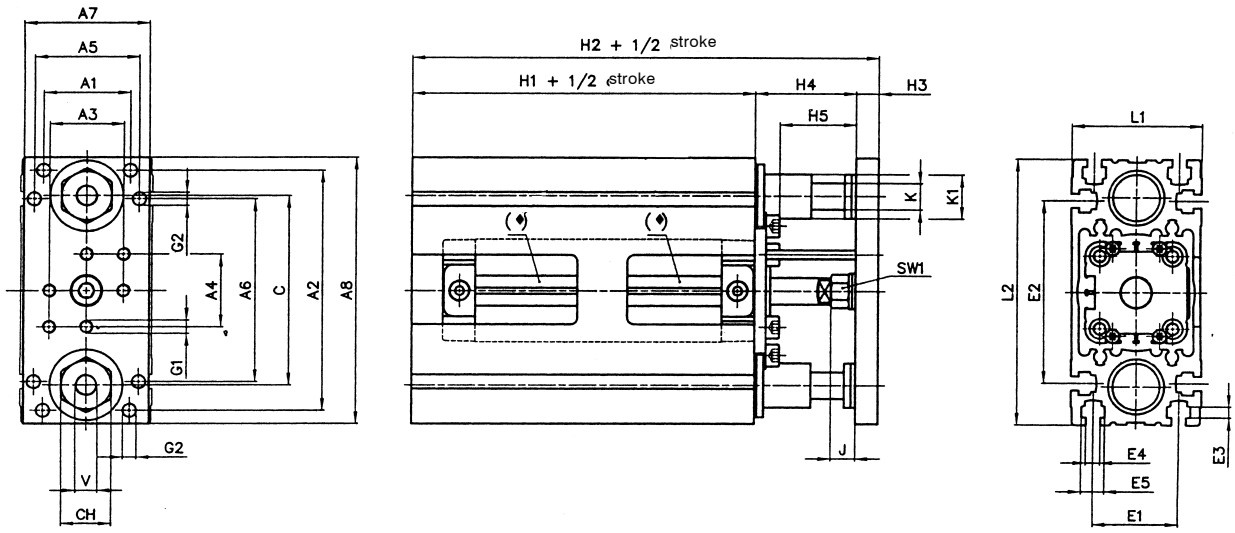
Max. moments of resistance (Nm)





Size	M2=M3 Nm
32	7,4
40	12
50	17,8
63	17,8

Telescopic slide unit magnetic version J64RT



(♦) Note: the magnetic sensors DF-___ may only be placed near the telescopic magnet holder stem (as shown in the drawing).

Cyl. Ø	A1	A2	A3	A4	A5	A6	A7	A8	C	CH	E1	E2	E3	E4	E5	G1
32	38	108	32,5	32,5	46	82	55	120	85	22	38	82	5	6,4	10,4	M6
40	42	118	38	38	54	90	65	130	95	22	42	90	5	6,4	10,4	M6
50	48,1	140	46,5	46,5	69	110	80	155	115	27	48	110	6,5	8,4	13,4	M8
63	56	157,5	56,5	56,5	79,5	120	95	175	130	30	56	120	7,5	10,5	17,5	M8

Cyl. Ø	G2(*)	H1+1/2 stroke(**)	H2+1/2 stroke(**)	H3	H4	H5	J	K	K1	L1	L2	N	SW1	V	Y
32	Ø6 H8	72 + stroke (**)	127+ stroke (**)	10	25	14	11	12	20	58	120	2,62	13	G 1/8	10,78
40	Ø8 H8	78 + stroke (**)	113 + stroke (**)	10	25	13	11	14	22	66	130	2,62	16	G 1/8	10,78
50	Ø8 H8	92 + stroke (**)	129 + stroke (**)	12	25	11	7	16	25	84	155	2,62	18	G 1/8	10,78
63	Ø8 H8	95 + stroke (**)	132 + stroke (**)	12	25	11	7	16	28	98	176	2,62	18	G 1/8	10,78

*** For use with locking pin tolerance m6.**
**** Min. stroke MAGNETIC TELESCOPIC SLIDE UNIT for bore sizes 32 and 40 = 160 mm (80+80), for bore sizes 50 and 63 = 120 mm (60+60).**

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; moreover, due to the functioning with non lubricated air these cylinders are ideal for ecological systems in accordance with EC rules relating to environment protection.

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 aluminium 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-... (Section Accessories page 2)

Upon request
- Rear trunnion
- Nipple
- Non-rotating piston rod (bore sizes Ø 16 ÷ 100)
- Hollow through piston rod (bore sizes Ø 20 ÷ 100)
- Magnetic option (bore sizes Ø 16 ÷ 100)
- Tandem cylinders
- Cylinders with slide unit, bore sizes Ø 20 ÷ 80 (Section High-Tech page 46)

Developed forces

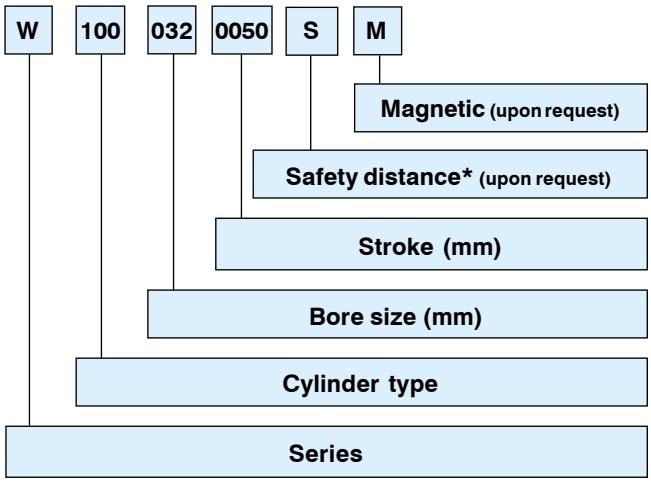
Calculated by applying the following formula:

Thrust force	Traction force
Thf = S · p - a	**Tf = s · p - a**

Where: p = supply pressure
S = piston push surface (cm^2)
s = piston pull surface (cm^2)
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

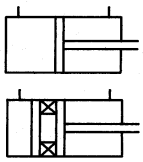
12 - 16 - 20 - 25 - 32 - 40 - 50 - 63 - 80 - 100 mm

STANDARD STROKE

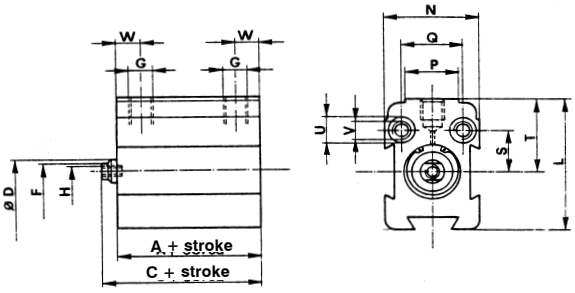
Ø12 - 25 S.A.: 5 - 10 mm
Ø32 - 100 S.A.: 5 - 10 - 25 mm
Ø12 - 16 D.A.: 5 - 10 - 20 - 25 - 30 - 40 - 50 mm
Ø20 - 100 D.A.: 5 - 10 - 20 - 25 - 30 - 40 - 50 - 75 mm

* 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).

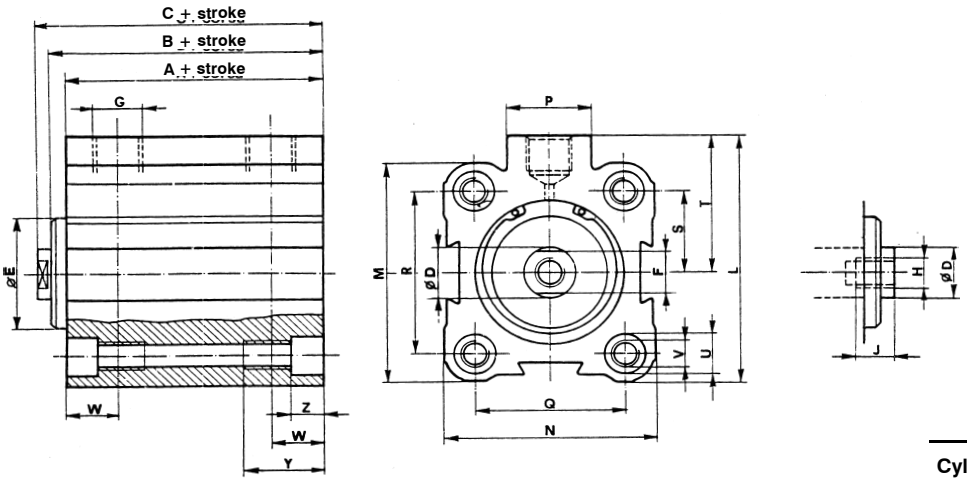
Double-acting cylinder W 100 . . / W 100 . . M Series



Ø 12 mm cylinder



Ø 16 ÷ 100 cylinder



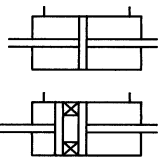
Mass

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

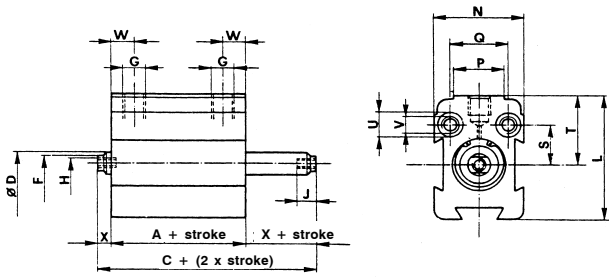
Cyl. Ø	A + STROKE	B + STROKE	C + STROKE	A* + STROKE	B* + STROKE	C* + STROKE	D	E	F	G	H	J	L	M
12	32	-	35,5	-	-	-	6	-	5	M5	M3	6,5	28,5	-
16	32	-	35,5	42	-	45,5	6	-	5	M5	M3	6,5	31	28
20	35	-	42	45	-	52	10	-	8	M5	M5	10	35	32
25	35	-	42	45	-	52	10	-	8	G 1/8	M5	10	44,5	39
32	37	42	49	47	52	59	12	23	10	G 1/8	M6	12	54	48
40	40	47	55	45	52	60	16	29,5	13	G 1/8	M8	14	60	54,5
50	40	46,5	55	45	51,5	60	16	35,5	13	G 1/4	M8	14	72	64
63	42	50,5	59	47	55,5	64	20	43	17	G 1/4	M10	15	88	80
80	52	60	71,5	57	65	76,5	25	50	22	G 3/8	M12	20	110	100
100	52	60	71,5	57	65	76,5	25	56	22	G 3/8	M12	20	134	124

* Magnetic version

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



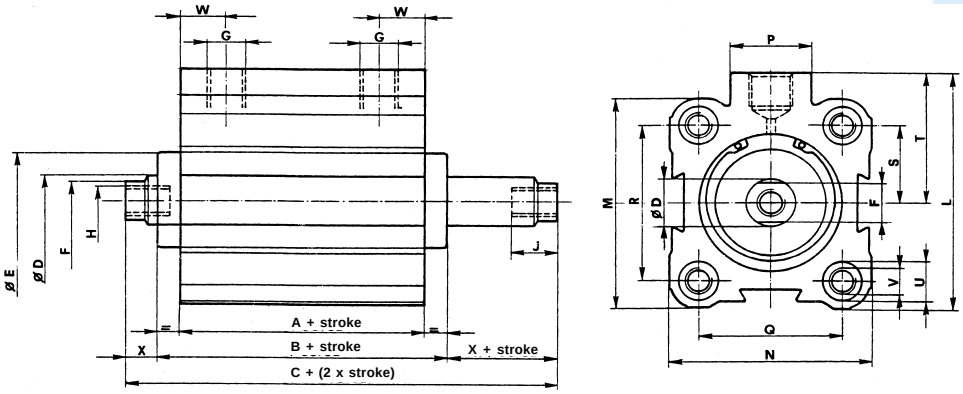
Ø 12 mm cylinder



Mass

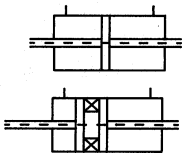
Cyl. Ø	Stroke 0 non magnetic kg	Stroke 0 magnetic kg	Increase per mm (g)
12	0,055	-	1,4
16	0,086	0,114	1,6
20	0,112	0,137	2,65
25	0,165	0,185	3,5
32	0,295	0,354	5
40	0,5	0,536	7
50	0,478	0,534	8
63	0,79	0,922	12,2
80	1,345	1,43	18,7
100	1,875	2,075	23,6

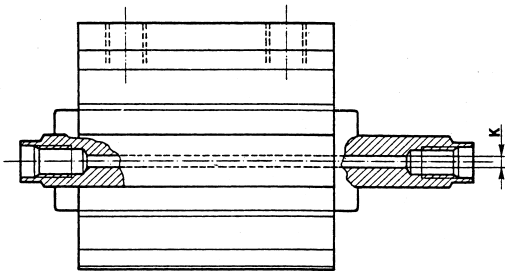
Ø 16 ÷100 mm cylinder



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

(min. Ø 20 ÷ 100 mm)





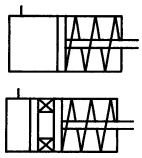
Cyl. Ø	12	16	20	25	32	40	50	63	80	100
K	-	-	2,5	2,5	3	4	4	6	6	6

For weights see table above

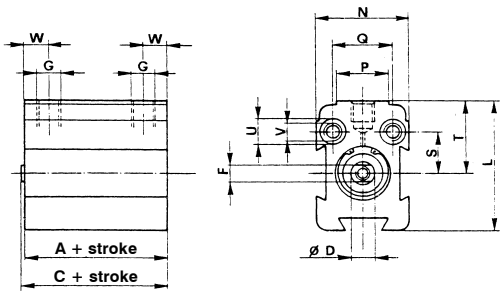
Cyl. Ø	A	B	C	A*	B*	C*	D	E	F	G	H	J	L	M	N	P
	+ STROKE															
12	37	-	44	-	-	-	6	-	5	M5	M3	6,5	28,5	-	20	1
16	37	-	44	47	-	54	6	-	5	M5	M3	6,5	31	28	28	1
20	40	-	54	50	-	64	10	-	8	M5	M5	10	35	32	32	1
25	40	-	54	50	-	64	10	-	8	G 1/8	M5	10	44,5	39	37	1
32	42	52	66	52	62	76	12	23	10	G 1/8	M6	12	54	48	45	1
40	45	59	75	50	64	80	16	29,5	13	G 1/8	M8	14	60	54,5	54,5	1
50	45	58	75	50	63	80	16	35,5	13	G 1/4	M8	14	72	64	64	2
63	47	64	81	52	69	86	20	43	17	G 1/4	M10	15	88	80	80	2
80	52	68	91	57	73	96	25	50	22	G 3/8	M12	20	110	100	100	2
100	52	68	91	57	73	96	25	56	22	G 3/8	M12	20	134	124	124	2

* Magnetic version

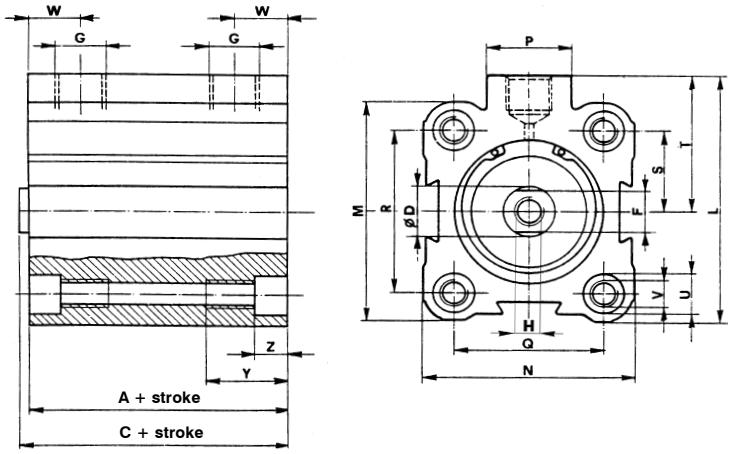
Single-acting cylinder, with retracted piston rod W 160 . . / W 160 . . M series



Ø 12 mm cylinder



Ø 16 ÷ 100 mm cylinder



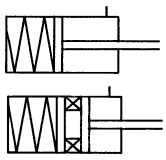
Mass

Cyl. Ø	Stroke 0 non magnetic kg	Stroke 0 magnetic kg	Increase per mm (g)
12	0,038	-	1,2
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

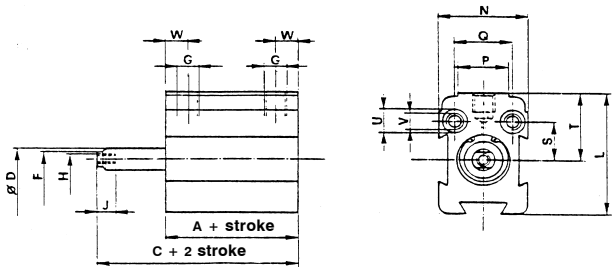
Cyl. Ø	A + STROKE	C + STROKE	A* + STROKE	C* + STROKE	D	F	G	H	J	L	M	N	P	
12	27	28	-	-	6	5	M5	M3	6,5	28,5	-	20	11	1
16	22	23	37	38	6	5	M5	M3	6,5	31	28	28	11	2
20	25	26	40	41	10	8	M5	M5	10	35	32	32	11	2
25	25	26	40	41	10	8	G 1/8	M5	10	44,5	39	37	18	2
32	32	33	47	48	12	10	G 1/8	M6	12	54	48	45	18	3
40	35	36	45	46	16	13	G 1/8	M8	14	60	54,5	54,5	18	4
50	35	36	45	46	16	13	G 1/4	M8	14	72	64	64	22	5
63	37	39	47	49	20	17	G 1/4	M10	15	88	80	80	22	6
80	47	53	57	63	25	22	G 3/8	M12	20	110	100	100	26	8
100	47	53	57	63	25	22	G 3/8	M12	20	134	124	124	26	1

* Magnetic version

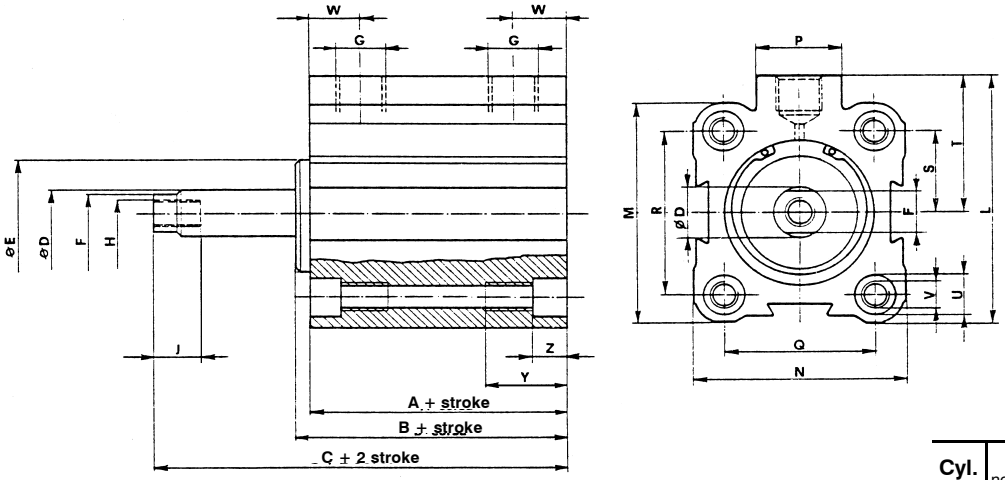
Single-acting cylinder with extended piston rod W 170 . . / W 170 . . M Series



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)
12	0,045	-	1,2
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

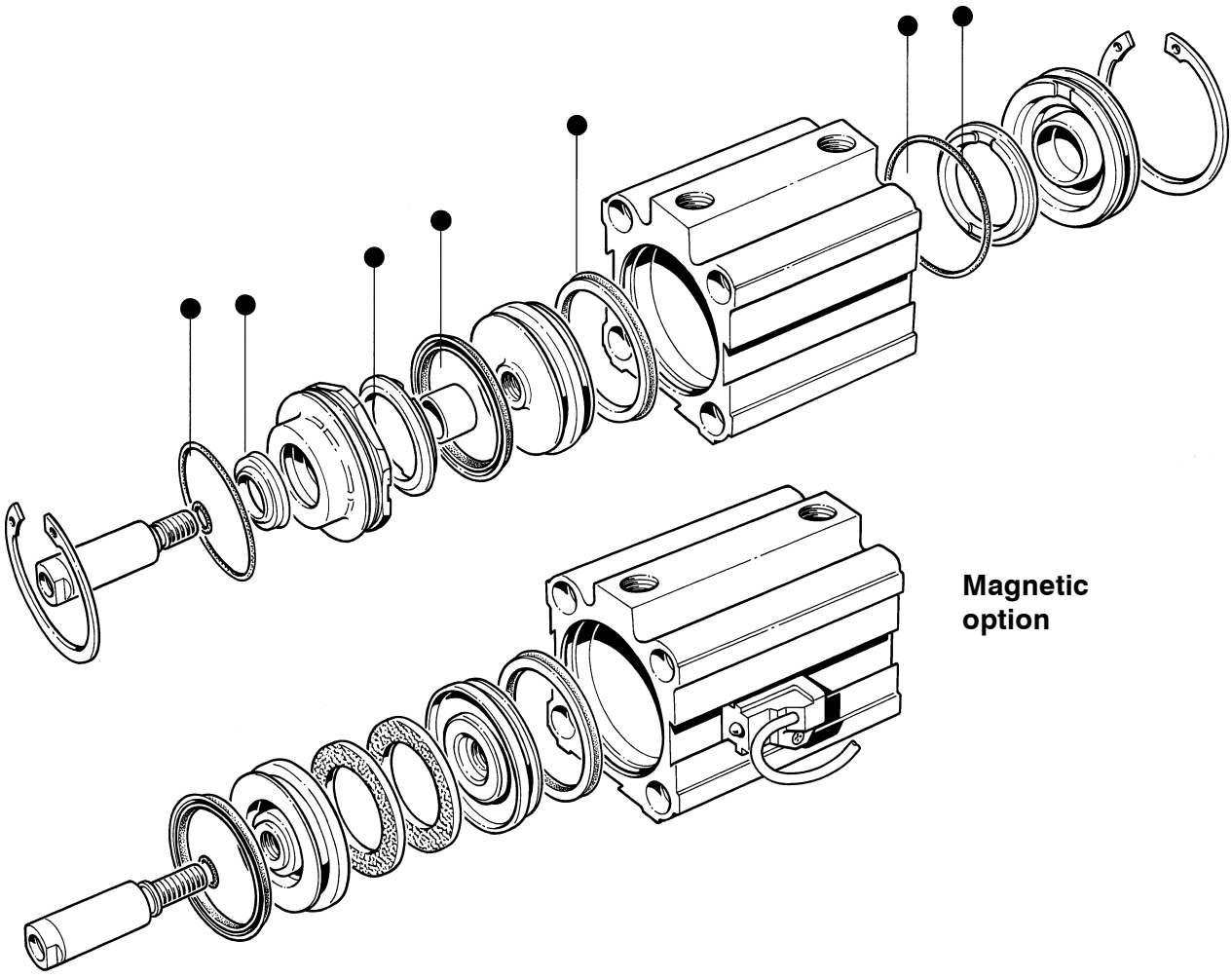
Cyl. Ø	A	B	C ♦	A*	B*	C* ♦	D	E	F	G	H	J	L	M	I
	+ STROKE														
12	32	-	35,5	-	-	-	6	-	5	M5	M3	6,5	28,5	-	2
16	27	-	30,5	42	-	45,5	6	-	5	M5	M3	6,5	31	28	2
20	30	-	37	45	-	52	10	-	8	M5	M5	10	35	32	3
25	30	-	37	45	-	52	10	-	8	G 1/8	M5	10	44,5	39	3
32	32	37	44	47	52	59	12	23	10	G 1/8	M6	12	54	48	4
40	35	42	50	45	52	60	16	29,5	13	G 1/8	M8	14	60	54,5	54
50	35	41,5	50	45	51,5	60	16	35,5	13	G 1/4	M8	14	72	64	6
63	37	45,5	54	47	55,5	64	20	43	17	G 1/4	M10	15	88	80	8
80	47	55	66,5	57	65	76,5	25	50	22	G 3/8	M12	20	110	100	1(
100	47	55	66,5	57	65	76,5	25	56	22	G 3/8	M12	20	134	124	1:

* Magnetic version

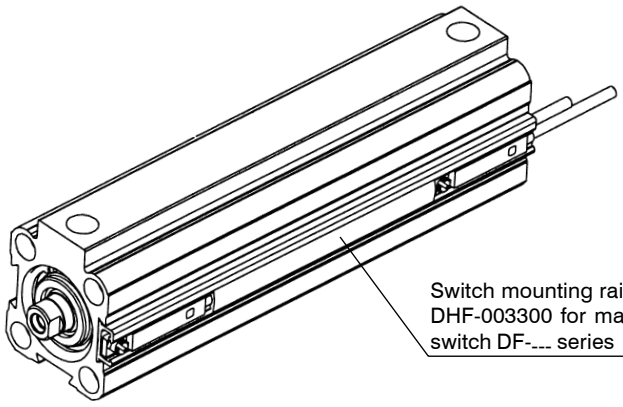
♦ Dimension C is to be used with 2 x stroke

Basic components

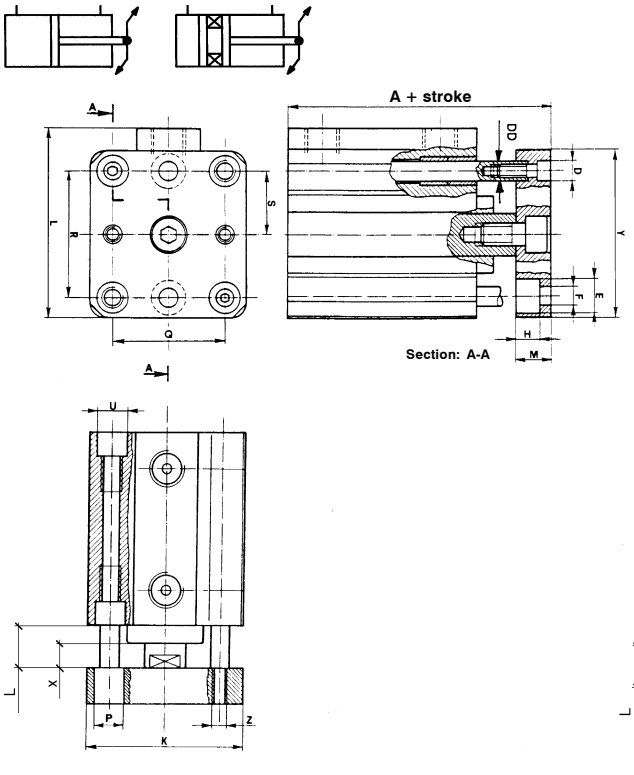
- Seal Kit: **WG-01** + Ø (12 ÷ 100)



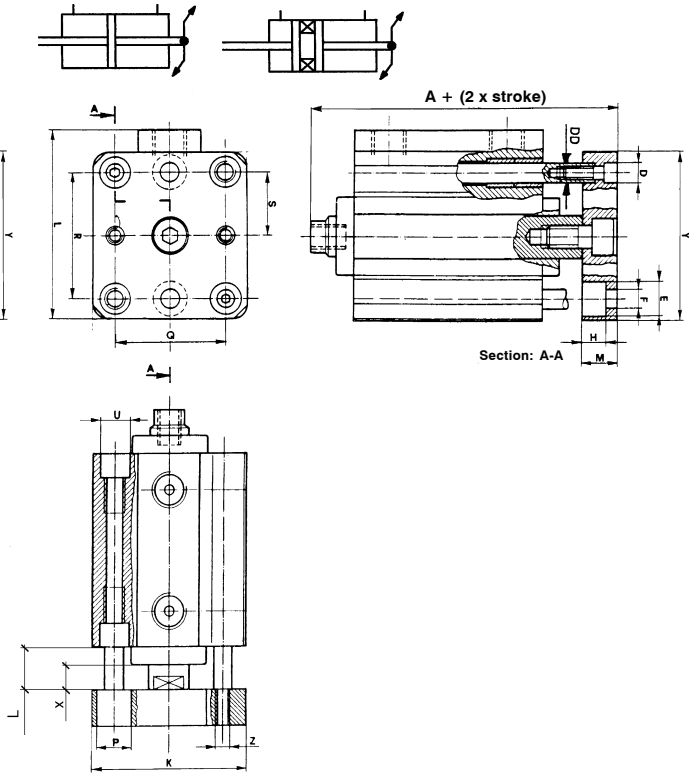
Magnetic option



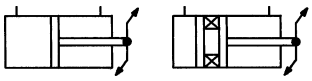
Non-rotating piston rod
W 110 . . / W 110 . . M Series



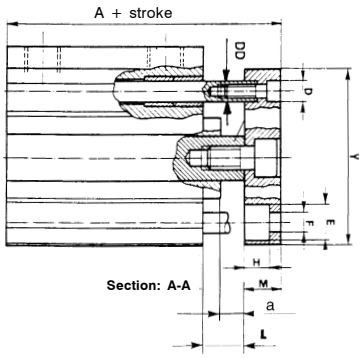
Through non-rotating piston rod
W 111 . . / W 111 . . M Series



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



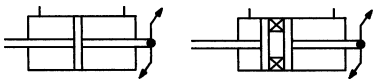
(with safety distance)



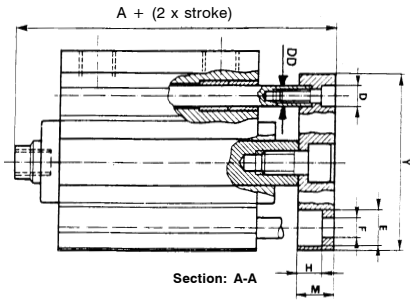
Mass

Cyl.	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

Through non-rotating piston rod
W 111 . . S / W 111 . . SM Series



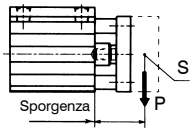
(with safety distance)



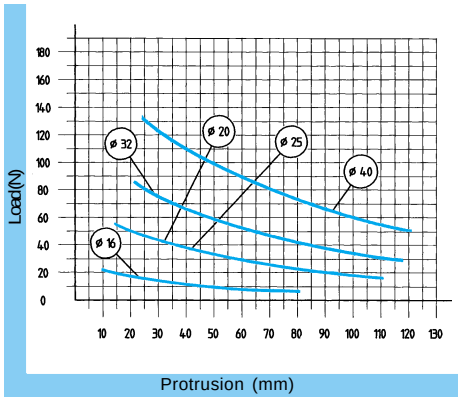
Mass

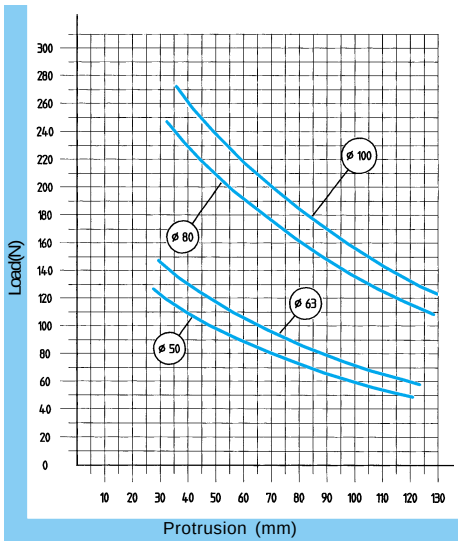
Cyl.	Stroke 0 non-magnetic kg	Stroke 0 magnetic kg	Increase per mm (g)
16	0,104	0,132	1,8
20	0,15	0,175	3,1
25	0,214	0,234	3,95
32	0,392	0,452	5,8
40	0,651	0,686	8,2
50	0,688	0,744	9,2
63	1,11	1,242	14
80	1,905	1,99	21
100	2,785	2,985	26,7

Chart relating to load / protrusion



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



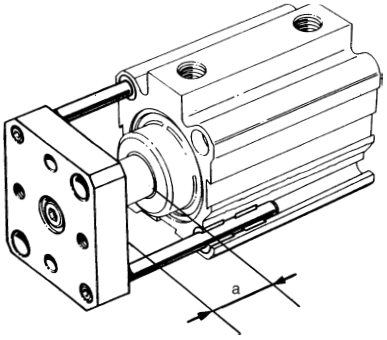


Overall dimensions of non-rotating cylinders

Cyl. Ø	X	L	W110 A + stroke	W111 A + (2 x stroke)	W110M A* + stroke	W111M A* + (2 x stroke)	
16	3,5	3,5	42,5	51	52,5	61	
20	7	7	50	62	60	72	7
25	7	7	50	62	60	72	7
32	7	12	59	76	69	86	
40	8	15	65	85	70	90	1(
50	8,5	15	67	87	72	92	1(
63	8,5	17	71	93	76	98	1:
80	11,5	19,5	85,5	105	90,5	110	1:
100	11,5	19,5	87,5	107	92,5	112	1(

* Magnetic version

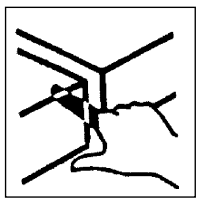
Overall dimensions of cylinder with non-rotating piston rod and safety distance option



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
20	70	82	80	92	27	2
25	70	82	80	92	27	2
32	79	96	89	106	32	2
40	85	105	90	110	35	2
50	87	107	92	112	35	28
63	91	113	96	118	37	28
80	100,5	120	105,5	125	34,5	26
100	102,5	122	107,5	127	34,5	26

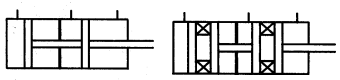
*** Magnetic version**

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



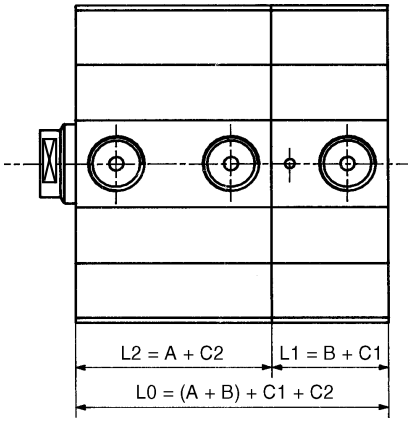
NOTE: for additional dimensions, please refer to models without non-rotating device

Tandem cylinder



W	1A	032	050	M

- M — Magnetic option (upon request)
- 050 — Stroke (C1 and C2)
- 032 — Bore (mm)
- 1A — Tandem with double thrust (output only)
- W — Series



Tandem short stroke 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 = 28 + C1	L0 = 73 + C1 + C2
50	L2 = 45 + C2	L1 = 27,5 + C1	L0 = 72.5 + C1 + C2
63	L2 = 47 + C2	L1 = 29 + C1	L0 = 76 + C1 + C2
80	L2 = 62 + C2	L1 = 38 + C1	L0 = 100 + C1 + C2
100	L2 = 62 + C2	L1 = 38 + C1	L0 = 100 + C1 + C2

Tandem short stroke W series magnetic

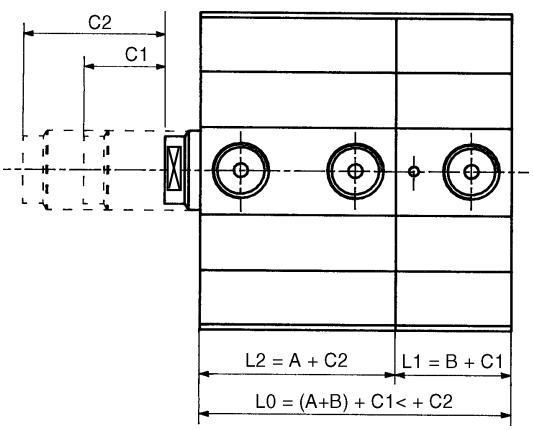
Cyl. Ø	L2 = A + C2	L1 = B + C1	L0 = (A+B) + C1 + C2
16	L2 = 47 + C2	L1 = 37 + C1	L0 = 84 + C1 + C2
20	L2 = 50 + C2	L1 = 40 + C1	L0 = 90 + C1 + C2
25	L2 = 50 + C2	L1 = 40 + C1	L0 = 90 + C1 + C2
32	L2 = 52 + C2	L1 = 38 + C1	L0 = 90 + C1 + C2
40	L2 = 50 + C2	L1 = 38 + C1	L0 = 88 + C1 + C2
50	L2 = 50 + C2	L1 = 37,5 + C1	L0 = 87,5 + 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

W	1B	032	050	090	M

- M — Magnetic option (upon request)
- 090 — Stroke of head cylinder
- 050 — Stroke of rear cylinder (C1)
- 032 — Bore (mm)
- 1B — Option tandem two positions
- W — Series



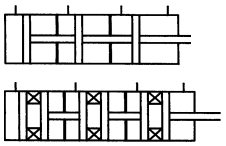
Tandem short stroke two positions W series

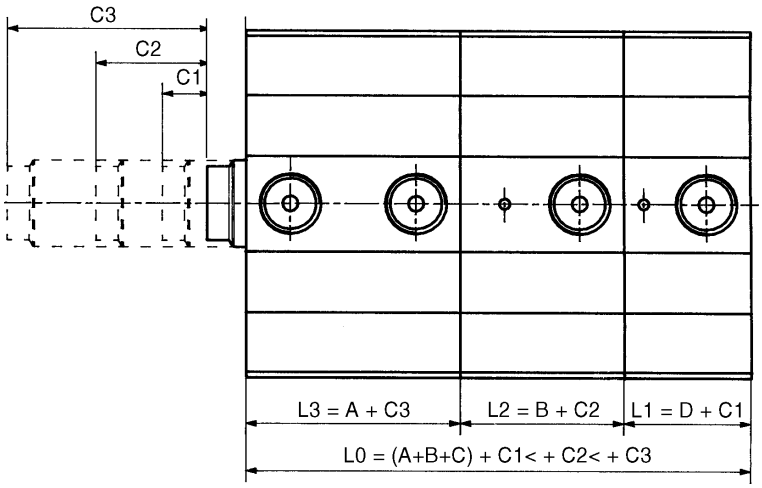
Cyl. Ø	L2 = A + C2	L1 = B + C1	L0 = (A+B) + C1< + C2
16	L2 = 37 + C2	L1 = 22 + C1	L0 = 59 + C1< + C2
20	L2 = 40 + C2	L1 = 25 + C1	L0 = 65 + C1< + C2
25	L2 = 40 + C2	L1 = 25 + C1	L0 = 65 + C1< + C2
32	L2 = 42 + C2	L1 = 23 + C1	L0 = 65 + C1< + C2
40	L2 = 45 + C2	L1 = 28 + C1	L0 = 73 + C1< + C2
50	L2 = 45 + C2	L1 = 27,5 + C1	L0 = 72,5 + C1< + C2
63	L2 = 47 + C2	L1 = 29 + C1	L0 = 76 + C1< + C2
80	L2 = 62 + C2	L1 = 38 + C1	L0 = 100 + C1< + C2
100	L2 = 62 + C2	L1 = 38 + C1	L0 = 100 + 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 = 38 + C1	L0 = 88 + C1< + C2
50	L2 = 50 + C2	L1 = 37,5 + C1	L0 = 87,5 + 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

Cyl. Ø	L3 = A + C3	L2 = B + C2	L1
16	L3 = 37 + C3	L2 = 27 + C2	L1
20	L3 = 40 + C3	L2 = 30 + C2	L1
25	L3 = 40 + C3	L2 = 30 + C2	L1
32	L3 = 42 + C3	L2 = 28 + C2	L1
40	L3 = 45 + C3	L2 = 35 + C2	L1
50	L3 = 45 + C3	L2 = 34,5 + C2	L1
63	L3 = 47 + C3	L2 = 36 + C2	L1
80	L3 = 62 + C3	L2 = 48 + C2	L1
100	L3 = 62 + C3	L2 = 48 + C2	L1

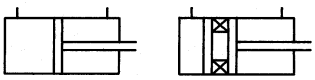
Multiple position tandem short stroke and magnetic option

Cyl. Ø	L3 = A + C3	L2 = B + C2	L1
16	L3 = 47 + C3	L2 = 42 + C2	L1
20	L3 = 50 + C3	L2 = 45 + C2	L1
25	L3 = 50 + C3	L2 = 45 + C2	L1
32	L3 = 52 + C3	L2 = 43 + C2	L1
40	L3 = 50 + C3	L2 = 43 + C2	L1
50	L3 = 50 + C3	L2 = 42,5 + C2	L1
63	L3 = 52 + C3	L2 = 44 + C2	L1
80	L3 = 57 + C3	L2 = 48 + C2	L1
100	L3 = 57 + C3	L2 = 48 + C2	L1

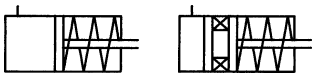
NOTE: options with non-rotating rod are possible
Additional dimensions are reported in W100 ... series at page 84

Rear male hinge

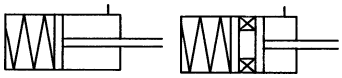
W 700 . . . / W 700 . . . M series

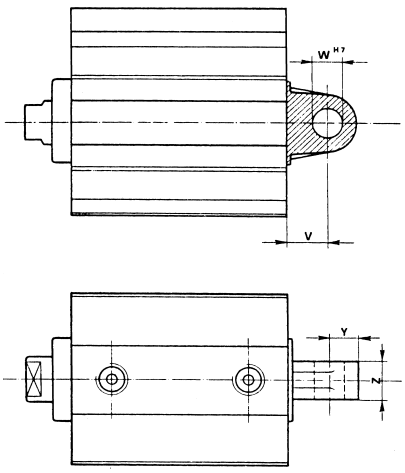


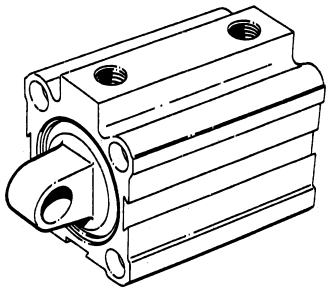
W 760 . . . / W 760 . . . M series



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





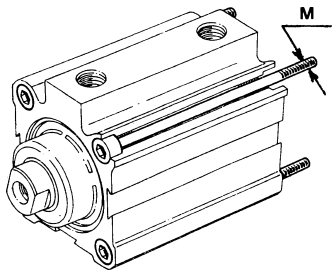


Mass

Cyl. Ø	W700.../W700...M			W760.../W760...M			W770.../W7	
	Stroke 0 non magnetic kg	Stroke 0 magnetic kg	Increase per mm (g)	Stroke 0 non magnetic kg	Stroke 0 magnetic kg	ncrease per mm (g)	Stroke 0 non magnetic kg	Stroke 0 magnetic kg
12	-	-	-	-	-	-	-	-
16	0,082	0,11	1,4	0,067	0,087	1,4	0,078	0,106
20	0,1075	0,1325	2	0,0825	0,0975	2	0,0985	0,1235
25	0,1585	0,1785	2,85	0,119	0,139	2,85	0,145	0,165
32	0,2765	0,3355	4,06	0,2375	0,2965	4,06	0,2555	0,3155
40	0,4705	0,5065	5,47	0,4025	0,4385	5,47	0,442	0,4785
50	0,417	0,473	6,4	0,349	0,405	6,4	0,379	0,435
63	0,6815	0,8135	9,7	0,5745	0,7565	9,7	0,6315	0,9135
80	1,2385	1,3235	14,85	1,0685	1,1535	14,85	1,1525	1,2375
100	1,775	1,975	19,7	1,545	1,745	19,7	1,631	1,831

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

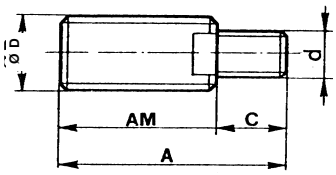
Fixing screws

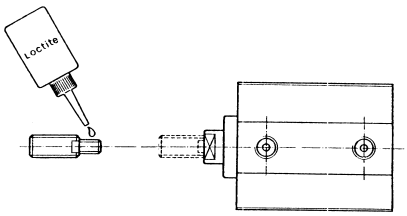


Cyl. Ø	12	16*	20	25	32	40	50	63	80	100
M	3	3	4	4	5	5	6	8	8	10

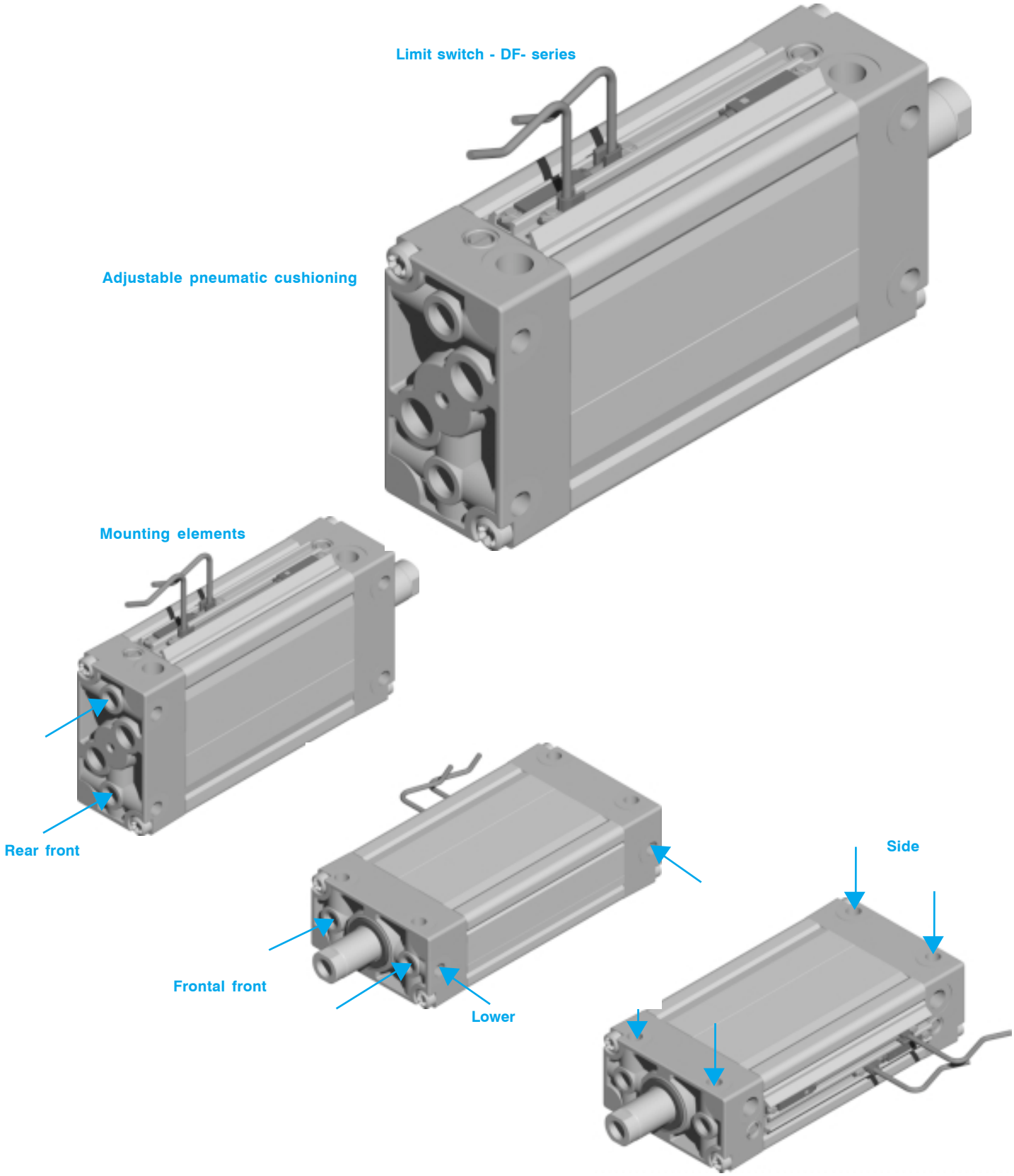
*** Magnetic version only for bore 16, the fixing screws have to be of the non magnetic type.**

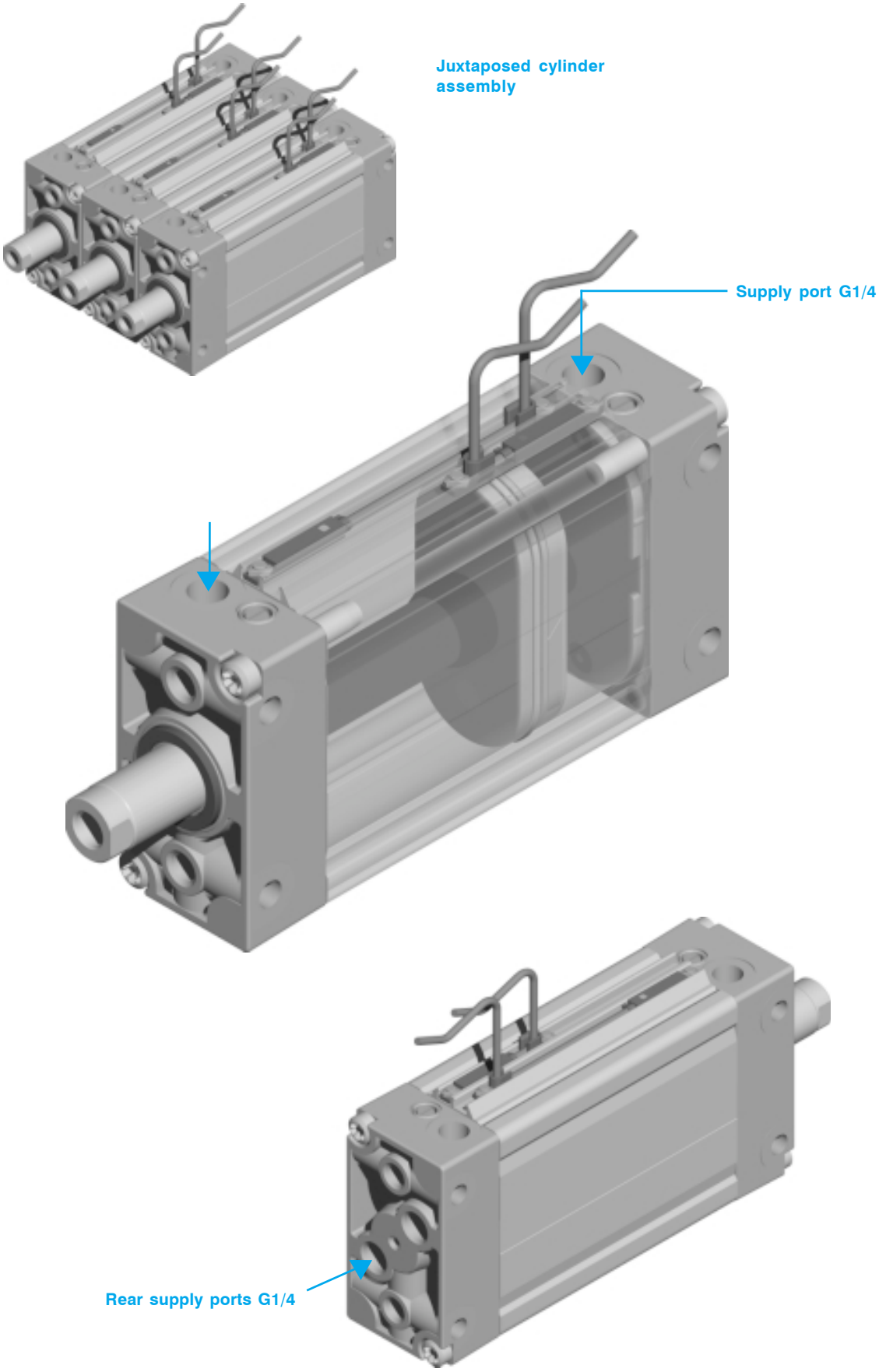
Nipple





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


Magnetic version standard
Limit switch - DF- series
Adjustable pneumatic cushioning
Mounting elements
Rear front
Frontal front
Lower
Side


Juxtaposed cylinder assembly
Supply port G1/4
Rear supply ports G1/4

Compact oval cylinder with standard adjustable pneumatic cushioning and non-rotating piston-rod; its shape allows the assembly of several coupled cylinders with small 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
Rod: chromium-plated steel
Adjustable cushioning
Magnetic version
Non-rotating piston rod
Max. speed: 1 m/s
Cylinder assembly without mounting elements with mounting possibilities:
front, rear, lower, side.

For the assembly of several coupled cylinders pay attention to the type of sensor.

Upon request:
- Versions with stainless steel rod.
- Magnetic sensor DF series (Section accessories page 2).
- Wire cover strap for magnetic sensor.

Theoretical forces [N] developed at the following working pressures [bar]

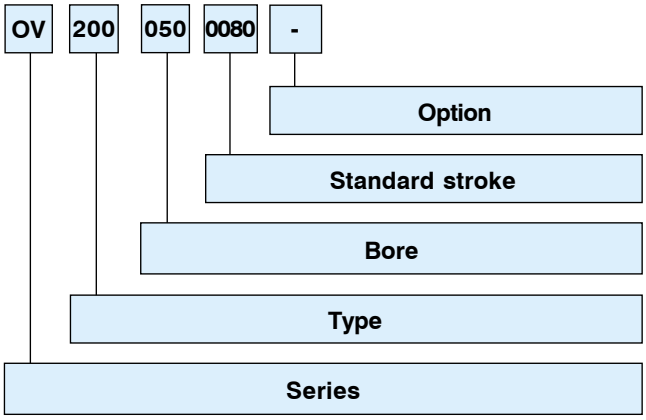
Cyl. Ø	Useful surface [mm²]		Working pressure [bar] 2	4	6	8	10
50	Spinta	1962	393	785	1178	1570	1963
	trazione	1762	352	704	1057	1409	1762
63	Spinta	3116	623	1246	1869	2493	3116
	trazione	2916	583	1166	1749	2332	2916

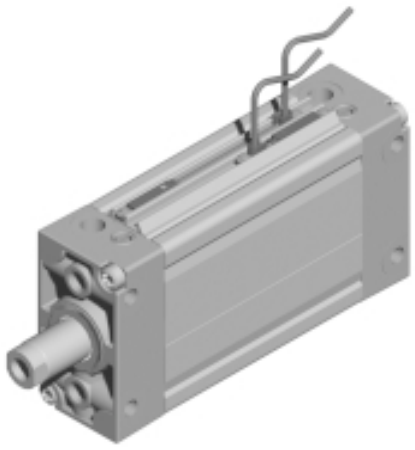
In the case of pneumatic cylinders with through rod, the theoretical force to be considered, in both directions, is always the same as the “traction” value indicated in the table.
In practice these values will have to be reduced taking into account the weight and sliding friction of the moving parts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

Maximum applicable torque [Nm]

Cyl. Ø	A	B
50	1,2	0,5°
63	1,5	0,4°

Codification key





SERIES

Oval cylinder with cushioning, magnetic version

TYPE

2___ Piston rod in chromium-plated steel
-00 D.A.
-01 D.A. through piston rod
-02 D.A. hollow through piston rod
-03 D.A. rear supply

1___ Piston rod in stainless steel

4___ Male piston rod in chromium-plated steel
_00 D.A.
_01 D.A. through piston rod
_02 D.A. hollow through piston rod
_03 D.A. rear supply

3___ Piston rod in stainless steel

BORE

050 ÷ 063

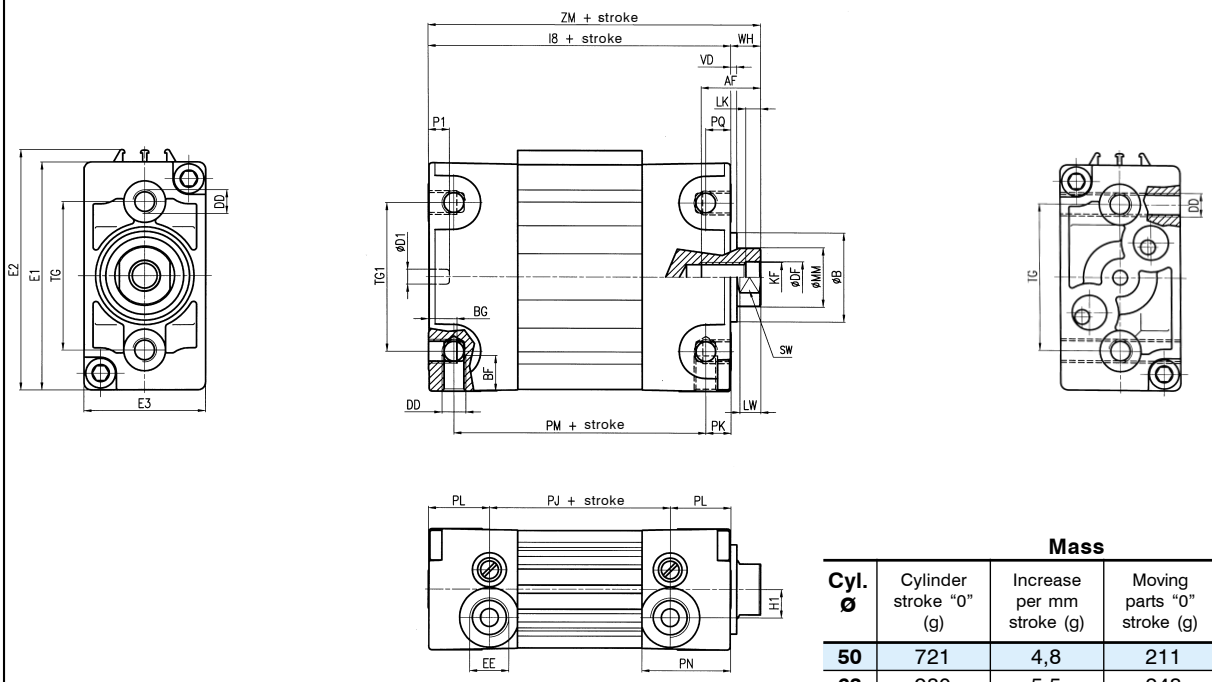
CORSA STANDARD

0010-0025-0040-0050-0080-0100-0125-0160-0200
0250-0320

OPTION

L = for side assembly

Double-acting cylinder with female rod OV-200___ series

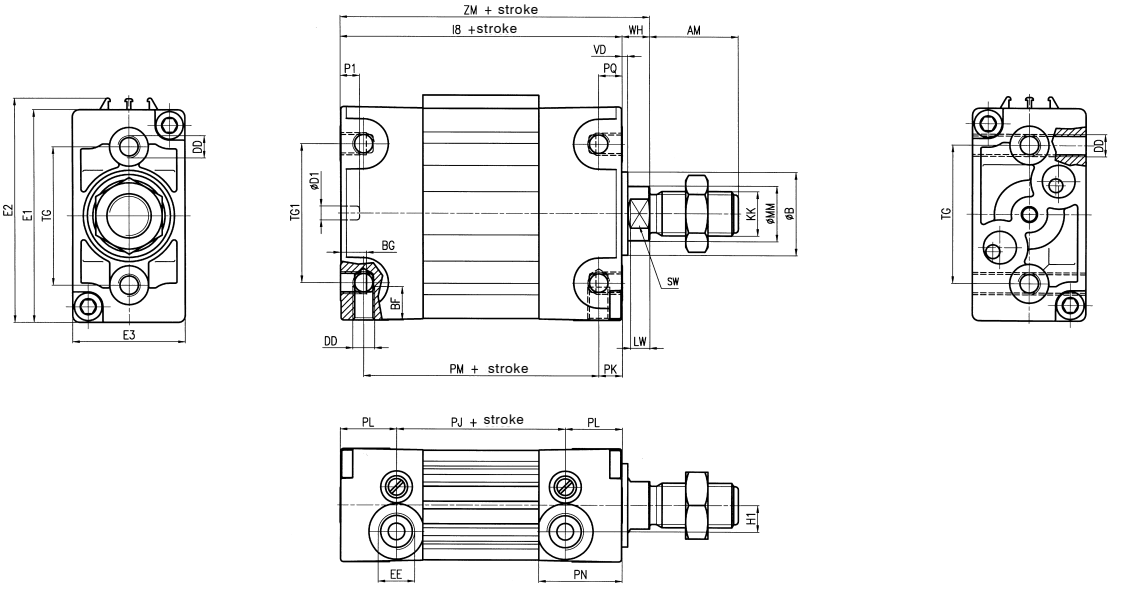


Mass

Cyl. Ø	Cylinder stroke "0" (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
50	721	4,8	211	2,5
63	980	5,5	248	2,5

Cyl. Ø	AF	ØB f9	BF	BG	ØD1 H9	DD	ØDF	E1	E2	E3	EE	H1	I8	KF	LK	LW	Ø MM	P1	PJ	PK	PKL	PM	PN	PQ	SW	TG	TG1	VD	WH	ZM
50	20	30	12	9,5	5	M8	10,5	77	81	41	G1/4	9,5	82	M10	5	7	20	7	41	8,5	20,5	65	30	8,5	17	50	50	2	10	92
63	20	30	14	10,5	5	M10	10,5	92	97	50	G1/4	10,5	82	M10	5	7	20	7	41	8,5	20,5	65	30	8,5	17	60	60	2	10	92

Double-acting cylinder with male rod OV-400___ series

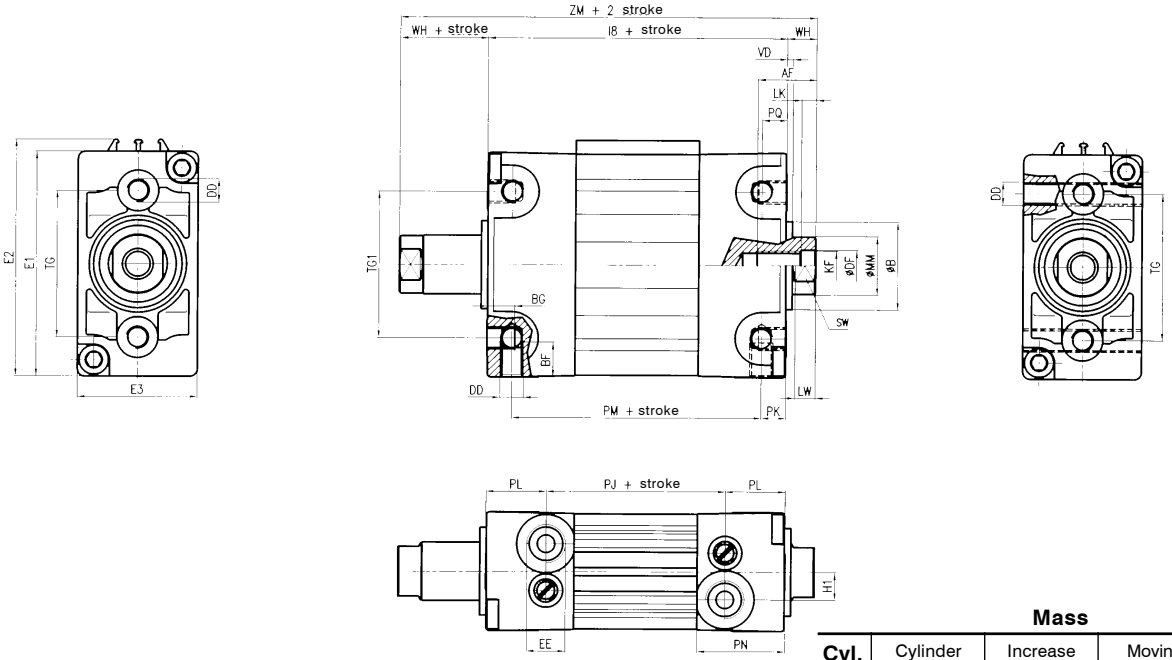


Mass

Cyl. Ø	Cylinder stroke "0" (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
50	803	4,8	272	2,5
63	1062	5,5	310	2,5

Cyl. Ø	AM	ØB f9	BF	BG	ØD1 H9	DD	E1	E2	E3	EE	H1	I8	KK	LW	Ø MM	P1	PJ	PK	PL	PM	PN	PQ	SW	TG	TG1	VD	WH	ZM
50	32	30	12	9,5	5	M8	77	81	41	G1/4	9,5	82	M16x1,5	7	20	7	41	8,5	20,5	65	30	8,5	17	50	50	2	10	92
63	32	30	14	10,5	5	M10	92	97	50	G1/4	10,5	82	M16x1,5	7	20	7	41	8,5	20,5	65	30	8,5	17	60	60	2	10	92

Double-acting cylinder female through piston rod OV-201___ series

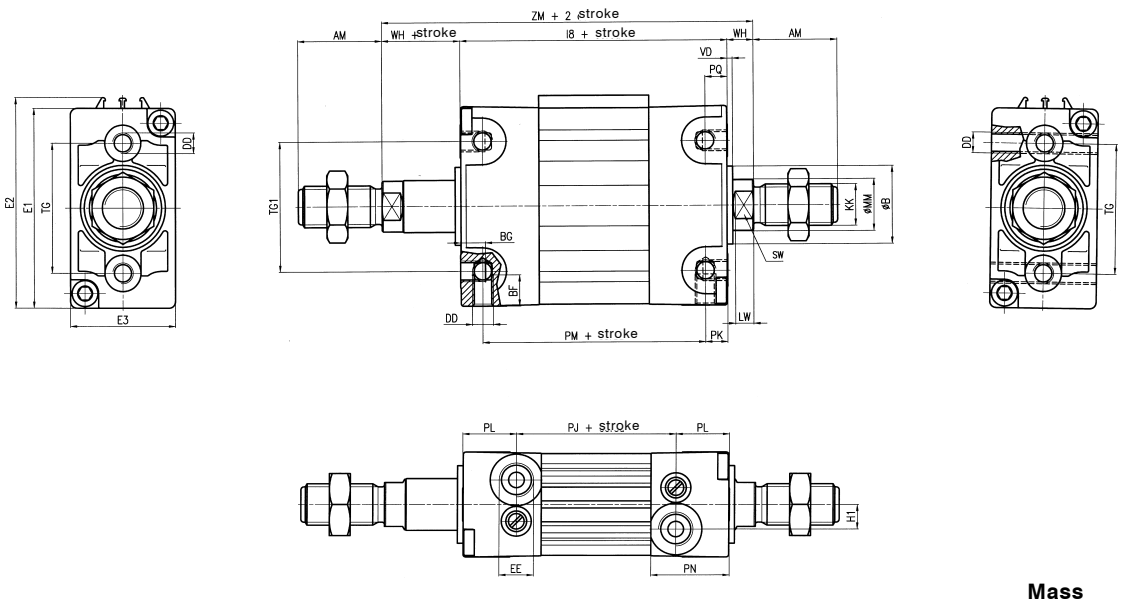


Mass

Cyl. Ø	Cylinder stroke "0" (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
50	818	7,3	264	5
63	1066	8	302	5

Cyl. Ø	AF	ØB f9	BF	BG	DD	ØDF	E1	E2	E3	EE	H1	I8	KF	LK	LW	Ø MM	PJ	PK	PL	PM	PN	PQ	SW	TG	TG1	VD	WH	ZM
50	20	30	12	9,5	M8	10,5	77	81	41	G1/4	9,5	82	M10	5	7	20	41	8,5	20,5	65	30	8,5	17	50	50	2	10	102
63	20	30	12	10,5	M10	10,5	92	97	50	G1/4	10,5	82	M10	5	7	20	41	8,5	20,5	65	30	8,5	17	60	60	2	10	102

Double-acting cylinder male through piston rod OV-401___ series

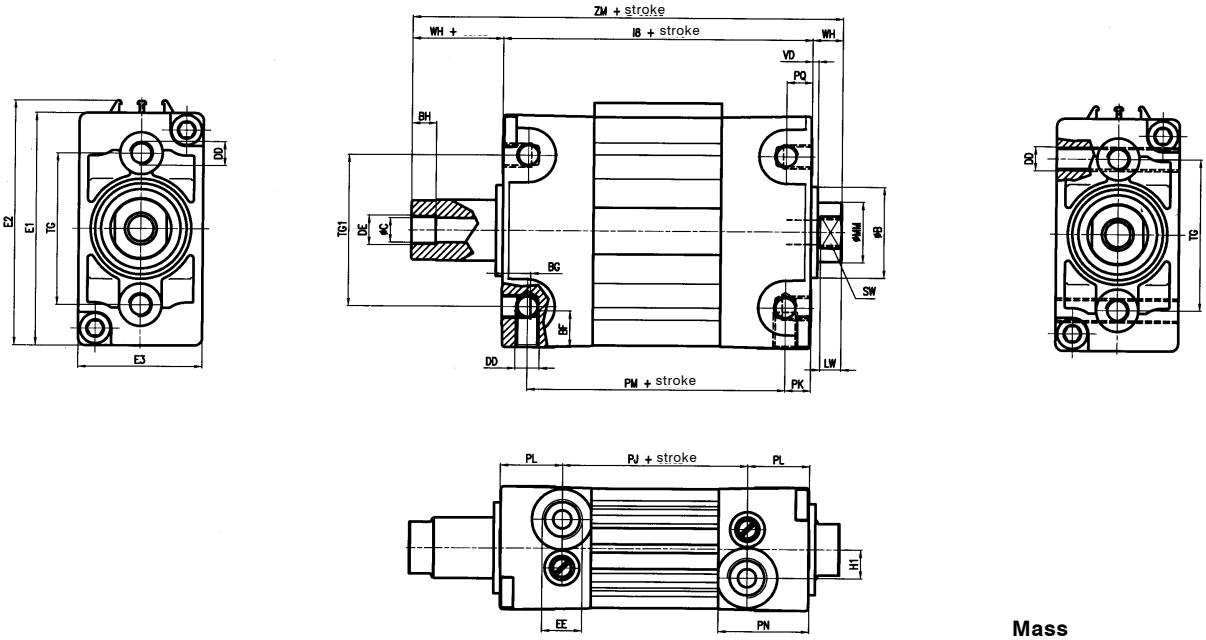


Mass

Cyl. Ø	Cylinder stroke "0" (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
50	983	7,3	387	5
63	1227	8	425	5

Cyl. Ø	AM	ØB f9	BF	BG	DD	E1	E2	E3	EE	H1	I8	KK	LW	Ø MM	PJ	PK	PL	PM	PN	PQ	SW	TG	TG1	VD	WH	ZM
50	32	30	12	9,5	M8	77	81	41	G1/4	9,5	82	M16x1,5	7	20	41	8,5	20,5	65	30	8,5	17	50	50	2	10	102
63	32	30	14	10,5	M10	92	97	50	G1/4	10,5	82	M16x1,5	7	20	41	8,5	20,5	65	30	8,5	17	60	60	2	10	102

Double-acting cylinder female hollow through piston-rod OV-202___ series

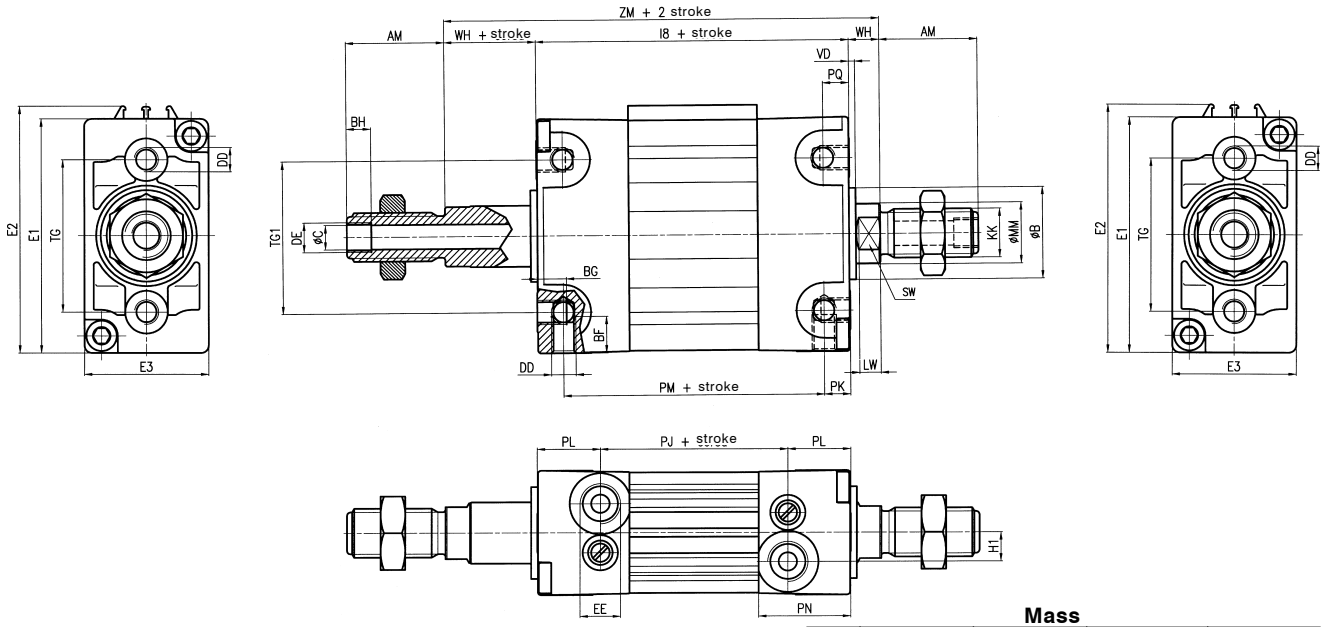


Mass

Cyl. Ø	Cylinder stroke "0" (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
50	802	6,3	248	4
63	1048	7	287	4

Cyl. Ø	ØB f9	BF	BH	BG	ØC	DD	DE	E1	E2	E3	EE	H1	I8	LW	ØMM	PJ	PK	PL	PM	PN	PQ	SW	TG	TG1	VD	WH	ZM
50	30	12	8	9,5	8	M8	G1/8	77	81	41	G1/4	9,5	82	7	20	41	8,5	20,5	65	30	8,5	17	50	50	2	10	102
63	30	12	8	10,5	8	M10	G1/8	92	97	50	G1/4	10,5	82	7	20	41	8,5	20,5	65	30	8,5	17	60	60	2	10	102

Double-acting cylinder male hollow through piston-rod OV___402 series

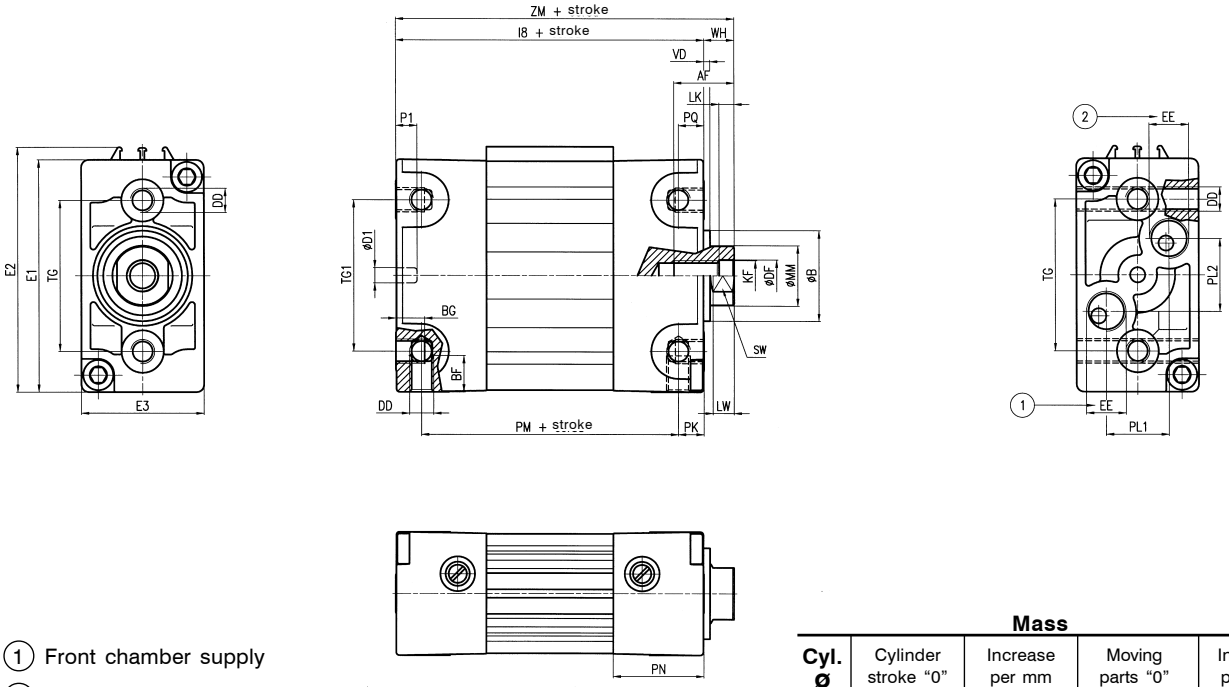


Mass

Cyl. Ø	Cylinder stroke "0" (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
50	916	6,3	320	4
63	1161	7	360	4

Cyl. Ø	AM	ØB f9	BF	BG	BH	ØC	DD	DE	E1	E2	E3	EE	H1	I8	KK	LW	Ø MM	PJ	PK	PL	PM	PN	PQ	SW	TG	TG1	VD	WH	ZM
50	32	30	12	9,5	8	8	M8	G1/8	77	81	41	G1/4	9,5	82	M16x1,5	7	20	41	8,5	20,5	65	30	8,5	17	50	50	2	10	102
63	32	30	14	10,5	8	8	M10	G1/8	92	97	50	G1/4	10,5	82	M16x1,5	7	20	41	8,5	20,5	65	30	8,5	17	60	60	2	10	102

Female piston rod rear supply OV-203___ series



(1) Front chamber supply

(2) Rear chamber supply

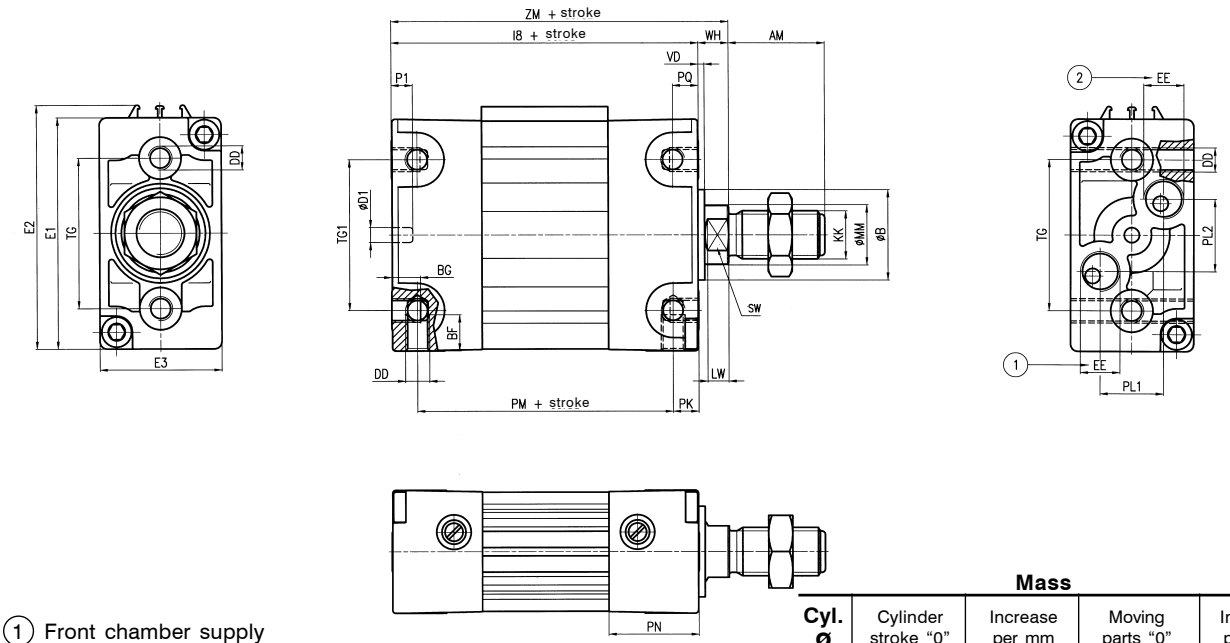
Mass

Cyl. Ø	Cylinder stroke "0" (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
50	735	4,8	211	2,5
63	1001	5,5	248	2,5

Overall dimensions

Cyl. Ø	AM	ØB f9	BF	BG	ØD1 H9	DD	ØDF	E1	E2	E3	EE	I8	KF	LK	LW	Ø MM	P1	PK	PL1	PL2	PM	PN	PQ	SW	TG	TG1	VD	WH	ZM
50	20	30	12	9,5	5	M8	10,5	77	81	41	G1/4	82	M10	5	7	20	7	8,5	21	24	65	30	8,5	17	50	50	2	10	92
63	20	30	14	10,5	5	M10	10,5	92	97	50	G1/4	82	M10	5	7	20	7	8,5	21	24	65	30	8,5	17	60	60	2	10	92

Male piston rod rear supply OV-403___ series



(1) Front chamber supply

(2) Rear chamber supply

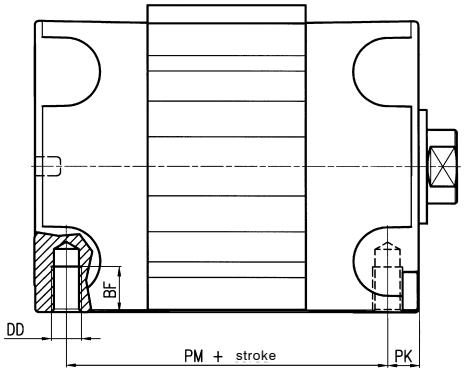
Mass

Cyl. Ø	Cylinder stroke "0" (g)	Increase per mm stroke (g)	Moving parts "0" stroke (g)	Increase per mm stroke (g)
50	818	4,8	272	2,5
63	1084	5,5	310	2,5

Overall dimensions

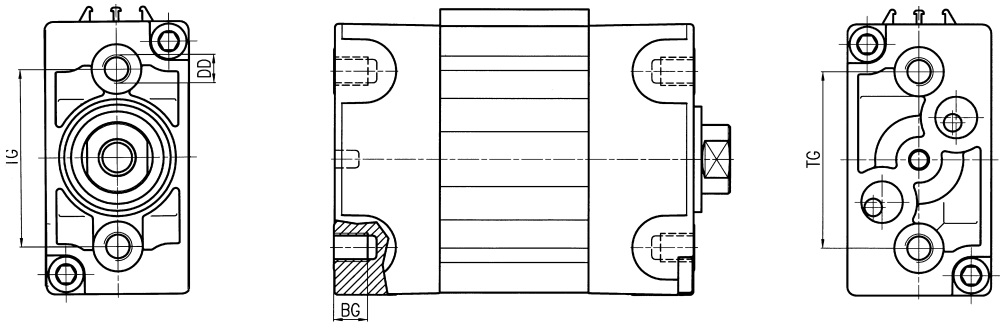
Cyl. Ø	AM	ØB f9	BF	BG	ØD1 H9	DD	E1	E2	E3	EE	I8	KK	LW	Ø MM	P1	PK	PL1	PL2	PM	PN	PQ	SW	TG	TG1	VD	WH	ZM
50	32	30	12	9,5	5	M8	77	81	41	G1/4	82	M16X1,5	7	20	7	8,5	21	24	65	30	8,5	17	50	50	2	10	92
63	32	30	14	10,5	5	M10	92	97	50	G1/4	82	M16X1,5	7	20	7	8,5	21	24	65	30	8,5	17	60	60	2	10	92

Lower fixing - option I



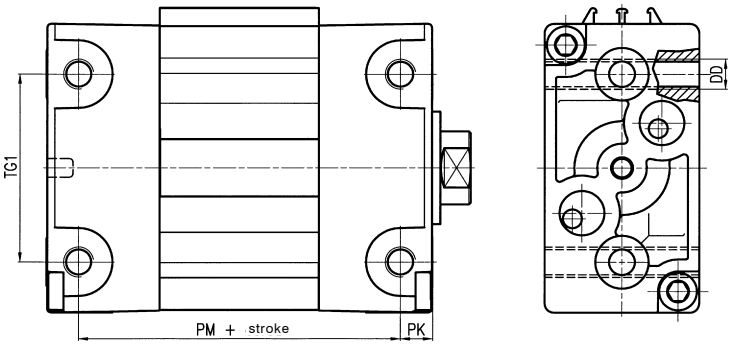
Cyl. Ø	BF	DD	PM	PK
50	12	M8	65	8,5
63	14	M10	65	8,5

Frontal and rear front fixing - option P



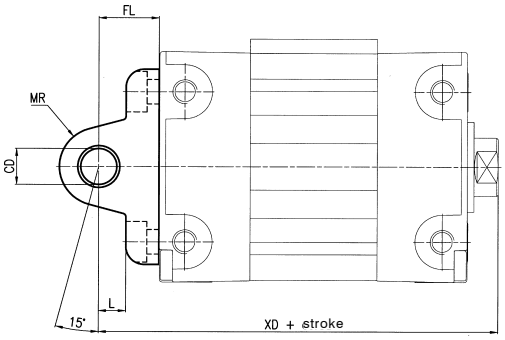
Cyl. Ø	BG	DD	TG
50	9,5	M8	50
63	10,5	M10	60

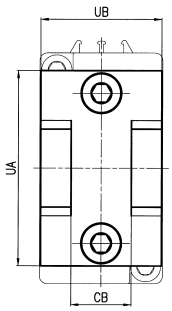
Side fixing - option L



Cyl. Ø	DD	PM	PK	TG1
50	M8	65	8,5	50
63	M10	65	8,5	60

Rear female hinge with pin

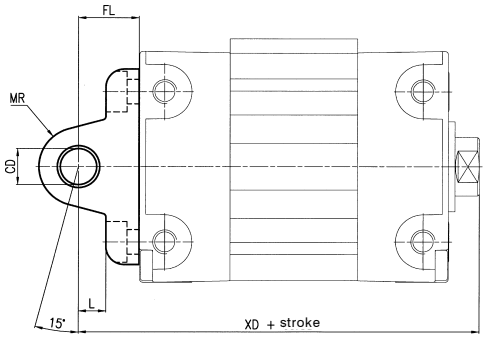


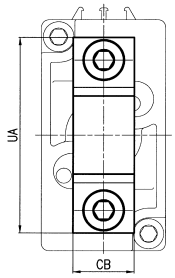


Overall dimensions

Cyl. Ø	CB H14	CD H9	FL	L	MR	UA	UB	XD	Part number	Mass g.
50	20	12	20	9	13	65	40	112	**OVF-10050A**	118,5
63	25	16	24	13	17	80	50	116	**OVF-10063A**	208

Rear male hinge

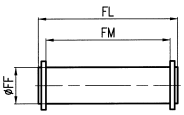




Overall dimensions

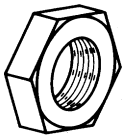
Cyl. ØH14	CB H9	CD	FL	L	MR	UA	XD	Part number	Mass g.
50	20	12	20	9	13	65	112	**OVF-11050**	81
63	25	16	24	13	17	80	116	**OVF-11063**	151

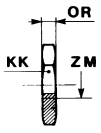
Pin in zinc-plated steel with 2 circlips



Cyl. Ø	Ø FF f8	FL	FM	Part number	Mass g.
50	12	46	41	**OVF-18050**	41
63	16	56	51	**OVF-18063**	89

Rod nut in zinc-plated steel





Cyl. Ø	ZM	KK	OR	Part number
50	M16 x 1,5	24	8	**KF-16050**
63	M16 x 1,5	24	8	