

CHARACTERISTICS

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

End-caps	aluminium, crimped on barrel
Barrel	stainless steel
Piston	brass (Ø8÷16), aluminium (Ø20-25)
Guide slide	acetalic resin
Piston rod	stainless steel
Piston seal	NBR
Guide bush for piston rod	standard supplied
Shock absorber seals	NBR
Cushionings	pneumatic adjustable (Ø16÷25)


CODIFICATION KEY

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

1 Series	2 Type	3 Version
M = Ø8÷25 mm - ISO 6432 Microcylinders	1 = Stainless steel piston rod (standard version) 2 = Chromium-plated steel piston rod (to be used only with locking unit) 3 = Reduced version with stainless steel piston rod	00 = D.A. Standard version 01 = D.A. Through piston rod 50 = D.A. With adjustable cushionings (Ø16÷25) 51 = D.A. Through piston rod with adjustable cushionings (Ø16÷25) 60 = S.A. Retracted piston rod (Ø10÷25), Max stroke 50 mm 70 = S.A. Extended piston rod (Ø16÷25), Max stroke 25 mm

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

4 Bore (mm)	5 Stroke (mm)	6 Option	7 Magnetic
008 = Ø8 010 = Ø10 012 = Ø12 016 = Ø16 020 = Ø20 025 = Ø25	0010 = 10 0080 = 80 0020 = 20 0100 = 100 0025 = 25 0125 = 125 0030 = 30 0150 = 150 0040 = 40 0160 = 160 0050 = 50 0175 = 175 0075 = 75 0200 = 200	0250 = 250 0300 = 300 0320 = 320 0400 = 400 0500 = 500	F = Preset for locking unit reduced protrusion M = Magnetic version (Ø10÷25)

M190 version with high temperature seals (Max 120°C) available upon request

FIXING ELEMENTS AND ACCESSORIES

Ø	Female fork with clips	Articulated self-lubricating fork	Fork with axially mounted articulated pin	Fork with angle mounted articulated pin	Floating joint	Female rear hinge	Angle bracket	Flange	Nut for end-cap	Holder for DF sensor	DF sensor
8											
10	MF-15008	MF-17008	-	-	-	MF-21008	MF-13008	MF-12008	MF-20008	-	DF
12	MF-15012	MF-17012	MF-22016	MF-23012	MF-24012	MF-21012	MF-13012	MF-12012	MF-20012	DH-M10DF	
16	MF-15012	MF-17012	MF-22016	MF-23012	MF-24012	MF-21016	MF-13012	MF-12012	MF-20012	DH-M12DF	
20	MF-15020	MF-17020	MF-22020	MF-23020	MF-24020	MF-21020	MF-13020	MF-12020	MF-20020	DH-M16DF	
25	KF-15032	KF-17032	KF-22025	KF-23025	KF-24032	MF-21020	MF-13020	MF-12020	MF-20020	DH-M20DF	

Ø	Holder for DH sensor	DH sensor
8		
10	DH-M10	DH
12	DH-M12	
16	DH-M16	
20	DH-M20	
25	DH-M25	

Through piston rod

Reduced version with adjustable cushionings




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

TECHNICAL CHARACTERISTICS

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

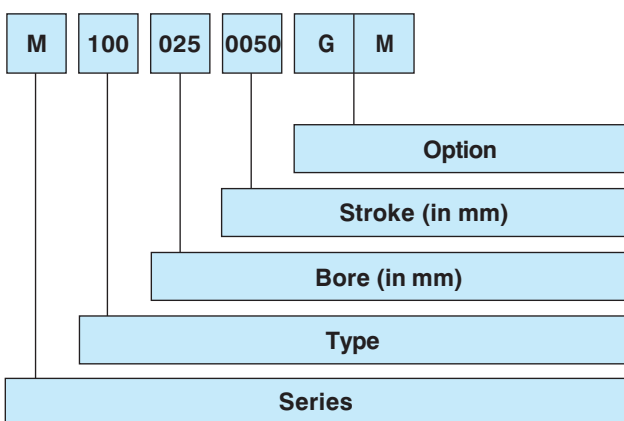


Upon request

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



Codification key



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

SERIES

M = microcylinders Ø 8 ÷ 25 mm

TYPE

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

BORE

Ø 008 - 010 - 012 - 016 - 020 - 025

STROKE

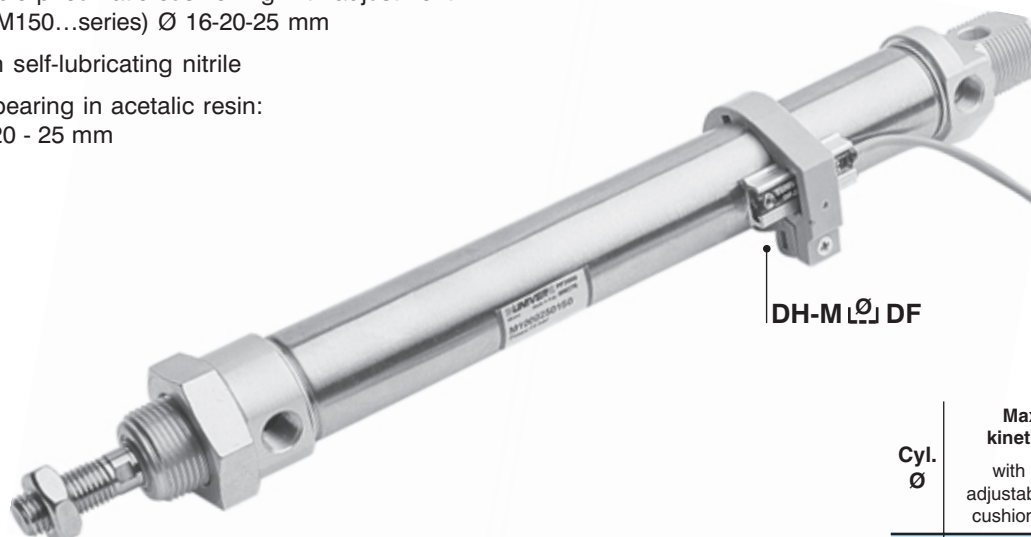
0010-0020-0025-0030-0040-0050-0075-0080-0100-0125-0150-0160-0175-0200-0250-0300-0320-0400-0500

OPTION

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

Main construction features

- Stainless steel barrel AISI 304.
- Anodized aluminium extrusion heads, crimped on the barrel
- Mechanical rubber shock absorbers standard mounted on heads (M100... series) 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	Increase by mm (g)	Stroke 0	Increase by mm (g)				
10	10 - 25 40 - 50		6,9	7,6	5,8	7,6	4,7	7,6	4	7,6	0,009	0,1	0,038	0,23
12	10 - 25 40 - 50		8,1	8,7	7,3	8,7	6,5	8,7	5,9	8,7	0,023	0,22	0,079	0,38
16	10 - 25 40 - 50	10 - 25	14,4	16	11,9	16	9,4	16	7,8	16	0,026	0,22	0,085	0,43
20	10 - 25 40 - 50	10 - 25	18,6	20	16,5	20	14,4	20	13	20	0,045	0,4	0,167	0,66
25	10 - 25 40 - 50	10 - 25	21,8	23,5	19,3	23,5	16,7	23,5	15	23,5	0,08	0,62	0,238	0,95

Double-acting microcylinder


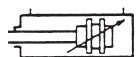


Cyl. Ø	Standard strokes (preferable values according to UNI 4393 in black)	Thrust force (min) at 6 bar (N)	Traction force at 6 bar (N)	Mass of moving parts		Cylinder mass		Length of decel. mm (g)
				Stroke 0 (kg)	Increase by mm (g)	Stroke 0 (kg)	Increase by mm (g)	
8	10 20 25 30 40 50 75 80 100 125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

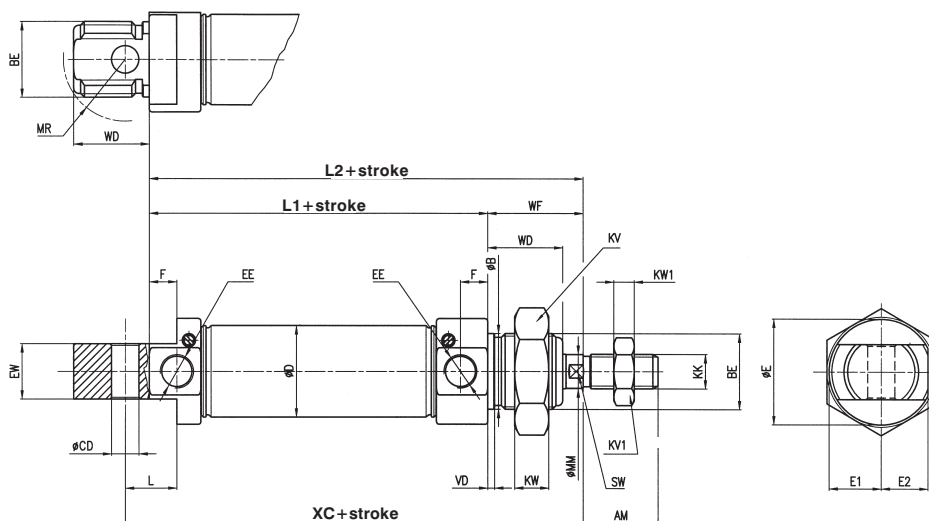
- Version with pneumatic cushioning

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

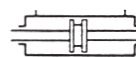
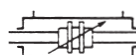


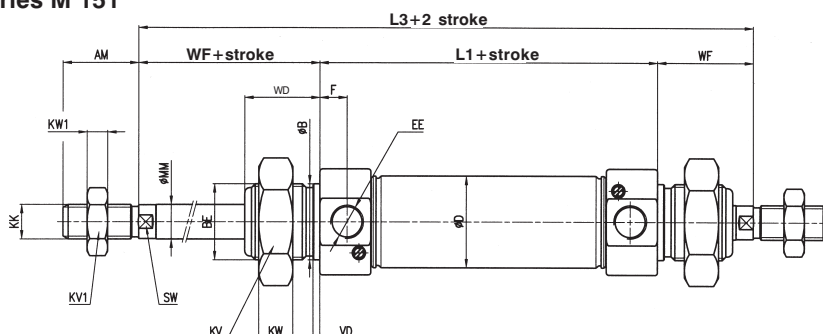
Double/single-acting cylinder

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




Double-acting through rod cylinder

-  **Series M 101**
-  **Series M 151**



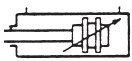
Cyl. Ø	AM	B	Ø BA	BE	CD	D	Ø E	E1	E2	* EE	EW	KV	KV1
		h 10			H9						d 13		
8	12	12		M12 x 1,25	4	9,3	14	8	8,5	M5 x 0,8	8	19	7
10	12	12		M12 x 1,25	4	11,3	14	8	8,5	M5 x 0,8	8	19	7
12	16	16		M16 x 1,5	6	13,3	17	9,5	10	M5 x 0,8	12	24	10
16	16	16	16	M16 x 1,5	6	17,3	20,8	10,4	9,6	M5 x 0,8	12	24	10
20	20	22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

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

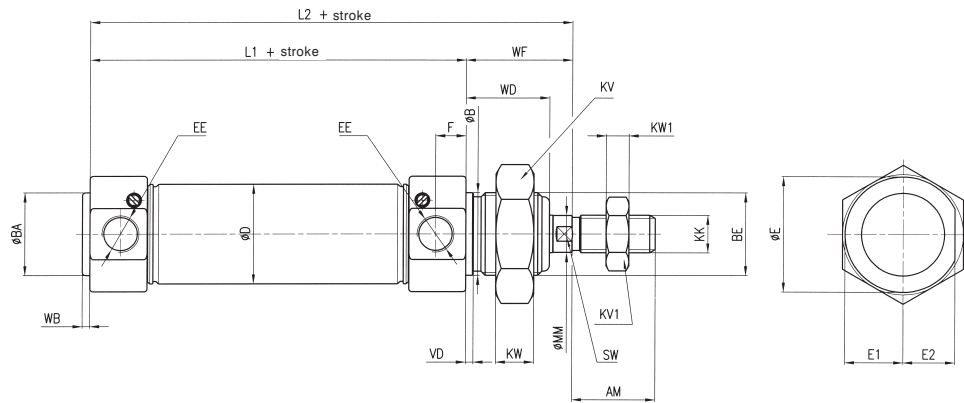
* The series with dimensions in inches is chosen in compliance with UNI-ISO 228/1 standard



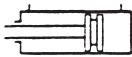
Double-acting cylinder Series 350 with cushioning Ø 16-20-25 mm



Series M 350

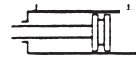


Double acting cylinder with standard air supply Ø 10 ÷ 25 mm



Series M 300

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



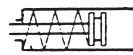
Series M 500

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



Series M 360

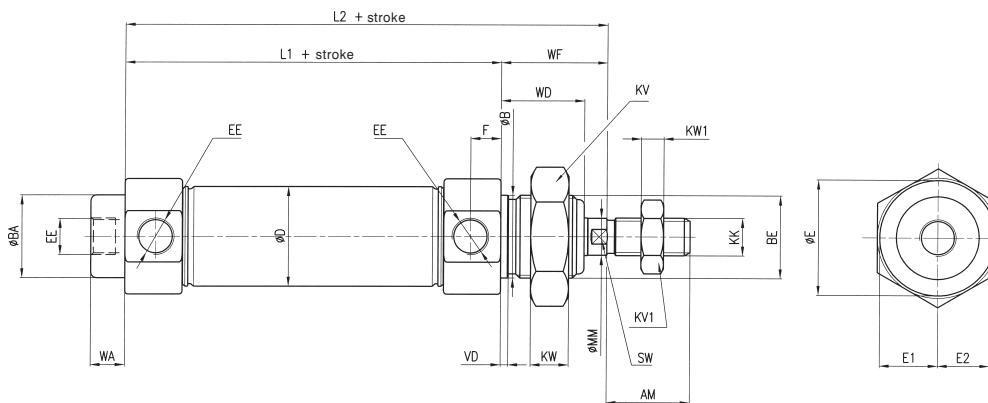
Single-acting cylinder retracted piston-rod with rear supply Ø 10 ÷ 25 mm



Series M 560



Series M 370

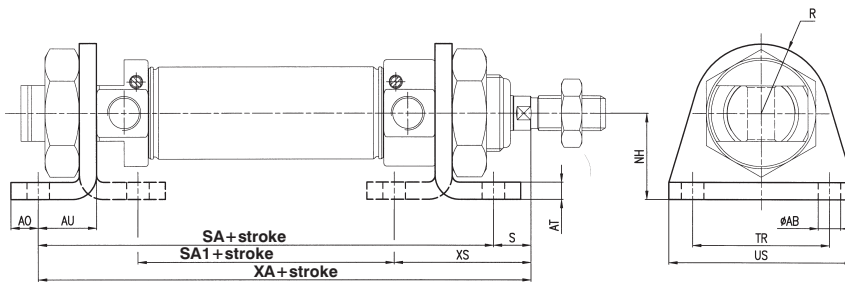


Cyl. Ø	AM	B h10	BA Ø	BE	D	E Ø	E1	E2	*EE	KV	KV1
10	12	12	12	M12 x 1,25	11,3	15,8	7,9	7,2	M5 x 0,8	19	7
12	16	16	16	M16 x 1,5	13,3	18,8	9,4	8,7	M5 x 0,8	24	10
16	16	16	16	M16 x 1,5	17,3	20,8	10,4	9,6	M5 x 0,8	24	10
20	20	22	22	M22 x 1,5	21,6	27,7	13,85	12	G 1/8	32	13
25	22	22	22	M22 x 1,5	26,6	30,7	15,35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

Cyl Ø	F	KK Z	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	4,5		17	22
16	5,5	M6 x 1	8	4	56	78	6	5	1,5	5,5	1,5	17	22
20	8	M8 x 1,25	10	5	68	92	8	7	2	5,5	2	19	24
25	8	M10 x 1,25	10	6	69	97	10	9	2	9	2	22	28

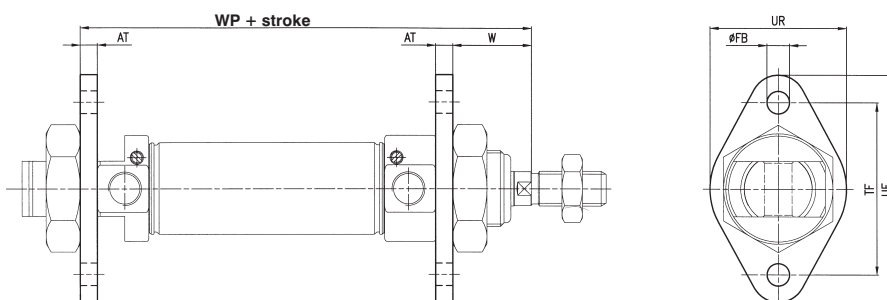
* The series in inches is according to UNI-ISO 228/1

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



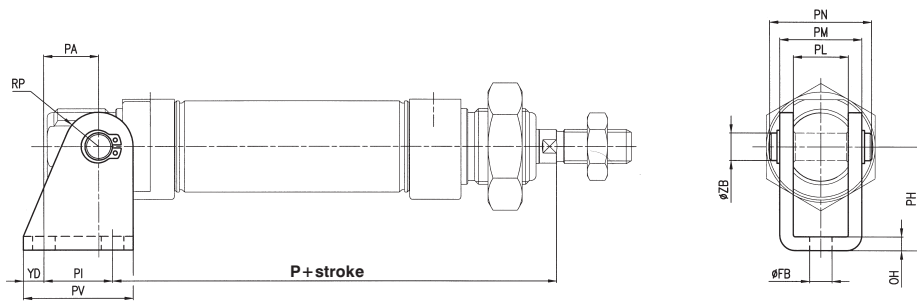
Cyl. \varnothing	AB	AO	AT	AU	NH	R	S	SA	SA1	TR	US	XA	XS	Mass kg	Part number
	H13			+0,3 0	$\pm 0,3$					Js14			$\pm 1,4$		
8-10	4,5	5	3	11	16	10	5	68	30	25	35	73	24	0,02	MF-13008
12	5,5	6	4	14	20	13	8	78	30	32	42	86	32	0,04	MF-13012
16	5,5	6	4	14	20	13	8	84	36	32	42	92	32	0,04	MF-13012
20	6,6	8	5	17	25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

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



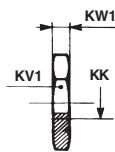
Cyl. \varnothing	AT	FB	TF	UF	UR	W	WP	Mass kg	Part number
		H13	Js14			$\pm 1,4$			
8-10	3	4,5	30	40	25	13	65	0,012	MF-12008
12	4	5,5	40	53	30	18	76	0,025	MF-12012
16	4	5,5	40	53	30	18	82	0,025	MF-12012
20	5	6,6	50	66	40	19	97	0,049	MF-12020
25	5	6,6	50	66	40	23	102	0,049	MF-12020

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



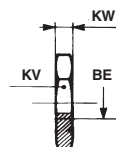
Cyl. Ø	Ø FB	OH	P	PA	PH	PI	PL	PM	PN	PV	RP	YD	ZB	Mass kg	Part number
	H13					E9							f8		
8-10	4,5	2,5	62,5	11	24	12,5	8,1	13,1	17	20	5,3	3,8	4	0,019	MF - 21008
12	5,5	3	73	13	27	15	12,1	18,1	23	25	7	5	6	0,037	MF - 21012
16	5,5	3	80	13	27	15	12,1	18,1	23	25	7	5	6	0,037	MF - 21012
20	6,6	4	91	16	30	20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

Nut for zinc-plated steel rod



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

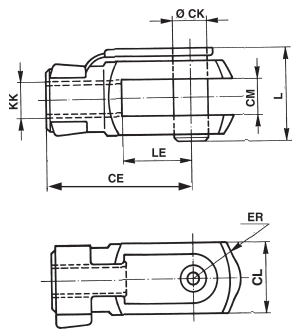
Nut for zinc-plated steel head



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

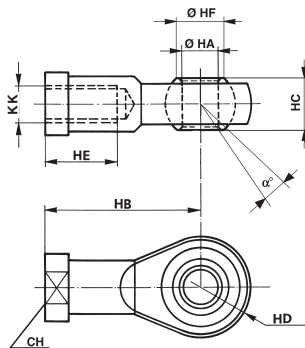



Double hinge in zinc-plated steel with pin for ISO 8140 rod



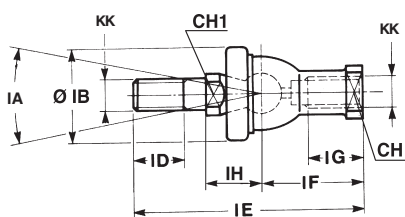
Cyl. Ø	CE	CK	CL	CM B12 B12	ER	KK	L	LE	Mass kg	Part number
8-10	16	4	8	4	5	M4 x 0,7	11	8	0,007	MF - 15008
12-16	24	6	12	6	7	M6 x 1	16	12	0,019	MF - 15012
20	32	8	16	8	10	M8 x 1,25	22	16	0,046	MF - 15020
25	40	10	20	10	16	M10 x 1,25	26	20	0,09	KF - 15032



Articulated self-lubricating fork in zinc-plated steel



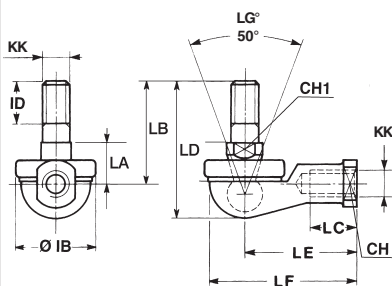
Cyl. Ø	a	CH	KK	HA	HB	HC	HD	HE	HF	Mass kg	Part number
				H7			0 -0,12				
8-10	13°	9	M4 x 0,7	5	27	8	9	10	7,7	0,018	MF - 17008
12-16	13°	11	M6 x 1	6	30	9	10	12	9	0,026	MF - 17012
20	14°	14	M8 x 1,25	8	36	12	12	16	10,4	0,046	MF - 17020
25	13°	17	M10 x 1,25	10	43	14	14	20	12,9	0,076	KF - 17032



Fork with axially mounted articulated pin



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

Fork with angle-mounted articulated pin



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