

Actuators

Cartridge Cylinders

Ø 6-16 mm



CA - CAF Series

Pg. 15.3

Mini Cylinders ISO 6432

Ø 8-25 mm



Mini Series

Pg. 15.5

Mini Stainless Steel ISO 6432

Ø 16-25 mm



Mini Stainless Steel Series

Pg. 15.14

Limited Space

Ø 32-63 mm



A95 Series

Pg. 15.17

Compact Cylinders

Ø 12-100 mm



Q Series

Pg. 15.24

ISO 15552 Cylinders

Ø 32-125 mm



L Series

Pg. 15.37

ISO 6431 Cylinders

Ø 160-320 mm



E Series

Pg. 15.44

ISO 15552 Cylinders

Ø 32-125 mm



X Series

Pg. 15.46

Stainless Steel ISO 15552

Ø 32-125 mm



V Series

Pg. 15.51

Twin Rod Cylinders

Ø 32-100 mm



NHA Series

Pg. 15.54

Compact Cylinders

Ø 20-100 mm



W Series

Pg. 15.58

Cylinder Accessories

ISO 6431 - ISO 15552 - ISO 21287



Pg. 15.66

Guided Units

ISO 15552 - Ø 12-25 mm
ISO 6431 VDMA - Ø 32-100 mm



Pg. 15.76

Rodless Cylinders

Ø 16-63 mm



R Series

Pg. 15.85

Rotary Actuators

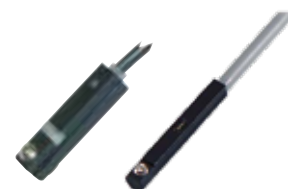
Ø 32-100 mm



XR Series

Pg. 15.96

Magnetic Position Sensing Switches



Sensor

Pg. 15.99

PNEUMATIC ACTUATORS

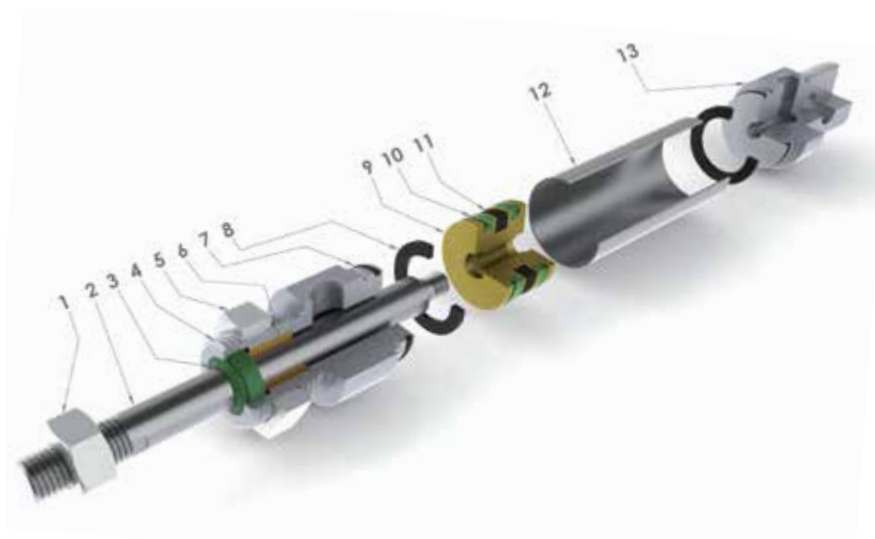


Actuators

MINI CYLINDERS - ISO 6432



TECHNICAL CHARACTERISTICS



Component Parts and Materials

- 1 Zinc plated steel rod jam nut
- 2 303 Stainless steel piston rod
- 3 Polyurethane rod seal
- 4 Anodized aluminum end cap
- 5 Zinc plated mounting nut
- 6 Sintered bronze rod bearing
- 7 NBR o-ring seals
- 8 Neoprene bumper
- 9 Brass piston
- 10 Polyurethane piston seal
- 11 Bonded ferrite magnet
- 12 304 Stainless steel body
- 13 Anodized aluminum end cap



Reference Standard

1907/2006
REACH✓

2011/65/CE
RoHS✓

PED
2014/68/UE

SILICON
FREE

ATEX
2014/34/UE


Pressures

1 bar (0.1 MPa) / 14.5 psi
10 bar (1 MPa) / 145 psi



Temperatures

0 °C / 32 °F (-20 °C / -4 °F with dry air)
+ 80 °C / 176 °F



Media

Filtered and lubricated or
non-lubricated compressed air



Functions

Single acting magnetic or non-magnetic.
Double acting single or double end rod,
magnetic or non-magnetic, cushioned or
non-cushioned.



Bores

8 - 10 - 12 - 16 - 20 - 25 mm



Standard Strokes

from 10 to 320 mm



FORCES, SPRING LOADS AND AIR CONSUMPTION

Extend and Retract Forces

Cylinder	Piston rod	Piston Area	Operating pressure									
Ø	Ø	mm ²	bar									
			1	2	3	4	5	6	7	8	9	10
			Output force N									
8	4	Extend = 50.2	5	10	15	20	25	30	35	40	45	50
		Retract = 37.7	3	6	9	12	15	18	21	24	27	30
10	4	Extend = 78.5	7	14	21	28	35	42	49	56	63	70
		Retract = 66	6	12	18	24	30	36	42	48	54	60
12	6	Extend = 113	10	20	30	40	50	60	70	80	90	100
		Retract = 85	7.5	15	22	30	37	45	52	60	68	75
16	6	Extend = 200	18	36	54	72	90	108	126	144	162	180
		Retract = 173	16	32	48	64	80	96	112	128	144	160
20	8	Extend = 314	28	56	84	112	140	168	196	224	252	280
		Retract = 264	24	48	72	96	120	144	168	192	216	240
25	10	Extend = 490	44	88	132	176	220	264	308	352	396	440
		Retract = 412	36	72	108	144	180	216	252	288	324	360

Spring Loads

Cylinder		Spring load		Stroke (mm)	
Ø		10	25	50	
		Output force N			
8	Load of spring at rest	4.1	3.5	2.6	
	Load of compressed spring	4.5	4.5	4.5	
10	Load of spring at rest	4.1	3.5	2.6	
	Load of compressed spring	4.5	4.5	4.5	
12	Load of spring at rest	5.5	4.8	3.5	
	Load of compressed spring	6	6	6	
16	Load of spring at rest	16.5	13.7	9	
	Load of compressed spring	18.3	18.3	18.3	
20	Load of spring at rest	19	15.5	9.5	
	Load of compressed spring	21.5	21.5	21.5	
25	Load of spring at rest	27	24	13.5	
	Load of compressed spring	29	29	29	

Air Consumption

Cylinder	Piston Rod	Piston Area	Operating pressure									
Ø	Ø	mm ²	bar									
			1	2	3	4	5	6	7	8	9	10
Air consumption for each 10 mm of stroke NI												
8	4	Extend = 50.2	0.001	0.002	0.002	0.003	0.003	0.004	0.004	0.005	0.005	0.006
		Retract = 37.7	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.004	0.004
10	4	Extend = 78.5	0.002	0.002	0.003	0.004	0.005	0.005	0.006	0.007	0.008	0.009
		Retract = 66	0.001	0.002	0.003	0.003	0.004	0.005	0.005	0.006	0.007	0.007
12	6	Extend = 113	0.002	0.003	0.005	0.006	0.007	0.008	0.009	0.010	0.011	0.012
		Retract = 85	0.002	0.003	0.003	0.004	0.005	0.006	0.007	0.008	0.009	0.009
16	6	Extend = 200	0.004	0.006	0.008	0.010	0.012	0.014	0.016	0.018	0.020	0.022
		Retract = 173	0.003	0.005	0.007	0.009	0.010	0.012	0.014	0.016	0.017	0.019
20	8	Extend = 314	0.006	0.009	0.013	0.016	0.019	0.022	0.025	0.028	0.031	0.035
		Retract = 264	0.005	0.008	0.011	0.013	0.016	0.018	0.021	0.024	0.026	0.029
25	10	Extend = 490	0.010	0.015	0.020	0.025	0.029	0.034	0.039	0.044	0.049	0.054
		Retract = 412	0.008	0.012	0.016	0.021	0.025	0.029	0.033	0.037	0.041	0.045

Series

Ø (mm)

Stroke (mm)

Special version

M F
0 0 8
0 0 2 5
V S

- ▲ **MB** Single acting - magnetic
- **MD** Single acting - magnetic
Spring extend
- **MF** Double acting - magnetic
- **MFN** Double acting - magnetic - head cut
port at 90°
- **MFX** Double acting - magnetic - head cut
port on axis
- ◆ **MH** Double acting - cushioned - magnetic
- **MJ** Double acting - magnetic
with double rod end
- ◆ **ML** Double acting - cushioned - magnetic
with double rod end

008
010
012
016
020
025

0010 0150
0025 0160
0050 0200
0080 0250
0100 0320
0125

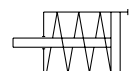
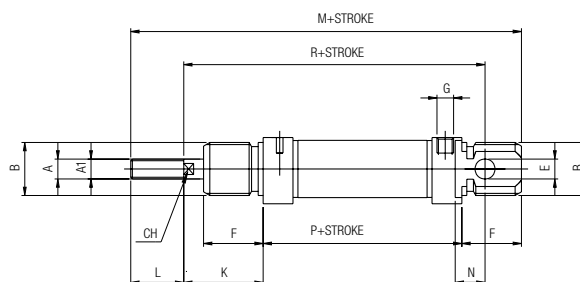
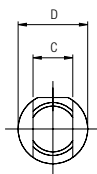
- VS** Rod Seals in FKM
- V** Seals in FKM

Intermediate or longer strokes
are available upon request.

Ø (mm)	Stroke (mm)									
	10	25	50	80	100	125	160	200	250	320
8	▲●	▲●	▲●	●	●	●				
10	▲●	▲●	▲●	●	●	●				
12	▲●	▲●	▲●	●	●	●	●	●	●	
16	▲■○	▲■○	▲■○	●○	●○	●○	●○	●○	●○	●○
20	▲■○	▲■○	▲■○	●○	●○	●○	●○	●○	●○	●○
25	▲■○	▲■○	▲■○	●○	●○	●○	●○	●○	●○	●○

MB

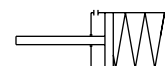
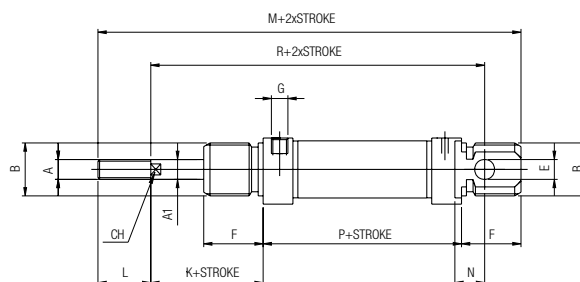
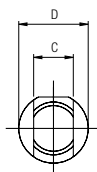
SINGLE ACTING - MAGNETIC



Ø	A	A1	B	C	D	E	F	G	K	L	M	N	P	R	CH
8	M4	4	M12x1.25	8	16	4	12	M5	16	12	86	6	46	64	-
10	M4	4	M12x1.25	8	16	4	12	M5	16	12	86	6	46	64	-
12	M6	6	M16x1.5	12	19	6	18	M5	22	16	104	9	48	75	5
16	M6	6	M16x1.5	12	19	6	18	M5	22	16	109	9	53	82	5
20	M8	8	M22x1.5	16	27	8	20	1/8G	24	20	131	12	67	95	7
25	M10x1.25	10	M22x1.5	16	30	8	22	1/8G	28	22	140	12	68	104	9

MD

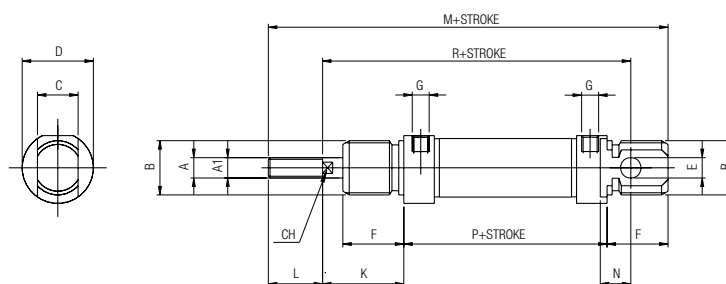
SINGLE ACTING - MAGNETIC - SPRING EXTEND



Ø	A	A1	B	C	D	E	F	G	K	L	M	N	P	R	CH
16	M6	6	M16x1.5	12	19	6	18	M5	22	16	134.5	9	78.5	107.5	5
20	M8	8	M22x1.5	16	27	8	20	1/8G	24	20	154	12	90	118	7
25	M10x1.25	10	M22x1.5	16	30	8	22	1/8G	28	22	166	12	94	130	9

MF

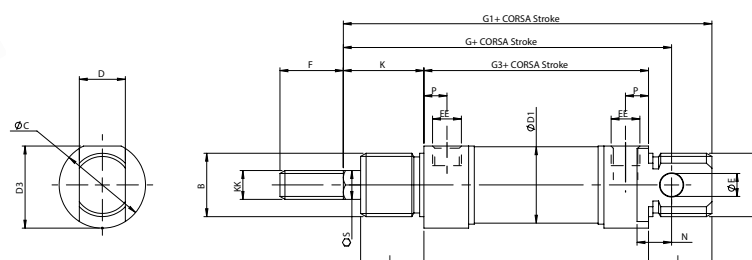
DOUBLE ACTING - MAGNETIC



Ø	A	A1	B	C	D	E	F	G	K	L	M	N	P	R	CH
8	M4	4	M12x1.25	8	16	4	12	M5	16	12	86	6	46	64	-
10	M4	4	M12x1.25	8	16	4	12	M5	16	12	86	6	46	64	-
12	M6	6	M16x1.5	12	19	6	18	M5	22	16	104	9	48	75	5
16	M6	6	M16x1.5	12	19	6	18	M5	22	16	109	9	53	82	5
20	M8	8	M22x1.5	16	27	8	20	1/8G	24	20	131	12	67	95	7
25	M10x1.25	10	M22x1.5	16	30	8	22	1/8G	28	22	140	12	68	104	9

MFA

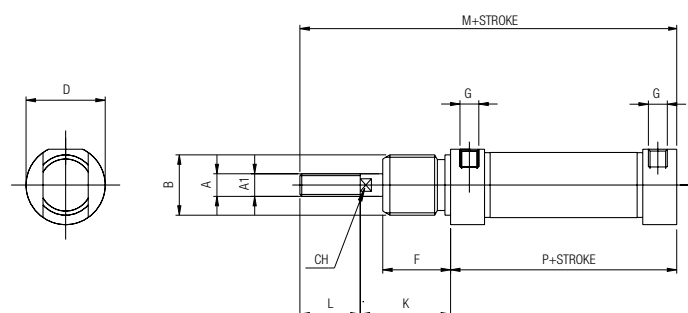
DOUBLE ACTING MAGNETIC HEXAGONAL ANTI-ROTATION



Ø	B	ØS	ØC	D	ØD1	D3	ØE	EE	F	G	G1	G3	K	KK	L	N	P
16	M6x1.5	6	19	12	17.27	18	6	M5	16	82	93	53	22	M6x1	18	9	4.5
20	M22x1.5	8	27	16	21.27	25.5	8	1/8" G	20	95	111	67	24	M8x1.25	20	12	8
25	M22x1.5	10	30	16	26.5	28.5	8	1/8" G	2	104	118	68	28	M10x1.25	22	12	8

MFN

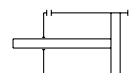
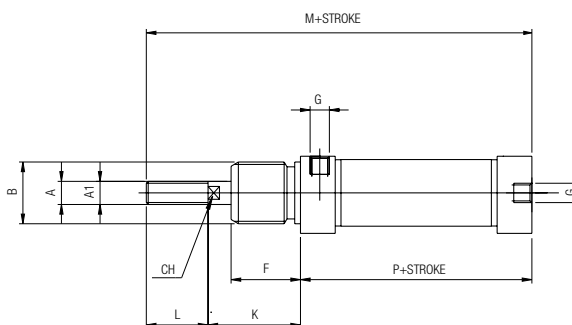
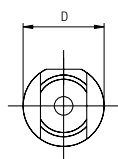
DOUBLE ACTING - MAGNETIC - HEAD CUT, PORT AT 90°



Ø	A	A1	B	D	G	K	L	M	P	CH	F
16	M6	6	M16x1.5	21	M5	22	16	91.5	53	5	18
20	M8	8	M22x1.5	27	1/8G	24	20	111.5	67	7	2
25	M10x1.25	10	M22x1.5	30	1/8G	28	22	118.5	68	9	22

MFX

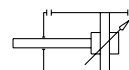
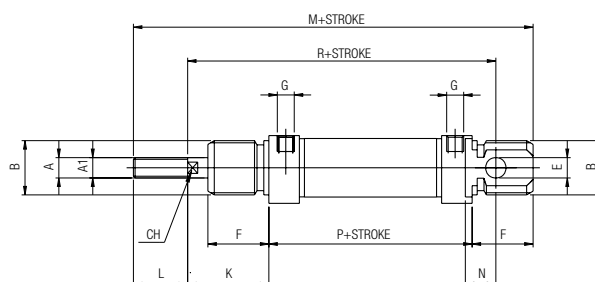
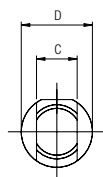
DOUBLE ACTING - MAGNETIC - HEAD CUT, PORT ON AXIS



Ø	A	A1	B	D	G	K	L	M	P	CH	F
16	M6	6	M16x1.5	21	M5	22	16	91.5	53	5	18
20	M8	8	M22x1.5	27	1/8G	24	20	111.5	67	7	2
25	M10x1.25	10	M22x1.5	30	1/8G	28	22	118.5	68	9	22

MH

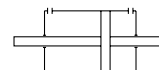
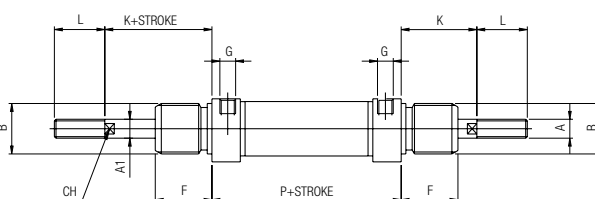
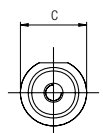
DOUBLE ACTING - CUSHIONED - MAGNETIC



Ø	A	A1	B	C	D	E	F	G	K	L	M	N	P	R	CH
16	M6	6	M16x1.5	12	21	6	18	M5	22	16	109	9	53	82	25
20	M8	8	M22x1.5	16	27	8	20	1/8G	24	20	131	12	67	95	7
25	M10x1.25	10	M22x1.5	16	30	8	22	1/8G	28	22	140	12	68	104	9

MJ

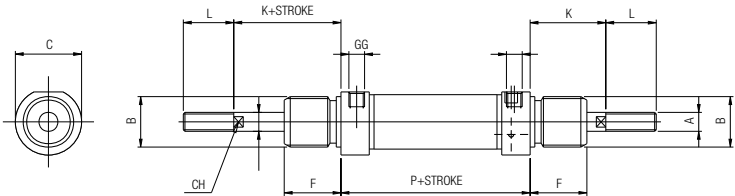
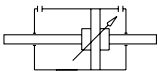
DOUBLE ACTING - MAGNETIC WITH DOUBLE ROD END



Ø	A	A1	B	C	F	G	K	L	P	CH
16	M6	6	M16x1.5	19	18	M5	22	16	53	5
20	M8	8	M22x1.5	27	20	1/8G	24	20	67	7
25	M10x1.25	10	M22x1.5	30	22	1/8G	28	22	68	9

ML

DOUBLE ACTING - CUSHIONED - MAGNETIC WITH DOUBLE ROD END



Ø	A	A1	B	C	F	G	K	L	P	CH
16	M6	6	M16x1.5	21	18	M5	22	16	53	5
20	M8	8	M22x1.5	27	20	1/8G	24	20	67	7
25	M10x1.25	10	M22x1.5	30	22	1/8G	28	22	68	9

PISTON ROD LOCK FOR MINI CYLINDERS - ISO 6432



TECHNICAL CHARACTERISTICS



How to Order

The piston rod lock can be assembled only with ISO 6432 Ø 20 or 25 mm cylinders produced with an extended piston rod.
To identify cylinders with extended piston rods or piston rod locks, it is necessary to affix the letter "B" after the cylinder's series code.



Reference Standard

1907/2006
REACH ✓

2011/65/CE
RoHS ✓

PED
2014/68/UE

SILICON
FREE



Pressures

Without Pressures: LOCKED

Cylinder supply pressure	Minimum release pressure
0 ÷ 7 bar (0 ÷ 0.7 Mpa)	2.5 bar (0.25 Mpa)
7 ÷ 10 bar (0.7 ÷ 1 Mpa)	3 bar (0.3 Mpa)



Temperatures

0 °C / 32 °F (-20 °C / -4 °F with dry air)
+ 80 °C / 176 °F



Media

Filtered and lubricated or non-lubricated compressed air

Series

Ø (mm)

Stroke (mm)

M F

B

B = Piston Rod Lock Assembled

0 2 0

020
025

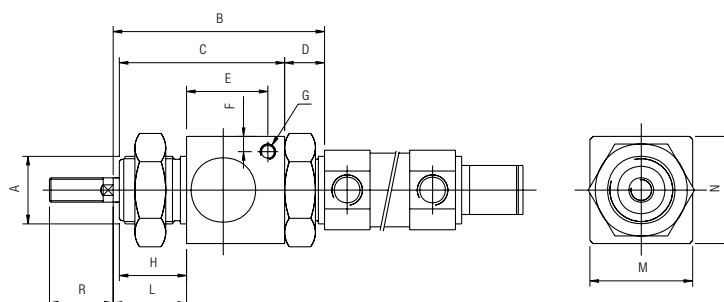
0 0 2 5

0010 0150
0025 0160
0050 0200
0080 0250
0100 0320
0125

Intermediate or longer strokes are available upon request.

MRL

PISTON ROD LOCK



Part No.	Ø	A	B	C	D	E	F	G	H	L	M	N	R
MRL 020	20	M22x1.5	68.5	54	13	27	5	M5	22	23.5	34	35	23
MRL 025	25	M22x1.5	69.5	54	13	27	5	M5	22	24.5	34	35	26

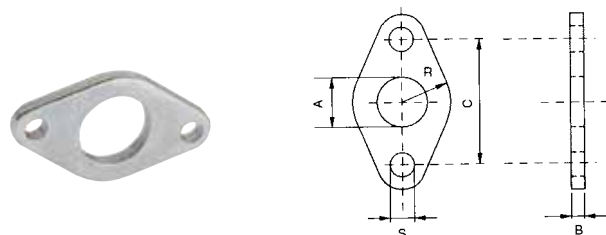
ISO 6432 Mounting Accessories

MFL

FLANGE

MATERIAL: Steel

Part No.	Ø	A	B	C	R	S
MFL 008	8-10	12	3	30	9	4.5
MFL 012	12-16	16	4	40	13	5.5
MFL 020	20-25	22	5	50	19	6.6

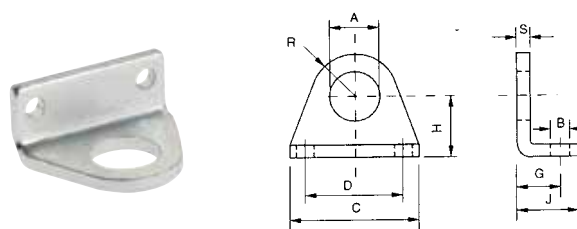


MPD

FOOT

MATERIAL: Steel

Part No.	Ø	A	B	C	D	G	H	J	R	S
MPD 008	8-10	12	4.5	35	25	11	16	16	10	3
MPD 012	12-16	16	5.5	42	32	14	20	20	13.5	4
MPD 020	20-25	22	6.6	54	40	17	25	25	18	5

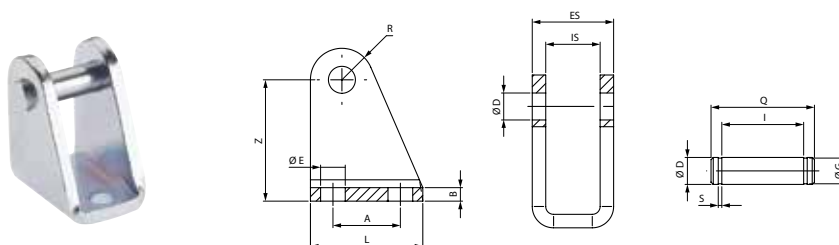


MCC

CLEVIS BRACKET WITH PIN

MATERIAL: Steel

Code	Ø	A	B	R	L	Z	IS	ES	S	I	Q	ØE	ØD	ØG
MCC 008	8-10	12.5	2.5	5	22	24	8.1	13	0.8	14	18	4.5	4	2.3
MCC 012	12-16	15	3	7	25	27	12	18	0.8	19	24	5.5	6	4
MCC 020	20-25	20	4	10	32	30	16	24	0.9	25	30	6.5	8	7



DA

MOUNTING NUT

Part No.	A	B	C
ODA00 00 51 D5 ZI	M12x1.25	19	7
ODA00 00 51 E3 ZI	M16x1.5	22	6
ODA00 00 51 F6 ZI	M22x1.5	27	8

MATERIAL: Steel

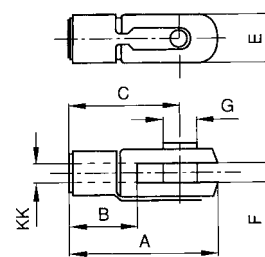
ROD JAM NUT

Part No.	A	B	C
ODA00 00 51 B1 ZI	M4	7	3.2
ODA00 00 51 B8 ZI	M6	10	5
ODA00 00 51 C3 ZI	M8x1.25	13	6.5
ODA00 00 51 C9 ZI	M10x1.25	17	8



FC

ROD CLEVIS WITH LOCKABLE PIN

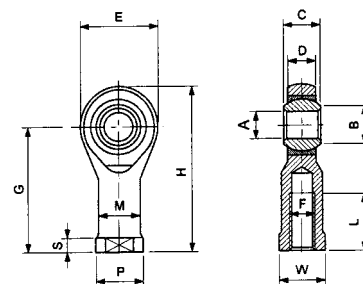


MATERIAL: Steel

Part No.	KK	A	B	C	E	F	G
FC 008	M4	21	8	16	8	4	4
FC 012	M6	31	12	24	12	6	6
FC 020	M8	42	16	32	16	8	8
FC 025	M10x1.25	52	20	40	20	10	10

TF

SELF-LUBRICATING SPHERICAL ROD EYE



MATERIAL: Steel

Part No.	F	A	B	C	Ø Sphere	D	E	G	H	L	M	P	S	W	Radial load		Weight
		H7	0	0 -0.13		± 0.13	± 0.5	± 0.5		± 0.7	± 0.7	± 0.5	+ 0.2 - 0.7	± 0.25	kg	kg	g
TF 008	M4x0.7	5	7.7	8	11.11	6	18	27	36	10	9	11	4	9	-	-	-
TF 012	M6x1	6	8.9	9	12.7	6.75	20	30	40	9	10	13	5	11	470	1.100	19
TF 020	M8x1.25	8	10.4	12	15.88	9	24	36	48	12	12.5	16	5	14	780	1.900	36
TF 025	M10x1.25	10	12.9	14	19.05	10.5	28	43	57	15	15	19	6.5	17	1.200	3.100	88