



Series 1390-1391-1392, ECOLIGHT

Construction characteristics

End caps	die-casting aluminium
Rod	C43 chromed steel or stainless steel
Barrel	aluminium alloy anodised
Rod-guide bushing	spheroid bronze on steel band with P.T.F.E. coat
Piston	Ø32 - Ø100 acetal resin, aluminium on request Ø125 - Ø200 aluminium V, Q, R, L versions (Ø32 - Ø100): aluminium
Seals	standard: NBR oil resistant rubber, PUR piston rod seals V version: FPM P version: PUR Q version: NBR and PUR with plastic rod scraper with a high wear resistance R version: PUR with metallic rod scraper L version: special PUR
Cushion adjusting screws	brass

Operational characteristics

Fluid	Filtered air. No lubrication needed, if applied it shall be continuous. L version (for low temperature): dried air, guarantee a dew point lower than the minimum operating temperature
Max. pressure	10 bar
Operating temperature	-5°C - +70°C with standard seals -30°C - +80°C with PUR seals (P version) -5°C - +80°C with FPM seals for 1390 and 1391 series (magnetic piston) (V version) -5°C - +150°C with FPM seals for 1392 series (no magnetic piston) (V version) -20°C - +80°C (Q version) -10°C - +80°C (R version) -50°C - +80°C (L version)
Bore	Ø <u>32</u> - <u>40</u> - <u>50</u> - <u>63</u> - <u>80</u> - <u>100</u> - <u>125</u> - <u>160</u> - <u>200</u>
Cushioning length	mm 27 - 31 - 31 - 37 - 40 - 44 - 44 - 50 - 55
Cushion length version with aluminum piston	mm 20 - 20 - 22 - 22 - 32 - 32 - / - / - /



Please follow the suggestions below to ensure a long life for these cylinders:

- use clean and lubricated air
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod;
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device and the aluminium piston);
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.)

VERSIONS WITH ADDITIONAL ROD SCRAPER

Version with plastic rod scraper (Q)

The pneumatic seal is manufactured using a special NBR seal material, with the rod scraper that comes in contact with the external environment made of a plastic material with a high wear resistance. The geometric shape with its excellent scraping capacity guarantees additional protection of the piston rod and nose seal against the impurities, liquids, water, and debris.

Version with metallic rod scraper (R)

The pneumatic seal is manufactured using a special FPM seal material with its own scraping lip with the additional rod scraper that comes into contact with the external environment made of metal. This combination of scraping lip and metal rod scraper enable these actuators to be used in particularly extreme environments.

Here are some examples:

Aluminum foundries: To remove the residues of alumina or fluorine compounds that are deposited on the piston rod during the preparation phase of aluminum casting.

Automotive: To prevent debris which has collected on the piston rod damaging the nose seal during operation especially waste produced during the welding process.

Industrial ovens: To eliminate cement powders or those produced during the manufacture of bricks/tiles

Thanks to the high-performance nose seal and scraper protection of the piston rod, the cylinder will be protected against premature wear that you would normally experience using standard cylinders in these harsh environments.

Low temperature version (L): The special seals compound allows the use of the cylinders up to a temperature of -50°C. The rod scraper seal is equipped with a metallic scraper which removes ice crystals which might form at minus temperature

Please note: air must be dry for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Our Technical Department will be glad to help.

Standard strokes (for all diameters)

from 0 to 150, every 25 mm
from 150 to 500, every 50 mm
from 500 to 1000, every 100 mm

On request are available strokes up to 2800 mm

Stroke tolerance (ISO 15552)

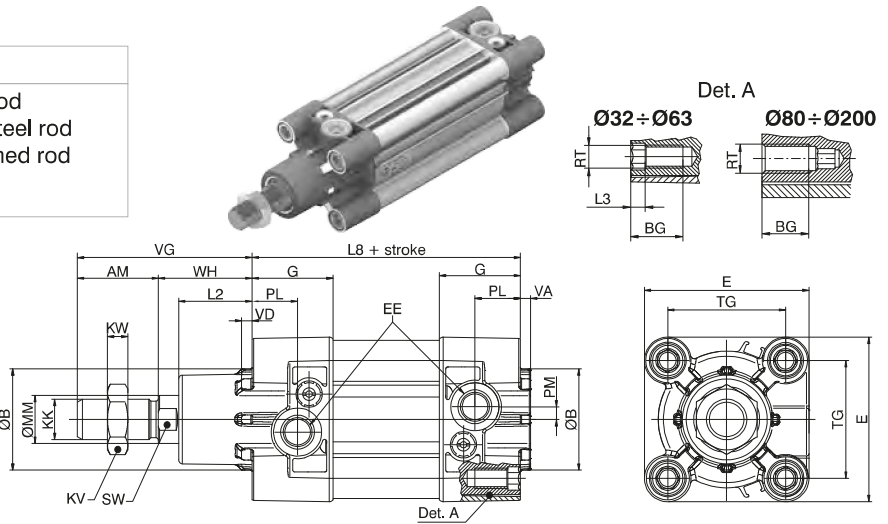
Bore	Stroke	Tolerance
32 - 40 - 50	up to 500	+2 0
	over 500 up to 1250	+3.2 0
63 - 80 - 100	up to 500	+2.5 0
	over 500 up to 1250	+4 0
125 - 160 - 200	up to 500	+4 0
	over 500 up to 1250	+5 0

Basic version "01"

Ordering code

- 1390.Ø.stroke.01** Magnetic chromed rod
- 1391.Ø.stroke.01** Magnetic stainless steel rod
- 1392.Ø.stroke.01** Non magnetic chromed rod

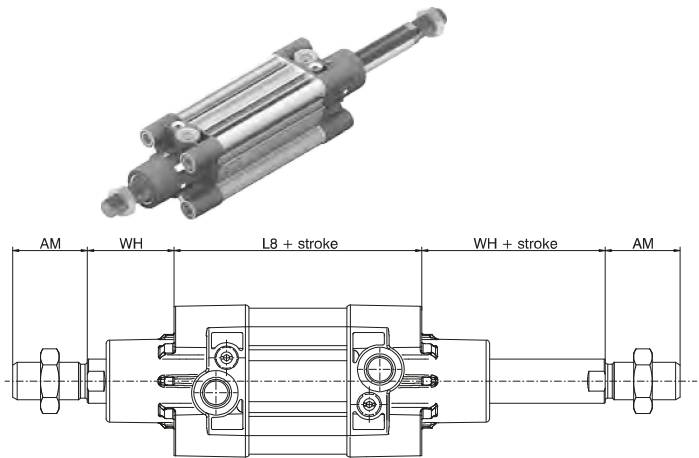
This is the configuration representing the basic cylinder according to ISO-VDMA standards. It can be directly anchored on machine parts using the four threads on the end cap screws. For other applications see "Cylinder section" on the General Catalogue, where different types of attachments are shown.



Through rod cylinder version "02"

Ordering code

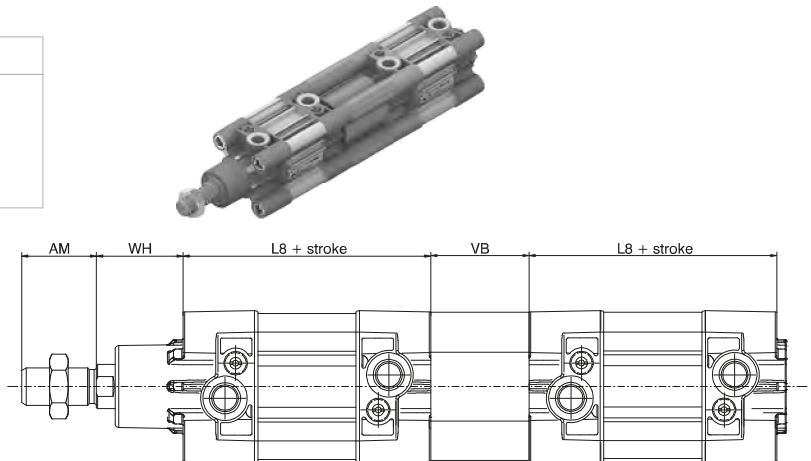
- 1390.Ø.stroke.02** Magnetic chromed rod
- 1391.Ø.stroke.02** Magnetic stainless steel rod
- 1392.Ø.stroke.02** Non magnetic chromed rod



Tandem push with common rods "G"

Ordering code

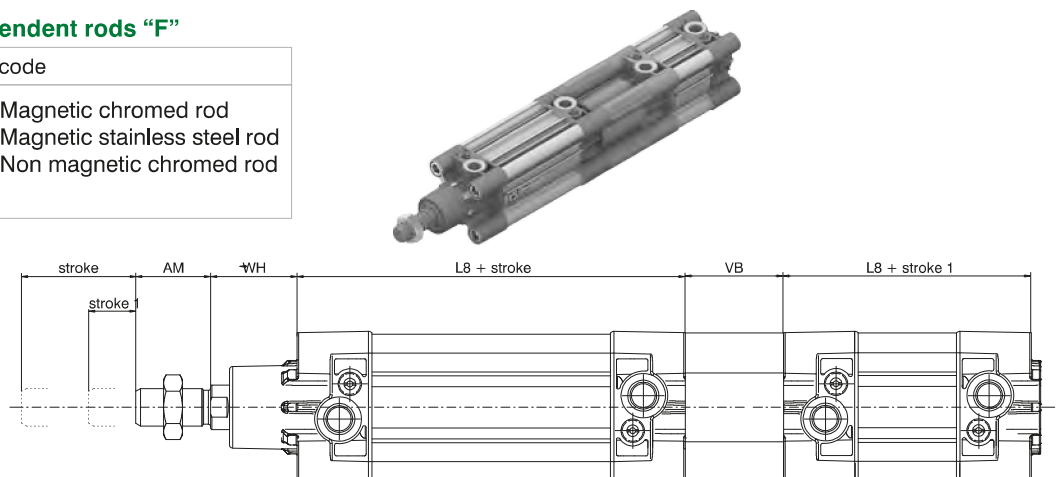
- 1390.Ø.stroke.G** Magnetic chromed rod
- 1391.Ø.stroke.G** Magnetic stainless steel rod
- 1392.Ø.stroke.G** Non magnetic chromed rod



Tandem push with independent rods "F"

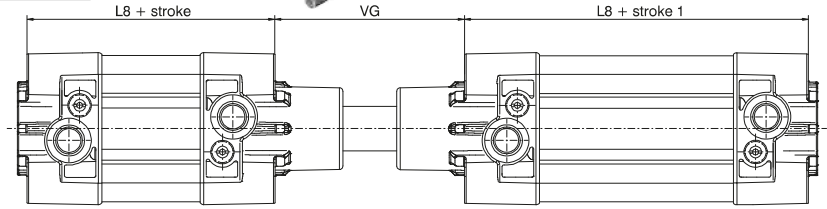
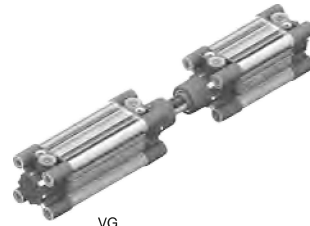
Ordering code

- 1390.Ø.stroke.stroke1.F** Magnetic chromed rod
- 1391.Ø.stroke.stroke1.F** Magnetic stainless steel rod
- 1392.Ø.stroke.stroke1.F** Non magnetic chromed rod



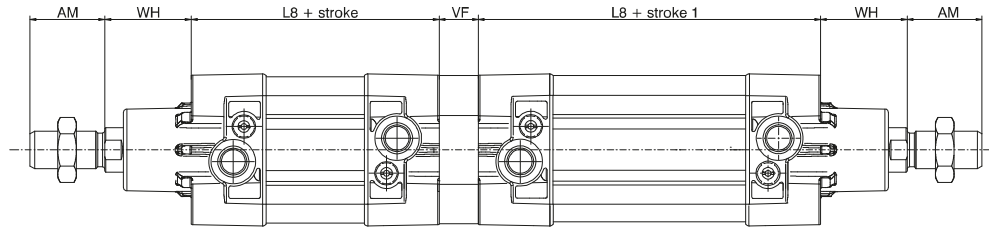
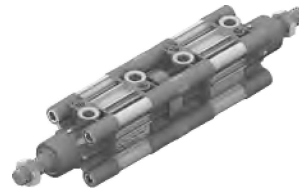
► **Opposed tandem with common rod "D"**

Ordering code
1390.Ø.stroke.stroke1.D Magnetic chromed rod
1391.Ø.stroke.stroke1.D Magnetic stainless steel rod
1392.Ø.stroke.stroke1.D Non magnetic chromed rod



► **Tandem with opposed rods - "E"**

Ordering code
1390.Ø.stroke.stroke1.E Magnetic chromed rod
1391.Ø.stroke.stroke1.E Magnetic stainless steel rod
1392.Ø.stroke.stroke1.E Non magnetic chromed rod



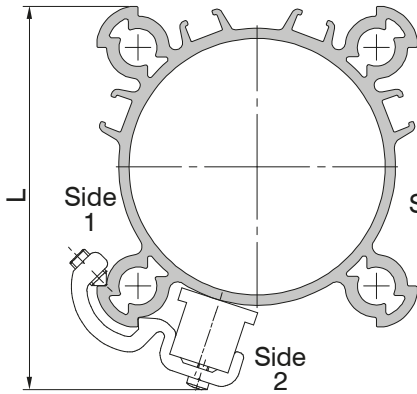
Variants

Ordering code
139_Ø.stroke._.P = Version with PUR seals
139_Ø.stroke._.K = Version with aluminium piston (from Ø32 to Ø100)
139_Ø.stroke._.PK = Version with PUR seals and aluminium piston (from Ø32 to Ø100)
139_Ø.stroke._.V = Version with FPM seals and aluminium piston
139_Ø.corsa._.R = Version with metallic rod scraper and aluminium piston (Ø32-Ø100)
139_Ø.corsa._.Q = Version with plastic rod scraper and aluminium piston (Ø32-Ø100)
139_Ø.stroke._.PQ = Version with PUR seals and plastic rod scraper and aluminium piston (Ø32-Ø100)
139_Ø.corsa._.L = Version for low temperature and aluminium piston (-50°C) (Ø32-Ø100)

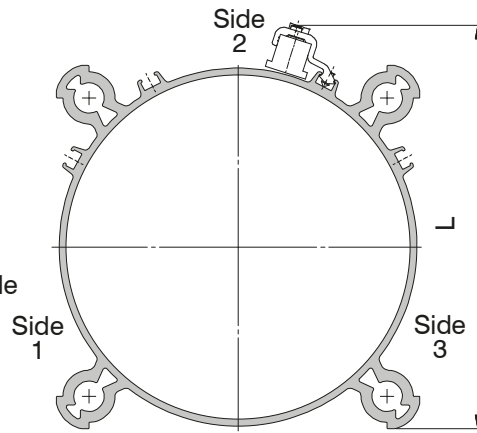
Table of dimensions

Bore	32	40	50	63	80	100	125	160	200	
AM	22	24	32	32	40	40	54	72	72	
B (d 11)	30	35	40	45	45	55	60	65	75	
BG	16	16	18	18	16	16	21	25	25	
E	47	54	65	76	95	113	138	180	216	
EE	G 1/8"	G 1/4"	G 1/4"	G 3/8"	G 3/8"	G 1/2"	G 1/2"	G 3/4"	G 3/4"	
G	29,5	33	32	36	38,5	41,5	48	49	49	
KK	M10X1,25	M12X1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M36x2	M36x2	
KV	17	19	24	24	30	30	41	55	55	
KW	6	7	8	8	9	9	12	18	18	
L2	19	22	29	29	35	36	45	50	60	
L3	4	4	5	5	/	/	/	/	/	
L8	94	105	106	121	128	138	160	180	180	
MM	12	16	20	20	25	25	32	40	40	
PL	13	16	18	18	16	18	25	26	25	
PM	3	4	5	4,5	2,5	6	8	11	11	
RT	M6	M6	M8	M8	M10	M10	M12	M16	M16	
SW	10	13	17	17	22	22	27	36	36	
TG	32,5	38	46,5	56,5	72	89	110	140	175	
VA	4	4	4	4	4	4	6	6	6	
VB	33	41	51	51	65	71	75	70	75	
VD	4	4	4	4	4	4	6	6	6	
VF	12	12	16	16	20	20	25	30	30	
VG	48	54	69	69	86	91	119	152	167	
WH	26	30	37	37	46	51	65	80	95	
Weight g	stroke 0	460	650	1030	1360	2180	2890	5700	11200	14900
	every 10 mm	23	32	45	49	75	81	130	195	245

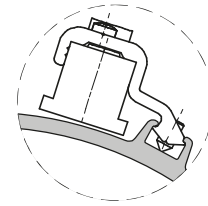
On the ECOLIGHT series it is possible to use three sensor types, according to bore, as indicated below:



Ø32 - Ø100: the sensors can be fixed on the three sides as indicated in the drawing, by using suitable brackets (except for Ø32 on side 2)



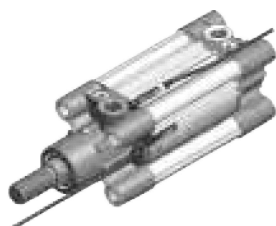
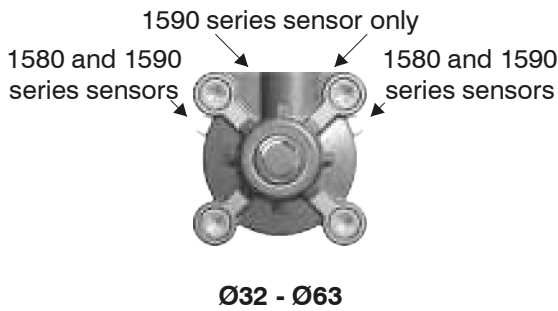
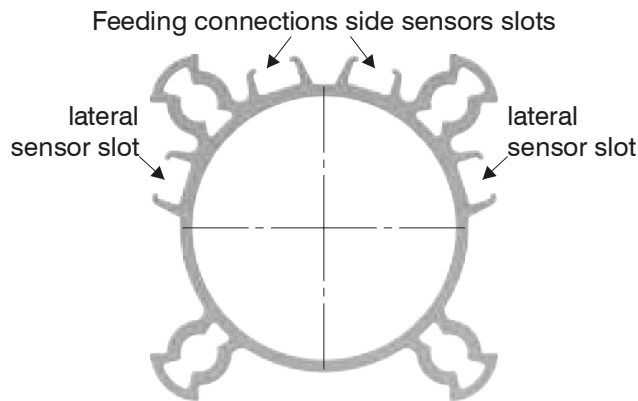
Ø125 - Ø200: the sensors can be fixed on the three sides as indicated in the drawing, by using suitable bracket



Code	Bore	L
1390.A	Ø32	58
	Ø40	65
1390.B	Ø50	75
	Ø63	86
1390.C	Ø80	105
	Ø100	122
1390.D	Ø125	150
	Ø160	190
	Ø200	225

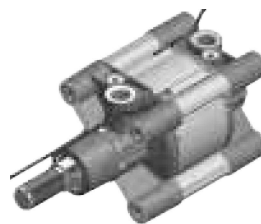
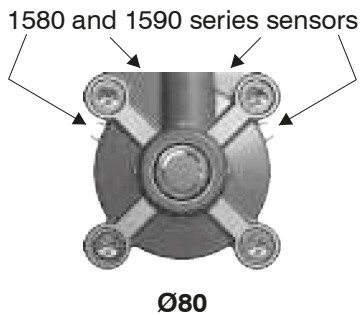
3

PNEUMATIC ACTUATION



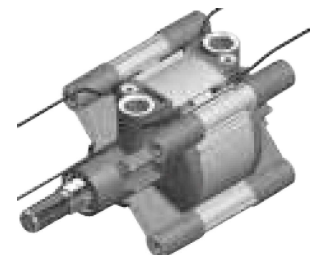
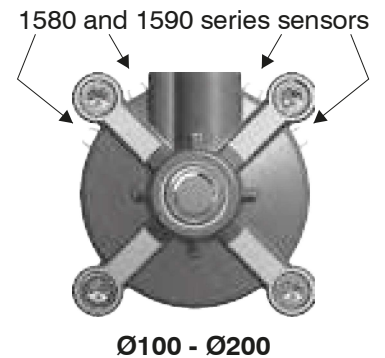
CYLINDERS - BORE SIZES Ø32 to Ø63:

The two slots on connection side are plugged, therefore only sensor 1590 can be used. Suitable for top housing and once placed by means of its screw, it can be fixed in desired position.



CYLINDERS - BORE SIZE Ø80:

The two top housing can be accessed from the front of the unit, one housing can be accessed from the front end cap and the opposite housing from the rear end cap. It is therefore possible to use both type of sensors: 1580 - 1590.

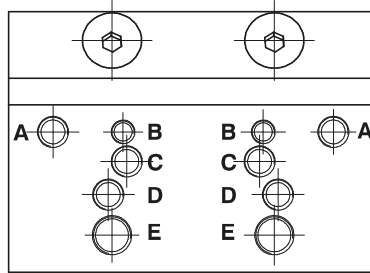


CYLINDERS - BORE SIZE Ø100-Ø200:

All four housings can be accessed from the front of the unit. It is therefore possible to use both type of sensors: 1580 - 1590.

Solenoid valves supports

This accessory permits to mount a valve or an electrovalve on a side of the cylinder. The plate can be fitted on the cylinder profiled barrel. Once installed the connections must be done with fittings and pipes. All of the threaded holes on the support plate are dedicated to different valves series as per attached drawing.

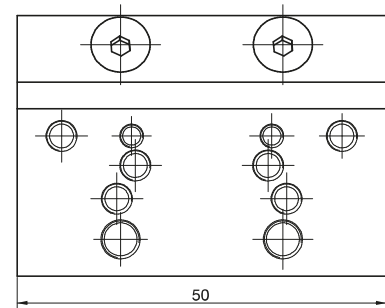
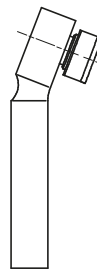


Fixing holes for valves series:

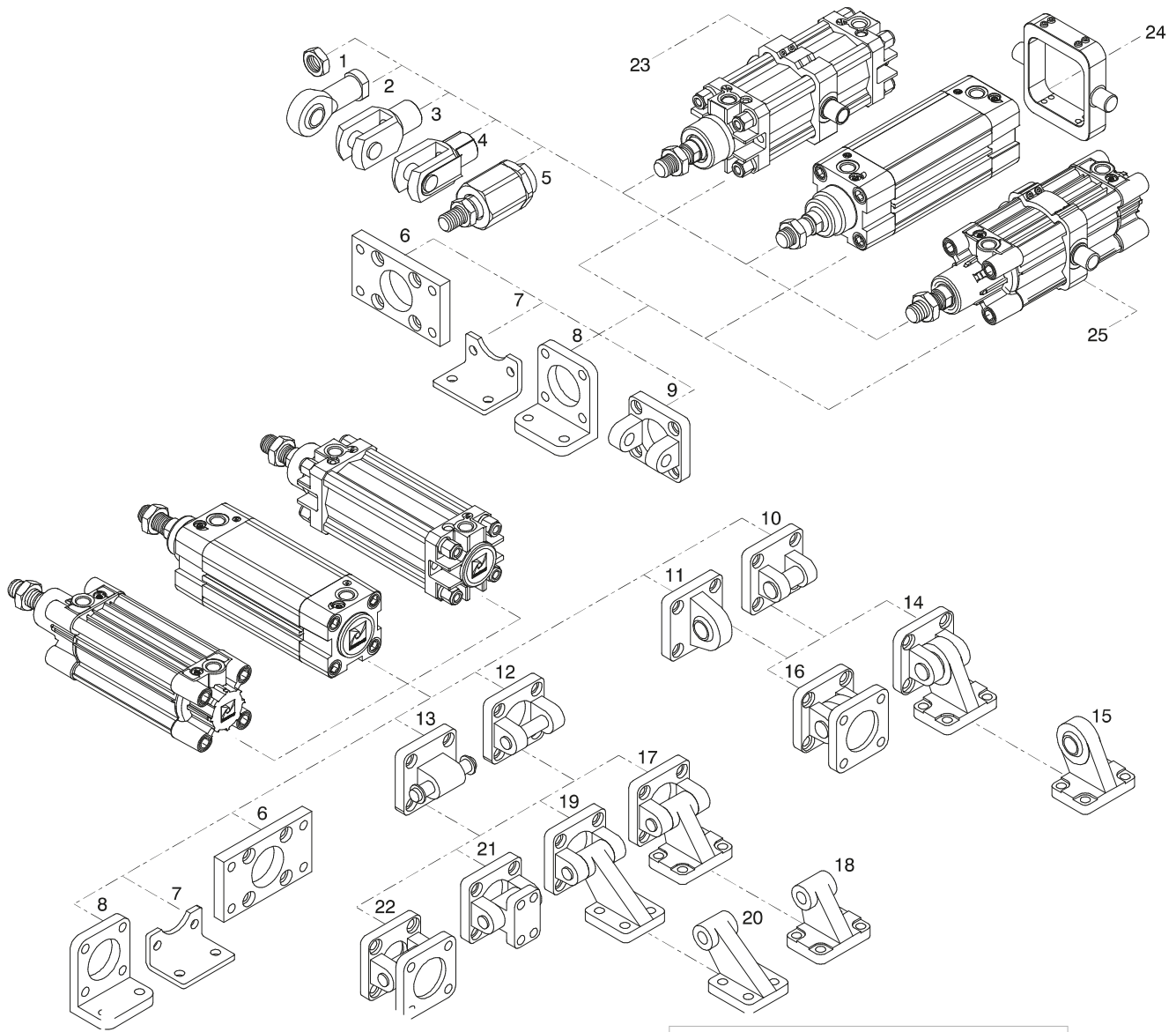
- A = 488 / 484
- B = 2400
- C = T488
- D = 2600
- E = T424

Ordering code

- 1390.25** (for Ø32)
- 1390.26** (for Ø40)
- 1390.27** (for Ø50)
- 1390.28** (for Ø63)
- 1390.29** (for Ø80)
- 1390.30** (for Ø100)



Attention: do not use ISO distributor for base mounting

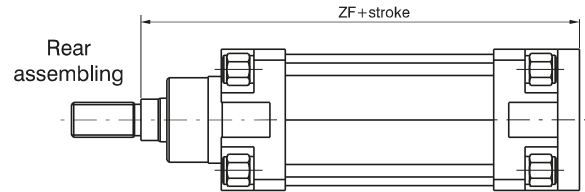
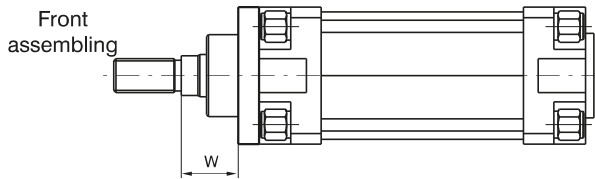
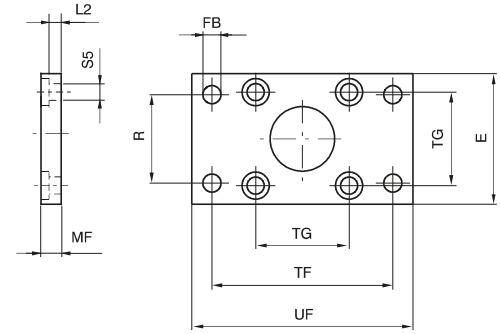


Pos.	Description	Ordering code	
		Aluminium	Steel
1	Rod nut	/	1320.Ø.18F
2	Ball joint	/	1320.Ø.32F
3	Forks	/	1320.Ø.13F
4	Fork with clips	/	1320.Ø.13/1F
5	Self-aligning joint	/	1320.Ø.33F
6	Flange (MF1-MF2)	1390.Ø.03F 1390.Ø.03FP	1380.Ø.03F
7	Short mounting foot brackets (in sheet metal MS1)	/	1320.Ø.05/1F
8	Standard mounting foot brackets	1320.Ø.05F	/
9	Front clevis	1380.Ø.08F	1320.Ø.19F
10	Rear narrow clevis (AB6)	1380.Ø.30F	1320.Ø.29F
11	Rear male clevis (with jointed head according to DIN 648K standard)	1380.Ø.15F	1320.Ø.25F
12	Rear female clevis (MP2)	1380.Ø.09F	1320.Ø.20F
13	Rear male clevis (MP4)	1380.Ø.09/1F	1320.Ø.21F
14	Complete square angle trunnion (pos.10 + pos.15)	/	1320.Ø.27F
15	Simple square counter clevis (pos.14)	/	1320.Ø.28F
16	Square angle trunnion with jointed head (pos.10 + pos.11)	1380.Ø.36F	1320.Ø.26F
17	Square angle trunnion (AB7) (pos.18 + pos.12)	1380.Ø.35F	1320.Ø.23F
18	Simple square counter clevis (pos.17)	1320.Ø.11/2F	1320.Ø.24F
19	Simple rear trunnion with support brackets (pos.20 + pos.12)	1380.Ø.11F	/
20	Simple square counter clevis (pos.19)	1320.Ø.11/1F	/
21	Standard trunnion	1380.Ø.10F	/
22	Standard complete trunnion (pos.12 + pos.13)	1380.Ø.22F	1320.Ø.22F
23	1319 - 1321 cylinders series Intermediate trunnion	1320.Ø.12BF	1320.Ø.12F
24	1386 - 1388 / 1396 - 1398 Ecoplus series Intermediate trunnion	/	1386.Ø.12F
25	1390 - 1392 Ecolight series Intermediate trunnion	1390.Ø.12F	/

► Front and rear flanges (MF1 - Mf2)

Ordering code		
Steel	:	1380.Ø.03F (Ø32 ... Ø200)
Aluminium	:	1390.Ø.03F (Ø32 ... Ø100)
Die-casting aluminium	:	1390.Ø.03FP (Ø32 ... Ø100)

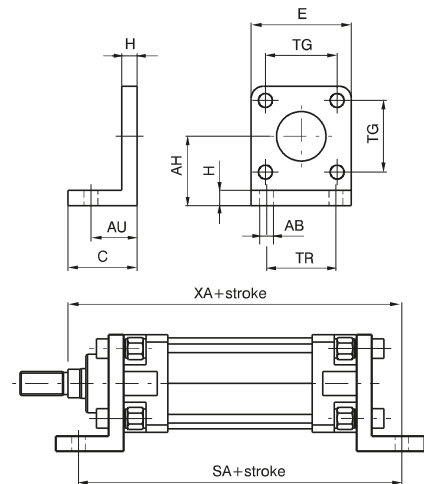
Plate which allows anchorage of the cylinder at a right angle to the plane. It is made of zinc-plated extruded steel.



Bore	E	FB (H 13)	MF (JS 14)	R (JS 14)	TF (JS 14)	TG	UF	ZF	W	L2	S5	Weight(g) steel	Weight(g) aluminium	Weight(g) Die-casting aluminium
32	45	7	10	32	64	32,5	80	130	16	5	6,6	190	65	60
40	52	9	10	36	72	38	90	145	20	5	6,6	250	90	69
50	65	9	12	45	90	46,5	110	155	25	6,5	9	480	170	130
63	75	9	12	50	100	56,5	120	170	25	6,5	9	620	220	170
80	95	12	16	63	126	72	150	190	30	8	11	1430	500	345
100	115	14	16	75	150	89	170	205	35	8	11	1990	690	485
125	140	16	20	90	180	110	205	245	45	10,5	14	3750	/	/
160	180	18	20	115	230	140	260	280	60	9,5	18	6350	/	/
200	220	22	25	135	270	175	300	300	70	12,5	18	11350	/	/

► Standard mounting foot brackets

Ordering code	
Aluminium:	1320.Ø.05F (1 piece)

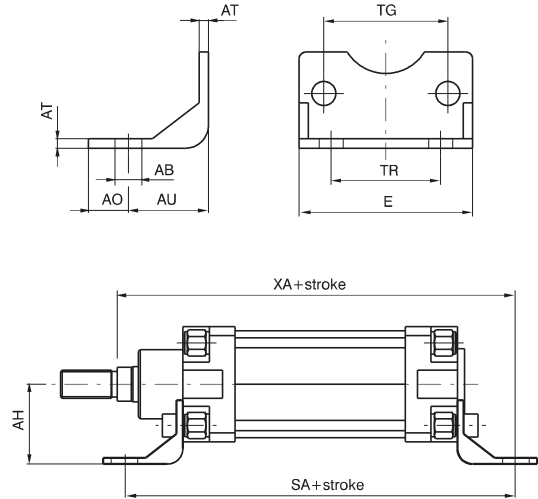


Elements used to anchor the cylinder parallel to the mounting plane. They are made of cast aluminium, painted black.

Bore	32	40	50	63	80	100	125	160	200
AB (H 14)	7	9	9	9	12	14	16	18	22
AH (JS 15)	32	36	45	50	63	71	91	115	135
AU (±0,2)	24	28	32	32	41	41	45	60	70
C	35	35	45	45	55	56	68	82	90
E	45	52	65	75	95	115	140	180	220
H	8	8	10	10	12	12	16	20	20
SA	142	161	170	185	210	220	250	300	320
TG	32,5	38	46,5	56,5	72	89	110	140	175
TR (JS 14)	32	36	45	50	63	75	90	115	135
XA	144	163	175	190	215	230	270	320	345
Weight gr.	45	65	140	175	380	470	920	2300	3200

▶ Short mounting foot brackets (in sheet metal MS1)

Ordering code
Steel: 1320.Ø.05/1F (1 piece)

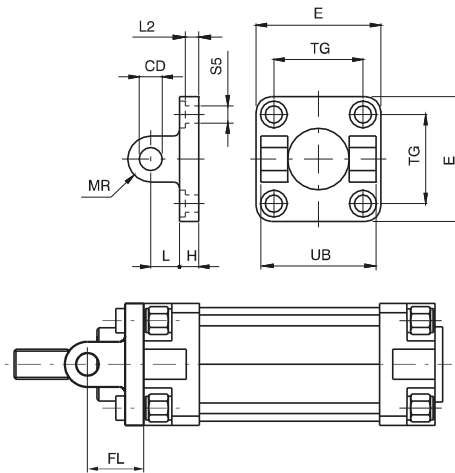


Bore	32	40	50	63	80	100	125	160	200
AB (H 14)	7	9	9	9	12	14	16	18	22
AH (JS 15)	32	36	45	50	63	71	90	115	135
AU (± 0.2)	24	28	32	32	41	41	45	60	70
AO (± 0.2)	11	8	15	13	14	16	25	15	30
E	45	52	65	75	95	115	140	180	220
AT	4	4	5	5	6	6	8	9	12
SA	142	161	170	185	210	220	250	300	320
TG	32,5	38	46,5	56,5	72	89	110	140	175
TR (JS 14)	32	36	45	50	63	75	90	115	135
XA	144	163	175	190	215	230	270	320	345
Weight g	65	80	170	190	380	452	1090	1190	3450

Elements used to anchor the cylinder parallel to the mounting plane. They are made of steel, and painted black.

▶ Front clevis (not specified by ISO-VDMA standards)

Ordering code
Aluminium: 1380.Ø.08F
Steel: 1320.Ø.19F



Bore	32	40	50	63	80	100	125	160	200
CD (H9)	10	12	12	16	16	20	25	30	30
E	Aluminium	45	52	65	75	95	115	140	220
	Steel	45	55	65	75	95	115	140	220
FL (±0,2)	22	25	27	32	36	41	50	55	60
H	Aluminium	9	9	11	11	14	14	20	25
	Steel	10	10	10	12	14	16	20	20
L	Aluminium	13	16	16	21	22	27	30	35
	Steel	12	15	17	20	22	25	30	35
MR	10	12	12	16	16	20	25	25	25
TG	32,5	38	46,5	56,5	72	89	110	140	175
UB (h14)	45	52	60	70	90	110	130	170	170
L2(±0,5)	5,5	5,5	6,5	6,5	10	10	10	10	11
S5 (H13)	6,6	6,6	9	9	11	11	14	18	18
Weight g	Aluminium	50	75	125	190	380	620	1180	1780
	Steel	150	235	340	550	1010	1710	3360	5750

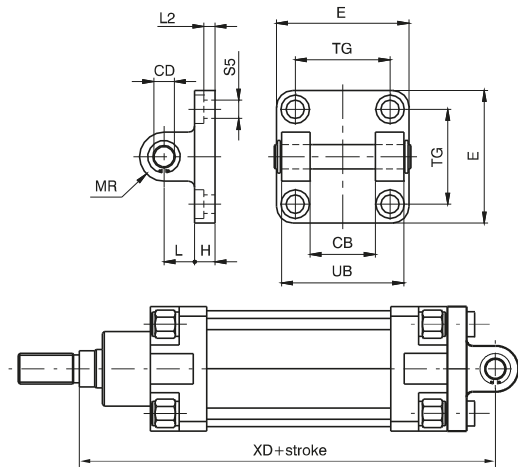
Used to mount the cylinder either parallel or at a right angle to the mounting plane; allows the cylinder to self-align under load. Made of aluminium alloy or steel (see ordering code) and painted black.

Rear clevis (MP2)

Ordering code
Aluminium: **1380.Ø.09F**
Steel: **1320.Ø.20F**



Similar to type 08 but includes a hinge pin. This type of mounting allows anchorage of the cylinder either parallel or right angle to plane; the cylinder rod can oscillate and self-align as necessary when under load. Made of aluminium alloy or steel (see ordering code) and painted black.



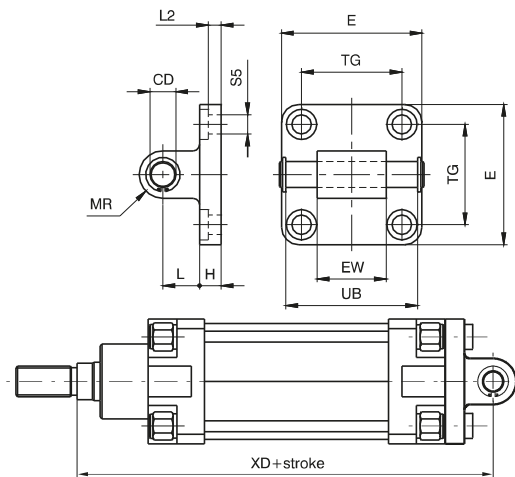
Bore		32	40	50	63	80	100	125	160	200
CB (H 14)		26	28	32	40	50	60	70	90	90
CD		10	12	12	16	16	20	25	30	30
E	Aluminium	45	52	65	75	95	115	140	180	220
	Steel	45	55	65	75	95	115	140	180	220
H	Aluminium	9	9	11	11	14	14	20	20	25
	Steel	10	10	10	12	14	16	20	20	20
L	Aluminium	13	16	16	21	22	27	30	35	35
	Steel	12	15	17	20	22	25	30	35	40
MR		10	12	12	16	16	20	25	25	25
TG		32,5	38	46,5	56,5	72	89	110	140	175
UB (h14)		45	52	60	70	90	110	130	170	170
XD		142	160	170	190	210	230	275	315	335
L2(±0,5)		5,5	5,5	6,5	6,5	10	10	10	10	11
S5		6,6	6,6	9	9	11	11	14	18	18
Weight	Aluminium	80	130	185	310	530	910	1710	2760	3820
	Steel	180	290	400	670	1160	2000	3890	6730	9880

Rear male clevis (MP4)

Ordering code
Aluminium: **1380.Ø.09/1F**
Steel: **1320.Ø.21F**



Similar to 09 clevis except for the connection, which is male rather than female. Used to mount the cylinder either parallel or at a right angle to the plane; the cylinder rod can oscillate and self-align as necessary when under load. Made of aluminium alloy or steel (see ordering code) and painted black.

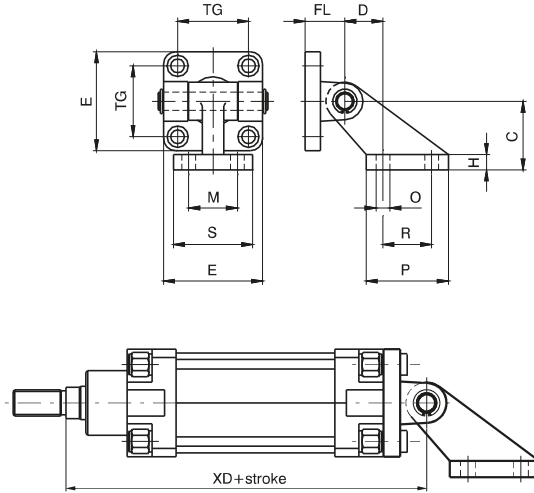


Bore		32	40	50	63	80	100	125	160	200
CD		10	12	12	16	16	20	25	30	30
E	Aluminium	45	52	65	75	95	115	140	180	220
	Steel	45	55	65	75	95	115	140	180	220
EW		26 ^(-0,2/-0,6)	28 ^(-0,2/-0,6)	32 ^(-0,2/-0,6)	40 ^(-0,2/-0,6)	50 ^(-0,2/-0,6)	60 ^(-0,2/-0,6)	70 ^(-0,5/-1,2)	90 ^(-0,5/-1,2)	90 ^(-0,5/-1,2)
H	Aluminium	9	9	11	11	14	14	20	20	25
	Steel	10	10	10	12	14	16	20	20	20
L	Aluminium	13	16	16	21	22	27	30	35	35
	Steel	12	15	17	20	22	25	30	35	40
MR		10	12	12	16	16	20	25	25	25
TG		32,5	38	46,5	56,5	72	89	110	140	175
UB (h ¹⁴)		46	53	61	71	91	111	132	171,5	171,5
XD		142	160	170	190	210	230	275	315	335
L2(±0.5)		5,5	5,5	6,5	6,5	10	10	10	10	11
S5		6,6	6,6	9	9	11	11	14	18	18
Weight	Aluminium	90	130	190	340	580	960	1890	2830	3940
	Steel	210	330	430	810	1350	2400	4300	6880	8560

Simple rear trunnion with support brackets (not specified by ISO-VDMA standards)

Ordering code

Aluminium: **1380.Ø.11F**
 Counter clevis can be ordered separately with code 1320.Ø.11/1F



Bore	32	40	50	63	80	100	125	160	200
C (±0,2)	32	45	45	63	63	90	90	140	140
D (±0,5)	18	25	25	32	32	40	40	50	50
E	45	52	65	75	95	115	140	180	220
H	8	10	10	12	12	17	17	20	20
FL	22	25	27	32	36	41	50	55	60
M (JS 14)	25	32	32	40	40	50	50	63	63
TG	32,5	38	46,5	56,5	72	89	110	140	175
O (H 13)	7	9	9	11	11	14	14	18	18
P	37	54	54	75	75	103	103	154	154
R (JS 14)	20	32	32	50	50	70	70	110	110
S	41	52	52	63	63	80	80	110	110
XD	142	160	170	190	210	230	275	315	335
Weight g	130	260	330	600	820	1560	2530	4735	5795

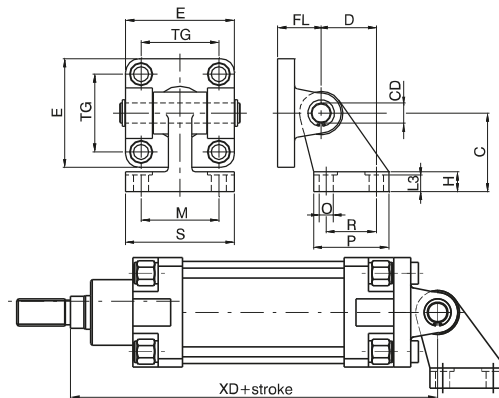
Used to mount cylinders parallel to the plane to which the counter clevis is attached. Allows self-alignment of the cylinder rod under load with an oscillation up to 90 degrees from the mounting plane.

Square angle trunnion

Ordering code

Aluminium: **1380.Ø.35F**
 Counter clevis can be ordered separately with code 1320.Ø.11/2F

Steel: **1320.Ø.23F (Ø32-Ø100)**
 Counter clevis can be ordered separately with code 1320.Ø.24F



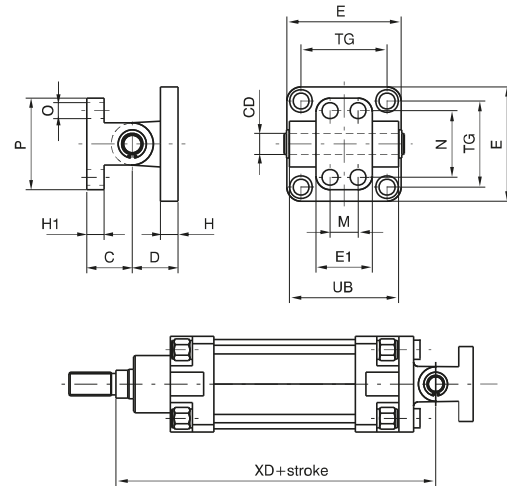
Bore		32	40	50	63	80	100	125	160	200
E	Aluminium	45	52	65	75	95	115	140	180	220
	Steel	45	55	65	75	95	115	140	180	220
TG		32,5	38	46,5	56,5	72	89	110	140	175
FL		22	25	27	32	36	41	50	55	60
D (JS14)		21	24	33	37	47	55	70	97	105
CD		10	12	12	16	16	20	25	30	30
C (JS15)		32	36	45	50	63	71	90	115	135
H	Aluminium	8	10	12	14	14	17	20	25	30
	Steel	8	10	12	12	14	15	/	/	/
L3	Aluminium	6,4	8,4	10,4	12,4	11,5	14,5	16,8	21	26
	Steel	6,5	8,5	10,5	10,5	11,5	12,5	/	/	/
R (JS14)		18	22	30	35	40	50	60	88	90
P		31	35	45	50	60	70	90	126	130
O (H13)		6,6	6,6	9	9	11	11	14	14	18
S		51	54	65	67	86	96	124	156	162
M (JS14)		38	41	50	52	66	76	94	118	122
XD		142	160	170	190	210	230	275	315	335
Weight g	Aluminium	120	180	225	435	730	1220	2325	3780	4950
	Steel	340	500	640	1250	2100	3500	/	/	/

► **Standard trunnion (not specified by ISO-VDMA standards)**

Ordering code
Aluminium: 1380.Ø.10F



Mounting consists of clevis 09 and counter clevis. Used to mount cylinders at a right angle to the plane to which the counter clevis is attached. Allows self-alignment of the cylinder rod under load with an oscillation of ± 60 degrees.



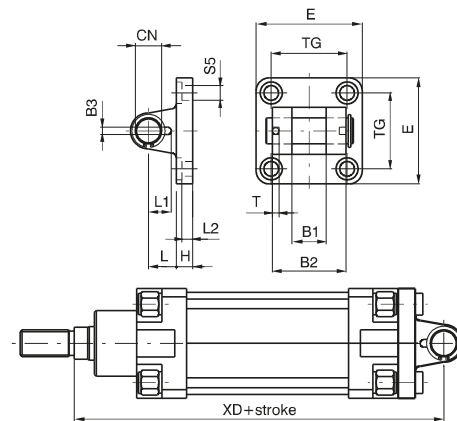
Bore	32	40	50	63	80	100	125	160	200
C (± 0.2)	18	26	26	34	34	41	41	55	55
CD	10	12	12	16	16	20	25	30	30
D	22	25	27	32	36	41	50	55	60
E	45	52	65	75	95	115	140	180	220
E1	25	32	32	46	46	56	56	71	71
H	10	10	12	12	16	16	20	20	25
H1	8	10	10	12	12	16	16	20	20
M (± 0.2)	-	16	16	25	25	32	32	43	43
N (± 0.2)	28	38	38	54	54	90	90	150	150
O	7	9	9	11	11	14	14	18	18
P	40	52	52	75	75	115	115	180	180
TG	32.5	38	46.5	56.5	72	89	110	140	175
UB	45	52	60	70	90	110	130	170	170
XD	142	160	170	190	210	230	275	315	335
Weight g	110	190	240	490	710	1290	2090	3690	4810

► **Rear narrow clevis**

Ordering code
Aluminium: 1380.Ø.30F
Steel: 1320.Ø.29F (Ø32 ... Ø125)



Utilised with clevis 15F allows the cylinder to oscillate in all directions. Made of aluminium alloy or steel (see ordering code) and painted black.

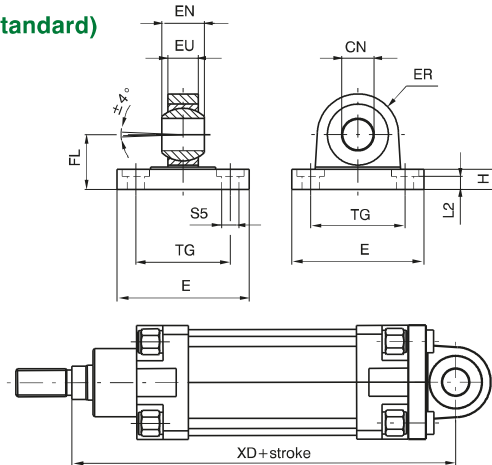


Bore	32	40	50	63	80	100	125	160	200
B1 (H 14)	14	16	21	21	25	25	37	43	43
B2 (d 12)	34	40	45	51	65	75	97	122	122
B3 (± 0.2)	3,3	4,3	4,3	4,3	4,3	6,3	6,3	6,3	6,3
CN	10	12	16	16	20	20	30	35	35
E	Aluminium	45	52	65	75	95	115	140	220
	Steel	45	55	65	75	95	115	140	220
H	Aluminium	9	9	11	11	14	14	20	25
	Steel	10	10	10	12	14	16	20	/
L	Aluminium	13	16	16	21	22	27	30	35
	Steel	12	15	17	20	22	25	30	/
L1	11,5	12	14	14	16	16	24	26,5	26,5
L2 ($\pm 0,5$)	5,5	5,5	6,5	6,5	10	10	10	10	11
S5	6,6	6,6	9	9	11	11	14	18	18
T	3	4	4	4	4	4	6	6	6
TG	32,5	38	46,5	56,5	72	89	110	140	175
XD	142	160	170	190	210	230	275	315	335
Weight g	Aluminium	70	115	200	290	570	820	1710	4380
	Steel	160	270	370	670	1110	2100	4150	/

Rear male clevis (with jointed head according to DIN 648K standard)

Ordering code

Aluminium: **1380.Ø.15F**
 Steel: **1320.Ø.25F**(Ø32 ... Ø125)



Bore		32	40	50	63	80	100	125	160	200
CN (H 7)		10	12	16	16	20	20	30	35	35
E	Aluminium	45	52	65	75	95	115	140	180	220
	Steel	45	55	65	75	95	115	140	180	220
EN (-0.1)		14	16	21	21	25	25	37	43	43
ER	Aluminium	16	19	21	24	28,5	30	40	45	48
	Steel	15	18	20	23	27	30	40	/	/
EU		10,5	12	15	15	18	18	25	28	28
FL (JS 15)		22	25	27	32	36	41	50	55	60
H	Aluminium	9	9	11	11	14	14	20	20	25
	Steel	10	10	10	12	14	16	20	/	/
L2 (±0.5)		5.5	5.5	6.5	6.5	10	10	10	10	11
S5		6.6	6.6	9	9	11	11	14	18	18
TG		32,5	38	46,5	56,5	72	89	110	140	175
XD		142	160	170	190	210	230	275	315	335
Weight g	Aluminium	60	100	180	245	480	650	1410	2420	3840
	Steel	210	310	400	710	1350	2400	4000	/	/

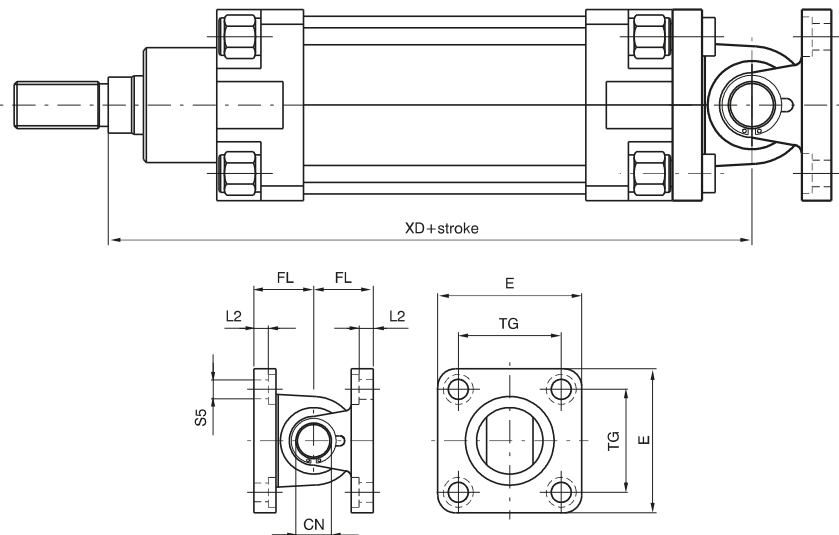
Utilised with clevis 30F allows the cylinder to oscillate in all directions. Made of aluminium alloy or steel (see ordering code) and painted black.

Complete standard trunnion (with jointed head according to DIN 648K standards)

Ordering code

Aluminium: **1380.Ø.36F**
 Counter clevis can be ordered separately with code 1380.Ø.15F

Steel: **1320.Ø.26F** (Ø32-Ø125)
 Counter clevis can be ordered separately with code 1320.Ø.25F



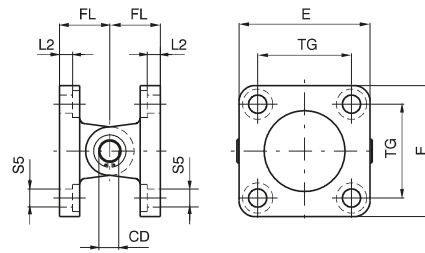
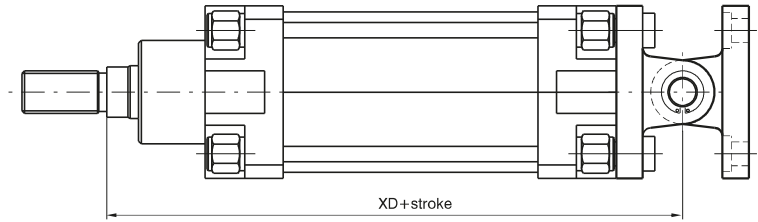
Bore		32	40	50	63	80	100	125	160	200
CN		10	12	16	16	20	20	30	35	35
E	Aluminium	45	52	65	75	95	115	140	180	220
	Steel	45	55	65	75	95	115	140	180	220
FL (JS 15)		22	25	27	32	36	41	50	55	60
L2 (±0.5)		5.5	5.5	6.5	6.5	10	10	10	10	11
S5		6.6	6.6	9	9	11	11	14	18	18
TG		32,5	38	46,5	56,5	72	89	110	140	175
XD		142	160	170	190	210	230	275	315	335
Weight g	Aluminium	130	215	380	535	1050	1470	3120	5430	8220
	Steel	380	580	770	1380	2460	4500	8150	/	/

► **Standard complete trunnion**

Ordering code

Aluminium: **1380.Ø.22F**
Mounting consists of rear clevis code 1380.Ø.09F
+ rear male clevis code 1380.Ø.09/1F
(ordering separately)

Steel: **1320.Ø.22F**
Mounting consists of rear clevis code 1320.Ø.20F
+ rear male clevis code 1320.Ø.21F
(ordering separately)

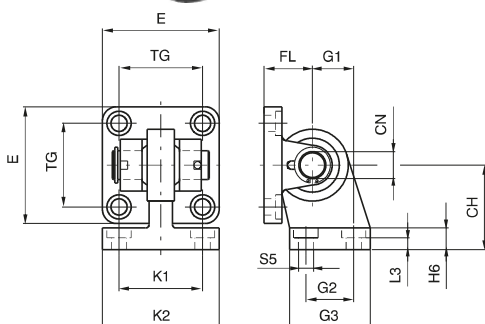
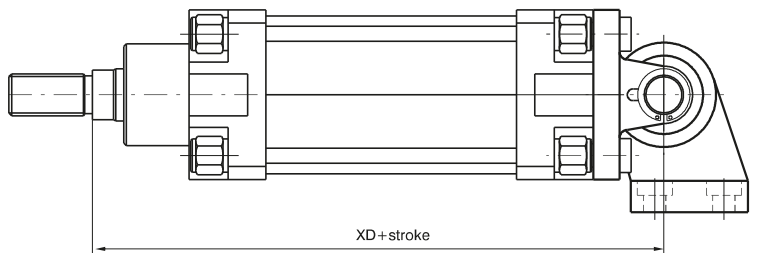


Bore	32	40	50	63	80	100	125	160	200
CD	10	12	12	16	16	20	25	30	30
E	45	55	65	75	95	115	140	180	220
FL	22	25	27	32	36	41	50	55	60
L 2 (±0.5)	5,5	5,5	6,5	6,5	10	10	10	10	11
S 5	6,6	6,6	9	9	11	11	14	18	18
TG	32,5	38	46,5	56,5	72	89	110	140	175
XD	142	160	170	190	210	230	275	315	335
Weight g	360	580	780	1370	2370	4110	7670	12650	17480

► **Complete square angle trunnion (with joined head according to DIN 648K standards)**

Ordering code

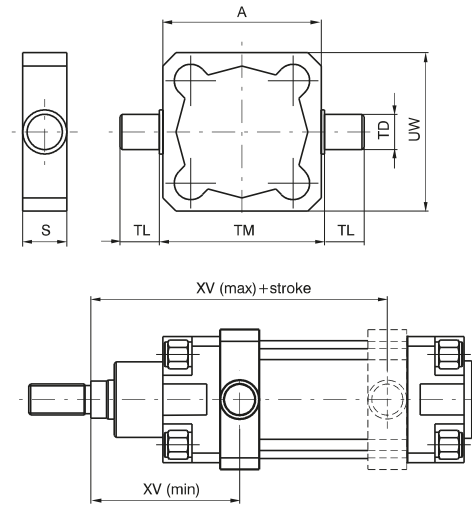
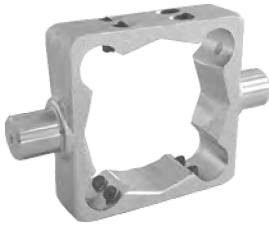
Steel: **1320.Ø.27F**
Mounting consists of
rear clevis narrow code 1320.Ø.29F
+ simple counter clevis code 1320.Ø.28F
(ordering separately)



Bore	32	40	50	63	80	100	125
CH (JS 15)	32	36	45	50	63	71	90
CN	10	12	16	16	20	20	30
E	45	55	65	75	95	115	140
FL (JS 15)	22	25	27	32	36	41	50
G1 (JS 15)	21	24	33	37	47	55	70
G2 (JS 14)	18	22	30	35	40	50	60
G3	31	35	45	50	60	70	90
H6	10	10	12	12	14	15	20
K1 (JS 14)	38	41	50	52	66	76	94
K2	51	54	65	67	86	96	124
L3 (±0.5)	8,5	8,5	10,5	10,5	11,5	12,5	17
S5	6,6	6,6	9	9	11	11	14
TG	32,5	38	46,5	56,5	72	89	110
XD	142	160	170	190	210	230	275
Weight g	330	480	830	1220	2100	3580	7000

Intermediate trunnion Series 1319 - 1321

Ordering code
Steel: 1320.Ø.12F



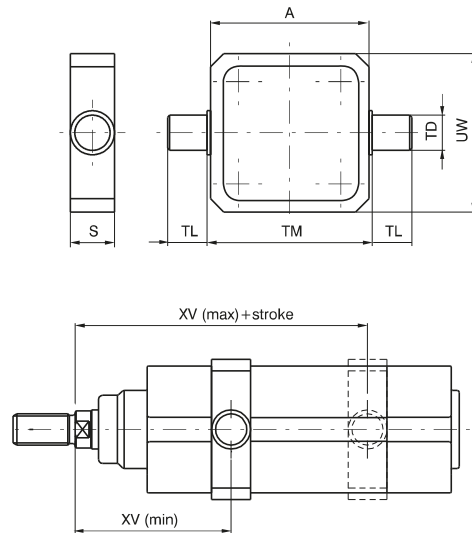
Clevis to be mounted on the barrel to have the centre of rotation of the hinge pin at a point between the end caps of the cylinder. It is attached to the barrel by means of eight pointed grains that block in the "V" groove of the four protruding shapes. In the case of anchorage subject to heavy use, it is recommended to connect the clevis once the right position has been found.

Attention: mounting of the clevis with contact to the end plates does not allow the use of the magnetic sensors as the switch limits.

Bore	32	40	50	63	80	100	125	160	200
A	49	62	73	87	109	130	155	190	240
S	18	21	21	27	27	32	32	40	40
TD (e9)	12	16	16	20	20	25	25	32	32
TL (h14)	12	16	16	20	20	25	25	32	32
TM (h14)	50	63	75	90	110	132	160	200	250
UW	59	62	73	87	109	130	155	190	240
XV (max.)	85	96	102	109	123.5	131.5	162	193	204
XV (min.)	61	69	78	86	96.5	108.5	128	150	168
Weight g	180	270	330	650	890	1550	1950	3580	5850

Intermediate trunnion Series 1386 - 1388 - 1396 - 1398

Ordering code
Steel: 1386.Ø.12F



Clevis to be mounted on the barrel to have the centre of rotation of the hinge pin at a point between the end caps of the cylinder. It is attached to the barrel by means of eight pointed grains. In the case of anchorage subject to heavy use, it is recommended to connect the clevis once the right position has been found.

Attention: mounting of the clevis with contact to the end plates does not allow the use of the magnetic sensors as the switch limits.

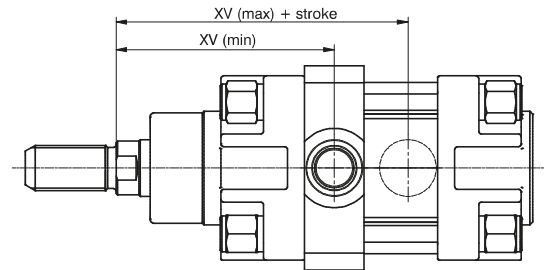
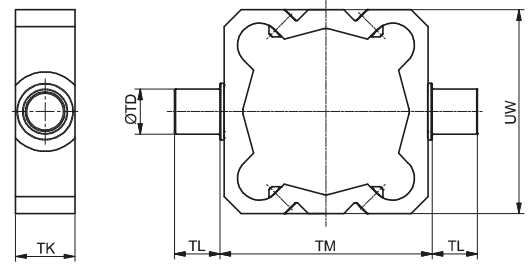
Bore	32	40	50	63	80	100
A	49.8	62.6	74.1	89.1	109.1	130.1
S	18	21	21	27	27	30
TD (e 9)	12	16	16	20	20	25
TL (h 14)	12	16	16	20	20	25
TM (h 14)	50	63	75	90	110	132
UW	70	78	91	94	130	145
XV (max.)	80	91.5	97.5	106.5	118.5	127
XV (min.)	66	73.5	82.5	88.5	101.5	113
Weight g	195	350	430	565	1035	1450

► Intermediate trunnion Series 1319 - 1321

Ordering code
1320.Ø.12BF (Aluminium with steel bushes)



Aluminium Intermediate Trunnion with steel bushes to be mounted on the barrel. This solution allows the cylinder to rotate around the hinge which can be mounted in any position between the end caps. It is attached to the barrel by means of 8 grub screws which secure the Trunnion to the extruded barrel. In the case of heavy duty applications it is recommended that the Trunnion is secured using expansion pins.
In case off applications with high speed, high load and high pressure please contact our technical office.
Please note: If the Trunnion is mounted in direct contact with the cylinder end cap, it will not be possible to fit magnetic sensors at the end of stroke.



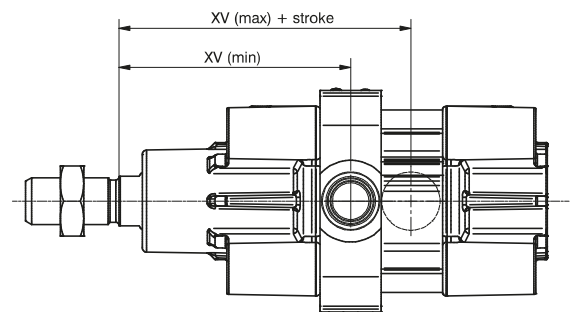
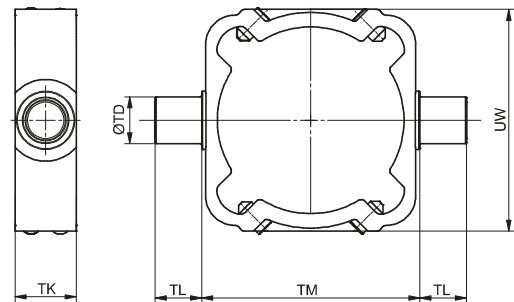
Bore	32	40	50	63	80	100
TD	Ø12	Ø16	Ø16	Ø20	Ø20	Ø25
TL	12	16	16	20	20	25
TM	50	63	75	90	110	132
TK	18	21	21	27	27	32
UW	54	60	72	87	109	130
XV min.	61	69	78	86	96.5	108.5
XV max.	85	96	102	109	123.5	131.5
Weight g	70	110	140	280	370	630

► Intermediate trunnion Series 1390 - 1392

Ordering code
1390.Ø.12F (Aluminium with steel bushes)



Aluminium Intermediate Trunnion with steel bushes to be mounted on the barrel. This solution allows the cylinder to rotate around the hinge which can be mounted in any position between the end caps. It is attached to the barrel by means of 8 grub screws which secure the Trunnion to the extruded barrel. In the case of heavy duty applications it is recommended that the Trunnion is secured using expansion pins.
In case off applications with high speed, high load and high pressure please contact our technical office.
Please note: If the Trunnion is mounted in direct contact with the cylinder end cap, it will not be possible to fit magnetic sensors at the end of stroke 1500_-, RS_-, HS_-series.



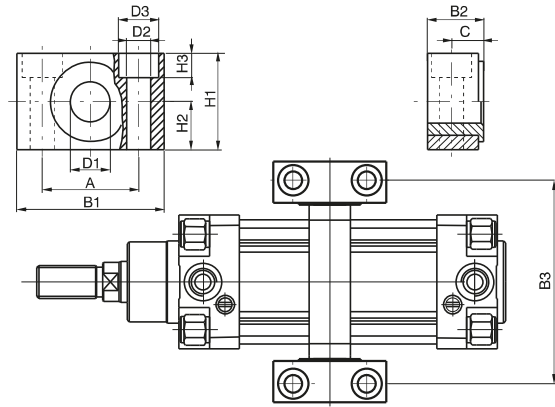
Bore	32	40	50	63	80	100
TD	Ø12	Ø16	Ø16	Ø20	Ø20	Ø25
TL	12	16	16	20	20	25
TM	53*	63	75	90	110	132
TK	18	21	21	27	27	32
UW	56	64	76	92	112	134
XV min.	65	74	80	87	99	109
XV max.	81	91	100	108	121	130.5
Weight g	60	100	125	240	320	540

* (Ø32, TM: not according to standard ISO 15552)

Support for intermediate trunnion

Ordering code

1320.Ø.12/1F
(1 piece)



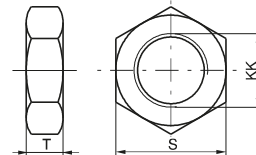
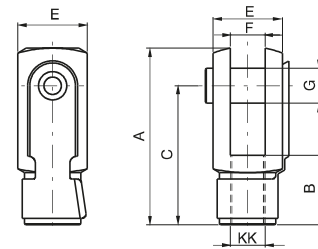
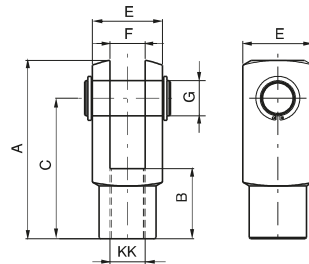
Combining two supports to the intermediate trunnion it is possible to fix the cylinder on plane surface.

Bore	32	40	50	63	80	100	125	160	200
A (±0.2)	32	36	36	42	42	50	50	60	60
B1	46	55	55	65	65	75	75	92	92
B2	18	21	21	23	23	28.5	28.5	40	40
B3	71	87	99	116	136	164	192	245	295
C	10.5	12	12	13	13	16	16	22.5	22.5
D1 (F7)	12	16	16	20	20	25	25	32	32
D2	6.6	9	9	11	11	14	14	18	18
D3	11	15	15	18	18	20	20	26	26
H1	30	36	36	40	40	50	50	60	60
H2 (±0.1)	15	18	18	20	20	25	25	30	30
H3	7	9	9	11	11	13	13	17	17
Weight g (1 piece)	100	150	150	235	235	435	435	850	850

Rod forks and nuts

Ordering code

1320.Ø.13F
1320.Ø.13/1F
(from Ø32 to Ø100)
1320.Ø.18F



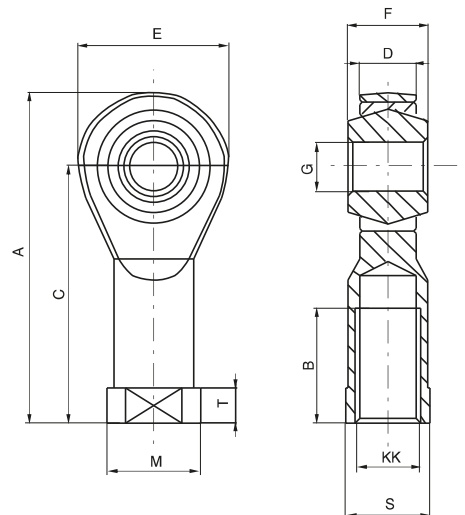
Bore	32	40	50	63	80	100	125	160	200
A	52	62	83	83	105	105	148	188	188
B	20	24	32	32	40	40	56	72	72
C	40	48	64	64	80	80	110	144	144
E	20	24	32	32	40	40	55	70	70
F(B12)	10	12	16	16	20	20	30	35	35
G	10	12	16	16	20	20	30	35	35
S	17	19	24	24	30	30	41	55	55
T	6	7	8	8	9	9	12	18	18
KK	M10X1.25	M12X1.25	M16X1.5	M16X1.5	M20X1.5	M20X1.5	M27X2	M36X2	M36X2
Weight g	forks	100	140	340	340	680	680	2500	4000
g	nut	15	20	20	20	40	40	100	210

Fork:
Element that when screwed to the rod consents a regular functioning even when there are significant lateral forces as the connection point. Made of zinc-plated steel.

Nut:
Used to block the position of the fork.

► **Ball joint**

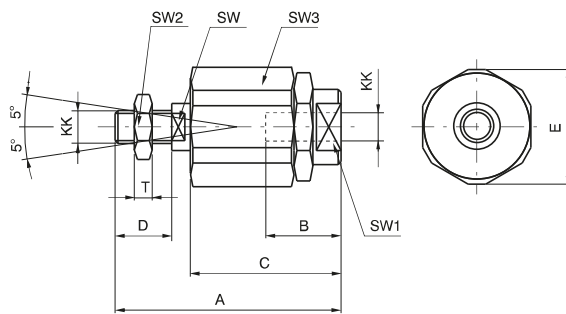
Ordering code
1320.Ø.32F



Bore	32	40	50	63	80	100	125	160	200
A	57	66	85	85	102	102	145	165	165
B	20	22	28	28	33	33	51	56	56
C	43	50	64	64	77	77	110	125	125
D (-0.1)	10.5	12	15	15	18	18	25	28	28
E	28	32	42	42	50	50	70	80	80
F	14	16	21	21	25	25	37	43	43
G (H 7)	10	12	16	16	20	20	30	35	35
KK	M10x1.25	M12x1.25	M16x1.5	M16x1.5	M20x1.5	M20x1.5	M27x2	M36x2	M36x2
M	19	22	27	27	34	34	50	58	58
S	17	19	22	22	30	30	41	50	50
T	6.5	6.5	8	8	10	10	15	17	17
Weight g	76	110	220	220	410	410	1200	1600	1600

► **Self-aligning joint**

Ordering code
1320.Ø.33F



Bore	32	40	50	63	80	100
A	71	75	103	103	119	119
B	20	20	32	32	40	40
C	46	46	63	63	71	71
D	20	24	32	32	40	40
E	32	32	45	45	45	45
KK	M10x1.25	M12x1.25	M16x1.5	M16x1.5	M20x1.5	M20x1.5
SW	12	12	20	20	20	20
SW1	19	19	27	27	27	27
SW2	17	19	24	24	30	30
SW3	30	30	41	41	41	41
T	6	7	8	8	9	9
Weight g	220	230	660	660	700	700