



## Series Steel line - AISI 316

The 1393-1394 stainless steel ISO 15552 cylinders series are designed for corrosion resistance application such as marine, pharmaceutical and food ambiances.

The pre lubrication grease used is NSF H1 certified for food application.

Specific care has been taken during the design stages and the result is a clean profile cylinder easy to clean and free from possible residue build-up areas.

All parts in contact with the external environment are in Stainless steel 316L and the seals are available in two different compounds for different temperature applications:

PUR -30°C ... +80°C FPM -5°C ... +150°C.

The range starts from 32 bore up to 100 bore , round barrel and tie rods design. Double acting version standard or with through rod, magnetic or not magnetic piston available.

The piston is aluminium and the sensor bracket, when required is in stainless steel 316.

The cylinder can be fixed via the threaded holes in the tie rod nuts or with the wide range of stainless steel accessories.

### Construction characteristics

Piston rod bushings	Stainless steel AISI 316 with P.T.F.E. coat
Barrel	Stainless steel AISI 316
Lubricating grease	NSF-H1 certified grease for incidental contact with food
Seals	PUR or FPM on request
Half-pistons	Aluminium
Piston rod	Stainless steel AISI 316
End caps	Stainless steel AISI 316
Cushion screws	Stainless steel AISI 316

### Operational characteristics

Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Pressure	10 bar
Working temperature	-30° C ... +80° C with PUR seals -5° C ... +150° C with FPM seals and non magnetic piston -5° C ... +80° C with FPM seals and magnetic piston

### Cushioning lengths

Bore	Ø	32	40	50	63	80	100
Cushioning lenght	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).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

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

### 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)

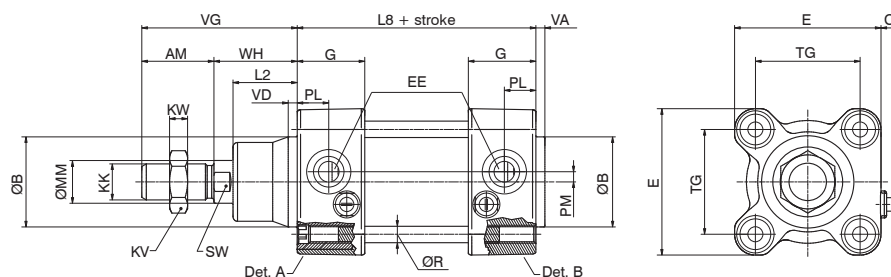
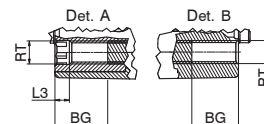
Bore	Stroke	Tolerance
32-40-50	up to 500 mm	+2 0
	over 500 up to 1000	+3,2 0
63-80-100	up to 500 mm	+2,5 0
	over 500 up to 1000	+4 0



### Basic version "01"

Coding: 13V.Ø.stroke.01G

V	VERSION
	93 = Magnetic 94 = Non magnetic
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
G	SEALS
	= PUR
	V = FPM



### Through rod cylinder version "02"

Coding: 13V.Ø.stroke.02G

V	VERSION
	93 = Magnetic 94 = Non magnetic
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
G	SEALS
	= PUR
	V = FPM

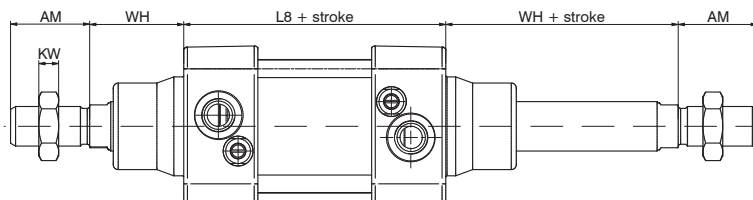
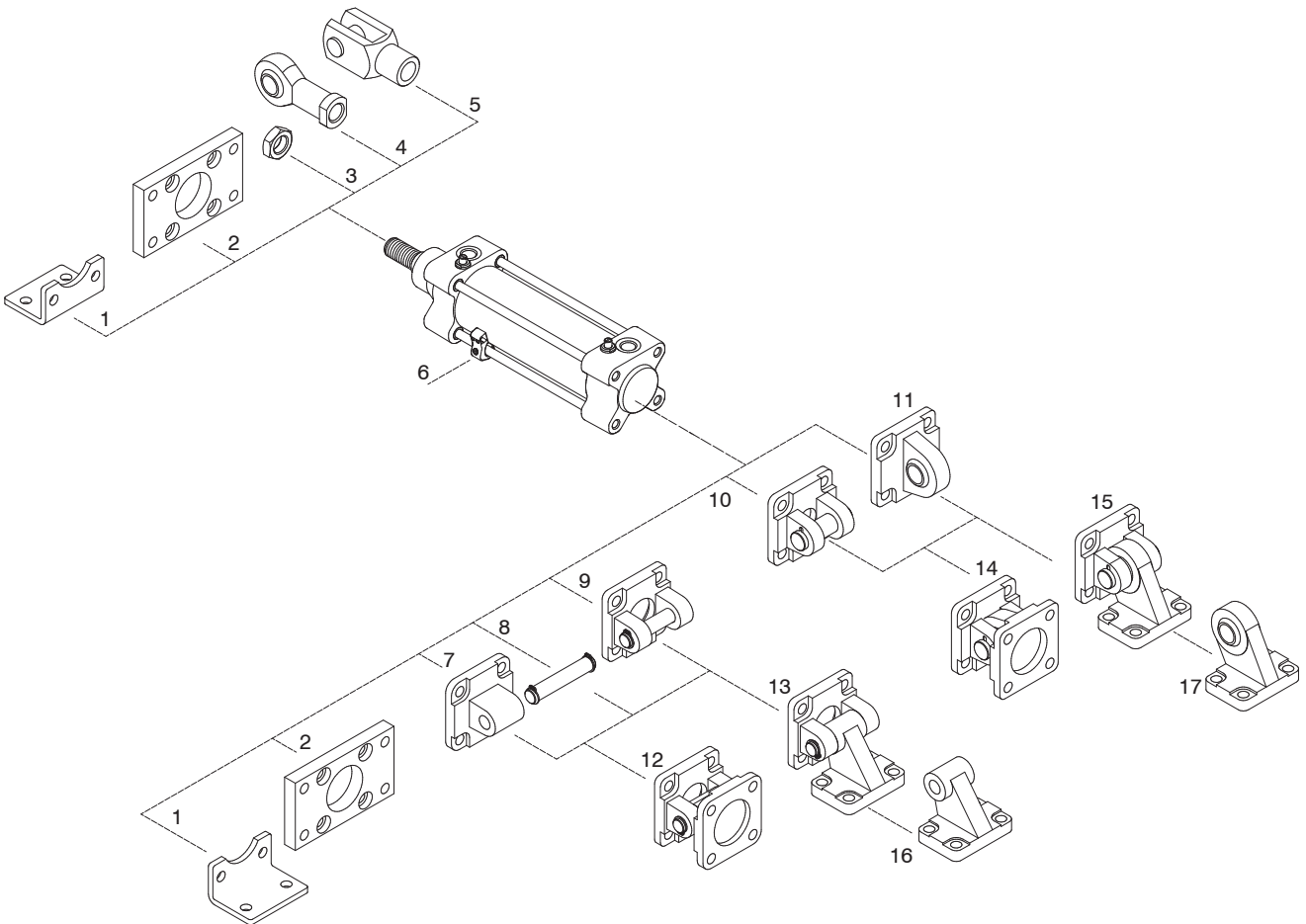


Table of dimensions

Bore		32	40	50	63	80	100
AM		22	24	32	32	40	40
ØB (d 11)		30	35	40	45	45	55
BG min.		16	16	16	16	18	17
C min.		4	4	4	4	3,5	3,5
C max.		7,5	7,5	8,5	8,5	9	9
E		47	52	65	76	95	113
EE		G1/8"	G1/4"	G1/4"	G3/8"	G3/8"	G1/2"
G		29	31	30	34	36	40,5
KK		M10X1,25	M12X1,25	M16X1,5	M16X1,5	M20x1,5	M20X1,5
KV		17	19	24	24	30	30
KW		16	7	8	8	9	9
L2		20	22	28,5	29	35	36
L3		4,5	4,5	5	5	6	6
L8		94	105	106	121	128	138
ØMM		12	16	20	20	25	25
PL		13	14	14	16	16	18
PM		3	3,5	4,5	7	8	8
ØR		Ø5,2	Ø5,2	Ø7,1	Ø7,1	Ø8,9	Ø8,9
RT		M6	M6	M8	M8	M10	M10
SW		10	13	17	17	22	22
TG		32,5	38	46,5	56,5	72	89
VA		4	4	4	4	4	4
VD		4	4	4	4	4	4
VG		48	54	69	69	86	91
WH		26	30	37	37	46	51
Weight	Stroke 0	1000	1430	2150	3000	4400	6400
	every 10 mm	35	45	63	80	120	135



Position	Description	Coding	Materials
1	Short mounting foot brackets (MS1)	1393.0.05/1F	Stainless steel AISI 316
2	Front and rear flanges (MF1 - MF2)	1393.0.03F	Stainless steel AISI 316
3	Nuts	1393.0.18F	Stainless steel AISI 316
4	Ball joint	1393.0.32F	Stainless steel
5	Fork	1393.0.13F	Stainless steel
6	Sensor brackets codes - 1580, -MRS, -MHS	1393.	Stainless steel AISI 316
7	Rear male clevis (MP4)	1393.0.09/1F	Stainless steel AISI 316
8	Pin with circlips for rear clevis (MP4 and MP2) (pos. 9)	1393.0.37F	Stainless steel AISI 316
9	Rear female clevis (MP2)	1393.0.09F	Stainless steel AISI 316
10	Rear narrow clevis	1393.0.30F	Stainless steel AISI 316
11	Rear male clevis (with jointed head according to DIN 648K standard)	1393.0.15F	Stainless steel AISI 316
12	Standard complete trunnion (pos. 7 + pos. 9)	1393.0.22F	Stainless steel AISI 316
13	Square angle trunnion (AB7) (pos. 9 + pos. 16)	1393.0.35F	Stainless steel AISI 316
14	Complete square angle trunnion (with jointed head according to DIN 648K standards) (pos. 10 + pos. 11)	1393.0.36F	Stainless steel AISI 316
15	Complete square angle trunnion (with jointed head according to DIN 648K standards) (pos. 10 + pos. 17)	1393.0.27F	Stainless steel AISI 316
16	Simple square counter clevis (AB7) (pos. 13)	1393.0.11/2F	Stainless steel AISI 316
17	Simple square counter clevis (pos. 15)	1393.0.28F	Stainless steel AISI 316

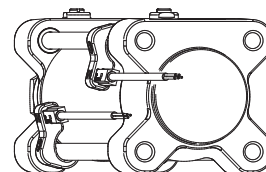
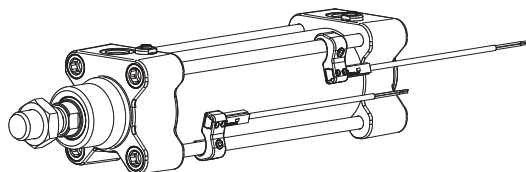
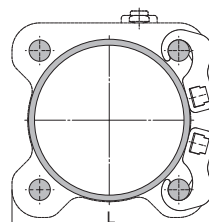


### Sensor brackets codes - 1580.\_,MRS.\_,MHS

Coding: 1393.①

TYPE
A = Ø32-Ø40
B = Ø50-Ø63
C = Ø80-Ø100

Fixing bracket made of stainless steel AISI 316 for sensor mounting on cylinders.



To mount the brackets on the tie rods use the dedicated stainless steel grub screw

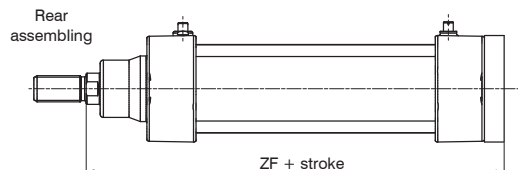
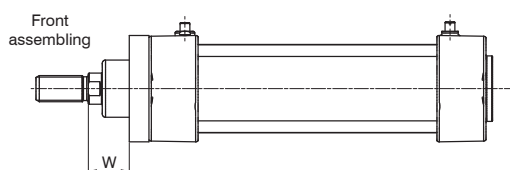
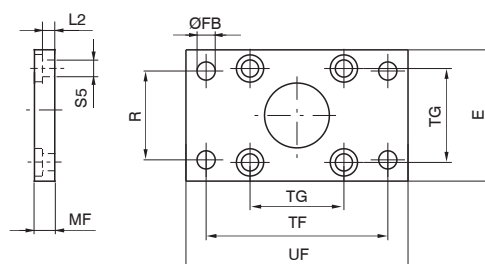
Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
L	51	57	67	79	98	115

### Front and rear flanges (MF1 - MF2)

Coding: 1393.Ø.03F

BORE
32 = Ø32
40 = Ø40
50 = Ø50
63 = Ø63
80 = Ø80
100 = Ø100

Plate in stainless steel AISI 316 which allows anchorage of the cylinder at a right angle to the plane.



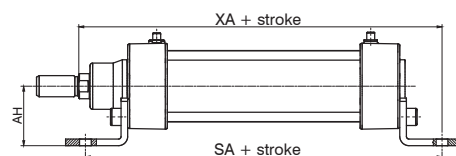
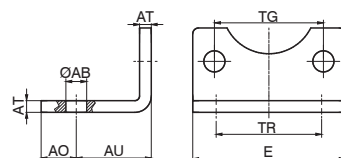
Bore	E	ØFB (H 13)	MF (JS 14)	R (JS 14)	TF (JS 14)	TG	UF	ZF	W	L2	ØS5	Weight (g)
32	45	7	10	32	64	32,5	80	130	16	5	6,6	190
40	52	9	10	36	72	38	90	145	20	5	6,6	250
50	65	9	12	45	90	46,5	110	155	25	6,5	9	480
63	75	9	12	50	100	56,5	120	170	25	6,5	9	620
80	95	12	15	63	126	72	150	189	31	7	11	1430
100	115	14	15	75	150	89	170	204	36	7	11	1990

### Short mounting foot brackets (MS1)

Coding: 1393.Ø.05/1F

BORE
32 = Ø32
40 = Ø40
50 = Ø50
63 = Ø63
80 = Ø80
100 = Ø100

Elements used to anchor the cylinder parallel to the mounting plane.  
 Made of stainless steel AISI 316.

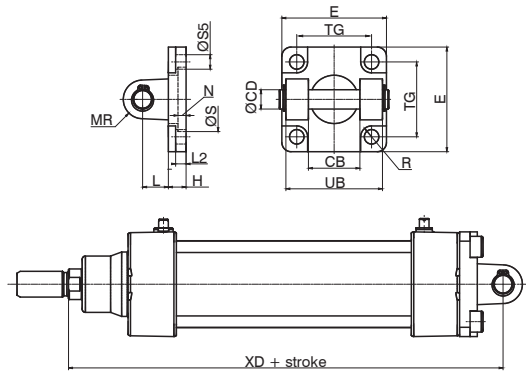


Bore	32	40	50	63	80	100
QAB (H 14)	7	9	9	9	12	14
AH	32	36	45	50	63	71
AU (± 0.2)	24	28	32	32	41	41
AO	11	8	15	13	14	16
E	45	52	65	75	95	115
AT	4	4	5	5	6	6
SA	142	161	170	185	210	220
TG	32,5	38	46,5	56,5	72	89
TR (JS 14)	32	36	45	50	63	75
XA	144	163	175	190	215	230
Weight (g)	60	70	160	180	370	430

### Rear clevis (MP2)

Coding: 1393.Ø.09F

BORE
32 = Ø32
40 = Ø40
50 = Ø50
63 = Ø63
80 = Ø80
100 = Ø100



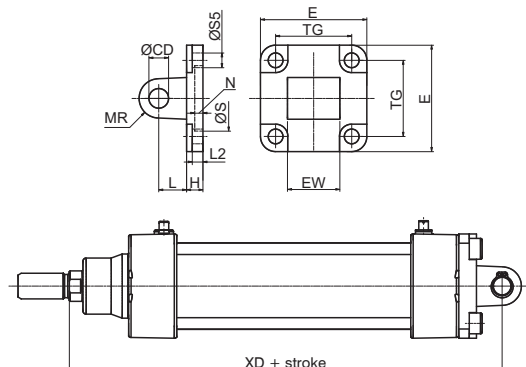
This type of mounting allows anchorage of the cylinder either parallel or right angle to plane; the cylinder rod can oscillate and self-align as necessary when under load. Made of stainless steel AISI 316.

Bore	32	40	50	63	80	100
CB (H 14)	26	28	32	40	50	60
ØCD	10	12	12	16	16	20
E	45	55	65	75	95	115
ØS (H11)	30	35	40	45	45	55
N	5	5	5	5	/	/
R (H13)	5,5	5,5	7,5	7,5	9	9
H	10	10	10	12	14	16
L	12	15	17	20	22	25
MR	10	12	12	16	16	20
TG	32,5	38	46,5	56,5	72	89
UB (h14)	45	52	60	70	90	110
XD	142	160	170	190	210	230
L2 (±0,5)	5,5	5,5	6,5	6,5	10	10
S5 (H13)	6,6	6,6	9	9	11	11
Weight (g)	140	230	370	540	1000	1700

### Rear male clevis (MP4)

Coding: 1393.Ø.09/1F

BORE
32 = Ø32
40 = Ø40
50 = Ø50
63 = Ø63
80 = Ø80
100 = Ø100



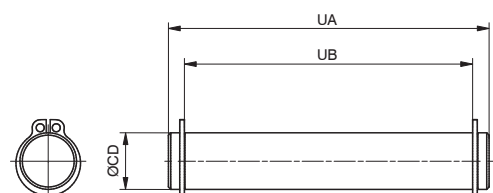
Similar to 09 clevis except for the connection, which is male rather than female. Used to mount the cylinder either parallel or at a right angle to the plane; the cylinder rod can oscillate and self-align as necessary when under load. Made of stainless steel AISI 316.

Bore	32	40	50	63	80	100
CD (H 9)	10	12	12	16	16	20
E	45	55	65	75	95	115
EW (-0,2/-0,6)	26	28	32	40	50	60
H	10	10	10	12	14	16
L	12	15	17	20	22	25
ØS (H11)	30	35	40	45	45	55
N	5	5	5	5	/	/
R (H13)	5,5	5,5	7,5	7,5	9	9
MR	10	12	12	16	16	20
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
L2 (±0,5)	5,5	5,5	6,5	6,5	10	10
S5 (H13)	6,6	6,6	9	9	11	11
Weight (g)	180	280	370	680	1200	2100

### Pin with circlips for rear clevis (MP4 and MP2)

Coding: 1393.Ø.37F

BORE
32 = Ø32
40 = Ø40
50 = Ø50
63 = Ø63
80 = Ø80
100 = Ø100



Stainless steel AISI 316 pin, complete with stainless steel circlips, which can be used with clevis code 1393.Ø.09/1F and 1393.Ø.09F

Bore	32	40	50	63	80	100
CD (e8)	10	12	12	16	16	20
UA	53	60	68	78	98	118
UB (-0,5/-0)	46	53	61	71	91	111
Weight (g)	35	50	60	120	150	290

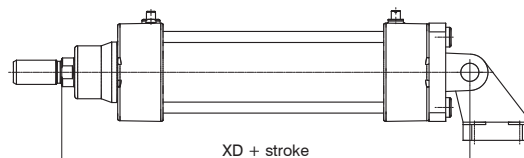
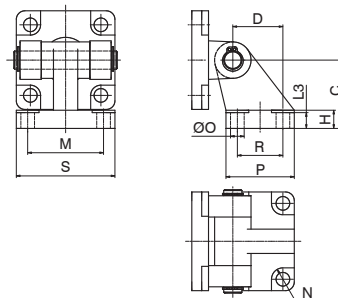


### ► Square angle trunnion (AB7)

Coding: 1393.Ø.35F

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

**Counter clevis**  
 can be ordered separately with code:  
 1393.Ø.11/2F



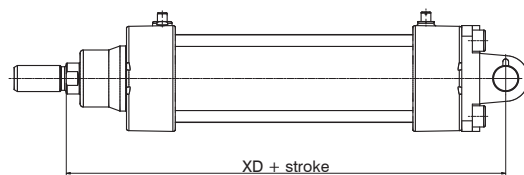
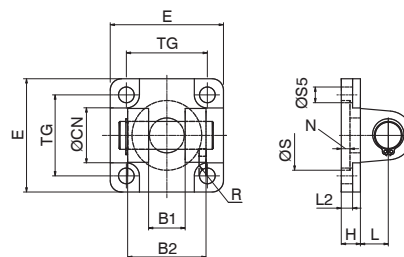
Made of stainless steel AISI 316

Bore	32	40	50	63	80	100
D (JS 15)	21	24	33	37	47	55
C (JS 15)	32	36	45	50	63	71
H	8	10	12	12	14	15
N (H 13)	5,5	5,5	7,5	7,5	9	9
L3	6,5	8,5	10,5	10,5	11,5	12,5
R (JS 14)	18	22	30	35	40	50
P	31	35	45	50	60	70
O (H 13)	6,6	6,6	9	9	11	11
S	51	54	65	67	86	96
M (JS 14)	38	41	50	52	66	76
XD	142	160	170	190	210	230
Weight (g)	330	520	810	1200	2200	4710

### ► Rear narrow clevis

Coding: 1393.Ø.30F

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100



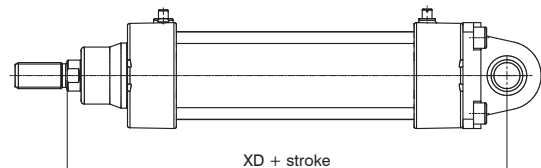
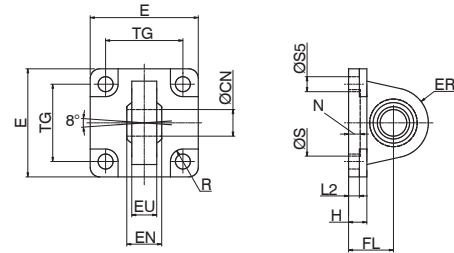
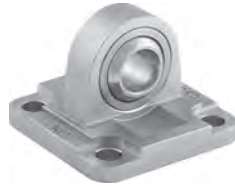
Bore	32	40	50	63	80	100
B1 (H 14)	14	16	21	21	25	25
B2 (h 14)	34	40	45	51	65	75
ØCN	10	12	16	16	20	20
E	45	55	65	75	95	115
H	10	10	10	12	14	16
L	12	15	17	20	22	25
L2 (±0,5)	5,5	5,5	6,5	6,5	10	10
S5 (H 13)	6,6	6,6	9	9	11	11
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
ØS (H 12)	30	35	40	45	45	55
R (H 13)	5,5	5,5	7,5	7,5	9	9
N	5	5	5	5	5	5
Weight (g)	170	270	420	650	1380	2050

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

Coding: 1393.Ø.15F

Ø	BORE
32	Ø32
40	Ø40
50	Ø50
63	Ø63
80	Ø80
100	Ø100

Made of stainless steel AISI 316



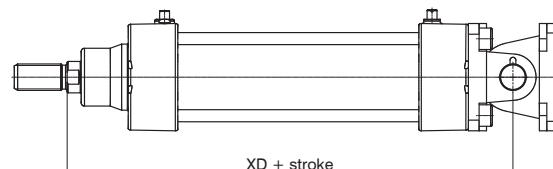
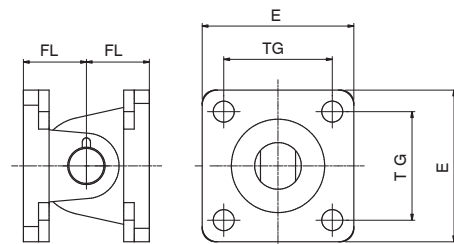
Bore	32	40	50	63	80	100
ØCN (H 7)	10	12	16	16	20	20
E	45	55	65	75	95	115
EN (-0.1)	14	16	21	21	25	25
ER	15	18	20	23	27	30
EU	10,5	12	15	15	18	18
FL (JS 15)	22	25	27	32	36	41
H	10	10	10	12	14	16
L2	5,5	5,5	6,5	6,5	10	10
S5 (H 13)	6,6	6,6	9	9	11	11
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
ØS (H 11)	30	35	40	45	45	55
R (H 13)	5,5	5,5	7,5	7,5	9	9
N	5	5	5	5	5	5
Weight (g)	150	260	370	600	1130	1800

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

Coding: 1393.Ø.36F

Ø	BORE
32	Ø32
40	Ø40
50	Ø50
63	Ø63
80	Ø80
100	Ø100

Made of stainless steel AISI 316



Bore	32	40	50	63	80	100
E	45	55	65	75	95	115
FL (JS 15)	22	25	27	32	36	41
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
Weight (g)	320	530	790	1250	2510	3850

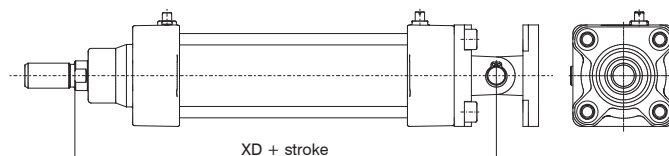
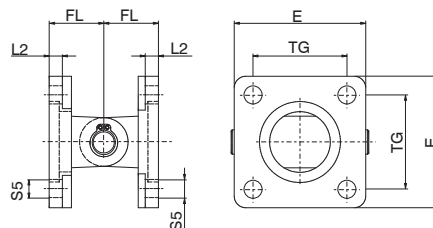


### Standard complete trunnion

Coding: 1393.Ø.22F

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Made of stainless steel AISI 316



Bore	32	40	50	63	80	100
E	45	55	65	75	95	115
FL	22	25	27	32	36	41
L2 (±0,5)	5,5	5,5	6,5	6,5	10	10
S5	6,6	6,6	9	9	11	11
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
Weight (g)	360	580	780	1370	2370	4110

3

PNEUMATIC ACTUATION

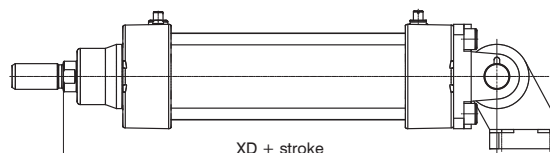
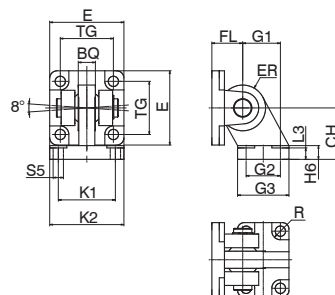
### Complete square angle trunnion (with joined head according to DIN 648K standards)

Coding: 1393.Ø.27F

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Counter clevis

can be ordered separately with code:  
1393.Ø.28F



Bore	32	40	50	63	80	100
CH (JS 15)	32	36	45	50	63	71
E	45	55	65	75	95	115
FL	22	25	27	32	36	41
G1 (JS 15)	21	24	33	37	47	55
G2 (JS 14)	18	22	30	35	40	50
G3	31	35	45	50	60	70
H6	10	10	12	12	14	15
K1 (JS 14)	38	41	50	52	66	76
K2	51	54	65	67	86	96
L3 (+0,5/-0)	8,5	8,5	10,5	10,5	11,5	12,5
S5 (H13)	6,6	6,6	9	9	11	11
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
BQ	10,5	12	15	15	18	18
ER	15	18	20	23	27	30
R (H 13)	5,5	5,5	7,5	7,5	9	9
Weight (g)	350	540	880	1200	2350	3380

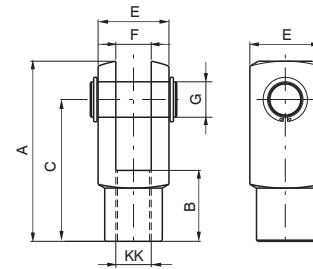
Made of stainless steel AISI 316



## Fork with pin

Coding: 1393.Ø.13F

Ø	BORE
32	Ø32
40	Ø40
50	Ø50
63	Ø63
80	Ø80
100	Ø100



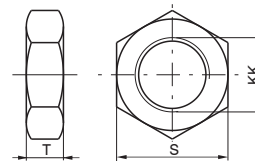
Element that when screwed to the rod consents a regular functioning even when there are significant lateral forces as the connection point. Made of stainless steel AISI 303.

Bore	32	40	50	63	80	100
A	52	62	83	83	105	105
B	20	24	32	32	40	40
C	40	48	64	64	80	80
E	20	24	32	32	40	40
F(B12)	10	12	16	16	20	20
G	10	12	16	16	20	20
KK	M10X1.25	M12X1.25	M16X1.5	M16X1.5	M20X1.5	M20X1.5
Weight (g)	100	140	340	340	680	680

## Nuts

Coding: 1393.Ø.18F

Ø	BORE
32	Ø32
40	Ø40
50	Ø50
63	Ø63
80	Ø80
100	Ø100



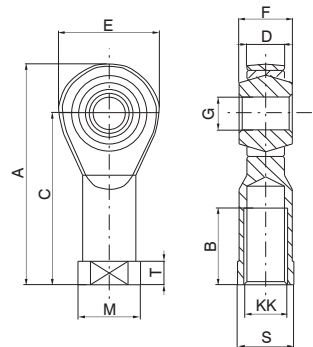
Used to block the position of the fork. Made of stainless steel AISI 316.

Bore	32	40	50	63	80	100
S	17	19	24	24	30	30
T	6	7	8	8	9	9
KK	M10X1.25	M12X1.25	M16X1.5	M16X1.5	M20X1.5	M20X1.5
Weight (g)	15	20	20	20	40	40

## Ball joint

Coding: 1393.Ø.32F

Ø	BORE
32	Ø32
40	Ø40
50	Ø50
63	Ø63
80	Ø80
100	Ø100



Mounted on the rod thread, assures a regular operation even in the presence of significant forces to the linked element. Made of stainless steel AISI 304 and 420.

Bore	32	40	50	63	80	100
A	57	66	85	85	102	102
B	20	22	28	28	33	33
C	43	50	64	64	77	77
D	10,5	12	15	15	18	18
E	28	32	42	42	50	50
F	14	16	21	21	25	25
G (H 7)	10	12	16	16	20	20
KK	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5
M	19	22	27	27	34	34
S	17	19	22	22	30	30
T	6,5	6,5	8	8	10	10
Weight (g)	75	110	220	220	410	410