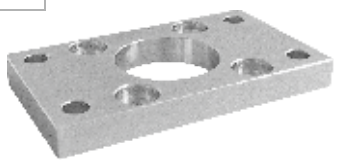
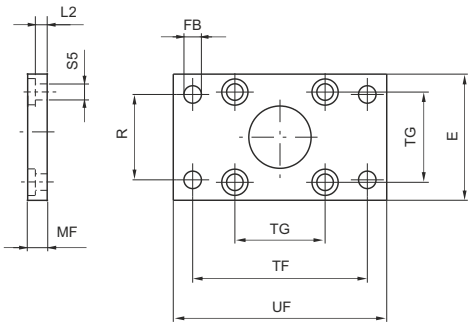
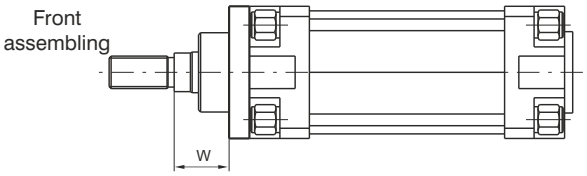
Front and rear flanges (MF1 - MF2)

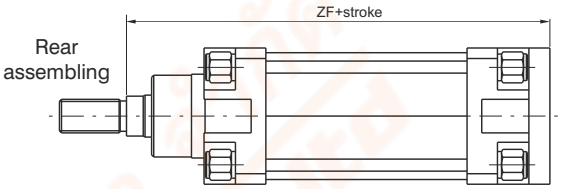
Ordering code		
Steel	: **1380.Ø.03F**	(Ø32 - Ø200)
Aluminium	: **1390.Ø.03F**	(Ø32 - Ø100)
Die-casting aluminium	: **1390.Ø.03FP**	(Ø32 - Ø100)

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





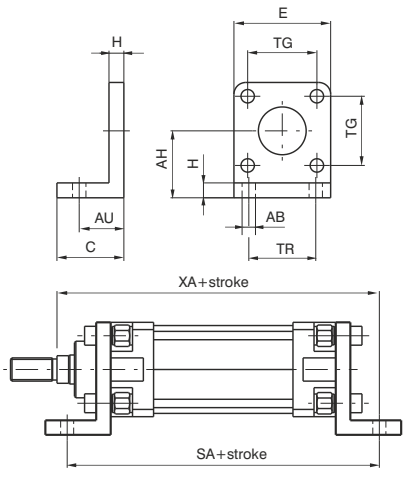




Bore	E	FB (H 13)	MF (JS 14)	R (JS 14)	TF (JS 14)	TG	UF	ZF	W	L2	S5	Weight(gr.) steel	Weight(gr.) aluminium	Weight(gr.) Die-casting aluminium
32	45	7	10	32	64	32,5	80	130	16	5	6,6	190	65	60
40	52	9	10	36	72	38	90	145	20	5	6,6	250	90	69
50	65	9	12	45	90	46,5	110	155	25	6,5	9	480	170	130
63	75	9	12	50	100	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)

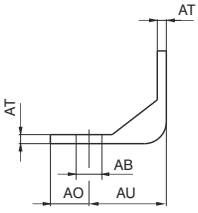


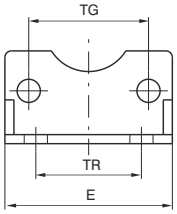
Elements used to anchor the cylinder parallel to the mounting plane. They are made of cast aluminium, painted black.

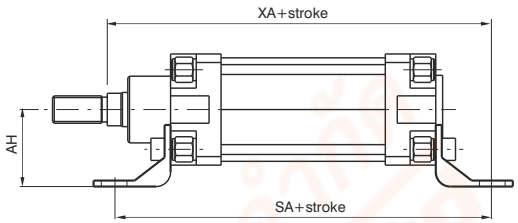
Bore	32	40	50	63	80	100	125	160	200
AB (H 14)	7	9	9	9	12	14	16	18	22
AH (JS 15)	32	36	45	50	63	71	91	115	135
AU (±0,2)	24	28	32	32	41	41	45	60	70
C	35	35	45	45	55	56	68	82	90
E	45	52	65	75	95	115	140	180	220
H	8	8	10	10	12	12	16	20	20
SA	142	161	170	185	210	220	250	300	320
TG	32,5	38	46,5	56,5	72	89	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)





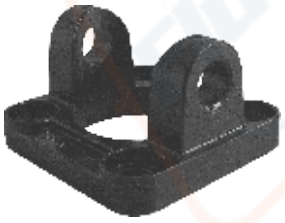


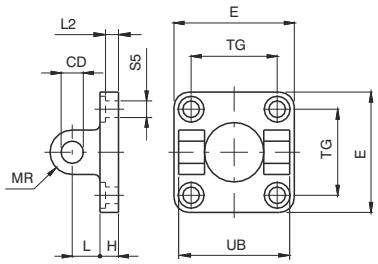
Elements used to anchor the cylinder parallel to the mounting plane. They are made of steel, and painted black.

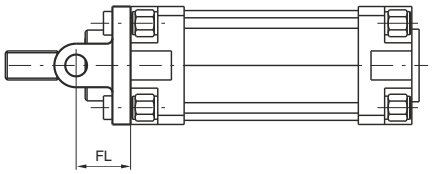
Bore	32	40	50	63	80	100	125	160	200
AB (H 14)	7	9	9	9	12	14	16	18	22
AH (JS 15)	32	36	45	50	63	71	90	115	135
AU (± 0.2)	24	28	32	32	41	41	45	60	70
AO (± 0.2)	11	8	15	13	14	16	25	15	30
E	45	52	65	75	95	115	140	180	220
AT	4	4	5	5	6	6	8	9	12
SA	142	161	170	185	210	220	250	300	320
TG	32,5	38	46,5	56,5	72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

Front clevis (not specified by ISO-VDMA standards)

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







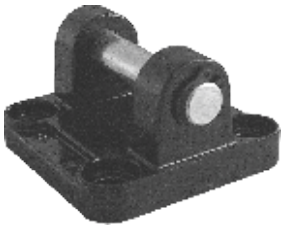
Used to mount the cylinder either parallel or at a right angle to the mounting plane; allows the cylinder to self-align under load. Made of aluminium alloy or steel (see ordering code) and painted black.

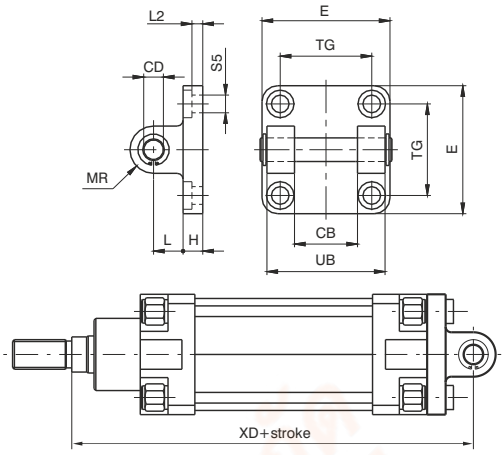
Bore		32	40	50	63	80	100	125	160	200
CD (H9)		10	12	12	16	16	20	25	30	30
E	Aluminium	45	52	65	75	95	115	140	180	220
	Steel	45	55	65	75	95	115	140	180	220
FL (±0,2)		22	25	27	32	36	41	50	55	60
H	Aluminium	9	9	11	11	14	14	20	20	25
	Steel	10	10	10	12	14	16	20	20	20
L	Aluminium	13	16	16	21	22	27	30	35	35
	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
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 gr.	Aluminium	50	75	125	190	380	620	1180	1780	2900
	Steel	150	235	340	550	1010	1710	3360	5750	8960

Rear clevis (MP2)

Ordering code

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





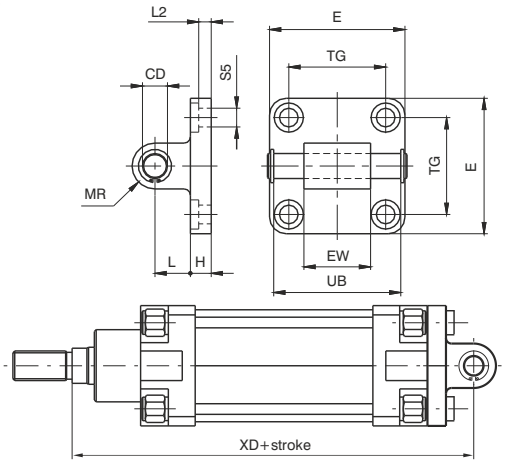
Similar to type 08 but includes a hinge pin. This type of mounting allows anchorage of the cylinder either parallel or right angle to plane; the cylinder rod can oscillate and self-align as necessary when under load. Made of aluminium alloy or steel (see ordering code) and painted black.

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 gr.	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**



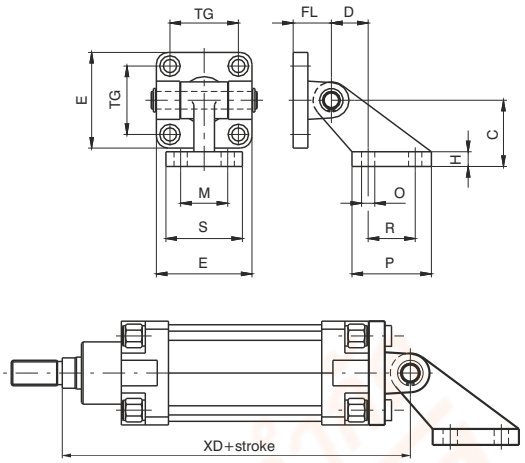
Similar to 09 clevis except for the connection, which is male rather than female. Used to mount the cylinder either parallel or at a right angle to the plane; the cylinder rod can oscillate and self-align as necessary when under load. Made of aluminium alloy or steel (see ordering code) and painted black.

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 ($^{-0,5}_{0}$)		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 gr.	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 code1320.Ø.11/1F



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.

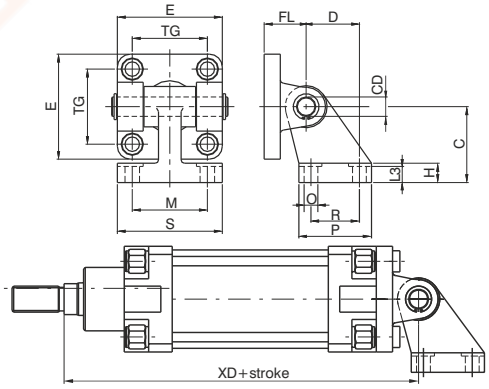
Bore	32	40	50	63	80	100	125	160	200
C (±0,2)	32	45	45	63	63	90	90	140	140
D (±0,5)	18	25	25	32	32	40	40	50	50
E	45	52	65	75	95	115	140	180	220
H	8	10	10	12	12	17	17	20	20
FL	22	25	27	32	36	41	50	55	60
M (JS 14)	25	32	32	40	40	50	50	63	63
TG	32,5	38	46,5	56,5	72	89	110	140	175
O (H 13)	7	9	9	11	11	14	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 gr.	130	260	330	600	820	1560	2530	4735	5795

Square angle trunnion

Ordering code

Aluminium: **1380.Ø.35F**
Counter clevis can be ordered separately with code1320.Ø.11/2F

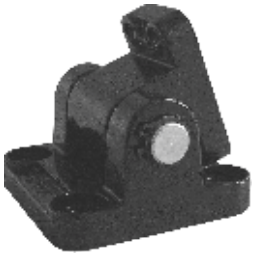
Steel: **1320.Ø.23F** (Ø32-Ø100)
Counter clevis can be ordered separately with code1320.Ø.24F

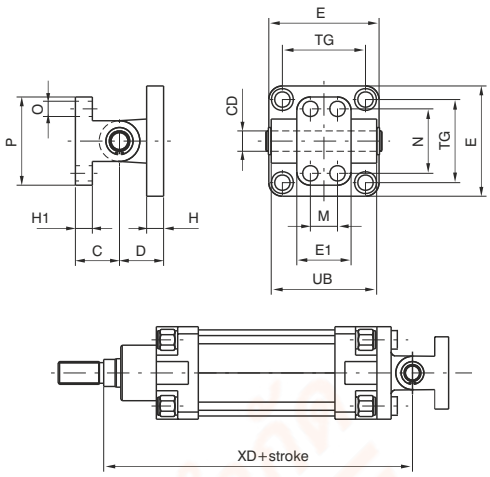


Bore		32	40	50	63	80	100	125	160	200
E	Aluminium	45	52	65	75	95	115	140	180	220
	Steel	45	55	65	75	95	115	140	180	220
TG		32,5	38	46,5	56,5	72	89	110	140	175
FL		22	25	27	32	36	41	50	55	60
D (JS14)		21	24	33	37	47	55	70	97	105
CD		10	12	12	16	16	20	25	30	30
C (JS15)		32	36	45	50	63	71	90	115	135
H	Aluminium	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 gr.	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**



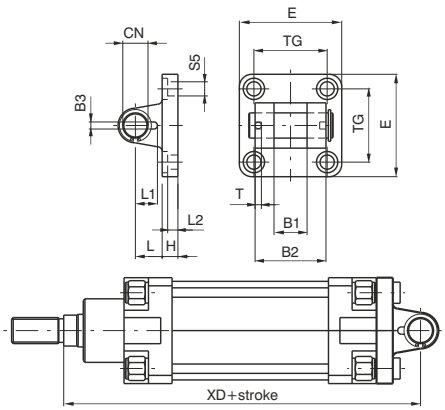


Mounting consists of clevis 09 and counter clevis. Used to mount cylinders at a right angle to the plane to which the counter clevis is attached. Allows self-alignment of the cylinder rod under load with an oscillation of ± 60 degrees.

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 gr.	110	190	240	490	710	1290	2090	3690	4810

Rear narrow clevis

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



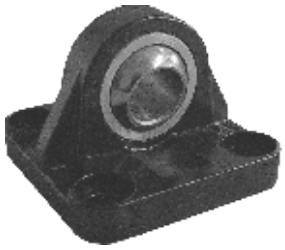
Utilised with clevis 15F allows the cylinder to oscillate in all directions. Made of aluminium alloy or steel (see ordering code) and painted black.

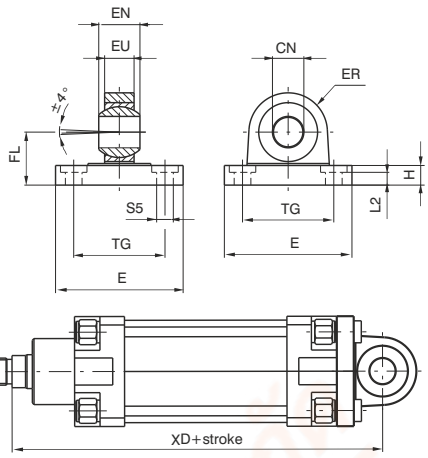
Bore		32	40	50	63	80	100	125	160	200
B1 (H 14)		14	16	21	21	25	25	37	43	43
B2 (d 12)		34	40	45	51	65	75	97	122	122
B3 ($^{+0.2}_{-0}$)		3,3	4,3	4,3	4,3	4,3	6,3	6,3	6,3	6,3
CN		10	12	16	16	20	20	30	35	35
E	Aluminium	45	52	65	75	95	115	140	180	220
	Steel	45	55	65	75	95	115	140	180	220
H	Aluminium	9	9	11	11	14	14	20	20	25
	Steel	10	10	10	12	14	16	20	/	/
L	Aluminium	13	16	16	21	22	27	30	35	35
	Steel	12	15	17	20	22	25	30	/	/
L1		11,5	12	14	14	16	16	24	26,5	26,5
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
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 gr.	Aluminium	70	115	200	290	570	820	1710	3010	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)





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

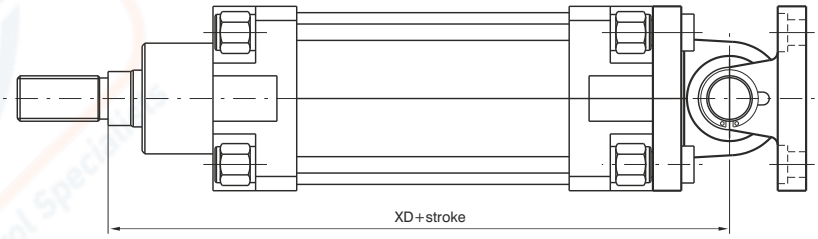
Bore		32	40	50	63	80	100	125	160	200
CN (H 7)		10	12	16	16	20	20	30	35	35
E	Aluminium	45	52	65	75	95	115	140	180	220
	Steel	45	55	65	75	95	115	140	180	220
EN (-0.1)		14	16	21	21	25	25	37	43	43
ER	Aluminium	16	19	21	24	28.5	30	40	45	48
	Steel	15	18	20	23	27	30	40	/	/
EU		10.5	12	15	15	18	18	25	28	28
FL (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	Aluminium	60	100	180	245	480	650	1410	2420	3840
gr.	Steel	210	310	400	710	1350	2400	4000	/	/

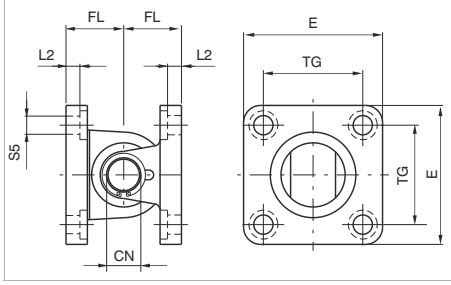
Complete standard trunnion (with joined head according to DIN 648K standards)

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





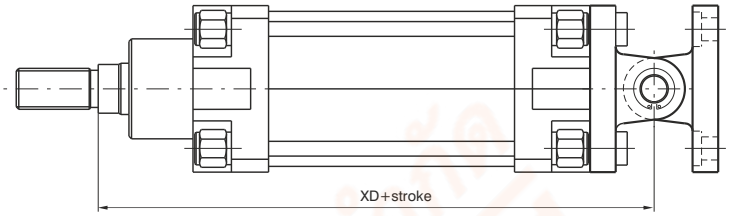
Bore		32	40	50	63	80	100	125	160	200
CN		10	12	16	16	20	20	30	35	35
E	Aluminium	45	52	65	75	95	115	140	180	220
	Steel	45	55	65	75	95	115	140	180	220
FL (JS 15)		22	25	27	32	36	41	50	55	60
L2 (±0.5)		5.5	5.5	6.5	6.5	10	10	10	10	11
S5		6.6	6.6	9	9	11	11	14	18	18
TG		32.5	38	46.5	56,5	72	89	110	140	175
XD		142	160	170	190	210	230	275	315	335
Weight	Aluminium	130	215	380	535	1050	1470	3120	5430	8220
gr.	Steel	380	580	770	1380	2460	4500	8150	/	/

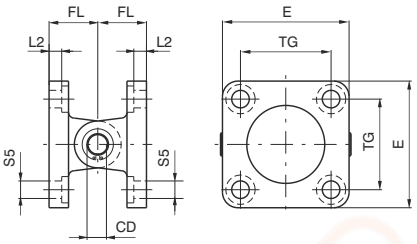
Standard complete trunnion

Ordering code

Aluminium: **1380.Ø.22F**
Mounting consists of rear clevis code 1380.Ø.09F
+ rear male clevis code1380.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)



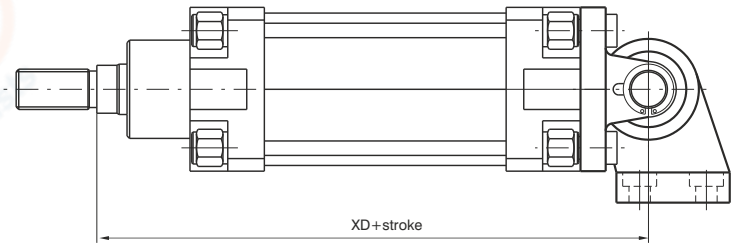


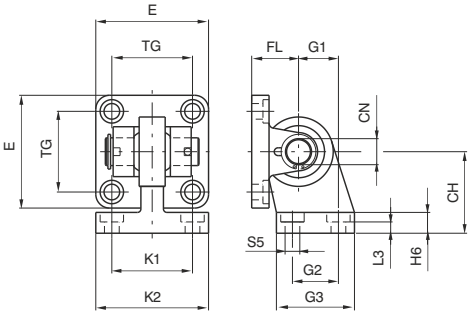
Bore	32	40	50	63	80	100	125	160	200
CD	10	12	12	16	16	20	25	30	30
E	45	55	65	75	95	115	140	180	220
FL	22	25	27	32	36	41	50	55	60
L2 (±0.5)	5,5	5,5	6,5	6,5	10	10	10	10	11
S5	6,6	6,6	9	9	11	11	14	18	18
TG	32,5	38	46,5	56,5	72	89	110	140	175
XD	142	160	170	190	210	230	275	315	335
Weight gr.	360	580	780	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)



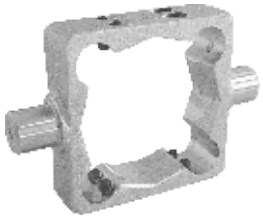


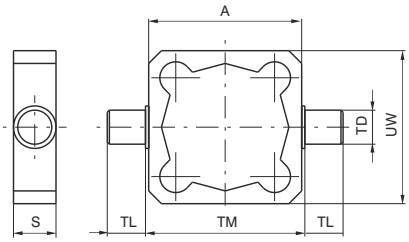
Bore	32	40	50	63	80	100	125
CH (JS 15)	32	36	45	50	63	71	90
CN	10	12	16	16	20	20	30
E	45	55	65	75	95	115	140
FL (JS 15)	22	25	27	32	36	41	50
G1 (JS 15)	21	24	33	37	47	55	70
G2 (JS 14)	18	22	30	35	40	50	60
G3	31	35	45	50	60	70	90
H6	10	10	12	12	14	15	20
K1 (JS 14)	38	41	50	52	66	76	94
K2	51	54	65	67	86	96	124
L3 ($^{+0.5}_{0}$)	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 gr.	330	480	830	1220	2100	3580	7000

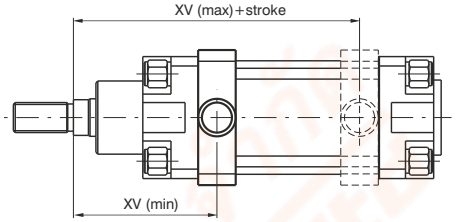
Intermediate trunnion Series 1319 - 1321

Ordering code

Steel: **1320.Ø.12F**







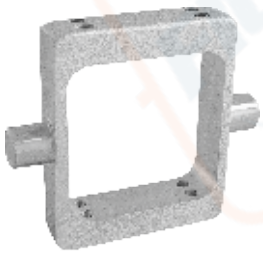
Clevis to be mounted on the barrel to have the centre of rotation of the hinge pin at a point between the end plates of the cylinder. It is attached to the barrel by means of eight pointed grains that block in the "V" groove of the four protruding shapes. In the case of anchorage subject to heavy use, 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.

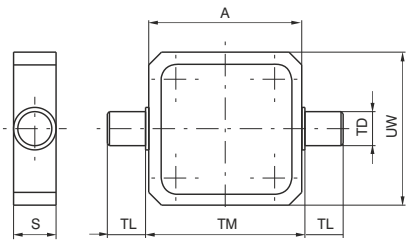
Bore	32	40	50	63	80	100	125	160	200
A	49	62	73	87	109	130	155	190	240
S	18	21	21	27	27	32	32	40	40
TD (e9)	12	16	16	20	20	25	25	32	32
TL (h14)	12	16	16	20	20	25	25	32	32
TM (h14)	50	63	75	90	110	132	160	200	250
UW	59	62	73	87	109	130	155	190	240
XV (max.)	85	96	102	109	123.5	131.5	162	193	204
XV (min.)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

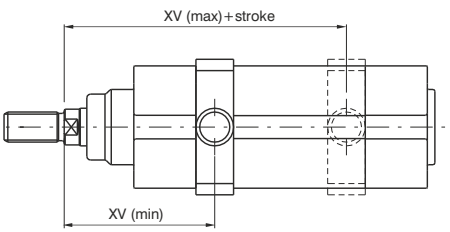
Intermediate trunnion Series 1386 - 1388 - 1396 - 1398

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 plates 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.

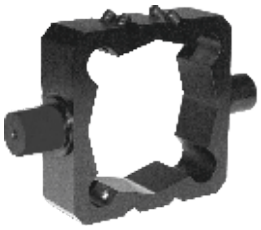
Attention: mounting of the clevis with contact to the end plates does not allow the use of the magnetic sensors as the switch limits.

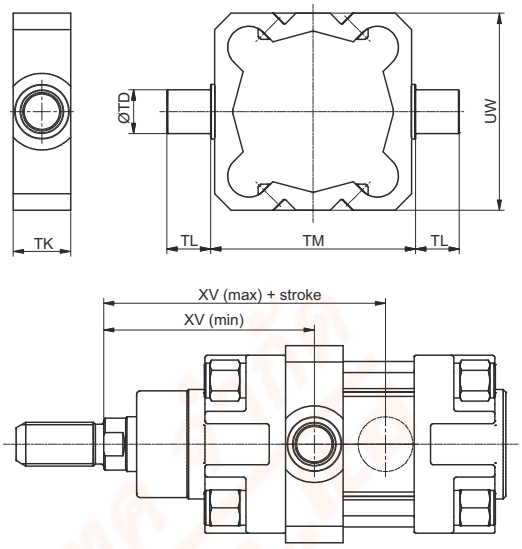
Bore	32	40	50	63	80	100
A	49.8	62.6	74.1	89.1	109.1	130.1
S	18	21	21	27	27	30
TD (e 9)	12	16	16	20	20	25
TL (h 14)	12	16	16	20	20	25
TM (h 14)	50	63	75	90	110	132
UW	70	78	91	94	130	145
XV (max.)	80	91.5	97.5	106.5	118.5	127
XV (min.)	66	73.5	82.5	88.5	101.5	113
Weight gr.	195	350	430	565	1035	1450

Intermediate trunnion Series 1319 - 1321

Ordering code

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





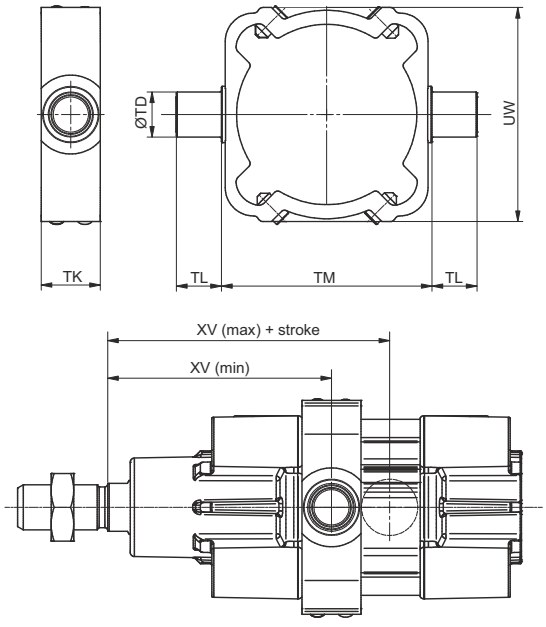
Aluminium Intermediate Trunnion with steel bushes to be mounted on the barrel. This solution allows the cylinder to rotate around the hinge which can be mounted in any position between the end caps. It is attached to the barrel by means of 8 grub screws which secure the Trunnion to the extruded barrel. 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 gr.	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 gr.	60	100	125	240	320	540

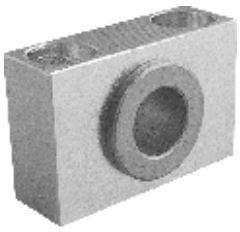
* (Ø32, TM: not according to standard ISO 15552

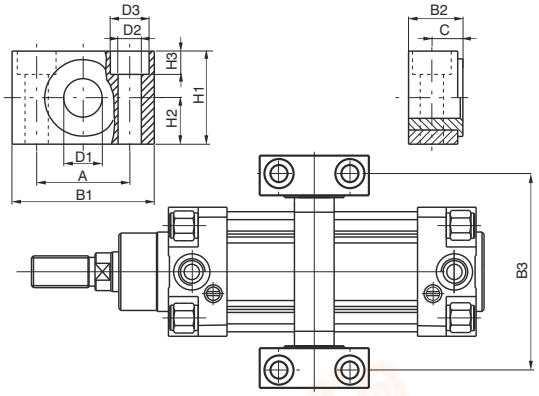
4

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 gr. (1 piece)	100	150	150	235	235	435	435	850	850

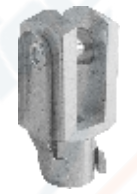
Rod forks and nuts

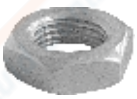
Ordering code

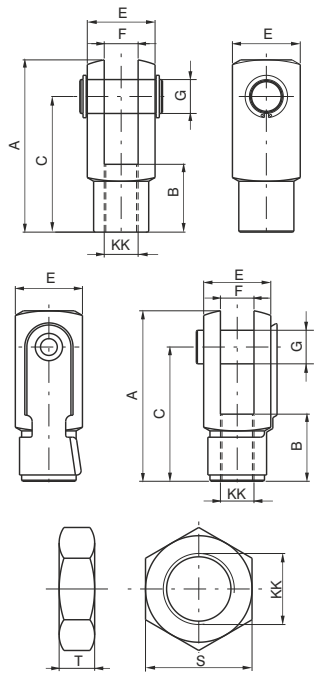
1320.Ø.13F

1320.Ø.13/1F
(from ø32 to ø100)

1320.Ø.18F







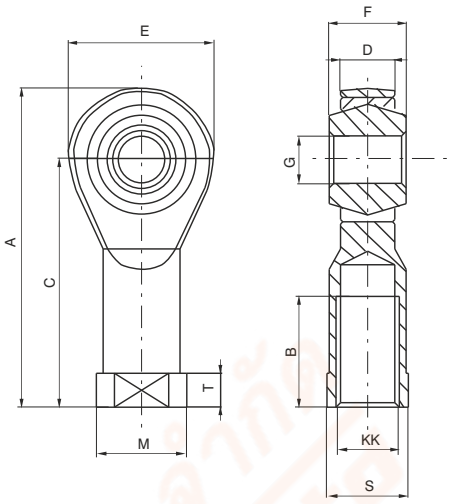
Fork:
Element that when screwed to the rod consents a regular functioning even when there are significant lateral forces as the connection point. Made of zinc-plated steel.
Nut:
Used to block the position of the fork.

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	forks	100	140	340	340	680	680	2500	4000	4000
gr.	nut	15	20	20	20	40	40	100	210	210

Ball joint

Ordering code

1320.Ø.32F

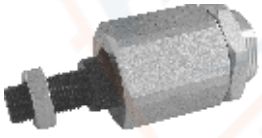


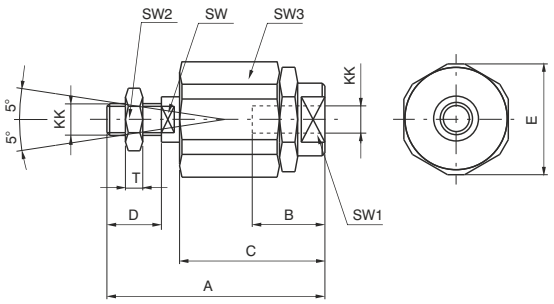
Bore	32	40	50	63	80	100	125	160	200
A	57	66	85	85	102	102	145	165	165
B	20	22	28	28	33	33	51	56	56
C	43	50	64	64	77	77	110	125	125
D (-0.1)	10.5	12	15	15	18	18	25	28	28
E	28	32	42	42	50	50	70	80	80
F	14	16	21	21	25	25	37	43	43
G (H 7)	10	12	16	16	20	20	30	35	35
KK	M10x1.25	M12x1.25	M16x1.5	M16x1.5	M20x1.5	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 gr.	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 gr.	220	230	660	660	700	700

Construction characteristics

Body	extruded shape anodized aluminium alloy 6060
Bushings	sintered bronze
Wiper	oil resitant NBR rubber
Rods	chromed C43 steel
Plate	plated zinc steel
Mounting block	plated zinc steel

Technical characteristics

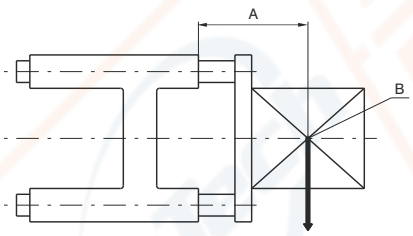
Max. suggested strokes for 1200 series:

Diameter	20	25
Stroke mm	200	250

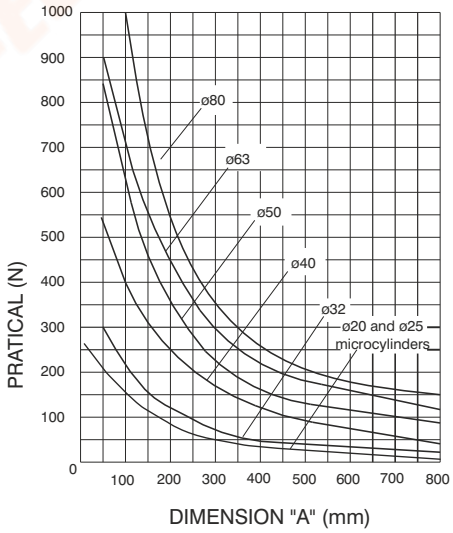
Max. suggested strokes for 1320 series:

Diameter	32	40	50	63	80
Stroke mm	300	350	450	500	550

Loading diagram based on dimension "**A**"



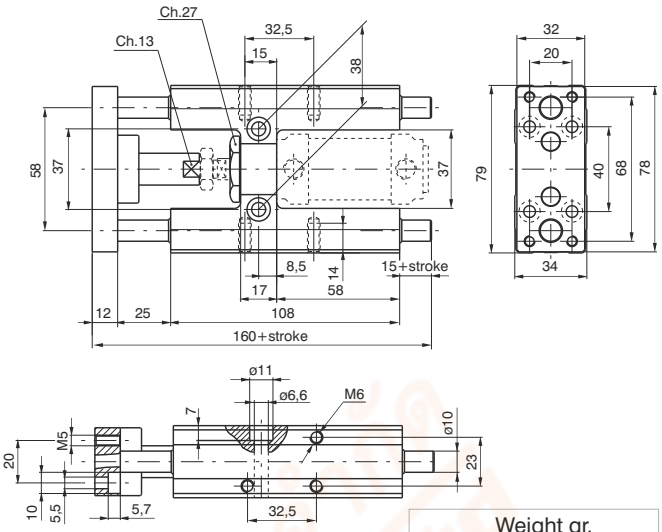
A = Protusion
B = Load centre of gravity



Use and maintenance

Follow the indication of the above diagram as far as loads are concerned. A large quantity of grease is placed between the two wipers during assembly, therefore the linear control units should not require special maintenance.

Dimensions for microcylinders ISO 6432



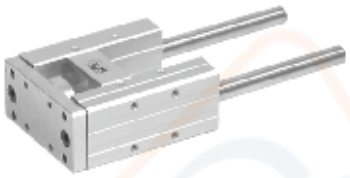
Ordering code
1260.Ø.stroke.GLB (Microcylinders ISO 6432 must be ordered separately)

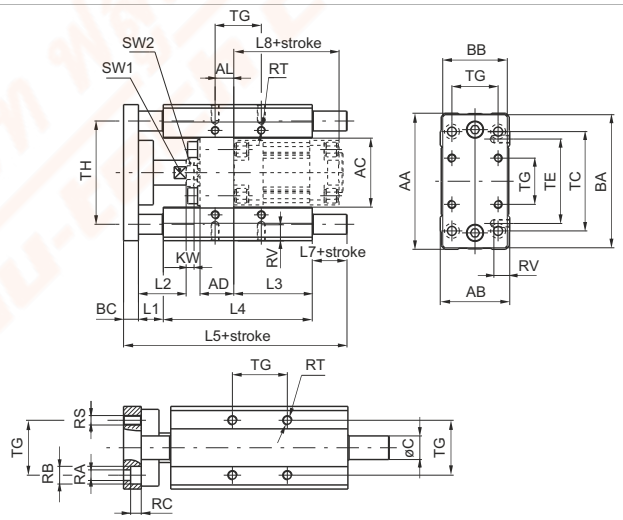
Weight gr.	
stroke 100	every 50 mm
970	60

Standard strokes
ø 20 100 - 150 - 200 mm
ø 25 100 - 150 - 200 - 250 mm

Sensors and sensor clamps: Use standard sensors and clamps.

Dimensions for microcylinders ISO 15552





Ordering code
1320.Ø.stroke.GLB (Cylinders must be ordered separately)

Weight gr.	Bore	Ø32	Ø40	Ø50	Ø63	Ø80
	stroke 100	1720	2900	4700	6000	11300
	every 50 mm	91	159	159	250	380

Bore	AA	AB	AC	AD	AL	BA	BB	BC	C	KW	L1	L2	L3	L4	L5
32	97	49	50	24	4.3	93	45	12	12	6	25	39	76	125	187
40	115	58	57.5	28	11	112	55	12	16	7	25	44	81	140	207
50	137	70	69.5	34	18.8	134	65	15	20	8	25	48	79	150	225
63	152	85	84.5	34	15.3	149	80	15	20	8	25	48	111	182	242
80	189	105	106	34	21	180	100	20	25	9	25	53	128	215	302

Bore	L7	L8	RA	RB	RC	RS	RT	RV	SW1	SW2	TC	TE	TG	TH
32	25	94	6.6	11	6.5	M6	M6	12	15	17	78	61	32.5	74
40	30	105	6.6	11	6.5	M6	M6	14	15	19	84	69	38	87
50	35	106	9	15	9	M8	M8	16	22	24	100	85	46.5	104
63	20	121	9	15	9	M8	M8	16	22	24	105	100	56.5	119
80	42	128	11	18	11	M10	M10	20	27	24	130	130	72	148

Standard strokes
Ø 32 100 - 150 - 200 - 250 - 300 mm
Ø 40 100 - 150 - 200 - 250 - 300 - 350 mm
Ø 50 100 - 150 - 200 - 250 - 300 - 350 - 400 - 450 mm
Ø 63 100 - 150 - 200 - 250 - 300 - 350 - 400 - 450 - 500 mm
Ø 80 100 - 150 - 200 - 250 - 300 - 350 - 400 - 450 - 500 - 550 mm

Sensor clamps and brackets for 1319-1320 series
Use standard sensors and brackets on the rear and following special brackets on front of cylinders for use sensors codes 1500._, RS._, HS._ which have the following ordering codes:

1320.AGL sensor bracket for cylinders Ø32 and Ø40
1320.BGL sensor bracket for cylinders Ø50 and Ø63
1320.CGL sensor bracket for cylinders Ø80

General

The 1393-1394 stainless steel ISO 15552 cylinders series are designed for corrosion resistance application such as marine, pharmaceutical and food ambiences.
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 -30C° - +80 C° and 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

End caps, piston rod, barrel, cushion screws	Stainless steel AISI 316
Rod-guide bushings	Stainless steel AISI 316 with P.T.F.E. coat
Half-pistons	Aluminium
Seals	PUR or FPM on request
Lubricating grease	NSF-H1 certified grease for incidental contact with food

Technical characteristics

Fluid	Filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Max. pressure	10 bar
Operating 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
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.
Our Technical Department will be glad to help.

Standard strokes (for all diameters)

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

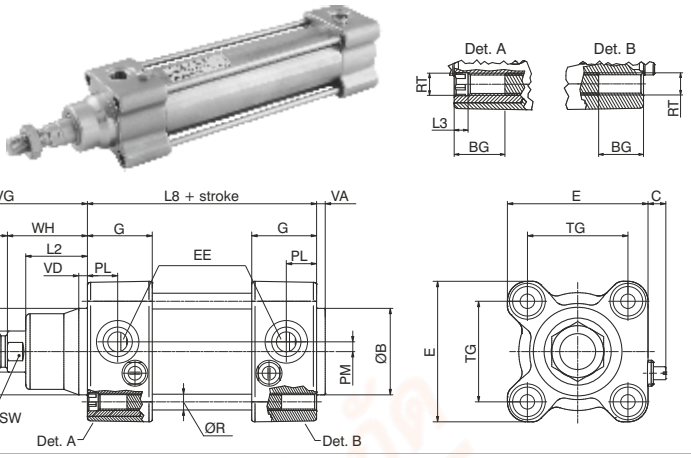
Stroke tolerance (ISO 15552)

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	$^{+4}_{0}$

Basic version “01”

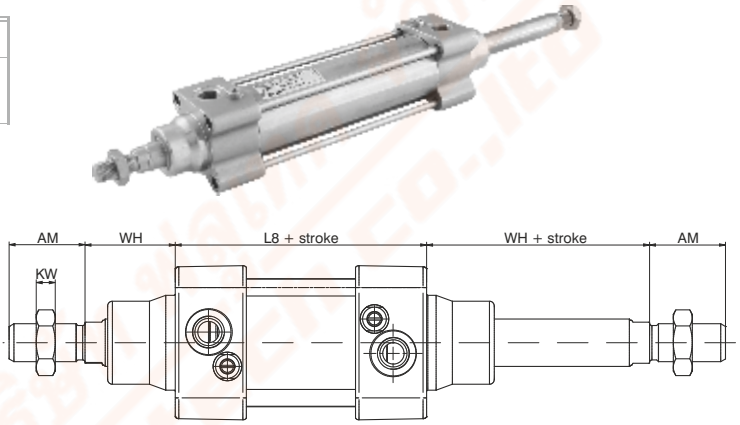
Ordering code
1393.Ø.stroke.01 Magnetic **1394.Ø.stroke.01** Non magnetic

This is the configuration representing the basic cylinder according to ISO standards. It can be directly anchored on machine parts using the four threads on the end cover screws. For other applications see the pages about different types of stainless steel fixings.



Push/pull version - “02”

Ordering code
1393.Ø.stroke.02 Magnetic **1394.Ø.stroke.02** Non magnetic



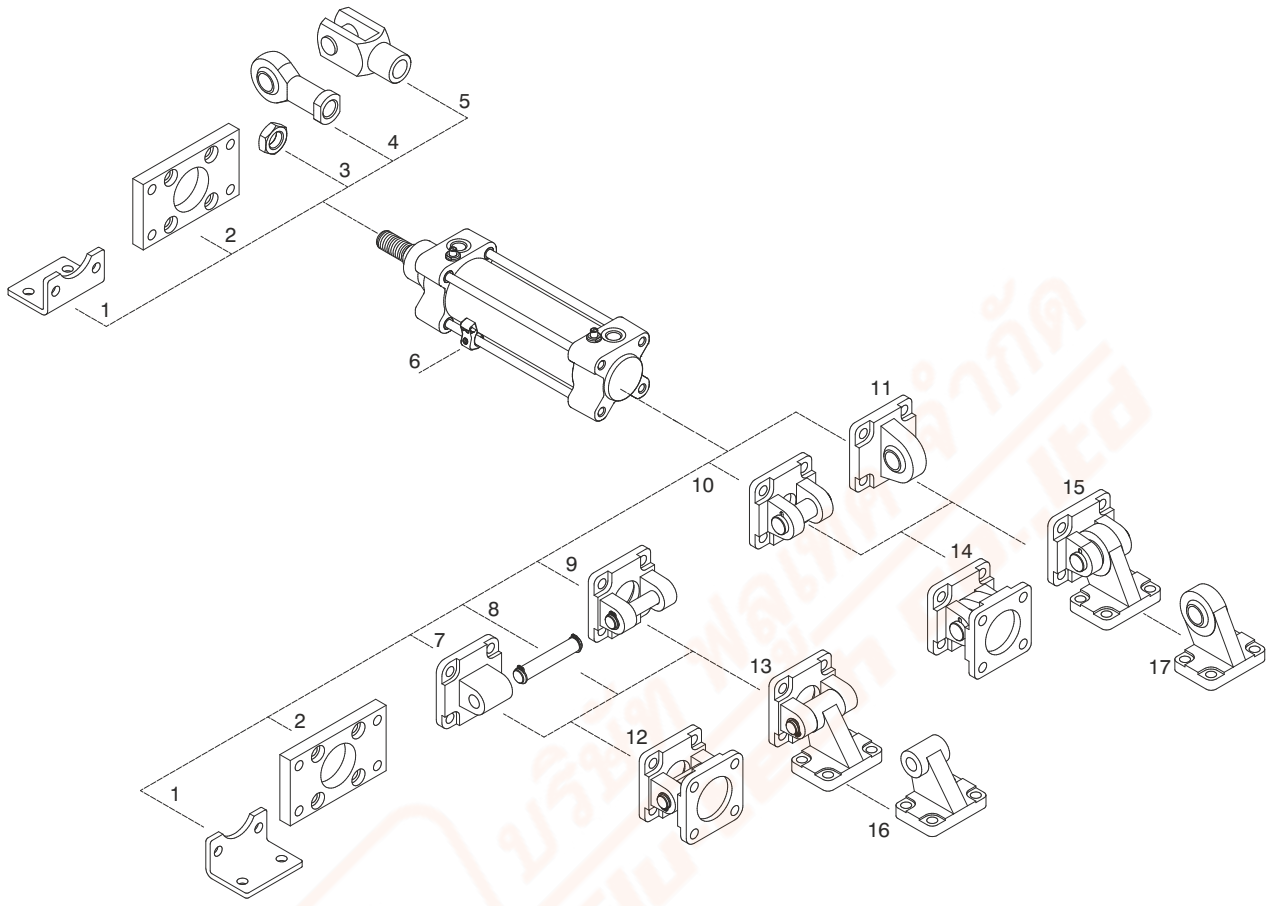
Variants

Version with FPM seals

Ordering code
139_.(93.94) Ø.stroke._ _ V

Table of dimensions

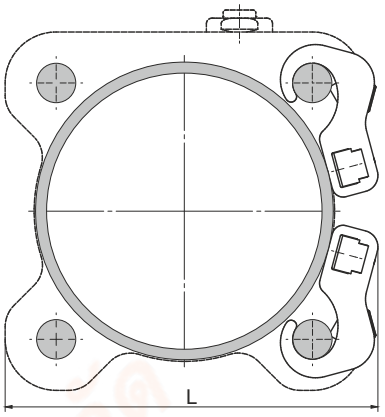
Bore		32	40	50	63	80	100
AM		22	24	32	32	40	40
ØB (d 11)		30	35	40	45	45	55
BG min.		16	16	16	16	18	17
C	min.	4	4	4	4	3,5	3,5
	max.	7.5	7,5	8,5	8,5	9	9
E		47	52	65	76	95	113
EE		G1/8"	G1/4"	G1/4"	G3/8"	G3/8"	G1/2"
G		29	31	30	34	36	40,5
KK		M10X1,25	M12X1,25	M16X1,5	M16X1,5	M20x1,5	M20X1,5
KV		17	19	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
gr.	every 10 mm	35	45	63	80	120	135



Position	Description	Ordering code	Materials
1	Short mounting foot brackets (MS1)	1393.Ø.05/1F	Stainless steel AISI 316
2	Flange (MF1-MF2)	1393.Ø.03F	Stainless steel AISI 316
3	Rod nut	1393.Ø.18F	Stainless steel AISI 316
4	Ball joint	1393.Ø.32F	Stainless steel
5	Fork	1393.Ø.13F	Stainless steel
6	Sensor bracket	1393._	Stainless steel AISI 316
7	Rear male clevis (MP4)	1393.Ø.09/1F	Stainless steel AISI 316
8	Pin (AA4) with circlips for rear clevis (MP2) (pos. 9)	1393.Ø.37F	Stainless steel AISI 316
9	Rear female clevis (MP2)	1393.Ø.09F	Stainless steel AISI 316
10	Rear narrow clevis (AB6)	1393.Ø.30F	Stainless steel AISI 316
11	Rear male clevis (with jointed head - MP6)	1393.Ø.15F	Stainless steel AISI 316
12	Standard complete trunnion (pos. 7 + pos. 9)	1393.Ø.22F	Stainless steel AISI 316
13	Square angle trunnion (pos. 9 + pos. 16)	1393.Ø.35F	Stainless steel AISI 316
14	Standard complete trunnion with jointed head (pos. 10 + pos.11)	1393.Ø.36F	Stainless steel AISI 316
15	Complete square angle trunnion (pos. 10 + pos.17)	1393.Ø.27F	Stainless steel AISI 316
16	Simple square counter clevis (AB7) (pos. 13)	1393.Ø.11/2F	Stainless steel AISI 316
17	Simple square counter clevis (pos. 15)	1393.Ø.28F	Stainless steel AISI 316

Sensor bracket

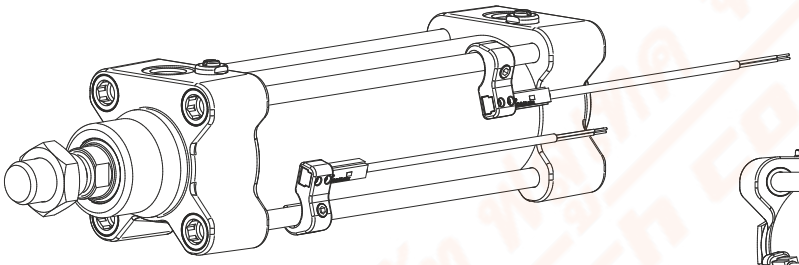
Ordering code
1393.A (Ø32 - Ø40) **1393.B** (Ø50 - Ø63) **1393.C** (Ø80 - Ø100)

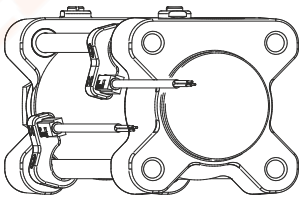


Fixing bracket made of stainless steel AISI 316 for sensor mounting on cylinders.

Sensors code **1580._**
MRS._
MHS._

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





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

Front and rear flanges (MF1 - MF2)

Ordering code
1393.Ø.03F

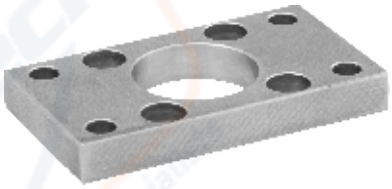
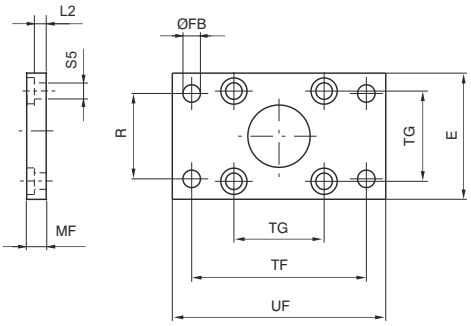
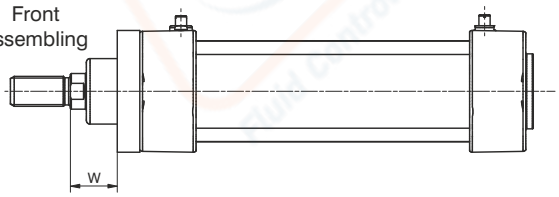


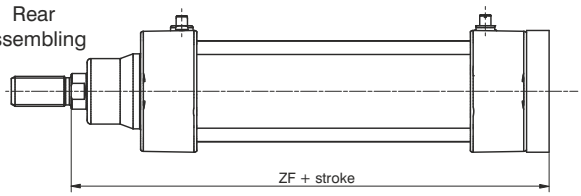
Plate in stainless steel AISI 316 which allows anchorage of the cylinder at a right angle to the plane.



Front assembling



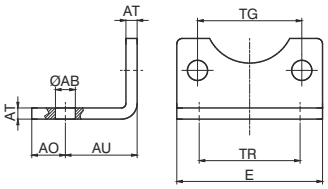
Rear assembling

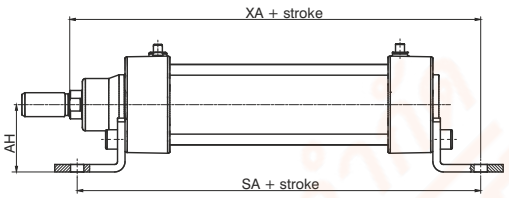


Bore	E	ØFB (H 13)	MF (JS 14)	R (JS 14)	TF (JS 14)	TG	UF	ZF	W	L2	ØS5	Weight (gr.)
32	45	7	10	32	64	32,5	80	130	16	5	6,6	190
40	52	9	10	36	72	38	90	145	20	5	6,6	250
50	65	9	12	45	90	46,5	110	155	25	6,5	9	480
63	75	9	12	50	100	56,5	120	170	25	6,5	9	620
80	95	12	15	63	126	72	150	189	31	7	11	1430
100	115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

Short mounting foot brackets (MS1)

Ordering code
1393.Ø.05/1F



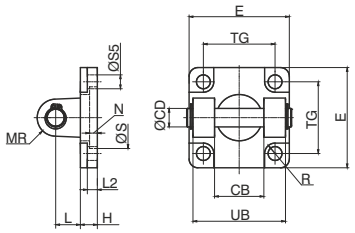


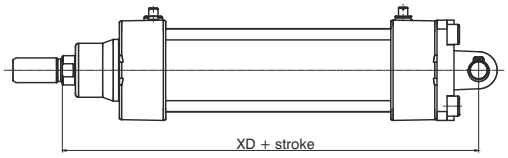
Elements used to anchor the cylinder parallel to the mounting plane. They are made of stainless steel AISI 316.

Bore	32	40	50	63	80	100
ØAB (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 gr.	60	70	160	180	370	430

Rear clevis (MP2)

Ordering code
1393.Ø.09F



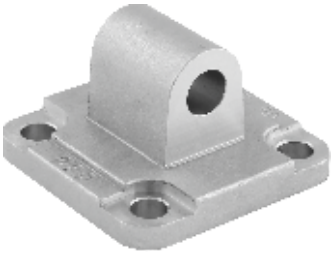


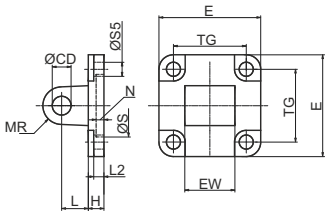
This type of mounting allows anchorage of the cylinder either parallel or right angle to plane; the cylinder rod can oscillate and self-align as necessary when under load. Made of stainless steel AISI 316.

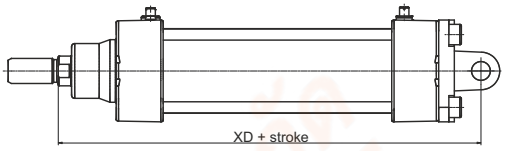
Bore	32	40	50	63	80	100
CB (H 14)	26	28	32	40	50	60
ØCD	10	12	12	16	16	20
E	45	55	65	75	95	115
ØS (H11)	30	35	40	45	45	55
N	5	5	5	5	/	/
R (H13)	5,5	5,5	7,5	7,5	9	9
H	10	10	10	12	14	16
L	12	15	17	20	22	25
MR	10	12	12	16	16	20
TG	32,5	38	46,5	56,5	72	89
UB (h14)	45	52	60	70	90	110
XD	142	160	170	190	210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

Rear male clevis (MP4)

Ordering code
1393.Ø.09/1F





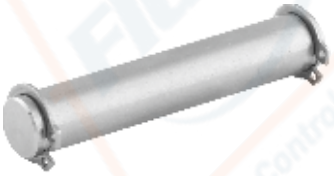


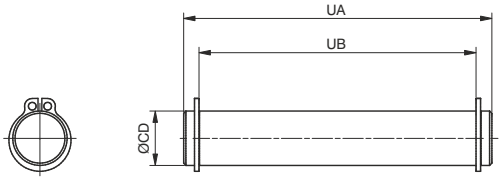
Similar to 09 clevis except for the connection, which is male rather than female. Used to mount the cylinder either parallel or at a right angle to the plane; the cylinder rod can oscillate and self-align as necessary when under load. Made of stainless steel AISI 316.

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 gr.	180	280	370	680	1200	2100

Pin with circlips for rear clevis (MP4 and MP2)

Ordering code
1393.Ø.37F





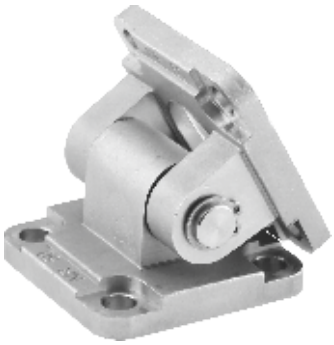
Stainless steel AISI 316 pin, complete with stainless steel circlips, which can be used with clevis code 1393.Ø.09/1F and 1393.Ø.09F

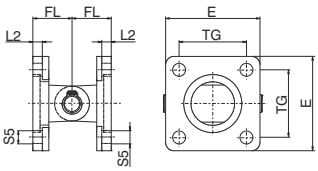
Bore	32	40	50	63	80	100
CD (e8)	10	12	12	16	16	20
UA	53	60	68	78	98	118
UB ($^{-0,5}_{-0}$)	46	53	61	71	91	111
Weight gr.	35	50	60	120	150	290

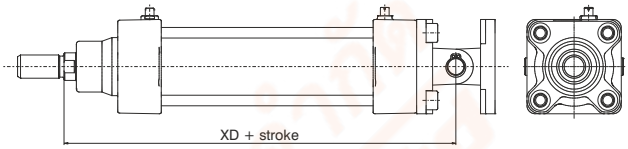
Standard complete trunnion

Ordering code

1393.Ø.22F
Mounting consists of rear clevis code 1380.Ø09F
+rear male clevis code 1380.Ø.09/1F
(ordering separately)







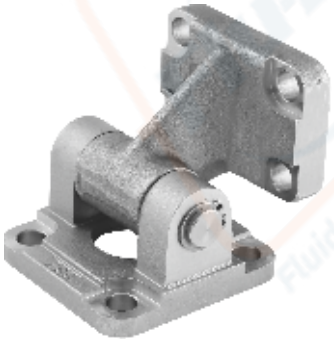
Made of stainless steel AISI 316.

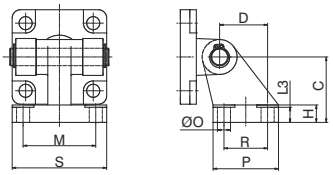
Bore	32	40	50	63	80	100
E	45	55	65	75	95	115
FL	22	25	27	32	36	41
L 2 (±0,5)	5,5	5,5	6,5	6,5	10	10
S 5	6,6	6,6	9	9	11	11
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
Weight gr.	360	580	780	1370	2370	4110

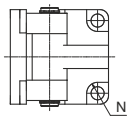
Square angle trunnion (AB7)

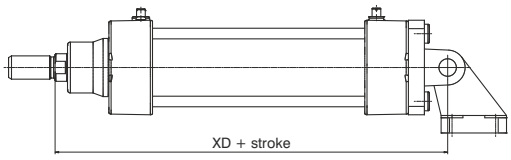
Ordering code

1393.Ø.35F
Counter clevis can be ordered
separately with code 1393.Ø.11/2F







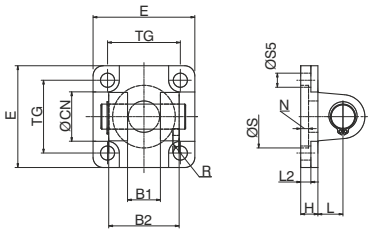


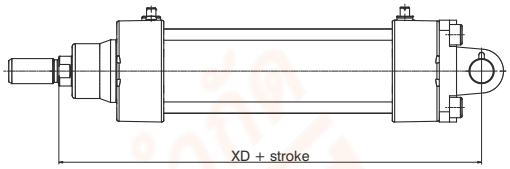
Made of stainless steel AISI 316.

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 gr.	330	520	810	1200	2200	4710

Rear narrow clevis (AB6)

Ordering code
1393.Ø.30F



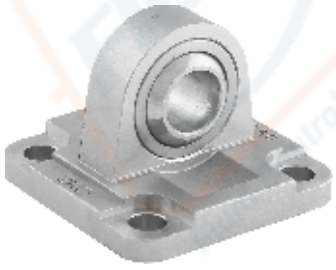


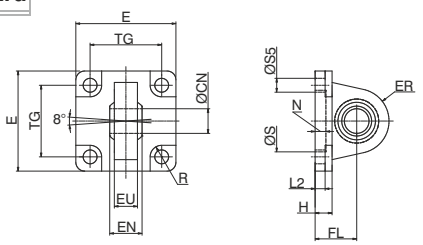
Utilised with clevis 1393.Ø.15F allows the cylinder to oscillate in all directions (see standard complete trunnion 1393.Ø.36F)
Made of stainless steel AISI 316.

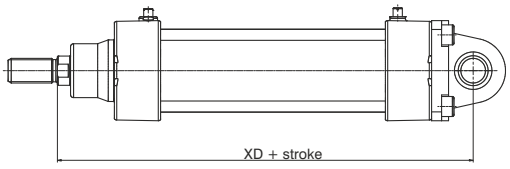
Bore	32	40	50	63	80	100
B1 (H 14)	14	16	21	21	25	25
B2 (h 14)	34	40	45	51	65	75
ØCN	10	12	16	16	20	20
E	45	55	65	75	95	115
H	10	10	10	12	14	16
L	12	15	17	20	22	25
L2 (±0,5)	5,5	5,5	6,5	6,5	10	10
S5 (H 13)	6,6	6,6	9	9	11	11
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
ØS (H 12)	30	35	40	45	45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

Rear male clevis (MP6) with jointed head according to DIN 648K standard

Ordering code
1393.Ø.15F







Utilised with clevis 1393.Ø.30F allows the cylinder to oscillate in all directions.
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 gr.	150	260	370	600	1130	1800