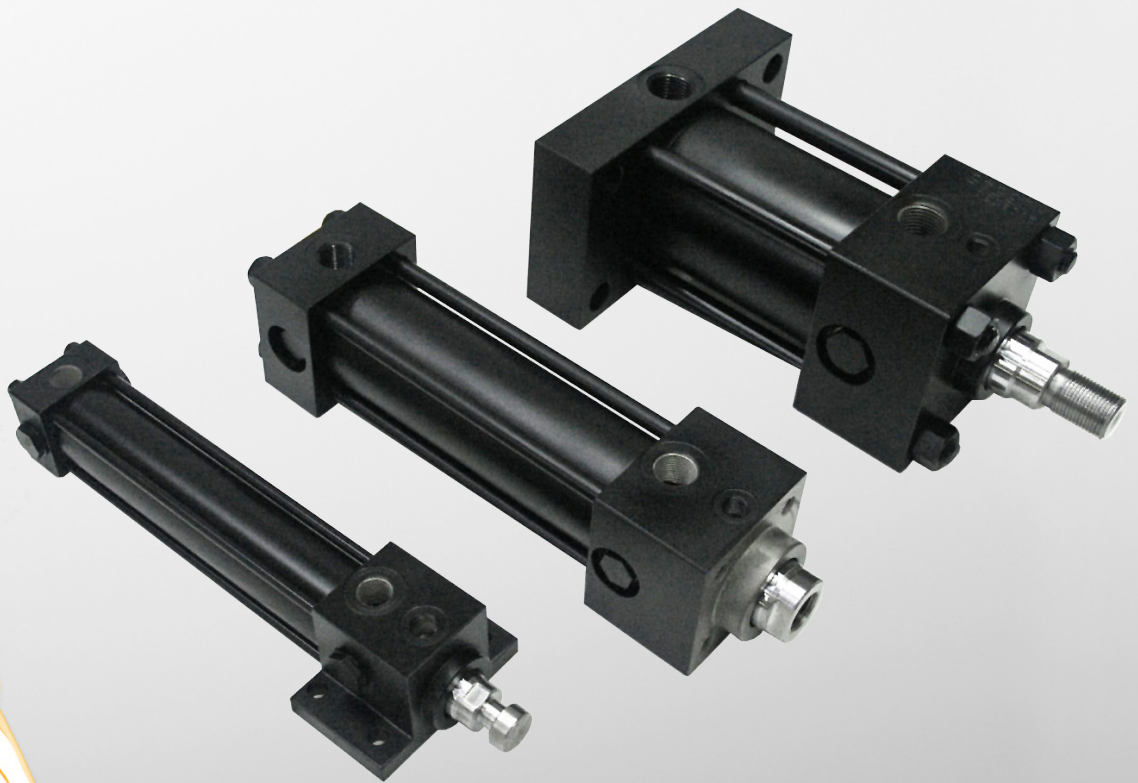




Hydraulic Beyond Limits



HYDRAULIC CYLINDERS
ISO 6020 / 2 - CT Series

The double-acting "CT" cylinders have been developed for industrial applications in accordance with the ISO 6020/2 manufacturing standards. The care taken in selecting the materials and seals used, the attention to detail required at every stage of production and inspection, combined with rigorous final testing, make these hydraulic actuators an excellent choice for any application requiring maximum reliability and repeatability.

GENERAL CONSTRUCTION NOTES

- Compact construction with square ends and tie rods
- Custom steel products designed with high safety factors
- Bore sizes and rod diameters in accordance with standards
- Strokes available up to 3000 mm
- Chrome plated rods, bolted and secured to the pistons, and manufactured to design specifications
- Optional drain on the front head to drain fluid accumulated between the gaskets
- Optional adjustable front and/or rear end-of-stroke
- Standard low-friction gaskets even for high-temperature applications

TECHNICAL SPECIFICATIONS

Applicable regulations	ISO 6020/2 - 1991
Piston diameter [mm]	25 - 32 - 40 - 50 - 63 - 80 - 100 - 125 - 160 - 200
Shaft diameter [mm]	Standard, intermediate, and oversized sizes with area ratios of 1:1,25 - 1:1,45 - 1:2
Operating pressure [bar / psi]	160 / 2320,6 (continuous service)
Maximum pressure [bar / psi]	250 / 3625,94 (peak pressure)
Operating temperature [°C]	From -20°C to +100°C
Translation speed [m/s]	Up to 15 m/s
Working fluid	Mineral oil compliant with ISO 6743/4
Degree of contamination	Class 20/16/15 according to ISO 4406:1999 NAS 9

CYLINDER TYPE

CIL CTN	Standard cylinders
CIL CT9	Special cylinders

TYPE CODE FOR STANDARD PROGRAM

CIL CG9 / 00 - 050 / 032 X 500 - XX M G 1 0 0 G 1 0 0 2 2 - / . 10

Encoding

Cylinder type

CGN (ISO 6020/2)

CG9 (ISO 6020/2 edited)

Lock integrated into the cylinder (00 no – 10 yes)

Rod diameter [mm] (3 digits, with a leading 0 if <100)

Primary shaft diameter [mm] (3 digits, with a leading 0 if <100)

Stroke [mm] (4 digits, 0 to complete) fill in by hand

Type of connection (Table 1)

Threads on the shaft (Table 2)

Front discharge nozzle (Table 3)

Front discharge port position (Table 4)

Front cushioning (Table 5)

Front vent (Table 6)

Rear discharge port (Table 7)

Rear outlet position (Table 8)

Rear cushioning (Table 9)

Rear vent (Table 10)

Spacer

Types of gaskets

Options

Series

STANDARD FINISH BLACK PAINT RAL 9005

CONNECTION TYPE

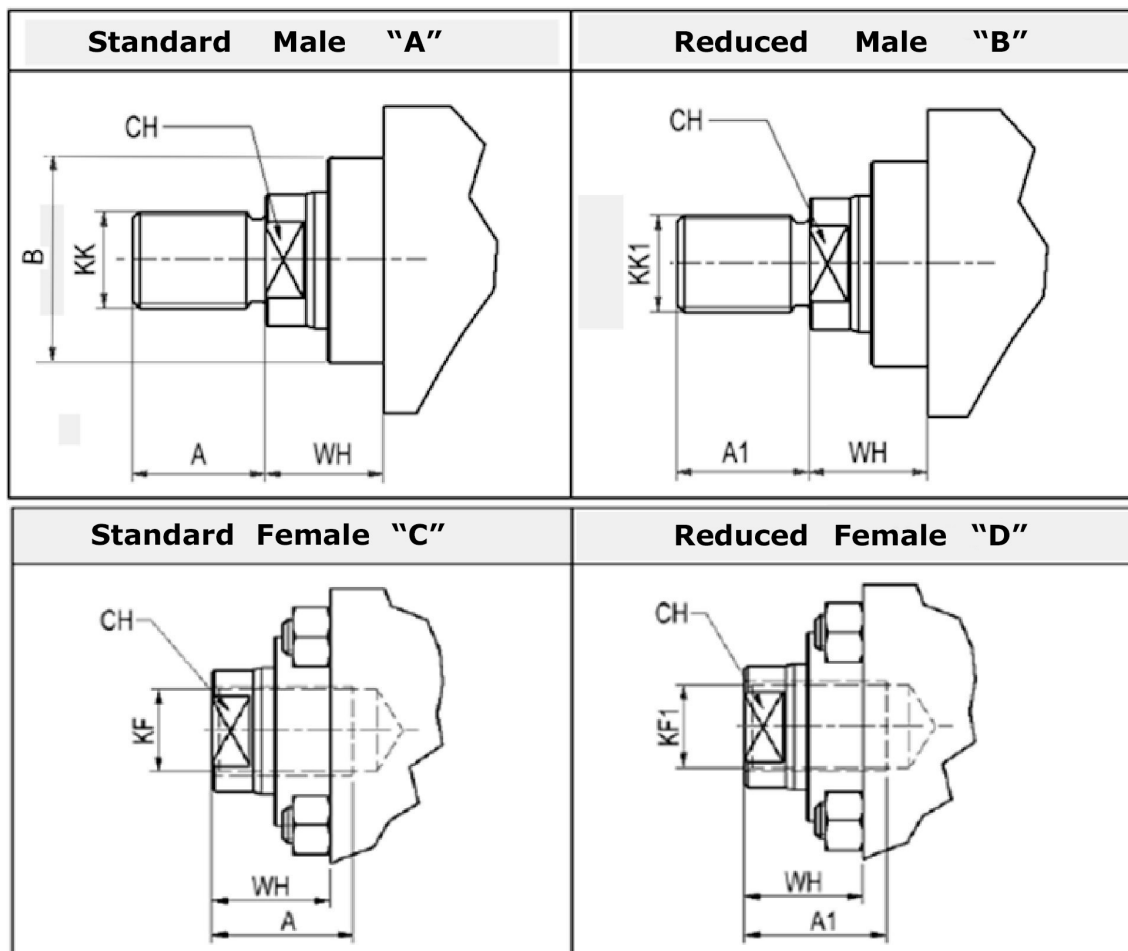
table 1	DESCRIPTION
E5	Front flange (ISO ME5)
E6	Rear flange (ISO ME6)
P5	Hinge with a joint (ISO MP5)
X1	Extended front and rear tie rods (ISO MX1)
X2	Extended front and rear tie rods (ISO MX2)
X3	Extended front and rear tie rods (ISO MX3)
S2	Siob lugs (ISO MS2)
P3	Male hinge (ISO MP3)
P1	Female hinge (ISO MP1)
T2	Rear swingarm (ISO MT2)
T1	Front swingarm (ISO MT1)
T4	Central pivot (ISO MT4)
C1	Front threaded holes
C2	Rear threaded holes
C3	Front threaded holes and extended rear tie rods
C4	Rear threaded holes and extended front tie rods

Special fasteners can be manufactured upon request.

DIMENSIONS OF THE ROD TIP

The stem ends can be made as "male" or "female" according to the following diagram

table 2	THREADING ON THE SHAFT
A	standard male (standard configuration)
B	reduced male
C	standard female
D	reduced female
X	special



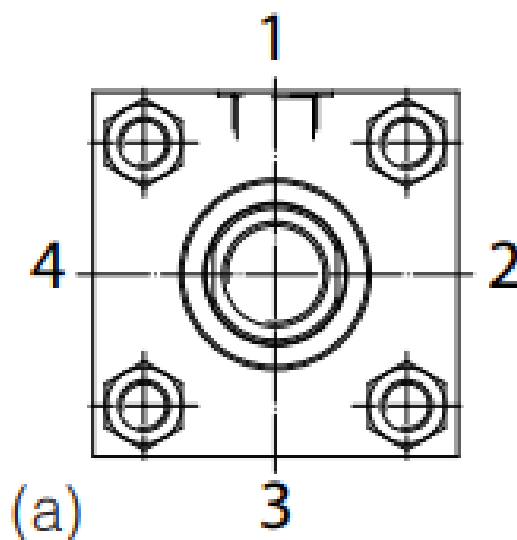
Ø Piston	Ø Rod	KK 6g	KK1 6g	KF 6H	KF1 6H	A	A1	CH
25	12	M10x1.25	-	M8x1	-	14	-	10
	18	M14x1.5	M10x1.25	M12x1.25	M8x1	18	14	15
32	14	M12x1.25	-	M10x1.25	-	16	-	12
	22	M16x1.5	M12x1.25	M16x1.5	M10x1.25	22	16	19
40	18	M14x1.5	-	M12x1.25	-	18	-	15
	22	M16x1.5	M14x1.5	M16x1.5	-	22	18	19
	28	M20x1.5	M14x1.5	M20x1.5	M12x1.25	28	18	22
50	22	M16x1.5	-	M16x1.5	-	22	-	19
	28	M20x1.5	-	M20x1.5	-	28	-	22
	36	M27x2	M16x1.5	M27x2	M16x1.5	36	22	30
63	28	M20x1.5	-	M20x1.5	-	28	-	22
	36	M27x2	-	M27x2	-	36	-	30
	45	M33x2	M20x1.5	M33x2	M20x1.5	45	28	39
80	36	M27x2	-	M27x2	-	36	-	30
	45	M33x2	-	M33x2	-	45	-	39
	56	M42x2	M27x2	M42x2	M27x2	56	36	45
100	45	M33x2	-	M33x2	-	45	-	39
	56	M42x2	-	M42x2	-	56	-	48
	70	M48x2	M33x2	M48x2	M33x2	63	45	62
125	56	M42x2	-	M42x2	-	56	-	48
	70	M48x2	-	M48x2	-	63	-	62
	90	M64x3	M42x2	M64x3	M42x2	85	56	80
160	70	M48x2	-	M48x2	-	63	-	62
	90	M64x3	M48x2	M64x3	-	85	63	80
	110	M80x3	M48x2	M80x3	M48x2	95	63	100
200	90	M64x3	-	M64x3	-	85	-	80
	110	M80x3	M64x3	M80x3	-	95	85	100
	140	M100x3	M64x3	M100x3	M64x3	112	85	128

DIMENSIONS OF SUPPLY OUTLETS

table 3	FRONT INLET
S	standard
M	enhanced
X	special

table 6	REAR INLET
S	standard
M	enhanced
X	special

LOCATION OF VENTS, CUSHIONING VENTS, AND AIR VENTS



BRAKING

The cylinder heads should not be used as end stops for the moving mass. In this regard, we recommend the use of Cushioning—adjustable via a pin—designed to slow the load's speed as it approaches the end of its stroke.

table 4	FRONT CUSHIONING
0	missing
1	position 1 front view
2	position 2 front view
3	position 3 front view (standard position)
4	position 4 front view

table 7	REAR CUSHIONING
0	missing
1	position 1 front view
2	position 2 front view
3	position 3 front view (standard position)
4	position 4 front view

AIR VENTS

Venting is a practical way to remove air from inside the cylinder during installation. They come standard with cushioning or are available as an option upon request

table 5	FRONT VENT
0	missing
1	position 1 front view
2	position 2 front view
3	position 3 front view (standard position)
4	position 4 front view

table 8	REAR VENT
0	missing
1	position 1 front view
2	position 2 front view
3	position 3 front view (standard position)
4	position 4 front view

When using cylinders with a stroke > 1000 mm, it is recommended to use spacers to improve rod guidance.

It is important to note that the overall length of the cylinder will increase depending on the number of spacers inserted.

table 9	SPACER
0	without
1	25 mm
2	50 mm
3	75 mm
4	100 mm
5	125 mm
6	150 mm
7	175 mm
8	200 mm
X	more than 200 mm

GASKET MATERIALS

The materials used in "CT" cylinder seals meet the operational requirements of most industrial applications.

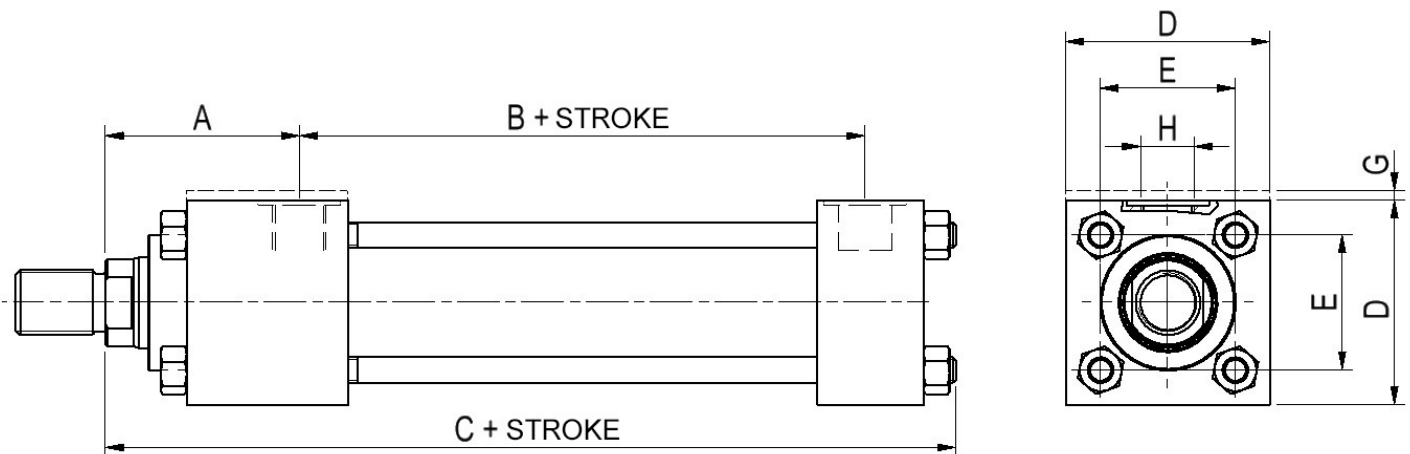
Our standard gaskets are characterized by low friction coefficients and the absence of stick-slip effects. Gaskets are also available for high-temperature operating conditions.

If special fluids are used or specific operating conditions are required, specially designed gaskets are available.

table 10	GASKET MATERIAL
1	NBR + polyurethane
2	NBR+ PTFE (standard material)
3	VITON + PTFE
X	special

table 11	OPTIONS
0	nothing
D	drainage
K	nickel and chrome-plated rod (NicroM)
T	hardened rod 42CrMo4
S*	front proximity sensor + position
R*	rear proximity sensor + position
P	position sensor

STANDARD CYLINDER

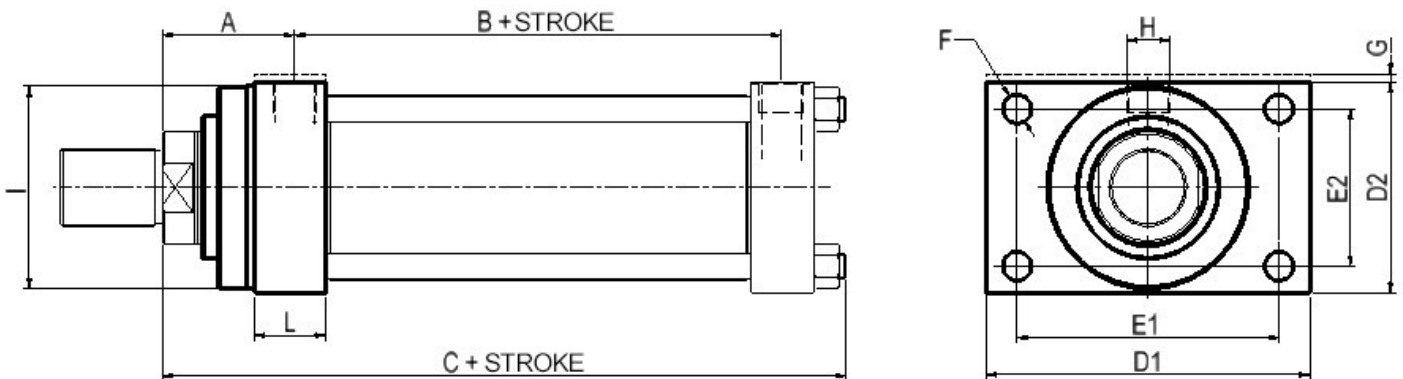


Ø PISTON	Ø ROD	B ± 1,5	A ± 2	C	D	E js13	G	H (*)
25	12	53	50	121	40 ± 1,5	28,3	5	1/4 G
	18							
32	14	56	60	137	45 ± 1,5	33,2	5	1/4 G
	22							
40	18	73	62	166	63 ± 1,5	41,7	/	3/8 G
	22							
	28							
50	22	74	67	176	75 ± 1,5	52,3	/	1/2 G
	28							
	36							
63	28	80	71	185	90 ± 1,5	64,3	/	1/2 G
	36							
	45							
80	36	93	77	212	115 ± 1,5	82,7	/	3/4 G
	45							
	56							
100	45	101	82	225	130 ± 2	96,9	/	3/4 G
	56							
	70							
125	56	117	86	260	165 ± 2	125,9	/	1 G
	70							
	90							
160	70	130	86	279	205 ± 2	154	/	1 G
	90							
	110							
200	90	165	98	336	245 ± 2	190,2	/	1 1/4 G
	110							
	140							

Dimensions in [mm]

(*) Standard opening sizes

TYPES OF MOUNTING: "E5" TYPE FRONT FLANGE (ISO ME5)

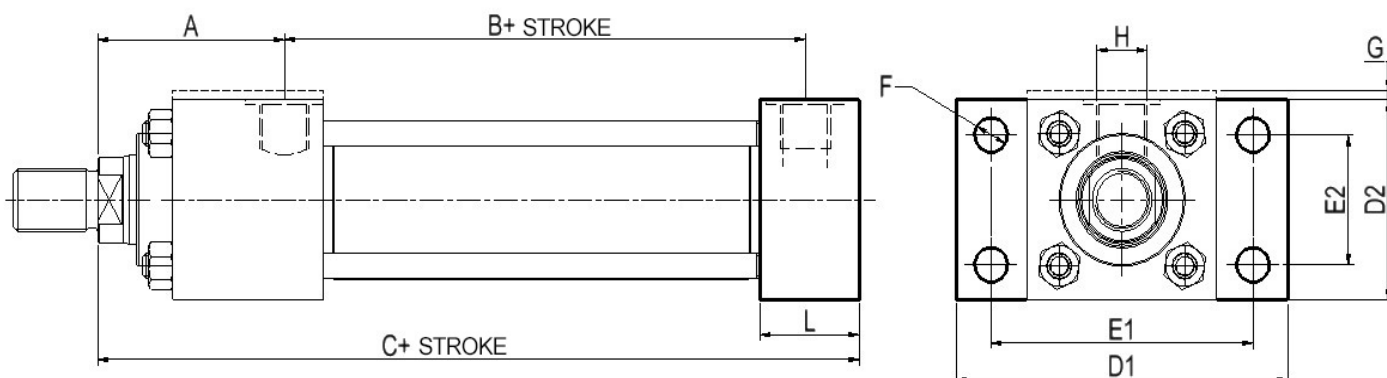


Ø PISTON	Ø ROD	B ± 1,5	A ± 2	D1	D2	E1 js13	E2 js13	G	F H13	H (*)	(ZB) C	I f8	L
25	12	53	50	65	40 ± 1,5	51	27	5	5,5	1/4 G	121	38	25
	18											38	
32	14	56	60	70	45 ± 1,5	58	33	5	6,5	1/4 G	137	42	25
	22											42	
40	18	73	62	110	63 ± 1,5	87	41	/	11	3/8 G	166	62	38
	22											62	
	28											62	
50	22	74	67	130	75 ± 1,5	105	52	/	14	1/2 G	176	74	38
	28											74	
	36											74	
63	28	80	71	145	90 ± 1,5	117	65	/	14	1/2 G	185	75	38
	36											88	
	45											88	
80	36	93	77	180	115 ± 1,5	149	83	/	18	3/4 G	212	62	45
	45											105	
	56											105	
100	45	101	82	200	130 ± 2	162	97	/	18	3/4 G	225	92	45
	56											125	
	70											125	
125	56	117	86	250	165 ± 2	208	126	/	22	1 G	260	105	58
	70											150	
	90											150	
160	70	130	86	300	205 ± 2	253	155	/	26	1 G	279	125	58
	90											170	
	110											170	
200	90	165	98	360	245 ± 2	300	190	/	33	1 1/4 G	336	150	76
	110											210	
	140											210	

Dimensions in [mm]

(*) Standard opening sizes

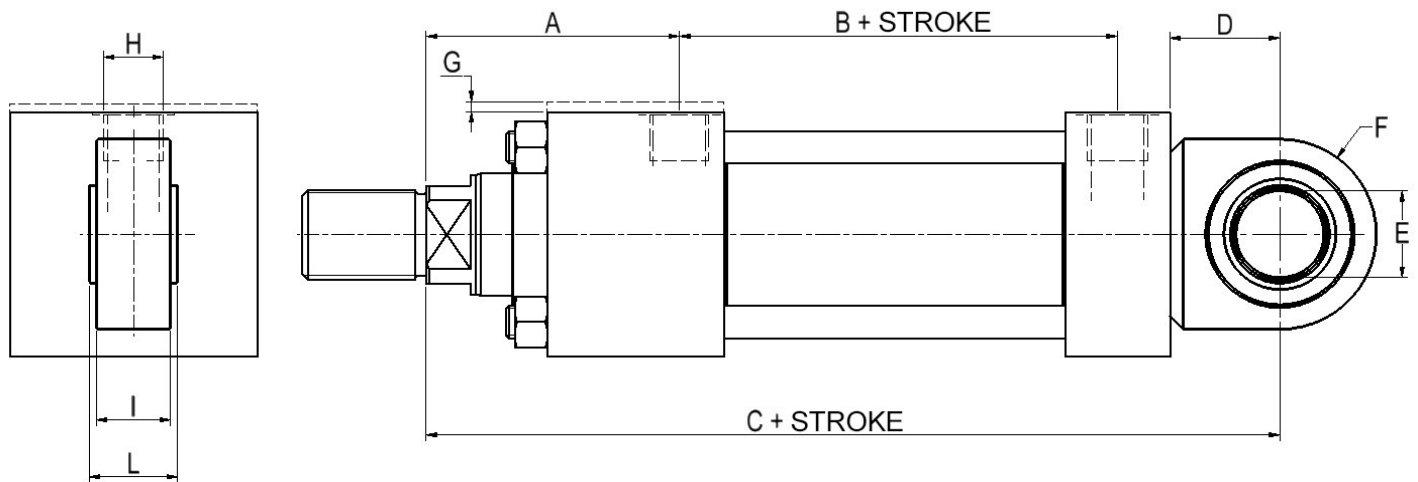
MOUNTING TYPE: "E6" REAR FLANGE (ISO ME6)



Ø PISTONE	Ø ROD	B ± 1,5	A ± 2	D1	D2	E1 js13	E2 js13	G	F H13	H (*)	C ± 1	L
25	12	53	50	65	40 ± 1,5	51	27	5	5,5	1/4 G	114	25
	18											
32	14	56	60	70	45 ± 1,5	58	33	5	6,5	1/4 G	128	25
	22											
40	18	73	62	110	63 ± 1,5	87	41	/	11	3/8 G	153	38
	22											
	28											
50	22	74	67	130	75 ± 1,5	105	52	/	14	1/2 G	159	38
	28											
	36											
63	28	80	71	145	90 ± 1,5	117	65	/	14	1/2 G	168	38
	36											
	45											
80	36	93	77	180	115 ± 1,5	149	83	/	18	3/4 G	190	45
	45											
	56											
100	45	101	82	200	130 ± 2	162	97	/	18	3/4 G	203	45
	56											
	70											
125	56	117	86	250	165 ± 2	208	126	/	22	1 G	232	58
	70											
	90											
160	70	130	86	300	205 ± 2	253	155	/	26	1 G	245	58
	90											
	110											
200	90	165	98	360	245 ± 2	300	190	/	33	1 1/4 G	299	76
	110											
	140											

Dimensions in [mm]
(*) Standard opening sizes

TYPES OF MOUNTING: "P5" TYPE HINGE (ISO MP5)



Ø PISTON	Ø ROD			B ± 1,5	A ± 2	C	D	E	F	G	H (*)	I	L
25	12	18		53	50	130	16	12 +0/-0.008	20	5	1/4 G	8	10 +0/-0.12
32	14	22		56	60	148	20	16 +0/-0.008	22,5	5	1/4 G	11	14 +0/-0.12
40	18	22	28	73	62	178	25	20 +0/-0.012	29	/	3/8 G	13	16 +0/-0.12
50	22	28	36	74	67	190	31	25 +0/-0.012	33	/	1/2 G	17	20 +0/-0.12
63	28	36	45	80	71	206	38	30 +0/-0.012	40	/	1/2 G	19	22 +0/-0.12
80	36	45	56	93	77	238	48	40 +0/-0.012	50	/	3/4 G	23	28 +0/-0.12
100	45	56	70	101	82	261	58	50 +0/-0.012	62	/	3/4 G	30	35 +0/-0.12
125	56	70	90	117	86	304	72	60 +0/-0.015	80	/	1 G	38	44 +0/-0.15
160	70	90	110	130	86	337	92	80 +0/-0.015	100	/	1 G	47	55 +0/-0.15
200	90	110	140	165	98	415	116	100 +0/-0.02	120	/	1 1/4 G	57	70 +0/-0.2

Dimensions in [mm]

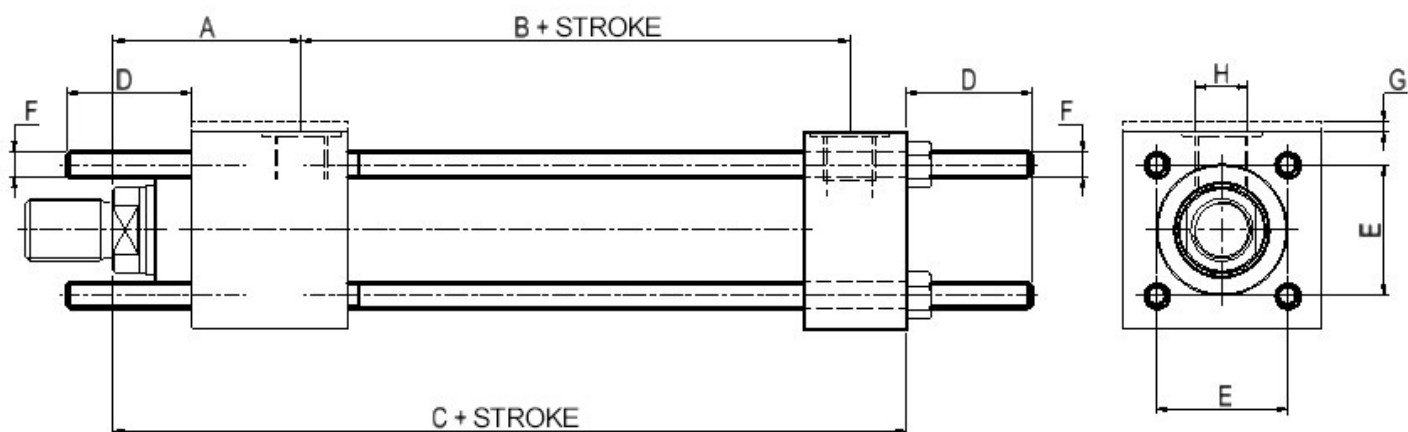
(*) Standard opening sizes

TYPES OF MOUNTS:

EXTENDED FRONT AND REAR TIE-RODS TYPE "X1" (ISO MX1)

EXTENDED REAR TIE-RODS TYPE "X2" (ISO MX2)

FRONT EXTENDED TIE-RODS TYPE "X3" (ISO MX3)

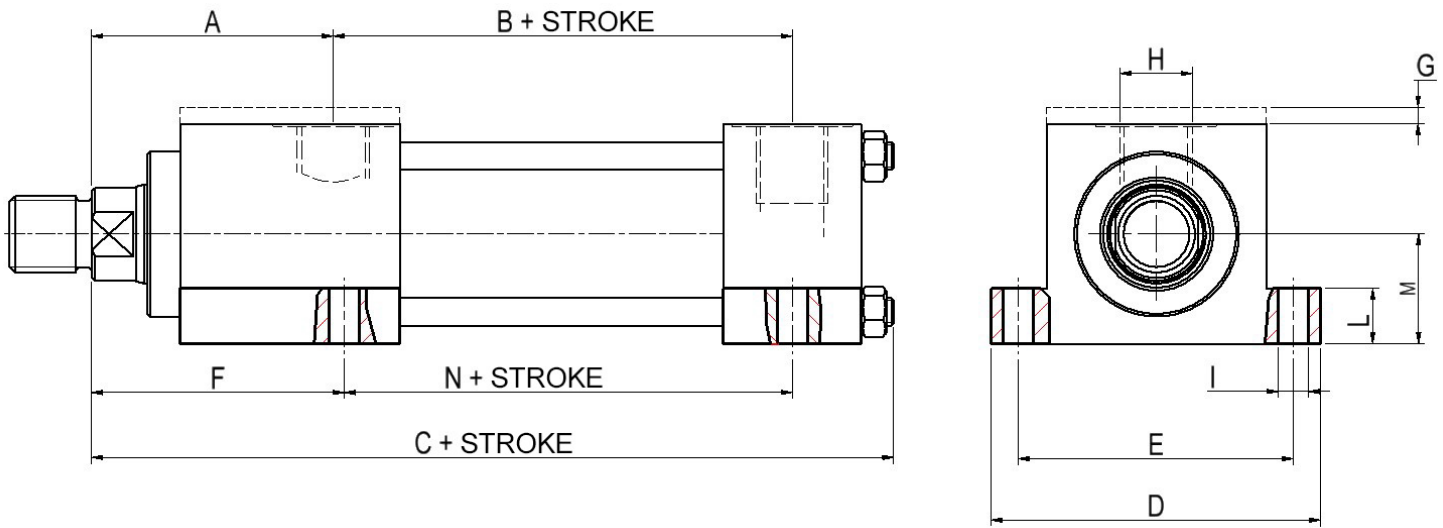


Ø PISTON	Ø ROD			B ± 1,5	A ± 2	C ± 1	D +3/+0	E js13	F	G	H (*)
25	12	18		53	50	114	19	28,3	M5x0,8	5	1/4 G
32	14	22		56	60	128	24	33,2	M6X1	5	1/4 G
40	18	22	28	73	62	153	35	41,7	M8X1	/	3/8 G
50	22	28	36	74	67	159	46	52,3	M12X1,25	/	1/2 G
63	28	36	45	80	71	166	46	64,3	M12X1,25	/	1/2 G
80	36	45	56	93	77	190	59	82,7	M16X1,5	/	3/4 G
100	45	56	70	101	82	203	59	96,9	M16X1,5	/	3/4 G
125	56	70	90	117	86	232	81	125,9	M22X1,5	/	1 G
160	70	90	110	130	86	245	92	154,9	M27X2	/	1 G
200	90	110	140	165	98	299	115	190,2	M30X2	/	1 1/4 G

Dimensions in [mm]

(*) Standard opening sizes

TYPES OF MOUNTING: "S2" TYPE SIDE LUGS (ISO MS2)

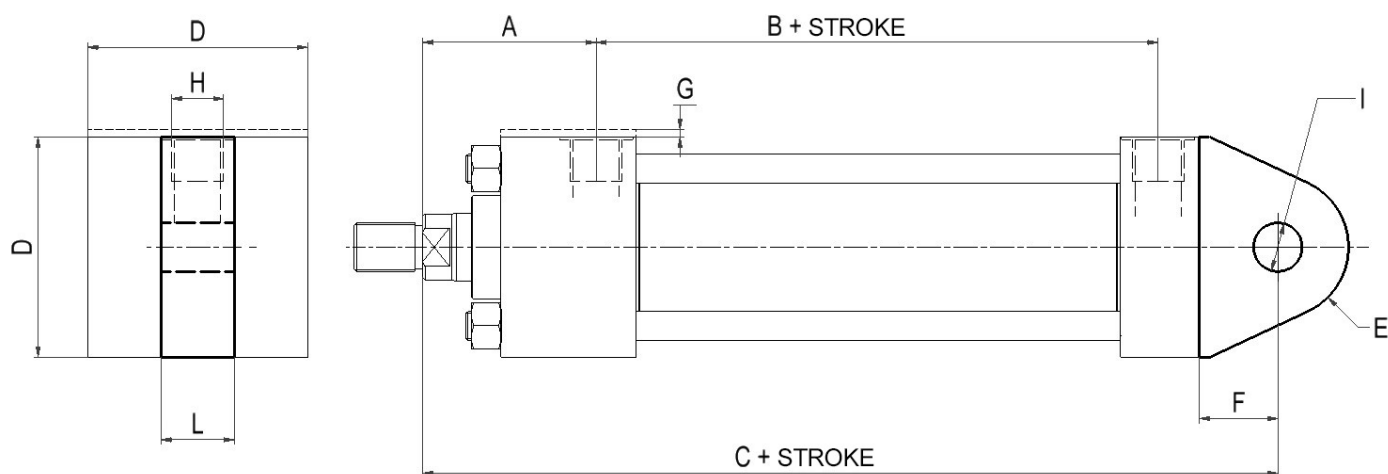


Ø PISTON	Ø ROD			B ± 1,5	A ± 2	C	D	E js13	F ± 2	G	H (*)	I H13	L js13	M h10	N ± 1,25
25	12	18		53	50	121	72	54	33	5	1/4 G	6,5	8,5	19	72
32	14	22		56	60	137	84	63	45	5	1/4 G	9	12,5	22	72
40	18	22	28	73	62	166	103	83	45	/	3/8 G	11	12,5	31	97
50	22	28	36	74	67	176	127	102	54	/	1/2 G	14	19	37	91
63	28	36	45	80	71	185	161	124	65	/	1/2 G	18	26	44	85
80	36	45	56	93	77	212	186	149	68	/	3/4 G	18	26	57	104
100	45	56	70	101	82	225	216	172	79	/	3/4 G	26	32	63	101
125	56	70	90	117	86	260	254	210	79	/	1 G	26	32	82	130
160	70	90	110	130	86	279	318	260	86	/	1 G	33	38	101	129
200	90	110	140	165	98	336	381	311	92	/	1 1/4 G	39	44	122	171

Dimensions in [mm]

(*) Standard opening sizes

TYPES OF MOUNTING: "P3" MALE HINGE

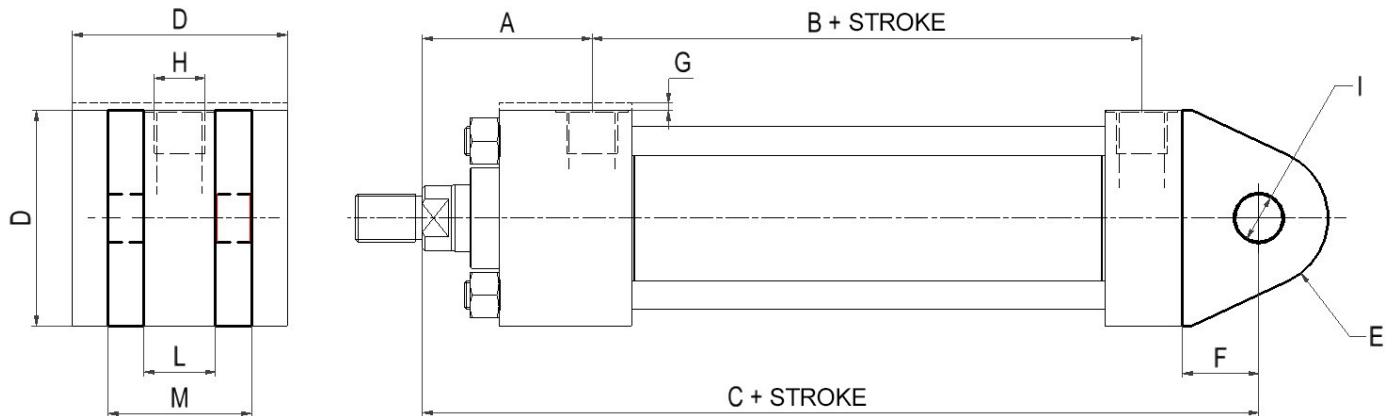


Ø PISTON	Ø ROD			B ± 1,5	A ± 2	C ± 1,5	D	E	F	G	H (*)	I H9	L h14
25	12	18		53	50	127	40 ± 1,5	12	13	5	1/4 G	10	12
32	14	22		56	60	147	45 ± 1,5	17	19	5	1/4 G	12	16
40	18	22	28	73	62	172	63 ± 1,5	17	19	/	3/8 G	14	20
50	22	28	36	74	67	191	75 ± 1,5	29	32	/	1/2 G	20	30
63	28	36	45	80	71	200	90 ± 1,5	29	32	/	1/2 G	20	30
80	36	45	56	93	77	229	115 ± 1,5	34	39	/	3/4 G	28	40
100	45	56	70	101	82	257	130 ± 2	50	54	/	3/4 G	36	50
125	56	70	90	117	86	289	165 ± 2	53	57	/	1 G	45	60
160	70	90	110	130	86	308	205 ± 2	59	63	/	1 G	56	70
200	90	110	140	165	98	381	245 ± 2	78	82	/	1 1/4 G	70	80

Dimensions in [mm]

(*) Standard opening sizes

TYPES OF MOUNTING: "P1" FEMALE HINGE (ISO MP1)

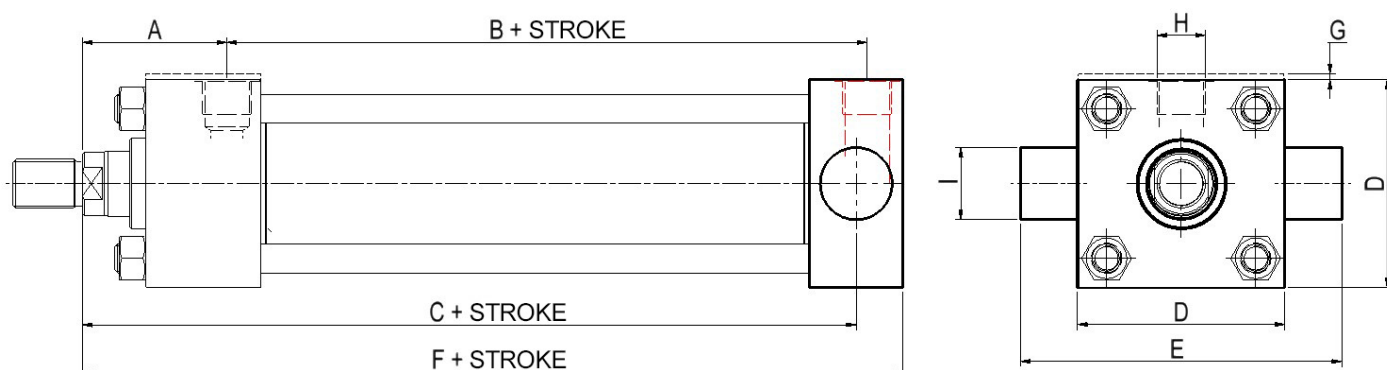


Ø PISTON	Ø ROD			B ± 1,5	A ± 2	C ± 1,5	D	E	F	G	H (*)	I H9	L h14	M
25	12	18		53	50	127	40 ± 1,5	12	13	5	1/4 G	10	12	25
32	14	22		56	60	147	45 ± 1,5	17	19	5	1/4 G	12	16	34
40	18	22	28	73	62	172	63 ± 1,5	17	19	/	3/8 G	14	20	42
50	22	28	36	74	67	191	75 ± 1,5	29	32	/	1/2 G	20	30	62
63	28	36	45	80	71	200	90 ± 1,5	29	32	/	1/2 G	20	30	62
80	36	45	56	93	77	229	115 ± 1,5	34	39	/	3/4 G	28	40	83
100	45	56	70	101	82	257	130 ± 2	50	54	/	3/4 G	36	50	103
125	56	70	90	117	86	289	165 ± 2	53	57	/	1 G	45	60	123
160	70	90	110	130	86	308	205 ± 2	59	63	/	1 G	56	70	143
200	90	110	140	165	98	381	245 ± 2	78	82	/	1 1/4 G	70	80	163

Dimensions in [mm]

(*) Standard opening sizes

TYPES OF MOUNTING: REAR SWING TYPE "T2" (ISO MT2)

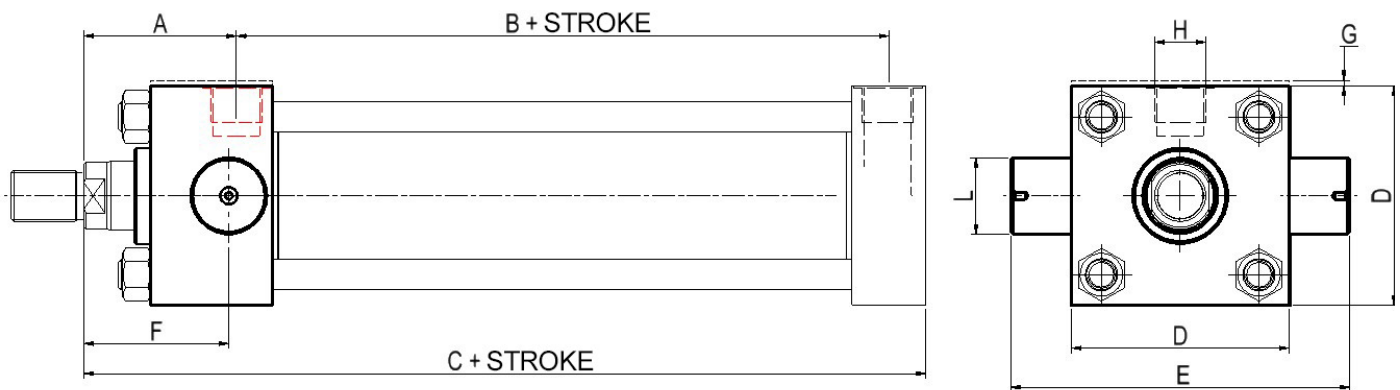


Ø PISTON	Ø ROD			B ± 1,5	A ± 2	C ± 1,5	D h14	E	F	G	H (*)	L f8
25	12	18		53	50	101	38	58	121	5	1/4 G	12
32	14	22		56	60	115	44	68	137	5	1/4 G	16
40	18	22	28	73	62	134	63	95	166	/	3/8 G	20
50	22	28	36	74	67	140	76	116	176	/	1/2 G	25
63	28	36	45	80	71	149	89	139	185	/	1/2 G	32
80	36	45	56	93	77	168	114	178	212	/	3/4 G	40
100	45	56	70	101	82	187	127	207	225	/	3/4 G	50
125	56	70	90	117	86	209	165	265	260	/	1 G	63
160	70	90	110	130	86	230	203	329	279	/	1 G	80
200	90	110	140	165	98	276	241	401	336	/	1 1/4 G	100

Dimensions in [mm]

(*) Standard opening sizes

TYPES OF MOUNTING: "T1" TYPE FRONT SWING (ISO MT1)

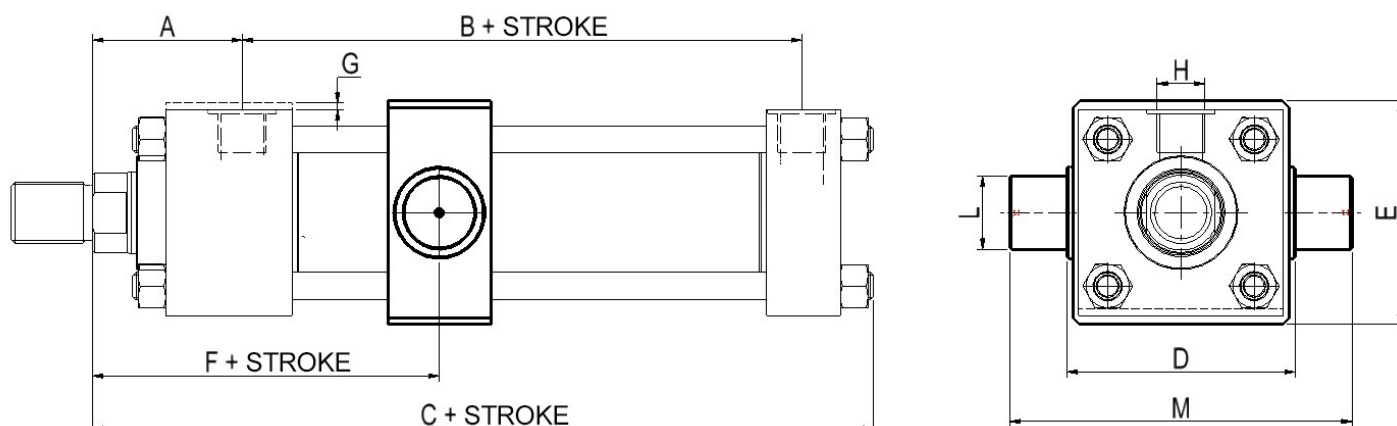


Ø PISTON	Ø ROD			B ± 1,5	A ± 2	C	D h14	E	F ± 2	G	H (*)	L f8
25	12	18		53	50	121	38	58	44	5	1/4 G	12
32	14	22		56	60	137	44	68	54	5	1/4 G	16
40	18	22	28	73	62	166	63	95	57	/	3/8 G	20
50	22	28	36	74	67	176	76	116	64	/	1/2 G	25
63	28	36	45	80	71	185	89	139	70	/	1/2 G	32
80	36	45	56	93	77	212	114	178	76	/	3/4 G	40
100	45	56	70	101	82	225	127	207	71	/	3/4 G	50
125	56	70	90	117	86	260	165	265	75	/	1 G	63
160	70	90	110	130	86	279	203	329	75	/	1 G	80
200	90	110	140	165	98	336	241	401	85	/	1 1/4 G	100

Dimensions in [mm]

(*) Standard opening sizes

TYPES OF MOUNTING: "T4" TYPE CENTRAL HINGE (ISO MT4)



Ø PISTON	Ø ROD			B ± 1,5	A ± 2	C	D h14	E	F ± 2	G	H (*)	L f8	M
25	12	18		53	50	121	48	45	74	5	1/4 G	12	68
32	14	22		56	60	137	55	50	86	5	1/4 G	16	79
40	18	22	28	73	62	166	76	70	99	/	3/8 G	20	108
50	22	28	36	74	67	176	89	88	98	/	1/2 G	25	129
63	28	36	45	80	71	185	100	98	100	/	1/2 G	32	150
80	36	45	56	93	77	212	127	127	115	/	3/4 G	40	191
100	45	56	70	101	82	225	140	141	117	/	3/4 G	50	220
125	56	70	90	117	86	260	178	168	134	/	1 G	63	278
160	70	90	110	130	86	279	215	215	141	/	1 G	80	341
200	90	110	140	165	98	336	279	269	166	/	1 1/4 G	100	439

Dimensions in [mm]

(*) Standard opening sizes

ADDITIONAL MOUNTING TYPES:

FRONT THREADED HOLES TYPE "C1"

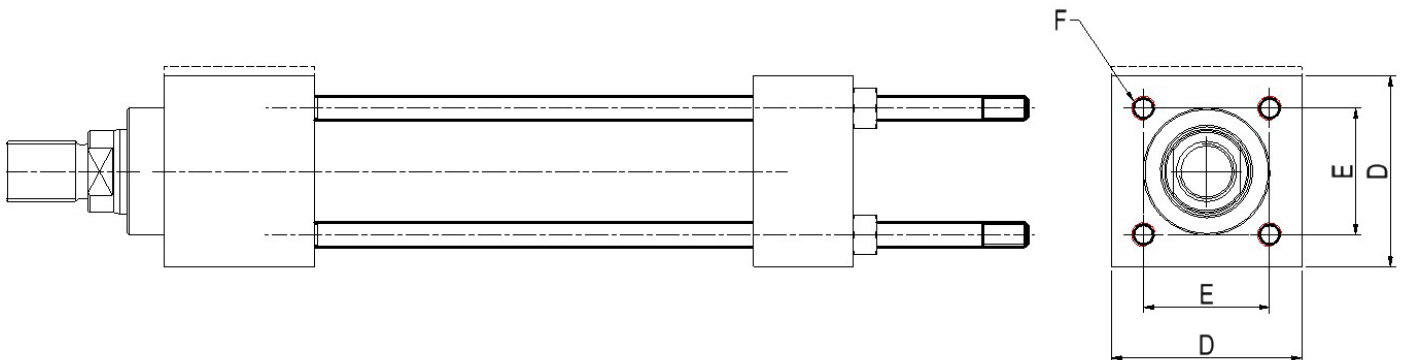
REAR THREADED HOLES TYPE "C2"

FRONT THREADED HOLES AND REAR EXTENDED TIE RODS

"C3" TYPE

REAR THREADED HOLES AND FRONT EXTENDED TIE RODS

"C4" TYPE



Ø PISTON	Ø ROD			D	E js13	(RT) F
25	12	18		$40 \pm 1,5$	28,3	M5x0,8
32	14	22		$45 \pm 1,5$	33,2	M6X1
40	18	22	28	$63 \pm 1,5$	41,7	M8X1,25
50	22	28	36	$75 \pm 1,5$	52,3	M12X1,75
63	28	36	45	$90 \pm 1,5$	64,3	M12X1,75
80	36	45	56	$115 \pm 1,5$	82,7	M16X2
100	45	56	70	130 ± 2	96,9	M16X2
125	56	70	90	165 ± 2	125,9	M22X2,5
160	70	90	110	205 ± 2	154,9	M27X3
200	90	110	140	245 ± 2	190,2	M30X3,5

Dimensions in [mm]

Missing dimensions in fasteners X1, X2, X3



Hydraulic **Beyond Limits**

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