

The background of the image features two hydraulic cylinders. They are silver-colored with blue end caps and blue mounting brackets. The cylinders are positioned diagonally, with one in the foreground and one slightly behind it. The text is overlaid on the image.

Hydraulic cylinders

ISO 6022

COMER
SYSTEM
SRL

CONTENTS:

General features	3
Mounting styles	5
Piston rod end characteristics	6
Single rod cylinder dimensions	8
Double rod cylinder dimensions	10
Port types	11
Port and cushion adjustment locations	11
Rod piston diameter selection	12
Accessories	14
Tightening torques	15
Seals	16
Seals kit	16
How to order a Comer System ICM cylinder	18
Special options	19

DEFINITIONS¹:

CYLINDER: appliance which transforms fluid Energy in mechanical force and rectilinear motion

CYLINDER BORE: cylinder internal diameter

PISTON ROD: tool which transmits mechanical force and piston movement

MOUNTING TOOL: appliance to anchor the cylinder

¹ rif. ISO 6022



**Hydraulic
cylinders
ISO 6022**

Standard construction according to ISO 6022

Work pressure 250 BAR

11 bore sizes

24 rod diameters

6 mounting styles

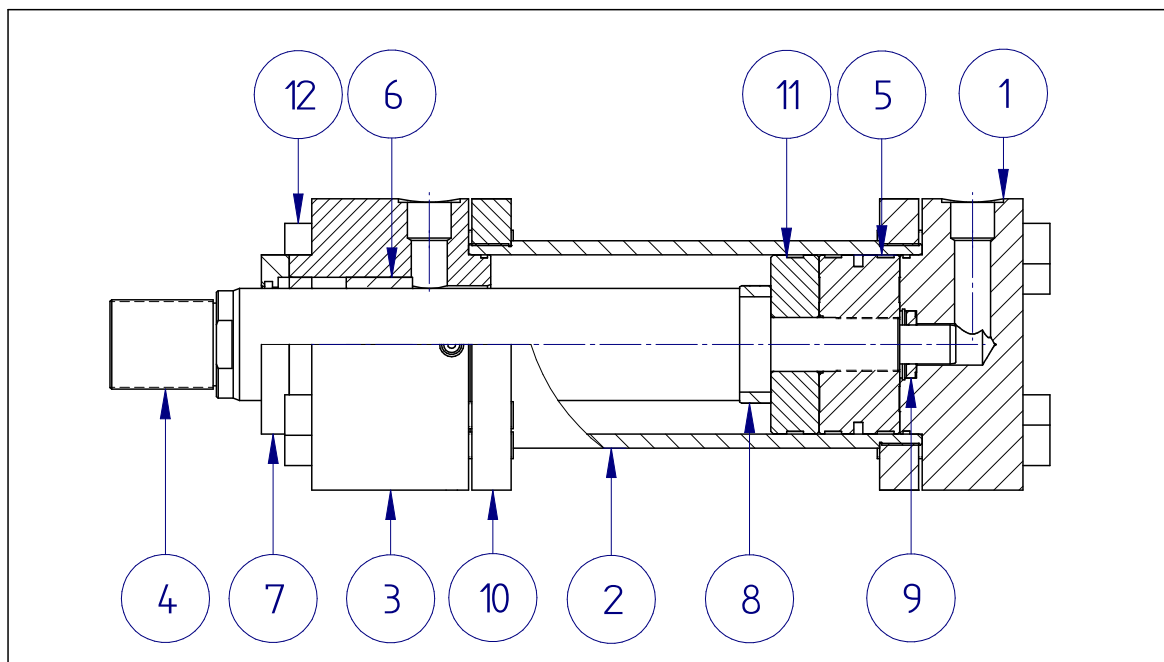
Optional cushioning at the head and cap

Stroke untill 5000 mm

Male or female thread rod ends

Rounded head and cap

Standard BSP port connections, if required we can supply NPTF threaded ports or flange ports SAE.



1 Cap

5 Piston

9 Back cushioning

2 Cylinder body

6 Bronze rod gland

10 Retention

3 Head

7 Front flange

11 Stop tube for piston

4 Piston rod

8 Front cushioning

12 Screw

CYLINDER BODY

High quality steel tube, cold wide drawing and yield point to 45 kg/mm².

Internal high surface finiture, max roughness 0,25 µ.

PISTON ROD

High quality steel, polished and chrome plated, diameter tolerance $f7$ and roughness 0,2 µ. If requied we can provide with special materials.

HEAD AND CAP ENDS

Made in steel, high level of precision to ensure maximum concentricity between them and the cylinder body.

PISTON

One-piece type, high quality steel. Particular attention for the concentricity, to ensure a good working for the seals.

SEALS

High quality gland, piston, head and cap ends seals in nitrile (NBR), PTFE and polyurethane, compatible with the work fluid, temperature range between $-10^{\circ} + 90^{\circ}\text{C}$, max speed 0,6 m/s. If requied, related to the work conditions, we can supplì cylinders with fluorocarbon elastomer (FPM), PTFE or special mixture.

CUSHIONING

All cylinders can be provided with cushioning at the head and cap end, with progressive and controller deceleration. Valves are provided at both ends, to permit a precise cushion adjustment.

LIMITED STROKE

When the stroke is particularly long.

The recommended lenght is:

50 mm for strokes between 1000÷1500 mm

100 mm for strokes between 1500÷2000 mm

150 mm for strokes between 2000÷2500 mm

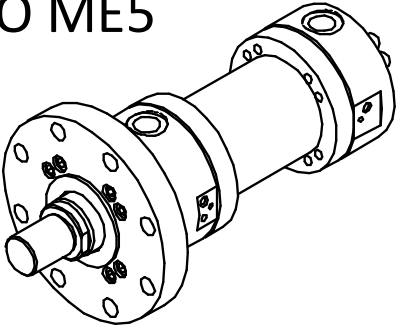
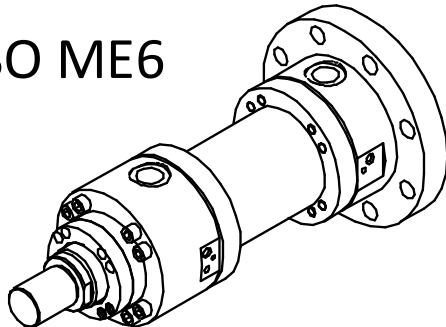
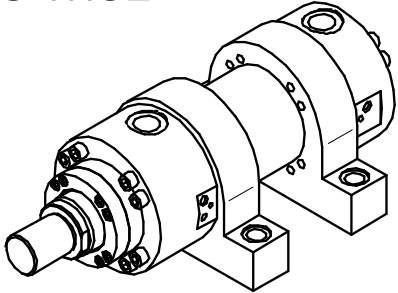
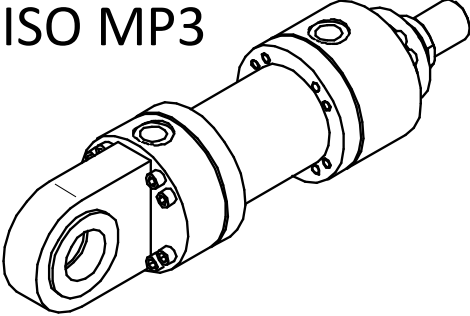
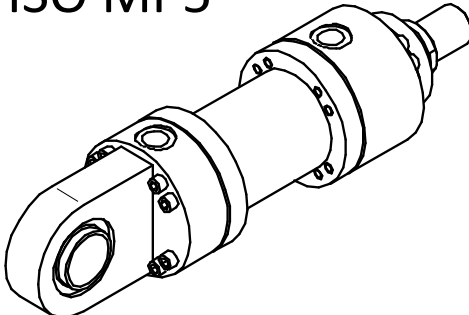
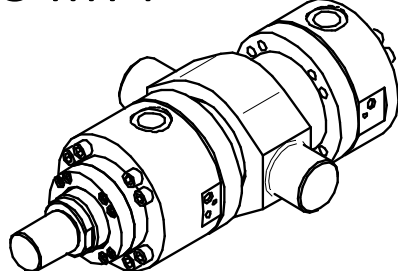
For longer strokes please contact our technical office.

MOUNTING STYLES

ISO 6022 mounting styles are:

- MF3: head round flange
- MF4: cap round flange
- MP3: cap fixed eye
- MP5: cap fixed eye with spherical bearing
- MT4: intermediate fixed trunnion.

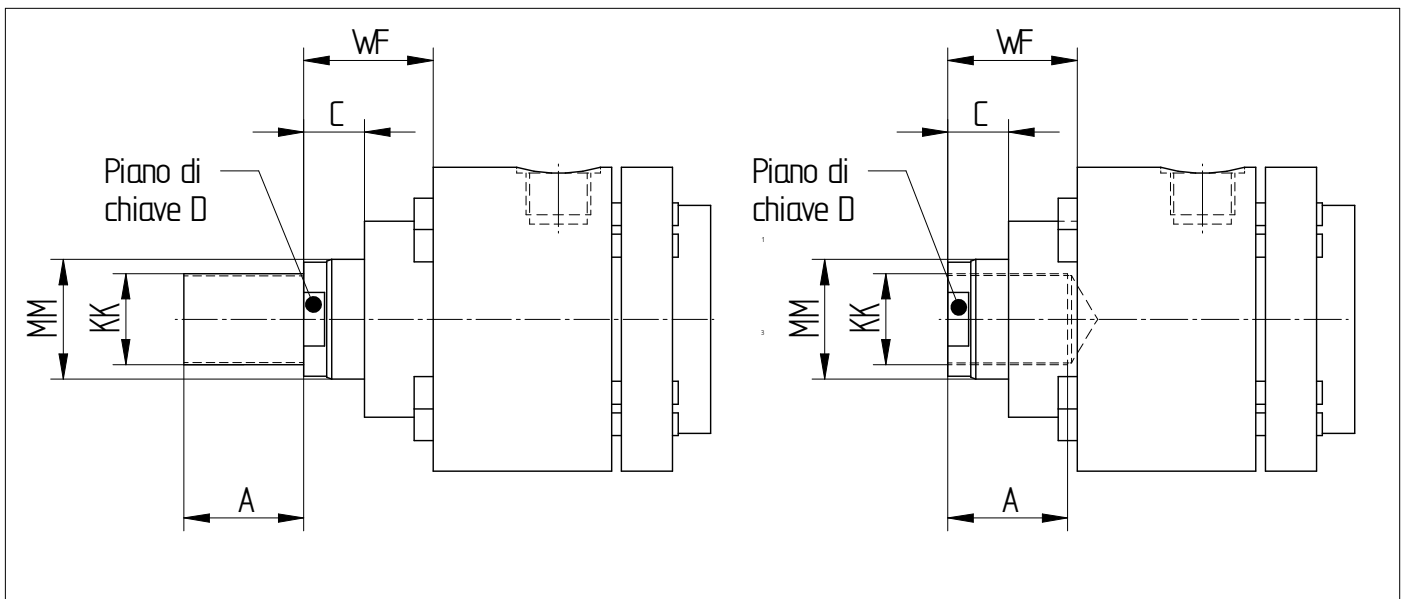
In addition, it is possible to supply MS2 mounting style: side lugs not ascribed in ISO 6022 standards.

ISO ME5  C	ISO ME6  D
ISO MS2  E	ISO MP3  F
ISO MP5  H	ISO MT4  M

PISTON ROD END CHARACTERISTICS

MALE THREAD (M)

FEMALE THREAD (F)



Bore Ø	MM	KK	A	WF	C	D
50	32 / 36	M27 x 2	36	47	22	28 / 30
63	40 / 45	M33 x 2	45	53	25	34 / 38
80	50 / 56	M42 x 2	56	60	28	43 / 48
100	63 / 70	M48 x 2	63	68	32	56 / 62
125	80 / 90	M64 x 3	85	76	36	70 / 80
140*	90 / 100	M72 x 3	90	76	36	80 / 85
160	100 / 110	M80 x 3	95	85	40	85 / 100
180*	110 / 125	M90 x 3	105	95	45	100 / 110
200	125 / 140	M100 x 3	112	101	45	110 / 120
250	160 / 180	M125 x 4	125	113	50	-
320	200 / 220	M160 x 4	160	136	56	-

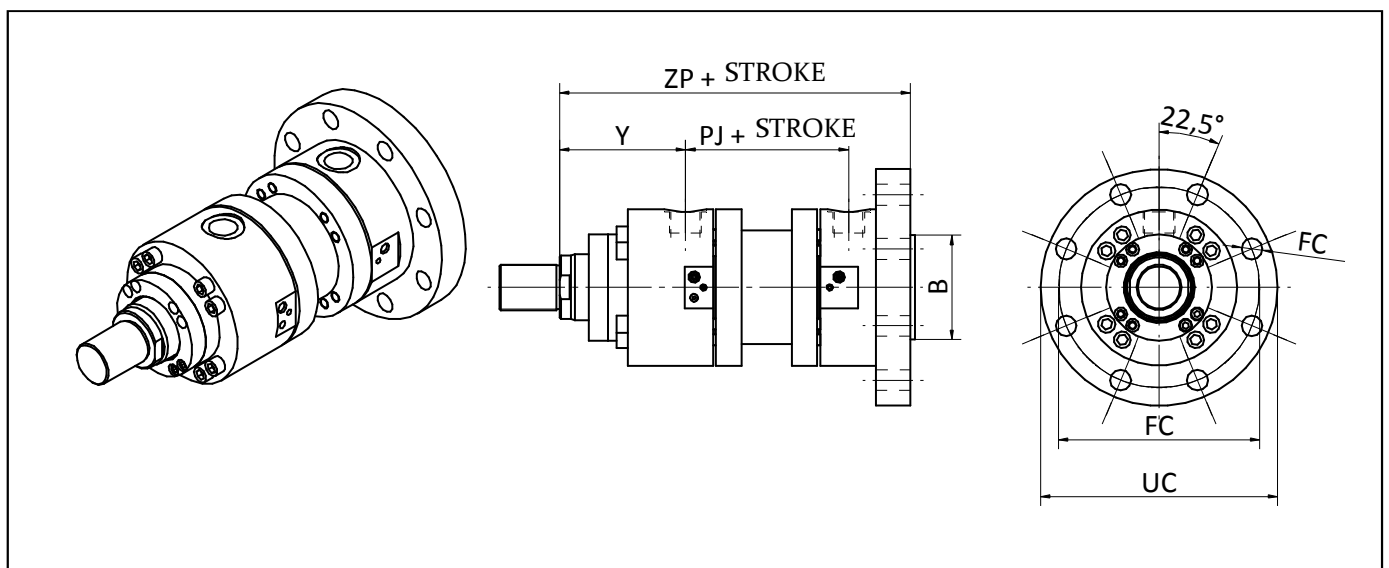
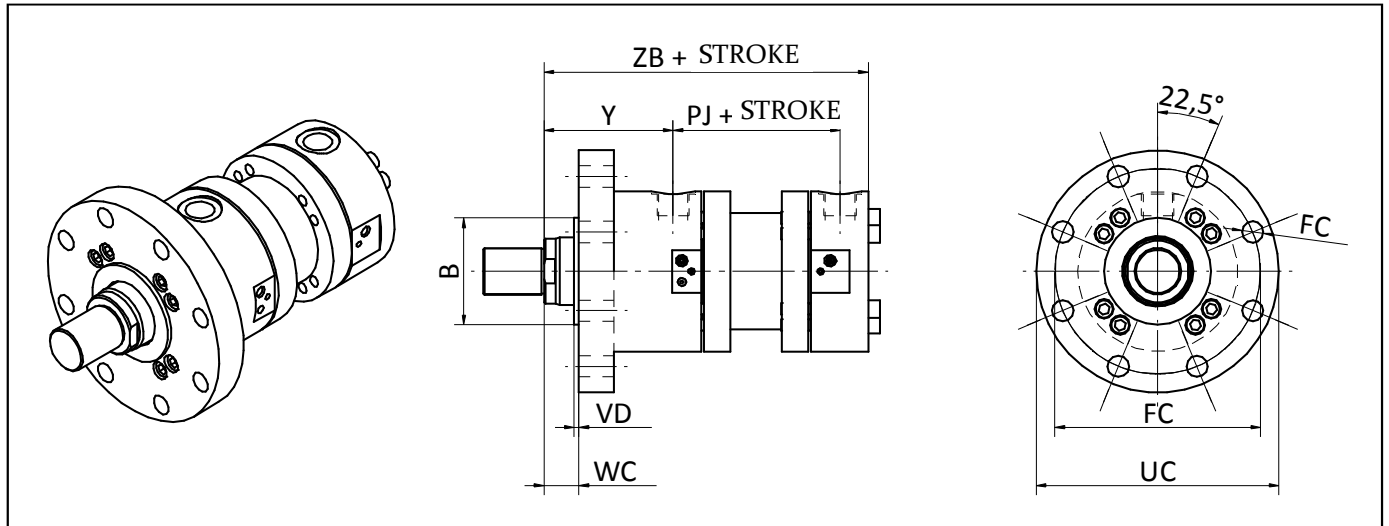
Piston rod thread

Special thread:

If a different rod end thread is required, indicate the S in the cylinder, pointing the

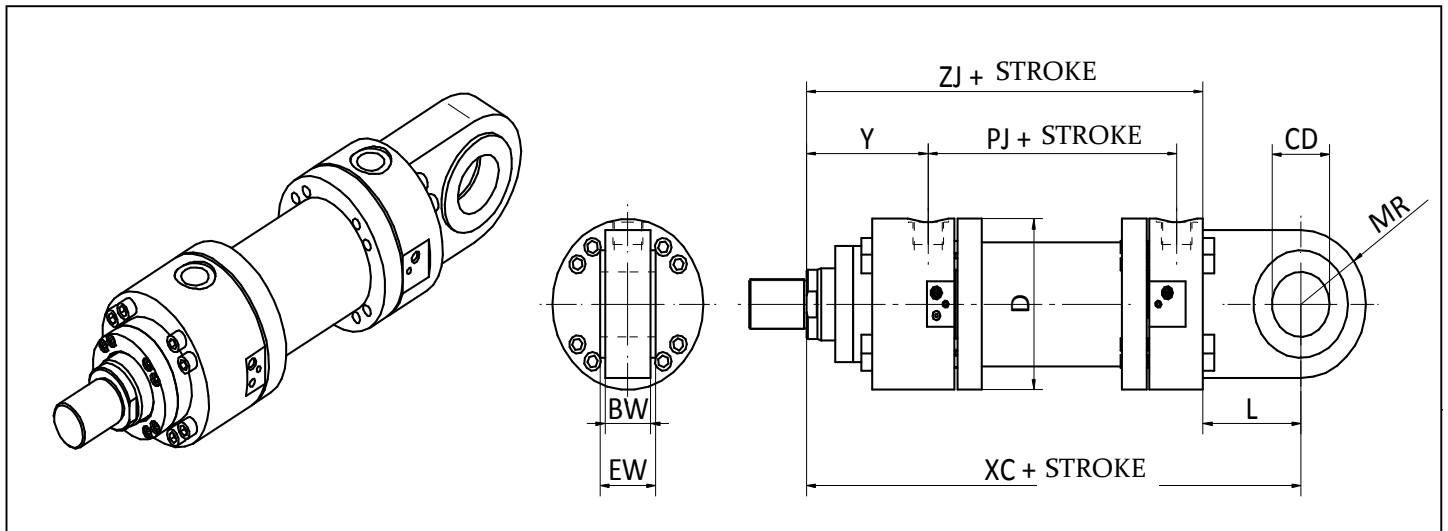
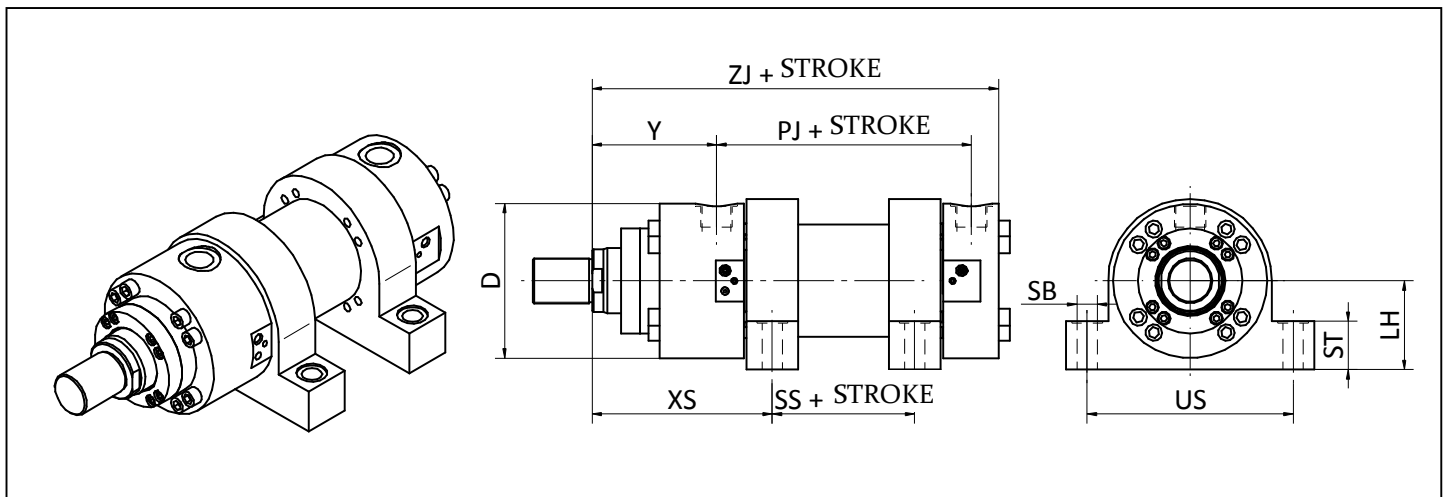
value of the required thread.

ROUND FLANGE MOUNTING



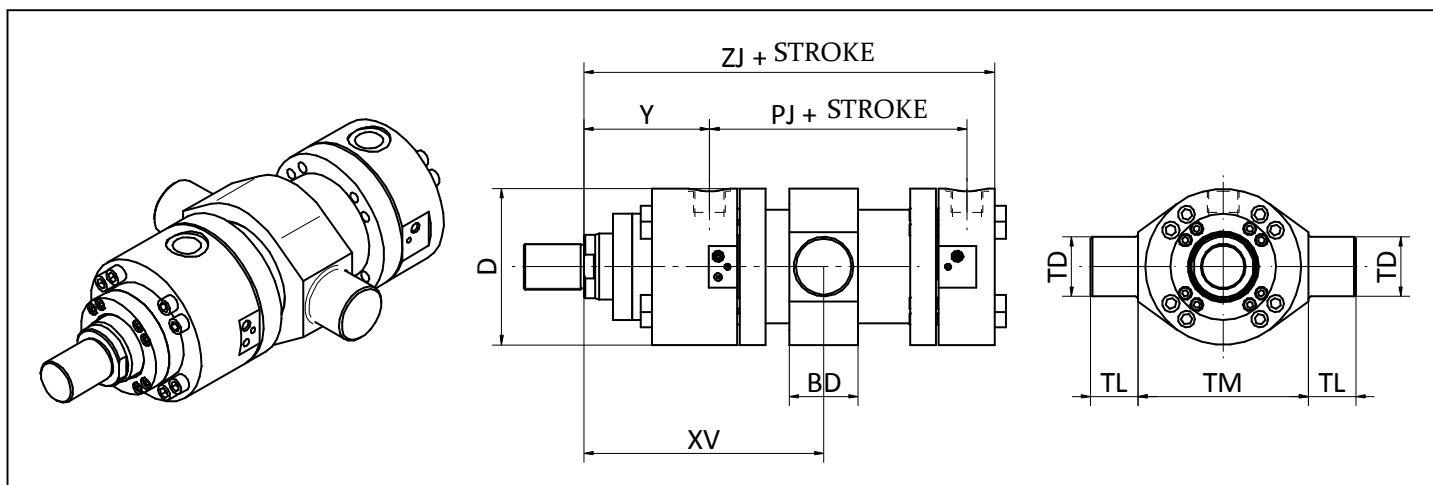
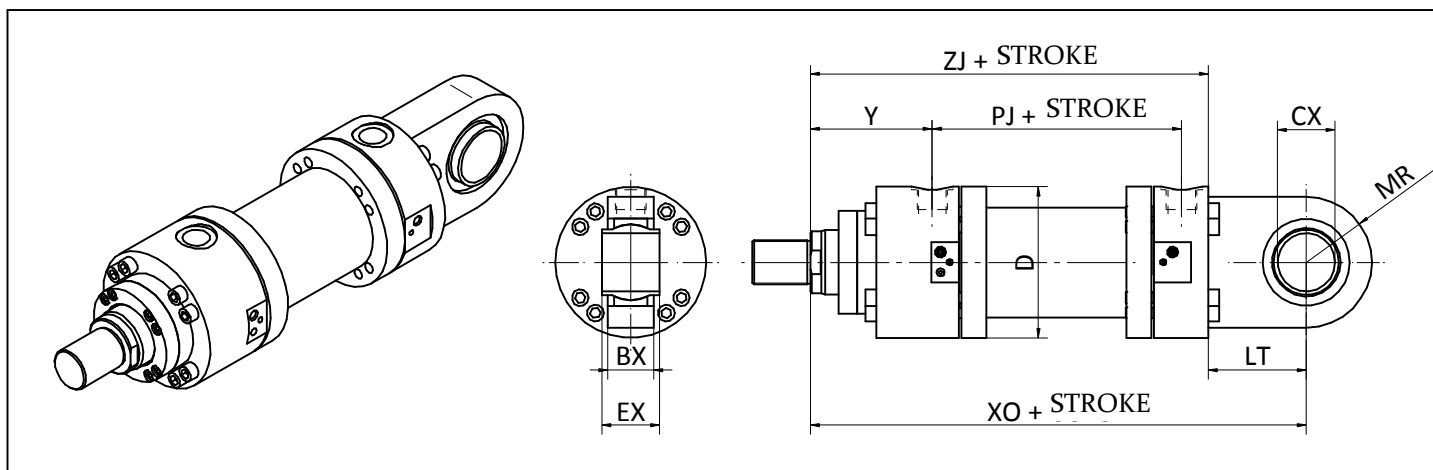
Bore Ø	MM	B/ BA	D	EE	F	FB	FC	PJ	UC	VD	WC	Y	ZJ	ZP
50	32 / 36	63	100	G1/2	25	13,5	132	120	155	4	22	98	240	265
63	40 / 45	75	115	G3/4	28	13,5	150	133	175	4	25	112	270	298
80	50 / 56	90	145	G3/4	32	17,5	180	155	210	4	28	120	307	332
100	63 / 70	110	160	G1	36	22	212	171	250	5	32	134	335	371
125	80 / 90	132	200	G1	40	22	250	205	290	5	36	153	390	430
140*	90 / 100	145	230	G1-1/4	40	26	300	208	340	5	36	181	425	465
160	100 / 110	160	260	G1-1/4	45	26	315	235	360	5	40	185	460	505
180*	110 / 125	185	280	G1-1/4	50	33	365	250	420	5	45	205	500	550
200	125 / 140	200	310	G1-1/4	56	33	385	278	440	5	45	220	540	596
250	160 / 180	250	390	G1-1/2	63	39	475	325	540	8	50	260	640	703
320	200 / 220	320	500	G2	80	45	600	350	675	8	56	310	750	830

FOOT MOUNTING - CAP FIXED EYE



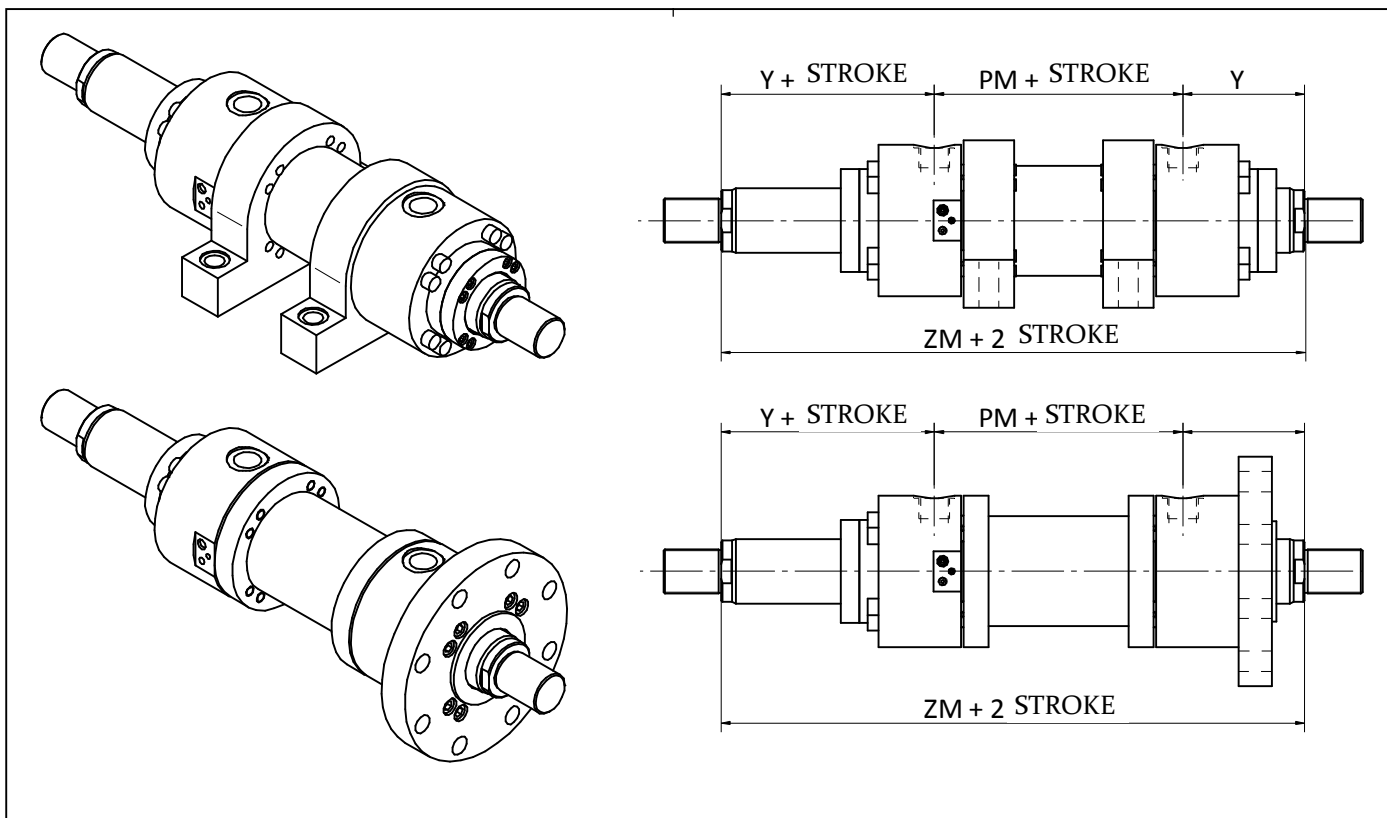
Bore Ø	CD	D	EE	EW	L	MR	PJ	SB	SS	ST	TS	US	XC	XS	Y	ZJ
50	32	100	G1/2	32	65	38	120	11	55	32	135	160	305	130	98	240
63	40	115	G3/4	40	69	50	133	13,5	55	37	155	185	348	147,5	112	270
80	50	145	G3/4	50	88	61,5	155	17,5	55	42	185	225	395	170,5	120	307
100	63	160	G1	63	107	71	171	22	55	52	220	265	442	192,5	134	335
125	80	200	G1	80	130	90	205	26	60	62	270	325	520	230	153	390
140*	90	230	G1-1/4	90	150	100	208	30	61	77	325	390	580	254,5	181	425
160	100	260	G1-1/4	100	157	112	235	33	79	77	340	405	617	265,5	185	460
180*	110	280	G1-1/4	110	185	129	250	40	85	87	390	465	690	287,5	205	500
200	125	310	G1-1/4	125	210	145	278	40	90	87	405	480	756	315	220	540
250	160	390	G1-1/2	160	263	187	325	52	120	112	520	620	903	360	260	640
320	200	500	G2	200	330	241	350	62	120	152	620	740	1080	425	310	750

CAP FIXED EYE WITH SPHERICAL BEARING - INTERMEDIATE TRUNNION



Bore	BD	CX	D	EX	LT	MS	PJ	TD	TL	TM	UV	XO	XV MIN	Y	ZJ
50	38	32	100	32	65	38	120	32	25	112	100	305	187	98	240
63	48	40	115	40	69	50	133	40	32	125	115	348	212	112	270
80	58	50	145	50	88	61,5	155	50	40	150	145	395	245	120	307
100	70	63	160	63	107	71	171	63	50	180	165	442	280	134	335
125	88	80	200	80	130	90	205	80	63	224	200	520	340	153	390
140*	98	90	230	90	150	100	208	90	70	265	260	580	380	181	425
160	108	100	260	100	157	112	235	100	80	280	280	617	400	185	460
180*	118	110	280	110	185	129	250	110	90	320	315	690	410	205	500
200	133	125	310	125	210	145	278	125	100	335	330	756	450	220	540
250	178	160	390	160	263	187	325	160	125	425	420	903	540	260	640
320	218	200	500	200	330	241	350	200	160	530	510	1080	625	310	750

DOUBLE ROD CYLINDERS



Bore	Piston rod	Y	PM	ZM
50	32 / 36	98	119	315
63	40 / 45	112	126	350
80	50 / 56	120	156	396
100	63 / 70	134	172	440
125	80 / 90	153	204	510
140*	90 / 100	181	208	570
160	100 / 110	185	240	610
180*	110 / 125	205	250	660
200	125 / 140	220	280	720
250	160 / 180	260	320	840
320	200 / 220	310	350	970

For double rod cylinders customer should indicate the desired mounting styles. Mounting styles available are A, C, E, M.

Dimensional informations not indicated in this prospect can be provided from previous corresponding table (single rod cylinders).

PORTS TYPES

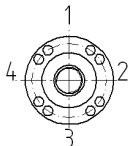
Comer System cylinders are supplied with BSP standard threaded ports, according to ISO 6022. If required, we can provide metric threaded ports, NPTF, SAE 6000.

Bore	BSP threaded ports	Metric threaded ports	NPTF ports	Ports with flange SAE 6000
50	G1/2	M22x1,5	NPTF 1/2	SAE 6000 - 1/2
63	G3/4	M27x2	NPTF 3/4	SAE 6000 - 3/4
80	G3/4	M27x2	NPTF 3/4	SAE 6000 - 3/4
100	G1	M33x2	NPTF 1	SAE 6000 - 1
125	G1	M33x2	NPTF 1	SAE 6000 - 1
140*	G1-1/4	M42x2	NPTF 1-1/4	SAE 6000 - 1-1/4
160	G1-1/4	M42x2	NPTF 1-1/4	SAE 6000 - 1-1/4
180*	G1-1/4	M42x2	NPTF 1-1/4	SAE 6000 - 1-1/4
200	G1-1/4	M42x2	NPTF 1-1/4	SAE 6000 - 1-1/4
250	G1-1/2	M48x2	NPTF 1-1/2	SAE 6000 - 1-1/2
320	G2	M60x2	NPTF 2	SAE 6000 - 2

If required it is possible to provide cylinders with oversize ports. In these cases, cylinder dimensions can change. For more informations, customer should contact our technical department.

PORTS AND CUSHION ADJUSTMENT LOCATION

The table below shows standard positions of the ports and the cushion adjustment for Comer System cylinders. All cylinders are provided with air-bleed.

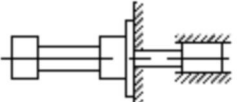
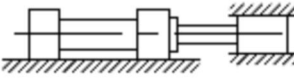
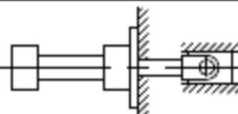
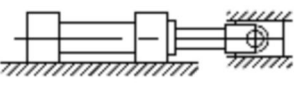
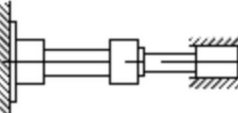
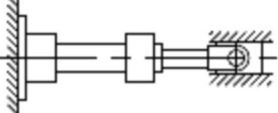
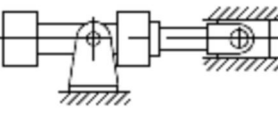
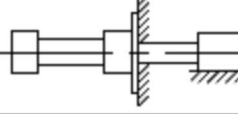
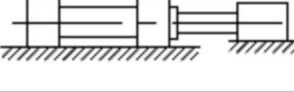
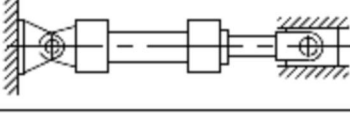
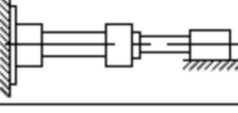
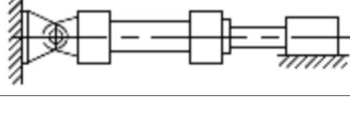


		Mounting style			
		C-D	E	F-H	M
Head	Connection port	1	1	1	1
	Cushion	2	2	2	2
	Check valve	4	4	4	4
	Air bleed	3	3	3	3
Cap	Connection port	1	1	1	1
	Cushion	2	2	2	2
	Check valve	4	4	4	4
	Air bleed	3	3	3	3

If limit switch sensors are required, the locations indicate above can change, according to customer specifications.

ROD PISTON DIAMETER SELECTION

When the cylinder works in pushing it is suggested to verify if the peak load is adequate. To do this, the steps are the followings. The first thing is to determine the constant k, related to the mounting style that is required:

Type of mounting	Stroke factor
 	0,5
 	0,7
	1,0
 	1,5
 	2,0
	2,0
	4,0
	4,0

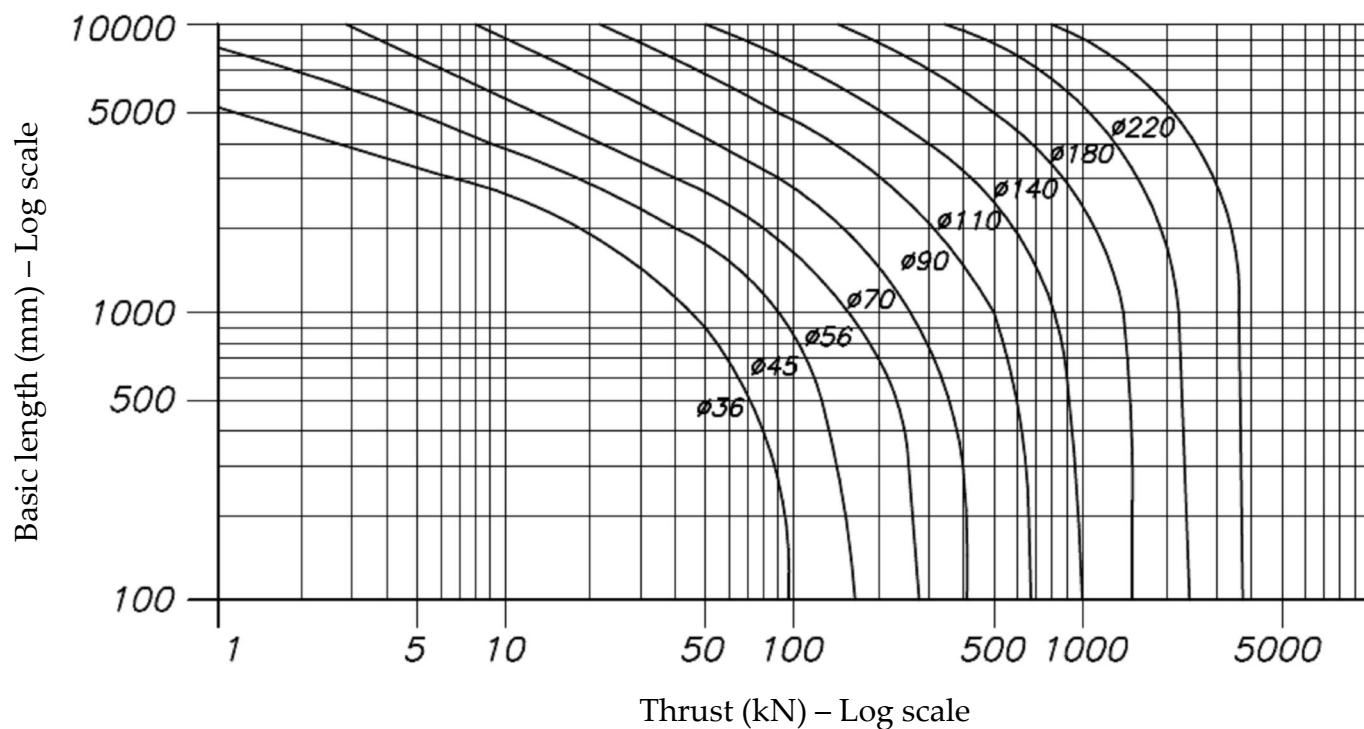
Calculate the basic length L:

$$L = k * \text{stroke}$$

Calculate the thrust by multiplying the bore area per the work pressure.

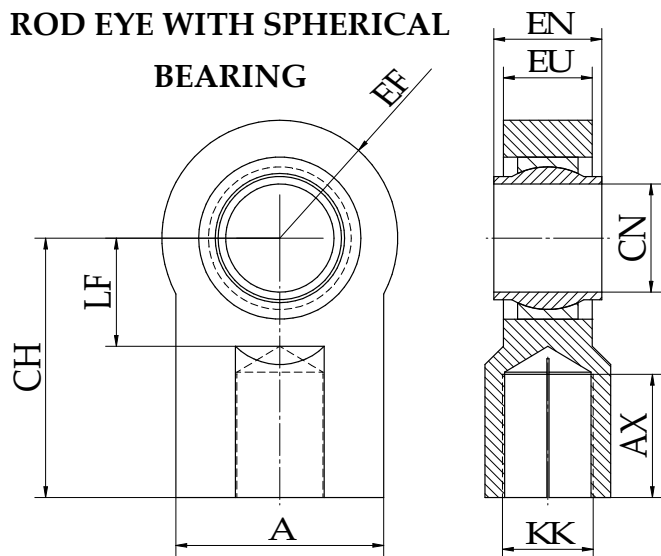
BORE (mm)	PUSH AREA (mm ²)	Push force (kN)					
		50 bar	75 bar	100 bar	160 bar	250 bar	320 bar
50	1963	9,82	14,73	19,63	31,42	49,09	62,83
63	3117	15,59	23,38	31,17	49,88	77,93	99,75
80	5027	25,13	37,70	50,27	80,42	125,66	160,85
100	7854	39,27	58,90	78,54	125,66	196,35	251,33
125	12272	61,36	92,04	122,72	196,35	306,80	392,70
140	15394	76,97	115,45	153,94	246,30	384,85	492,60
160	20106	100,53	150,80	201,06	321,70	502,65	643,40
180	25447	127,23	190,85	254,47	407,15	636,17	814,30
200	31416	157,08	235,62	314,16	502,65	785,40	1005,31
250	49087	245,44	368,16	490,87	785,40	1227,18	1570,80
320	80425	402,12	603,19	804,25	1286,80	2010,62	2573,59

Interpolating L with the thrust calculate before, it's possible to define the point of intersection, from the following chart:

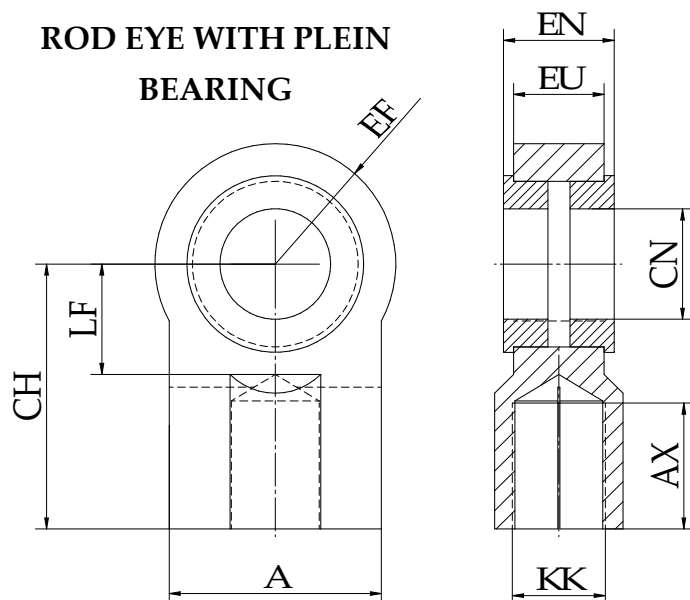


ACCESSORIES

ROD EYE WITH SPHERICAL BEARING



ROD EYE WITH PLEIN BEARING

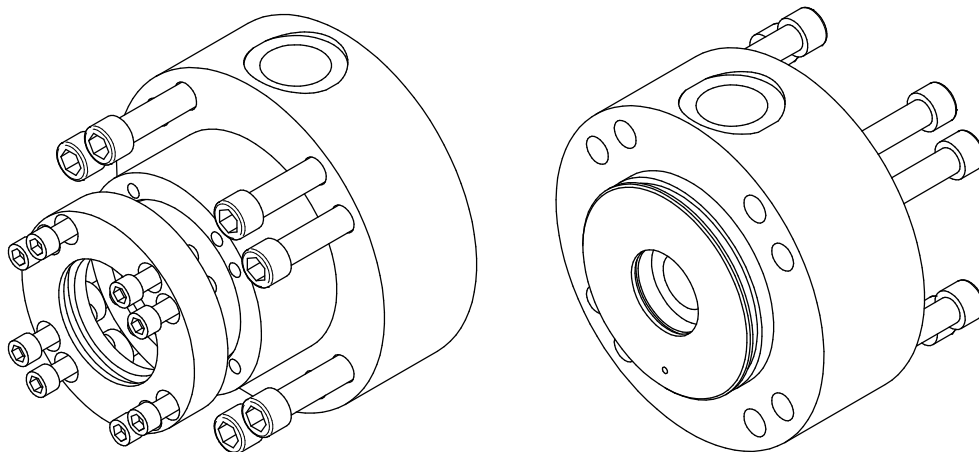


KK	Snodo sferico	Snodo fisso
M27 x 2	SS 50 M	SF 50 M
M33 x 2	SS 63 M	SF 63 M
M42 x 2	SS 80 M	SF 80 M
M48 x 2	SS 100 M	SF 100 M
M64 x 3	SS 125 M	SF 125 M
M72 x 3	SS 140 M	SF 140 M
M80 x 3	SS 160 M	SF 160 M
M90 x 3	SS 180 M	SF 180 M
M100 x 3	SS 200 M	SF 200 M
M125 x 4	SS 250 M	SF 250 M
M160 x 4	SS 320 M	SF 320 M

KK	A	AX	CH	CN	EF	EN	EU	LF
M27 x 2	66	37	80	32	40	32	28	32
M33 x 2	80	46	97	40	48,5	40	33	41
M42 x 2	96	57	120	50	60	50	41	50
M48 x 2	114	64	140	63	70	63	53	62
M64 x 3	148	86	180	80	90	80	67	78
M72 x 3	160	91	195	90	97,5	90	72	85
M80 x 3	178	96	210	100	104,5	100	85	98
M90 x 3	190	106	235	110	117,5	110	88	105
M100 x 3	200	113	260	125	132,5	125	103	120
M125 x 4	250	126	310	160	163	160	130	150
M160 x 4	320	161	390	200	209	200	162	195

TIGHTENING TORQUE

For Comer System mill type cylinders', bolts of minimum strength grade 8.8 are used and the tightening torque applied are showed in the table below:



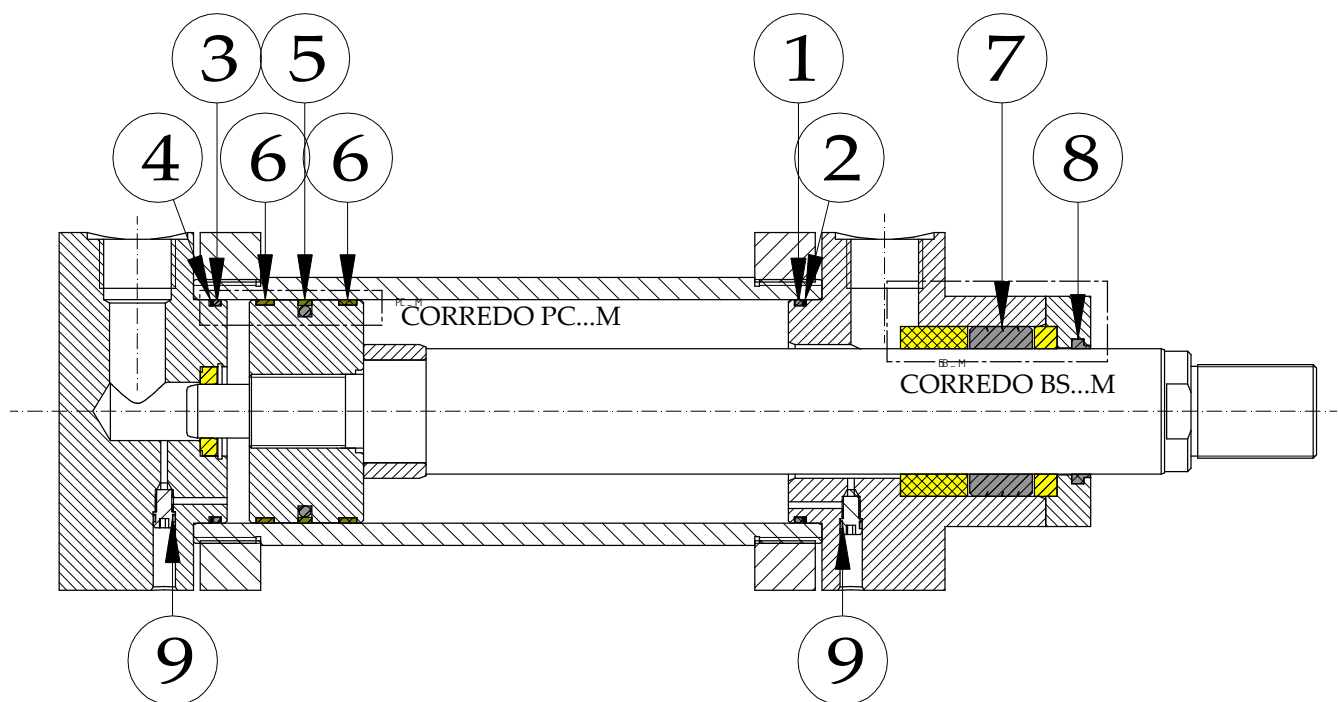
BORE	SCRE	QUAN-	GRADE	TIGHTENING	RETEINER	GRADE	TIGHTENING
50	M8	8	8.8	30	M6	8.8	7
63	M10	8	8.8	50	M6	8.8	7
80	M12	8	8.8	70	M8	8.8	30
100	M12	8	8.8	70	M8	8.8	30
125	M16	8	8.8	150	M8	8.8	30
140	M20	8	8.8	245	M8	8.8	30
160	M24	8	8.8	500	M10	8.8	50
180	M24	8	8.8	500	M12	8.8	70
200	M27	8	8.8	650	M12	8.8	70
250	M27	12	8.8	650	M12	8.8	70
320	M30	16	8.8	900	M16	8.8	150

GASKETS CHARACTERISTICS

Seals should be chosen according to work conditions of the environment where the cylinder operates, paying particular attention to the fluid characteristics and the temperature. The table below shows the suggested material for the seals, according to the working conditions of the cylinder:

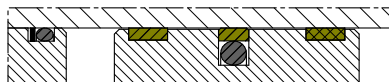
MATERIAL	CHARACTERISTICS	TEMPERATURE	FLUID
NBR + polyurethane	High performances in static/dynamic conditions	-30°C ÷ + 70°C	Mineral oil HH, HL, HLP, HLP-D, HM, HV
NBR + PTFE	Low friction	-30°C ÷ + 70°C	Mineral oil, HFA, HFC, HFD-U
FKM + PTFE	Low friction - High temperature	-20°C ÷ + 120°C	Mineral oil, HFA, HFB, HFD-U, HFD-R

SEALS KITS



- | | |
|-----------------------|--|
| 1 Head O-ring | 6 PTFE wear ring |
| 2 Head back-up washer | 7 Lipseal |
| 3 Cap O-ring | 8 Wipe seal |
| 4 Cap back-up washer | 9 Cushioning valve O-ring + back-up washer |
| 5 Piston seal | |

CORREDO PC : contains 1, 2, 3, 4, 5, 6

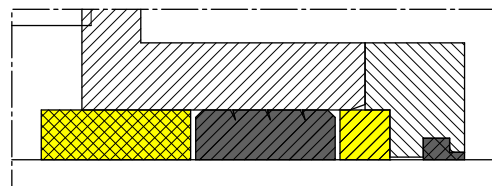


CORREDO PC ... M

BORE	NBR + polyurethane	NBR + PTFE	FKM + PTFE
50	PC50M	PC50MS	PC50MV
63	PC63M	PC63MS	PC63MV
80	PC80M	PC80MS	PC80MV
100	PC100M	PC100MS	PC100MV
125	PC125M	PC125MS	PC125MV
140*	PC140M	PC140MS	PC140MV
160	PC160M	PC160MS	PC160MV
180*	PC180M	PC180MS	PC180MV
200	PC200M	PC200MS	PC200MV
250	PC250M	PC250MS	PC250MV
320	PC320M	PC320MS	PC320MV

CORREDO GB: contains 7, 8

CORREDO BS: contains 7, 8, bronze gland



CORREDO GB ... M

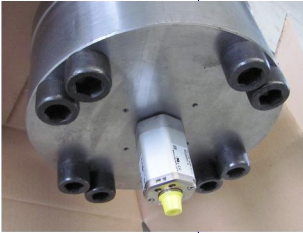
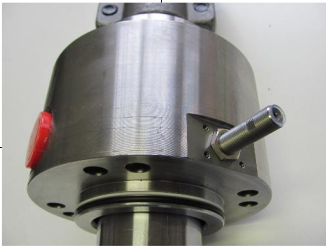
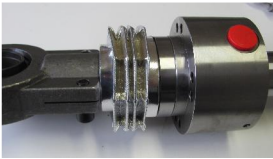
BORE	STELO	NBR		FKM	
50	32 / 36	GB32M / GB36M	BS32M / BS36M	GB32MV / GB36MV	BS32MV / BS36MV
63	40 / 45	GB40M / GB45M	BS40M / BS45M	GB40MV / GB45MV	BS40MV / BS45MV
80	50 / 56	GB50M / GB56M	BS50M / BS56M	GB50MV / GB56MV	BS50MV / BS56MV
100	63 / 70	GB63M / GB70M	BS63M / BS70M	GB63MV / GB70MV	BS63MV / BS70MV
125	80 / 90	GB80M / GB90M	BS80M / BS90M	GB80MV / GB90MV	BS80MV / BS90MV
140*	90 / 100	GB90M / GB100M	BS90M / BS100M	GB90MV / GB100MV	BS90MV / BS100MV
160	100 / 110	GB100M / GB110M	BS100M / BS110M	GB100MV / GB110MV	BS100MV / BS110MV
180*	110 / 125	GB110M / GB125M	BS110M / BS125M	GB110MV / GB125MV	BS110MV / BS125MV
200	125 / 140	GB125M / GB140M	BS125M / BS140M	GB125MV / GB140MV	BS125MV / BS140MV
250	160 / 180	GB160M / GB180M	BS160M / BS180M	GB160MV / GB180MV	BS160MV / BS180MV
320	200 / 220	GB200M / GB220M	BS200M / BS220M	GB200MV / GB220MV	BS200MV / BS220MV

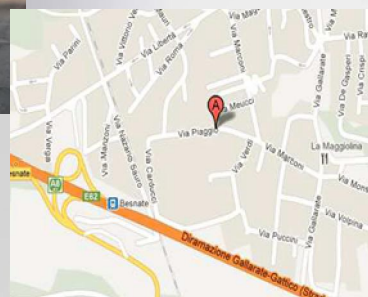
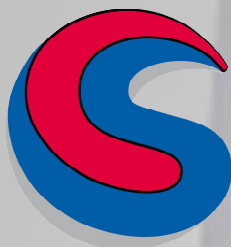
HOW TO ORDER A COMER SYSTEM CYLINDER – ICM SERIES (ISO 6022)

	<i>SERIE ICM</i>	 Cf ... Fa Fp S
Bore	Indicate in mm	↑
Rod piston A	Indicate Ø rod piston	↑
Rod thread	Male M or Female F	↑
Rod piston B	Indicate Ø rod piston	↑
Rod thread	Male M o Female F	↑
Cylinder stroke	Indicate in mm	↑
Mounting style	C = head round flange (ISO MF3) D = cap round flange (ISO MF4) E = side lugs (ISO MS2) F = cap fixed eye (ISO MP3) H = cap fixed eye with spherical bearing (ISO MP5) M = intermediate fixed trunnion (ISO MT4)	↑
Stop Tube		↑
Fa = head cushioning		↑
Fp = cap cushioning		↑
S = special executions	Indicate the change from the standard execution (see dedicated section page 19)	↑

SPECIAL EXECUTIONS (indicate the required special executions)

S = special executions

V	T	SA	SP	ST	C
 FMK seals	 Linear transducer				
		 Head limit switch sensor			
		Cap limit switch sensor			
			 Heat resistant bellow		
					Connection ports (if not standard)



COMER SYSTEM SRL

Via Piaggio 25 - 21010 Besnate (Va)

Tel: 00390331274812

Fax: 00390331272459

Email: info@comersystem.com

Sito web: www.comersystem.com

