ISO 6020/2 hydraulic cylinders with tie rods are suitable for a wide range of industrial applications, when a compact, highly reliable and easy-to-maintain product is required, thanks to the configuration with four high-strength tie rods, the use of the best materials and technical choices guided by the great experience gained through the years.

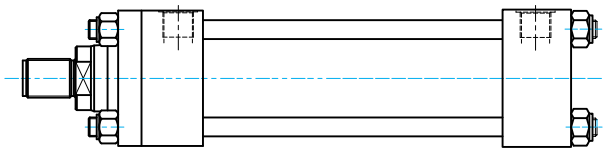
The overall dimensions, mounting configurations and working pressure of 160 bar comply with ISO 6020/2. The cylinder can be provided with reliable end-of-stroke cushioning, equipped with a quick restart system and adjustable to suit the needs and loads to be cushioned. Available in various sealing configurations to suit the desired operating conditions and performance.
Before delivery, each cylinder is tested in accordance with ISO 10100 and we record these results in our systems to ensure product quality and performance. They can be equipped with various types of switches to detect the piston at the end of the stroke or in intermediate positions, or sensors to detect it continuously along the entire stroke. In addition, the cylinder can be equipped with a CETOP plate for the installation of a control valve with ISO 4401 mounting surfaces.

Spare parts are easy to find and are always available at our warehouse, with rapid support service to deal with any urgency.
For strokes over 2000 mm, it is recommended to choose ISO 6020/2 hydraulic cylinders with counterflanges (see page 26).

Standard		ISO 6020/2 - DIN 24554 - tie rods	
Bore	**mm**	from 25 to 200	
Pressure	**bar**	operational 160	testing 240
Maximum stroke	**mm**	4000	
Fluid		Mineral hydraulic oil Phosphoric esters HFC-fluid	

TIE-ROD CYLINDERS SERIES

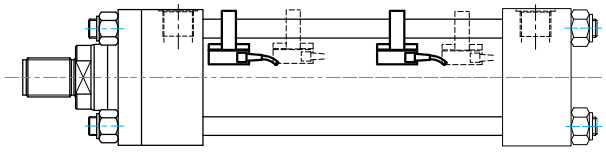
CD Bore from 25 to 100
DK Bore from 125 to 200



The CD and DK series hydraulic cylinders are the standard version of the ISO 6020/2 tie-rod cylinders. The technical features, dimensions, versions and options available are detailed on pages 7.
They are available in a wide variety of configurations, with rods in various materials, with CETOP plate for valve and with end-stroke switches integrated in the cylinder heads, as well as many other special options.
In addition, for applications in aggressive environments in contact with substances that promote corrosion, they are available with a chemical nickel-plating surface treatment.

TIE-RODS CYLINDERS SERIES WITH MAGNETIC SWITCHES

MD Bore from 25 to 125

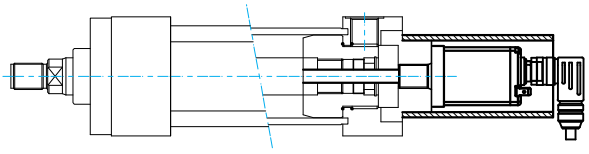


The MD series hydraulic cylinders have the same technical features, dimensions and available options as the standard CD and DK series, but are equipped with a magnetic piston and stainless-steel tube.
One or more magnetic switches can be positioned along the tube, fixed to the tie rods, to detect the passage of the piston in correspondence with the SR or SH switch.

Special programmable sensors are available on request (see page 20).

TIE-RODS CYLINDERS SERIES WITH POSITION TRANSDUCER

TD Bore from 40 to 100
TK Bore from 125 to 200



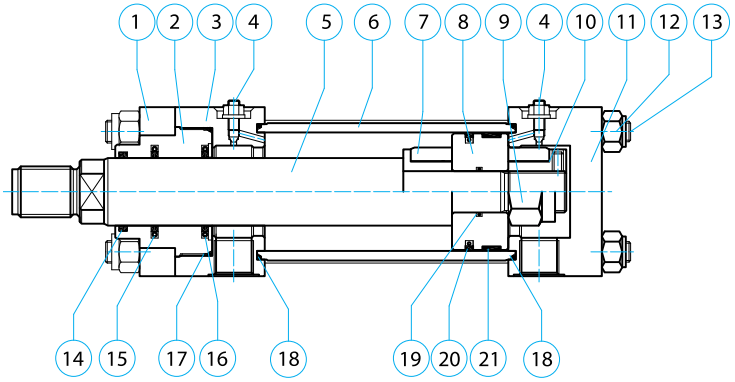
The TD and TK series hydraulic servo cylinders have the same technical features, dimensions and available options as the CD and DK series, but are equipped with a magnetostrictive linear position transducer (see page 22) for precise and continuous detection of the piston at any point in the cylinder stroke.
The external parts of the position transducer are protected against accidental impact during transport, installation and operation by a removable steel cover.

AVAILABLE SEALS

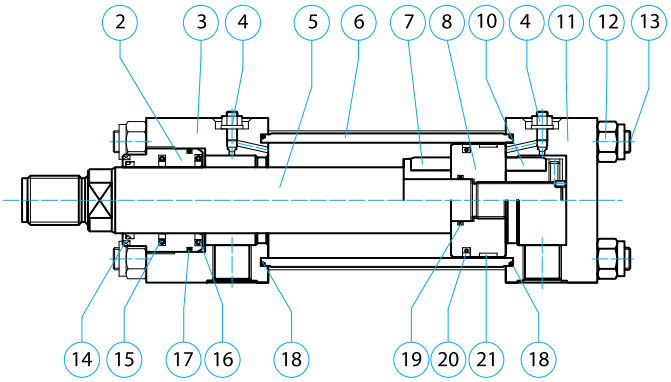
Seal code	Performances					Fluid		
	High sealing	Low friction	Max speed	Temp °C Min	Temp °C Max	Hydraulic oil	Phosphoric esters	HFC-Fluid
S	√		0.5 m/s	-20	+80	√		
L		√	1 m/s	-20	+80	√		
H		√	1 m/s	-20	+150	√	√	
G		√	1 m/s	-20	+80			√

For speeds and temperatures exceeding the indicated limits, please contact our technical department.

BORE 25-100



BORE 125-200



	Component	Material	Features
1	Closing flange	Steel	Burnished
2	Guide bushing	Bronze	
3	Front head	Steel	Burnished
4	Cushioning adj. + air bleed	Steel	
5	Piston rod	Chromeplated steel	Cr 25 µm ISO f7 - Ra 0.20 µm
6	Cylinder body	Steel	Honed H8 - Ra 0.40 µm
7	Front cushioning	Hardened steel	
8	Piston	Steel	
9	Rod self-locking nut	Steel	
10	Rear cushioning	Hardened steel	
11	Rear head	Steel	Burnished
12	Tie-rod self-locking nut	Steel	
13	Tie-rod	Alloy steel	Threaded rolled

The cylinders are equipped with a bronze guide bushing with wiper and double seal with high seal or low-friction.

The tie rods are made of high-strength material and the thread is obtained by cold-rolling, to increase fatigue strength.

The original floating ring cushioning system guarantees perfect centring and performs the function of rapid opening for quick restart of the cylinder. Made of hardened steel guarantees a long service life, thanks to the steel housing of the cylinder head.

The screw adjustment system allows a precise adjustment of the cushioning effect and at the same time bleeding the air (see page 9).

	Component	Groove	Material			
			S	L	H	G
14	Rod wiper		NBR + PTFE	NBR + PTFE	Viton® + PTFE	NBR + PTFE CG
15	First rod seal	ISO 7425/2	NBR + PTFE	NBR + PTFE	Viton® + PTFE	NBR + PTFE CG
16	Second rod seal	ISO 7425/2	PU	NBR + PTFE	Viton® + PTFE	NBR + PTFE CG
17	Head / bushing sealing		NBR + PTFE	NBR + PTFE	Viton® + PTFE	NBR + PTFE
18	Tube seal		NBR	NBR	Viton®	NBR
19	Internal piston seal		NBR	NBR	Viton®	NBR
20	External piston seal	ISO 7425/1	NBR + PU	NBR + PTFE	Viton® + PTFE	NBR + PTFE CG
21	Piston guide		Resin	Resin	Resin	Resin

SIZING AND FORCES

Dimension		Piston area		Force at 100 bar		Force at 160 bar		Tie rods tightening torque
Bore	Rod	push	pull	push	pull	push	pull	
mm	mm	cm²	cm²	daN	daN	daN	daN	Nm
25	12	4.9	3.8	491	378	785	604	5
	18		2.4		236		378	
32	14	8.0	6.5	804	650	1287	1040	9
	18		5.5		550		880	
	22		4.2		424		679	
40	18	12.6	10.0	1257	1002	2011	1603	20
	22		8.8		877		1402	
	28		6.4		641		1025	
50	22	19.6	15.8	1963	1583	3142	2533	70
	28		13.5		1348		2156	
	36		9.5		946		1513	
63	28	31.2	25.0	3117	2501	4988	4002	70
	36		21.0		2099		3359	
	45		15.3		1527		2443	
80	36	50.3	40.1	5027	4009	8042	6414	160
	45		34.4		3436		5498	
	56		25.6		2564		4102	
100	45	78.5	62.6	7854	6264	12566	10022	160
	56		53.9		5391		8626	
	70		40.1		4006		6409	
125	56	122.7	98.1	12272	9809	19635	15694	460
	70		84.2		8423		13477	
	90		59.1		5910		9456	
160	70	201.1	162.6	20106	16258	32170	26012	820
	90		137.4		13744		21991	
	110		106.0		10603		16965	
200	90	314.2	250.5	31416	25054	50265	40087	1150
	110		219.1		21913		35060	
	140		160.2		16022		25635	

STROKE

During testing, the cylinder stroke is checked, assuring compliance with the tolerance of 0/+2 mm as per ISO 8131.
For space requirements of the cylinder components or switches, the stroke cannot be less than a minimum value in some circumstances.
This problem can be overcome by inserting a spacer.

	Bore		25	32	40	50	63	80	100	125	160	200
Minimum stroke	CD/DK (mm)	Mounting H (ISO MT4)	5	10	10	15	25	30	40	50	65	75
		Others	0	0	0	0	0	0	0	0	0	0
	MD (mm)	Mounting H (ISO MT4)	47	55	55	62	70	75	84	95	-	-
		Others	25	28	24	22	20	15	14	5	-	-

OPERATIONAL LIFE-TIME

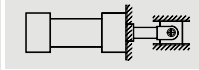
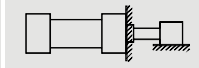
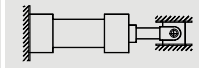
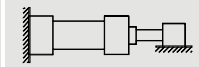
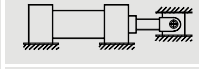
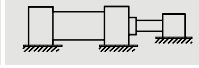
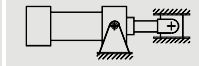
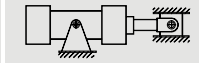
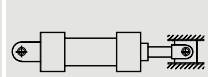
The cylinders are manufactured from high-quality materials and according to design guidelines validated by many years of experience with these products. Under ideal conditions, the cylinders are capable of working for millions of cycles requiring only regular basic maintenance and replacement of wear parts. The real application situations can subject cylinders to conditions that reduce their service life and would therefore be preferable to avoid.
The most frequent are:

- radial loads, generated by external forces or misalignments in fixing to machinery
- end-stroke impacts and external impulsive forces
- pressure peaks and water hammers;
- contaminated hydraulic fluid;
- over-temperatures, caused either by the environment or internal causes such as frequent cycles with short strokes, which prevent sufficient oil change.

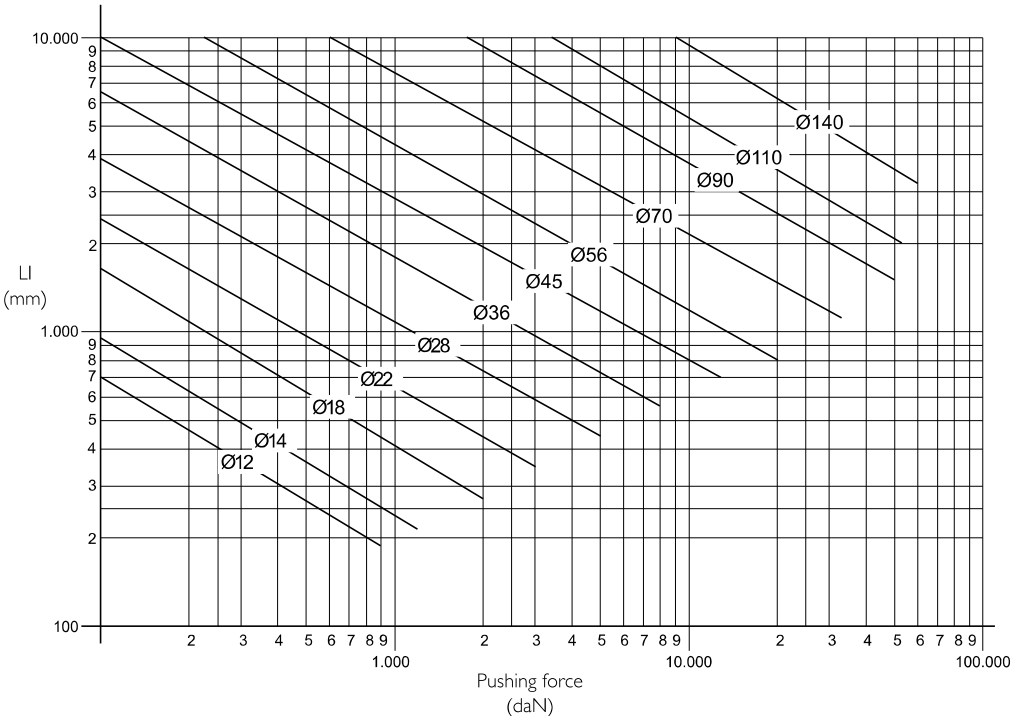
Our technical department will be able to advise you on how best to prevent or reduce problems.

BUCKLING VERIFICATION

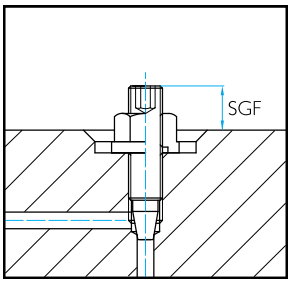
When the cylinder is pushing, it can be subject to buckling instability, depending on mounting, stroke and pushing force.
The graph illustrates the boundary working conditions for each rod. Stay below for optimal operation. The mounting of the cylinder determines the stroke factor FC. Multiplying the cylinder stroke CO by FC gives the ideal length LI. The value of LI, read on the vertical axis, meets the line corresponding to the diameter of the rod to be checked, identifying on the horizontal axis the maximum possible push.
If the actual thrust does not exceed this limit value, the verification is passed.
Spacers and rod extensions must be added to the stroke to obtain the CO value to be multiplied by FC.

MOUNTING		FC
X (MX5) A (ME5) R (MX3) Q (MX1)		0.7
		2
B (ME6) S (MX2) T (MX6)		1.5
		4
E (MS2)		0.7
		2
G (MT1)		1
H (MT4)		1.5
C (MP3) D (MP5) L (MT2) M (MP1)		2

ROD SELECTION CHART



CUSHIONING ADJUSTMENT AND AIR BLEEDING



All the cushioned cylinders are equipped with a screw that allows the cushioning adjustment.

Slightly loosen the Seal-Lock® sealing nut, adjust the screw and tighten carefully.

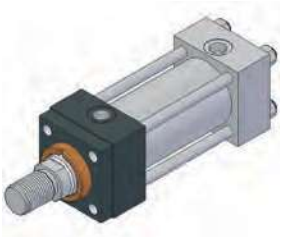
The cushioning adjustment unit can also be used as an air bleeder by loosening the nut until the air has escaped.

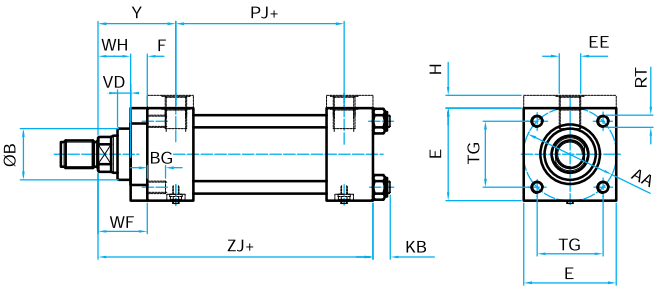
On cylinders with cushioning, if the stroke is shorter than the cushioning length, the cylinder is always cushioned.

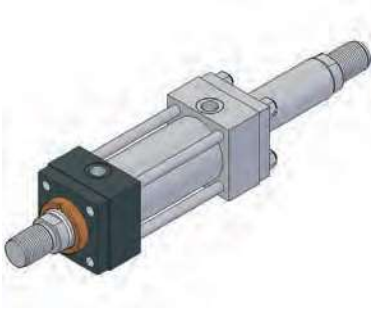
Bore		25	32	40	50	63	80	100	125	160	200
Cushioning lenght	mm	12	14	23	21	21	28	28	26	30	44
Cushioning area	cm²	1.8	3.5	5.5	8.3	13.8	23.8	38	56	99	151
SGF	mm	8	8	5	5	2	0	0	0	0	0

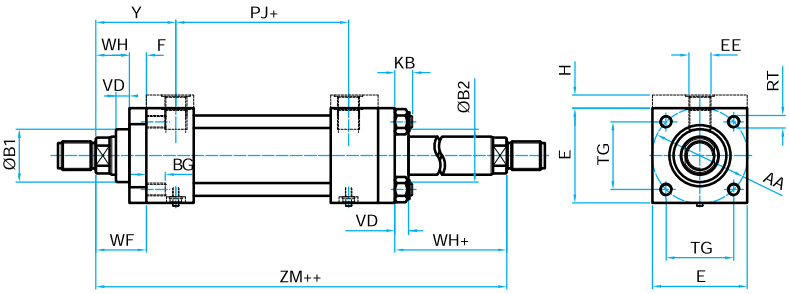
ISO MX5 - FRONT THREADED HOLES

X



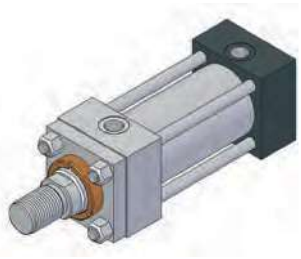


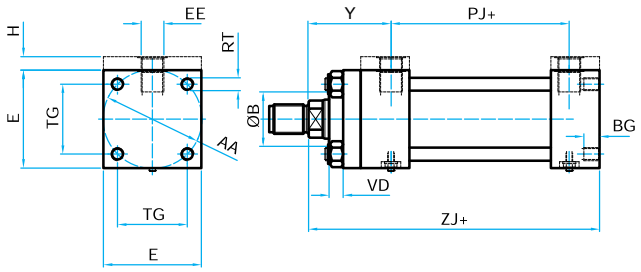




ISO MX6 - REAR THREADED HOLES

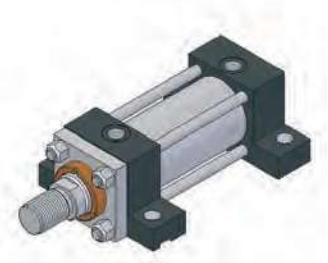
T

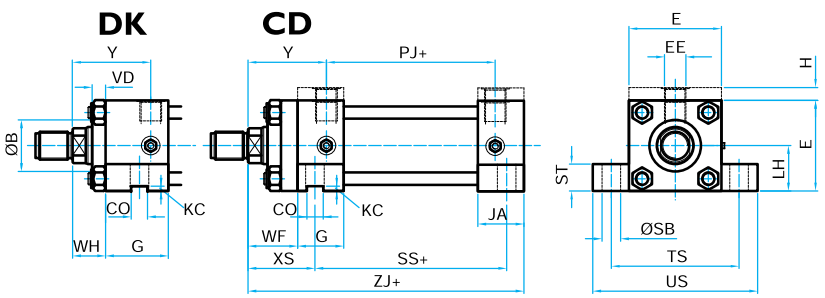


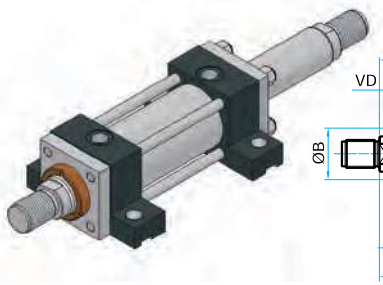


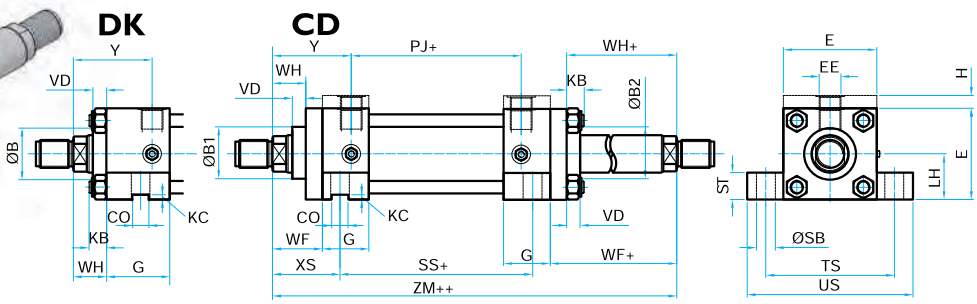
ISO MS2 - FEET

E



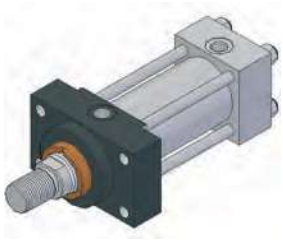


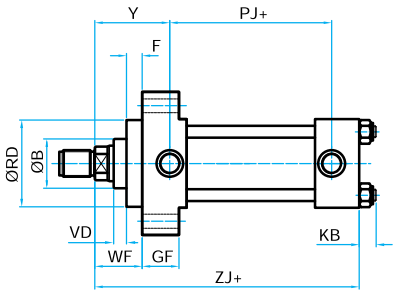


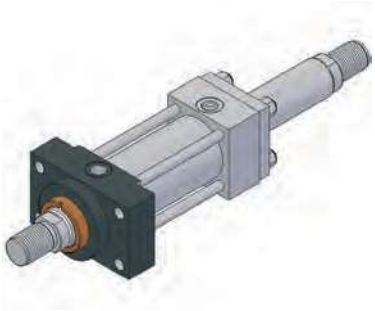


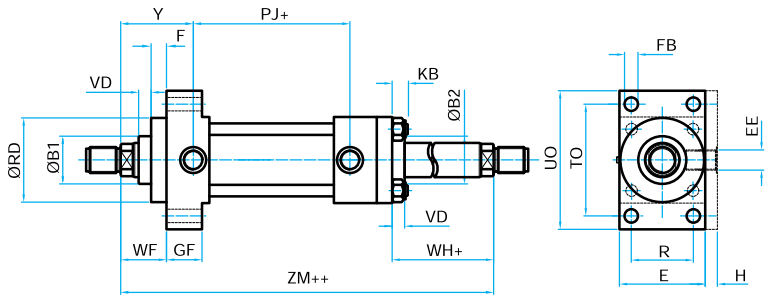
ISO ME5 - FRONT FLANGE

A



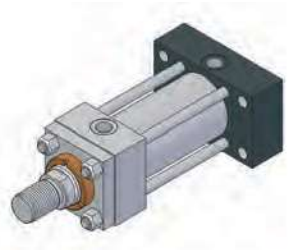


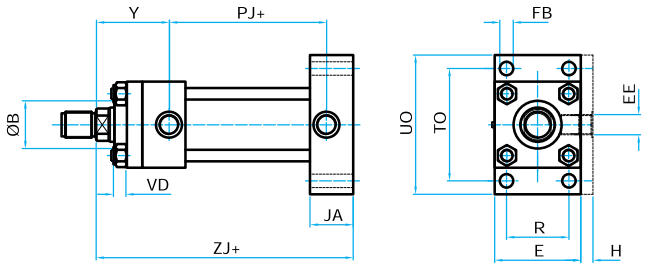




ISO ME6 - REAR FLANGE

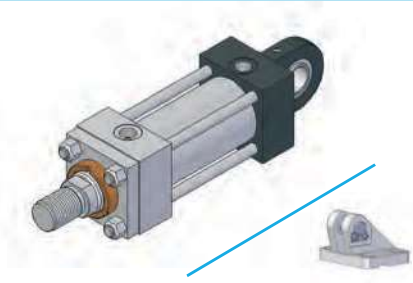
B

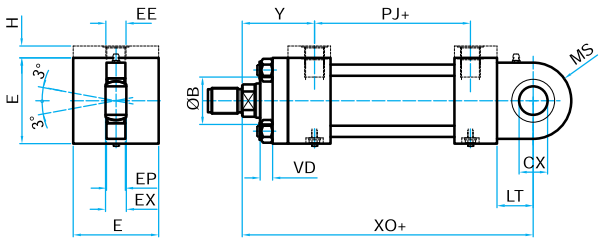




ISO MP5 - BALL JOINTED EYE

D

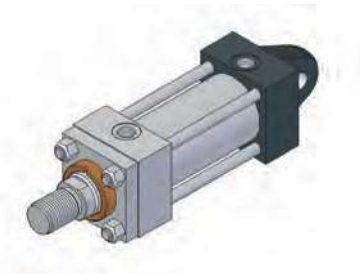


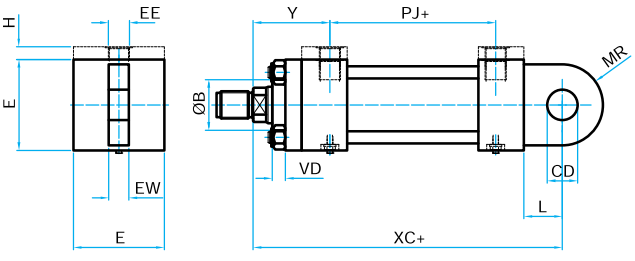


Accessory LD available on page 58

ISO MP3 - MALE CLEVIS

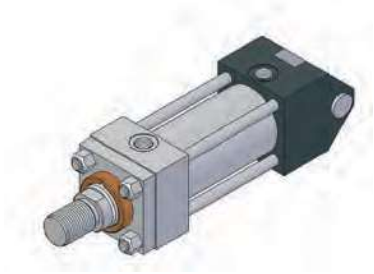
C

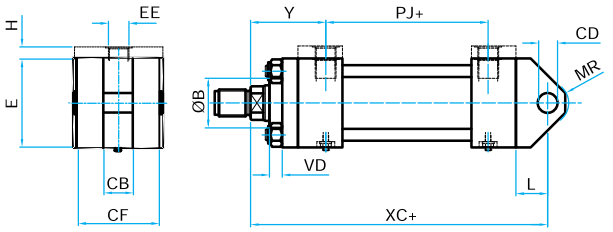




ISO MP1 - FEMALE CLEVIS

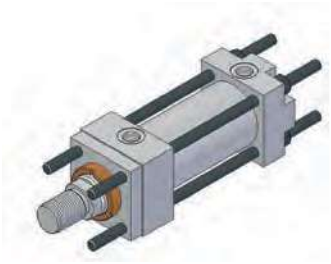
M

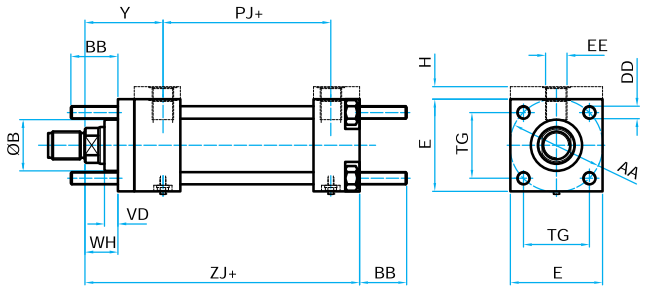


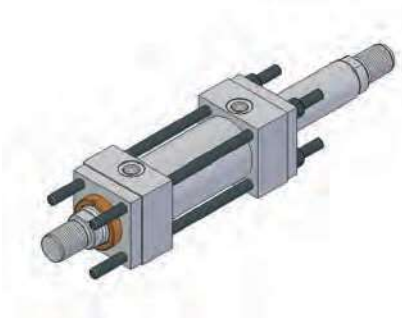


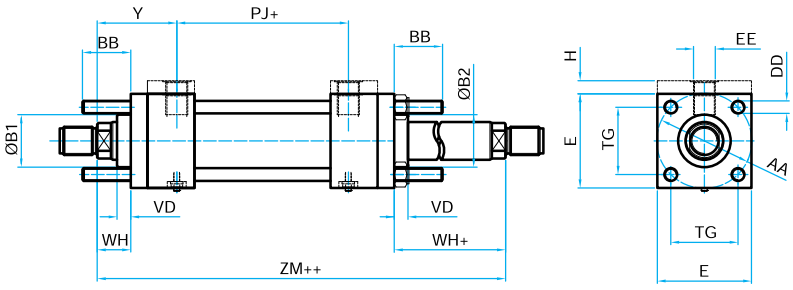
ISO MX1 - FRONT AND REAR EXTENDED TIE-RODS

Q



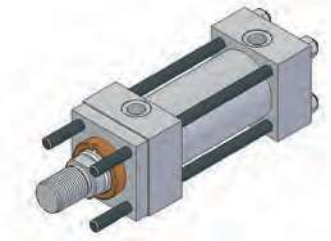


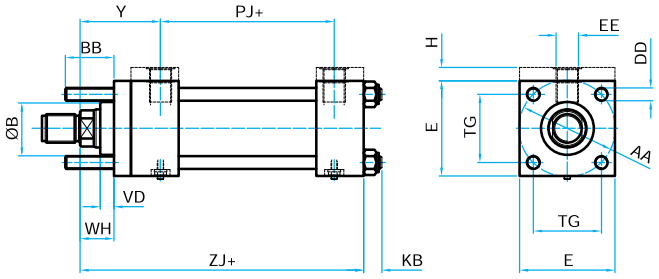




ISO MX3 - FRONT EXTENDED TIE-RODS

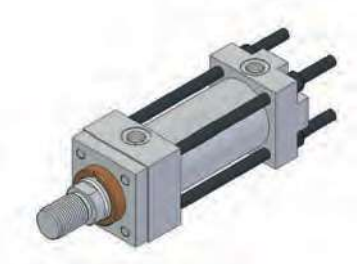
R

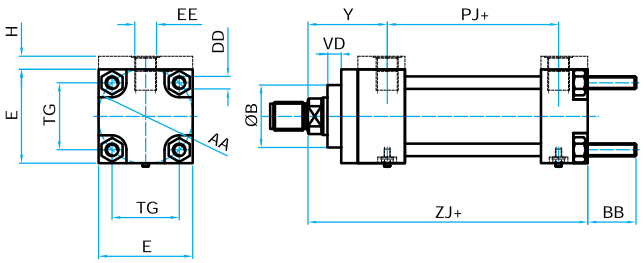




ISO MX2 - REAR EXTENDED TIE-RODS

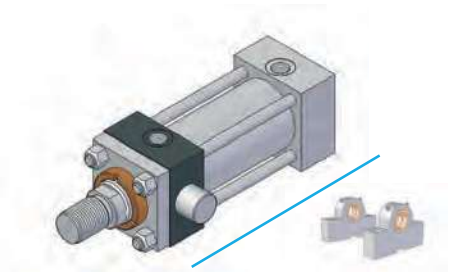
S

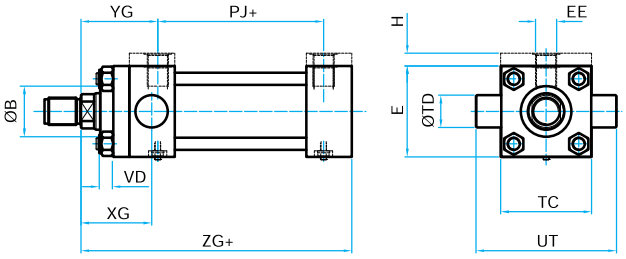




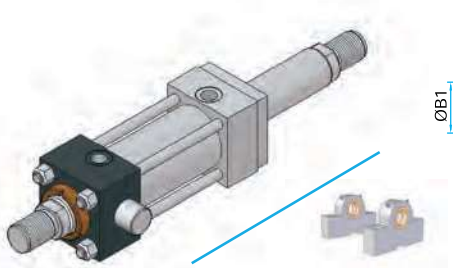
ISO MT1 - FRONT TRUNNIONS

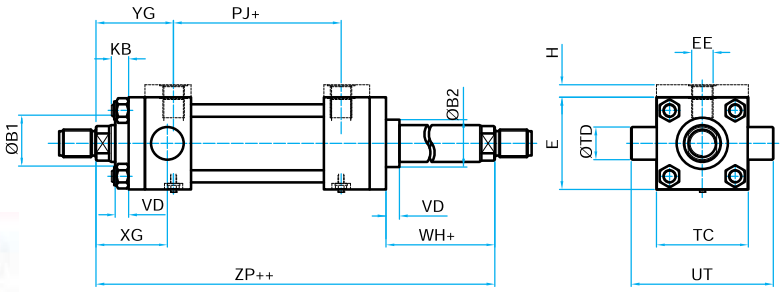
G





Accessory LK available on page 59

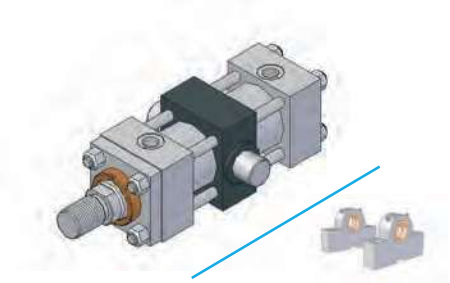


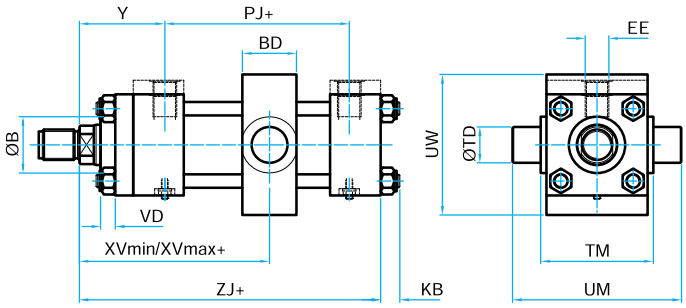


Accessory LK available on page 59

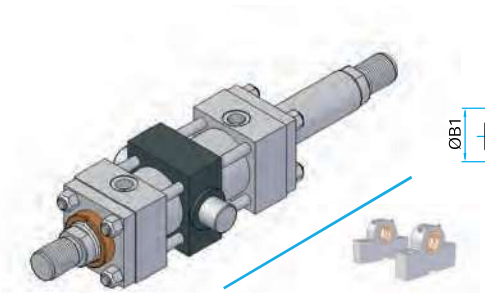
ISO MT4 - INTERMEDIATE TRUNNIONS

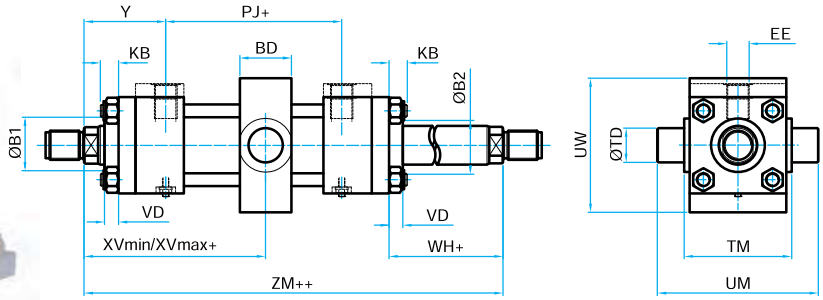
H





Accessory LK available on page 59

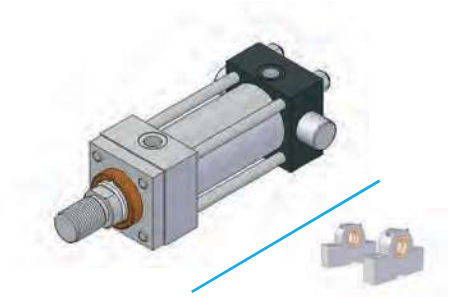


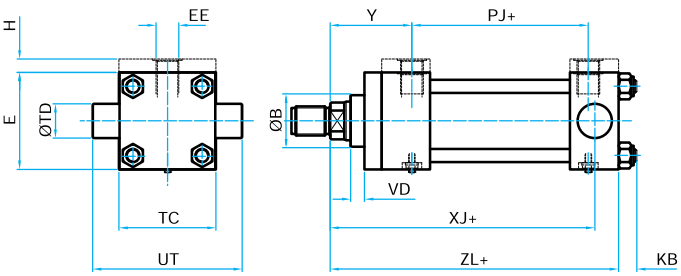


Accessory LK available on page 59

ISO MT2 - REAR TRUNNIONS

L





Accessory LK available on page 59

Bore	25		32			40			50			63			80			100			125			160			200		
Rod	12	18	14	18	22	18	22	28	22	28	36	28	36	45	36	45	56	45	56	70	56	70	90	70	90	110	90	110	140
B f9	24	30	26	30	34	30	34	42	34	42	50	42	50	60	50	60	72	60	72	88	72	88	108	88	108	133	108	133	163
AA	40		47			59			74			91			117			137			178			219			269		
BB	19		24			35			46			46			59			59			81			92			115		
BD	20		25			29			38			48			58			68			88			108			125		
BG	12		15			16			18			18			24			24			30			35			40		
CB	16(*)		16			20			30			30			40			50			64(*)			80(*)			80		
CD H9	10		12			14			20			20			28			36			45			56			70		
CF	40		45			60			74			90			110			130			164			200			240		
CO H8	-		-			12			12			16			16			16			20			30			40		
CX	12 $^{0}_{-0.008}$		16 $^{0}_{-0.008}$			20 $^{0}_{-0.012}$			25 $^{0}_{-0.012}$			30 $^{0}_{-0.012}$			40 $^{0}_{-0.012}$			50 $^{0}_{-0.012}$			60 $^{0}_{-0.015}$			80 $^{0}_{-0.015}$			100 $^{0}_{-0.020}$		
DD	M5x0.8		M6x1			M8x1			M12x1.25			M12x1.25			M16x1.5			M16x1.5			M22x1.5			M27x2			M30x2		
E max	40		45			60			75			90			115			130			165			200			245		
EE (page 16)	G 1/4"		G 1/4"			G 3/8"			G 1/2"			G 1/2"			G 3/4"			G 3/4"			G 1"			G 1"			G 1 1/4"		
EP	9		12			14			18			20			24			30			38			47			58		
EW h14	12		16			20			30			30			40			50			60			70			80		
EX	10 $^{0}_{-0.12}$		14 $^{0}_{-0.12}$			16 $^{0}_{-0.12}$			20 $^{0}_{-0.12}$			22 $^{0}_{-0.12}$			28 $^{0}_{-0.12}$			35 $^{0}_{-0.12}$			44 $^{0}_{-0.15}$			55 $^{0}_{-0.15}$			70 $^{0}_{-0.20}$		
F max	10		10			10			16			16			20			22			22			25			25		
FB H13	5.5		6.6			11			14			14			18			18			22			26			33		
G	32		35.5			46			45			45			52			55			87			95			117		
GF	25		25			38			38			38			45			45			58			58			76		
H	5		5			-			-			-			-			-			-			-			-		
JA	32		35.5			46			45			45			52			55			65			70			92		
KB	7		10			13			17			17			23			23			30			35			37		
KC	-		-			4			4.5			4.5			5			6			6			8			8		
L min	13		19			19			32			32			39			54			57			63			82		
LH h10	19		22			31			37			44			57			63			82			101			122		
LT min	16		20			25			31			38			48			58			72			92			116		
MR max	12		17			17			29			29			34			50			53			59			78		
MS max	20		22.5			29			33			40			50			62			80			100			120		
PJ	49+ (*)		47+ (*)			58+ (*)			62+ (*)			64+ (*)			77+ (*)			78+ (*)			117+			130+			165+		
R	27		33			41			52			65			83			97			126			155			190		
RD f8	38		42			62			74			88 (**)			105 (**)			125 (**)			150 (**)			170 (**)			210 (**)		
RT	M5		M6			M8			M12			M12			M16			M16			M22			M27			M30		
SB H13	6.5		9			11			14			18			18			26			26			33			39		
SS	73+		73+			98+			92+			86+			105+			102+			131+			130+			172+		
ST	8.5		12.5			12.5			19			26			26			32			32			38			44		
TC	38		44			63			76			89			114			127			165			203			241		
TD f8	12		16			20			25			32			40			50			63			80			100		
TG	28.3		33.2			41.7			52.3			64.3			82.7			96.9			125.9			154.9			190.2		
TM	48		55			76			89			100			127			140			178			215			279		
TO	51		58			87			105			117			149			162			208			253			300		
TS	54		63			83			102			124			149			172			210			260			311		
UM	68		79			108			129			150			191			220			278			341			439		
UO max	65		70			110			130			145			180			200			250			300			360		
US	72		84			103			127			161			186			216			254			318			381		
UT	58		68			95			116			139			178			207			265			329			401		
UW	45		50			70			90			100			130			140			180			215			300		
VD	6		12			12			9			13			9			10			9	10	10	10	10	7	10	7	7
WF	25		35			35			41			48			51			57			57			57			57		
WH	15		25			25			25			32			31			35			35			32			32		
XC	127+		147+			172+			191+			200+			229+			257+			289+			308+			381+		
XG	44		54			57			64			70			76			71			75			75			85		
XJ	95+ (*)		109+ (*)			131+ (*)			136+ (*)			146+ (*)			165+ (*)			177+ (*)			214+ (*)			227+ (*)			271+ (*)		
XO	130+		148+			178+			190+			206+			238+			261+			304+			337+			415+		
XS	33		45			45			54			65			68			79			79			86			92		
XV min/max	68 / 71+		84 / 79+			97 / 92+			106 / 94+			118 / 98+			133 / 108+			147 / 113+			167 / 122+			182 / 120+			212 / 144+		
Y	45 (*)		58 (*)			65 (*)			69 (*)			76 (*)			82 (*)			91 (*)			86			86			98		
YG	45 (*)		58 (*)			65 (*)			69 (*)			76 (*)			82 (*)			79 (*)			86			86			98		
ZG	114+		128+			153+			159+			168+			190+			191+			232+			245+			299+		
ZJ	114+		128+			153+			159+			168+			190+			203+			232+			245+			299+		
ZL	114+		128+			153+			159+			168+			190+			203+			254+			270+			324+		
ZM	139++		163++			188++			200++			216++			241++			260++			289++			302++			356++		
ZP	139++		163++			188++			200++			216++			241++			248++			289++			302++			356++		

(*) Dimension not compliant with ISO 6020/2

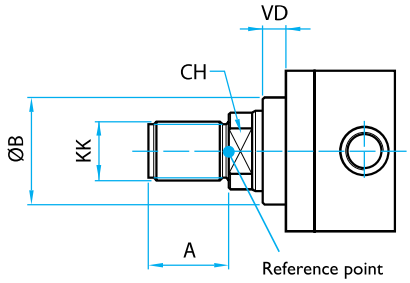
(**) Unified RD dimension, with reference to the bigger rod in compliance with ISO 6020/2. Smaller RD available on request.

\+ = add the stroke

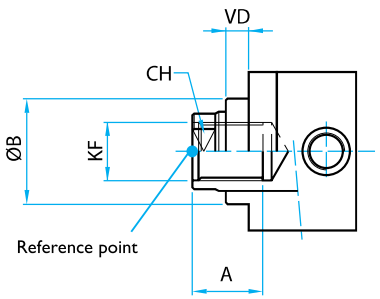
++ = add twice the stroke

ROD END

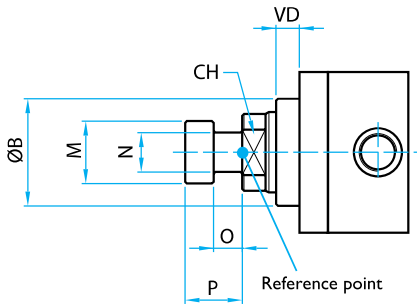
- Male thread ISO 6020/2



SF Female thread



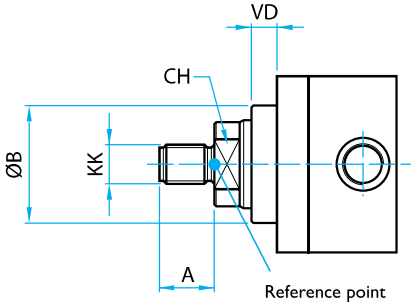
ST Floating joint



Rod	12	14	18	22	28	36	45	56	70	90	110	140
A	14	16	18	22	28	36	45	56	63	85	95	112
B f9	24	26	30	34	42	50	60	72	88	108	133	163
CH	10	10	15	19	22	30	36	46	60	75	95	120
KK	M10x1.25	M12x1.25	M14x1.5	M16x1.5	M20x1.5	M27x2	M33x2	M42x2	M48x2	M64x3	M80x3	M100x3
KF	M8x1	M10x1.25	M12x1.25	M16x1.5	M20x1.5	M27x2	M33x2	M42x2	M48x2	M64x3	M80x3	M100x3
M	11	13	16	18	22	28	35	45	56	70	106	136
N	6.5	8	10	11	14	18	22	28	35	45	65	70
O	5	6	7	8	10	13	16	20	25	35	35	45
P	10	12	14	16	20	25	32	40	50	70	70	90

For the ISO 6020/2 standard male rod end, ball-joint or clevis pin ends are available on page 56.
Different threads, lengths and rod extensions are available on request.

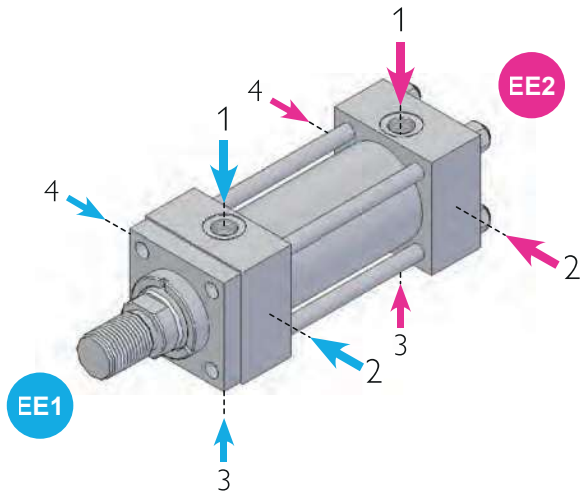
SL Male thread DIN 24554



Bore	25		32			40			50			63			80			100			125			160			200		
Rod	12	18	14	18	22	18	22	28	22	28	36	28	36	45	36	45	56	45	56	70	56	70	90	70	90	110	90	110	140
A	14		16			18			22			28			36			45			56			63			85		
B f9	24	30	26	30	34	30	34	42	34	42	50	42	50	60	50	60	72	60	72	88	72	88	108	88	108	133	108	133	163
CH	10	15	12	15	19	15	19	22	19	22	30	22	30	36	30	36	46	36	46	60	46	60	75	60	75	95	75	95	120
KK	M10x1.25		M12x1.25			M14x1.5			M16x1.5			M20x1.5			M27x2			M33x2			M42x2			M48x2			M64x3		
VD	6		12			12			9			13			9			10			9	10	10	10	10	7	10	7	7

For the SL rod end with male thread DIN 24554, ball-joint or clevis pin ends are available on page 56.

OIL PORTS



The standard configuration has the oil port in position 1 and the cushioning adjustment or air bleed on position 3, except for the fixing type E where they are in position 2.

		ISO 1179-1 (GAZ)		SAE 3000	
Bore	Side	Standard	Oversize	Standard	Oversize
25	Front	G 1/4"	-	-	-
	Rear	G 1/4"	G 3/8"	-	-
32	Front	G 1/4"	-	-	-
	Rear	G 1/4"	G 3/8"	-	-
40	Front	G 3/8"	-	-	-
	Rear	G 3/8"	G 1/2"	-	-
50	Front	G 1/2"	-	-	-
	Rear	G 1/2"	G 3/4"	-	-
63	Front	G 1/2"	-	-	-
	Rear	G 1/2"	G 3/4"	-	-
80	Front	G 3/4"	-	3/4"	1"
	Rear	G 3/4"	G 1"	3/4"	1"
100	Front	G 3/4"	-	3/4"	1"
	Rear	G 3/4"	G 1"	3/4"	1"
125	Front	G 1"	G 1 1/4"	1"	1 1/4"
	Rear	G 1"	G 1 1/4"	1"	1 1/4"
160	Front	G 1"	G 1 1/4"	1"	1 1/4"
	Rear	G 1"	G 1 1/4"	1"	1 1/4"
200	Front	G 1 1/4"	G 1 1/2"	1 1/4"	1 1/2"
	Rear	G 1 1/4"	G 1 1/2"	1 1/4"	1 1/2"

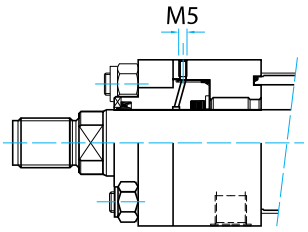
ROD MATERIAL

-	CK45 chromeplated steel
RRX	Chromeplated Stainless steel
RRB	Hardened and tempered chromeplated steel
RRK	Nikrom steel
RRH	Hardened chromeplated steel

The cylinder rod is made of high-quality chrome-plated ground steel to reduce seal wear and achieve the best sealing performance over time.
The standard version is made of CK45 steel.
For special requirements regarding resistance to corrosion, mechanical stress and wear, stainless steel, Nikrom-coated, hardened and tempered steel or hardened steel rods are available.

BUSHING DRAIN

SD Stroke longer than 2000 mm and high-speed movement can generate a build-up of fluid between the wiper and the rod guide bushing seal.
The cylinder can be equipped with a bushing drain port to allow excess fluid to be removed and returned to the tank.
The drain port is normally located on the side opposite the oil port and must be connected to an atmospheric pressure tank.



METAL WIPER

RM The metal wiper is particularly suitable for keeping extraneous particles, even small ones, outside the cylinder in the surrounding operating environment, thanks to the perfect adhesion between the scraper and the cylinder rod.
Recommended in environments with a high quantity of small dust particles.

HIGH SEALING AND LOW FRICTION PISTON

BL A special version of the piston is available for applications where high sealing and high free-flowing performance are required at the same time: e.g. load balancing cylinders, applications with closed circuits or with different fluids (oil/air), etc.
Please consult our technical department to verify the applicability of this solution.

PISTON FOR HEAVY-DUTY APPLICATIONS

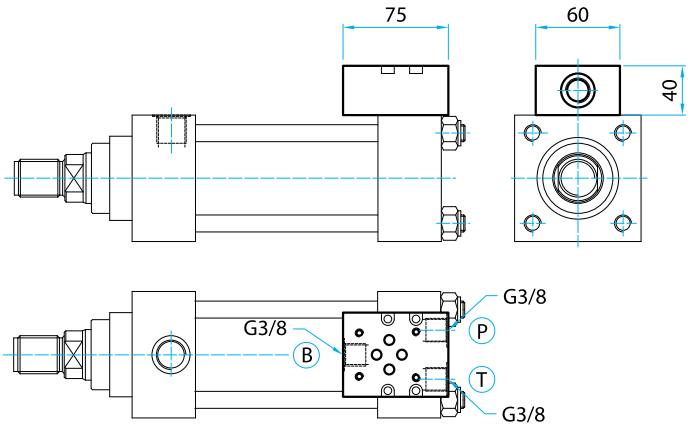
PQ A special version of the piston is available for heavy-duty applications, where shocks and impulsive forces cannot be avoided in any way and their damaging effects on cylinder life must be limited.
In these cases we recommend the use of this piston in combination with a hardened and tempered steel piston rod.
Please consult our technical department to verify the applicability of this solution.

CETOP PLATES FOR ISO 4401 VALVES

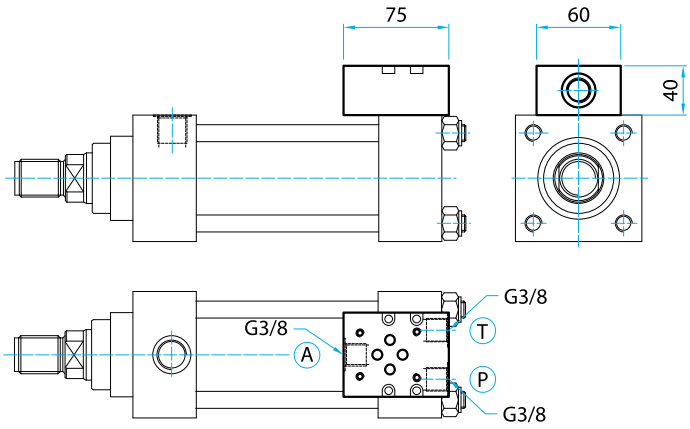
CETOP plates with ISO 4401 mounting surfaces allow fixing a four-way control valves to reduce oil volumes between the cylinder and the valve, achieving better control accuracy.
They are mounted directly on the rear head of the cylinder by means of a nipple and four screws, which ensure stable attachment even in the case of continuous vibrations. They are often chosen in combination with the use of position transducers for absolute and precise detection of the rod. On request, the cylinder can be supplied with the connection tube to the front end fitted.

CETOP 3 PLATES FOR ISO 4401-03 NG6 VALVES (for bores 40 to 125)

BV3-A Link configuration A on rear side

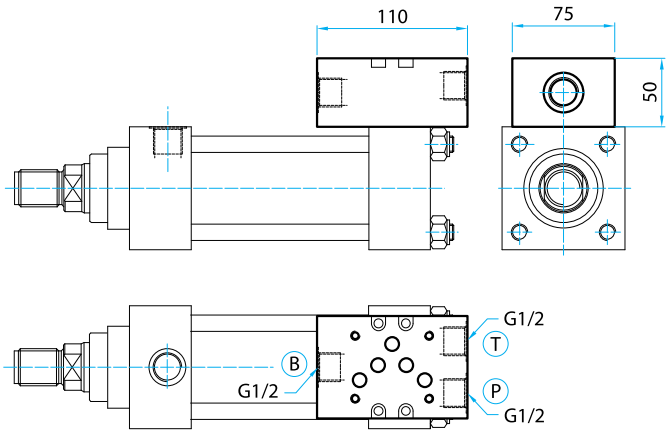


BV3-B Link configuration B on rear side

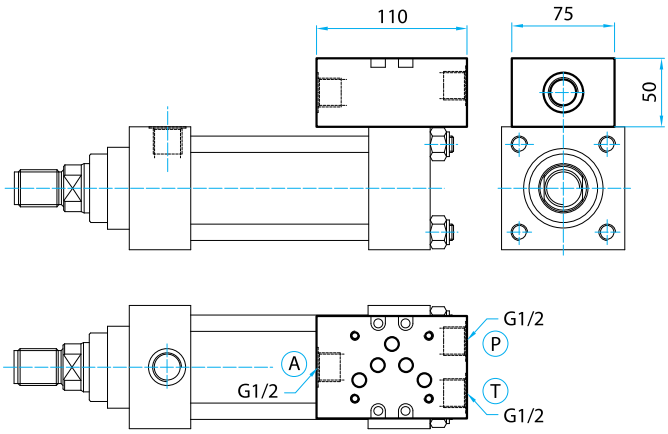


CETOP 5 PLATES FOR ISO 4401-05 NG10 VALVES (for bores 50 to 200)

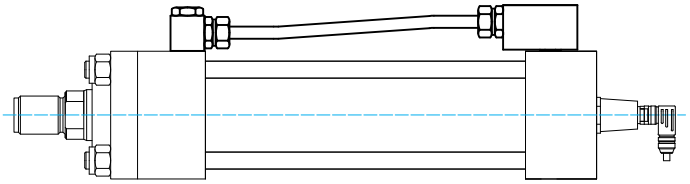
BV5-A Link configuration A on rear side



BV5-B Link configuration B on rear side



TBV Connection pipe to front head (on request)



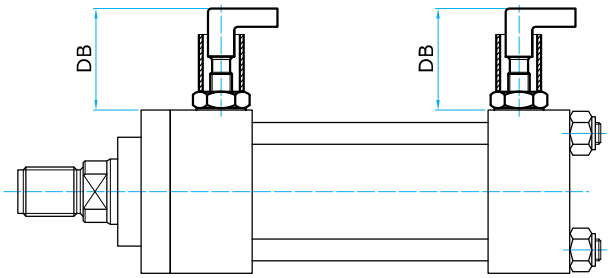
On request, it is possible to supply the cylinder already equipped with the connection pipe to the front head.

TIE ROD HYDRAULIC CYLINDERS WITH PROXIMITY SWITCHES

The CD and DK series cylinders can be equipped with proximity switches integrated in the cylinder heads, for detecting the position of the piston at the end of the stroke, on one or both sides. The switch generates a magnetic field and it is able to detect the change resulting from the approaching of the cushioning bushing.

The switches are mounted on the cylinder head, usually in position 4, and are protected from accidental impact by a solid steel cover (see page 16).

For reasons of space, the application of switches is not possible for bores 25 and 32.



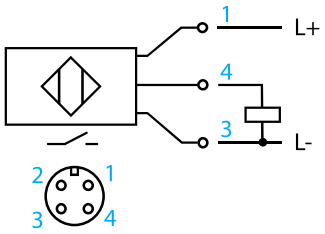
Bore	DB max (mm)
40	85
50	80
63	80
80	70
100	60
125	65
160	55
200	50

SPV	Front-side switch option
SPZ	Rear-side switch option
SPK	Front and rear side switches option

The switches are made of stainless steel and are supplied correctly mounted in the cylinder and tested before delivery.

The switch is supplied with a 5-metre PUR cable with M12 connector.

The output signal is regulated by a 'normally open' contact.



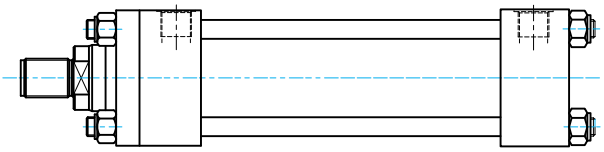
Switch technical features	
Operating temperature	-25°C / +120°C
Maximum pressure	500 bar
Protection grade	IP69k
Connector	S4
Hysteresis	<= 15%
Repeatability	<= 5%
Wiring	3 wires
Switching function	Normally open
Output signal	PNP
Rated operational voltage	24 V DC
Rated operational current	200 mA
Supply voltage	10 / 36 V DC

TIE ROD CYLINDERS WITH NICKEL-PLATING TREATMENT

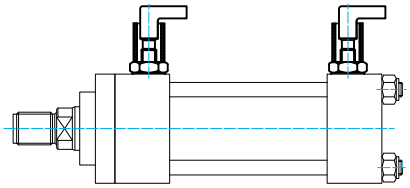
Nickel-plated hydraulic cylinders with chrome-plated stainless-steel rod, according to ISO 6020/2.
Suitable for use in aggressive environments, in contact with substances that promote corrosion, as an alternative to cylinders made entirely of stainless steel. Available in a variety of mountings including ME5, ME6, MS2 and, MP5, in all seals configurations and selectable options for all CD/DK/MD series tie rod cylinders (see from page 7) depending on desired operating conditions and performance.
All cylinders are tested before delivery in accordance with ISO 10100.

NK Nickel-plated cylinder option

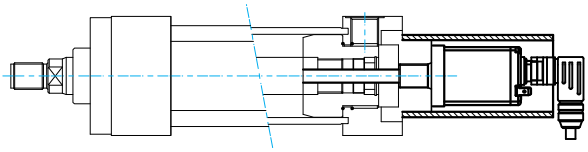
Nickel-plating performances	
Nickel thickness	20µm
Corrosion resistance	1200 hours in salt spray rating 10
High adhesion and uniformity of the nickel layer	
Low environmental impact	
No heavy metals and ammonia	



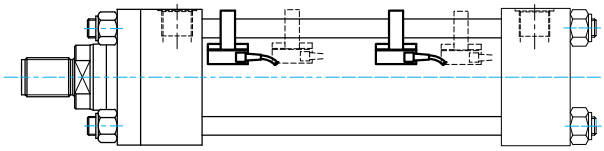
CD - DK series standard tie rods hydraulic cylinder.



Cylinder with switches integrated in the heads, for end-of-stroke detection piston stroke.



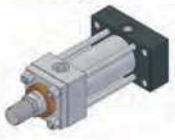
TD - TK series servo-cylinder with position transducer for precise and continuous detection of the piston position.



Switches attached to cylinder rods, with stainless steel tube and magnetic piston for detection at various positions along the stroke.

AVAILABLE MOUNTINGS

A - ISO ME5
FRONT FLANGE



B - ISO ME6
REAR FLANGE

D - ISO MP5
BALL JOINTED EYE

E - ISO MS2
FEET

R - ISO MX3
EXTENDED FRONT TIE RODS

Q - ISO MX1
EXTENDED REAR AND FRONT TIE RODS

S - ISO MX2
EXTENDED REAR TIE RODS

TIE-RODS CYLINDERS WITH MAGNETIC SWITCHES

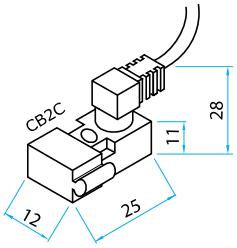
The MD series hydraulic cylinders have the same technical features, dimensions and available options as the basic CD and DK series, but are equipped with a magnetic piston and stainless-steel tube. One or more magnetic switches fixed to the tie rods can be positioned along the tube to detect the passage of the piston near the SR or SH switch.
Special programmable sensors are available on request.

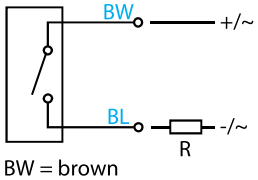
Voltage and current values must never exceed the values given in the table.

Current peaks can be caused by capacitive charges (e.g. cables longer than 3 m).
Voltage peaks can be caused by inductances (e.g. relays, solenoid valves, contactors, etc.).
Magnetic distortions can be caused by ferrous masses (e.g. cylinder seats inside moulds) or by the presence of strong magnetic fields (e.g. electric motors, coils, inverters, etc.).
For space reasons of the switch components, check that the cylinder stroke is longer than a minimum value (see page 8).
False contacts can occur in the presence of strong vibrations.

The SR and SH type switches are able to detect the passage of the magnetic piston underneath them, closing the electrical circuit.
They are fastened to the tie rods using the STA/STB/STC/STD brackets.

SR REED Switches

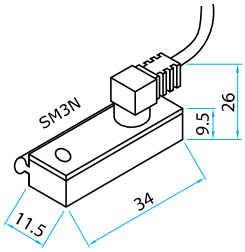


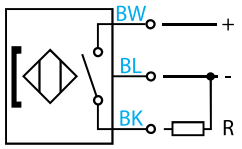


BW = brown
BL = blue

Voltage	3-110 V AC/DC
Max current (at 25°C)	0.3 A
Switch on time	0.5 ms
Switch off time	0.5 ms
Electric life	10^7 pulse
Protecting rating	IP 67 EN60529
Operating temperature	-10 / +70 °C
Visual signal	LED
Cable	2 x 0.25 mm^2
Cable lenght	5 m

SH PNP Switches – Magnetostrictive

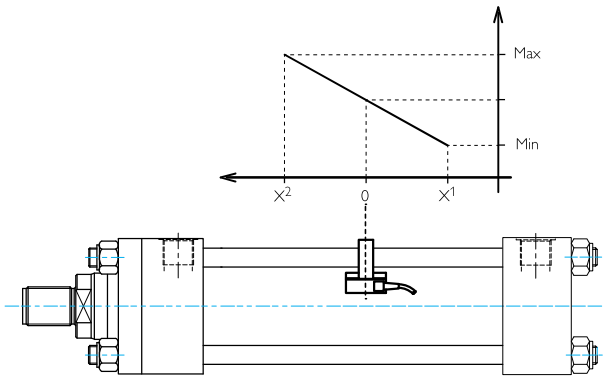




BW = brown
BL = blue
BK = black

Voltage	6-30 V DC
Max current (at 25°C)	0.25 A
Switch on time	0.5 ms
Switch off time	0.5 ms
Electric life	10^7 pulse
Protecting rating	IP 67 EN60529
Operating temperature	-10 / +70 °C
Visual signal	LED
Cable	3 x 0.25 mm^2
Cable lenght	5 m

TIE-ROD CYLINDERS WITH SPECIAL SENSORS



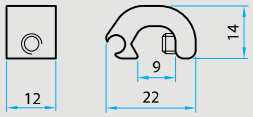
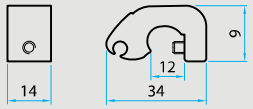
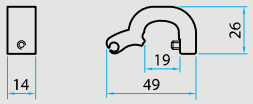
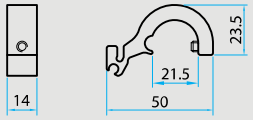
On request, by contacting our technical department, special sensors are available that can detect the piston within a programmable range, continuously providing its position via a digital output signal.

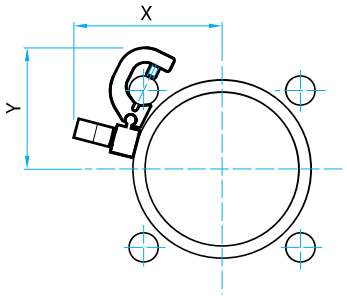
It is also possible to programme the closing of the circuit in two intervals within the reading range, which can also be modified via software on board the machine. The digital connection allows the sensors to send several operating parameters, such as the working temperature.

They are attached to the tie rods by means of special brackets.

TIE-RODS CYLINDERS WITH MAGNETIC SWITCHES

Brackets for mounting SR and SH type switches.

Bore	X	Y	Bracket	
25	43	26	STA	
32	45	28		
40	50	32		
50	56	44	STB	
63	61	50		
80	71	57	STC	
100	78	64		
125	95	80	STD	



SWITCHES ORDERING CODE COMPOSITION

Switch + mounting bracket.
Can also be ordered separately.

SR **STA**

Type	Switch
REED	**SR**
PNP	**SH**

Special sensors are available on request by contacting our technical department.

Bracket	Bore
STA	25 - 32 - 40
STB	50 - 63
STC	80 - 100
STD	125

CODE COMPOSITION

The entry fields for the example values are mandatory.

CD		50	/	28	/		A		500		S			

	Bore	Type
Standard	25 / 100	CD
	125 / 200	DK
Magnetic	25 / 125	MD

Special version (1) **SX**

		Bore	Rod
MD	CD	25	12 18
		32	14 18 22
		40	18 22 28
		50	22 28 36
		63	28 36 45
		80	36 45 56
		100	45 56 70
	DK	125	56 70 90
		160	70 90 110
		200	90 110 140

Second rod

See mounting list from page 10	ISO 6020/2	DIN 24554	Mounting
Front tapped holes	MX5		X
Rear threaded holes	MX6		T
Feet	MS2	MS2	E
Front flange	ME5	ME5	A
Rear flange	ME6	ME6	B
Ball jointed eye	MP5	MP5	D
Male clevis	MP3		C
Female clevis	MP1		M
Extented front and rear tie-rods	MX1		Q
Extented front tie-rods	MX3		R
Extented rear tie-rods	MX2		S
Front trunnions	MT1		G
Intermediate trunnions (2)	MT4	MT4	H
Rear trunnions	MT2		L

Only for MD cylinders (see page 20)

Quantity

Type	Switch
SR	REED 24-110 V AC/DC
SH	PNP 24 V DC

Special switches are available on request by contacting our technical department.

Options (see from page 16)

Air bleed	
-	No air bleed
SV	Front only
SZ	Rear only
SK	Front and rear

Rod end (see page 15)

-		Male thread
SF		Female thread
ST		Floating joint
SL		Male thread DIN 24554

Seals (see page 7)

S	High sealing
L	Low friction
H	Viton®
G	HFC-fluid

Spacer	
-	For stroke from 0 to 1000
SJ 50	from 1000 to 1500
SJ 100	from 1500 to 2000
SJ 150	from 2000 to 3000
SJ 200	over 3000

Stroke in mm

Adjustable cushioning		
-		Not cushioned
V		Front only
Z		Rear only
K		Front and rear

(1) Indicate SX whenever the cylinder has special requests or executions, by filling in the options section of the code, followed by our drawing number if applicable. (see list of available options from page 16)

(2) For H mounting (MT4), enter 'XV' at the end of the code followed by the value of dimension XV (see page 13 and page 14).

Interactive online coding wizard available at www.confortinet.com