Tie rods hydraulic cylinder, in compliance with the ISO 6020/2 standard, also available with magnetic sensors.
All standard ISO mountings are available, in several seal configurations, depending on application conditions and desired performances.
All cylinders are tested in compliance with the ISO 10100 standard.
In the event of strokes longer than 2000 mm, we recommend the use of the cylinders series HD / HK (see page 16).

CD/DK

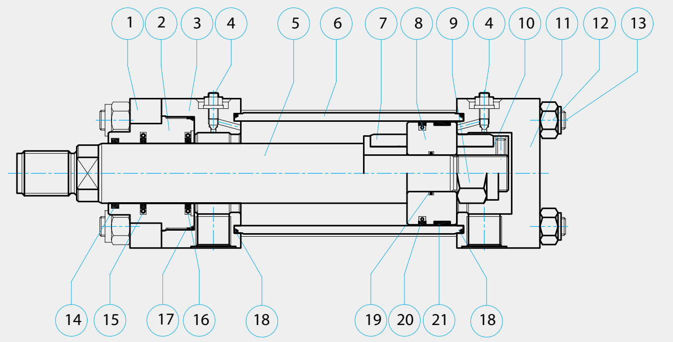
SPECIFICATIONS		
Standard cylinders		ISO 6020/2 - DIN 24554 tie rods
Bore	mm	from 25 to 100 CD from 125 to 200 DK
Pressure	bar	operating 160 max 210
Max stroke	mm	4000
Stroke tolerance		0 + 2 mm ISO 8131 Standard
Fluid		Hydraulic mineral oil Phosphoric esters HFC-fluid
Viscosity		12... 90 mm²/S

MD MAGNETIC

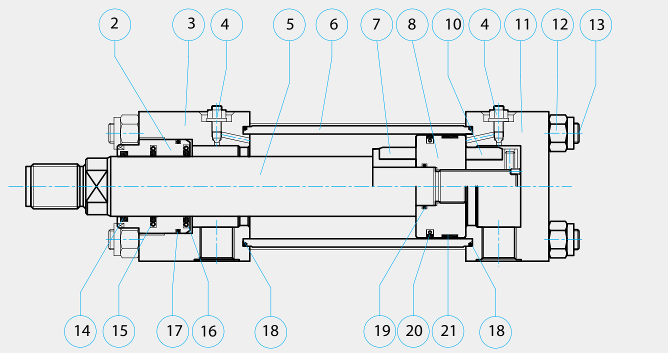
SPECIFICATIONS		
Standard cylinders		ISO 6020/2 - DIN 24554 tie rods
Bore	mm	from 25 to 125
Pressure	bar	max 160
Fluid temperature	°C	Compatibly with magnetic proximity switches operating temperature limits.
Max stroke	mm	4000
Stroke tolerance		0 + 2 mm ISO 8131 Standard
Fluid		Hydraulic mineral oil Phosphoric esters HFC-fluid
Viscosity		12... 90 mm²/S

Seal code	Performance					Fluid		
	High sealing	Low friction	Max speed	Temp °C Min	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		√	0,5 m/s	- 20	+ 80			√

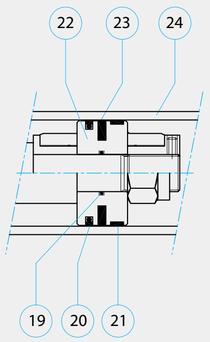
CD



DK



MD MAGNETIC VERSION



	Component	Material	Specifications
1	Closing flange	Steel	Burnished
2	Guide bushing	Bronze	
3	Front head	Steel	Burnished
4	Cushioning adjusting + 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	Rolled threaded
22	Magnetic piston	Stainless steel	
23	Magnet		
24	Cylinder body	Stainless steel	

	Component	Groove	Material			
			S	L	H	G
14	Rod wiper		NBR + PTFE	NBR + PTFE	Viton ® + PTFE	NBR + PTFE CG
15	Rod seal	ISO 7425/2	NBR + PTFE	NBR + PTFE	Viton ® + PTFE	NBR + PTFE CG
16	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 CG
18	Tube seal		NBR	NBR	Viton ®	NBR
19	Piston seal		NBR	NBR	Viton ®	NBR
20	Piston seal	ISO 7425/1	NBR + PU	NBR + PTFE	Viton ® + PTFE	NBR + PTFE CG
21	Piston guide		Resin	Resin	Resin	Resin

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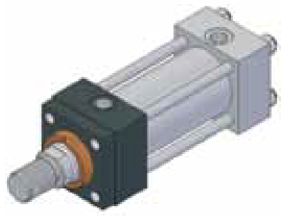
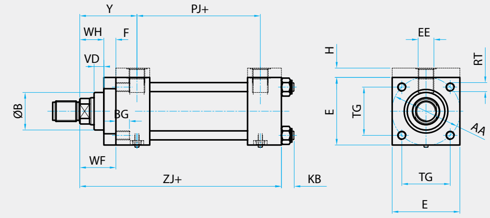
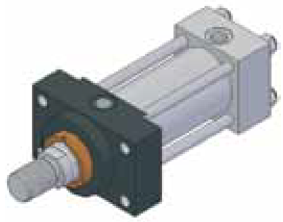
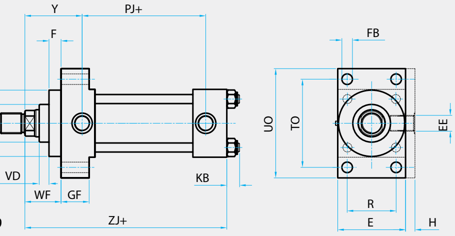
X — ISO MX5 — FRONT THREADED HOLES





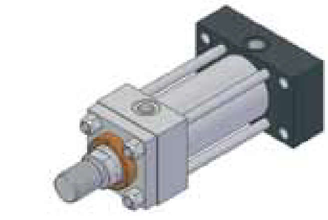
A — ISO ME5 — FRONT FLANGE

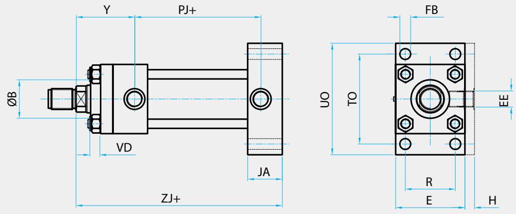




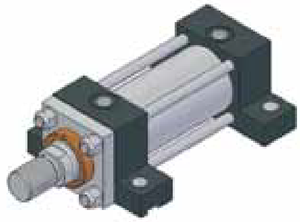
*Vedi nota pag. 9
*See note at page 9

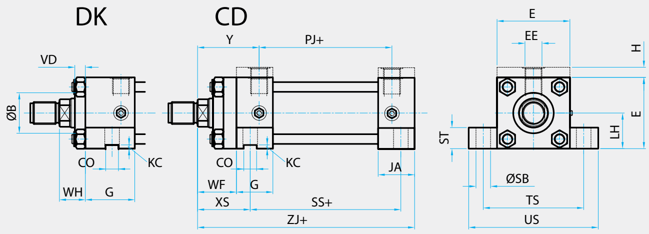
B — ISO ME6 — REAR FLANGE



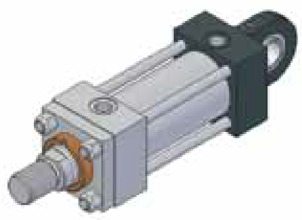


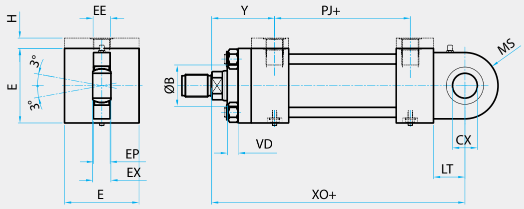
E — ISO MS2 — FEET



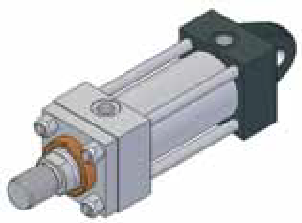


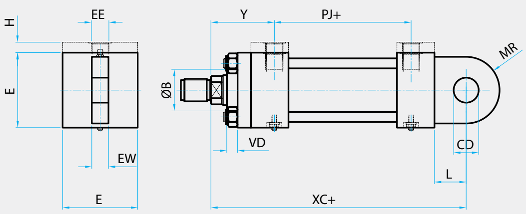
D — ISO MP5 — BALL JOINTED EYE



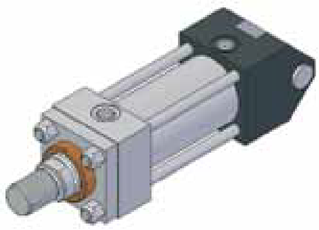


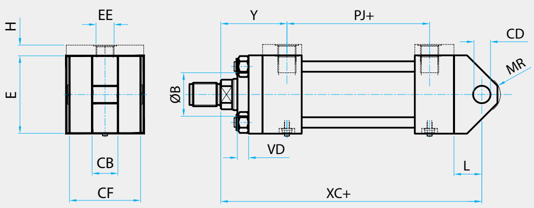
C — ISO MP3 — MALE CLEVIS



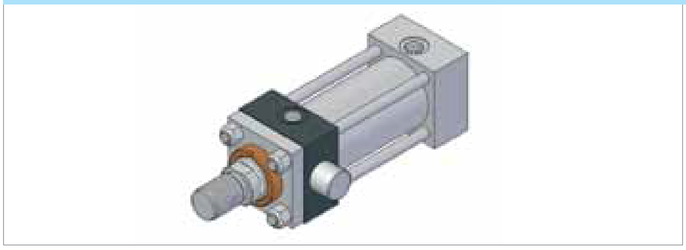
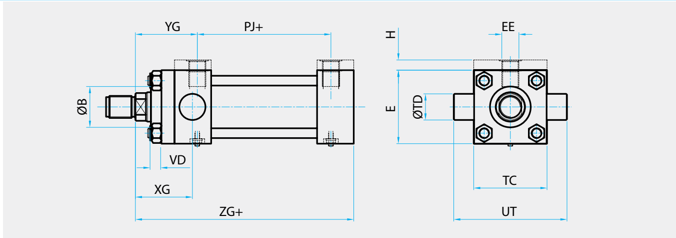


M — ISO MP1 — FEMALE CLEVIS

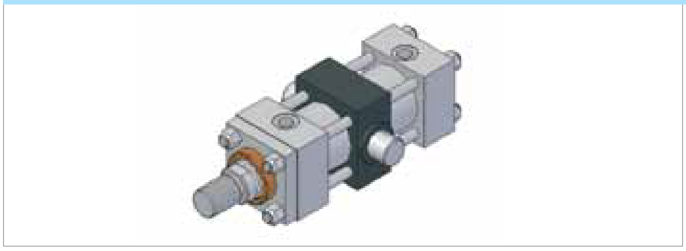
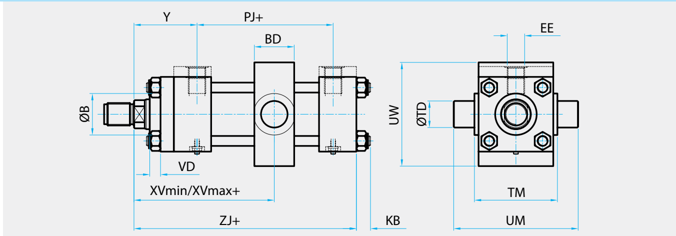




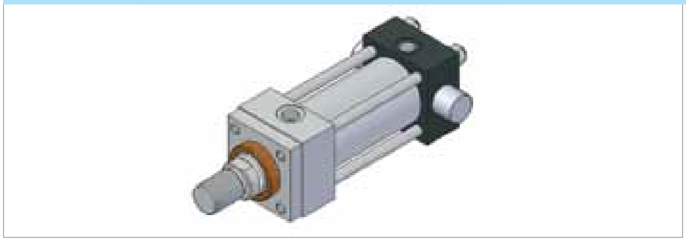
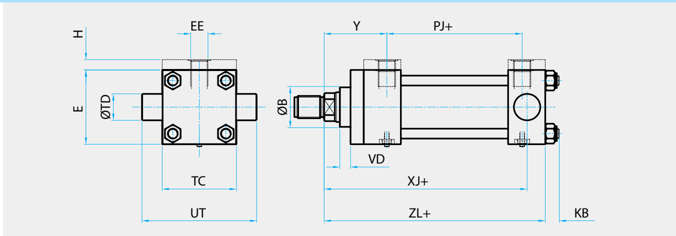
G ISO MT1 FRONT TRUNNIONS

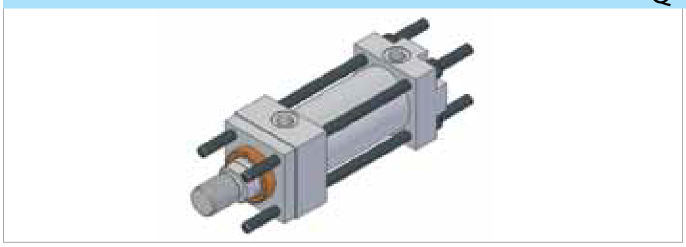
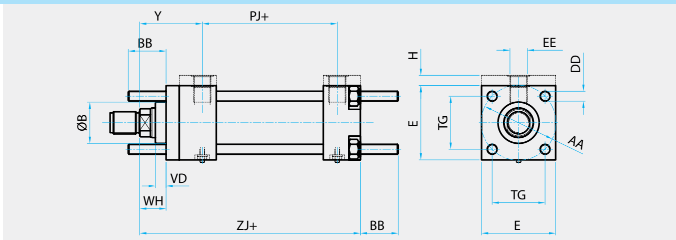
H ISO MT4 INTERMEDIATE TRUNNIONS

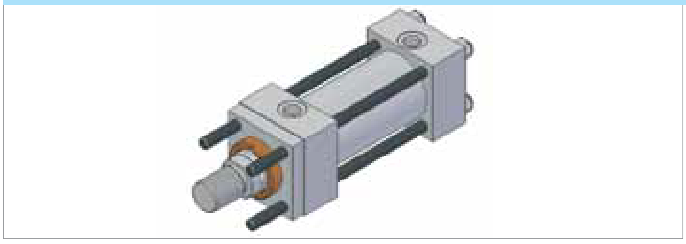
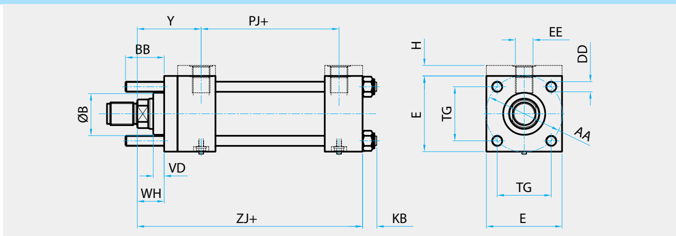
L ISO MT2 REAR TRUNNIONS

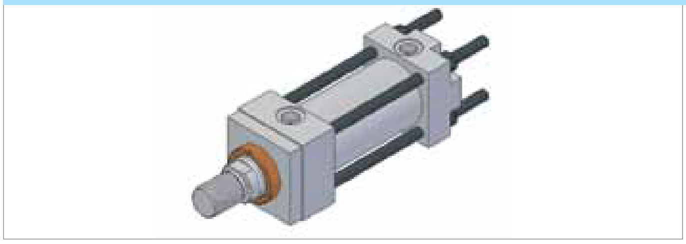
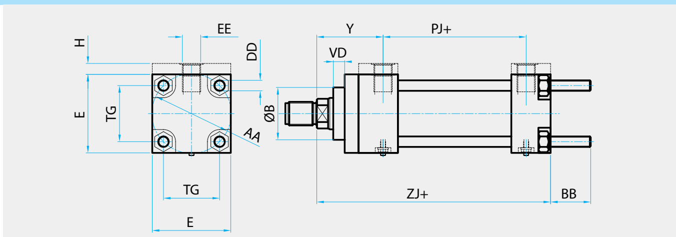
Q ISO MX1 FRONT AND REAR EXTENDED TIE-RODS

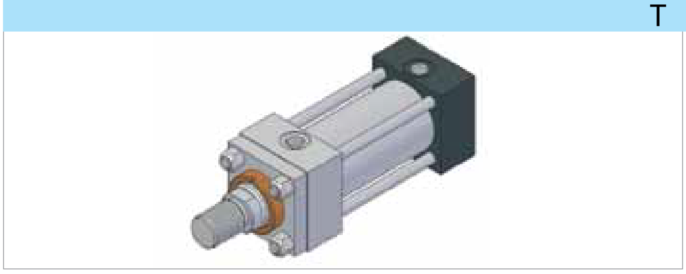
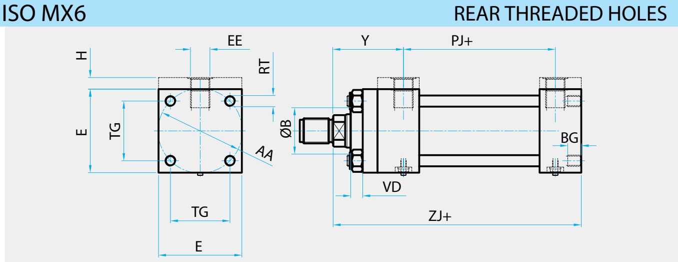
R ISO MX3 EXTENDED FRONT TIE-RODS

S ISO MX2 EXTENDED REAR TIE-RODS

T ISO MX6 REAR THREADED HOLES

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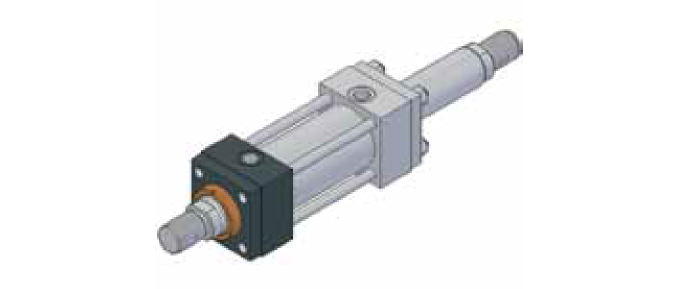
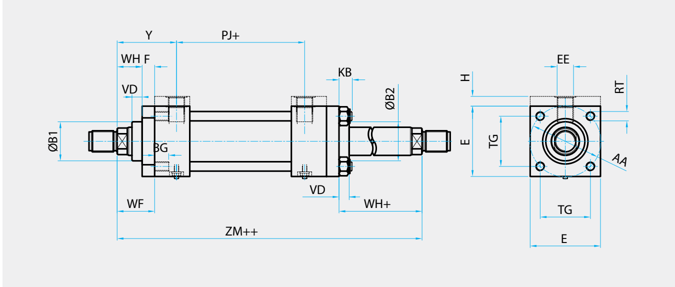
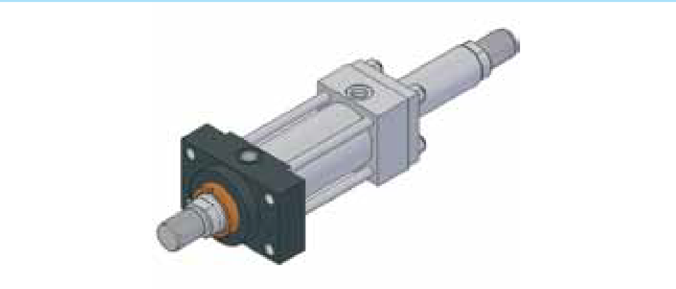
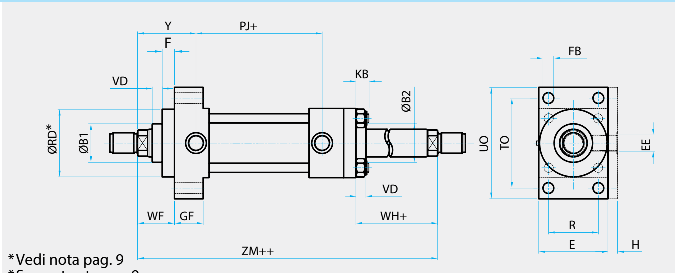
X — FRONT THREADED HOLES





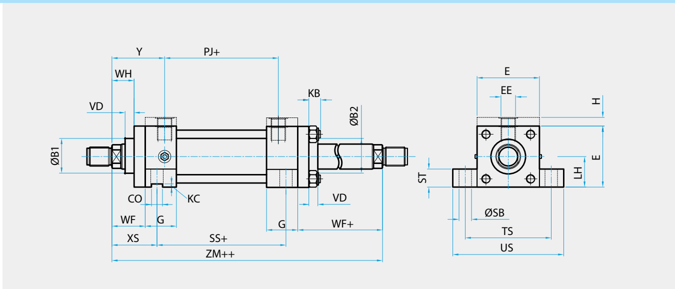
A — FRONT FLANGE



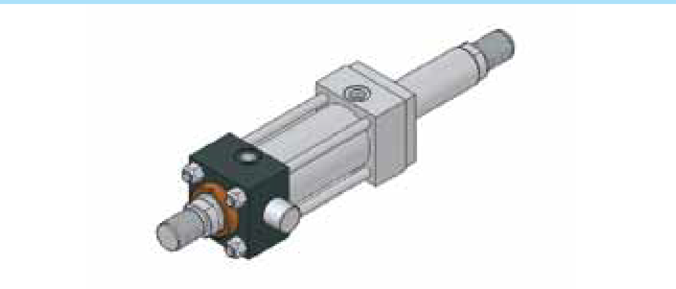


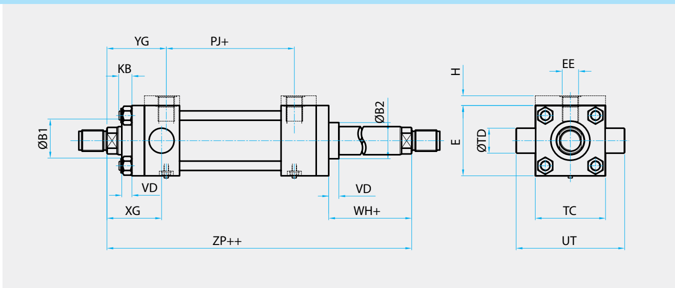
*Vedi nota pag. 9
*See note at page 9

E — FEET

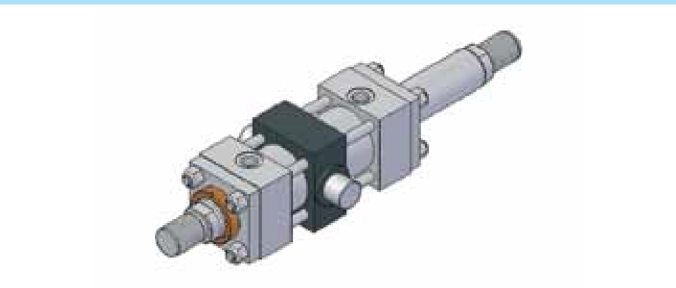


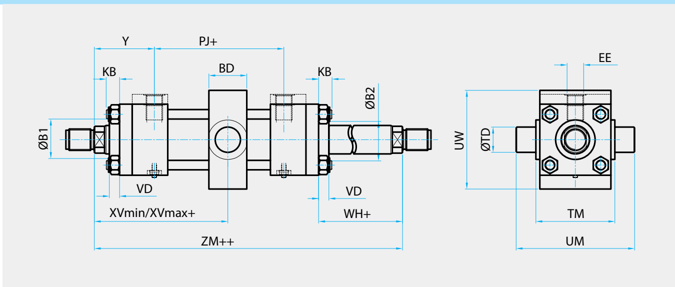
G — FRONT TRUNNIONS



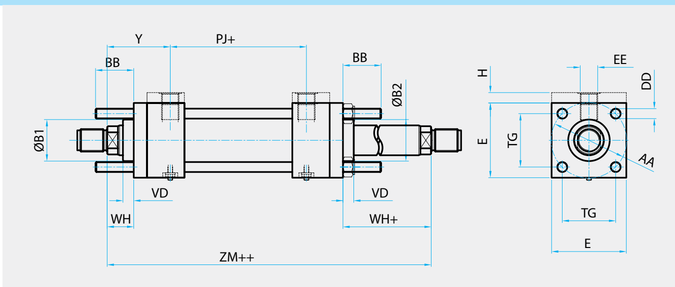


H — INTERMEDIATE TRUNNIONS





Q — FRONT AND REAR EXTENDED TIE-RODS



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 h8	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 -0.008	16 -0.008	20 -0.012	25 -0.012	30 -0.012	40 -0.012	50 -0.012	60 -0.015	80 -0.015	100 -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	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	14	16	20	22	28	35	44	55	70
F	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	13	19	19	32	32	39	54	57	63	82
LH h10	19	22	31	37	44	57	63	82	101	122
LT	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	6.6	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	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	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	67 / 72+	83 / 80+	96 / 92+	106 / 94+	118 / 98+	133 / 108+	147 / 113+	166 / 123+	182 / 120+	213 / 142+
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++

(*) Does not comply with ISO 6020/2 standard

(**) RD dimension is unified, with reference to the higher diameter between the ones defined by ISO 6020/2 standard. Special RD dimensions on request.

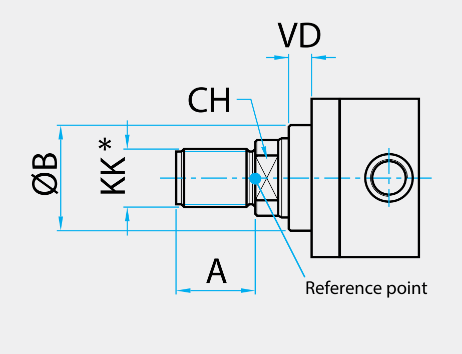
+ = add the stroke

++ = add the double of the stroke

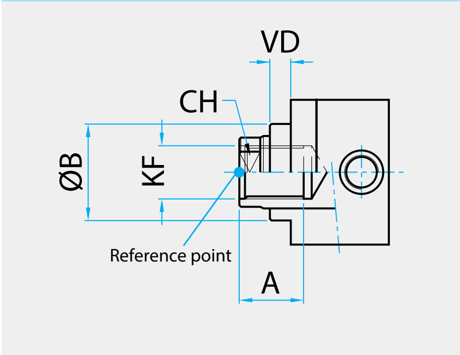
1

ISO 6020/2

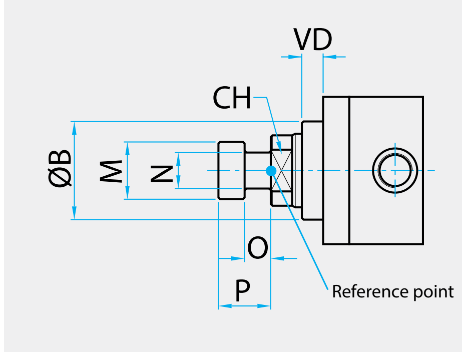
STANDARD



SF



ST

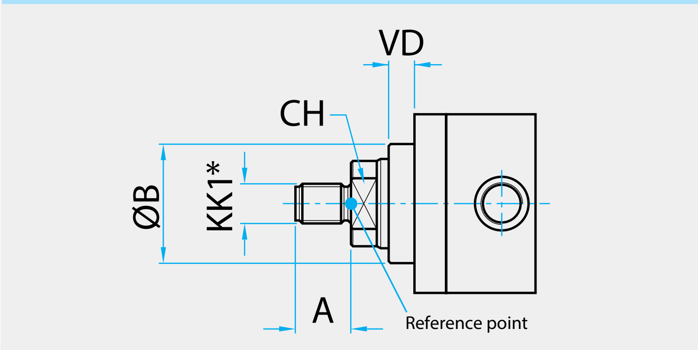


Rod	12	14	18	22	28	36	45	56	70	90	110	140
A	14	16	18	22	28	36	45	56	63	85	95	112
B f9	24	26	30	34	42	50	60	72	88	108	133	163
CH	10	12	15	19	22	30	36	46	60	75	95	120
KK	M10x1.25	M12x1.25	M14x1.5	M16x1.5	M20x1.5	M27x2	M33x2	M42x2	M48x2	M64x3	M80x3	M100x3
KF	M8x1	M10x1.25	M12x1.25	M16x1.5	M20x1.5	M27x2	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 standard male rod end, the most suitable rod end eye with spherical bearing is the CS version (get in touch for more information)aa.

DIN 24554

SL 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
KK1	M10x1.25		M12x1.25			M14x1.5			M16x1.5			M20x1.5			M27x2			M33x2			M42x2			M48x2			M64x3		
VD	6		12			12			9			13			9			10			10			7			7		

* For the SL male rod end, the most suitable rod end eye with spherical bearing is the TS version (get in touch for more information).

ORDERING CODE

The fields containing sample values are compulsory.

CD | | 50 / 28 / | | A | | 500 | | S | | | | | | |

Only for MD cylinders (see page 15)

Type	Bore	
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
		125	56
			70
			90
	DK	160	70
			90
			110
		200	90
			110
			140

Possible 2 nd rod	

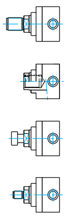
See pages 6-8	ISO 6020/2	DIN24554	Mounting
Front tapped holes	MX5		X
Front flange	ME5	ME5	A
Rear flange	ME6	ME6	B
Feet	MS2	MS2	E
Ball jointed eye	MP5	MP5	D
Male clevis	MP3		C
Female clevis	MP1		M
Front trunnions	MT1		G
Intermediate trunnions (2)	MT4	MT4	H
Rear trunnions	MT2		L
Extended front and rear tie-rods	MX1		Q
Extended front tie-rods	MX3		R
Extended rear tie-rods	MX2		S
Rear threaded holes	MX6		T

Quantity

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

Special options/versions (see page 12/14)

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

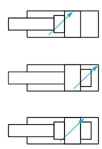


Rod end see page 10	
	Male thread (standard)
SF	Female thread
ST	Floating joint
SL	Male thread DIN 24554

Seals	See pages 4
S	Standard (mineral oil)
L	Low friction
H	Viton (high temperature, phosphoric esters)
G	HFC-fluid

Spacer	Recommended for stroke:
	da 0 a 1000 / from 0 to 1000
SJ 50	da 1000 a 1500 / from 1000 to 1500
SJ 100	da 1500 a 2000 / from 1500 to 2000
SJ 150	da 2000 a 3000 / from 2000 to 3000
SJ 200	oltre 3000 / over 3000

Stroke
Specify in mm



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

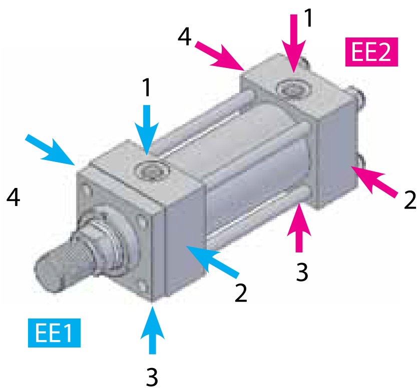
(1)

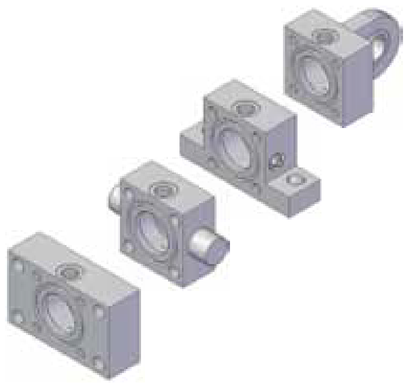
Indicate SX when the cylinder has special options or versions. Then, indicate in the appropriate box, after the ordering code, the corresponding code (see page 12) followed by the drawing's number, if any.

	ROD MATERIAL
RRX	Stainless steel chromeplated rod
RRB	Hardened and tempered chromeplated rod
RRK	Nikrom rod
RRH	Hardened chromeplated rod

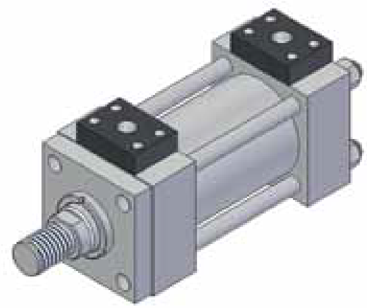
1

PORT LOCATION





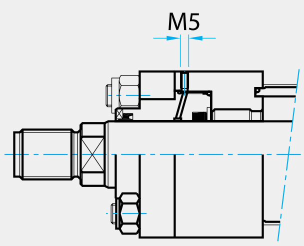
SAE 3000 CONNECTIONS



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

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

SD BUSHING DRAIN



The bushing drain avoids the accumulation of liquid behind the scraper.
A connection between the scraper and the lip seal allows to send the fluid back to the tank.
The drain is usually installed on the opposite side of the oil port.

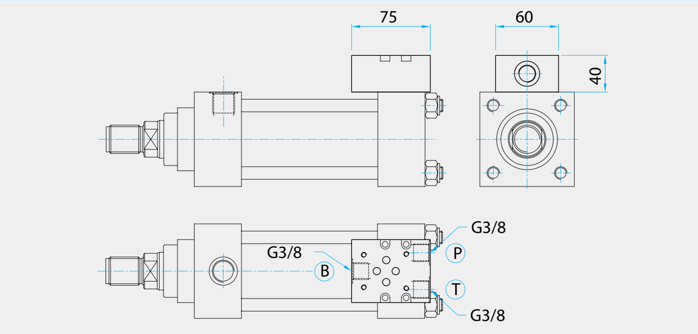
BL

For special application, where high sealing and low friction is required (i.e., closed circuit application), a special piston is available.
Contact our technical department in order to verify the feasibility of this solution.

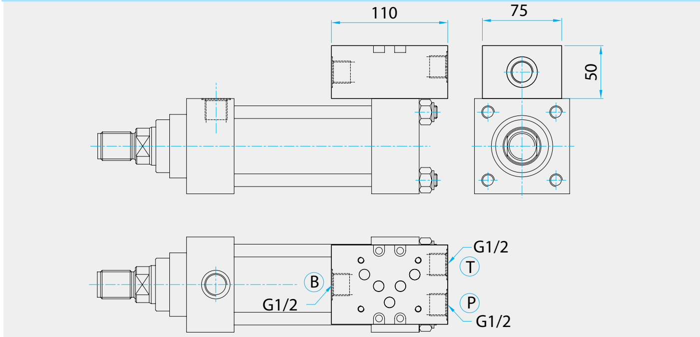
The incorporated plate allows mounting a four port control valve with an ISO 4410 mounting surface.
In this way, the oil volumes between the cylinder and the valve are reduced, obtaining a better control precision.
They are mounted directly on the cylinder's rear head though four screws and a nipple.
They are available also in a version with conic threaded nipple, usable also for small bores or in other particular situations: for information, contact our technical departmen

INCORPORATED PLATES: MOUNTED WITH FOUR SCREWS

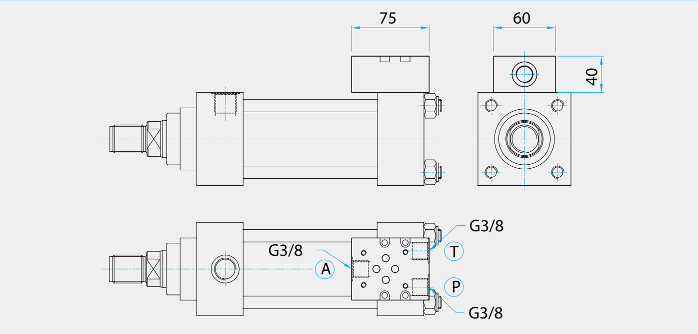
BV3-A



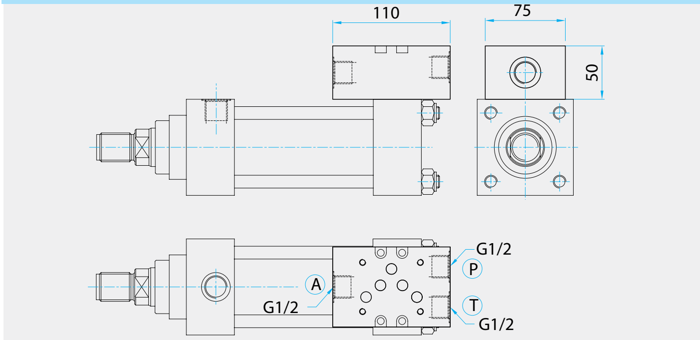
BV5-A



BV3-B



BV5-B



INCORPORATED PLATES ORDERING CODE

The fields containing sample values are compulsory.

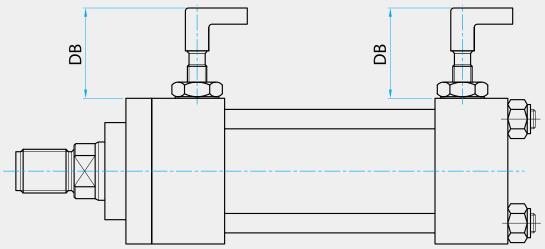
BV **3** - **A**

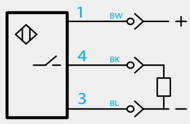
Oil port dimension	Bore range	
ISO 4001-03 NG6	40 - 125	3
ISO 4001-05 NG10	50 - 200	5

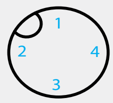
	Link configuration
A	Port A ▶ rear side
B	Port B ▶ rear side

Proximity switches can be used to detect the piston position when it is close to stroke end. They are mounted on the cylinder head, usually in position 4 (see page 12). The proximity switches work only in cylinders with bore between 40 and 200 mm with cushioning. In fact, the proximity switch generates a magnetic field and it is able to detect its modification due to the proximity of the cushioning bushing. The output signal is modulated by a “normally open” switch.

PROXIMITY SWITCHES





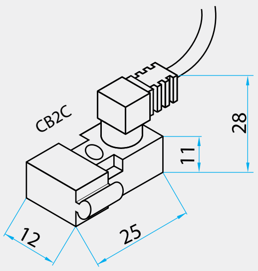


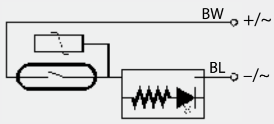
Bore (mm)	DB max (mm)
40	85
50	80
63	80
80	70
100	60
125	65
160	55
200	50

	SPECIFICATIONS
Working temperature	-25°C … +80°C
Maximum pressure	500 bar
Protection grade	IP68
Connection	S4
Hysteresis	<= 15%
Repeatability	<= 5%
Wiring	3 wires
Switching function	Normally open
Output signal	PNP
Rated operational voltage	24 DCV
Rated operationale current	200 mA
Supply voltage	10 … 30 DCV

	ORDERING CODES
SPV	Front sensor
SPZ	Rear sensor
SPK	Front and rear sensor

SR (REED)

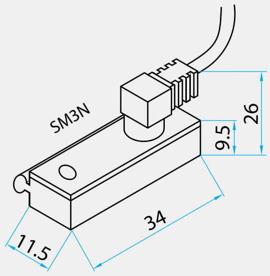


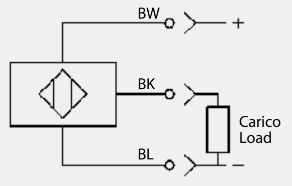


BW = brown
BL = blue

SPECIFICATIONS	
Voltage	24-110 V AC/DC
Max current (a 25 °C)	0.3 A
Electric circuit	REED
Switching-on time	0.8 ms
Switching-off time	0.1 ms
Electric lifespan	10^7 pulse
Protection class	IP 67 EN60529
Temperature range	-20 +80 °C
Visual signal	LED
Cable	2 x 0.25 mm^2
Cable length	5.0 m

SH (PNP)



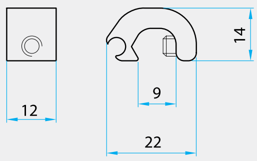
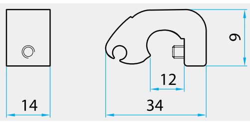
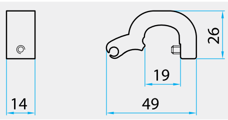
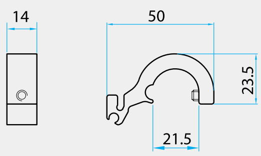


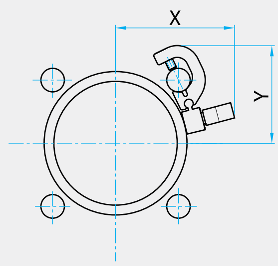
BW = brown
BL = blue
BK = black

SPECIFICATIONS	
Voltage	24 V DC
Max current (a 25 °C)	0.25 A
Electric circuit	PNP
Switching-on time	0.8 ms
Switching-off time	0.1 ms
Electric lifespan	10^7 pulse
Protection class	IP 67 EN60529
Temperature range	-20 +80 °C
Visual signal	LED
Cable	3x0.25 mm^2
Cable length	5.0 m

I

CORRECT USE OF MAGNETIC SENSORS
Voltage and current values must never exceed values specified in the table.
Current surges may be caused by capacitive loads (e.g. cables of lengths over 3 metres).
Voltage surges may be caused by inductance (e.g. solenoid valves, relays, contactors, etc.).
Magnetic distortion may be caused by ferrous masses (e.g. cylinder seat inside moulds)
or the presence of strong magnetic fields (e.g. electric motors, coils, inverter etc.).
For strokes lower than 20 mm, contact our technical department
High vibration can generate false contacts.

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	



SWITCH + BRACKET ORDERING CODE

SR STA

Type	Switch
REED	SR
PNP	SH

Bracket	For cylinder with bore
STA	25, 32, 40
STB	50, 63
STC	80, 100
STD	125

Hydraulic cylinders with counterflanges, in compliance with the ISO 6020/2 standard.
They can be used with pressures up to 210 bar and they are suitable for long strokes.
The cylinders are available in several seal configurations, depending on application conditions and desired performances.
All the cylinders are tested in compliance with the ISO 10100 standard.

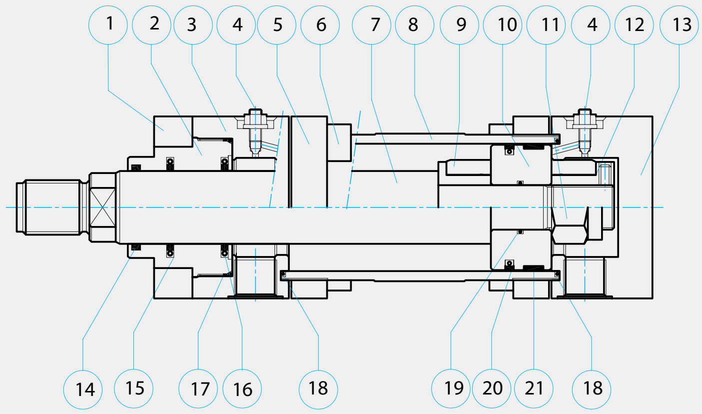
HD/HK

SPECIFICATIONS			
Standard cylinders	ISO 6020/2 - DIN 24554 with counter flanges		
Bore mm	from 50 to 100 HD	from 125 to 200 HK	
Pressure bar	operating 210		
Max stroke mm	4000		
Stroke tolerance	0 + 2 mm Norma ISO 8131 ISO 8131 Standard		
Fluid	Hydraulic mineral oil Phosphoric esters HFC-fluid		
Viscosity	12... 90 mm²/S		

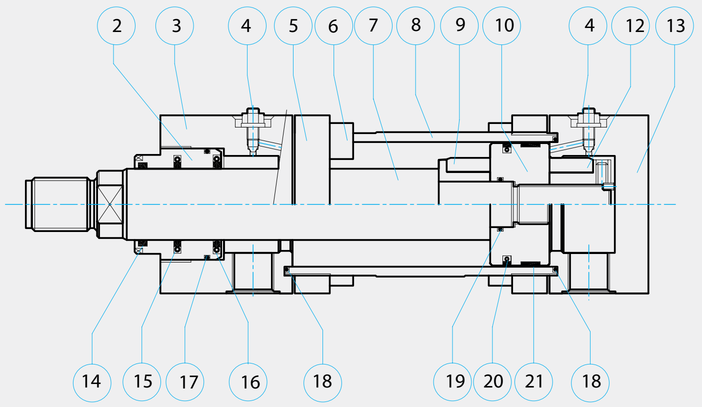
Seal code	Performance					Fluid		
	High sealing	Low friction	Max speed	Temp °C Min	Temp °C Max	Hydraulic oil	Phosphoric esters	HFC-fluid
S	√		0,5 m/s	- 20	+ 80	√		
L		√	1 m/s	- 20	+ 80	√		
H		√	1 m/s	- 20	+ 150	√	√	
G		√	0,5 m/s	- 20	+ 80			√

1

HD



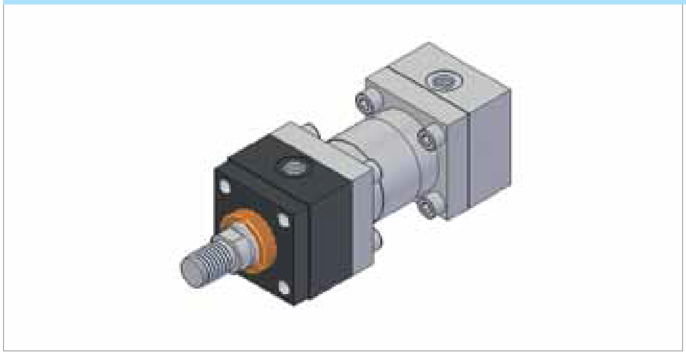
HK

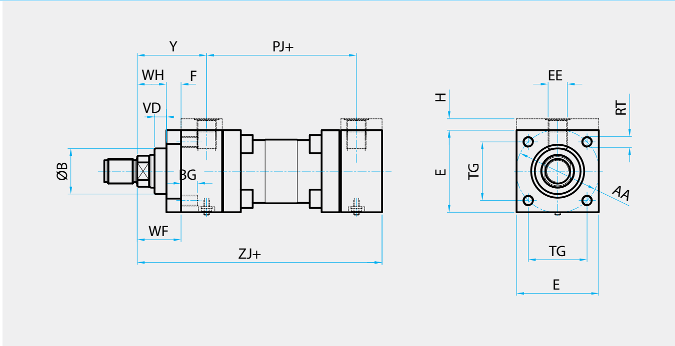


	Component	Material	Specifications
1	Closing flange	Steel	Burnished
2	Guide bushing	Bronze	
3	Front head	Steel	Burnished
4	Cushioning adjusting + air bleed	Steel	
5	Counter flange	Steel	Burnished
6	Closing screw	Steel	Burnished
7	Piston rod	Chromeplated steel	Cr 25 µm ISO f7 - Ra 0.20 µm
8	Cylinder body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

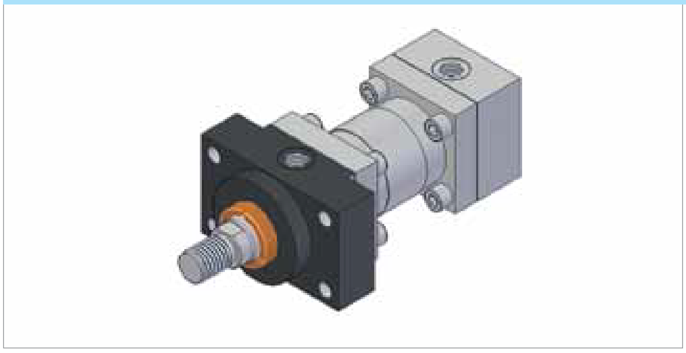
	Component	Groove	Material			
			S	L	H	G
14	Rod wiper		NBR + PTFE	NBR + PTFE	Viton® + PTFE	NBR + PTFE CG
15	Rod seal	ISO 7425/2	NBR + PTFE	NBR + PTFE	Viton® + PTFE	NBR + PTFE CG
16	Rod seal	ISO 7425/2	PU	NBR + PTFE	Viton® + PTFE	NBR + PTFE CG
17	Head-bushing sealing		NBR + PTFE	NBR + PTFE	Viton® + PTFE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

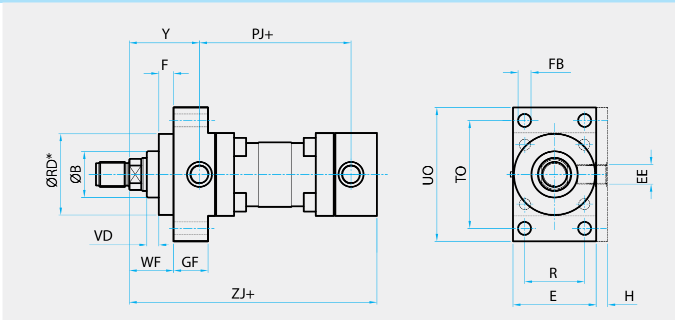
X — ISO MX5 — FRONT THREADED HOLES





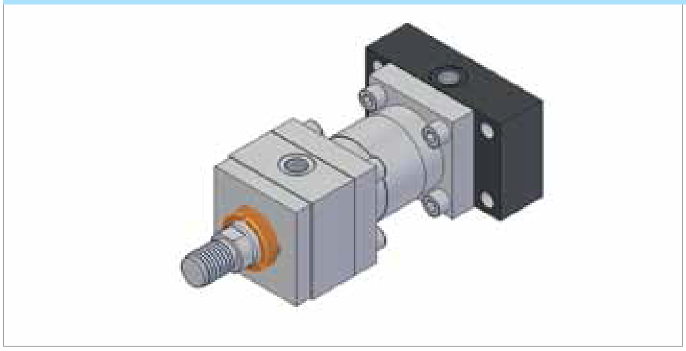
A — ISO ME5 — FRONT FLANGE

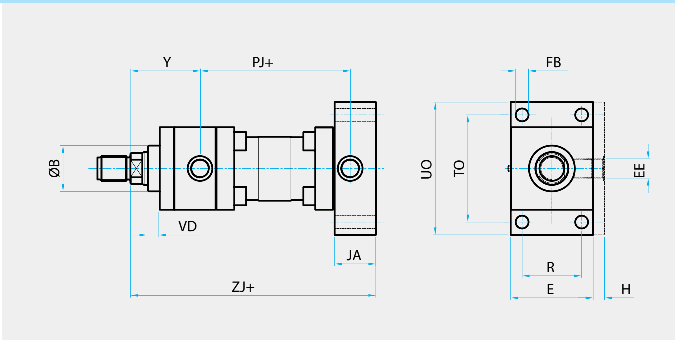




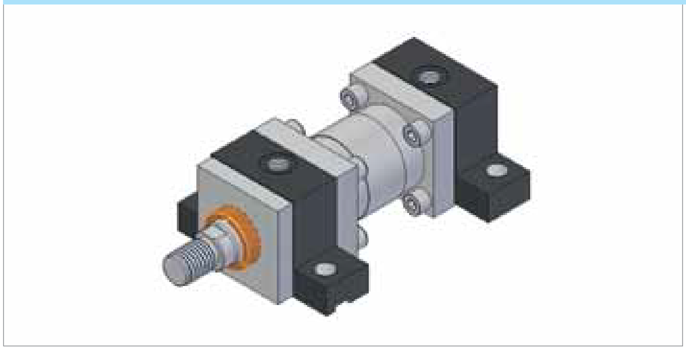
*See note at page 9

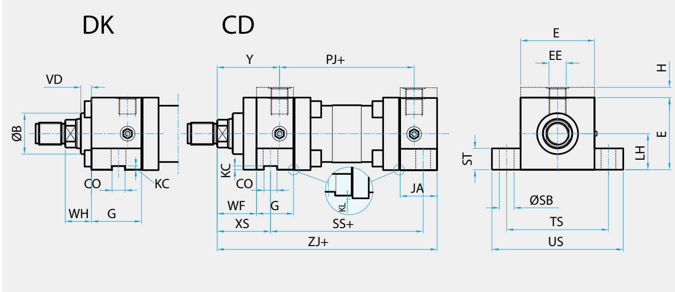
B — ISO ME6 — REAR FLANGE





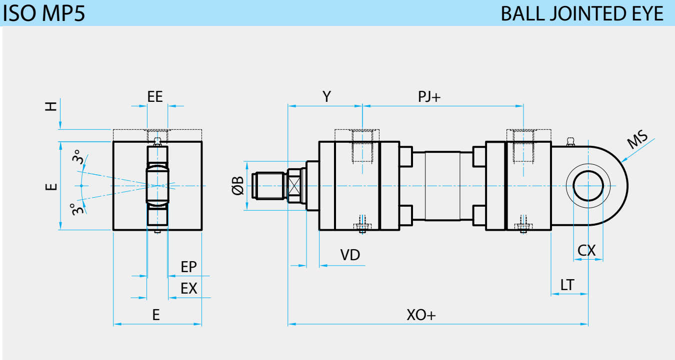
E — ISO MS2 — FEET



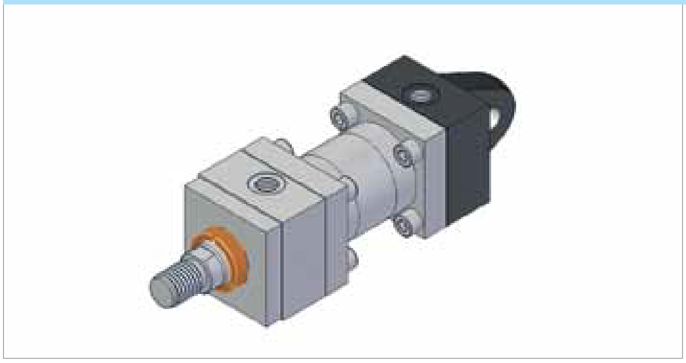


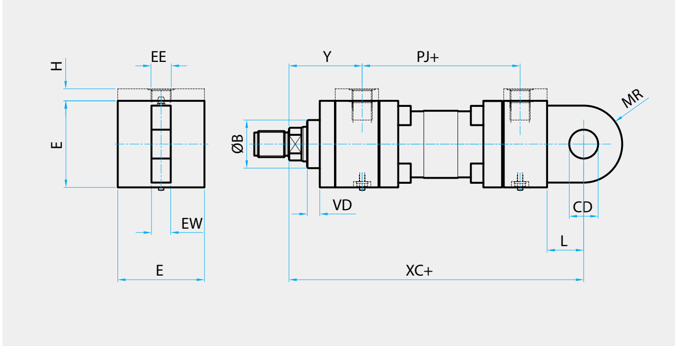
The counterflange stick out from of the feet base (see KL dimension).

D — ISO MP5 — BALL JOINTED EYE

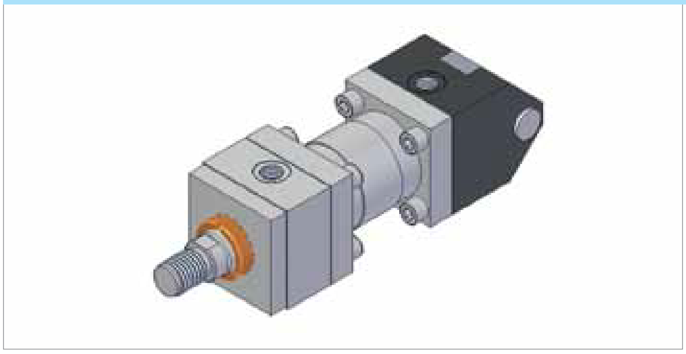


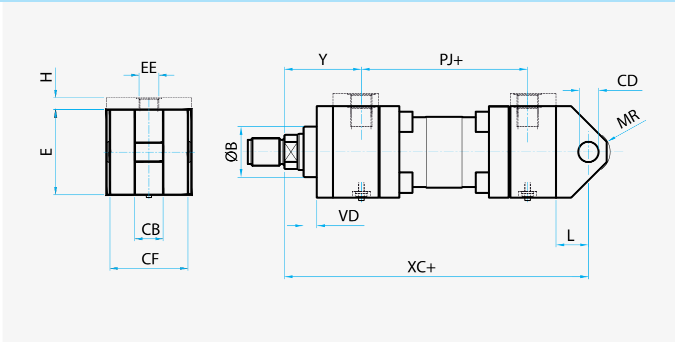
C ISO MP3 MALE CLEVIS



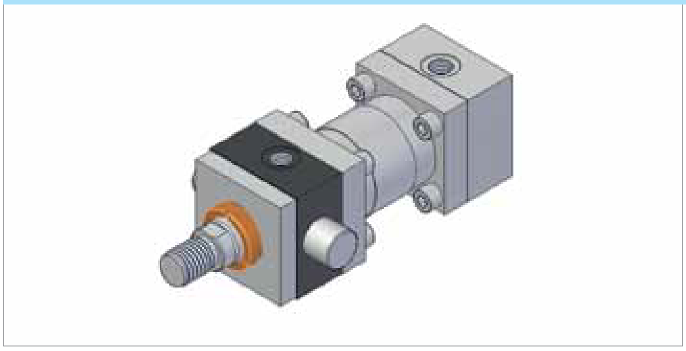


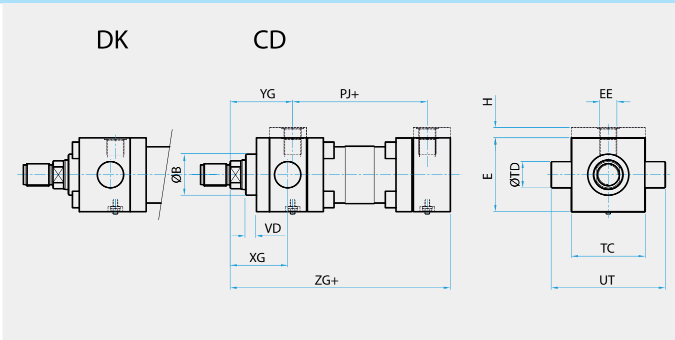
M ISO MP1 FEMALE CLEVIS



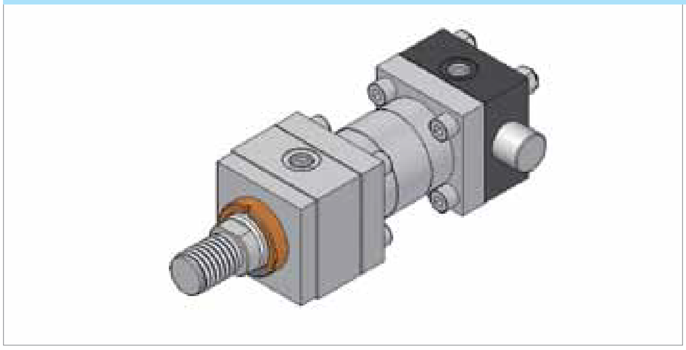


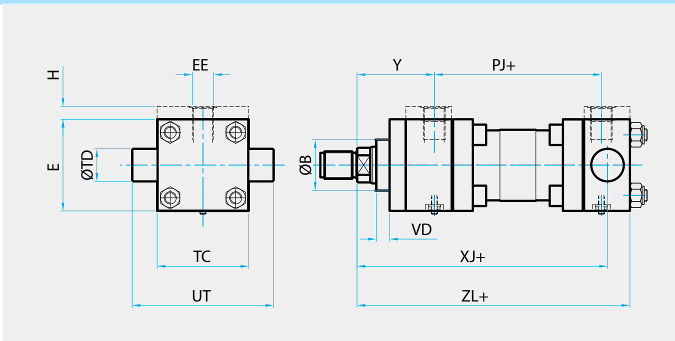
G ISO MT1 FRONT TRUNNIONS



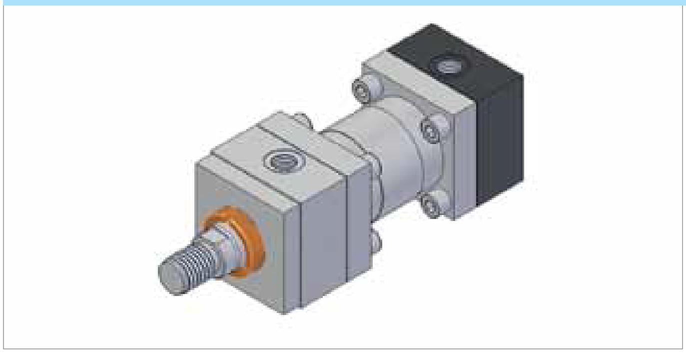


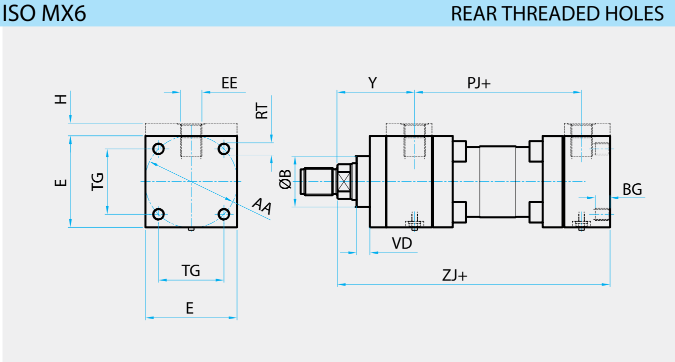
L ISO MT2 REAR TRUNNIONS



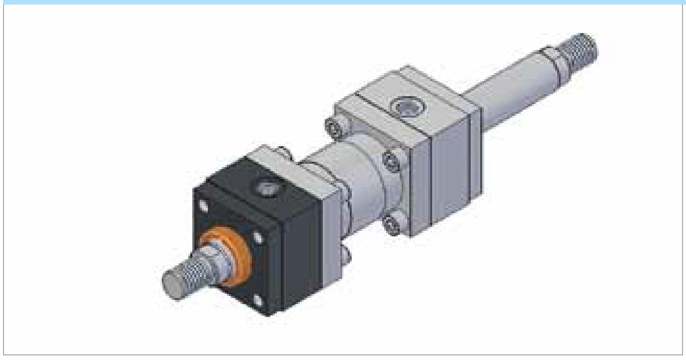


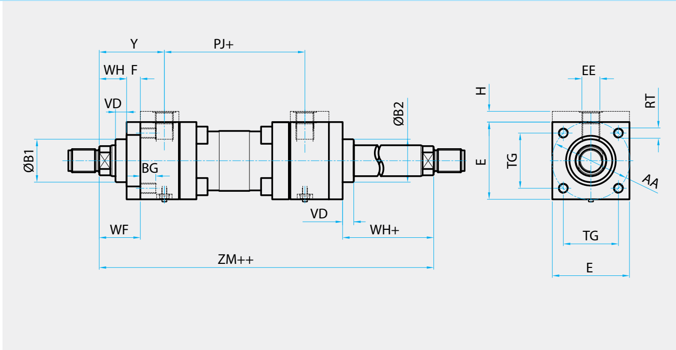
T ISO MX6 REAR THREADED HOLES



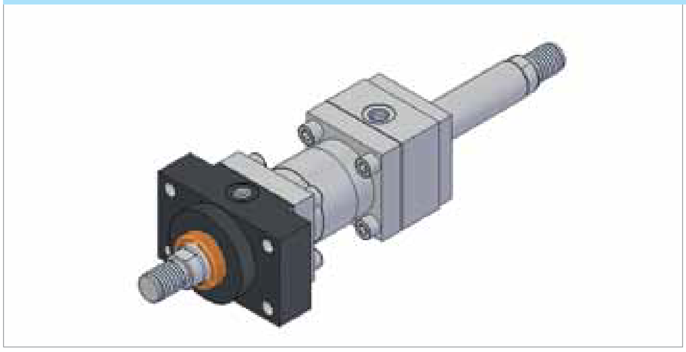


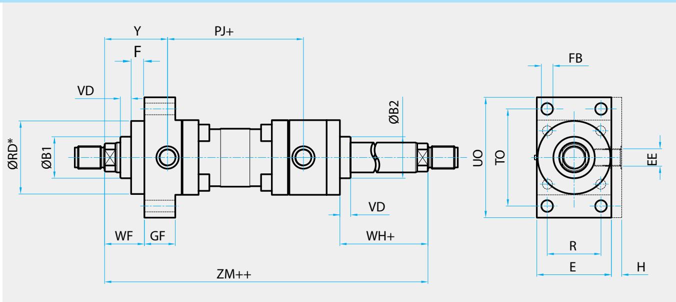
X — FRONT THREADED HOLES





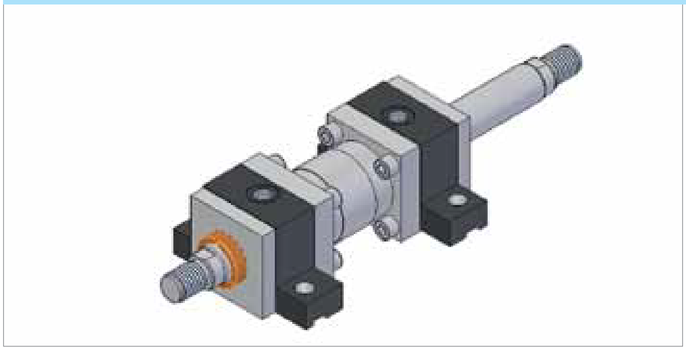
A — FRONT FLANGE

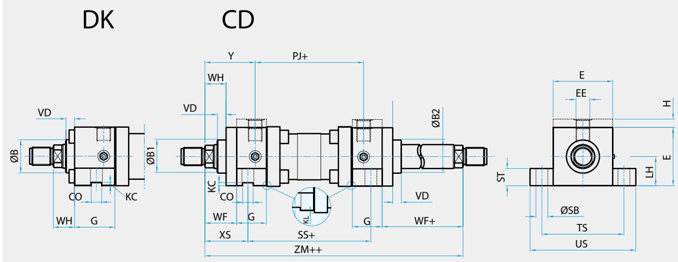




*Vedi nota pag. 9
*See note at page 9

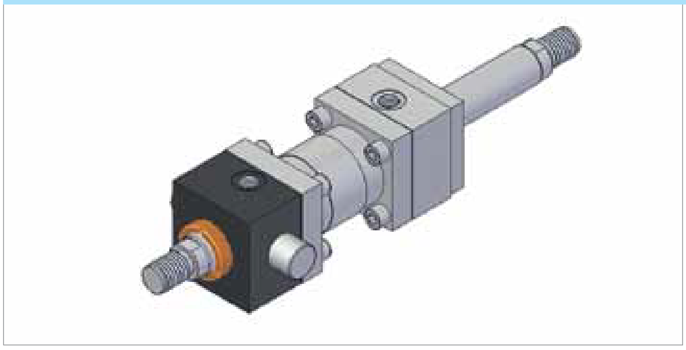
E — FEET

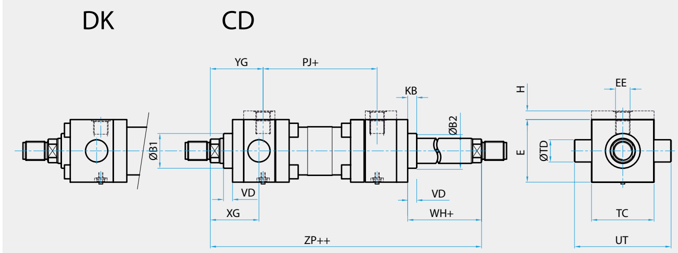




La controflangia sporge rispetto alla base del piedino (vedi quota KL)
The counterflange stick out from of the feet base (see KL dimension).

G — FRONT TRUNNIONS





Bore	50			63			80			100			125			160			200		
Rod	22	28	36	28	36	45	36	45	56	45	56	70	56	70	90	70	90	110	90	110	140
B f9	34	42	50	42	50	60	50	60	72	60	72	88	72	88	108	88	108	133	108	133	163

Bore	50	63	80	100	125	160	200
AA	74	91	117	137	178	219	269
BD	38	48	58	68	88	108	125
BG	18	18	24	24	30	35	40
CB	30	30	40	50	64(*)	80(*)	80
CD h8	20	20	28	36	45	56	70
CF	74	90	110	130	164	200	240
CO H8	12	16	16	16	20	30	40
CX	25 -0.012	30 -0.012	40 -0.012	50 -0.012	60 -0.015	80 -0.015	100 -0.020
DD	M12x1.25	M12x1.25	M16x1.5	M16x1.5	M22x1.5	M27x2	M30x2
E max	75	90	115	130	165	200	245
EE	G 1/2”	G 1/2”	G 3/4”	G 3/4”	G 1 ”	G 1 ”	G 1 1/4”
EP	18	20	24	30	38	47	58
EW h14	30	30	40	50	60	70	80
EX	20	22	28	35	44	55	70
F	16	16	20	22	22	25	25
FB H13	14	14	18	18	22	26	33
G	45	45	52	55	87	95	117
GF	38	38	45	45	58	58	76
H	—	—	—	—	—	—	—
JA	45	45	52	55	65	70	92
KC	4.5	4.5	5	6	6	8	8
KL	1	2	2	6	3	1	5
L	32	32	39	54	57	63	82
LH h10	37	44	57	63	82	101	122
LT	31	38	48	58	72	92	116
MR max	29	29	34	50	53	59	78
MS max	33	40	50	62	80	100	120
PJ	62+ (*)	64+ (*)	77+ (*)	78+ (*)	117+	130+	165+
R	52	65	83	97	126	155	190
RD f8	74	88 (**)	105 (**)	125 (**)	150 (**)	170 (**)	210 (**)
RT	M12	M12	M16	M16	M22	M27	M30
SB H13	14	18	18	26	26	33	39
SS	92+	86+	105+	102+	131+	130+	172+
ST	19	26	26	32	32	38	44
TC	76	89	114	127	165	203	241
TD f8	25	32	40	50	63	80	100
TG	52.3	64.3	82.7	96.9	125.9	154.9	190.2
TO	105	117	149	162	208	253	300
TS	102	124	149	172	210	260	311
UO	130	145	180	200	250	300	360
US	127	161	186	216	254	318	381
UT	116	139	178	207	265	329	401
UW	90	100	130	140	180	215	300
VD	9	13	9	10	10	7	7
WF	41	48	51	57	57	57	57
WH	25	32	31	35	35	32	32
XC	191+	200+	229+	257+	289+	308+	381+
XG	64	70	76	71	75	75	85
XJ	136+ (*)	146+ (*)	165+ (*)	177+ (*)	214+ (*)	227+ (*)	271+ (*)
XO	190+	206+	238+	261+	304+	337+	415+
XS	54	65	68	79	79	86	92
Y	69 (*)	76 (*)	82 (*)	91 (*)	86	86	98
YG	69 (*)	76 (*)	82 (*)	79 (*)	86	86	98
ZG	159+	168+	190+	191+	232+	245+	299+
ZJ	159+	168+	190+	203+	232+	245+	299+
ZL	159+	168+	190+	203+	254+	270+	324+
ZM	200++	216++	241++	260++	289++	302++	356++
ZP	200++	216++	241++	248++	289++	302++	356++

(*) Does not comply with ISO 6020/2 standard

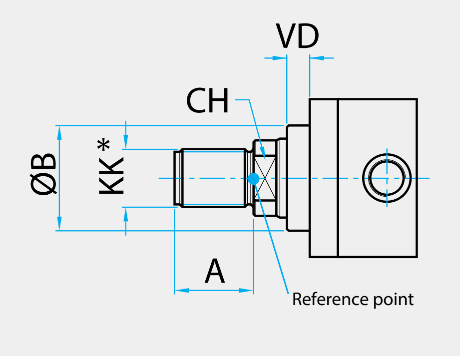
(**) RD dimension is unified, with reference to the higher diameter between the ones defined by ISO 6020/2 standard.
Special RD dimension on request.

\+ = add the stroke

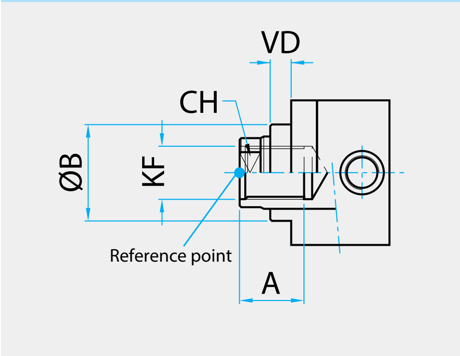
++ = add the double of the stroke

ISO 6020/2

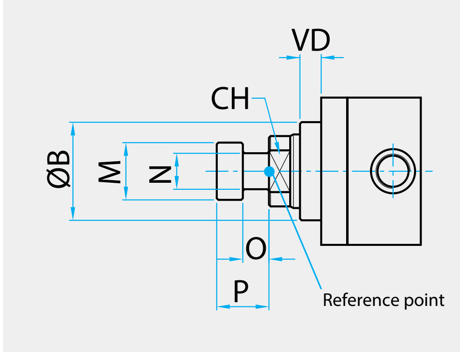
STANDARD



SF



ST

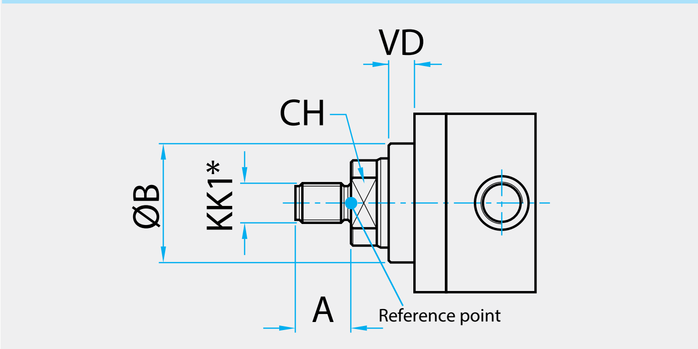


Rod	22	28	36	45	56	70	90	110	140
A	22	28	36	45	56	63	85	95	112
B f9	34	42	50	60	72	88	108	133	163
CH	19	22	30	36	46	60	75	95	120
KK	M16x1.5	M20x1.5	M27x2	M33x2	M42x2	M48x2	M64x3	M80x3	M100x3
KF	M16x1.5	M20x1.5	M27x2	M33x2	M42x2	M48x2	M64x3	M80x3	M100x3
M	18	22	28	35	45	56	70	106	136
N	11	14	18	22	28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

* For the standard male rod end, the most suitable rod end eye with spherical bearing is the CS version (get in touch for more information).

DIN 24554

SL — DIN 24554



Bore	50			63			80			100			125			160			200		
Rod	22	28	36	28	36	45	36	45	56	45	56	70	56	70	90	70	90	110	90	110	140
A	22			28			36			45			56			63			85		
B f9	34	42	50	42	50	60	50	60	72	60	72	88	72	88	108	88	108	133	108	133	163
CH	19	22	30	22	30	36	30	36	46	36	46	60	46	60	75	60	75	95	75	95	120
KK1	M16x1.5			M20x1.5			M27x2			M33x2			M42x2			M48x2			M64x3		
VD	9			13			9			10			10			7			7		

* For the SL male rod end, the most suitable rod end eye with spherical bearing is the TS version (get in touch for more information).

ORDERING CODE

HD [ ] 50 / 28 / [ ] A [ ] 500 [ ] S [ ] [ ] [ ]

The fields containing sample values are compulsory.

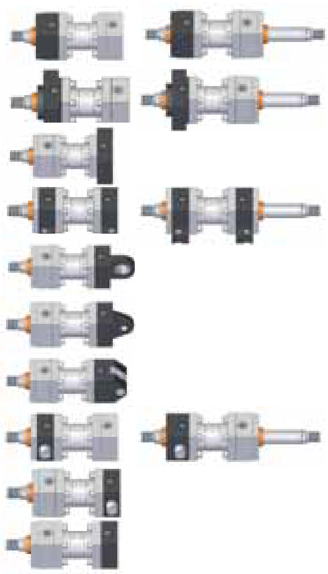
Type	Bore	
Standard	50... 100	HD
	125... 200	HK

Special version (1)	SX

	Bore	Rod
HD	50	22
		28
		36
	63	28
		36
		45
	80	36
		45
		56
	100	45
		56
		70
HK	125	56
		70
		90
	160	70
		90
		110
	200	90
		110
		140

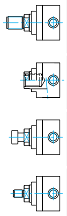
Possible 2 nd rod	

See pages 18-20	ISO 6020/2	DIN24554	Mounting
Front tapped holes	MX5		X
Front flange	ME5	ME5	A
Rear flange	ME6	ME6	B
Feet	MS2	MS2	E
Ball jointed eye	MP5	MP5	D
Male clevis	MP3		C
Female clevis	MP1		M
Front trunnions	MT1		G
Rear trunnions	MT2		L
Rear threaded holes	MX6		T



Special options/versions	(see page 24/25)

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

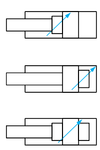


Rod end (see page 22)	
	Male thread (standard)
SF	Female thread
ST	Floating joint
SL	Male thread DIN 24554

Seals (See page 16)	
S	Standard (mineral oil)
L	Low friction
H	Viton® (high temperature, phosphoric esters)
G	HFC-fluid

Spacer	Recommended 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
Specify in mm

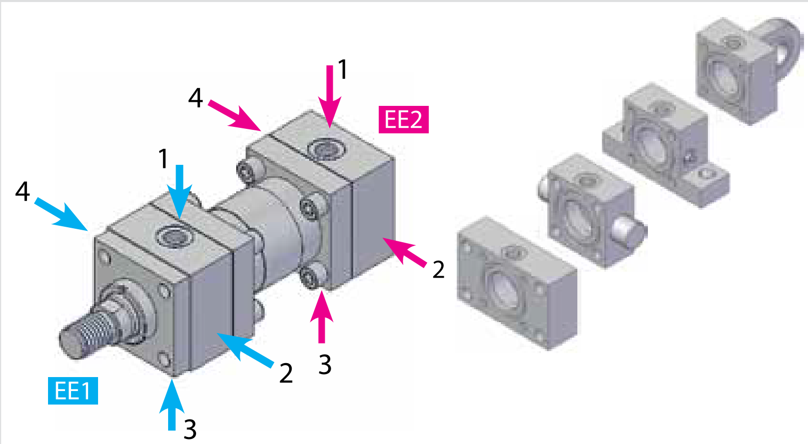


Adjustable cushioning	
	Not cushioned
V	Front only
Z	Rear only
K	Front and rear

(1) Indicate SX when the clylinder has special options or versions. Then, indicate in the appropriate box, after the ordering code, the corresponding code (see page 24) followed by the drawing number, if any.

	ROD MATERIAL
RRX	Stainless steel chromeplated rod
RRB	Hardened and tempered chromeplated rod
RRK	Nikrom rod
RRH	Hardened chromeplated rod

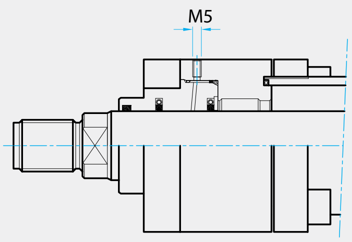
PORT LOCATION



		ISO 1179-1 (GAS)		SAE 3000	
Bore	Side	Standard	Oversize	Standard	Oversize
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"

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

SD BUSHING DRAIN

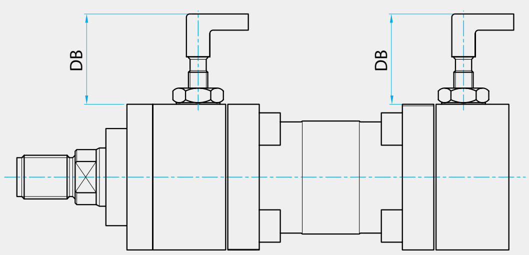


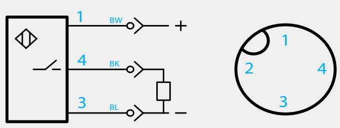
The bushing drain avoids the accumulation of liquid behind the scraper.
A connection between the scraper and the lip seal allows to send the fluid back to the tank.
The drain is usually installed on the opposite side of the oil port.

BL

For special application, where high sealing and low friction is required (i.e., closed circuit application), a special piston is available.
Contact our technical department in order to verify the feasibility of this solution.

PROXIMITY SWITCHES





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

SPV	Front sensor
SPZ	Rear sensor
SPK	Front and rear sensor

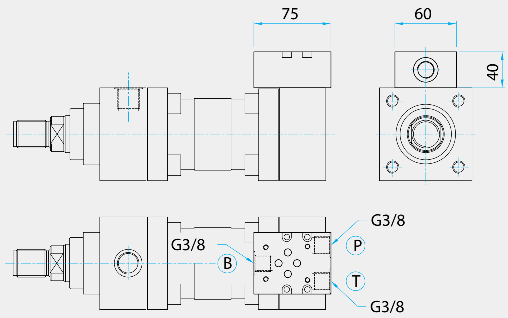
For proximity switches features, see documentation at page 14.

The incorporated plate allows mounting a four port control valve with an ISO 4410 mounting surface.
In this way, the oil volumes between the cylinder and the valve are reduced, obtaining a better control precision.
They are mounted directly on the cylinder’s rear head though four screws and a nipple.
They are available also in a version with conic threaded nipple, usable also for small bores or in other particular situations:
For information, contact our technical department.

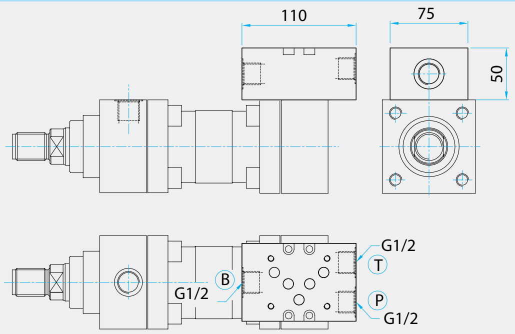
INCORPORATED PLATES: MOUNTED WITH FOUR SCREWS

1

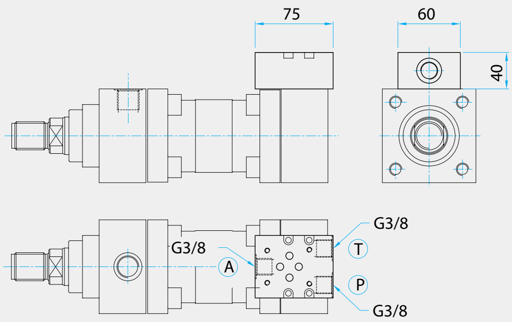
BV3-A



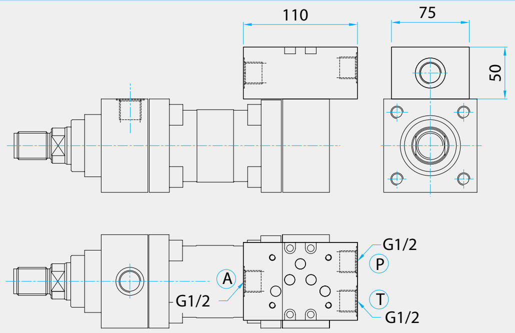
BV5-A



BV3-B



BV5- B



INCORPORATED PLATES ORDERING CODE

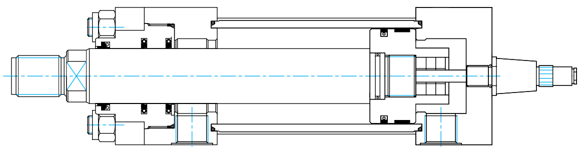
The fields containing sample values are compulsory.

BV 3 - A

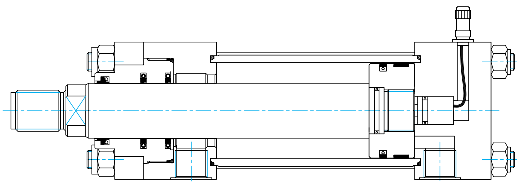
Size	Bore range	
ISO 4001-03 NG6	50 - 125	3
ISO 4001-05 NG10	50 - 200	5

	Link configuration
A	Port A ▶ rear side
B	Port B ▶ rear side

Version with external transducer. For mountings X, A, E, G, H, L, R



Version with internal transducer. For mountings B, D, C, M, Q, S, T. Contact our technical department.



The ISO 6020/2 servocylinders are available both with tie rods (TD and TK versions) and with counter flanges (TH and TX version).
The servocylinders include an electronic transducer, which allows to obtain the absolute position of the rod. The type of transducer to be used depends on the performance you need. The precision of positioning is determined by 2 elements: the resolution of the transducer and the drive system of the cylinder.
3 type of transducers are available:

TEMPOSONIC : it allows high resolutions and different types of control; it supports all the stroke lengths necessary.

POTENTIOMETRIC : the output signal is given from a cursor sliding on a piezoelectric. The maximum stroke allowed is 500 mm.

INDUCTIVE : it emits a voltage or current signal generated by a separated electrical circuit. The maximum stroke allowed is 1000 mm.

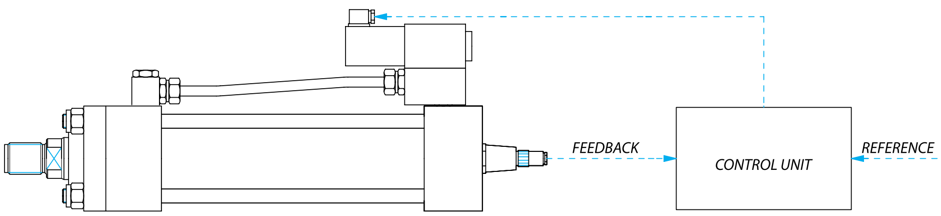
	MV	MA	MS	PV	IV	IA
Transducer type	Temposonic	Temposonic	Temposonic	Potentiometric	Inductive	Inductive
Supply voltage	24V DC	24V DC	24V DC	Max 60V	24V DC	24V DC
Output	0-10 V	4-20 mA	SSI (Syncronic Serial Interface)		0-10 V	4-20 mA
Resolution	Endless	Endless		Endless	Endless	Endless
Linearity	< ± 0.02% F.S. (min ± 50 µm)	< ± 0.02% F.S. (min ± 50 µm)	< ±0.01% F.S. (min ± 50 µm)	±0.1% F.S.	±0.2% F.S.	±0.2% F.S.
Repeatability	< ±0.001% F.S. (min ± 2.5 µm)	< ±0.001% F.S. (min ± 2.5 µm)	< ±0.001% F.S. (min ± 2.5 µm)			
Hysteresis	< 4µm	< 4µm	< 4µm			
Absorption	100 mA	100 mA	100 mA			
Max speed	2 m/s	2 m/s	2 m/s	1 m/s	2 m/s	2 m/s
Temperature	-20 +70 °C	-20 +70 °C	-20 +70 °C	-20 +70 °C	-20 +70 °C	-20 +70 °C
Max stroke	2500	2500	2500	500	1000	1000

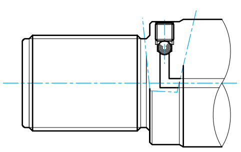
F.S. = full scale

The servocylinders can be equipped with ISO interface plates, which allow to mount directly on the cylinder the following elements:
- Solenoid valves ON/OFF
- Proportional solenoid valves
- Servovalves

À

This configuration, together with a CONTROL UNIT, ensures an optimal hydraulic rigidity, which drastically increments the answer time, the repeteability and the precision of the positioning.





Air bleed

To allow the servocylinders to work correctly, you need to completely exhaust the air within the cylinder when setting them up. Therefore, these cylinders not only include air bleed on the heads, but they also have an air bleed on the head of the rod for exhausting the air within the chamber of the transducer. The particular position of this air bleed allows working even when the cylinder is operative, without having to remove the rod from its housing.

ORDERING CODE

TD	MA		80	/	56	/		A	500		L			

The fields containing sample values are compulsory.

Type		Bore	
tie rods		40... 100	TD
		125... 200	TK
counterflanges		50... 100	TH
		125... 200	TX

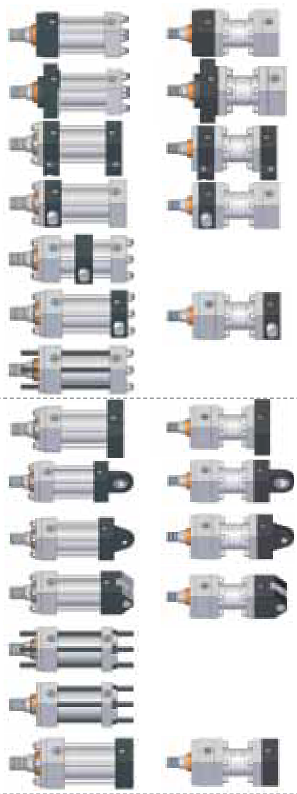
Transducer	
Temposonic	MV
	MA
	MS
Potentiometric	PV
Inductive	IV
	IA

Special version (1)	SX

		Bore	Rod
TD	TH	40	28
		50	28
			36
		63	28
			36
			45
		80	36
			45
			56
		100	45
			56
			70
TK	TX	125	56
			70
			90
		160	70
			90
			110
		200	90
			110
			140

Possible 2 nd rod

TD TK	TH TX	See pages 6-8	ISO 6020/2	DIN24554	Mounting
√	√	Front tapped holes	MX5		X
√	√	Front flange	ME5	ME5	A
√	√	Feet	MS2	MS2	E
√	√	Front trunnions	MT1		G
√		Intermediate trunnions (2)	MT4	MT4	H
√	√	Rear trunnions	MT2		L
√		Extended front tie-rods	MX3		R
√	√	Rear flange	ME6	ME6	B
√	√	Ball jointed eye	MP5	MP5	D
√	√	Male clevis	MP3		C
√	√	Female clevis	MP1		M
√		Extended front and rear tie-rods	MX1		Q
√		Extended rear tie-rods	MX2		S
√	√	Rear tapped holes	MX6		T



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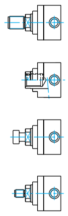
Special options/versions	(see page 12-14)

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



Rod end (see page 10)	
	Male thread (standard)
SF	Female thread
ST	Floating joint
SL	Male thread DIN 24554

Seals (see page 4)	
L	Low friction
H	Viton® (high temperature, phosphoric esters)
G	HFC-fluid

Spacer	Recommended 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

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Stroke
Specify in mm

(1) Indicate SX when the cylinder has special options or versions. Then, indicate in the appropriate box, after the ordering code, the corresponding code (see page 12) followed by the number, if any.

(2) For H mounting (MT4), indicate at the end of the code the letters "XV" followed by the XV quote value (see pages 7-8)

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