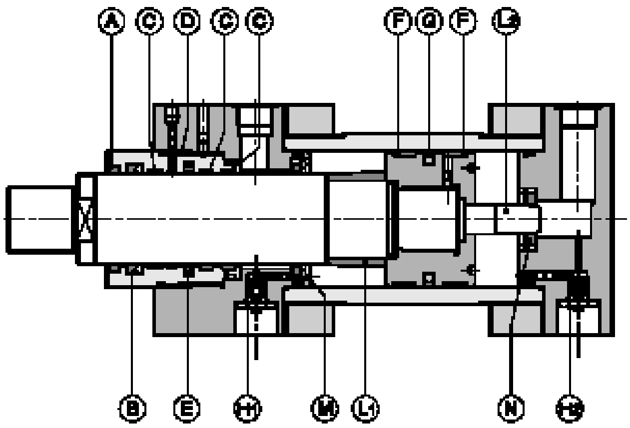
HC3

HYDRAULIC CYLINDER
SERIES 10

1 – FEATURES



- Double acting cylinders constructed in compliance with ISO 6022 and DIN 24333.

- These cylinders are made with particularly resistant materials. Therefore, they are suitable for applications in the iron and steel sector, where the loads are not always quantifyable.

- There are 5 different mounting styles and a range of accessories to meet all working requirements.

A – Scraper ring
B – Piston rod seal
C – Guide ring
D – Drain seal (o'ring)
E – Piston rod seal
F – Guide ring
G – Piston seal
H1 – Front cushioning adjustment screw
H2 – Rear cushioning adjustment screw
L1 – Front cushion
L2 – Rear cushion
M – Front cushioning bushing
N – Rear cushioning bushing

2 – TECHNICAL DATA

Nominal operating pressure (continuous service)	bar	250
Maximum operating pressure	bar	320
Maximum speed (standard)	m/s	0,5
Maximum stroke (standard)	mm	6000
Fluid temperature range	°C	-20 – +80

3 – CHARACTERISTICS

3.1 – Bores and Piston Rods

Bores with diameters from Ø50 to Ø400mm are available to enable a vast choice according to the required force. Two piston rod diameters are available for each bore:

- Reduced piston rod with area ratio 1:1,65
- Standard piston rod with area ratio 1:2

3.2 – Cushionings

On request, gradual and adjustable cushioning devices can be fitted in the front and/or rear ends of the cylinder without affecting overall dimensions.

The particular design of the cushions guarantees optimal repeatability also when there are variations in fluid viscosity.

Cushioning devices are always recommended because they allow impact-free stopping even at high speed and reduce pressure surges and impact transferred to the mounting supports.

For bores with diameter bigger than 160mm with cushioning, the caps can have an additional port connected directly with the braking chamber. This connection must be used for installation, near the cylinder, of a pressure relief valve set at 350 bar, to limit overpressures during braking.

For other informations and identification code, consult our Sales Department.

Bore (mm)	50	63	80	100	125	140	160	180	200	250	320	400
Front cone length (mm)	38	40	50	50	60	60	75	75	80	100	100	110
Rear cone length (mm)	34	42	58	49	54	54	68	73	69	101	99	108

3.3 – Connections

The cylinders are usually supplied with BSP threads and spot facing for seal rings in compliance with ISO 1179.

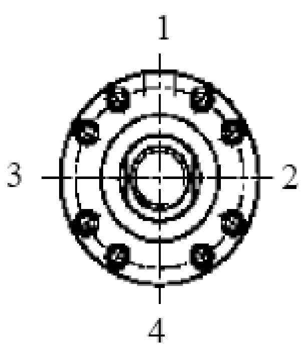
It is possible to order oversized connections compared to those shown in the dimensions tables.

For correct cylinder operation, fluid velocity must not exceed 5m/s.

For other informations and identification code, consult our Sales Department.

3.4 – Connection position

Standard positions of oil ports, cushioning adjustment screws, breathers, optional external drain and optional end-stroke proximity sensors, are indicated in the table below. It is possible to order different connection positions from the standard. As a consequence, the other options positions will be rotated. For special requests, consult our Sales Department.



Frontal view piston side

	Position
Connections	1
Cushioning adjustment	3
Breathers	4
Drainage	1
Proximity end stroke	2
Optional port (see section 3.4)	4

3.5 – Seals

The table illustrates seal characteristics in relation to hydraulic fluid and operating temperatures.

Type	Seal type	Seal material	Hydraulic fluid	Minimum pressure (bar)	Operating pressure	Maximum speed
K	Standard	Nitrile polyurethane	Mineral oil	10	-20 a +80°C	0,5
M	Low friction	Nitrile PTFE	Mineral oil Glycol water	20 (note)	-20 a +80°C	15
V	High temperature and/or agressive fluid	Viton PTFE	Special fluids	10	-20 a +150°C	1

Note: for lower pressure, consult our technical departament.

3.6 – Strokes

Strokes of up to 6000mm are available.

On request, cylinders with longer strokes can be supplied. Stroke tolerances are:

0 + 1mm for strokes of up to 1000mm.
0 + 4mm for strokes of up to 6000mm.

3.7 – Spacers

In case of cylinders with strokes > 1000mm, the use of spacers is recommended, which can be inserted to reduce loads on the piston rod bushing and prevent the piston from sticking. Each spacer is 50mm long. We recommend to insert 1 spacer for strokes from 1001 to 1500mm, with an increment of 1 spacer for every 500mm stroke. It is necessary to consider that the overall cylinder dimensions increase according to the number os inserted spacers (50mm for each spacer).

3.8 – Drainage

On request, it is possible to supply a connection for external drainage on the front end, for fluid drops recovery of the rod first seal, without any modification to the overall dimensions.

The connection is 1/8'' BSP for bore up to Ø100mm, and 1/4'' BSP for higher bores.

3.9 – Breathers

On request, cylinder ends can be supplied with breathers for the elimination of air. This is necessary when the entire stroke is not used or when connections are not facing upwards.

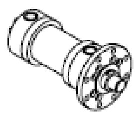
3.10 – Surface finish

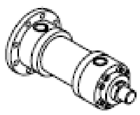
The cylinders are supplied painted with Green colour 5G/2 (semi-bright synthetic) with a paint thickness of 40µ. The rod is chromed.

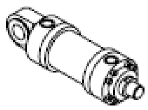
4 – IDENTIFICATION

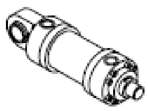
HC3		-		/			/			-		-		-		-		-			/			/	10

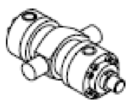
Mounting Style


A - Front flange


B - Rear flange (MP4)


D - Male clevis (MP3)


F - Spheric swivel (MP5)


L - Mid swinging (MT4)

Serial number
Indicate for spare parts requests

Dimension XV for "L" mounting
Omit if not required

N° of spacers multiple of 50mm (see section 3.7)
Omit if not required

Back end connection position (see section 3.4)
1 - 4

Front end connection position (see section 3.4)
1 - 4

Drainage (see section 3.8)
0 = without drainage
E = external drainage with connection on the front end

Breathers (see section 3.9)
0 = without brathers
S = front and back breathers

Cushioning (see section 3.2)
0 = without cushioning
1 = front
2 = back
3 = front and back

Seals (see section 3.5)
K = standard (nitrile + polyurethane)
M = low friction (nitrile + PTFE)
V = high temperature (viton + PTFE)

Stroke (mm)
For cylinders with spacers, indicate the working stroke

Double rod threading
See single rod for dimensions (omit if not required)

Double rod
Not available with mounting style D-F
See single rod for dimensions (omit if not required)

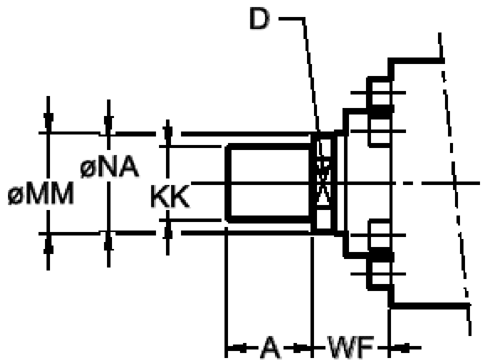
Rod threading (see section 5)
W = female thread
Omit = male thread (standard)

Ø ROD (mm)		RODS AVAILABLE FOR EACH BORE									
32	36	*									
40	45		*								
50	56			*							
63	70				*						
80	90					*					
100	110						*				
125	140							*			
160	180								*		
200	220									*	
250	280										*
BORE (mm)		50	63	80	100	125	160	200	250	320	400

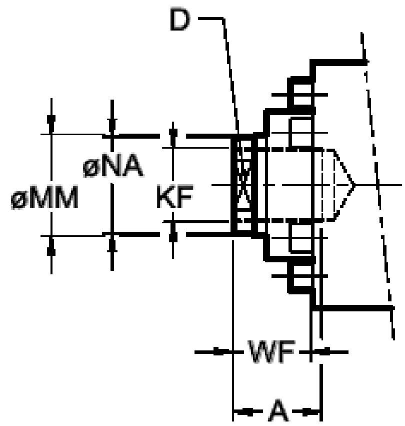
* Bores not considered by the standard ISO 6022

5 – DIMENSIONS

Standard: male thread



W = female thread

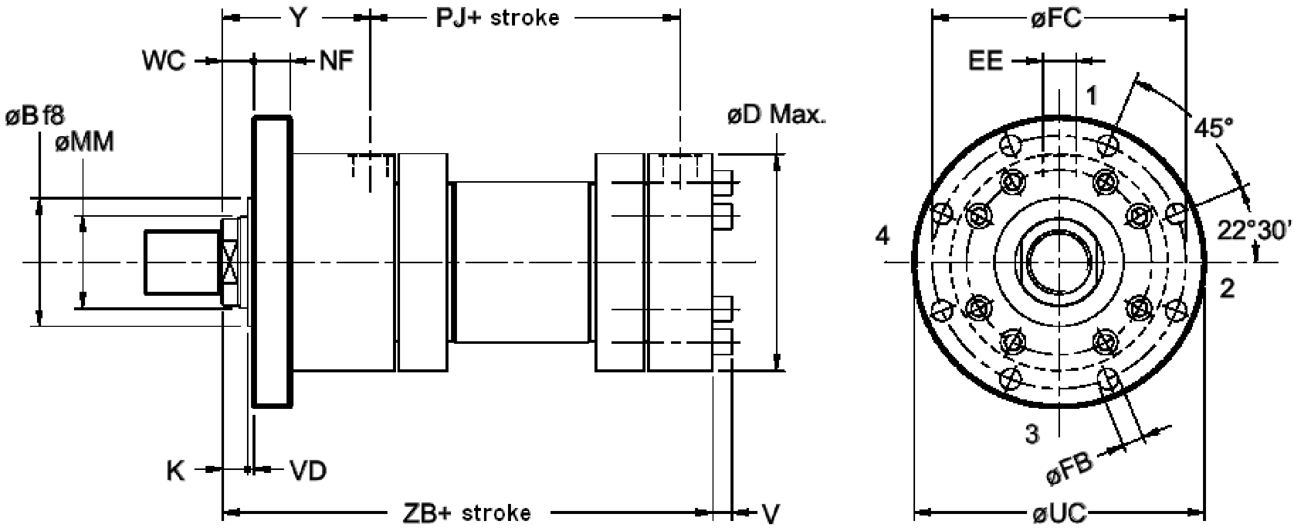


For bores with Ø180mm and rods with Ø90mm or higher, the rod has 4 holes at 90° over the Ø shown in the table.

Ø Bore	MM Ø Rod	KK	Ø NA	KF	A	D	WF
50	32 36	M27x2	31 35	- M27x2	36	28 32	47
63	40 45	M33x2	38 43	- M33x2	45	34 36	53
80	50 56	M42x2	48 54	- M42x2	56	43 46	60
100	63 70	M48x2	60 67	- M48x2	63	53 60	68
125	80 90	M64x3	77 87	- M64x3	85	65 75	76
140	90 100	M72x3	87 96	- M72x3	90	75 85	76
160	100 110	M80x3	96 106	- M80x3	95	85 95	85
180	110 125	M90x3	106 121	- M90x3	105	95 Ø12"	95
200	125 140	M100x3	121 136	- M100x3	112	Ø12"	101
250	160 180	M125x4	155 175	- M125x4	125	Ø15"	113
320	200 220	M160x4	195 214	- M160x4	160	Ø15"	136
400	250 280	M200x4	245 270	- M200x4	200	Ø20"	163

6 – MOUNTING DIMENSIONS ISO MP3

A = Front flange

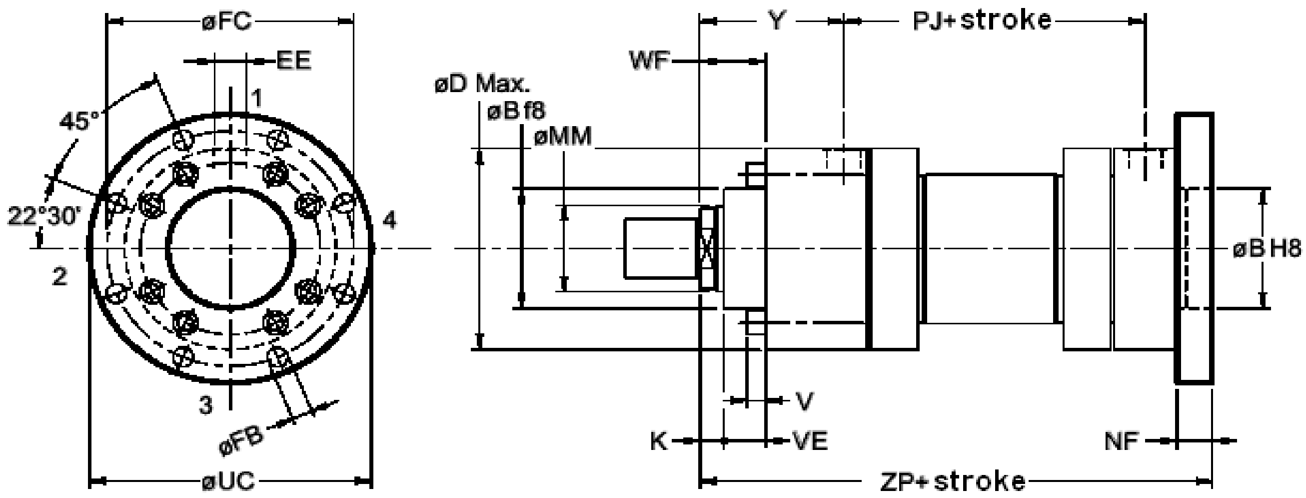


Ø Bore	MM Ø Rod	ØB f8	ØD max.	EE BSP	ØFB	ØFC	K	NF	PJ	ØUC	V	VD	WC	Y	ZB
50	32 36	63	105	1/2"	13,5	132	18	25	120	155	8	4	22	98	244
63	40 45	75	122	3/4"	13,5	150	21	28	133	175	10	4	25	112	274
80	50 56	90	145	3/4"	17,5	180	24	32	155	210	12	4	28	120	305
100	63 70	110	175	1"	22	212	27	36	171	250	16	5	32	134	340
125	80 90	132	210	1"	22	250	31	40	205	290	16	5	36	153	396
140	90 100	145	255	1.1/4"	26	300	31	40	208	340	24	5	36	181	430
160	100 110	160	270	1.1/4"	26	315	35	45	235	360	24	5	40	185	467
180	110 125	185	315	1.1/4"	33	365	40	50	250	420	27	5	45	205	505
200	125 140	200	330	1.1/4"	33	385	40	56	278	440	24	5	45	220	550
250	160 180	250	410	1.1/2"	39	475	42	63	325	540	27	8	50	260	652
320	200 220	320	510	2"	45	600	48	80	350	675	36	8	56	310	764
400	250 280	400	628	2"	45[1]	720	53	100	355	800	42	10	63	310	775

NOTE[1]: The Ø400 bore has 12 equally spaced holes in the mounting flange.

7 – MOUNTING DIMENSIONS ISO MF5

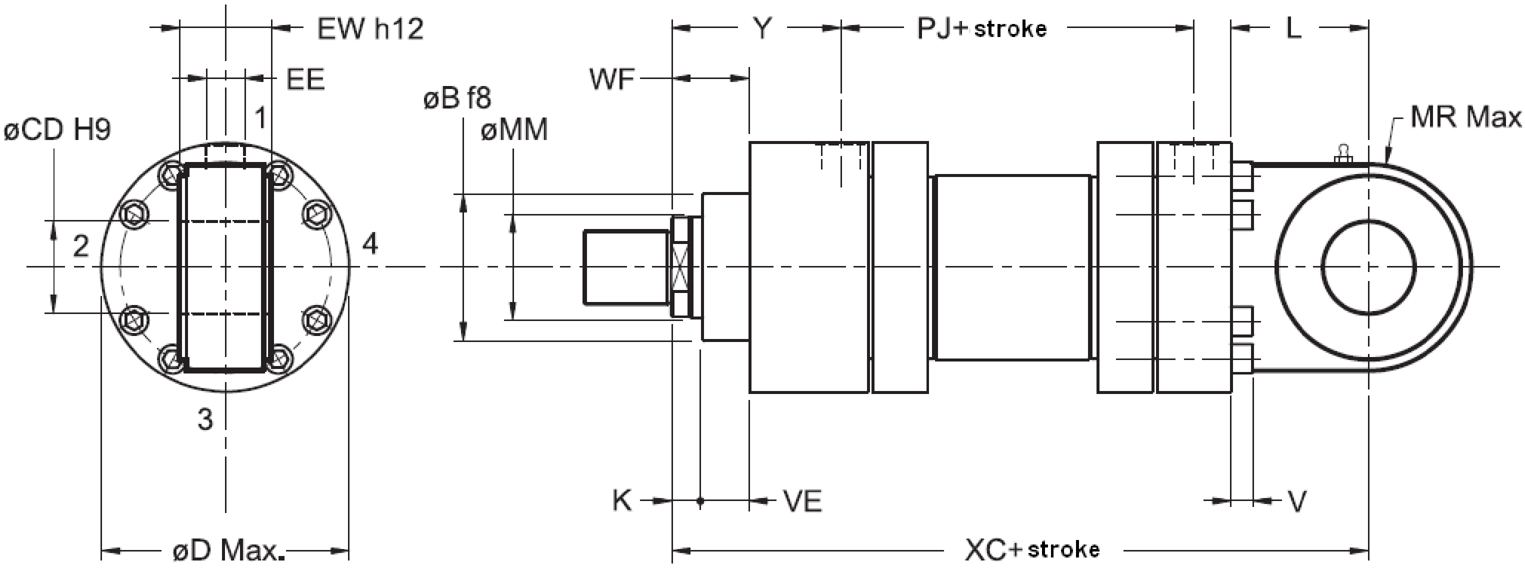
B = Front flange



Ø Bore	MM Ø Piston	ØB f8	ØD máx.	EE BSP	ØFB	ØFC	K	NF	PJ	ØUC	V	VE	WF	Y	ZP
50	32 36	63	105	1/2"	13,5	132	18	25	120	155	8	29	47	98	265
63	40 45	75	122	3/4"	13,5	150	21	28	133	175	10	32	53	112	298
80	50 56	90	145	3/4"	17,5	180	24	32	155	210	12	36	60	120	332
100	63 70	110	175	1"	22	212	27	36	171	250	16	41	68	134	371
125	80 90	132	210	1"	22	250	31	40	205	290	16	45	76	153	430
140	90 100	145	255	1.1/4"	26	300	31	40	208	340	24	45	76	181	465
160	100 110	160	270	1.1/4"	26	315	35	45	235	360	24	50	85	185	505
180	110 125	185	315	1.1/4"	33	365	40	50	250	420	27	55	95	205	550
200	125 140	200	330	1.1/4"	33	385	40	56	278	440	24	61	101	220	596
250	160 180	250	410	1.1/2"	39	475	42	63	325	540	27	71	113	260	703
320	200 220	320	510	2"	45	600	48	80	350	675	36	88	136	310	830
400	250 280	400	628	2"	45[1]	720	53	100	355	800	42	110	163	310	855

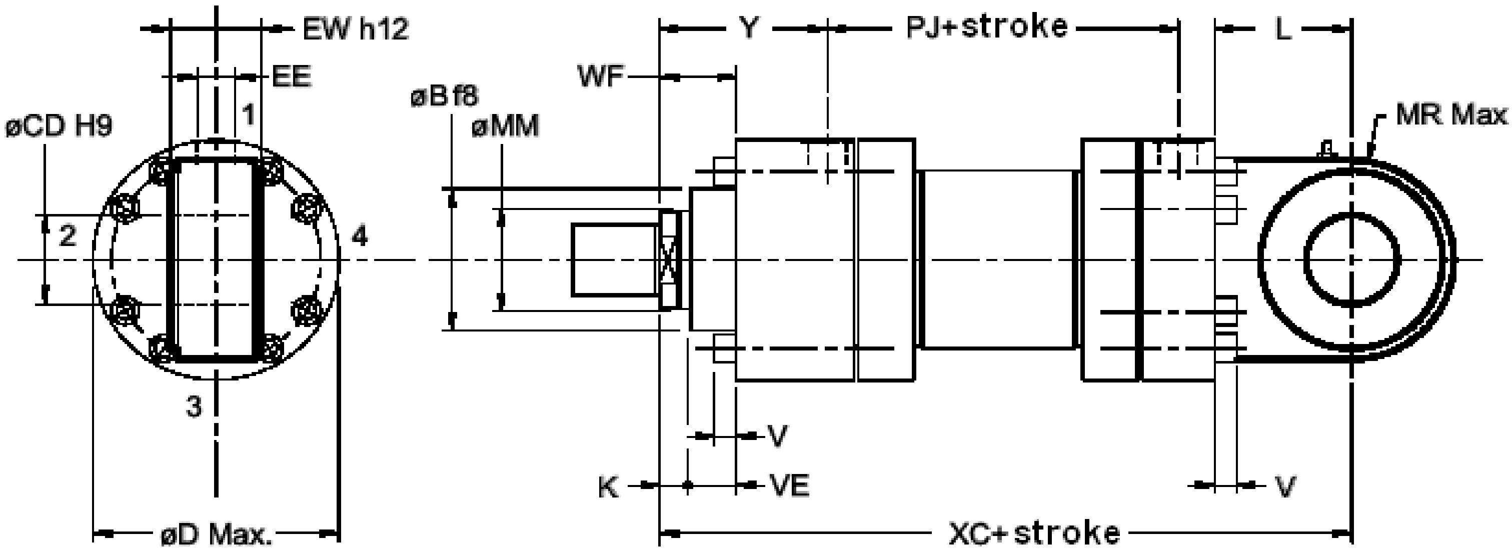
NOTE[1]: The Ø400 bore has 12 equally spaced holes in the mounting flange.

8 – MOUNTING DIMENSIONS ISO MP3



Ø Bore	MM Ø Rod	ØB f8	CD H9	ØD max.	EE BSP	EW h12	K	L	MR max.	PJ	V	VE	WF	XC	Y
50	32 36	63	32	105	1/2"	32	18	25	40	120	8	29	47	305	98
63	40 45	75	40	122	3/4"	40	21	28	50	133	10	32	53	348	112
80	50 56	90	50	145	3/4"	50	24	32	63	155	12	36	60	395	120
100	63 70	110	63	175	1"	63	27	36	71	171	16	41	68	442	134
125	80 90	132	80	210	1"	80	31	40	90	205	16	45	76	520	153
140	90 100	145	90	255	1.1/4"	90	31	40	113	208	24	45	76	580	181
160	100 110	160	100	270	1.1/4"	100	35	45	112	235	24	50	85	617	185
180	110 125	185	110	315	1.1/4"	110	40	50	147,5	250	27	55	95	690	205
200	125 140	200	125	330	1.1/4"	125	40	56	160	278	24	61	101	756	220
250	160 180	250	160	410	1.1/2"	160	42	63	200	325	27	71	113	903	260
320	200 220	320	200	510	2"	200	48	80	250	350	36	88	136	1080	310
400	250 280	400	250	628	2"	250	53	100	320	355	42	110	163	1075	310

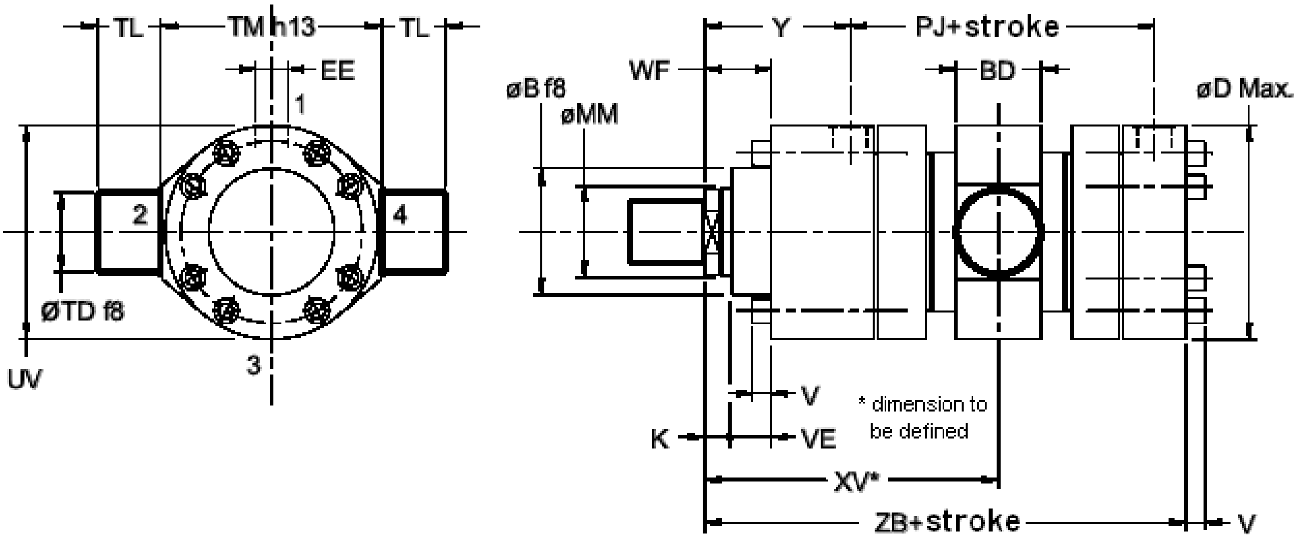
9 – MOUNTING DIMENSIONS ISO MP5



Ø Bore	MM Ø Rod	ØB f8	BX	CX H7	ØD max.	EE BSP	EX h12	K	LT	MS max.	PJ	V	VE	WF	XO	Y
50	32 36	63	27	32	105	1/2"	32	18	61	40	120	8	29	47	305	98
63	40 45	75	35	40	122	3/4"	40	21	74	50	133	10	32	53	348	112
80	50 56	90	40	50	145	3/4"	50	24	90	63	155	12	36	60	395	120
100	63 70	110	52	63	175	1"	63	27	102	71	171	16	41	68	442	134
125	80 90	132	60	80	210	1"	80	31	124	90	205	16	45	76	520	153
140	90 100	145	65	90	255	1.1/4"	90	31	150	113	208	24	45	76	580	181
160	100 110	160	84	100	270	1.1/4"	100	35	150	112	235	24	50	85	617	185
180	110 125	185	80	110	315	1.1/4"	110	40	185	147,5	250	27	55	95	690	205
200	125 140	200	102	125	330	1.1/4"	125	40	206	160	278	24	61	101	756	220
250	160 180	250	130	160	410	1.1/2"	160	42	251	200	325	27	71	113	903	260
320	200 220	320	132	200	510	2"	200	48	316	250	350	36	88	136	1080	310
400	250 280	400	192	250	628	2"	250	53	300	320	355	42	110	163	1075	310

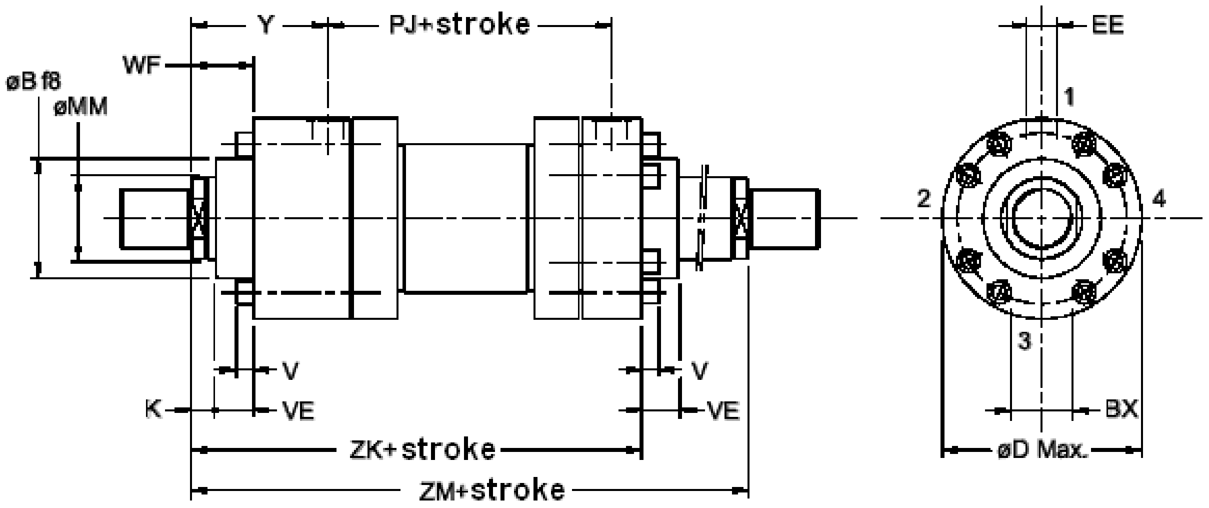
10 – MOUNTING DIMENSIONS ISO MT4

L mid swinging



Ø Bore	MM Ø Rod	ØB f8	BD	STROKE min.	ØD max	EE BSP	K	PJ	ØTD f8	TL	TM h13	ØUV	V	VE	WF	XV min	XV max. + stroke	Y	ZB
50	32 36	63	38	45	105	1/2"	18	120	32	25	112	105	8	29	47	180	144	98	244
63	40 45	75	48	45	122	3/4"	21	133	40	32	125	122	10	32	53	195	160	112	274
80	50 56	90	58	60	145	3/4"	24	155	50	40	150	145	12	36	60	220	175	120	305
100	63 70	110	73	80	175	1"	27	171	63	50	180	175	16	41	68	245	185	134	340
125	80 90	132	88	95	210	1"	31	205	80	63	224	210	16	45	76	290	220	153	396
140	90 100	145	98	115	255	1.1/4"	31	208	90	70	265	255	24	45	76	330	240	181	430
160	100 110	160	108	115	270	1.1/4"	35	235	100	80	280	270	24	50	85	340	255	185	476
180	110 125	185	118	150	315	1.1/4"	40	250	110	90	320	315	27	55	95	390	270	205	505
200	125 140	200	133	180	330	1.1/4"	40	278	125	100	335	330	24	61	101	430	280	220	550
250	160 180	250	180	220	410	1.1/2"	42	325	160	125	425	410	27	71	113	505	320	260	652
320	200 220	320	220	260	510	2"	48	350	200	160	530	510	36	88	136	590	380	310	764
400	250 280	400	270	340	628	2"	53	355	250	200	630	628	42	110	163	630	340	310	775

11 – MOUNTING DIMENSIONS DOUBLE ROD

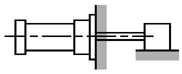
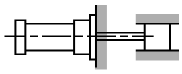
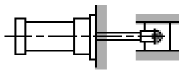
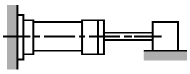
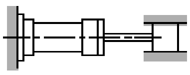
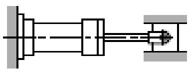


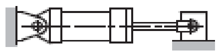
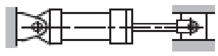
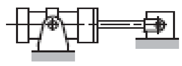
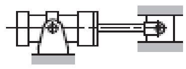
Ø Bore	MM Ø Rod	K	PK	V	VE	WF	Y	ZM	ZK
50	32 36	18	126	8	29	47	98	322	275
63	40 45	21	134	10	32	53	112	358	305
80	50 56	24	153	12	36	60	120	393	333
100	63 70	27	165	16	41	68	134	433	365
125	80 90	31	204	16	45	76	153	510	434
140	90 100	31	208	24	45	76	181	570	494
160	100 110	35	225	24	50	85	185	595	510
180	110 125	40	250	27	55	95	205	660	565
200	125 140	40	271	24	61	101	220	711	610
250	160 180	42	308	27	71	113	260	828	715
320	200 220	48	350	36	88	136	310	970	834
400	250 280	53	355	42	110	163	310	975	812

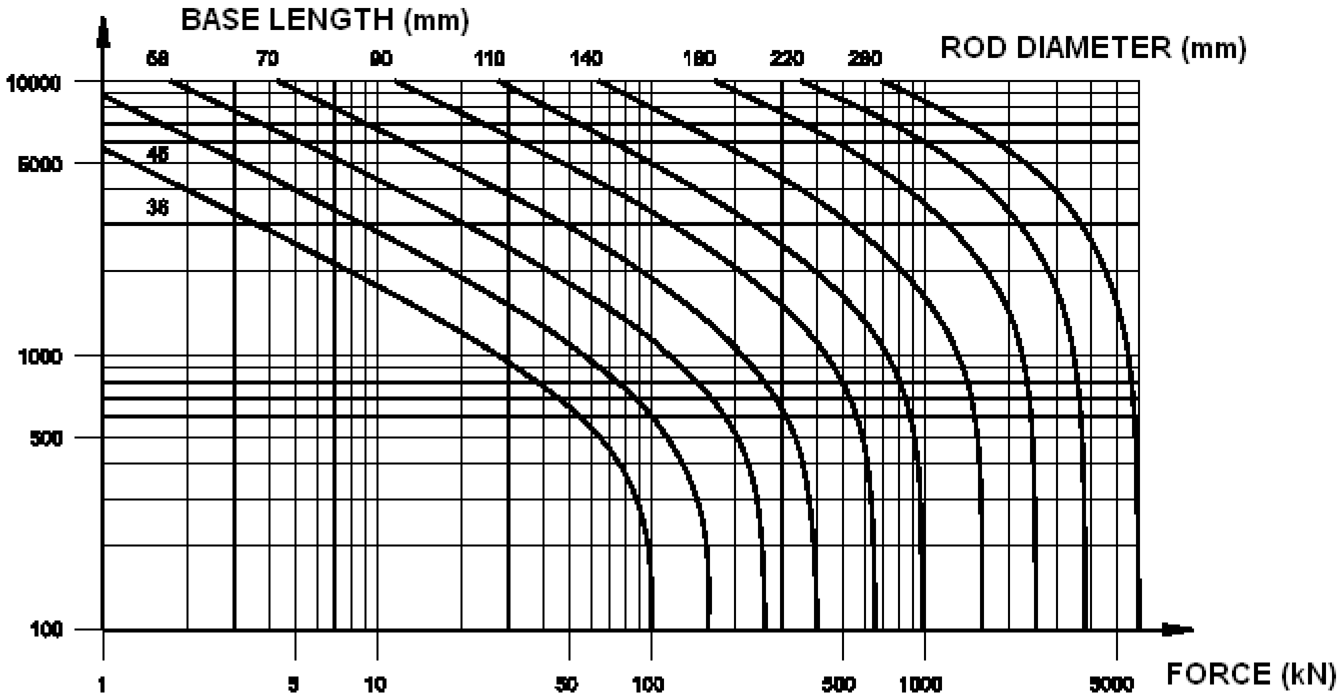
Note: Double rod cylinders are manufactured with two separate rods, fixed together by threading. Because of this mounting style, the rod with female threading is less resistant than the other. To allow the identification of the more resistant tod, the "M" marking is stamped on its end. The use of the weaker rod for less demanding applications is recommended.

12 – ROD DIAMETER SELECTION

- Identify the stroke factor according to the mounting style in the table.
- Calculate the reference length, multiplying the working stroke by the stroke factor.
- Calculate the thrust force, multiplying the total cylinder area by the operating pressure.
- Find on the diagram the point of intersection between the thrust force and reference length.
- Identify the minimum rod diameter on the curve above the previous point of intersection.
- Cylinders with rod diameters smaller than the value pltted in the diagram will not guarantee sufficient rigidity.

Mounting style	Rod connection	Mounting	Stroke factor
A	Fixed and supported		2
	Fixed and rigidly guided		0.5
	Jointed and rigidly guided		0.7
B	Fixed and supported		4
	Fixed and rigidly guided		1
	Jointed and rigidly guided		1.5

Mounting style	Rod connection	Mounting	Stroke factor
D - F	Jointed and supported		4
	Jointed and rigidly guided		2
L	Jointed and supported		3
	Jointed and rigidly guided		1.5



13 – THEORETICAL FORCES

Push force

$F_S = P \times A_t$

Pull force

$F_t = P \times A_a$

F_S = Extension force in N

F_t = Retraction force in N

A_t = Total area in mm²

A_a = Annular area in mm²
P = Pressure in MPa

1 bar = 0,1 MPa
1 kgf = 9,81 N

Ø Bore	Ø Rod mm	Total Area mm²	Annular Area mm²
50	32 36	1964	1159 946
63	40 45	3117	1861 1527
80	50 56	0	3063 2564
100	63 70	7854	4737 4006
125	80 90	12272	7245 5910
140	90 100	15394	9032 7540
160	100 110	0	12252 10603
180	110 125	25447	15943 13175
200	125 140	31416	19144 16022
250	160 180	0	28981 23640
320	200 220	0	49009 42412
400	250 280	125664	76576 64089

14 – THEORETICAL VELOCITIES

Configuration 1

The diagram shows a conventional cylinder application: the fluid is delivered by a directional control valve in alternation to the front chamber while the rear chamber is connected to tank, or vice-versa. To calculate the velocity and force, proceed as follows:

Velocity with extended rod: $V = (Q . 1000) / (A_t . 60)$

Velocity with retracted rod: $V = (Q . 1000) / (A_a . 60)$

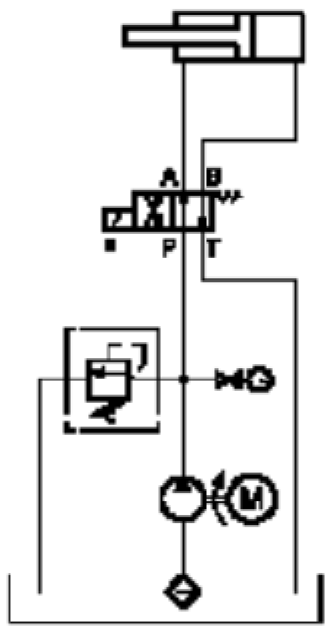
Force with extended rod: $F = P . A_t$

Force with retracted rod: $F = P . A_a$

Onde:

V = velocity in m/s
Q = flow rate in L/min
A_t = total area (piston bore) in mm²
A_a = annular area
F = force in N
P = pressure in MPa

1 bar = 0,1 MPa
1 kgf = 9,81 N



Configuration 2

When the system requires high velocities with relatively low forces, the use of a regenerative circuit is recommended. Diagram 2 illustrates the simples version of this type of set-up.

The annular chamber is always connected to the pump, while the bore end is connected alternately to the pump, in which case the piston rod extends as a result of the differential areas (since both chambers are supplied at the same pressure) and, therefore, the piston rod retracts.

To calculate the velocity and force, proceed as follows:

Velocity with extended rod: $V = (Q \cdot 1000) / (A_t \cdot 60)$

Velocity with retracted rod: $V = (Q \cdot 1000) / (A_a \cdot 60)$

Force with extended rod: $F = P \cdot A_t$

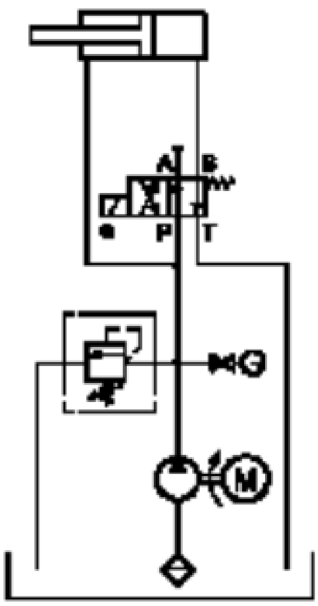
Force with retracted rod: $F = P \cdot A_a$

In regenerative circuits, the sizing of the directional control valve is important. Flow rate through the distributor is calculated according to the following formula:

$$Q_d = (V \cdot A_t \cdot 60) / 1000$$

Where:

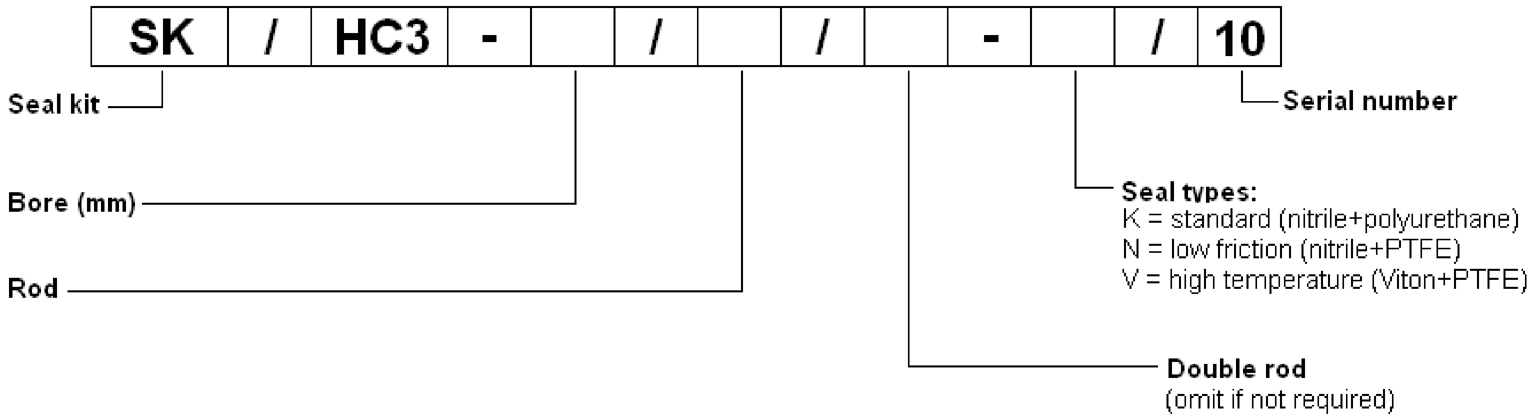
Q_d = flow rate through distributor (Q + rod chamber return flow rate) in L/min



15 – WEIGHTS

Bore	Ø Rod	Weight for 0 mm stroke			Weight for 10 mm stroke
		Mounting style			
		A – B	D – F	L	
mm	mm	kg	kg	kg	kg
50	32 36	14	16	17	0,2
63	40 45	28	27	27	0,3
80	50 56	39	38	39	0,5
100	63 70	61	62	63	0,6 0,7
125	80 90	103 104	107 108	110	0,9 1
140	90 100	164	173	175	1,1 1,2
160	100 110	198 199	210	208 209	1,6 1,7
180	110 125	289	296 297	298 299	2 2,2
200	125 140	356 357	365 366	364 365	2,2 2,4
250	160 180	666 667	698 700	685 687	3,2 3,6
320	200 220	1200 1250	1314 1365	1259 1310	5,1 5,6
400	250 280	2180 2250	2259 2330	2249 2320	7 7,5

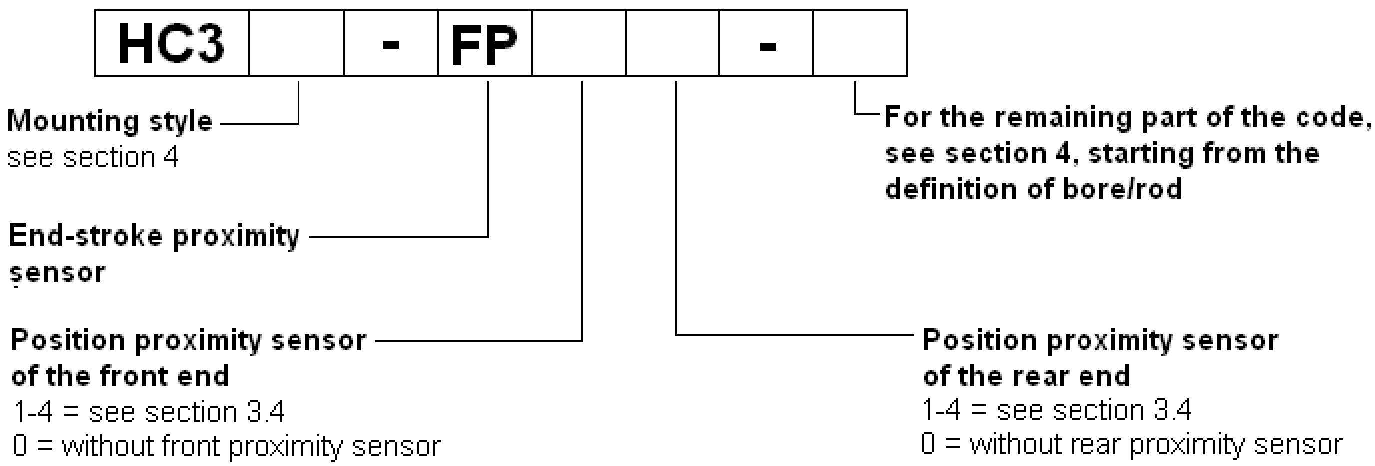
16 – SEAL KIT IDENTIFICATION



17 – END-STROKE PROXIMITY SENSORS

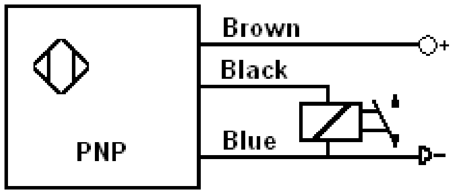
On request, it is possible to supply cylinders with end-stroke proximity sensors mounted on the ends of the cylinder.
The proximity sensors send an electric signal when the piston rod reaches the stroke end.
To ensure the correct functioning of the sytem, cylinders must be equipped with cushionings.
These sensors can only be used to provide the switching signal, not to control voltage loads.

Identification



Technical characteristics and electrical connection

Nominal voltage	Voc	24
Power supply voltage range	Voc	10 – 30
Absorbed current	mA	200
Output	Contact normally open	
Electric protection	- Polarity inversion - Short circuit - Overvoltage	
Maximum operating pressure	bar	500
Electric connection	With connector	
Operating temperature range	°C	-25 – +80
Protection class according to IEC 144 about atmospheric agents		IP68
Piston position LED		No (present on connector)



Connectors for proximity sensors

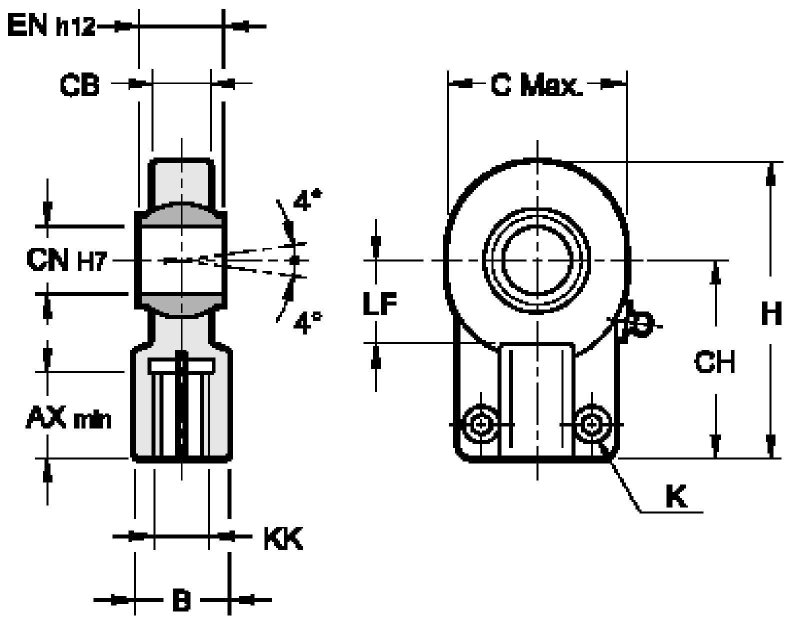
Conectors for proximity sensors must be ordered separately, specifying the code: ECM3S/M12L/10

Connector M12 – IP68 – cable with 3 conductors 0,34 mm²
Length 5 metres – cable material: POLYURETHANE (oil resistant)
Indicator light – piston at stroke end: yellow led on – green led on
– piston not at stroke end: yellow led off – green led on

Note: The green led indicated the presence of power supply to the connector.
Connector supplied: green led on
Connector not supplied: green led off

18 – MOUNTING DIMENSIONS

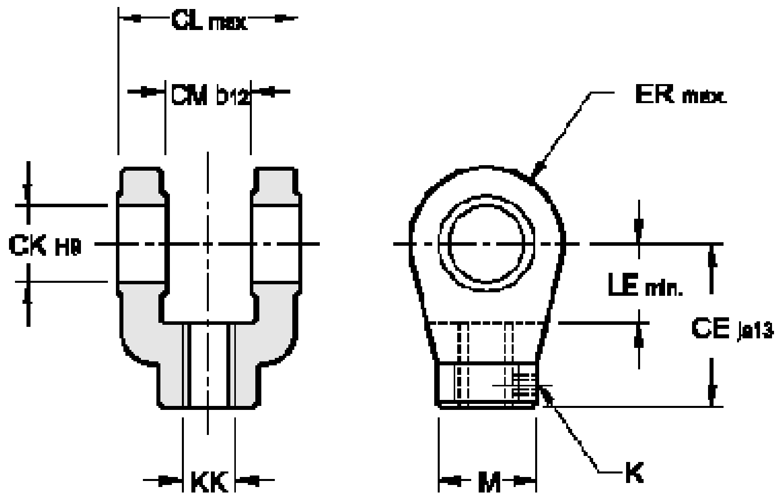
Spheric swivel ISO 9682/DIN 24338



Type	Ø Cylinder bore	AX min	B	C max	CB	CH	ØCN H7	EN h12	H	KK	LF	Bolt K UNI 5931	Torque Nm	Max load kN	Weight kg
LSF-36	50	37	38	76	27	80	32	32	119	M27x2	32	M10x25	49	67	1,17
LSF-45	63	46	47	97	32	97	40	40	146	M33x2	41	M10x30	49	100	2,15
LSF-56	80	57	58	118	40	120	50	50	180	M42x2	50	M12x35	86	156	3,75
LSF-70	100	64	70	142	52	140	63	63	212	M48x2	62	M16x40	210	255	7,00
LSF-90	125	86	90	180	66	180	80	80	271	M64x3	78	M20x50	410	400	13,80
LSF-100	140	91	100	185	72	195	90	90	239	M72x3	85	M20x60	410	490	19,1
LSF-110	160	96	110	224	84	210	100	100	322	M80x3	98	M24x60	710	610	25
LSF-125	180	106	125	235	88	235	110	110	364	M90x3	105	M24x60	710	655	32
LSF-140	200	113	135	290	102	260	125	125	405	M100x3	120	M24x70	710	950	46
LSF-180	250	126	165	346	130	310	160	160	480	M125x4	150	M24x80	710	1370	82,5
LSF-220	320	161	215	460	162	390	200	200	620	M160x4	195	M30x100	1500	2120	168

19 – MOUNTING DIMENSIONS

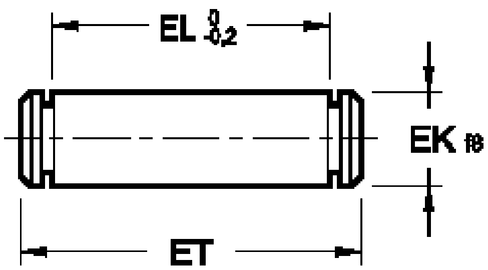
Female clevis ISO 8133



Type	Ø Cylinder bore	M CH	CE js13	ØCK H9	CL max	CM b12	ER max	KK	LE min	Bolt K	Max load kN	Weight kg
LSF-36	50	40	75	28	83	40	34	M27x2	39	M6x6	80	1,8
LSF-45	63	55	99	36	103	50	50	M33x2	54	M8x8	125	3,7
LSF-56	80	56	113	45	123	60	53	M42x2	57	M8x8	200	5,6
LSF-70	100	75	126	56	143	70	59	M48x2	63	M12x12	320	9,3
LSF-90	125	95	168	70	163	80	78	M64x3	83	M12x12	500	20
LSF-110	160	95	168	70	163	80	78	M80x3	83	M12x12	500	20

20 – MOUNTING DIMENSIONS

Clevis pin ISO 8133 (with spring retainers)



Type	ØEK f8	EL 0 / -0,2	ET	Weight kg
PNF-36	28	87	96	0,5
PNF-45	36	107	120	1
PNF-56	45	129	144	1,8
PNF-70	56	149	164	3,2
PNF-90	70	169	187	5,6

3 – If not indicated, dimensions in milimeters.