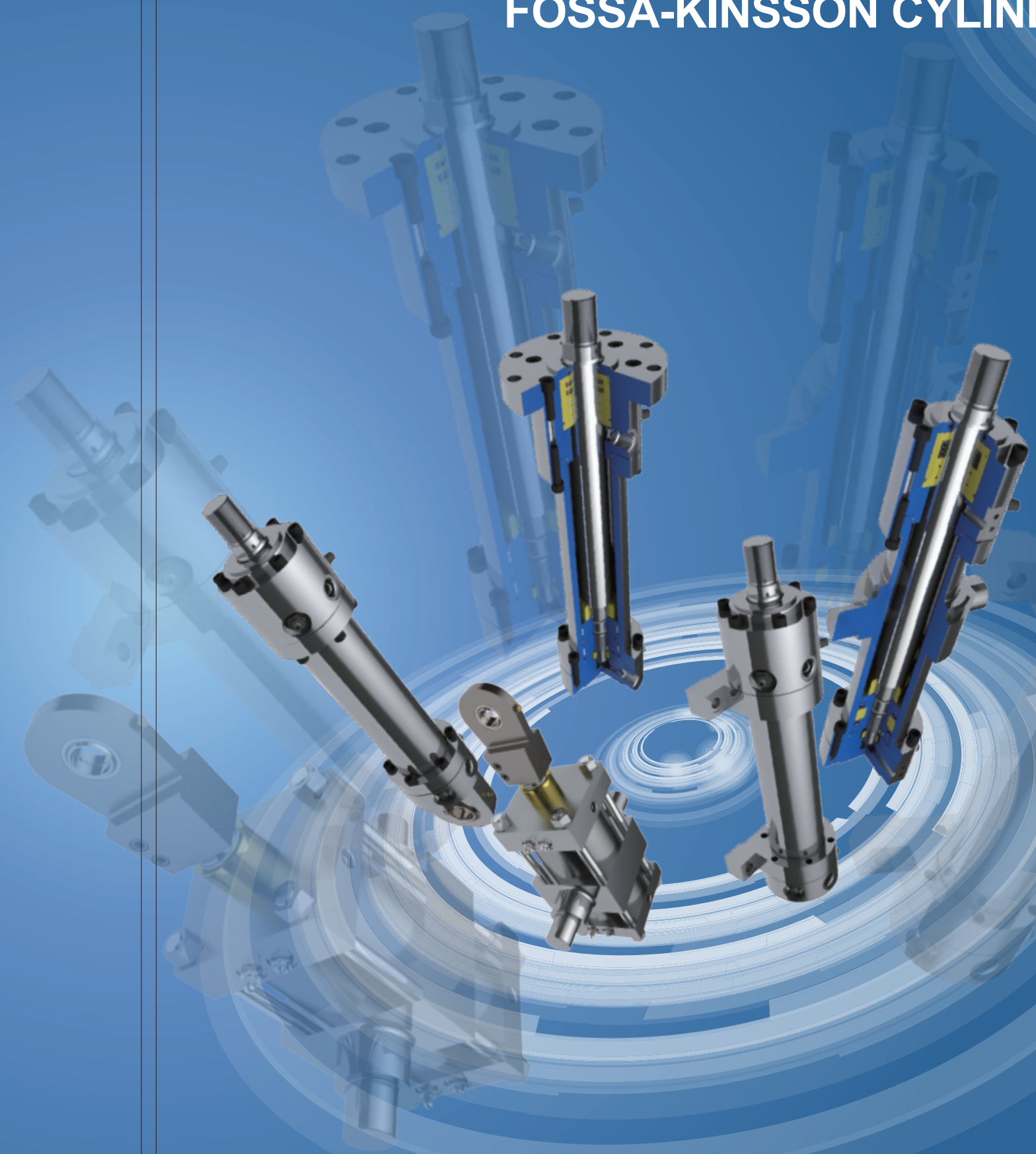


FOSSA-KINSSON CYLINDER



FOSSA KINSSON (SHANGHAI) FLUID EQUIPMENT COMPANY LIMITED

Add: NO.4,3129Shenzhuan Rd., Songjiang, Shanghai, P.R.China

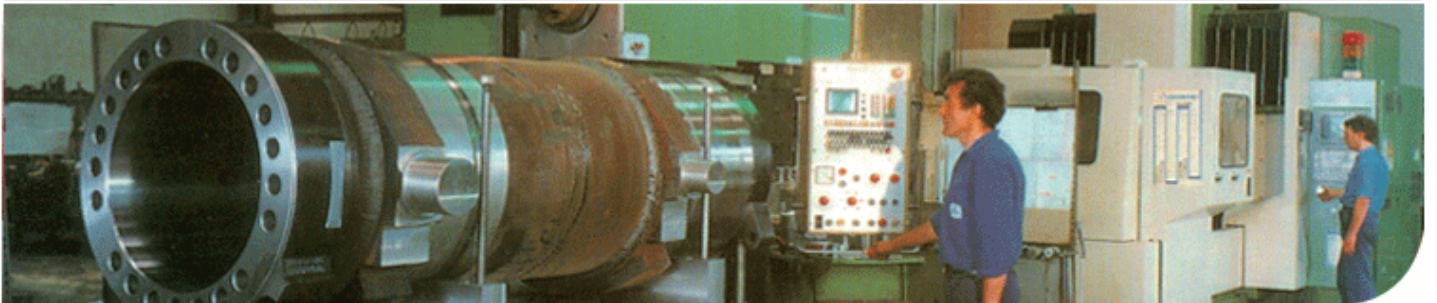
Tel: 021-57669669

Fax: 021-57669411

E-mail: info@fossa-kinsson.com

FOSSA-KINSSON

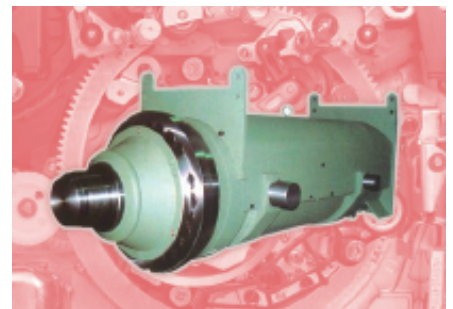
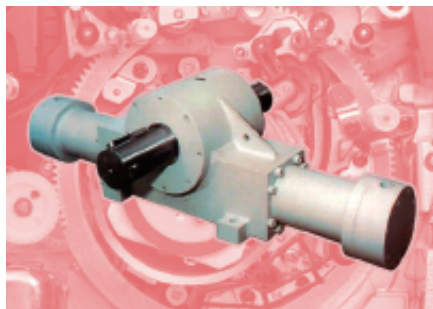
FOSSA KINSSON (SHANGHAI) FLUID EQUIPMENT COMPANY LIMITED



Fossa-Kinsson is a joint venture of SILVIO FOSSA s.p.a which is a leader firm in manufacturing hydraulic and air cylinders. The JV is found in 2005 and bend itself to hydraulic cylinder's production in china.

Our company adopt advanced design and manufacture technique of SILVIO FOSSA, have experienced engineer, so we can manufacture cylinders of any type and dimension, suitable to be mounted in any application and in every industrial field. Besides the standard production, special cylinders is also a very important part in our production. It normally realizes also cylinders according to international standards.

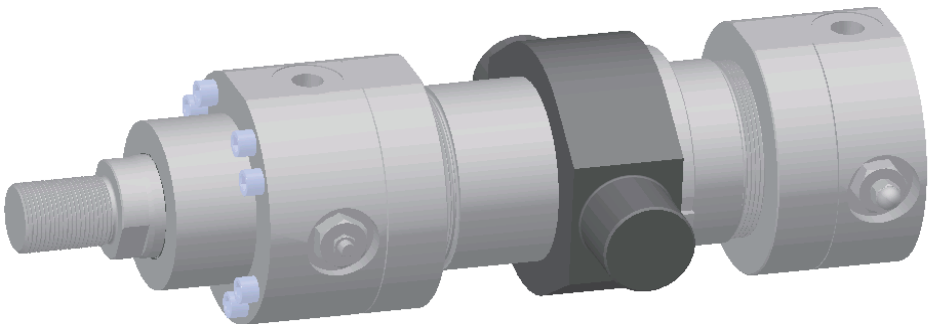
Our company is able to supply all the request, even telescopic cylinders, rotating cylinders, electro-cylinders, hydraulic capsules, rotating distributors, hydraulic and air mobile pipes-torque cylinders(actuators). Specific tools and modern machineries allow the manufacturing of cylinders having the following max dimensions: $\varnothing 800\text{mm}$ bore, 10000 mm stroke. Working pressure at 700Bar.



Hydraulic Cylinder

Type FKS 1

Nominal pressure: 250 bar (25Mpa)



FKS-1 Hydraulic Cylinder

Content	Page
Selection of cylinder	2
Spare parts.....	3
Mounting type overview	4
Output pressure table	5
Max load form	6
Main dimensions	8
Self-aligning clevis.....	14
Plain clevis	15
Position sensor.....	16
Proximity switch	20
Oil port dimensions	23
Dust jacket.....	24
Coupling	25
Use and Maintenance Manual.....	26

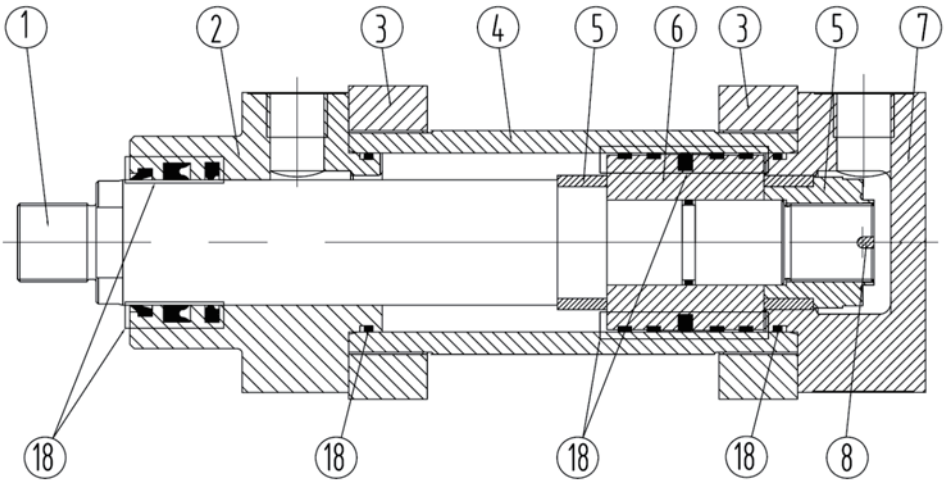


► FKS 1Hydraulic cylinder selection

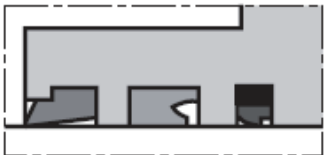
	FK	1 — 63	36	400	MF4	A	FS	M	2	H	E	C	T	C	
Double acting = FKS															Option 2
Serious= 1															W= Withoutoption
Piston Φ (40–200mm)															C= Analogue output
Piston rod Φ (20–140mm)															4—20mA
Stroke (mm)															F= Analogue output
Mounting types															0—10V
Plain clevis at base															D= Digital output SSI
Self-aligning at base															V= Enter trunnion
Round flange at head															Displacement
Round flange at base															XV(mm)
Intermediate trunion															Y= Enterpiston rod
Foot mounting															Extension
Design principle															LY(mm)
Head and rear flanged															X= Other special
Head flanged and rear welded															
Seal version															Option 1
Standard (NBR)															W= Without option
Low friction (NBR)															T = Pos. measuring system
Standard (FKM)															S = Inductive proximity switch
Low friction (FKM)															P = Piston rod dust jacket
Connection port															C = Coupling
Pipe thread to ISO															X = Other
Metric thread to ISO															
NPT thread															Piston rod version
Flange hole pattern to ISO 6162															C = Hard chromium plate
Other															H = Hardened and hard chromium plate
Port position at head and rear															N = Nickel plate and hard chromium plate
View on piston rod															S = Stainless steel chromium plate
															X = Other
															End position cushioning
															V = Without
															D = Self-regulation both sides
															K = Rear end self-regulation
															S = Head end self-regulation
															E = Adjustable both sides
															Piston rod type
															G = Thread for self-aligning clevis GIHR-K
															H = With mounted self-aligning clevis GIHR-K
															K = With mounted plain clevis BK
															X = Other

Order example: FKS1—63/36/400MF4AFSM2HECWY, LY=150mm

FKS1 Spare parts form



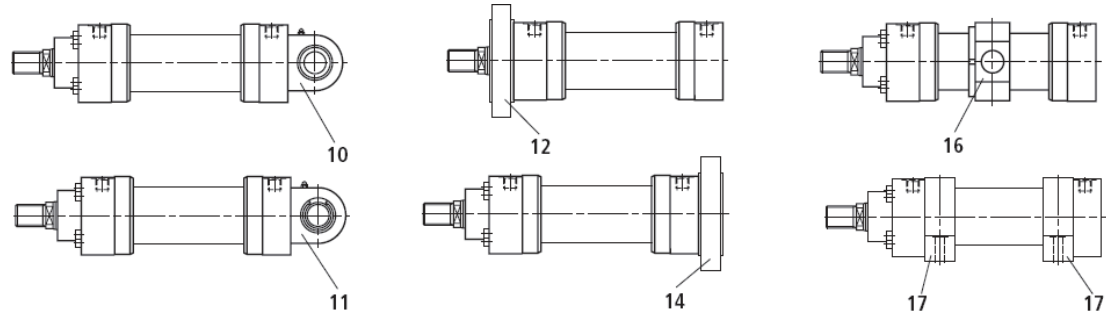
Piston rod seal
standard



Piston
standard/ low friction



low friction

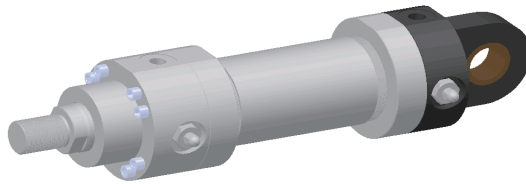


- | | | | |
|--------------------|--------------|----------------------|----------------------|
| 1. Piston rod | 2. Head | 3. Flange | 4. Barrier |
| 5. Cushioning bush | 6. Piston | 7. Rear | 8. Set screw |
| 10. Rear MP3 | 11. Rear MP5 | 12. Round flange MF3 | 14. Round flange MF4 |
| 16. Trunring MT4 | 17. Foot MS2 | 18. Seal kits | |

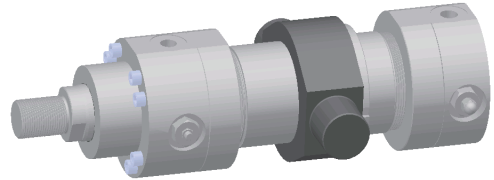
Wiper rod seal Piston seal O-ring Guide bush

FKS1 Mounting type overview

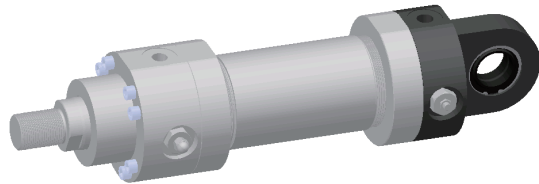
FKS1 MP3



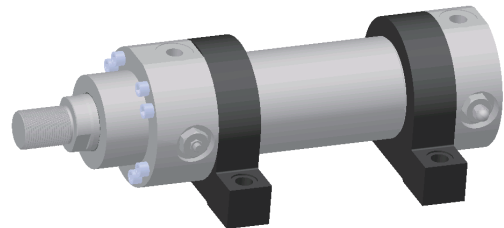
FKS1 MT4



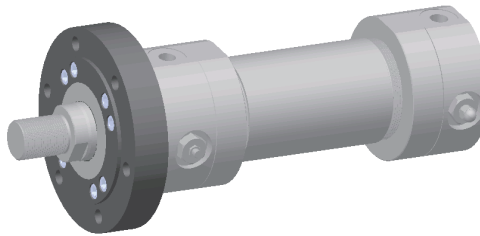
FKS1 MP5



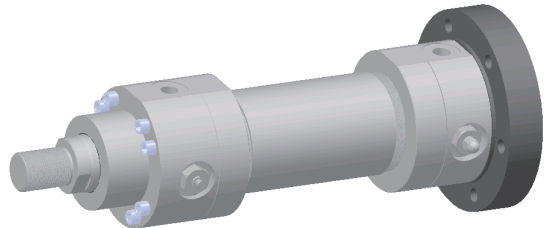
FKS1 MS2



FKS1 MF3



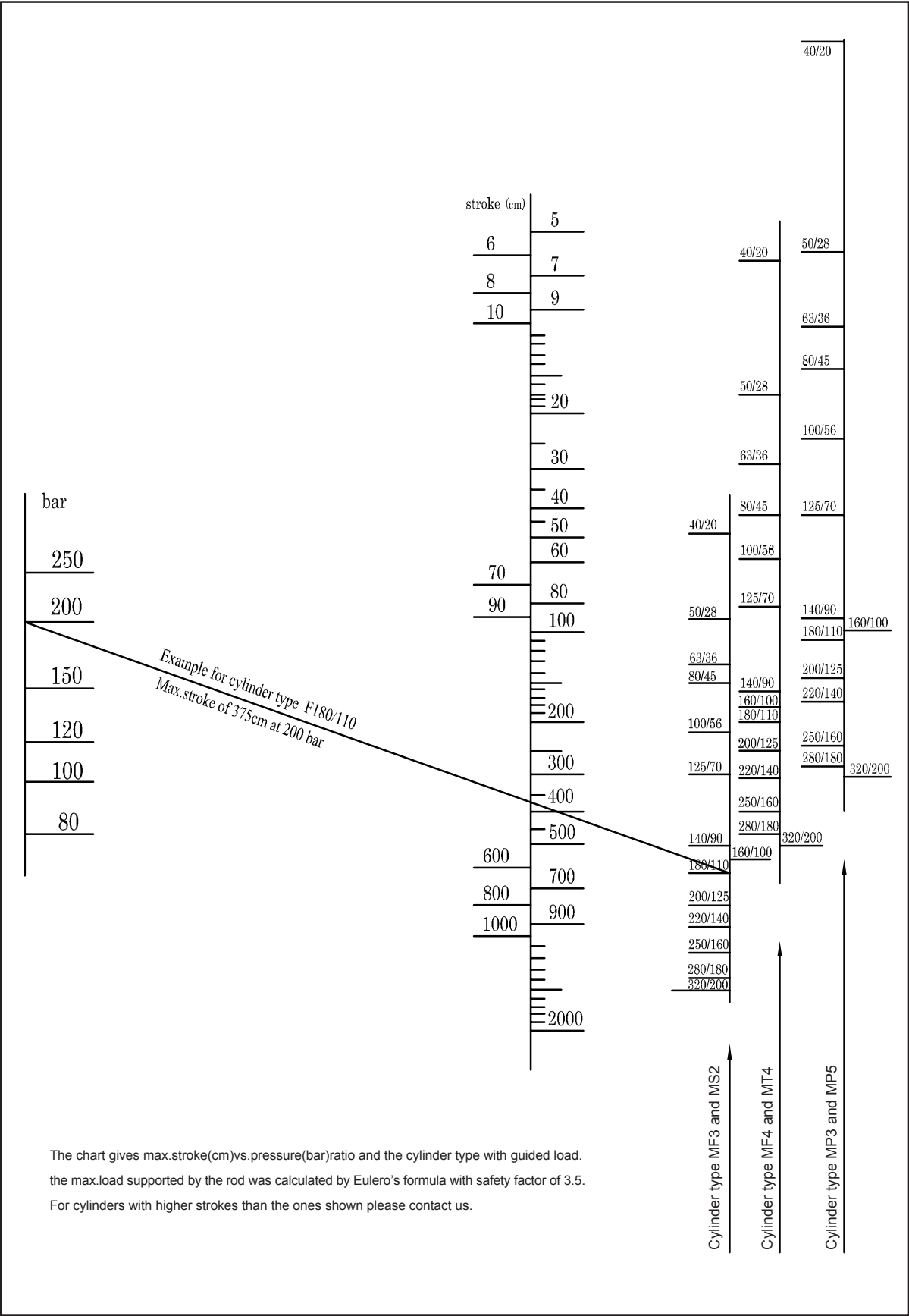
FKS1 MF4



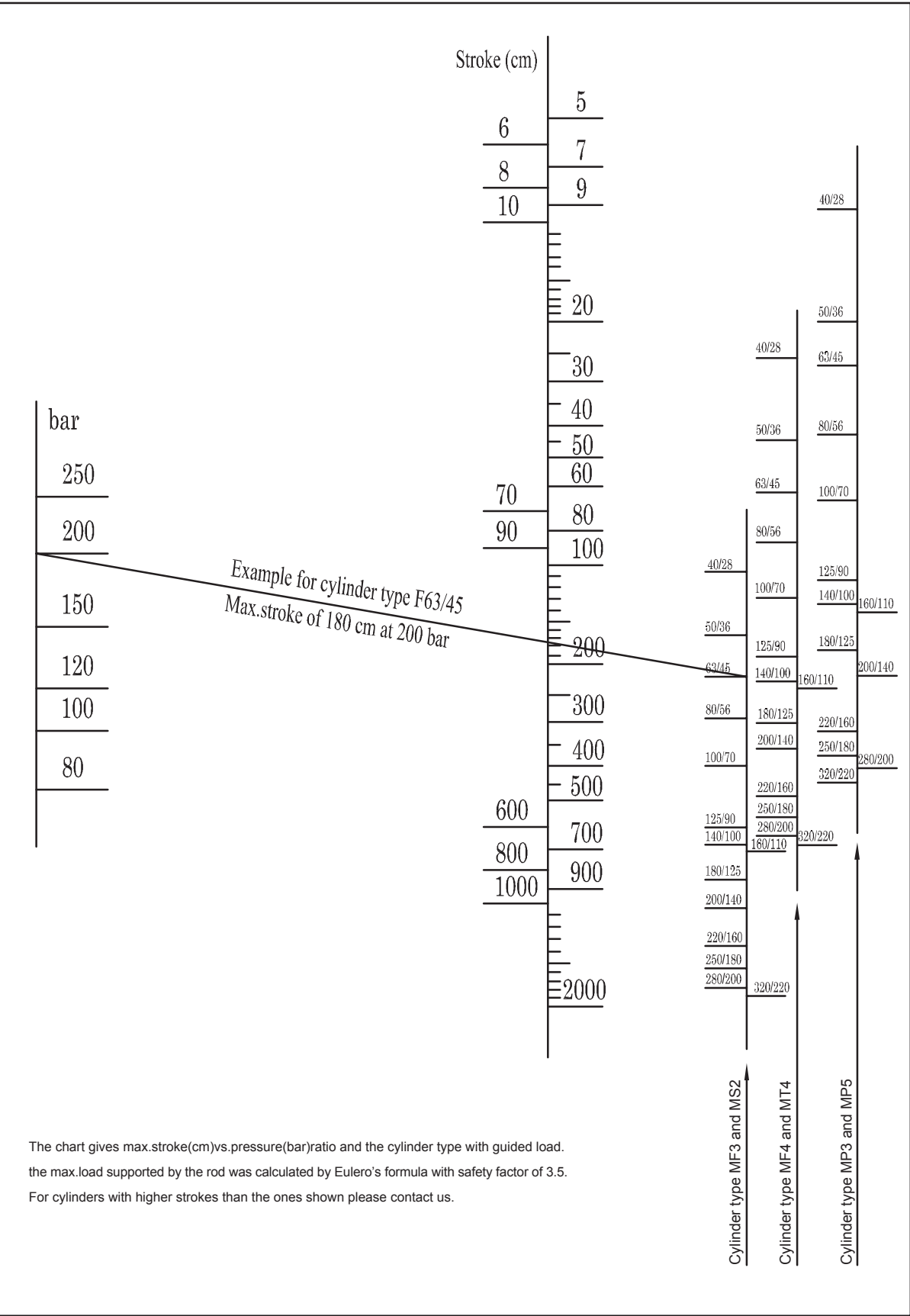
► Output pressure table

Output pressure table KN											
bar	Φ bore (mm)	40		50		63		80		100	
	Φ rod (mm)	20	28	28	36	36	45	45	56	56	70
	Piston area cm²	12.56		19.63		31.17		50.26		78.54	
	Ring area cm²	9.42	6.4	13.47	9.45	20.99	15.27	34.36	25.63	53.91	40.06
100	Thrust (KN)	12.56		19.36		31.17		50.26		78.54	
	Tension (KN)	9.42	6.4	13.47	9.45	20.99	15.27	34.36	25.63	53.91	40.06
150	Thrust (KN)	18.84		29.46		46.75		75.40		117.81	
	Tension (KN)	14.13	9.60	20.22	14.19	31.5	22.89	51.54	38.46	80.85	60.09
200	Thrust (KN)	25.12		39.28		62.34		100.54		157.08	
	Tension (KN)	18.84	12.8	26.96	18.92	42	30.52	68.72	51.28	107.8	80.12
250	Thrust (KN)	31.4		49.1		77.9		125.65		196.35	
	Tension (KN)	23.55	16	33.7	23.65	52.5	38.15	85.9	64.1	134.75	100.15
bar	Φ bore (mm)	125		140		160		180		200	
	Φ rod (mm)	70	90	90	100	100	110	110	125	125	140
	Piston area cm²	122.72		153.94		201.06		254.47		314.16	
	Ring area cm²	84.24	59.1	90.32	75.4	122.5	106	159.43	131.75	191.4	160.2
100	Thrust (KN)	122.72		153.94		201.06		254.47		314.16	
	Tension (KN)	84.24	59.1	90.32	75.4	122.5	106	159.43	131.75	191.4	160.2
150	Thrust (KN)	184.05		230.85		301.5		381.70		471.15	
	Tension (KN)	126.3	88.65	135.5	113.1	183.8	159	239.1	197.6	287.1	240.3
200	Thrust (KN)	245.4		307.8		402		508.94		628.2	
	Tension (KN)	168.4	118.2	180.6	150.8	245	212	318.86	263.5	382.8	320.4
250	Thrust (KN)	306.75		384.75		502.5		636.17		785.25	
	Tension (KN)	210.5	147.8	225.8	188.4	306.3	265	398.57	329.37	478.5	400.5

► FKS 1 Hydraulic cylinder max load form

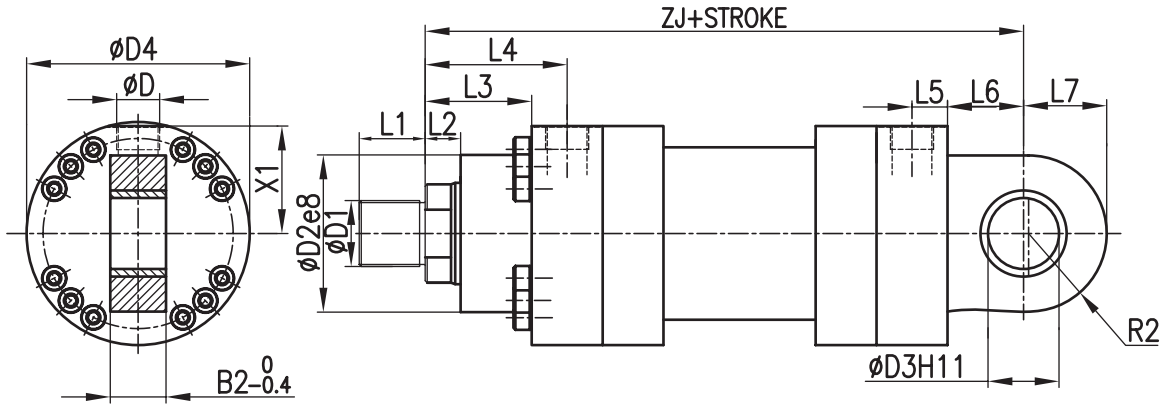


FKS 1 Hydraulic cylinder max load form



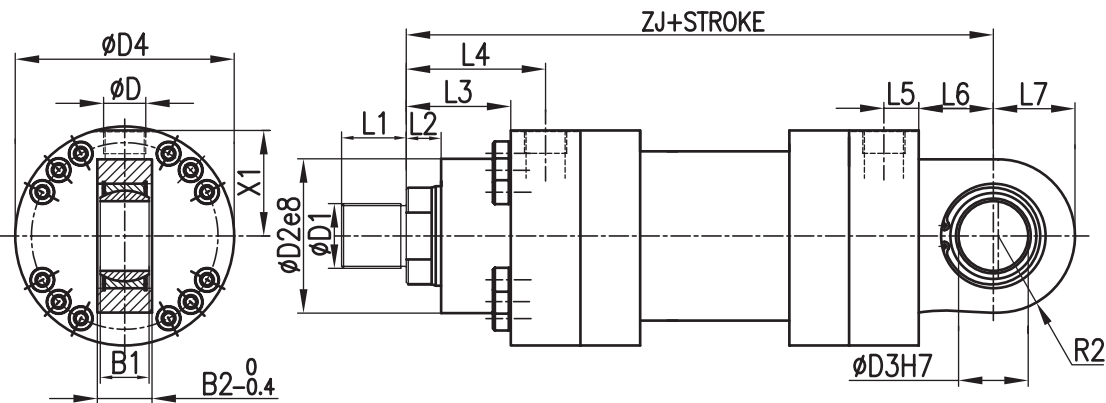
The chart gives max.stroke(cm)vs.pressure(bar)ratio and the cylinder type with guided load.
the max.load supported by the rod was calculated by Eulero's formula with safety factor of 3.5.
For cylinders with higher strokes than the ones shown please contact us.

FKS 1 MP3

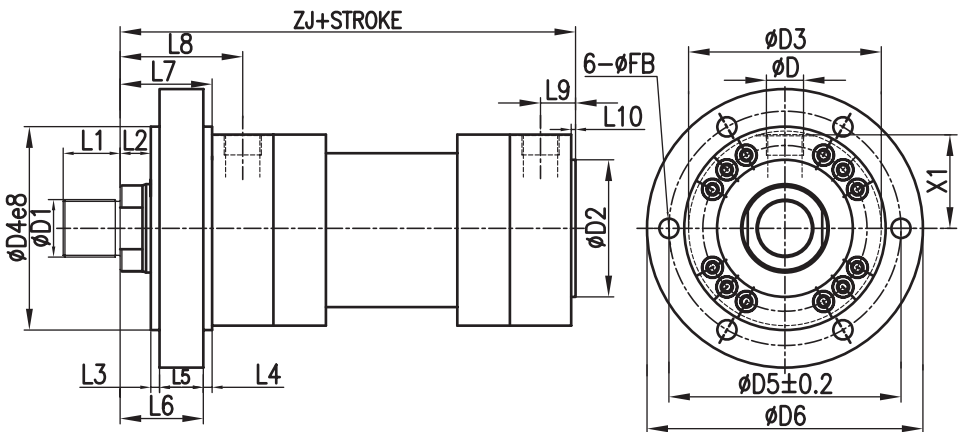


Hydraulic cylinder dimension										
MP3										
Bore	40	50	63	80	100	125	140	160	180	200
Rod	20/28	28/36	36/45	45/56	56/70	70/90	90/100	100/110	110/125	125/140
D	G 1/2"	G 1/2"	G 3/4"	G 3/4"	G 1"	G 1.1/4"	G 1.1/4"	G 1.1/2"	G 1.1/2"	G 1.1/2"
D1	M16x1.5	M22x1.5	M28x1.5	M35x1.5	M45x1.5	M58x1.5	M65x1.5	M80x2	M100x2	M110x2
D2	55	68	75	95	115	135	155	180	200	215
D3	25	30	35	40	50	60	70	80	90	100
D4	86	105	120	140	168	205	225	265	290	310
L1	16	22	28	35	45	58	65	80	100	110
L2	14	18	22	15	30	32	35	40	40	40
L3	54	58	67	65	85	97	105	120	130	135
L4	74	78	90	91	115	132	140	160	170	178
L5	27	29	23	36	30	30	35	40	40	38
L6	31	36	45	60	65	75	75	85	105	120
L7	27.5	32.5	40	50	62.5	70	82	95	113	125
X1	39	49	56	67	81	98	109	128	141	152
ZJ	252	265	302	330	385	447	490	550	610	645
R2	27.5	32.5	40	50	62.5	65	77	88	103	115
B2	23	28	30	36	40	50	55	60	65	70

FKS 1 MP5



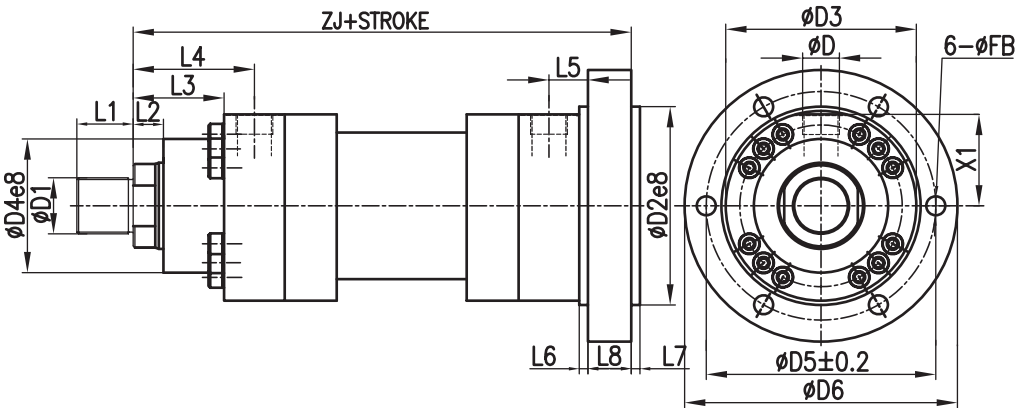
FKS 1 MF3



Hydraulic cylinder dimension										
MP5										
Bore	40	50	63	80	100	125	140	160	180	200
Rod	20/28	28/36	36/45	45/56	56/70	70/90	90/100	100/110	110/125	125/140
D	G1/2"	G1/2"	G3/4"	G3/4"	G1"	G1.1/4"	G1.1/4"	G1.1/2"	G1.1/2"	G1.1/2"
D1	M16x1.5	M22x1.5	M28x1.5	M35x1.5	M45x1.5	M58x1.5	M65x1.5	M80x2	M100x2	M110x2
D2	55	68	75	95	115	135	155	180	200	215
D3	25	30	35	40	50	60	70	80	90	100
D4	86	105	120	140	168	205	225	265	290	310
L1	16	22	28	35	45	58	65	80	100	110
L2	14	18	22	15	30	32	35	40	40	40
L3	54	58	67	65	85	97	105	120	130	135
L4	74	78	90	91	115	132	140	160	170	178
L5	27	29	23	36	30	30	35	40	40	38
L6	31	36	45	60	65	75	75	85	105	120
L7	27.5	32.5	40	50	62.5	70	82	95	113	125
X1	39	49	56	67	81	98	109	128	141	152
ZJ	252	265	302	330	385	447	490	550	610	645
R2	27.5	32.5	40	50	62.5	65	77	88	103	115
B1	20	22	25	28	35	44	49	55	60	70
B2	23	28	30	36	40	50	55	60	65	70

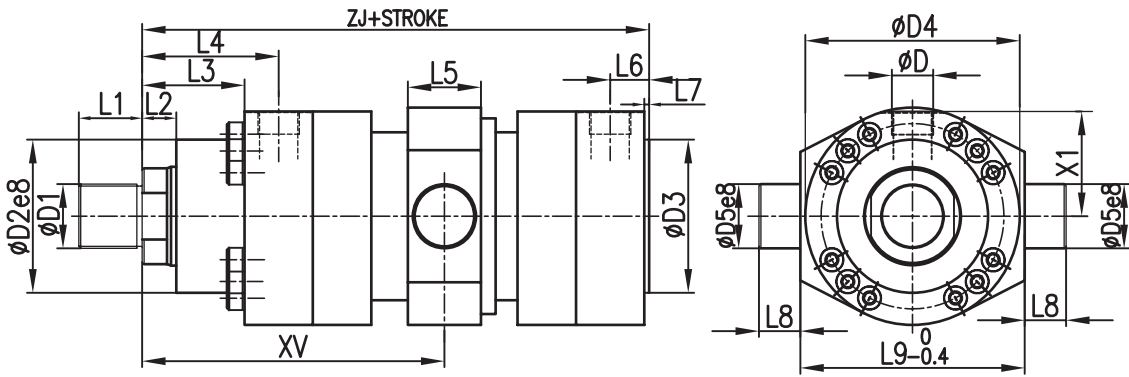
Hydraulic cylinder dimension										
MF3										
Bore	40	50	63	80	100	125	140	160	180	200
Rod	20/28	28/36	36/45	45/56	56/70	70/90	90/100	100/110	110/125	125/140
D	G 1/2"	G 1/2"	G 3/4"	G 3/4"	G 1"	G1.1/4"	G1.1/4"	G1.1/2"	G1.1/2"	G1.1/2"
D1	M16x1.5	M22x1.5	M28x1.5	M35x1.5	M45x1.5	M58x1.5	M65x1.5	M80x2	M100x2	M110x2
D2	55	68	75	95	115	135	155	180	200	215
D3	86	105	120	140	168	205	225	265	290	310
D4	90	110	130	145	175	210	230	275	300	320
D5	108	130	155	170	205	245	265	325	360	375
D6	130	160	185	200	245	295	315	385	420	445
L1	16	22	28	35	45	58	65	80	100	110
L2	14	18	22	15	30	32	35	40	40	40
L3	5	5	5	5	5	5	10	10	10	10
L4	5	5	5	10	10	10	10	10	10	10
L5	30	30	35	35	45	50	50	60	70	75
L6	49	53	62	55	80	87	95	110	120	125
L7	54	58	67	65	85	97	105	120	130	135
L8	74	78	90	91	115	132	140	160	170	178
L9	32	34	28	41	35	35	40	50	50	48
L10	5	5	5	5	5	5	5	10	10	10
X1	39	49	56	67	81	98	109	128	141	152
ZJ	226	234	262	275	325	377	420	475	515	535
FB	9.5	11.5	14	14	18	22	22	28	30	33

FKS 1 MF4



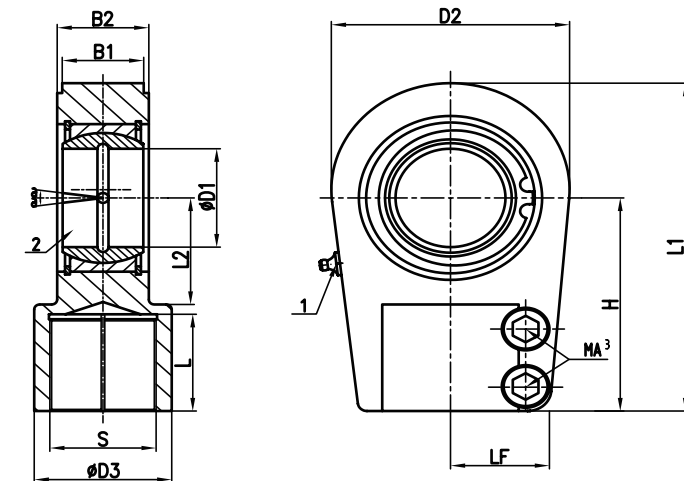
Hydraulic cylinder dimension										
MF4										
Bore	40	50	63	80	100	125	140	160	180	200
Rod	20/28	28/36	36/45	45/56	56/70	70/90	90/100	100/110	110/125	125/140
D	G1/2"	G1/2"	G3/3"	G3/3"	G1"	G1.1/4"	G1.1/4"	G1.1/2"	G1.1/2"	G1.1/2"
D1	M16x1.5	M22x1.5	M28x1.5	M35x1.5	M45x1.5	M58x1.5	M65x1.5	M80x2	M100x2	M110x2
D2	90	110	130	145	175	210	230	275	300	320
D3	86	105	120	140	168	205	225	265	290	310
D4	55	68	75	95	115	135	155	180	200	215
D5	108	130	155	170	205	245	265	325	360	375
D6	130	160	185	200	245	295	315	385	420	445
L1	16	22	28	35	45	58	65	80	100	110
L2	14	18	22	15	30	32	35	40	40	40
L3	54	58	67	65	85	97	105	120	130	135
L4	74	78	90	91	115	132	140	160	170	178
L5	32	34	28	46	40	40	45	50	50	48
L6	5	5	5	10	10	10	10	10	10	10
L7	5	5	5	5	5	5	10	10	10	10
L8	30	30	35	35	45	50	50	60	70	75
X1	39	49	56	67	81	98	109	128	141	152
ZJ	256	264	297	315	375	432	475	535	585	610
FB	9.5	11.5	14	14	18	22	22	28	30	33

FKS 1 MT4



Hydraulic cylinder dimension										
MT4										
Bore	40	50	63	80	100	125	140	160	180	200
Rod	20/28	28/36	36/45	45/56	56/70	70/90	90/100	100/110	110/125	125/140
D	G1/2"	G1/2"	G3/4"	G3/4"	G1"	G1.1/4"	G1.1/4"	G1.1/2"	G1.1/2"	G1.1/2"
D1	M16x1.5	M22x1.5	M28x1.5	M35x15	M45x1.5	M58x1.5	M65x1.5	M80x2	M100x2	M110x2
D2	55	68	75	95	115	135	155	180	200	215
D3	55	68	75	95	115	135	155	180	200	215
D4	86	105	120	140	168	205	225	265	290	310
D5	30	30	35	40	50	60	65	75	85	90
L1	16	22	28	35	45	58	65	80	100	110
L2	14	18	22	15	30	32	35	40	40	40
L3	54	58	67	65	85	97	105	120	130	135
L4	74	78	90	91	115	132	140	160	170	178
L5	35	35	40	45	55	65	75	85	95	100
L6	32	34	28	41	35	35	40	50	50	48
L7	5	5	5	5	5	5	5	10	10	10
L8	27.5	20	20	25	30	40	42.5	52.5	55	55
L9	95	115	130	145	175	210	230	275	300	320
X1	39	49	56	67	81	98	109	128	141	152
ZJ	226	234	262	275	325	377	420	475	515	535
XV	≥131	≥140	≥160	≥170	≥210	≥245	≥272	≥306	≥336	≥352

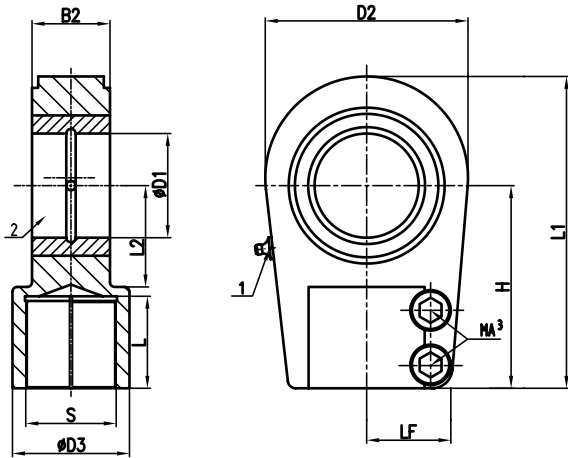
►► Round self-aligning clevis GHR-K



Bore	Type	D1	B1	H	S	L	D2	D3	LF	B2	L1	L2	a	MA(3)	m(4)
Φ										- 0.4				Nm	kg
40	GIHR-K 25	25	20	50	M16x1.5	17	56	25	20	23	80	25	8°	9	0.43
50	GIHR-K 30	30	22	60	M22x1.5	23	64	32	22	28	94	30	7°	20	0.7
63	GIHR-K 35	35	25	70	M28x1.5	29	78	40	27	30	112	40	7°	20	1.1
80	GIHR-K 40	40	28	85	M35x1.5	36	94	49	35	35	135	45	7°	40	2
100	GIHR-K 50	50	35	105	M45x1.5	46	116	61	42	40	168	55	7°	80	3.3
125	GIHR-K 60	60	44	130	M58x1.5	59	130	75	54	50	200	65	7°	160	5.5
140	GIHR-K 70	70	49	150	M65x1.5	66	154	86	57	55	232	75	6°	160	8.6
160	GIHR-K 80	80	55	170	M80x2	81	176	102	66	60	265	80	6°	160	12.2
180	GIHR-K 90	90	60	210	M100x2	101	206	124	76	65	323	90	6°	160	21.5
200	GIHR-K100	100	70	235	M110x2	111	230	138	85	70	360	105	7°	300	27.5

- 1) Cone head grease nipple from A to DIN 71412
- 2) Associated pin $\Phi m6$. Associated pin $\Phi j6$ with
Maintenance free self-aligning clevis
- (3) tightening torque
The self-aligning clevis must always be screwed to the piston rod thread stop. Subsequently, the clamping screws have to be tightened to the specified torque.
- (4) Weight of the self-aligning

► Plain clevis BK

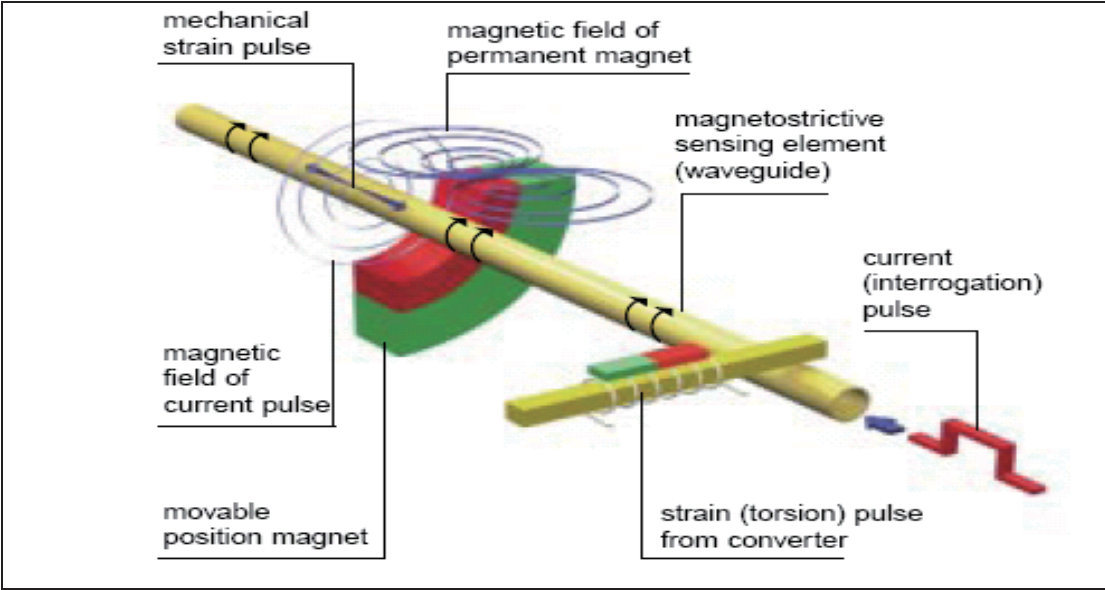


Bore Φ	Type	D1 H11	H	S	L	D2	D3	LF	B2	L1	L2	MA(3) Nm	m(4) kg
40	BK25	25	50	M16x1.5	17	56	25	20	23	80	25	9	0.43
50	BK30	30	60	M22x1.5	23	64	32	22	28	94	30	20	0.7
63	BK35	35	70	M28x1.5	29	78	40	27	30	112	40	20	1.1
80	BK40	40	85	M35x1.5	36	94	49	35	35	135	45	40	2
100	BK50	50	105	M45x1.5	46	116	61	42	40	168	55	80	3.3
125	BK60	60	130	M58x1.5	59	130	75	54	50	200	65	160	5.5
140	BK70	70	150	M65x1.5	66	154	86	57	55	232	75	160	8.6
160	BK80	80	170	M80x2	81	176	102	66	60	265	80	160	12.2
180	BK90	90	210	M100x2	101	206	124	76	65	323	90	160	21.5
200	BK100	100	235	M110x2	111	230	138	85	70	360	105	300	27.5

► Notes

- (1) Cone head grease nipple from A to DIN 71412
- (2) Associated pin Φm6.Associated pin Φj6 with
- (3) tightening torque
The self-aligning clevis must always be screwed to the piston rod thread stop.Subsequently,the clamping screws have to be tightened to be tightened to the specified torque.
- (4) Weight of the self-aligning clevis

► Hydraulic cylinder magnetostrictive displacement sensor

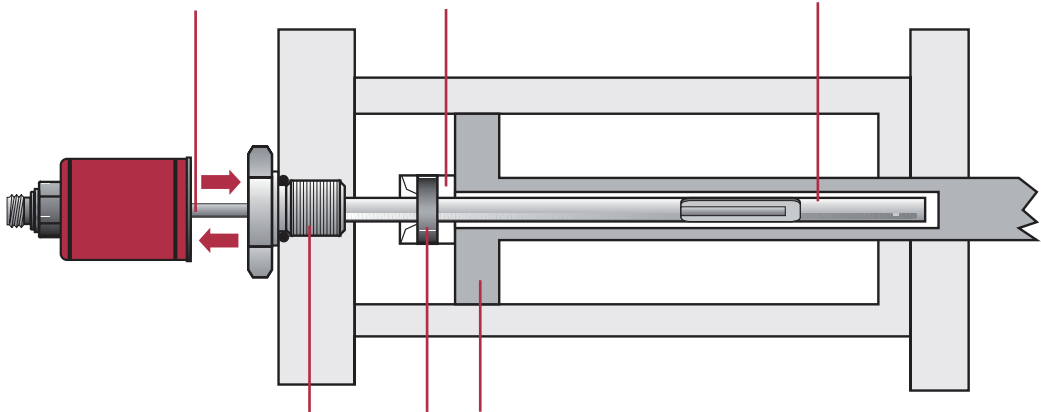


► Magnetostrictive Theory

Inside the sensor a tensional strain pulse is induced in a specially designed magnetostrictive waveguide by the momentary interaction of two magnetic fields. One field comes from a moving magnet, which passes along the outside of the transducer tube, and the other field is generated from a current pulse which is applied to the waveguide.

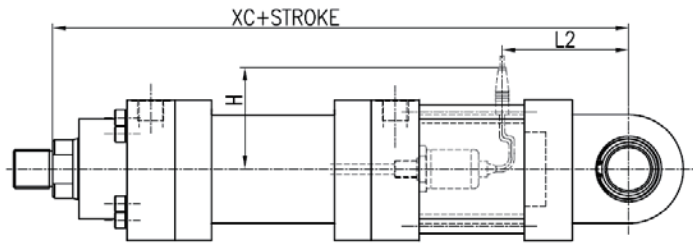
The interaction between these two magnetic fields produces a strain pulse which travels at sonic speed along the sensor waveguide, until the pulse is detected at the head of the transducer. The position of the moving magnet is precisely determined by measuring the elapsed time between the application of the current pulse and the arrival of the strain pulse.

► Internal liner position sensor sketch

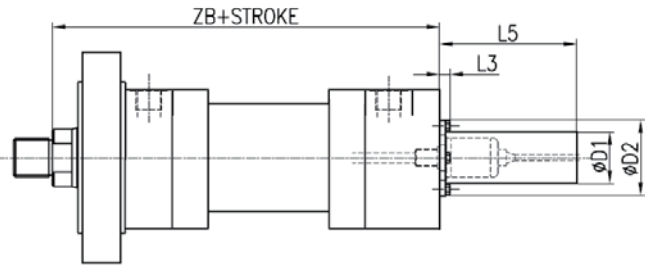


FKS 1 Internal liner position sensor measuring system

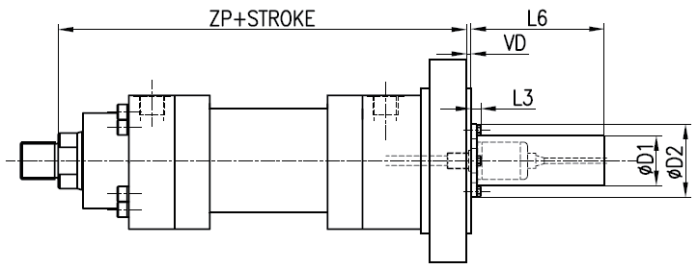
MP3, MP5



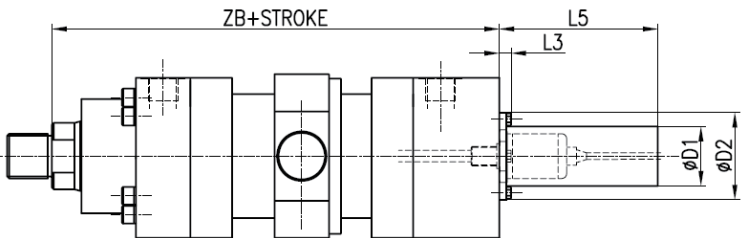
MF3



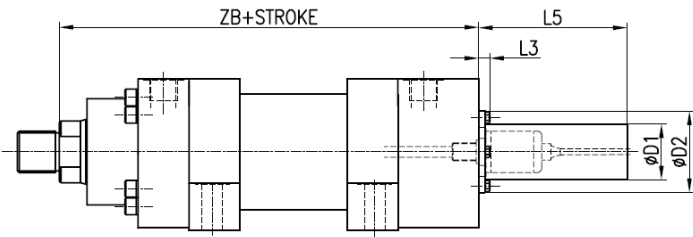
MF4



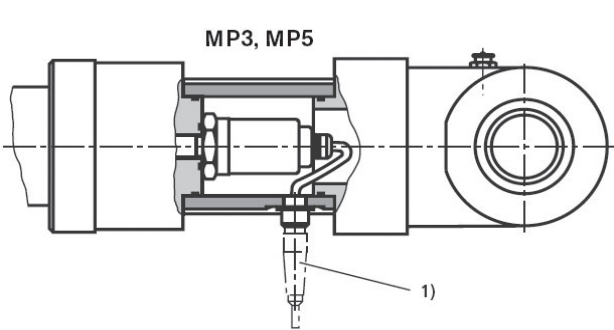
MT4



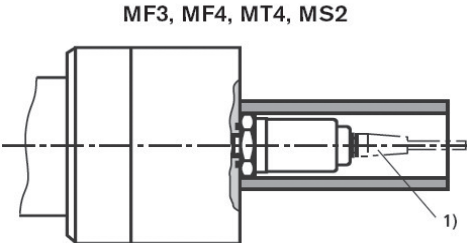
MS2



FKS 1 Internal liner position sensor measuring system
Mounting types



1) For Analogue output:
6-pin Amphenol-
Plug-in connector material no: 00072231
(Plug-in connector is not included)

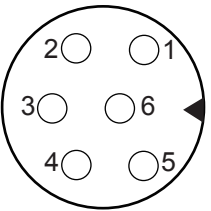


1) For Digital output
7-pin Amphenol-
Plug-in connector material no: 00072231
(Plug-in connector is not included)



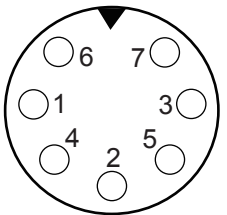
Connection allocation

Pos.measuring system (Analogue output)
Component plug (viewed on the pin side)



pin	cable	signal/current	signal/voltage
1	Grey	4-20mA	0 -10 V
2	Pink	Gnd	Gnd
3	Yellow	n.c	10-0 V
4	Green	n.c	Gnd
5	Brown	+24V DC(±25%)	+24V DC(±25%)
6	White	Gnd	Gnd

Pos.measuring system (digital output)
Component plug (viewed on the pin side)



pin	cable	signal/SSI
1	Grey	Date (-)
2	Pink	Date (+)
3	Yellow	Tact (+)
4	Green	Tact (-)
5	Brown	+24V DC(+20%/-15%)
6	White	0 V
7	—	n. c

FKS 1 Internal liner position sensor measuring system

Dimensions (in mm)

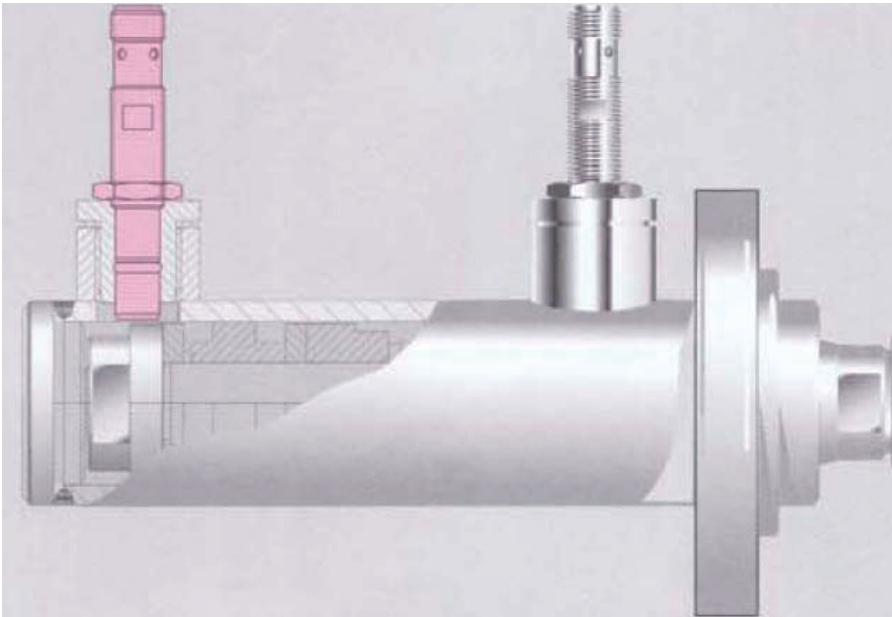
Bore	Rod	Stroke Max	XC	H	ZB	ZP	VD	L2	L3	L5	L6	D1	D2
Φ	Φ											Φ	Φ
40	28	700	417	115	235	265	5	98	12	160	160	60	88
50	28 36	800	430	115	243	274	5	103	12	160	160	60	88
63	36 45	1100	480	130	287	310	5	116	12	160	160	60	88
80	45 56	1400	515	125	312	330	5	132	12	160	137	60	88
100	56 70	1700	560	135	352	390	5	145	12	160	117	60	88
125	70 90	2000	620	145	392	432	5	172	12	160	115	60	88
140	90 100	2300	665	155	430	475	10	182	12	160	105	60	88
160	100 110	2600	720	165	475	535	10	200	12	160	90	60	88
180	110 125	3000	775	175	515	585	10	222	12	160	80	60	88
200	125 140	3000	815	190	535	615	10	237	12	160	70	60	88

With inductive proximity switch
Theory

For non-contact detection of metallic targets at ranges generally under 50mm. Inductive proximity sensors emit an alternating electro-magnetic sensing field. When a metal target enters the sensing field, eddy currents are induced in the target, reducing the signal amplitude and triggering a change of state at the sensor output.

Inductive proximity sensors are used as a reliable end position control for hydraulic cylinders. They are an important element, in providing safety system,inter/lock and other machine functions where signals safety and exactly monitor the position. The nominal pressure is up to 500bar, and with non-contact, also can supplies a wide variety of mounting types. Due to safety reasons the proximity switch is protected against being screwed in too deep. The switching distance can, therefore not be adjusted. As standard the cylinder are fitted with proximity switches on both sides.

Proximity switch sketch



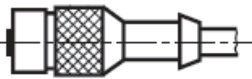
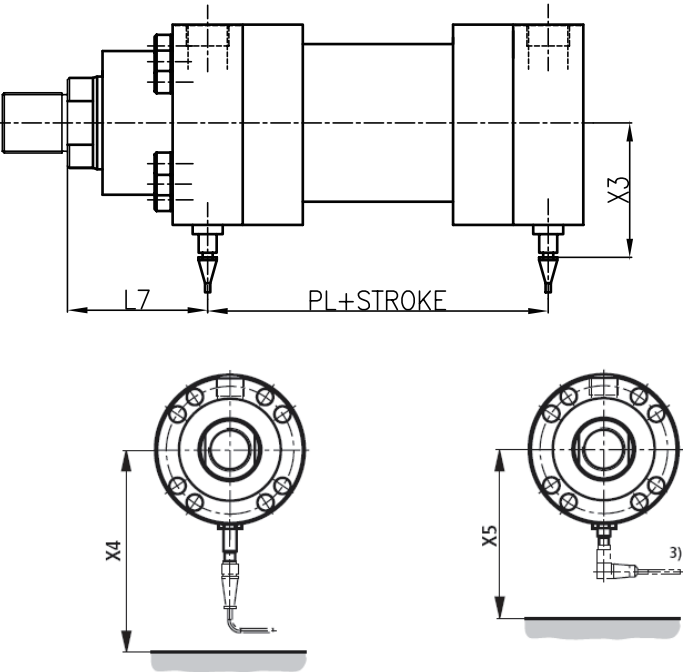
FKS 1 proximity switch

FKS 1 proximity switch

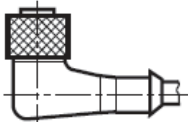
Dimensions (in mm)

Bore Φ	Rod Φ	PL	L7	X3	X4	X5
40	22 28	112	83	94	170	125
50	28 36	110	92	98	175	130
63	36 45	125	104	103	180	135
80	45 56	138	108	108	185	140
100	56 70	161	129	116	195	150
125	70 90	193	141	126	205	160
140	90 100	209	161	146	225	180
160	100 110	228	191	151	230	185
180	110 125	254	204	159	235	190
200	125 140	264	212	166	245	200

Mounting type

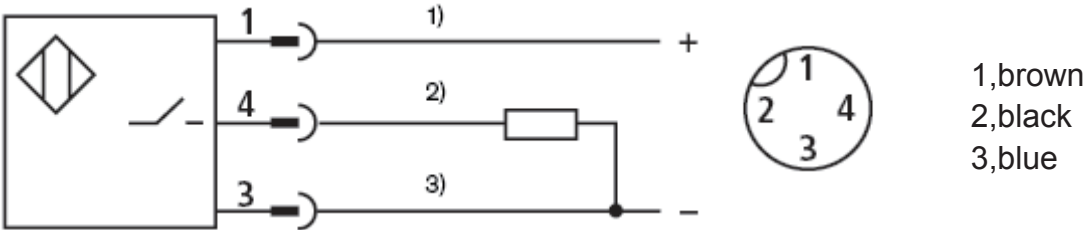


Plug-in connector with 5m cable
Material no: 00026512
(Plug-in connector is not included with scope of supply, has to be ordered separately)



Plug-in connector,angled,with 5m cable
(The orientation of the cable exit is not definable)
Material no: 00021404
(Plug-in connector is not included with scope of supply, has to be ordered separately)

Connection arrangement

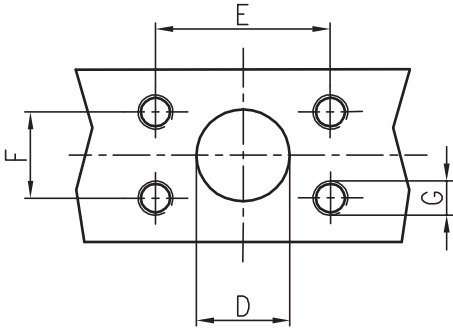


FKS1 Cylinder port dimensions

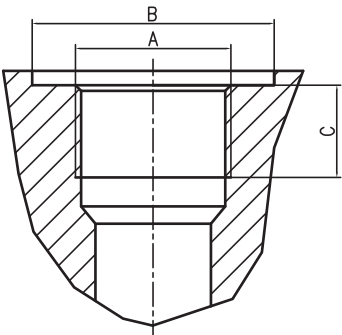
Cylinder port dimensions				
Bore Φ	G	M	S	NPT
40	1/2"	M22x1.5	—	1/2"
50	1/2"	M22x1.5	—	1/2"
63	3/4"	M27x2	—	3/4"
80	3/4"	M27x2	1/2"	3/4"
100	1"	M33x2	1/2"	1"
125	1 1/4"	M42x2	3/4"	1 1/4"
140	1 1/4"	M42x2	1"	1 1/4"
160	1 1/2"	M48x2	1"	1 1/2"
180	1 1/2"	M48x2	1 1/4"	1 1/2"
200	1 1/2"	M48x2	1 1/4"	1 1/2"

Flange connections
ISO 6162(400bar)—SAE (6000PSI)

dimensions	Φ D	E ±0.25	F ±0.25	G
1/2"	13	40.5	18.2	M8
3/4"	19	50.8	23.8	M10
1"	25	57.2	27.8	M12
1 1/4"	32	66.6	31.8	M14



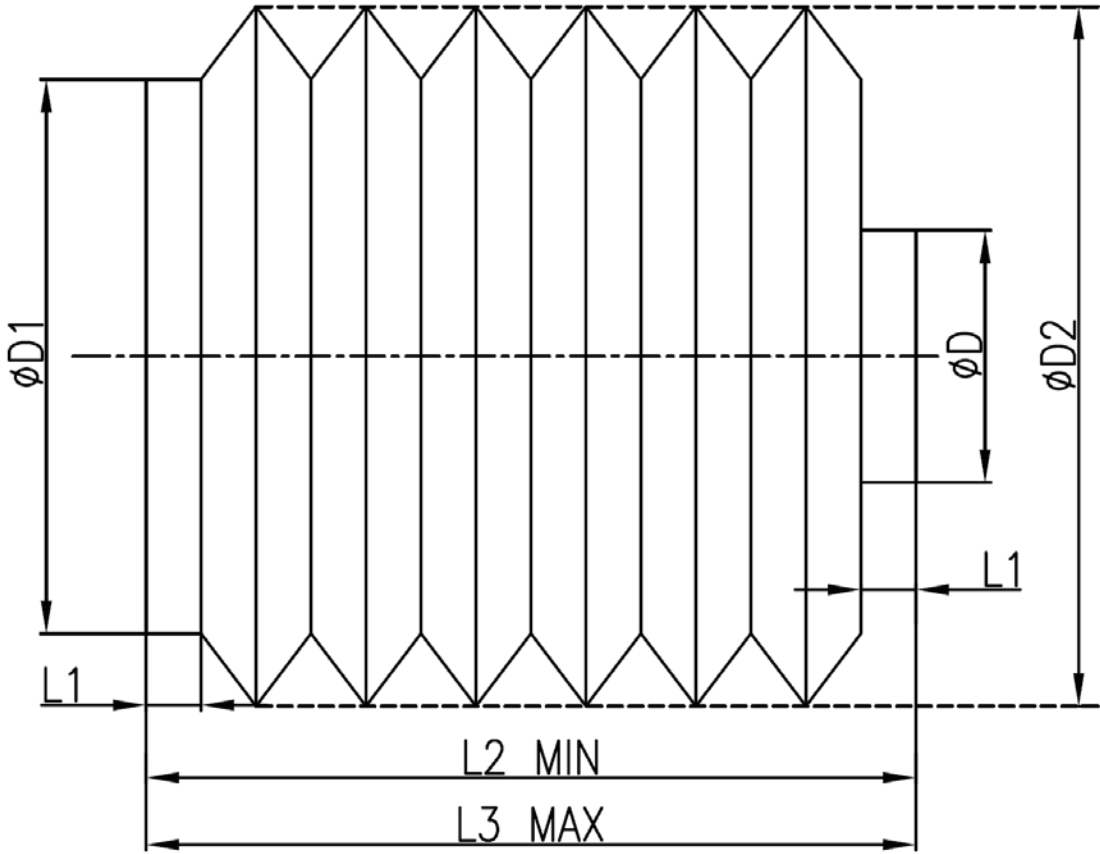
Thread connections



G					
A	G 1/2"	G 3/4"	G 1"	G 1 1/4"	G 1 1/2"
B MAX	34	42	47	58	65
C MIN	14	16	18	20	22

M					
A	M22x1.5	M27x2	M33x2	M42x2	M48x2
B MAX	34	42	47	58	65
C MIN	14	16	18	20	22

Cylinder dust jacket



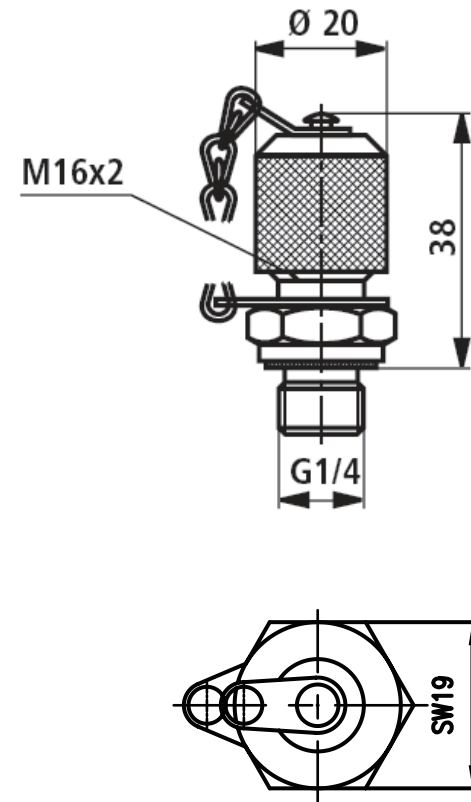
Notes

When hydraulic cylinder work under severe working conditions, should be supplied piston rod dust jacke, so that it can protect against dust , water, oil, emulsion polluted and other chemicals pollution.

Feature: Stretch-proof.Not-deformation, Impact resistance, Corrosion-resistant.
Long service life.

Connection type: Clamp linkage on both sides.

►► Cylinder Coupling



►► Notes

- For pressure measuring or bleeding.
- For installation in the measuring/bleed port.
- Coupling with check valve function ,i.e.
- It can also be connected when pressures present.

►► Scope of supply

- Coupling AB-E20-11/K1
- With NBR seal
- Material no : 00009090
- Coupling AB-E20-11/K1V
- With FKM seal
- Material no : 00001264

►► Use and Maintenance Manual

1. Overview

Before mounting the hydraulic cylinder, we should refer the criterion as followed.

- The content of sample
- German standard DIN 24 346
- International standard ISO 4413

2. Mounting

2.1 Before we mount the cylinder into the hydraulic system, make sure that the technical parameter in the rating plate should be compared with the ordered.

Cleanliness requirements

- Hydraulic cylinder's mounting position and the surrounded environment should keep clean.
- Oil tank should be closed in order that protest the external pollutions..
- The dirt in the pipeline and oil tank should be cleaning before mounting.
- Hot bending and welding pipeline should be acid cleaning ,second flushing and fill oil.
- Use special flannel or paper when cleaning.
- Linen thread is not permitted using.

2.2 Mounting position

Variety

2.3 Electronical control connection

- Internal linear displacement sensor
 - Inductive proximity switch
- The connection chart refer to the relevant sample.

3. Put into operation

3.1 Hydraulic oil

- Mineral oil DIN 51 524 (HL ; HLP; HFA)
Recommend using NBR seal material.
- Phosphate ester (HFD-R)
Recommend using FKM seal material.
- pay attention to the temperature and pressure range, can not exceed the maximum use temperature.
- Before use the cylinder, check the used oil whether it is accord with the cylinder allowed.

► Plain clevis BK

- We suggest contacting us when you use other mineral oils.

3.2 Oil filter

- Reliable is the oil filter can increase the service life of hydraulic cylinders, hydraulic oil cleanliness according to the maximum allowable NAS 1638 level of 10 standards.
- We therefore recommend as filtration element a filter with a minimum retention rate of $\beta_{10} \geq 75$.

3.3 Exhaust

- In the no-load pressure, release the end caps and the head screws on the exhaust.
- Exhaust.
- When the outflow of oil no longer contains air bubbles, handle the needle and the nut.
- Lock the needle and tighten the nut.

4. Maintenance

4.1 Apart from regular maintenance, such as add lubricating oil in the swing axle, link point, shaft pin, etc. The hydraulic cylinder needn't have to maintain.

4.2 Check the cylinder's seals condition regularly.

4.3 Replace the seals.

The cylinder dynamic seals are wearing parts, when the internal leakage and external leakage in excess of the allowable values, you'd better sent hydraulic cylinder to our factories, so that we can replace the seals at the same time we can check the guide bushings.

5. Storing

5.1 The requirement of the warehouse.

- The warehouse should be dry, clean, non-corrosive substance and water vapor.

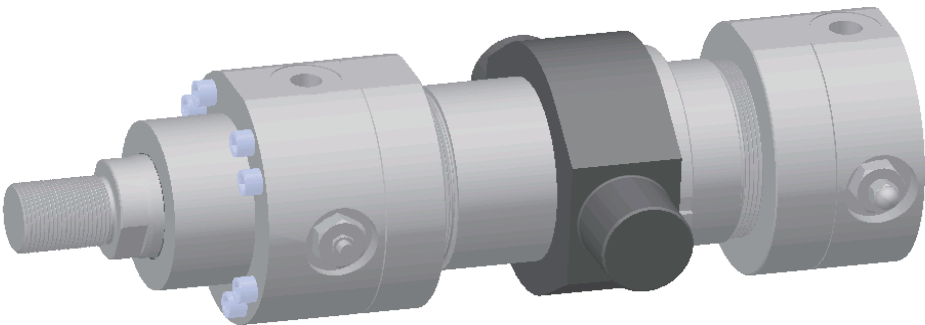
5.2 If the storage period of more than 6 months:

- Hydraulic cylinder will be filled with anti-corrosion oil, and sealed.

Hydraulic Cylinder

Type FKS2

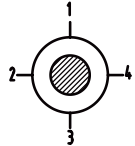
Nominal pressure: 250 bar (25Mpa)



Content	Page
Selection of cylinder.....	2
Spare parts	3
Mounting type overview.....	4
Output pressure table	5
Max load form	6
Main dimensions.....	8
Self-aligning clevis	14
Position sensor.....	15
Proximity switch	19
Oil port dimensions.....	22
Dust jacket	23
Coupling	24
Use and Maintenance Manual	25

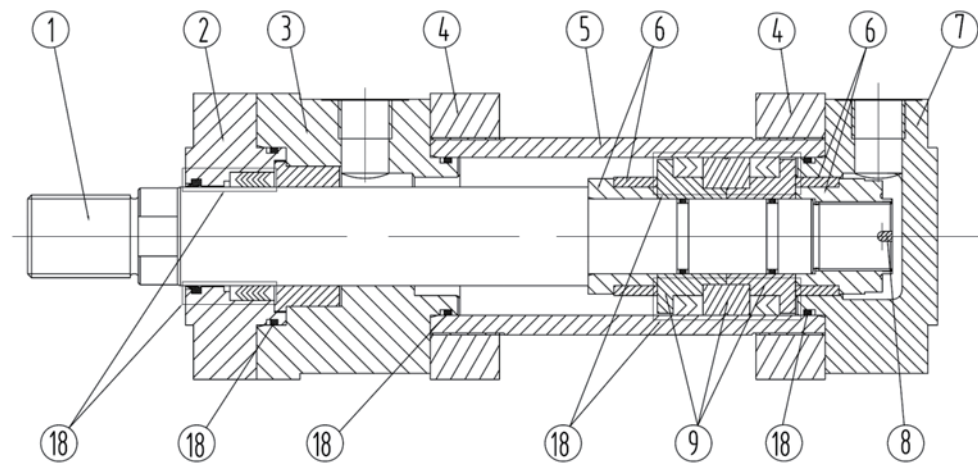
► FKS 2Hydraulic cylinder selection

	FKS	2	63	45	400	MT4	A	FV	M	2	H	E	C	T	D	
Double acting																Option 2
= FKS																W= Without option
Serious= 2																C = Analogue output 4—20 mA
Piston Φ (50—200mm)																F = Analogue output 0—10 V
Piston rod Φ (32—140mm)																D = Digital output SSI
Stroke (mm)																V = Entertrunion Displacement XV(mm)
Mounting types																Y = Enter piston rod Extension LY(mm)
Self-aligning at base																X = Other special
Self-aligning at base																Option 1
Round flange at head																W= Without option
Round flange at base																T= Pos. measuring system
Intermediate trunion																S= Inductive proximity switch
Foot mounting																P= Piston rod dust jacket
Design principle																C= Coupling
Head and rear flanged																X= Other
Head flanged and rear welded																Piston rod version
Seal version																C = Hard chromium plate
V combined seal (NBR)																H = Hardened and hard chromium plate
V combined seal (NBR)																N = Nickel plate and hard chromium plate
Connection port																S = Stainless steel chromium plate
Pipe thread to ISO																X = Other
Metric thread to ISO																End position cushioning
NPT thread																V = Without
Flange hole pattern to ISO 6162																D = Self-regulation both sides
Other																K = Rear end self-regulation
Port position at head and rear																S = Head end self-regulation
View on piston rod																E = Adjustable both sides
																Piston rod type
																G = Thread for self-aligning clevis GIHR-K
																H = With mounted self-aligning clevis GIHR-K
																X = Other

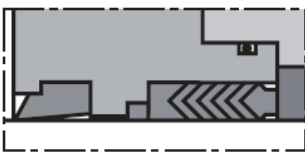


Order example: FKS2—63/45/400MT4AFVM2HECWV, XV=300 mm

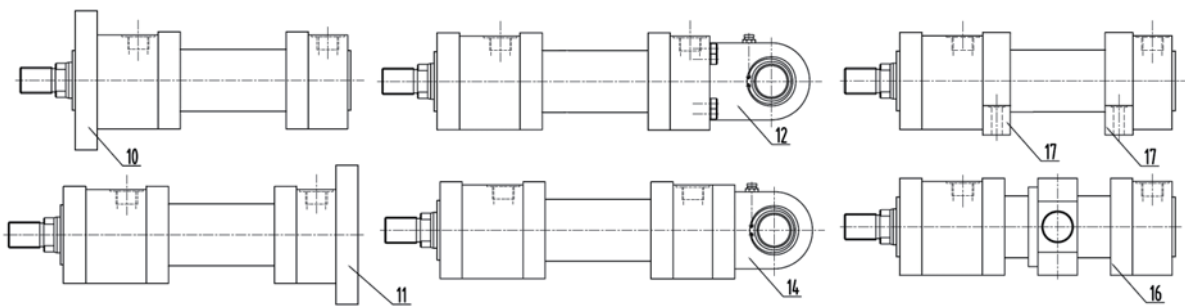
FKS2 Spare parts form



Piston rod seal
V-combined seal ring



Piston
V-combined seal ring

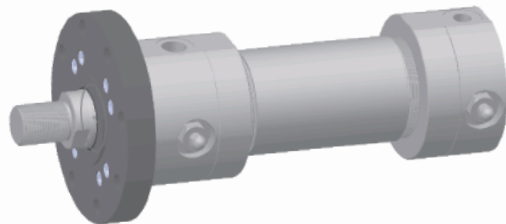


- | | | | |
|--------------------|----------------------|----------------------|------------------|
| 1. Piston rod | 2. Front cap | 3. Head | 4. Flange |
| 5. Barrier | 6. Cushioning bush | 7. Rear | 8. Set screw |
| 9. Separate piston | 10. Round flange MF3 | 11. Round flange MF4 | 12. Rear MP5 |
| 13. Rear MP6 | 14. Rear MP6 | 15. Trunnion MT4 | 16. Trunnion MT4 |
| 17. Foot MS2 | 18. Seal kits | | |

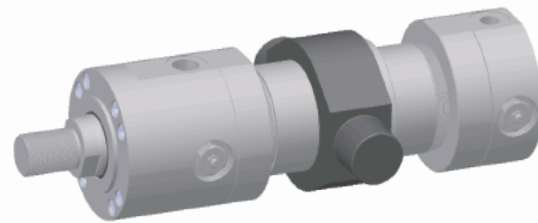
Dust ring Wiper rod seal Piston seal O-ring Guide bush

FKS2 Mounting type overview

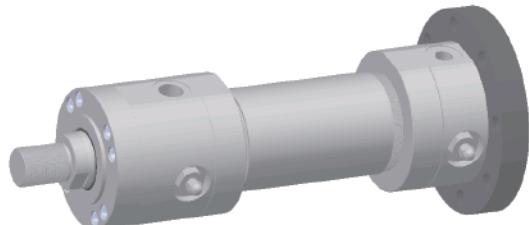
FKS2 MF3



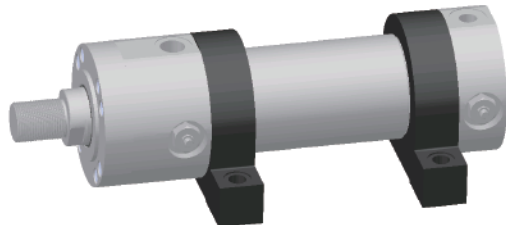
FKS2 MT4



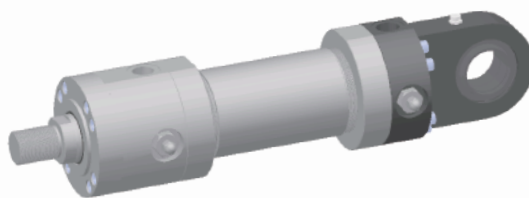
FKS2 MF4



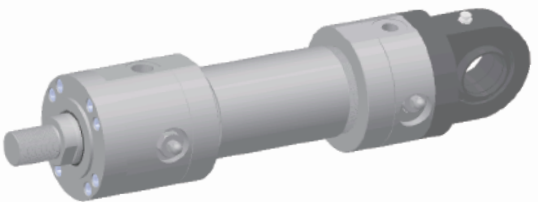
FKS2 MS2



FKS2 MP5



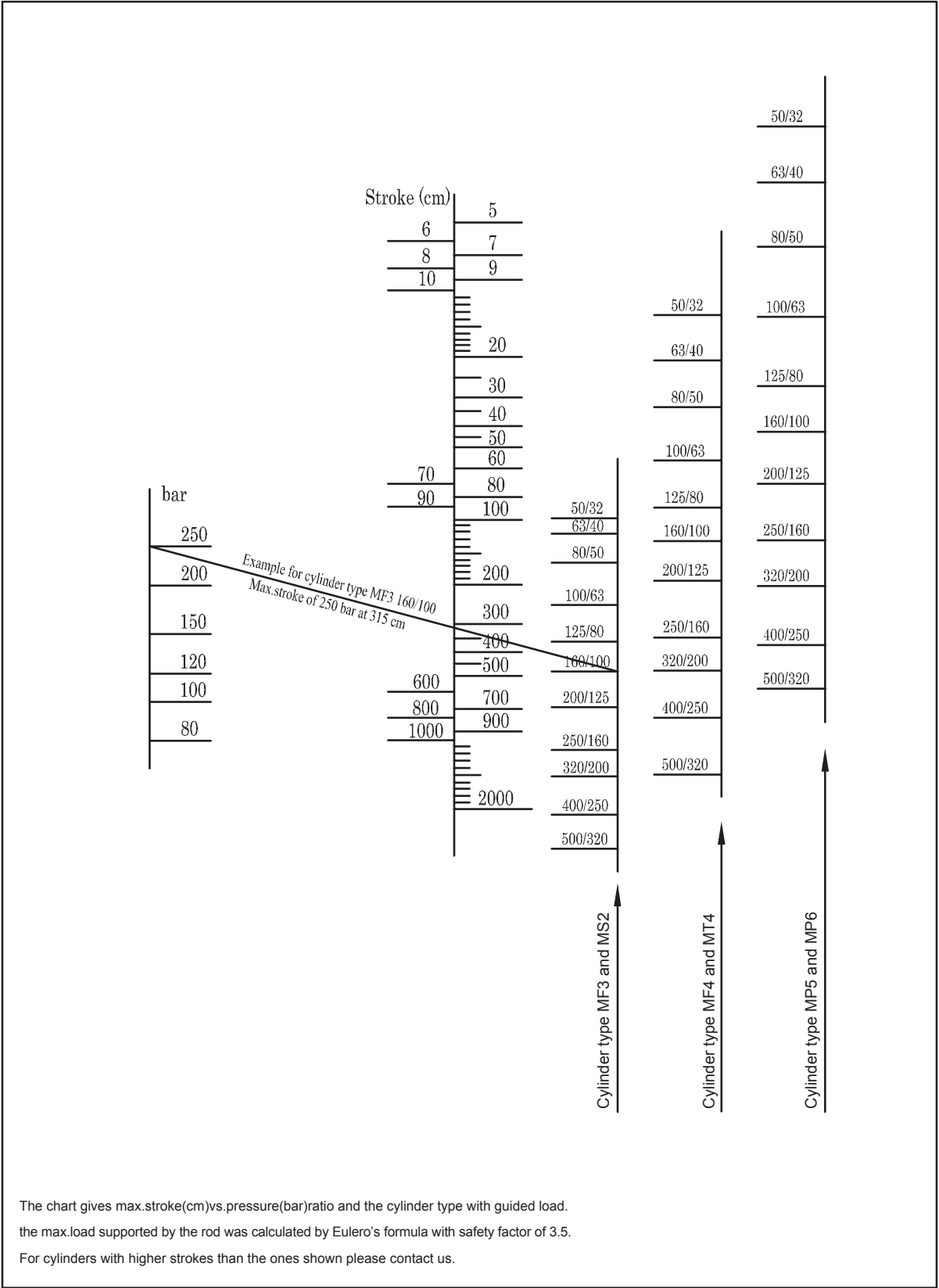
FKS2 MP6



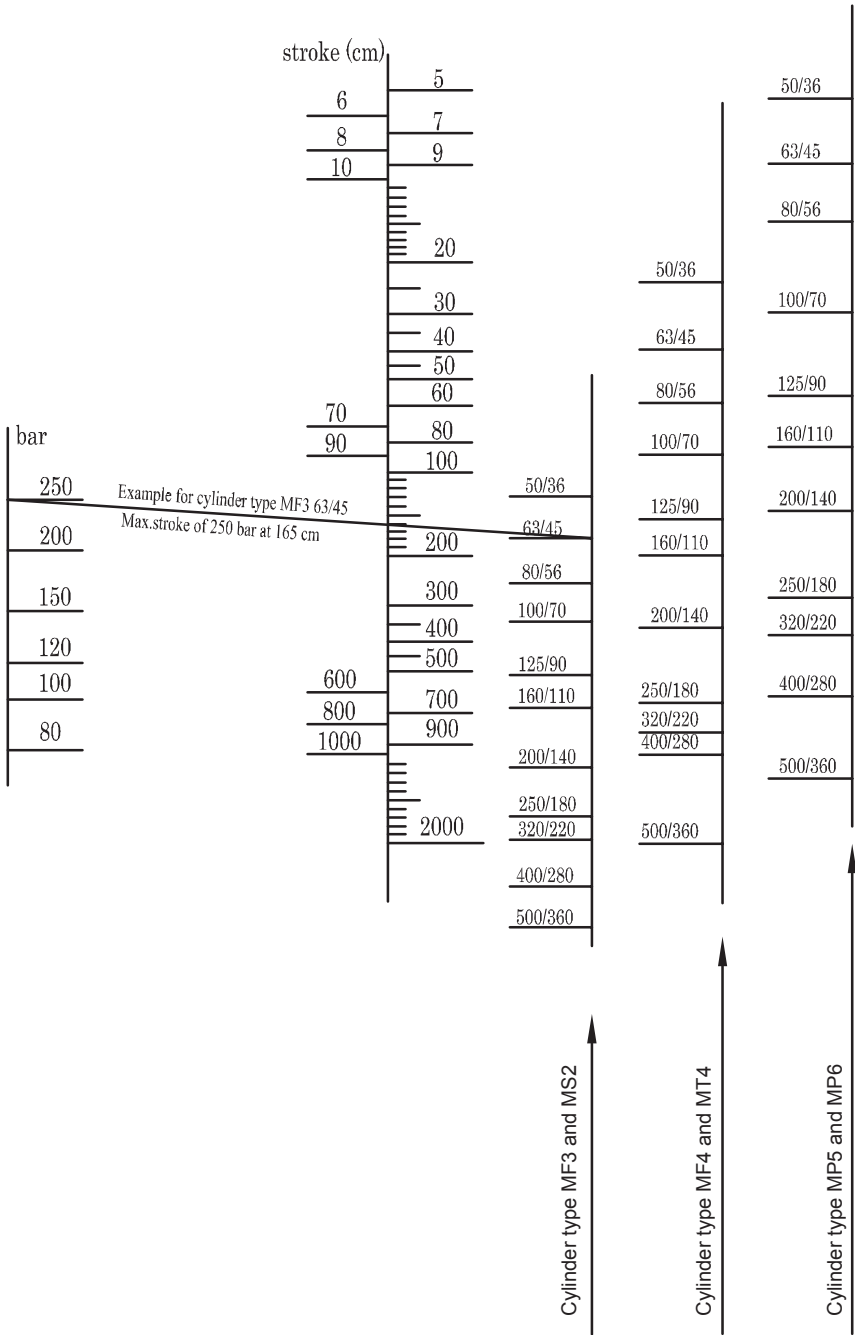
►► Output pressure table

Output pressure table KN											
bar	Φ bore (mm)	50		63		80		100		125	
	Φ rod (mm)	32	36	40	45	50	56	63	70	80	90
	Piston area cm²	19.64		31.17		50.26		78.54		122.72	
	Ring area cm²	11.59	9.45	18.6	15.27	30.62	25.63	47.36	40.06	72.45	59.1
100	Thrust (KN)	19.27		30.58		49.3		77.05		120.39	
	Tension (KN)	11.36	9.27	18.25	14.97	30.04	25.14	46.46	39.29	71.07	57.98
150	Thrust (KN)	28.9		45.87		73.95		115.57		180.58	
	Tension (KN)	17.05	13.9	27.37	22.45	45.06	37.71	69.69	58.93	106.6	86.97
200	Thrust (KN)	38.53		61.15		98.6		154.1		240.78	
	Tension (KN)	22.74	18.54	36.5	29.94	60.08	50.28	92.92	78.58	142.14	116
250	Thrust (KN)	48.17		76.44		123.25		192.62		300.97	
	Tension (KN)	28.42	23.18	45.62	37.42	75.1	62.85	116.15	98.22	177.67	145
bar	Φ bore (mm)	140		160		180		200			
	Φ rod (mm)	90	100	100	110	110	125	125	140		
	Piston area cm²	153.94		201.06		254.47		314.16			
	Ring area cm²	90.32	75.4	122.5	106	159.43	131.8	191.4	160.2		
100	Thrust (KN)	153.94		197.24		254.47		308.19			
	Tension (KN)	90.32	75.4	120.19	103.99	159.43	131.8	187.76	157.2		
150	Thrust (KN)	230.85		295.86		381.70		462.28			
	Tension (KN)	135.5	113.1	180.28	155.98	239.1	197.6	281.64	235.7		
200	Thrust (KN)	307.8		394.48		508.94		616.38			
	Tension (KN)	180.6	150.8	240.38	207.98	318.86	263.5	375.52	314.3		
250	Thrust (KN)	384.75		493.1		636.17		770.47			
	Tension (KN)	225.8	188.4	300.47	259.97	398.57	329.4	469.4	392.9		

►► FKS 2 Hydraulic cylinder max load form

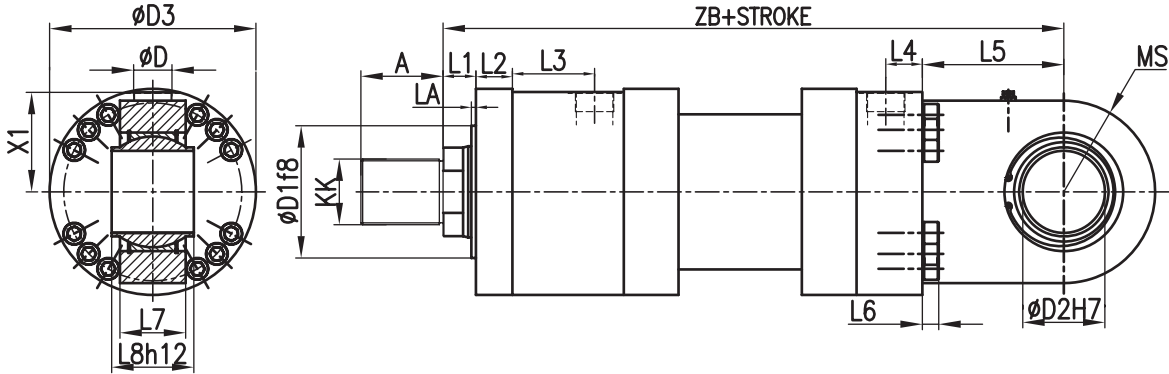


FKS 2 Hydraulic cylinder max load form



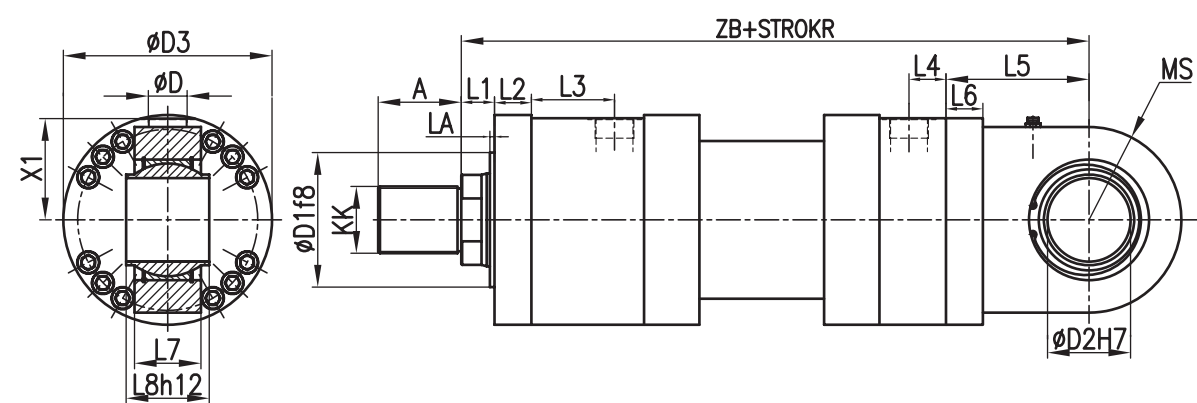
The chart gives max.stroke(cm)vs.pressure(bar)ratio and the cylinder type with guided load.
the max.load supported by the rod was calculated by Eulero's formula with safety factor of 3.5.
For cylinders with higher strokes than the ones shown please contact us.

FKS 2 MP5

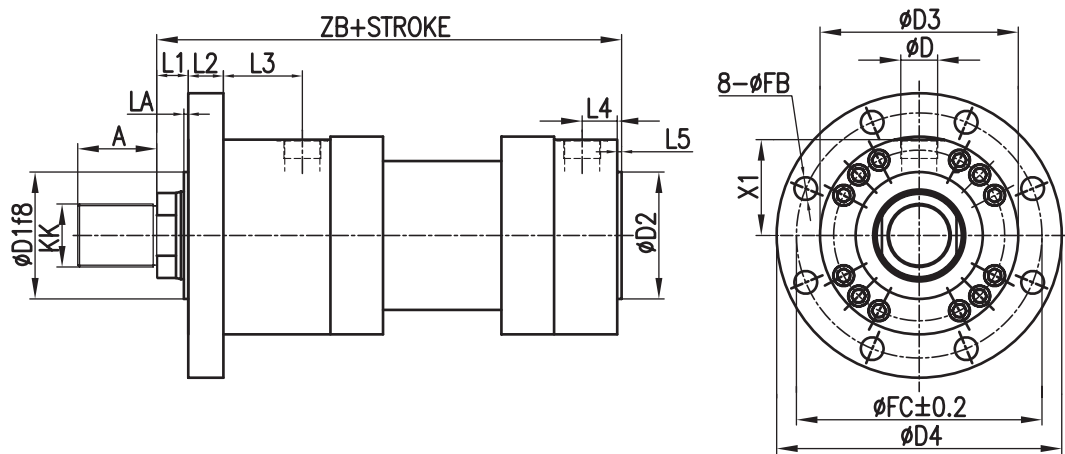


Hydraulic cylinder dimension									
MP5									
Bore	50	63	80	100	125	140	160	180	200
Rod	32/36	40/45	50/56	63/70	80/90	90/100	100/110	110/125	125/140
KK	M27x2	M33x2	M42x2	M48x2	M64x3	M72x3	M80x3	M90x3	M100x3
A	36	45	56	63	85	90	95	105	112
LA	4	4	4	5	5	5	5	5	5
L1	22	25	28	32	36	36	40	45	45
L2	25	28	32	36	40	40	45	50	56
L3	48	54	64	71	88	90	109	99	129
L4	20	27	28	34	34	40	44	44	50
L5	65	78	95	107	130	149	157	190	216
L6	10	10	14	14	18	18	18	22	23
L7	27	32	40	52	66	72	84	88	103
L8	32	40	50	63	80	90	100	110	125
ZB	305	348	395	442	520	580	617	690	756
D	G 1/2"	G 3/4"	G 3/4"	G 1"	G 1.1/4"	G 1.1/4"	G 1.1/2"	G 1.1/2"	G 1.1/2"
D1	63	75	90	110	132	145	160	185	200
D2	32	40	50	63	80	90	100	110	125
D3	108	122	145	172	215	226	275	292	330
X1	51	57	69	82	103	109.5	130	143	162
MS	38	48.5	59	71	90	100	112	129	145

FKS 2 MP6



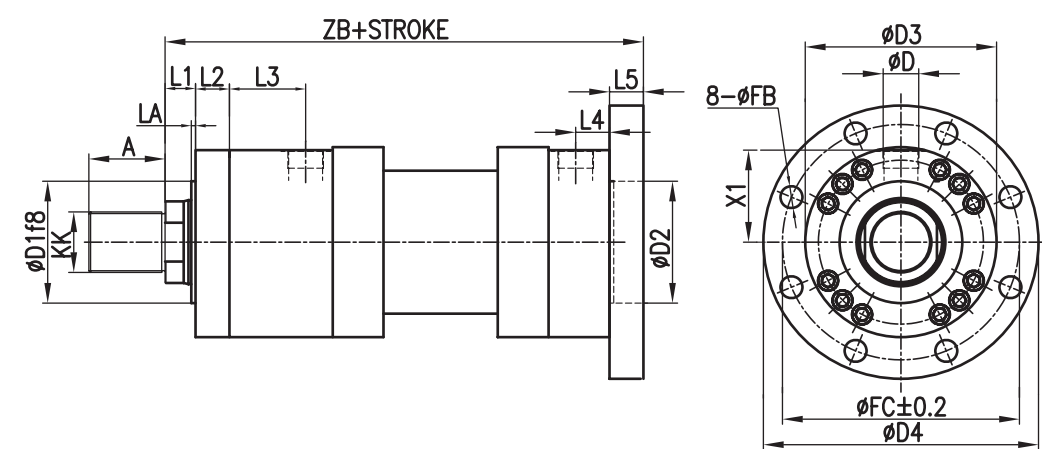
FKS 2 MF3



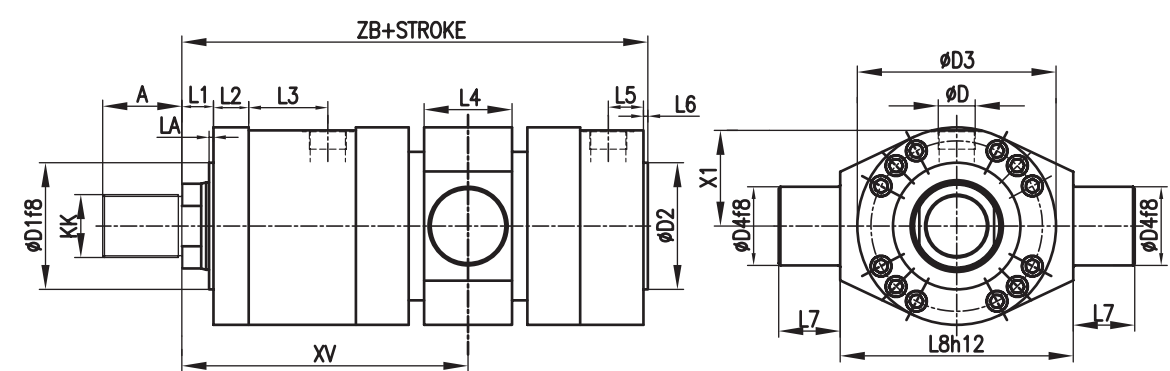
Hydraulic cylinder dimension									
MP6									
Bore	50	63	80	100	125	140	160	180	200
Rod	32/36	40/45	50/56	63/70	80/90	90/100	100/110	110/125	125/140
KK	M27x2	M33x2	M42x2	M48x2	M64x3	M72x3	M80x3	M90x3	M100x3
A	36	45	56	63	85	90	95	105	112
LA	4	4	4	5	5	5	5	5	5
L1	22	25	28	32	36	36	40	45	45
L2	25	28	32	36	40	40	45	50	56
L3	48	54	64	71	88	90	109	99	129
L4	20	27	28	34	34	40	44	44	50
L5	65	78	95	107	130	149	157	190	216
L6	25	28	32	36	40	40	45	50	56
L7	27	32	40	52	66	72	84	88	103
L8	32	40	50	63	80	90	100	110	125
ZB	305	348	395	442	520	580	617	690	756
D	G 1/2"	G3/4"	G3/4"	G 1"	G1.1/4"	G1.1/4"	G1.1/2"	G1.1/2"	G1.1/2"
D1	63	75	90	110	132	145	160	185	200
D2	32	40	50	63	80	90	100	110	125
D3	108	122	145	172	215	226	275	292	330
X1	51	57	69	82	103	109.5	130	143	162
MS	38	48.5	59	71	90	100	112	129	145

Hydraulic cylinder dimension									
MF3									
Bore	50	63	80	100	125	140	160	180	200
Rod	32/36	40/45	50/56	63/70	80/90	90/100	100/110	110/125	125/140
KK	M27x2	M33x2	M42x2	M48x2	M64x3	M72x3	M80x3	M90x3	M100x3
A	36	45	56	63	85	90	95	105	112
LA	4	4	4	5	5	5	5	5	5
L1	22	25	28	32	36	36	40	45	45
L2	25	28	32	36	40	40	45	50	56
L3	48	54	64	71	88	90	109	99	129
L4	20	27	28	34	34	40	44	44	50
L5	4	4	5	5	6	6	7	10	10
ZB	244	274	305	340	396	430	467	510	550
D	G 1/2"	G3/4"	G3/4"	G 1"	G1.1/4"	G1.1/4"	G1.1/2"	G1.1/2"	G1.1/2"
D1	63	75	90	110	132	145	160	185	200
D2	63	75	90	110	132	145	160	185	200
D3	108	122	145	172	215	226	275	292	330
D4	155	175	210	250	290	325	360	405	440
FB	13.5	13.5	17.5	22	22	26	26	33	33
FC	132	150	180	212	250	280	315	350	385
X1	51	57	69	82	103	109.5	134	143	162

FKS 2 MF4



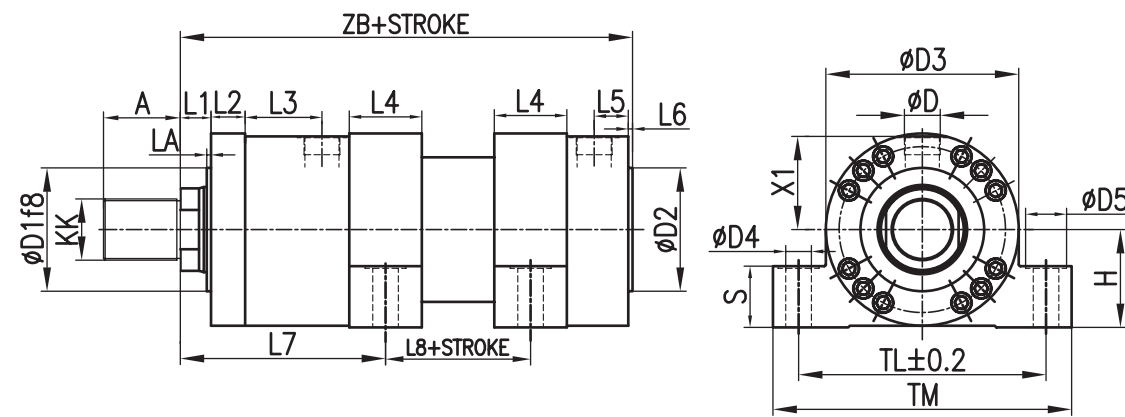
FKS 2 MT4



Hydraulic cylinder max load form									
MF4									
Bore	50	63	80	100	125	140	160	180	200
Rod	32/36	40/45	50/56	63/70	80/90	90/100	100/110	110/125	125/140
KK	M27x2	M33x2	M42x2	M48x2	M64x3	M72x3	M80x3	M90x3	M100x3
A	36	45	56	63	85	90	95	105	112
LA	4	4	4	5	5	5	5	5	5
L1	22	25	28	32	36	36	40	45	45
L2	25	28	32	36	40	40	45	50	56
L3	48	54	64	71	88	90	109	99	129
L4	20	27	28	34	34	40	44	44	50
L5	25	28	32	36	40	40	45	50	56
ZB	265	298	332	371	430	465	505	550	596
D	G 1/2"	G3/4"	G3/4"	G 1"	G1.1/4"	G1.1/4"	G1.1/2"	G1.1/2"	G1.1/2"
D1	63	75	90	110	132	145	160	185	200
D2	63	75	90	110	132	145	160	185	200
D3	108	122	145	172	215	226	275	292	330
D4	155	175	210	250	290	325	360	405	440
FB	13.5	13.5	17.5	22	22	26	26	33	33
FC	132	150	180	212	250	280	315	350	385
X1	51	57	69	82	103	109.5	134	143	162

Hydraulic cylinder max load form									
MT4									
Bore	50	63	80	100	125	140	160	180	200
Rod	32/36	40/45	50/56	63/70	80/90	90/100	100/110	110/125	125/140
KK	M27x2	M33x2	M42x2	M48x2	M64x3	M72x3	M80x3	M90x3	M100x3
A	36	45	56	63	85	90	95	105	112
LA	4	4	4	5	5	5	5	5	5
L1	22	25	28	32	36	36	40	45	45
L2	25	28	32	36	40	40	45	50	56
L3	48	54	64	71	88	90	109	99	129
L4	42	50	60	75	90	100	110	120	135
L5	20	27	28	34	34	40	44	44	50
L6	4	4	5	5	6	6	7	10	10
L7	25	32	40	50	63	70	80	90	100
L8	112	125	150	180	224	265	280	320	335
ZB	244	274	305	340	396	430	467	510	550
D	G 1/2"	G3/4"	G3/4"	G 1"	G1.1/4"	G1.1/4"	G1.1/2"	G1.1/2"	G1.1/2"
D1	63	75	90	110	132	145	160	185	200
D2	63	75	90	110	132	145	160	185	200
D3	108	122	145	172	215	226	275	292	330
D4	32	40	50	63	80	90	100	110	125
X1	51	57	69	82	103	109.5	134	143	162
XV	≥ 174	≥ 195	≥ 225	≥ 260	≥ 310	≥ 323	≥ 371	≥ 392	≥ 455.5

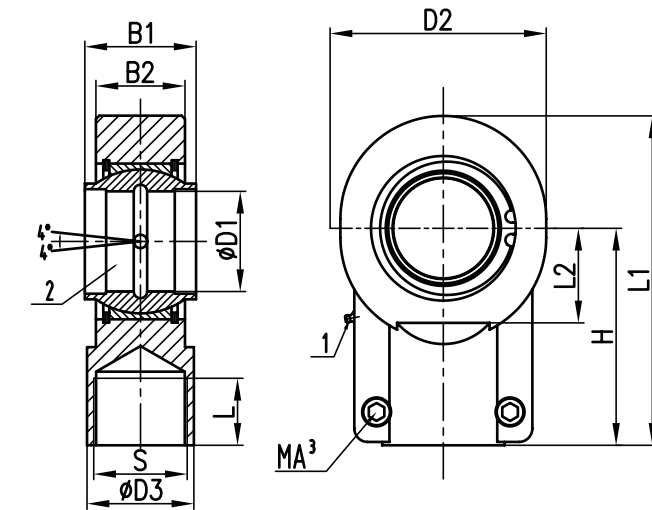
►► FKS 2 MS2



Hydraulic cylinder max load form

MS2									
Bore	50	63	80	100	125	140	160	180	200
Rod	32/36	40/45	50/56	63/70	80/90	90/100	100/110	110/125	125/140
KK	M27x2	M33x2	M42x2	M48x2	M64x3	M72x3	M80x3	M90x3	M100x3
A	36	45	56	63	85	90	95	105	112
LA	4	4	4	5	5	5	5	5	5
L1	22	25	28	32	36	36	40	45	45
L2	25	28	32	36	40	40	45	50	56
L3	48	54	64	71	88	90	109	99	129
L4	30	35	45	55	60	85	75	115	90
L5	20	27	28	34	34	40	44	44	50
L6	4	4	5	5	6	6	7	10	10
L7	130	147.5	170.5	192.5	230	240.5	265.5	291.5	315
L8	55	55	55	55	60	70	79	69	90
ZB	244	274	305	340	396	430	467	510	550
D	G 1/2"	G3/4"	G3/4"	G 1"	G1.1/4"	G1.1/4"	G1.1/2"	G1.1/2"	G1.1/2"
D1	63	75	90	110	132	145	160	185	200
D2	63	75	90	110	132	145	160	185	200
D3	108	122	145	172	215	226	275	292	330
D4	11	13.5	17.5	22	26	30	33	40	40
D5	18	20	26	33	40	48	48	60	60
X1	51	57	69	82	103	109.5	134	143	162
H	60	68	80	95	115	115	145	150	170
S	32	37	42	52	62	72	77	92	87
TL	135	155	185	220	270	290	340	360	405
TM	160	185	225	265	325	350	405	440	480

▶▶ Round self-aligning clevis GIHN-K

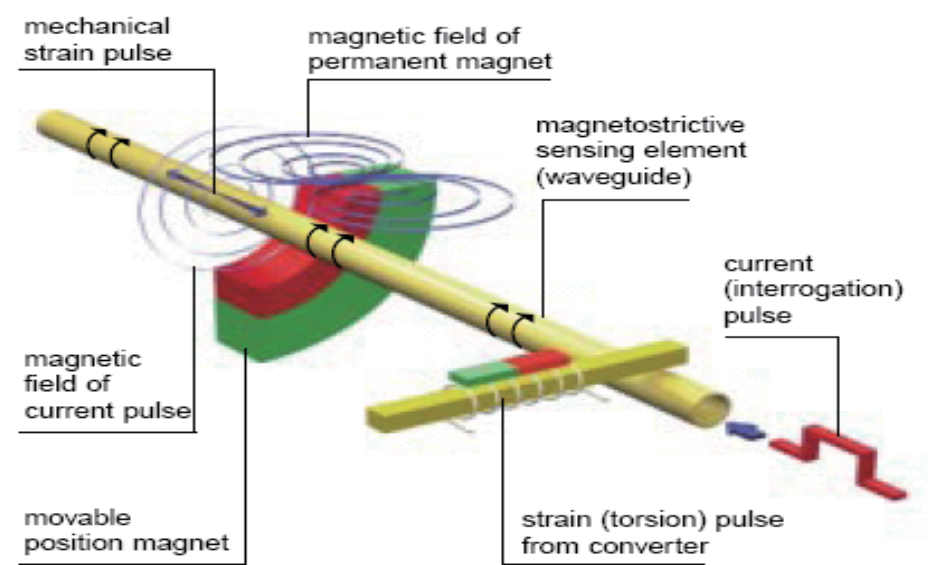


Bore Φ	Type	D1 H7	B1 h12	H js16	S	L min	D2	D3	B2	L1	L2	MA (3) Nm	m (4) kg
50	GIHN-K 32	32	32	80	M27x2	37	70	38	27	118	32	64	1.2
63	GIHN-K 40	40	40	97	M33x2	46	89	47	32	145.5	41	64	2.1
80	GIHN-K 50	50	50	120	M42x2	57	108	58	40	179	50	110	4.4
100	GIHN-K 63	63	63	140	M48x2	64	132	70	52	211	62	80	7.6
125	GIHN-K 80	80	80	180	M64x3	86	168	90	66	270	78	195	14.5
140	GIHN-K 90	90	90	195	M72x3	91	185	100	72	296	85	195	17
160	GIHN-K100	100	100	210	M80x3	96	210	110	84	322	98	385	28
180	GIHN-K110	110	110	235	M90x3	106	235	125	88	364	105	385	32
200	GIHN-K125	125	125	260	M100x3	113	262	135	102	405	120	385	43

►► Notes

- 1) Cone head grease nipple from A to DIN 71412
- 2) Associated pin $\Phi m6$. Associated pin $\Phi j6$ with
Maintenance free self-aligning clevis
- 3) tightening torque
The self-aligning clevis must always be screwed to the piston rod thread stop. Subsequently, the clamping screws have to be tightened to the specified torque.
- 4) Weight of the self-aligning clevis

► Hydraulic cylinder magnetostrictive displacement sensor

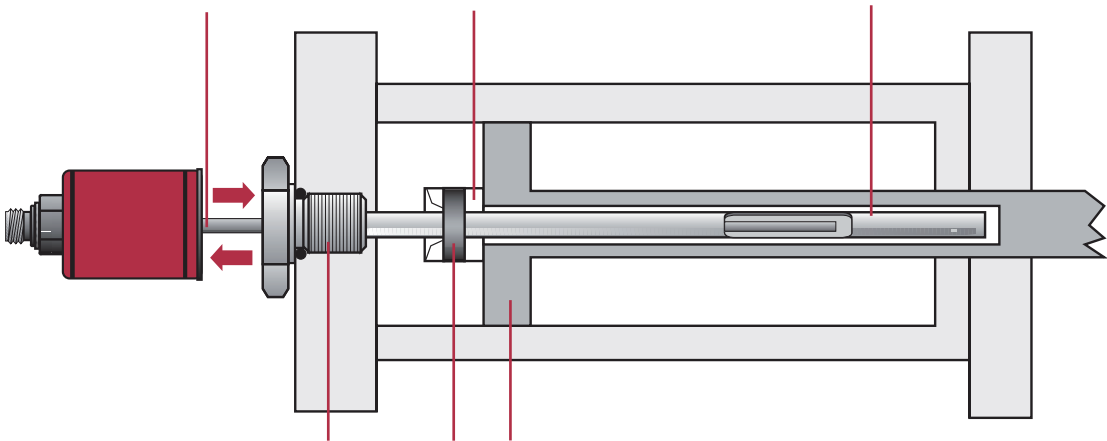


► Magnetostrictive Theory

Inside the sensor a tensional strain pulse is induced in a specially designed magnetostrictive waveguide by the momentary interaction of two magnetic fields. One field comes from a moving magnet, which passes along the outside of the transducer tube, and the other field is generated from a current pulse which is applied to the waveguide.

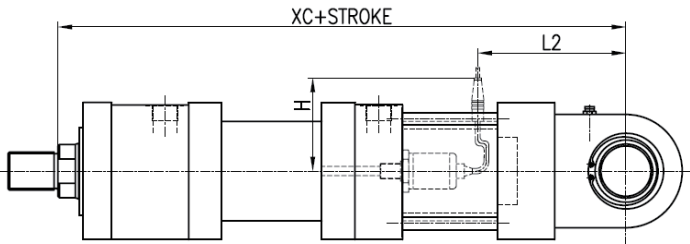
The interaction between these two magnetic fields produces a strain pulse which travels at sonic speed along the sensor waveguide, until the pulse is detected at the head of the transducer. The position of the moving magnet is precisely determined by measuring the elapsed time between the application of the current pulse and the arrival of the strain pulse.

► Internal liner position sensor sketch

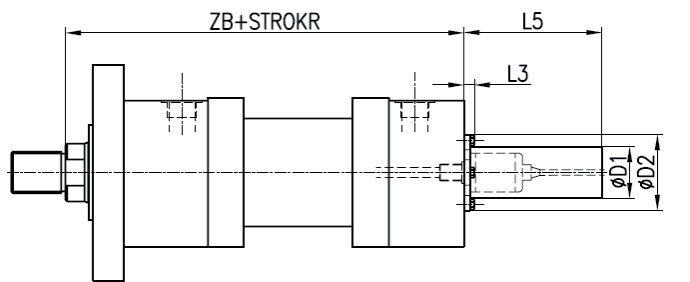


► FKS2 Internal liner position sensor measuring system

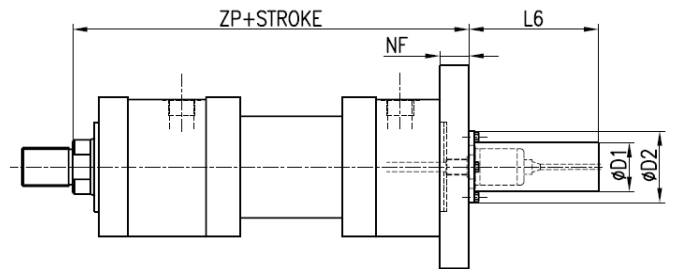
MP5, MP6



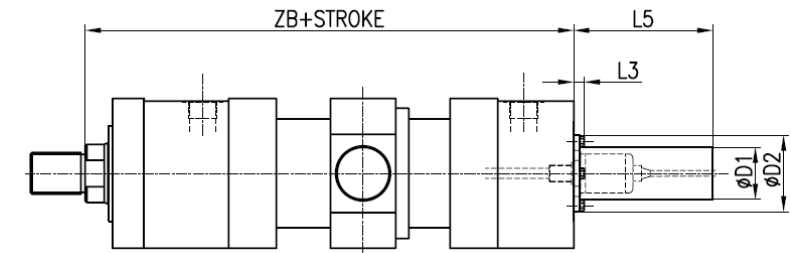
MF3



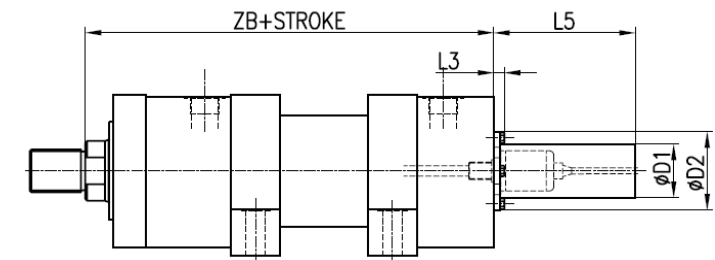
MF4



MT4

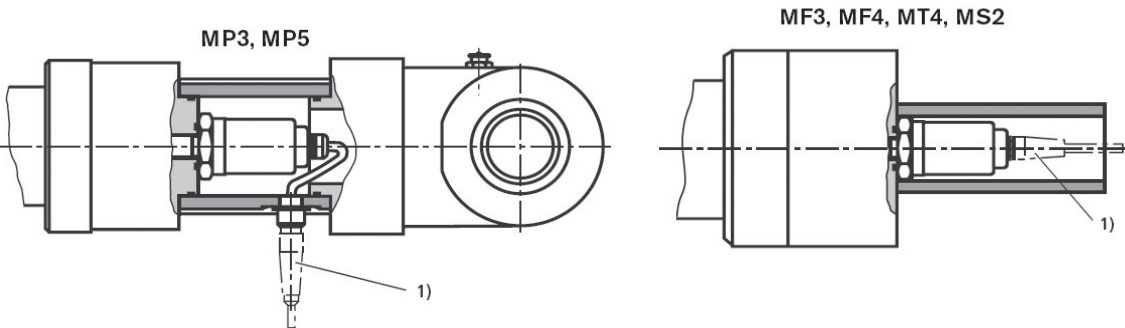


MS2



FKS2 Internal liner position sensor measuring system

Mounting types



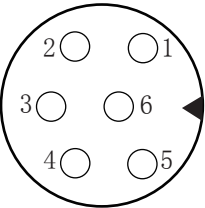
- 1) For Analogue output:
6-pin Amphenol -
Plug-in connector material no.:00072231
Plug-in connector is not included)
- 1) For Digital output
7-pin Amphenol -
Plug-in connector material no.:00079551
Plug-in connector is not included)



Connection allocation

Pos.measuring system (Analogue output)

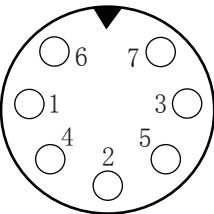
Component plug (viewed on the pin side)



pin	cable	signal/current	signal/voltage
1	Grey	4-20mA	0-10 V
2	Pin k	Gnd	Gnd
3	Yellow	n. c	10-0 V
4	Green	n. c	Gnd
5	Brown	+24V DC(±25%)	+24V DC(±25%)
6	White	Gnd	Gnd

Pos.measuring system(Digital output)

Component plug (viewed on the pin side)



pin	cable	signal/SSI
1	Grey	Date (-)
2	Pin k	Date (+)
3	Yellow	Tact (+)
4	Green	Tact (-)
5	Brown	+24V DC(+20%/-15%)
6	White	0 V
7	—	n. c

FKS2 Internal liner position sensor measuring system

Dimensions(in mm)

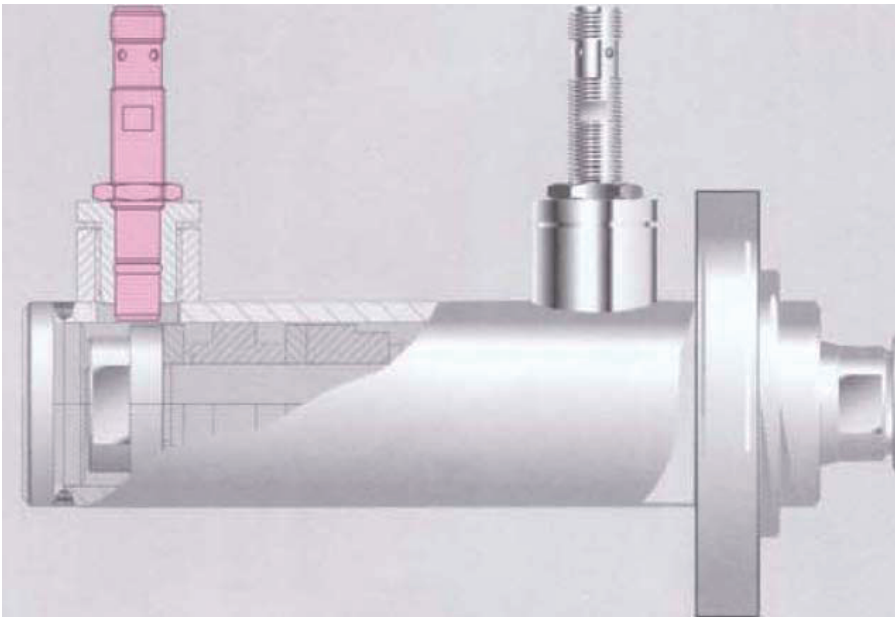
Bore Φ	Rod Φ	Stroke max	XC	H	ZB	ZP	NF	L2	L3	L5	L6	D1 Φ	D2 Φ
50	32 36	800	470	120	254	278	28	132	12	160	160	60	88
63	40 45	1100	526	130	299	313	28	150	12	160	160	60	88
80	50 56	1400	580	125	332.5	350	32	176.5	12	160	142.5	60	88
100	63 70	1700	617	135	362	390	36	192	12	160	132	60	88
125	80 90	2000	693	145	410	445	55	227	12	160	125	60	88
140	90 100	2300	755	155	440	485	60	262	12	160	115	60	88
160	100 110	2600	787	165	472.5	525	65	269.5	12	160	112.5	60	88
180	110 125	2600	855	175	510	570	70	307	12	160	100	60	88
200	125 140	3000	926	190	550	616	76	333	12	160	94	60	88

►► With inductive proximity switch
Theory

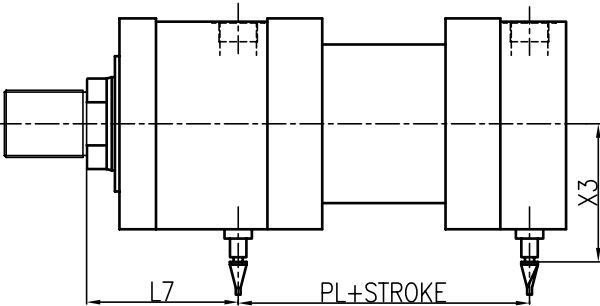
For non-contact detection of metallic targets at ranges generally under 50mm. Inductive proximity sensors emit an alternating electro-magnetic sensing field. When a metal target enters the sensing field, eddy currents are induced in the target, reducing the signal amplitude and triggering a change of state at the sensor output.

Inductive proximity sensors are used as a reliable end position control for hydraulic cylinders. They are an important element, in providing safety system,inter/lock and other machine functions where signals safety and exactly monitor the position. The nominal pressure is up to 500bar, and with non-contact, also can supplies a wide variety of mounting types. Due to safety reasons the proximity switch is protected against being screwed in too deep. The switching distance can, therefore not be adjusted. As standard the cylinder are fitted with proximity switches on both sides.

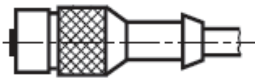
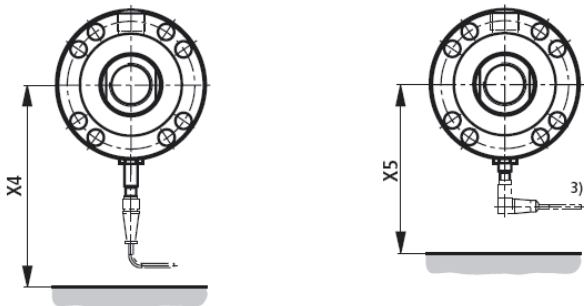
►► Proximity switch sketch



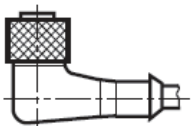
►► FKS 2 proximity switch



►► Mounting type

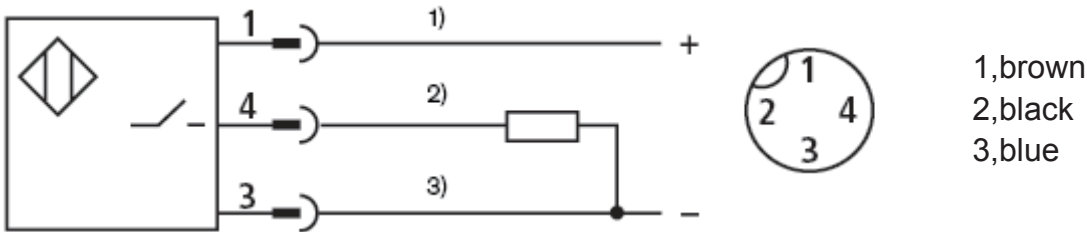


Plug-in connector with 5m cable
Material no.: 00026512
(Plug-in connector is not included with scope of supply, has to be ordered separately)



Plug-in connector, angled, with 5m cable
(The orientation of the cable exit is not definable)
Material no.: 00021404
(Plug-in connector is not included with scope of supply, has to be ordered separately)

►► Connection arrangement



FKS 2 proximity switch

Dimensions (in mm)

Bore Φ	Rod Φ	PL	L7	X3	X4	X5
50	32 36	110	103	98	175	130
63	40 45	125	116	103	180	135
80	50 56	138	128.5	108	185	140
100	63 70	161	139	116	195	150
125	80 90	193	159	126	205	160
140	90 100	209	171	146	225	180
160	100 110	228	188.5	151	230	185
180	110 125	254	199	159	235	190
200	125 140	264	227	166	245	200

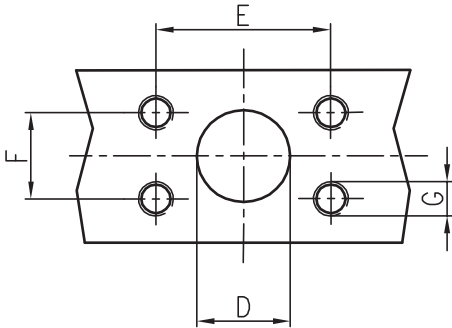
FKS 2 Cylinder port dimensions

Cylinder port dimensions				
	G	M	S	N
Bore Φ	British standard pipe thread	The metric pipe thread	flanged joint	NPT
50	1/2"	M22x1.5	—	1/2"
63	3/4"	M27x2	1/2"	3/4"
80	3/4"	M27x2	1/2"	3/4"
100	1"	M33x2	3/4"	1"
125	1 1/4"	M33x2	1"	1 1/4"
140	1 1/4"	M42x2	1 1/4"	1 1/4"
160	1 1/2"	M42x2	1 1/4"	1 1/2"
180	1 1/2"	M42x2	1 1/2"	1 1/2"
200	1 1/2"	M42x2	1 1/2"	1 1/2"

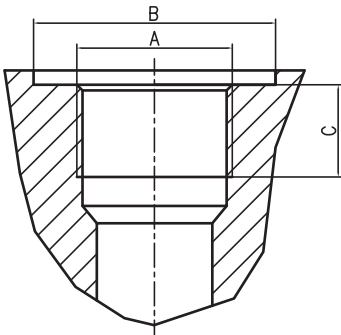
Flange connections

ISO 6162 (250-350bar) —SAE 3000 PSI

dimensions	Φ D	E ±0.25	F ±0.25	G
1/2"	13	38.1	17.5	M8
3/4"	19	47.6	22.3	M10
1"	25	52.4	26.2	M10
1 1/4"	32	58.7	30.2	M10
1 1/2"	38	69.9	35.7	M12



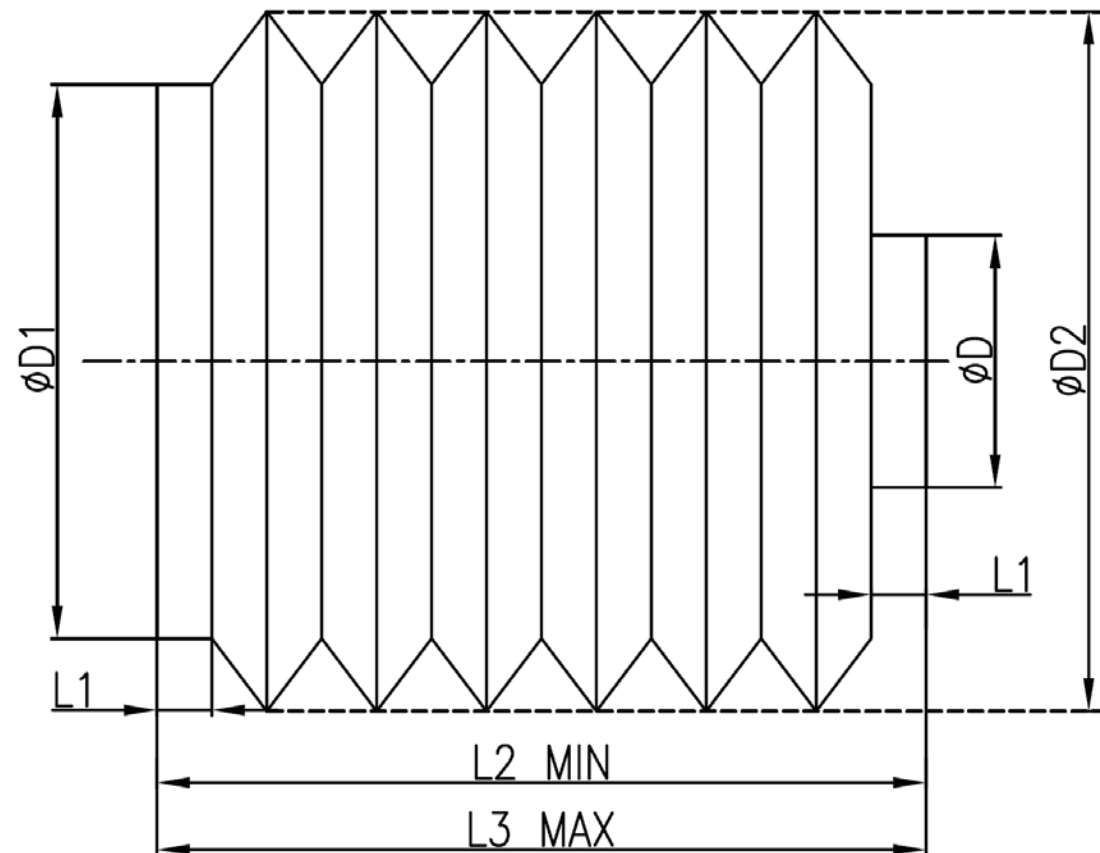
Thread connections



G					
A	G 1/2"	G 3/4"	G 1"	G 1 1/4"	G 1 1/2"
B MAX	34	42	47	58	65
C MIN	14	16	18	20	22

M					
A	M22x1.5	M27x2	M33x2	M42x2	M48x2
B MAX	34	42	47	58	65
C MIN	14	16	18	20	22

►► Cylinder dust jacket

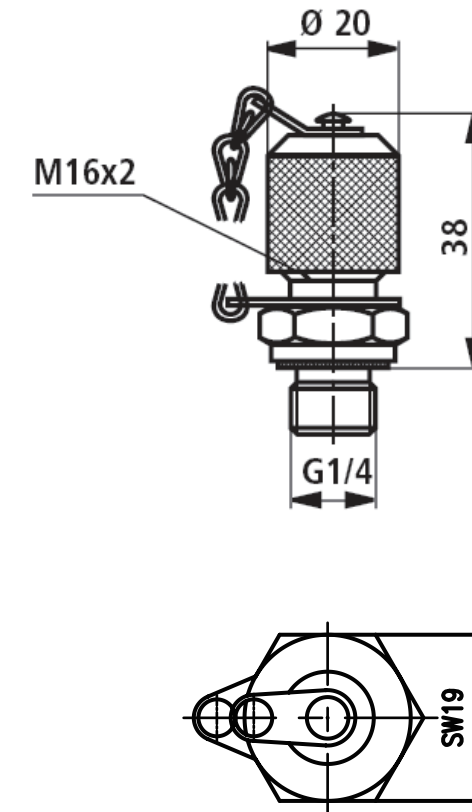


►► Notes

When hydraulic cylinder work under severe working conditions ,should be supplied piston rod dust jacket, so that it can protect against dust ,water,oil,emulsion polluted and other chemicals pollution.
Feature: Stretch-proof . Not-deformation , impact resistance,Corrosion-resistant , long service life.

Connection type: Clamp linkage on both sides.

►► Cylinder Coupling



►► Notes

For pressure measuring or bleeding.
For installation in the measuring/bleed port.
Coupling with check valve function ,i.e.
It can also be connected when pressures present.

►► Scope of supply

Coupling AB-E20-11/K1
With NBR seal
Material no.: 00009090
Coupling AB-E20-11/K1V
With FKM seal
Material no.: 00001264

►► Use and Maintenance Manual

1. Overview

Before mounting the hydraulic cylinder, we should refer the criterion as followed.

- The content of sample
- German standard DIN 24 346
- International standard ISO 4413

2. Mounting

2.1 Before we mount the cylinder into the hydraulic system, make sure that the technical parameter in the rating plate should be compared with the ordered.

Cleanliness requirements

- Hydraulic cylinder's mounting position and the surrounded environment should keep clean.
- Oil tank should be closed in order that protest the external pollutions..
- The dirt in the pipeline and oil tank should be cleaning before mounting.
- Hot bending and welding pipeline should be acid cleaning ,second flushing and fill oil.
- Use special flannel or paper when cleaning.
- Linen thread is not permitted using.

2.2 Mounting position

Variety

2.3 Electronical control connection

- Internal linear displacement sensor
 - Inductive proximity switch
- The connection chart refer to the relevant sample.

3. Put into operation

3.1 Hydraulic oil

- Mineral oil DIN 51 524 (HL ; HLP; HFA)
Recommend using NBR seal material.
- Phosphate ester (HFD-R)
Recommend using FKM seal material.
- pay attention to the temperature and pressure range, can not exceed the maximum use temperature.
- Before use the cylinder, check the used oil whether it is accord with the cylinder allowed.

►► Plain clevis BK

- We suggest contacting us when you use other mineral oils.

3.2 Oil filter

- Reliable is the oil filter can increase the service life of hydraulic cylinders, hydraulic oil cleanliness according to the maximum allowable NAS 1638 level of 10 standards.
- We therefore recommend as filtration element a filter with a minimum retention rate of $\beta_{10} \geq 75$.

3.3 Exhaust

- In the no-load pressure, release the end caps and the head screws on the exhaust.
- Exhaust.
- When the outflow of oil no longer contains air bubbles, handle the needle and the nut.
- Lock the needle and tighten the nut.

4. Maintenance

4.1 Apart from regular maintenance, such as add lubricating oil in the swing axle, link point, shaft pin, etc. The hydraulic cylinder needn't have to maintain.

4.2 Check the cylinder's seals condition regularly.

4.3 Replace the seals.

The cylinder dynamic seals are wearing parts, when the internal leakage and external leakage in excess of the allowable values, you'd better sent hydraulic cylinder to our factories, so that we can replace the seals at the same time we can check the guide bushings.

5. Storing

5.1 The requirement of the warehouse.

- The warehouse should be dry, clean, non-corrosive substance and water vapor.

5.2 If the storage period of more than 6 months:

- Hydraulic cylinder will be filled with anti-corrosion oil, and sealed.

