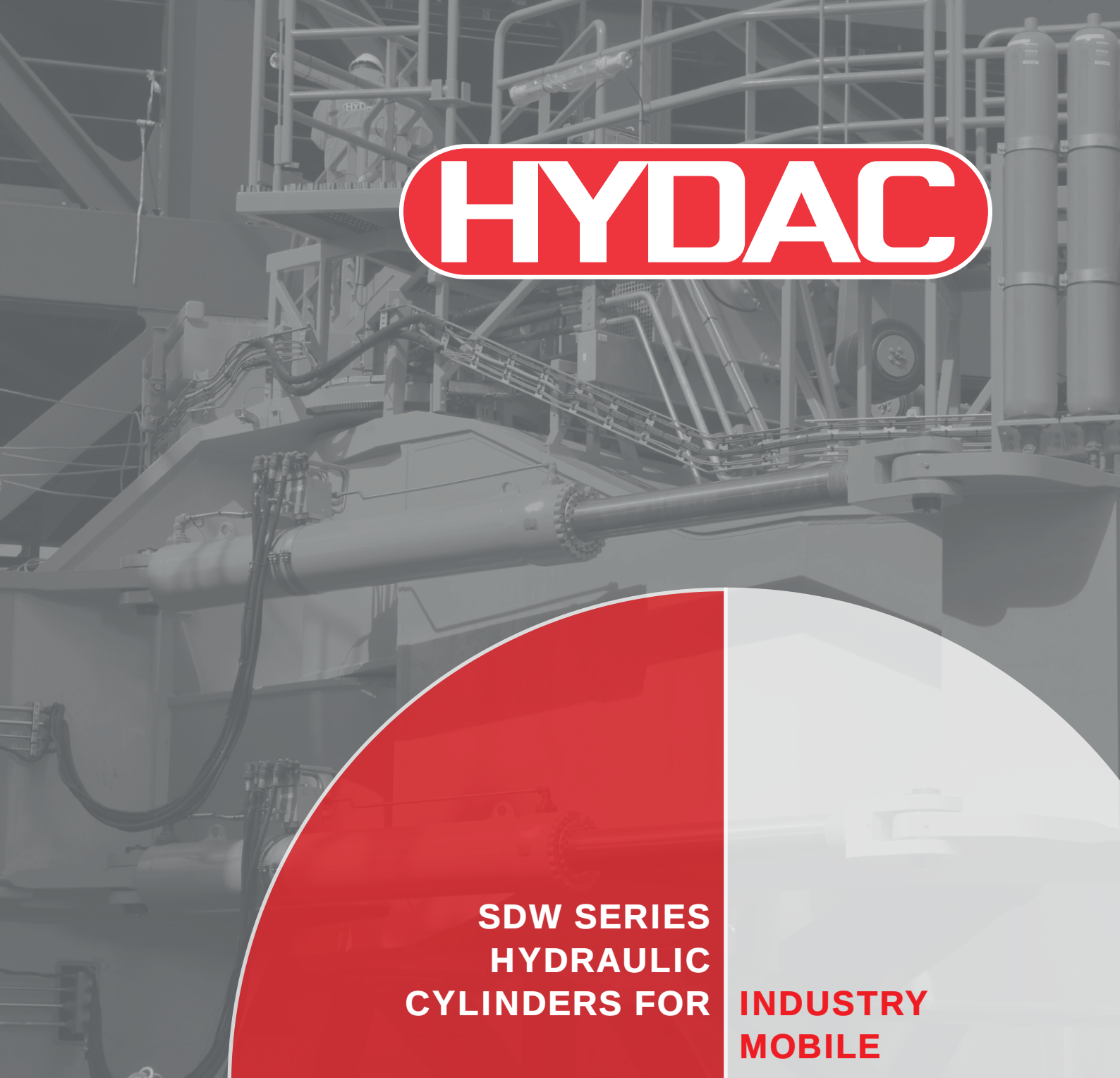




HYDAC

**SDW SERIES
HYDRAULIC
CYLINDERS FOR**

**INDUSTRY
MOBILE**

HYCOM B.V.

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INTRODUCTION

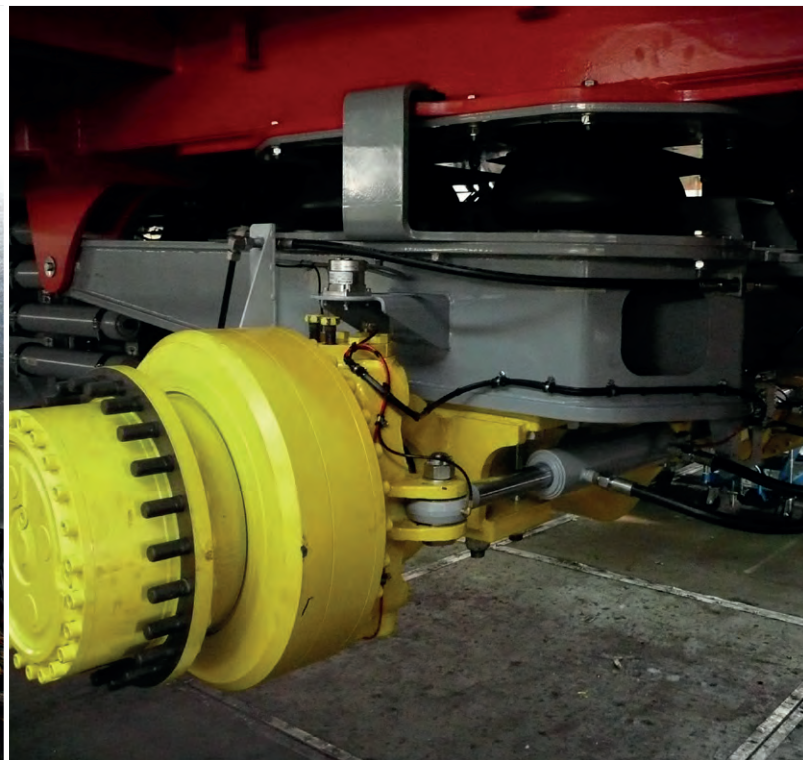
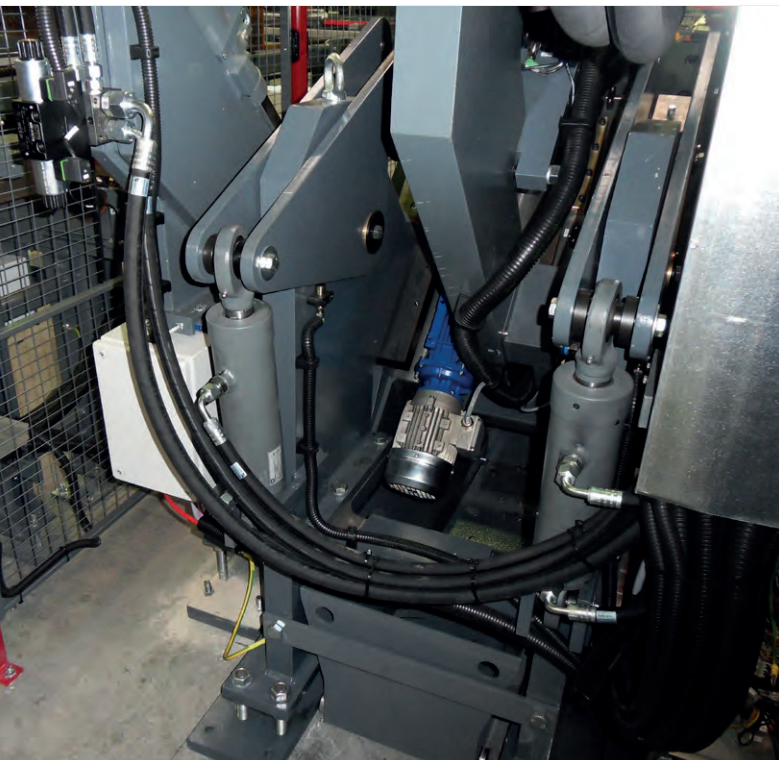
Hycom is the leading specialist in complete hydraulic systems, including their control systems for the industry, offshore, dredging, civil works, mobile equipment & aviation.

The turn-key hydraulic systems engineered and manufactured by Hycom can be found throughout the world. Often hydraulic cylinders are part of the systems delivered by Hycom.

Distinctive characteristics of Hycom hydraulic cylinders are:

- Solid constructions
- Long life time by applying high-grade materials
- Accurate dimensions
- Wide range of piston rod protection
- Very wide range of applications

Hycom is a specialist in all aspects of hydraulic cylinders and has the capability to react quickly to your demands.



SDW SERIES HYDRAULIC CYLINDERS

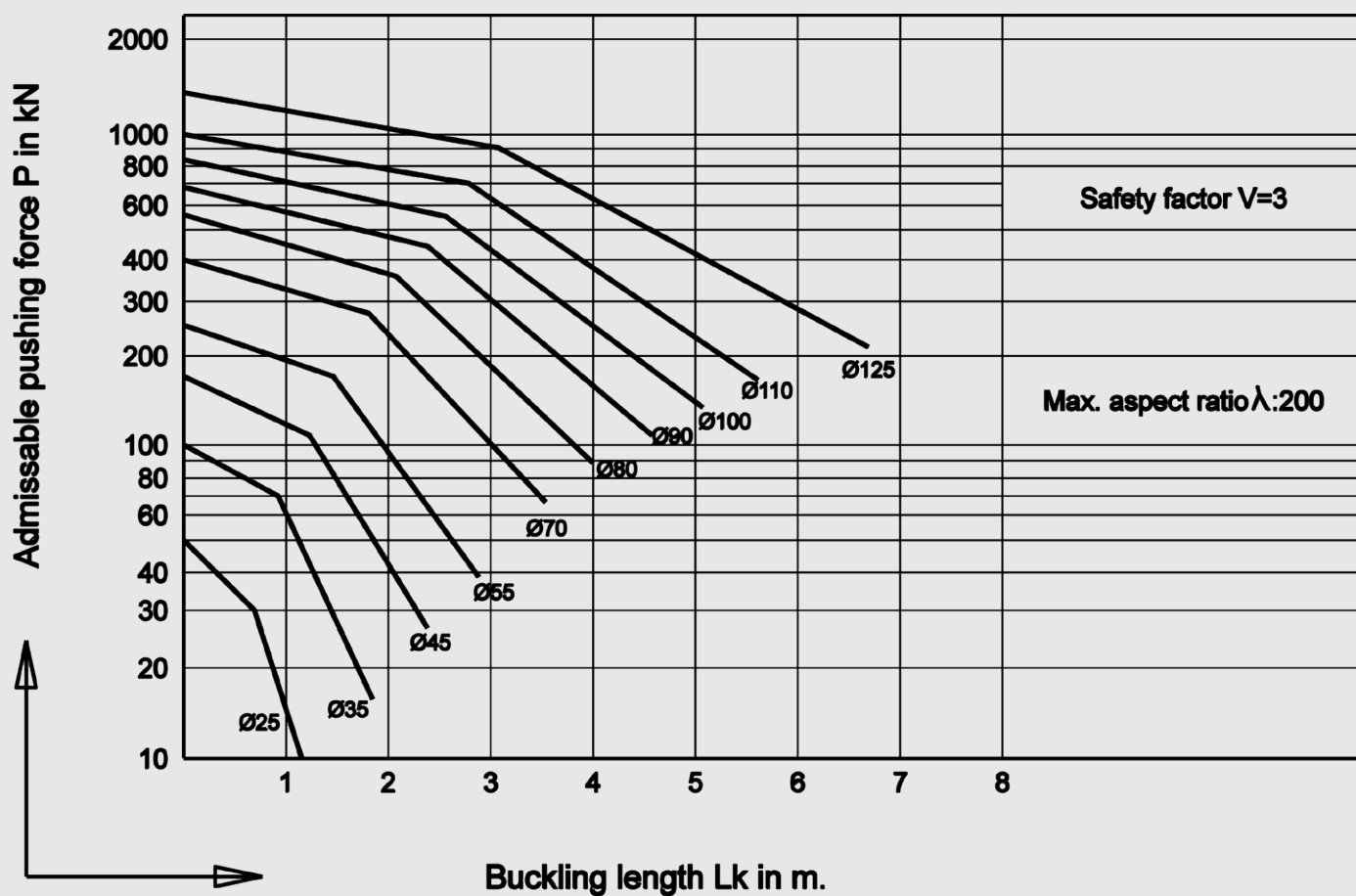
With the SDW series of hydraulic cylinders Hycom puts an extremely favourable price/performance product on the market. Thanks to her long experiences in designing and manufacturing of hydraulic cylinders, the SDW type arose. Characteristic properties are short delivery time, modern welltried materials and technics and an extremely favourable price.

Besides that a high degree of is given by using various types of mounting, a choice of four piston rod treatments and when required, cushioning at one or both sides. The maximum allowable piston velocity is approx. 0,5 m/sec.

PISTON ROD PROCESSING

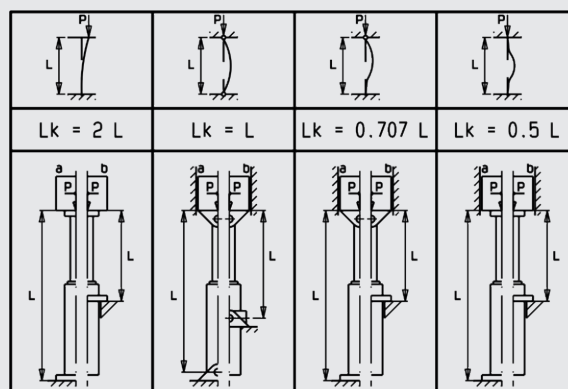
CODE-1 1	Carbon steel with galvanic single-layer coating (hard chromium) * 20MnV6 + 0.020mm hard chromium
CODE-2 2	Carbon steel with galvanic dual-layer coating (nickel-hard chromium) * 20MnV6 + 0.030/0.020mm nickel/hard chromium
CODE-3 3	Stainless steel with galvanic single-layer coating (Hard Chromium) * AISI431 + 0.020mm hard chromium
3.1	* AISI329 + 0.020mm hard chromium

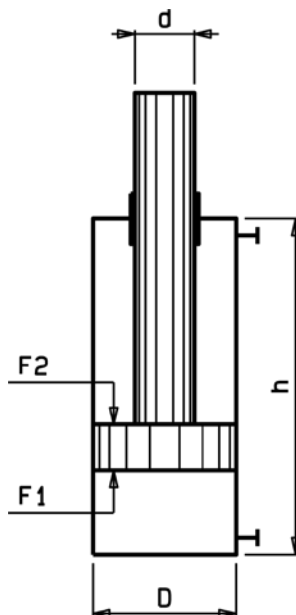
Graph to determine the piston rod diameter on buckling



Side load of piston rods

Hydraulic cylinders preferably are to be installed in such a manner, that side loads cannot occur. In the event that side loading is unavoidable, the piston rod must be designed for bending loads, as well as for buckling loads.





Formula's for double acting cylinders

Pushing force $F1 = p \cdot A1 \cdot 10^{-3} \text{ kN}$
 Pulling force $F2 = p \cdot A2 \cdot 10^{-3} \text{ kN}$
 Required pump flow $Q = A \cdot V \cdot 10^{-3} \text{ l/min}$
 Piston velocity $v = \frac{Q \cdot 10^{-3}}{A} \text{ cm/min}$
 Stroke time $t = \frac{A \cdot h \cdot 6 \cdot 10^{-2}}{Q} \text{ sec.}$

F1 = Pushing force in kN
 F2 = Pulling force in kN
 P = Oil pressure in Mpa (1 Mpa = 10 bar)
 d = Piston rod diameter in mm²
 A = Pushing/ pulling surface in cm²
 A1 = Pushing surface in cm²
 A2 = Pulling surface in cm²
 φ = D/d (surface ratio)
 Q = Pumpflow in ltr/min
 v = piston velocity in cm/min
 t = motion time in sec
 h = stroke in cm

Type	D (mm)	d (mm)	A1 (cm ²)	A2 (cm ²)	φ	Theoretical forces at 16 MPa		Theoretical forces at 25 MPa	
						Push (kN)	Pull (kN)	Push (kN)	Pull (kN)
40/25	40	25	12,57	7,66	1,64	20,1	12,3	31,4	19,1
50/25	50	25	19,63	14,73	1,33	31,4	23,6	49,1	36,8
50/35		35		10,01	1,96		16,0		25,0
65/35	65	35	33,18	23,56	1,41	53,1	37,7	83,0	58,9
65/45		45		17,28	1,92		27,6		43,2
80/45	80	45	50,27	34,36	1,46	80,4	55,0	125,7	85,9
80/55		55		26,51	1,9		42,4		66,3
100/55	100	55	78,54	54,78	1,43	125,7	87,7	196,3	137,0
100/70		70		40,06	1,96		64,1		100,1
125/70	125	70	122,72	84,23	1,46	196,3	134,8	306,8	210,6
125/90		90		59,10	2,08		94,6		147,8
140/ 80	140	80	153,94	103,67	1,49	246,3	165,9	384,8	259,2
140/100		100		75,40	2,04		120,6		188,5
160/90	160	90	201,06	137,44	1,46	321,7	219,9	502,7	343,6
160/110		110		106,03	1,9		169,6		265,1
180/100	180	100	254,47	175,93	1,45	407,2	281,5	636,2	439,8
180/125		125		131,75	1,93		210,8		329,4

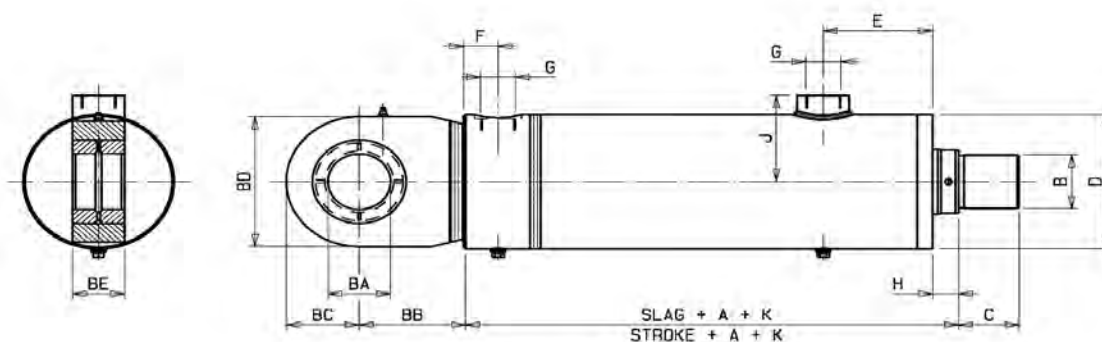




Model code for cylinder SDW

	Cylinder type	Bore	Rod Dia.	Type of mounting	Stroke	Rod processing	cushioning	pressure	Option for signaling
example	SDW -	140	/80 -	C/E -	250 -	2 -	P -	Y -	LO
	SDW = Double acting				Stroke in mm				
		Bore 40/25 125/70 50/25 125/90 50/35 140/80 65/35 140/100 65/45 160/90 80/45 160/110 80/55 180/100 100/55 180/125 100/70		Cylinder mountings B = Bottom eye C = Bottem eye with ball joint bearing H = Trunnion mounting J = Front flange K = Bottom flange Rod connections D = Screw on rod eye E = Screw on rod eye with ball joint bearing		1 = standard chromium plated 2 = Corrosion resistant chromium plated 3 = Stainless steel 4 = Ceracom	P = No cushioning R = Adjustable bottom cushioning S = Adjustable rod cushioning	Y = Working pressure up to 25 Mpa	LO = Displacement transducer ES = End position sensor(s)



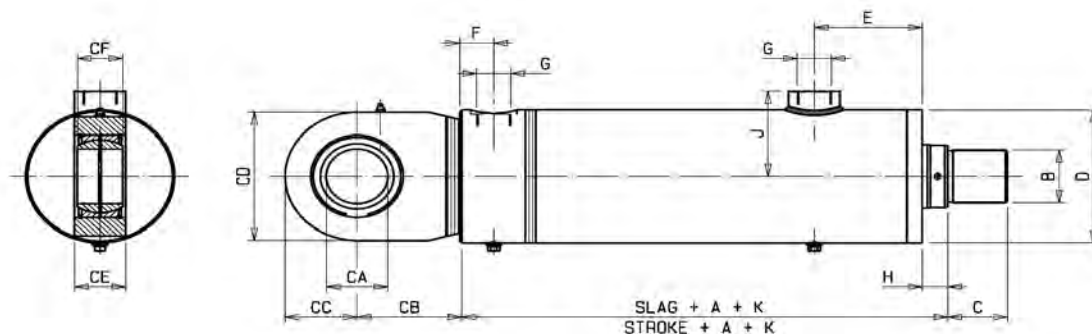


* Dimensions in mm

* Subject to alteration

Bore	40	50	65	80	100	125	140	160	180
Pistonrod	25	25/35	35/45	45/55	55/70	70/90	80/100	90/110	100/125
Stroke	≤1200					≤2000			
A	185	190	200	220	230	275	285	325	350
Stroke	1200-2500					2000-4000			
A	285	290	300	320	330	375	385	425	450
Stroke	> 2500					>4000			
A	385	390	400	420	430	475	485	525	550
B	M16x1,5	M22x1,5	M28x1,5	M35x1,5	M45x1,5	M58x1,5	M65x1,5	M65x1,5	M80x2
C	16	22	28	35	45	58	65	65	80
D	52	65	80	1 00	120	145	160	185	210
E	55	65	80	85	90	105	115	130	140
F	20	23	23	27	27	33	33	42	42
G	G 3/8"	G 1/2 "	G 1/2 "	G 3/4 "	G 3/4 "	G 1"	G 1"	G 1 1/4 "	G 1 1/4 "
H	20	20	20	20	25	25	25	25	25
J	41	48	55	70	80	93	103	120	130
K±max	2	2	2	2	2	3	3	3	3
Type B									
BA (H11)	25	30	35	40	50	60	70	70	80
BB	45	51	61	69	88	100	115	115	141
BC	28	33	42	50	62	70	82	82	90
BD	55	65	83	100	123	140	164	164	180
BE	23	28	30	35	40	50	55	55	60



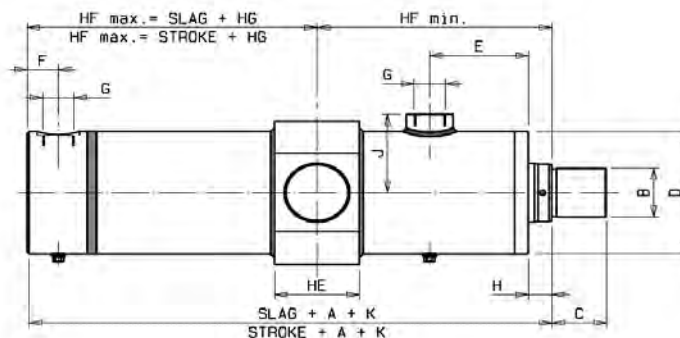
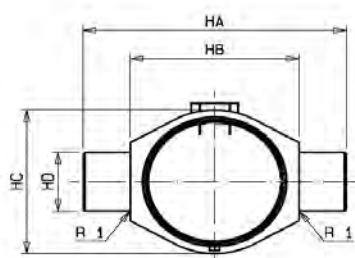


* Dimensions in mm

* Subject to alteration

Bore	40	50	65	80	100	125	140	160	180
Pistonrod	25	25/35	35/45	45/55	55/70	70/90	80/100	90/110	100/125
Stroke	≤1200					≤2000			
A	185	190	200	220	230	275	285	325	350
Stroke	1200-2500					2000-4000			
A	285	290	300	320	330	375	385	425	450
Stroke	> 2500					>4000			
A	385	390	400	420	430	475	485	525	550
B	M16x1,5	M22x1,5	M28x1,5	M35x1,5	M45x1,5	M58x1,5	M65x1,5	M65x1,5	M80x2
C	16	22	28	35	45	58	65	65	80
D	52	65	80	100	120	145	160	185	210
E	55	65	80	85	90	105	115	130	140
F	20	23	23	27	27	33	33	42	42
G	G 3/8"	G 1/2 "	G 1/2 "	G 3/4 "	G 3/4 "	G 1"	G 1"	G 1 1/4 "	G 1 1/4 "
H	20	20	20	20	25	25	25	25	25
J	41	48	55	70	80	93	103	120	130
K±max	2	2	2	2	2	3	3	3	3
Type C									
CA (M7)	25	30	35	40	50	60	70	70	80
CB	45	51	61	69	88	100	115	115	141
CC	28	33	42	50	62	70	82	82	90
CD	55	65	83	100	123	140	164	164	180
CE	23	28	30	35	40	50	55	55	60
CF	20	22	25	28	35	44	49	49	55



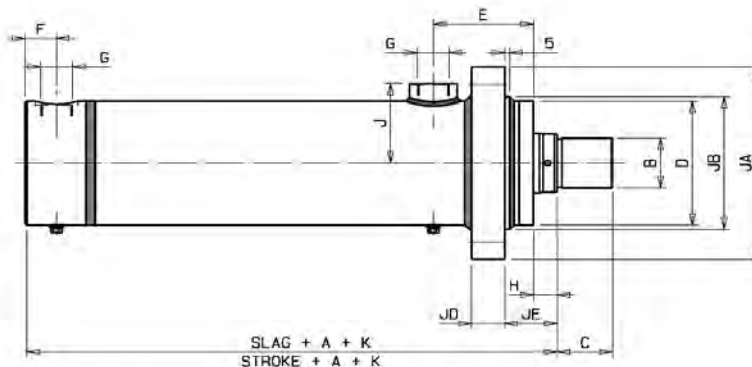
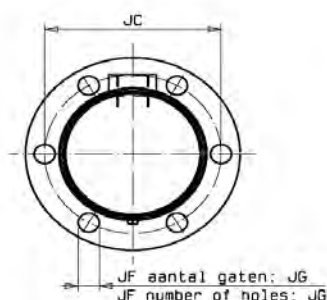


* Dimensions in mm

* Subject to alteration

Bore	40	50	65	80	100	125	140	160	180
Pistonrod	25	25/35	35/45	45/55	55/70	70/90	80/100	90/110	100/125
Stroke	≤1200					≤2000			
A	185	190	200	220	230	275	285	325	350
Stroke	1200-2500					2000-4000			
A	285	290	300	320	330	375	385	425	450
Stroke	> 2500					>4000			
A	385	390	400	420	430	475	485	525	550
B	M16x1,5	M22x1,5	M28x1,5	M35x1,5	M45x1,5	M58x1,5	M65x1,5	M65x1,5	M80x2
C	16	22	28	35	45	58	65	65	80
D	52	65	80	100	120	145	160	185	210
E	55	65	80	85	90	105	115	130	140
F	20	23	23	27	27	33	33	42	42
G	G 3/8"	G 1/2 "	G 1/2 "	G 3/4 "	G 3/4 "	G 1"	G 1"	G 1 1/4 "	G 1 1/4 "
H	20	20	20	20	25	25	25	25	25
J	41	48	55	70	80	93	103	120	130
K±max	2	2	2	2	2	3	3	3	3
Type H									
HA	100	120	155	185	225	280	310	350	400
HB	70	85	105	125	150	180	200	230	260
HC	70	85	105	125	150	170	190	220	250
HD (e8)	25	30	35	45	55	70	80	90	100
HE	30	40	45	55	65	90	100	110	120
HF	120	135	160	175	190	215	230	270	285
HG	120	115	120	120	130	145	150	165	185



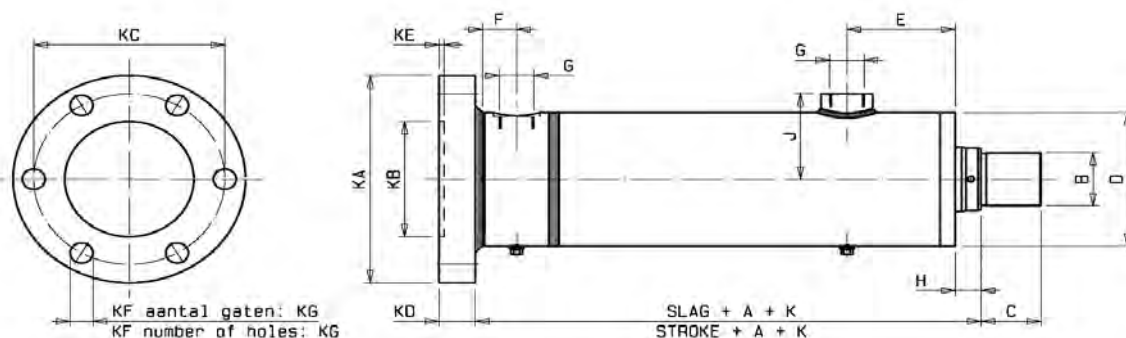


* Dimensions in mm

* Subject to alteration

Bore	40	50	65	80	100	125	140	160	180
Pistonrod	25	25/35	35/45	45/55	55/70	70/90	80/100	90/110	100/125
Stroke	≤1200					≤2000			
A	185	190	200	220	230	275	285	325	350
Stroke	1200-2500					2000-4000			
A	285	290	300	320	330	375	385	425	450
Stroke	> 2500					>4000			
A	385	390	400	420	430	475	485	525	550
B	M16x1,5	M22x1,5	M28x1,5	M35x1,5	M45x1,5	M58x1,5	M65x1,5	M65x1,5	M80x2
C	16	22	28	35	45	58	65	65	80
D	52	65	80	100	120	145	160	185	210
E	55	65	80	85	90	105	115	130	140
F	20	23	23	27	27	33	33	42	42
G	G 3/8"	G 1/2 "	G 1/2 "	G 3/4 "	G 3/4 "	G 1"	G 1"	G 1 1/4 "	G 1 1/4 "
H	20	20	20	20	25	25	25	25	25
J	41	48	55	70	80	93	103	120	130
K±max	2	2	2	2	2	3	3	3	3
Type J									
JA	100	125	145	175	210	225	255	305	330
JB (e8)	60	75	90	110	130	155	170	195	220
JC	80	100	120	145	170	185	210	245	270
JD	15	18	22	25	30	35	40	45	50
JE	42	44	44	47	52	55	60	63	63
JF	11	14	14	18	22	22	26	33	33
JG	4	4	6	6	6	7	7	7	7



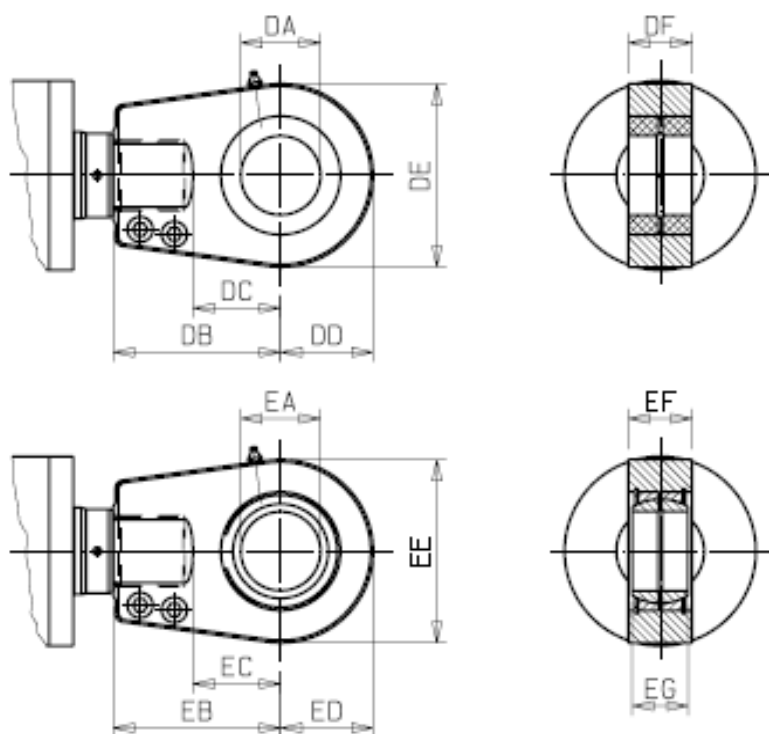


* Dimensions in mm

* Subject to alteration

Bore	40	50	65	80	100	125	140	160	180
Pistonrod	25	25/35	35/45	45/55	55/70	70/90	80/100	90/110	100/125
Stroke	≤1200					≤2000			
A	185	190	200	220	230	275	285	325	350
Stroke	1200-2500					2000-4000			
A	285	290	300	320	330	375	385	425	450
Stroke	> 2500					>4000			
A	385	390	400	420	430	475	485	525	550
B	M16x1,5	M22x1,5	M28x1,5	M35x1,5	M45x1,5	M58x1,5	M65x1,5	M65x1,5	M80x2
C	16	22	28	35	45	58	65	65	80
D	52	65	80	100	120	145	160	185	210
E	55	65	80	85	90	105	115	130	140
F	20	23	23	27	27	33	33	42	42
G	G 3/8"	G 1/2 "	G 1/2 "	G 3/4 "	G 3/4 "	G 1"	G 1"	G 1 1/4 "	G 1 1/4 "
H	20	20	20	20	25	25	25	25	25
J	41	48	55	70	80	93	103	120	130
K±max	2	2	2	2	2	3	3	3	3
Type K									
KA	100	125	145	175	210	225	225	305	330
KB (H10)	40	50	65	80	100	125	140	160	180
KC	80	100	120	145	170	185	210	245	270
KD	15	18	22	25	30	35	40	45	50
KE	3	3	3	4	4	5	5	5	5
KF	11	14	14	18	22	22	26	33	33
KG	4	4	6	6	6	7	7	7	7





* Dimensions in mm

* Subject to alteration

Code	Type D						Type E						
Bore	DA (H11)	DB	DC	DD	DE	DF	EA (M7)	EB	EC	ED	EE	EF	EG
40	25	50	25	28	56	23	25	50	25	28	56	23	20
50	30	60	30	32	64	28	30	60	30	32	64	28	22
65	35	70	38	39	78	30	35	70	38	39	78	30	25
80	40	85	45	47	94	35	40	85	45	47	94	35	28
100	50	105	55	58	116	40	50	105	55	58	116	40	35
125	60	130	65	70	130	50	60	130	65	70	130	50	44
140	70	150	75	82	154	55	70	150	75	82	154	55	49
160	70	150	75	82	154	55	70	150	75	82	154	55	49
180	80	170	80	95	176	60/	80	170	80	95	176	60	55

