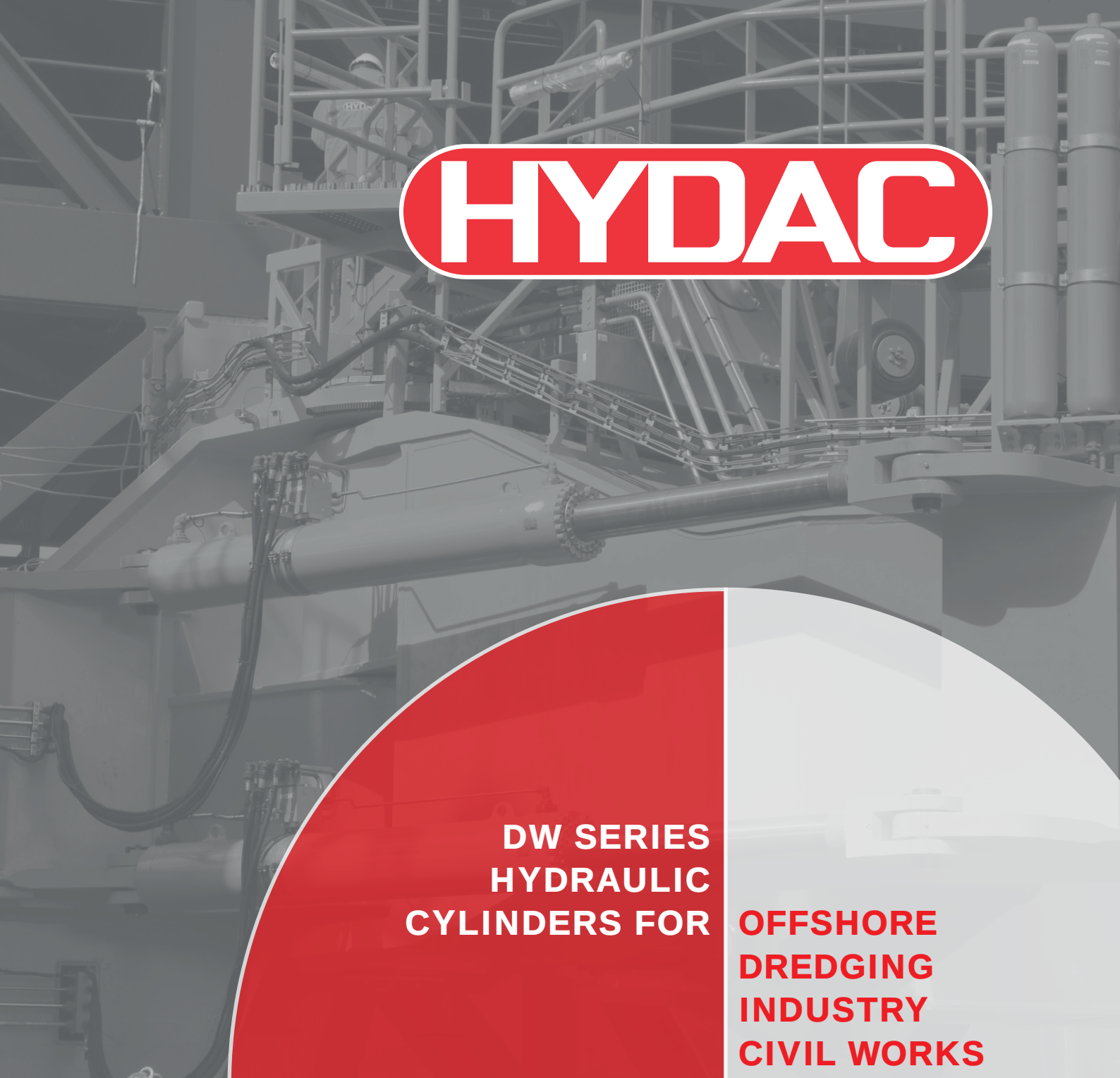




HYDAC

**DW SERIES
HYDRAULIC
CYLINDERS FOR**

**OFFSHORE
DREDGING
INDUSTRY
CIVIL WORKS**

HYCOM B.V.

P.O. Box 1079 | 7301 BH Apeldoorn

Antillen 43 | 7333 PE Apeldoorn | The Netherlands

T +31 (0)88 0597 200 | Trade Register: 08080097

E info@hycom.nl | W www.hycom.nl

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.



DW SERIES HYDRAULIC CYLINDERS

The Hycom DW series cylinders has been designed to meet hard working conditions. Their solid construction suits the cases of general mechanical engineering when heavy strains of the cylinders are required. Every time, a multitude of mounting combinations allows to erect cylinders according to the way suitable for the working conditions.

The maximum possible stroke depends on the bending strength of the piston rod, on the resulting pushing force and on the kind of mounting of the cylinder. This has to be determined according to the buckling graph.

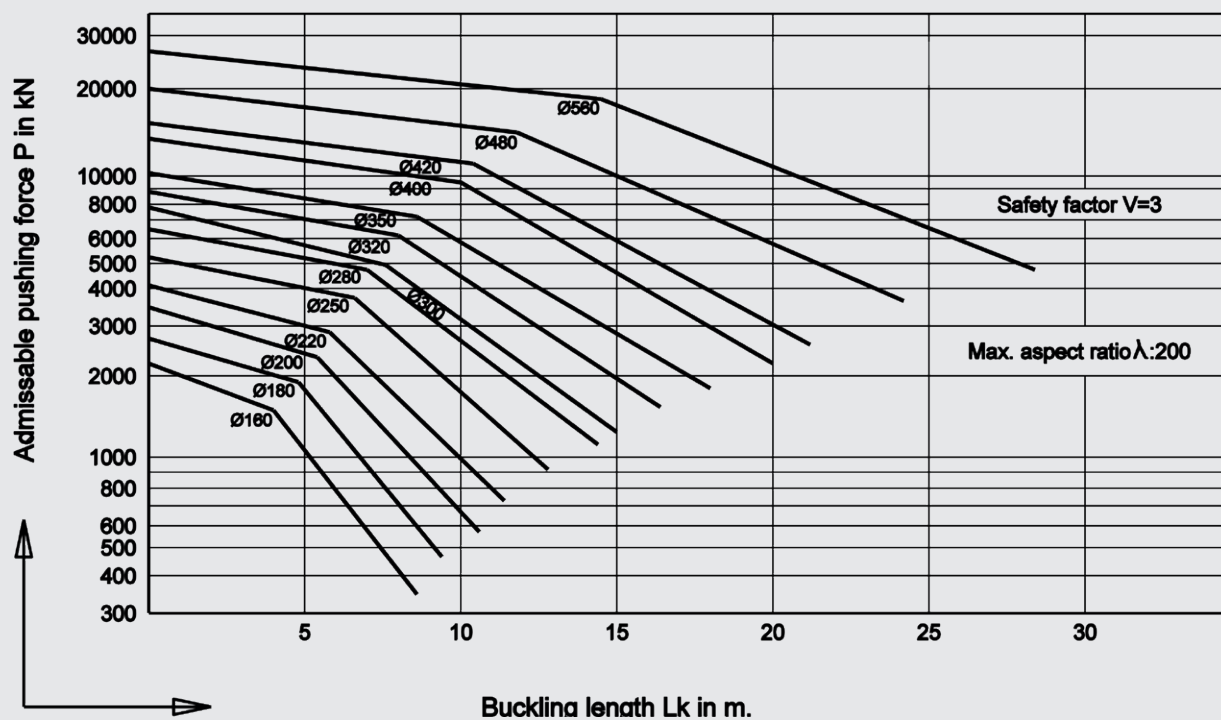
For the DW series culinders we use seamless honed steel tubes. The heads and cylinder bottoms are made of steel. The piston rods are made of high quality material, there are four standard surface treatments available. On request they can be hardened additionally. The interchangeable piston guides and guide bushing are made of bronze.

Also the cylinder can be equipped with cushioning at one or both sides. The seals of the piston rod are re-adjustable. The cylinders are suitable for a standard pressure of 25 MPa (= 250 bar). The standard sealing material has been laid out for a maximum speed of 0,5 m/s.

PISTON ROD PROCESSING

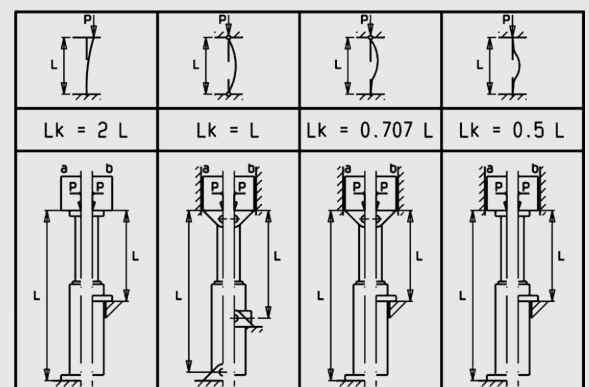
CODE-1	Carbon steel with galvanic single-layer coating (hard chromium)
1	* S355 + 0.050mm hard chromium
1.1	* other base material and/or layer thickness
CODE-2	Carbon steel with galvanic dual-layer coating (nickel-hard chromium)
2	* S355 + 0.060/0.040mm nickel/hard chromium
2.1	* other base material and/or layer thickness
CODE-3	Stainless steel with galvanic single-layer coating (Hard Chromium)
3	* AISI431 + 0.050mm hard chromium
3.1	* other base material and/or layer thickness
CODE-4	Carbon steel with plasma sprayed coating (ceramic/metal)
4	* S355 + 0.020/0.200mm inconel625/chromium titanate
4.1	* other base material
CODE-5	Staal with special surface treatment (tbd)
5	* S355 + (tbd)
5.1	* other base material and/or treathment
CODE-6	Carbon steel with HVOF-sprayed coating (metal)
6	* S355 + 0.020/0.150mm inconel625/chromium carbide-nickel/chromium
6.1	* other base material

Graph to determine the piston rod diameter on buckling



Side load of piston rods

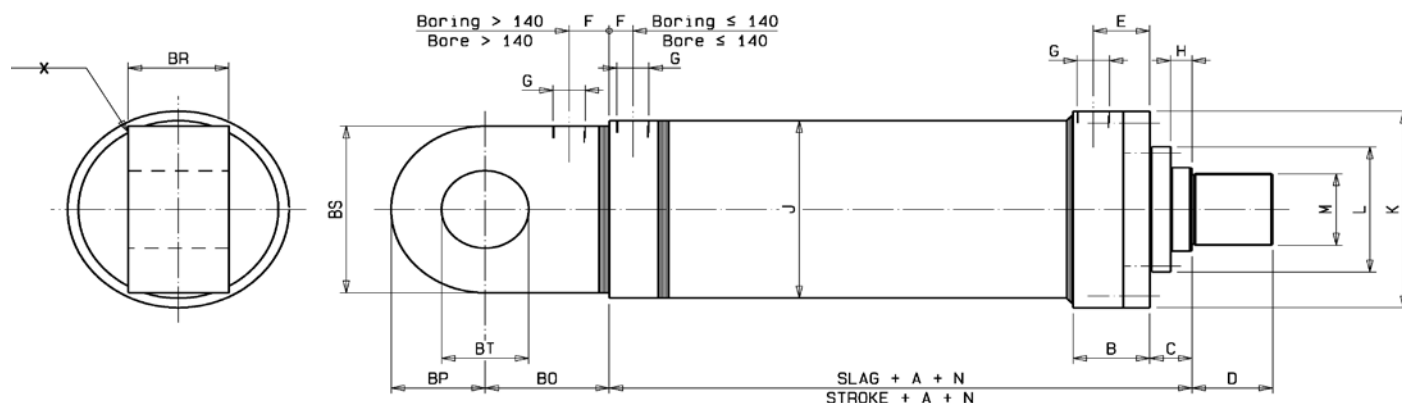
Hydraulic cylinders preferably are to be installed in such a manner, that side loads cannot occur. In the event that side loading is unavoidable, the piston rod must be designed for bending loads, as well as for buckling loads.





Model code for cylinder DW

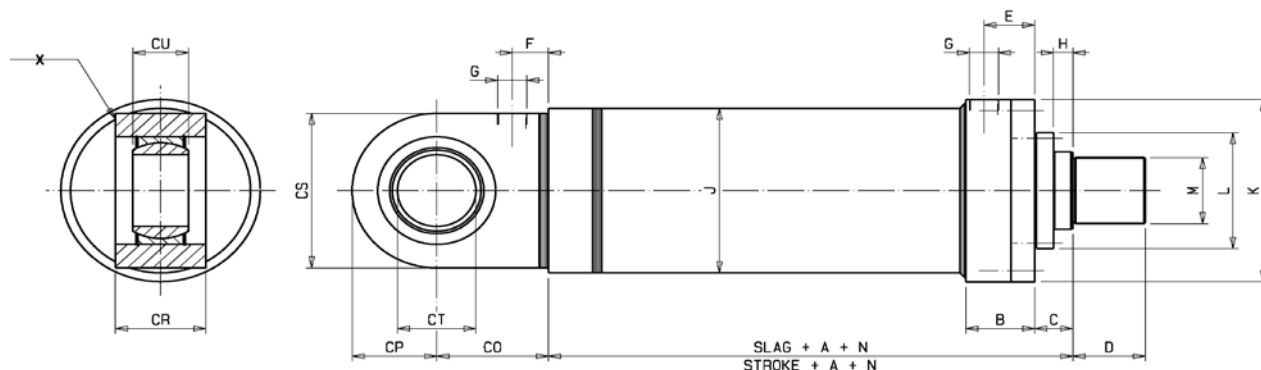
	Cylinder type	Bore	Rod Dia.	Type of mounting	Stroke	Rod processing	cushioning	pressure	Option for signaling
example	DW	140	/80 -	C/E -	250 -	2 -	P -	Y -	LO
	DW = Double acting DLP = Double acting with double piston rods	Bore 40/28 160/90 50/28 160/125 50/35 180/90 63/35 180/125 63/45 200/100 80/45 200/140 80/55 220/125 100/55 220/160 100/70 250/140 125/70 250/150 125/90 280/160 140/80 280/200 140/100	Stroke in mm	1 = standard chromium plated 2 = Corrosion resistant chromium plated 3 = Stainless steel	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)		
			Cylinder mountings B = Bottom eye C = Bottem eye with ball joint bearing H = Trunnion mounting J = Front flange K = Bottom flange L = Foot Mounting Rod connections D = Screw on rod eye E = Screw on rod eye with ball joint bearing						



* Dimensions in mm
* Subject to alteration

Bore	320		360		400			460			520			580			650			720			800			
Pistonrod	160	220	180	250	200	280	320	250	300	320	250	300	350	300	350	400	320	400	480	350	420	480	400	480	560	
Stroke	≤ 2250													≤ 3000												
A	485	520	530	555	600	630	650	680	725	740	777	827	877	882	932	982	962	1042	1122	1052	1122	1182	1172	1252	1332	
Stroke	2251 - 4000													3001 - 4500												
A	685	720	730	755	800	830	850	880	925	940	977	1027	1077	1082	1132	1182	1162	1242	1233	1152	1322	1382	1372	1452	1532	
Stroke	4001 - 6000													4501 - 7250 Longer strokes on request												
A	785	820	830	855	900	930	950	980	1025	1040	1077	1127	1177	1182	1232	1282	1262	1342	1422	1352	1422	1482	1472	1552	1632	
B	127	160	138	160	150	180	190	170	190	200	195	210	230	205	225	255	220	245	270	245	270	300	265	295	325	
C	55	57	56	58	58			58			62			67			72			77			82			
D	130		140		175			200			280			300			325			350			380			
E	97	130	103	125	115	145	155	135	155	165	150	165	185	160	180	210	175	200	225	195	220	250	93	110		
F	50		60		60			60			70			70			70			80			80			
G	G 1 1/4 "		G 1 1/2 "		G 1 1/2 "			G 1 1/2 "			G 1 3/4 "			G 1 3/4 "			G 1 3/4 "			G2"			G2"			
H	25		25		25			25			25			30			30			36			30			
J	368		419		470			558			625			700			780			865			960			
K	410		450		490			590			650			720			800			890			980			
L	220	295	245	325	265	370	410	325	380	400	390	440	490	440	490	540	460	540	620	490	560	620	540	620	700	
M	M110x3		M125x3		M140x3			M160x3			M185x3			M210x3			M240x3			M250x3			M280x3			
N±(max.)	5		5		5			5			6			6			6			6			7			
TypeB																										
BO	180		200		220			260			270			300			330			370			405			
BP	165		180		195			210			235			260			285			320			350			
BR	160		180		200			250			270			310			330			370			400			
BS	220		250		290			320			370			420			460			510			560			
BT(H8)	140		160		180			220			240			270			290			330			360			



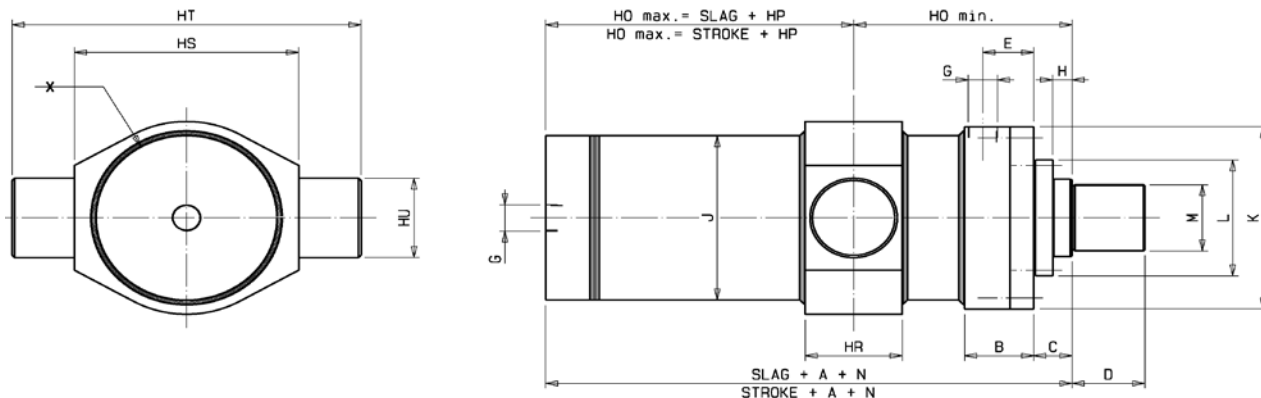


* Dimensions in mm
* Subject to alteration

Bore	320		360		400			460			520			580			650			720			800		
Pistonrod	160	220	180	250	200	280	320	250	300	320	250	300	350	300	350	400	320	400	480	350	420	480	400	480	560
Stroke	≤ 2250													≤ 3000											
A	485	520	530	555	600	630	650	680	725	740	777	827	877	882	932	982	962	1042	1122	1052	1122	1182	1172	1252	1332
Stroke	2251 - 4000													3001 - 4500											
A	685	720	730	755	800	830	850	880	925	940	977	1027	1077	1082	1132	1182	1162	1242	1233	1152	1322	1382	1372	1452	1532
Stroke	4001 - 6000													4501 - 7250 Longer strokes on request											
A	785	820	830	855	900	930	950	980	1025	1040	1077	1127	1177	1182	1232	1282	1262	1342	1422	1352	1422	1482	1472	1552	1632
B	127	160	138	160	150	180	190	170	190	200	195	210	230	205	225	255	220	245	270	245	270	300	265	295	325
C	55	57	56	58	58			58			62			67			72			77			82		
D	130		140		175			200			280			300			325			350			380		
E	97	130	103	125	115	145	155	135	155	165	150	165	185	160	180	210	175	200	225	195	220	250	93	110	
F	50		60		60			60			70			70			70			80			80		
G	G 1 1/4 "		G 1 1/2 "		G 1 1/2 "			G 1 1/2 "			G 1 3/4 "			G 1 3/4 "			G 1 3/4 "			G2"			G2"		
H	25		25		25			25			25			30			30			30			30		
J	368		419		470			558			625			700			780			865			960		
K	410		450		490			590			650			720			800			890			980		
L	220	295	245	325	265	370	410	325	380	400	390	440	490	440	490	540	460	540	620	490	560	620	540	620	700
M	M110x3		M125x3		M140x3			M160x3			M185x3			M210x3			M240x3			M250x3			M280x3		
N±(max.)	5		5		5			5			6			6			6			6			7		
TypeC																									
CO	240		270		310			350			395			450			510			565			610		
CP	210		235		275			300			345			400			455			510			55		
CR	100		105		105			135			150			170			195			220			245		
CS	340		375		440			460			525			600			675			755			850		
CT(M7)	140		160		180			220			240			280			340			380			420		
CU	90		105		105			135			140			155			160			190			190		



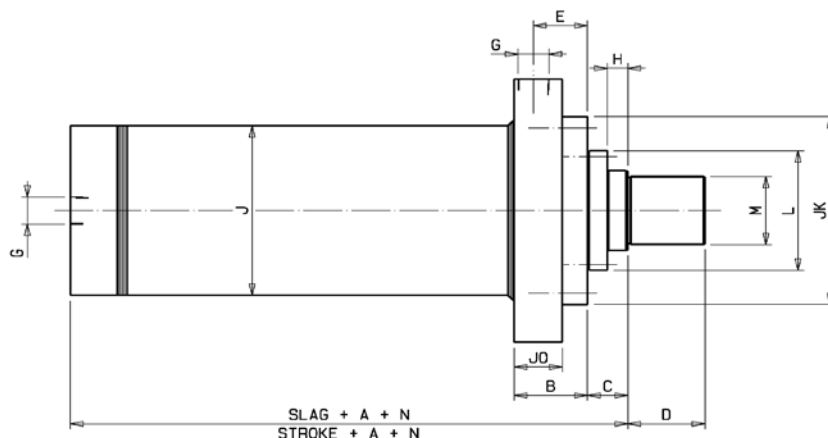
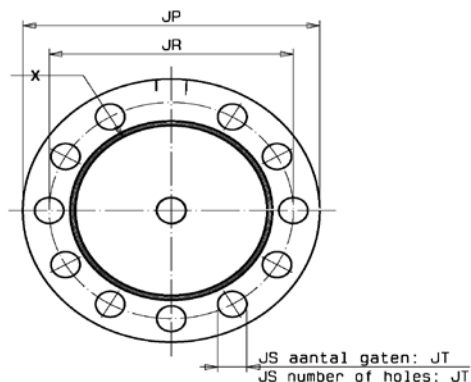
HYCOM B.V.
P.O. Box 1079 | 7301 BH Apeldoorn
Antillen 43 | 7333 PE Apeldoorn | The Netherlands
T +31 (0)88 0597 200
E info@hycom.nl | W www.hycom.nl | Trade Register:08080097



* Dimensions in mm
* Subject to alteration

Bore	320		360		400			460			520			580			650			720			800		
Pistonrod	160	220	180	250	200	280	320	250	300	320	250	300	350	300	350	400	320	400	480	350	420	480	400	480	560
Stroke	≤ 2250													≤ 3000											
A	485	520	530	555	600	630	650	680	725	740	777	827	877	882	932	982	962	1042	1122	1052	1122	1182	1172	1252	1332
Stroke	2251 - 4000													3001 - 4500											
A	685	720	730	755	800	830	850	880	925	940	977	1027	1077	1082	1132	1182	1162	1242	1233	1152	1322	1382	1372	1452	1532
Stroke	4001 - 6000													4501 - 7250 Longer strokes on request											
A	785	820	830	855	900	930	950	980	1025	1040	1077	1127	1177	1182	1232	1282	1262	1342	1422	1352	1422	1482	1472	1552	1632
B	127	160	138	160	150	180	190	170	190	200	195	210	230	205	225	255	220	245	270	245	270	300	265	295	325
C	55	57	56	58	58			58			62			67			72			77			82		
D	130		140		175			200			280			300			325			350			380		
E	97	130	103	125	115	145	155	135	155	165	150	165	185	160	180	210	175	200	225	195	220	250	93	110	
F	50		60		60			60			70			70			70			80			80		
G	G 1 1/4 "		G 1 1/2 "		G 1 1/2 "			G 1 1/2 "			G 1 3/4 "			G 1 3/4 "			G 1 3/4 "			G2"			G2"		
H	25		25		25			25			25			30			30			30			30		
J	368		419		470			558			625			700			780			865			960		
K	410		450		490			590			650			720			800			890			980		
L	220	295	245	325	265	370	410	325	380	400	390	440	490	440	490	540	460	540	620	490	560	620	540	620	700
M	M110x3		M125x3		M140x3			M160x3			M185x3			M210x3			M240x3			M250x3			M280x3		
N±(max.)	5		5		5			5			6			6			6			6			7		
TypeH																									
HO	317	352	339	363	363	393	403	393	413	423	447	462	482	472	492	522	512	537	562	557	582	612	602	632	662
HP	350	385	385	410	445	475	485	520	560	580	687	737	787	782	832	882	842	922	1002	917	987	1047	1017	1097	1117
HR	160		180		200			250			270			290			330			360			400		
HS	450		510		570			650			750			840			940			1040			1150		
HT	640		710		800			900			1060			1180			1320			1460			1620		
HU (e8)	140		160		180			220			240			260			290			320			360		



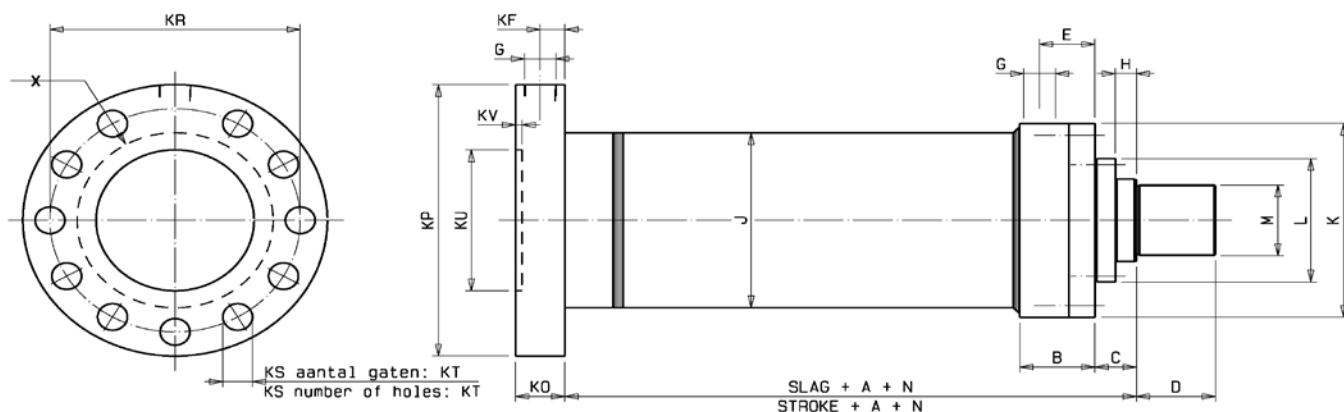


* Dimensions in mm
* Subject to alteration

Bore	320		360		400			460			520			580			650			720			800		
Pistonrod	160	220	180	250	200	280	320	250	300	320	250	300	350	300	350	400	320	400	480	350	420	480	400	480	560
Stroke	≤ 2250													≤ 3000											
A	485	520	530	555	600	630	650	680	725	740	777	827	877	882	932	982	962	1042	1122	1052	1122	1182	1172	1252	1332
Stroke	2251 - 4000													3001 - 4500											
A	685	720	730	755	800	830	850	880	925	940	977	1027	1077	1082	1132	1182	1162	1242	1233	1152	1322	1382	1372	1452	1532
Stroke	4001 - 6000													4501 - 7250 Longer strokes on request											
A	785	820	830	855	900	930	950	980	1025	1040	1077	1127	1177	1182	1232	1282	1262	1342	1422	1352	1422	1482	1472	1552	1632
B	127	160	138	160	150	180	190	170	190	200	195	210	230	205	225	255	220	245	270	245	270	300	265	295	325
C	55	57	56	58	58			58			62			67			72			77			82		
D	130		140		175			200			280			300			325			350			380		
E	97	130	103	125	115	145	155	135	155	165	150	165	185	160	180	210	175	200	225	195	220	250	93	110	
F	50		60		60			60			70			70			70			80			80		
G	G 1 1/4 "		G 1 1/2 "		G 1 1/2 "			G 1 1/2 "			G 1 3/4 "			G 1 3/4 "			G 1 3/4 "			G2"			G2"		
H	25		25		25			25			25			30			30			30			30		
J	368		419		470			558			625			700			780			865			960		
K	410		450		490			590			650			720			800			890			980		
L	220	295	245	325	265	370	410	325	380	400	390	440	490	440	490	540	460	540	620	490	560	620	540	620	700
M	M110x3		M125x3		M140x3			M160x3			M185x3			M210x3			M240x3			M250x3			M280x3		
N±(max.)	5		5		5			5			6			6			6			6			7		
Type J																									
JK(e8)	410		450		490			590			650			720			800			890			980		
JO	80		90		100			120			140			145			155			170			185		
JP	550		610		650			780			840			910			990			1110			1200		
JR	480		530		570			690			750			820			900			1000			1100		
JS	32		38		38			45			45			45			45			52			52		
JT	15		16		16			16			16			23			23			23			29		



HYCOM B.V.
P.O. Box 1079 | 7301 BH Apeldoorn
Antillen 43 | 7333 PE Apeldoorn | The Netherlands
T +31 (0)88 0597 200
E info@hycom.nl | W www.hycom.nl | Trade Register:08080097

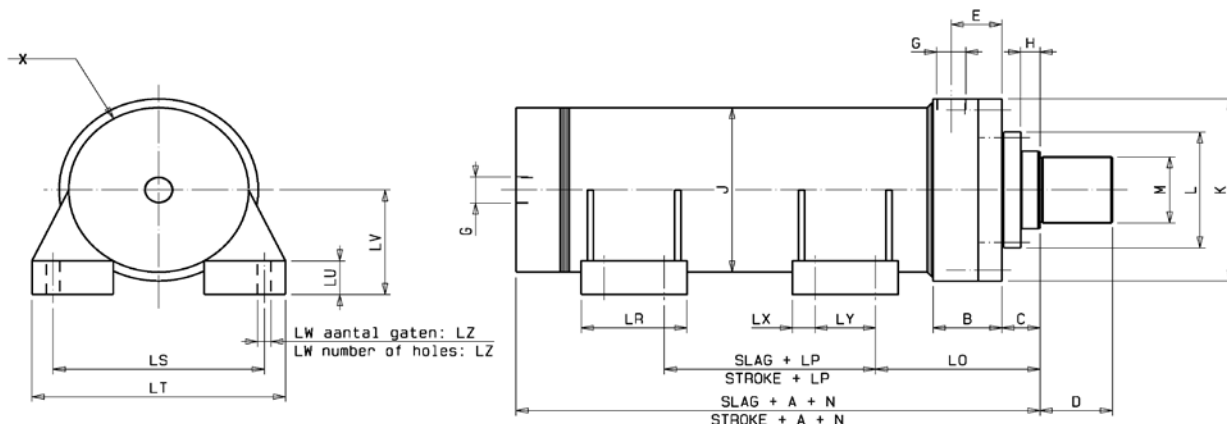


* Dimensions in mm
* Subject to alteration

Bore	320			360		400			460			520			580			650			720			800		
Pistonrod	160	220	180	250	200	280	320	250	300	320	250	300	350	300	350	400	320	400	480	350	420	480	400	480	560	
Stroke	≤ 2250													≤ 3000												
A	485	520	530	555	600	630	650	680	725	740	777	827	877	882	932	982	962	1042	1122	1052	1122	1182	1172	1252	1332	
Stroke	2251 - 4000													3001 - 4500												
A	685	720	730	755	800	830	850	880	925	940	977	1027	1077	1082	1132	1182	1162	1242	1233	1152	1322	1382	1372	1452	1532	
Stroke	4001 - 6000													4501 - 7250 Longer strokes on request												
A	785	820	830	855	900	930	950	980	1025	1040	1077	1127	1177	1182	1232	1282	1262	1342	1422	1352	1422	1482	1472	1552	1632	
B	127	160	138	160	150	180	190	170	190	200	195	210	230	205	225	255	220	245	270	245	270	300	265	295	325	
C	55	57	56	58	58			58			62			67			72			77			82			
D	130		140		175			200			280			300			325			350			380			
E	97	130	103	125	115	145	155	135	155	165	150	165	185	160	180	210	175	200	225	195	220	250	93	110		
F	50		60		60			60			70			70			70			80			80			
G	G 1 1/4 "		G 1 1/2 "		G 1 1/2 "			G 1 1/2 "			G 1 3/4 "			G 1 3/4 "			G 1 3/4 "			G2"			G2"			
H	25		25		25			25			25			30			30			30			30			
J	368		419		470			558			625			700			780			865			960			
K	410		450		490			590			650			720			800			890			980			
L	220	295	245	325	265	370	410	325	380	400	390	440	490	440	490	540	460	540	620	490	560	620	540	620	700	
M	M110x3		M125x3		M140x3			M160x3			M185x3			M210x3			M240x3			M250x3			M280x3			
N±(max.)	5		5		5			5			6			6			6			6			7			
Type K																										
KF	35		40		40			40			50			50			50			60			75			
KO	95		95		95			110			130			135			140			155			170			
KP	530		600		650			750			820			890			970			1000			1180			
KR	460		520		570			660			730			800			880			980			1080			
KS	32		38		38			45			45			45			45			52			52			
KT	15		16		16			16			16			23			23			23			29			
KU(H8)	360		420		470			560			620			700			780			860			960			
KV	7		10		10			10			10			10			15			15			15			



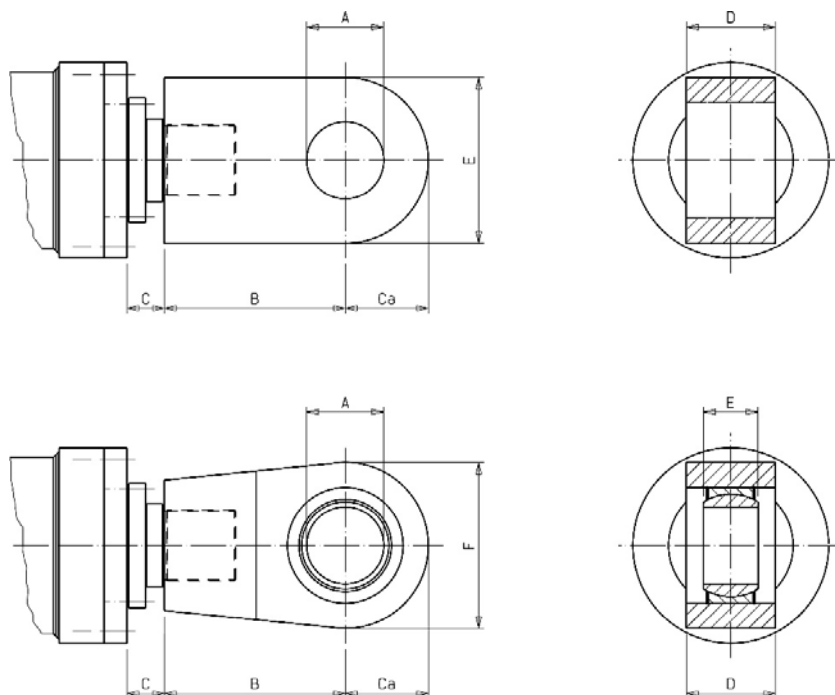
HYCOM B.V.
P.O. Box 1079 | 7301 BH Apeldoorn
Netherlands | 7333 PE Apeldoorn | The Netherlands
T +31 (0)88 0597 200
E info@hycom.nl | W www.hycom.nl | Trade Register: 08080097



* Dimensions in mm
* Subject to alteration

Bore	320		360		400			460			520			580			650			720			800				
Pistonrod	160	220	180	250	200	280	320	250	300	320	250	300	350	300	350	400	320	400	480	350	420	480	400	480	560		
Stroke	≤ 2250													≤ 3000													
A	485	520	530	555	600	630	650	680	725	740	777	827	877	882	932	982	962	1042	1122	1052	1122	1182	1172	1252	1332		
Stroke	2251 - 4000													3001 - 4500													
A	685	720	730	755	800	830	850	880	925	940	977	1027	1077	1082	1132	1182	1162	1242	1233	1152	1322	1382	1372	1452	1532		
Stroke	4001 - 6000													4501 - 7250 Langere slaglengte op aanvraag Longer strokes on request													
A	785	820	830	855	900	930	950	980	1025	1040	1077	1127	1177	1182	1232	1282	1262	1342	1422	1352	1422	1482	1472	1552	1632		
B	127	160	138	160	150	180	190	170	190	200	195	210	230	205	225	255	220	245	270	245	270	300	265	295	325		
C	55	57	56	58	58			58			62			67			72			77			82				
D	130		140		175			200			280			300			325			350			380				
E	97	130	103	125	115	145	155	135	155	165	150	165	185	160	180	210	175	200	225	195	220	250	93	110			
F	50		60		60			60			70			70			70			80			80				
G	G 1 1/4 "		G 1 1/2 "		G 1 1/2 "			G 1 1/2 "			G 1 3/4 "			G 1 3/4 "			G 1 3/4 "			G2"			G2"				
H	25		25		25			25			25			30			30			30			30				
J	368		419		470			558			625			700			780			865			960				
K	410		450		490			590			650			720			800			890			980				
L	220	295	245	325	265	370	410	325	380	400	390	440	490	440	490	540	460	540	620	490	560	620	540	620	700		
M	M110x3		M125x3		M140x3			M160x3			M185x3			M210x3			M240x3			M250x3			M280x3				
N±(max.)	5		5		5			5			6			6			6			6			7				
Type L																											
LO	317	352	339	363	353	383	393	388	418	448	497	512	532	512	532	562	542	567	592	602	627	657	637	667	692		
LP	-157		-189		-188		-138			-148			-145			-220			-185			-255			-365		
LR	360		420		420			480			560			720			750			850			1040				
LS	440		500		560			625			725			780			880			985			1080				
LT	515		585		645			725			845			900			1000			1125			1220				
LU	85		95		110			110			120			120			130			140			150				
LV	215		235		255			310			340			380			420			470			520				
LW	39		45		45			52			60			60			60			68			68				
LX	80		90		90			100			120			120			120			140			140				
LY	2x100		2x120		2x120			2x140			2x160			2x160			2x170			2x190			2x190				
LZ	12		12		12			12			12			16			16			16			20				
Min. Slag / Min. Stroke	600		705		705			705			825			1060			1065			1245			1555				





* Dimensions in mm
* Subject to alteration

Code	Type D					Type E					
Bore	A	B	Ca	D	E	A	B	Ca	D	E	F
320	140	265	165	160	220	140	395	210	90	100	340
360	160	290	180	180	250	160	440	235	105	105	375
400	180	315	195	200	290	180	520	275	105	105	440
460	220	370	210	250	320	220	620	300	135	135	460
520	240	420	235	270	370	240	670	345	140	150	525
580	270	470	260	310	420	270	780	400	155	170	600
650	290	525	285	330	460	290	920	455	160	195	675
720	330	570	320	370	510	330	1020	510	190	220	755
800	360	630	350	400	560	360	1050	550	190	245	850



HYCOM B.V.
P.O. Box 1079 | 7301 BH Apeldoorn
Antillen 43 | 7333 PE Apeldoorn | The Netherlands
T +31 (0)88 0597 200
E info@hycom.nl | W www.hycom.nl | Trade Register: 08080097