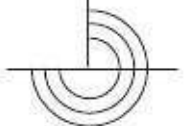


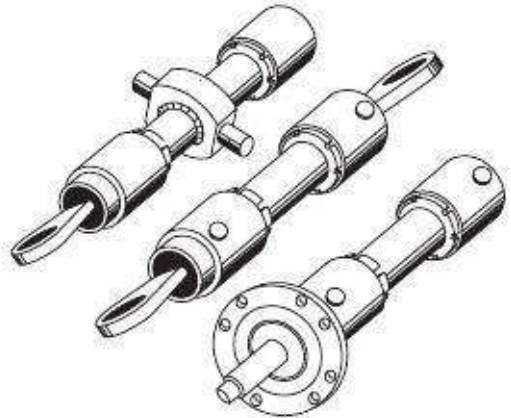
B



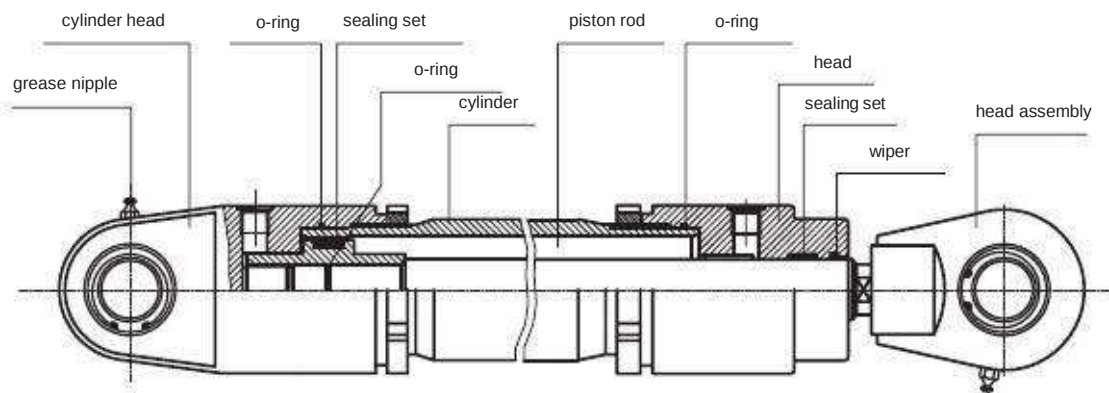
Doubled-acting cylinders

DESCRIPTION

- Threaded design.
- Cylinders are fabricated of steel tubes.
- Piston rods are made of hardened steel, while sliding surfaces are hard-chromium plated.
- High-quality sealing material contributes to long service life and high reliability under all service duties.
- Standardized components make possible for short delivery terms and easier servicing.
- Any of the hydraulic cylinders from this series can be fitted with bolt eye head or swivel bearing head.



B

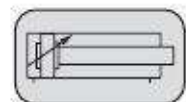
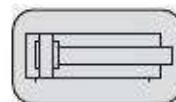


TECHNICAL DATA

Symbol

cylinder without cushioning

cylinder with cushioning



GENERAL

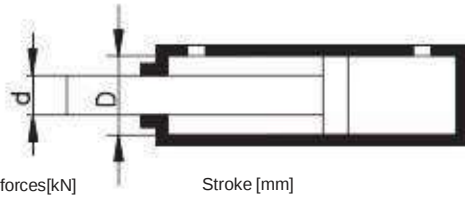
Line connection	threaded ports DIN 3852
Mounting position	optional
Loading direction	along the cylinder axis
Ambient temperature [°C]	to +50
Mass [kg]	according to the table

HYDRAULIC

Pressure [bar]	nominal	210
	max	260
Force, stroke	given in separate table	
Piston speed [m/s]	max 0,5	
Working fluid	mineral oil	
	viscosity [mm ² /s]	10 to 400
	temperature [°C]	-20 to +80

Doubled-acting cylinders

FORCES AND STROKES



Nominal size	ØD	ød	Static forces[kN] at 210 bar		Stroke [mm] max (depending of the pressure)*				min
			push	pull	50 bar	100 bar	150 bar	210 bar	
A - 40/22 B - 40/22	40	22	25,3	17,7	490	315	235	185	65
C - 40/22 D - 40/22					720	480	370	300	112
F - 40/22					1500	1170	940	860	
A - 50/28 B - 50/28					505	330	250	200	65
C - 50/28 D - 50/28					660	430	330	230	65
F - 50/28	50	28	40,3	27,5	940	640	500	390	120
A - 63/36 B - 63/36					2000	1520	1230	1000	
C - 63/36 D - 63/36					673	443	343	243	65
F - 63/36					900	600	460	370	65
A - 80/45 B - 80/45					63	36	63,8	42,4	1280
C - 80/45 D - 80/45	2880	2000	1600	1470					
F - 80/45	917	617	477	387					65
A - 100/56 B - 100/56	1100	740	580	470					75
C - 100/56 D - 100/56	80	45	103	69,8					1570
F - 100/56					3000	2470	1930	1680	
A - 125/70 B - 125/70					1118	758	598	488	75
C - 125/70 D - 125/70					1400	940	730	595	75
F - 125/70					100	56	160	110	2000
A - 140/80 B - 140/80	3000	3000	2500	1900					
C - 140/80 D - 140/80	1424	964	754	619					75
F - 140/80	1780	1200	940	770					100
A - 160/90 B - 160/90	125	70	253	173					2470
C - 160/90 D - 160/90					3000	3000	3000	2590	
F - 160/90					1812	1232	972	802	100
A - 180/100 B - 180/100					2090	1410	1110	900	105
C - 180/100 D - 180/100					140	80	318	214	2900
F - 180/100	3000	3000	3000	3000					
A - 200/110 B - 200/110	2130	1450	1150	940					105
C - 200/110 D - 200/110	2320	1570	1230	1000					120
F - 200/110	160	90	412	280					3000
A - 225/125 B - 225/125					3000	3000	3000	3000	
C - 225/125 D - 225/125					2363	1613	1273	1043	120
F - 225/125					2560	1730	1360	1135	120
A - 250/140 B - 250/140					180	100	524	362	3000
C - 250/140	3000	3000	3000	3000					
	2603	1773	1403	1178					120
	2770	1870	1470	1200					145
	200	110	648	452					3000
					3000	3000	3000	3000	
					2813	1913	1513	1243	145
					3000	2150	1698	1380	215
					225	125	819	566	3000
	3000	3000	3000	3000					
	3000	2190	1735	1420					215
	3000	2438	1920	1560					215
	250	140	1030	707					3000
D - 250/140					3000	3000	3000	3000	215
F - 250/140					3000	2470	1950	1590	

* Strokes indicated in this table may be higher, depending on the application conditions.

Doubled-acting cylinders

MASS [kg] - THEORETICAL VALUES

Nominal size	Design A, B		Design C		Design D, F		Design A,B
	stroke = 0	* stroke > 0	stroke = 0	stroke > 0	stroke = 0	stroke > 0	
40/22	5,33	5,33 + 0,915 stroke	5,39	5,39 + 0,91 5 stroke	5,16	5,16 + 0,91 5 stroke	0,52
50/28	7,12	7,12 + 1,428 stroke	7,40	7,40 + 1,428 stroke	7,68	7,68 + 1 . 428 stroke	0,81
63/36	11,35	11,35 + 1,913 stroke	11,46	11,46 + 1,913 stroke	11,08	11,08 + 1,913 stroke	1,39
80/45	18,91	18,91 + 2,867 stroke	19,31	1 9,31 + 2,867 stroke	19,30	19,30 + 2,867 stroke	2,50
100/56	28,15	28,15 + 4,945 stroke	27,61	27,61 + 4,945 stroke	31,93	31 ,93 + 4,945 stroke	4,33
125/70	47,84	47,84 + 6,529 stroke	45,32	45,32 + 6,529 stroke	45,76	45,76 + 6;529 stroke	7,48
140/80	61,33	61,33 + 9,263 stroke	60,32	60,32 + 9,263 stroke	55,80	55,80 + 9,263 stroke	11,20
160/90	80,89	80,89 + 12,176 stroke	79,66	79,66 + 12,176 stroke	74,11	74,11 + 12,1 76 stroke	17,92
180/100	105,34	105,34 + 14,955 stroke	92,24	92,24 + 14,955 stroke	100,40	100,4 + 14,955 stroke	17,92
200/110	146,32	146,32 + 15,413 stroke	116,46	116,46 +15,413 stroke	135,24	135,24+ 15,413 stroke	29,72
225/125	193,98	193,98 + 22,37 stroke	170,42	170,42 + 22,37 stroke	188,00	188,00 + 22,37 stroke	38,36
250/140	252,57	252,57 + 28,301 stroke	257,68	257,68 + 28,301stroke	308,44	308,44+ 28,301 stroke	54,62
* stroke = [dm]							

DESIGNATION

CYLINDERS

i1 * — D / d / H / *

Mounting mode:

- A — cylinder with bolt eye
- B — cylinder with swivel bearing
- C — cylinder with central trunnion
- D — cylinder with cylinder head flange
- F — cylinder with end flange

Nominal size:

ØD - piston diameter
Ød - piston rod diameter

Stroke:
(to table)

Piston cushioning variant:
0 without cushioning
1 both-end cushioning
2 piston side cushioning
3 piston rod side cushioning

Ordering example:

To double-acting hydraulic cylinder with swivel bearing, cylinder diameter D = 100 [mm], piston rod diameter d = 56 [mm], piston stroke H = 500 [mm], with both-end cushioning effect, bears the following designation:

i1B-100/56/500/1.

CYLINDER HEADS

I1G — **

Mounting mode:

- A = with bolt eye
- B = with swivel bearing

Nominal diameter:
of bolt eye or swivel bearing (according to table)

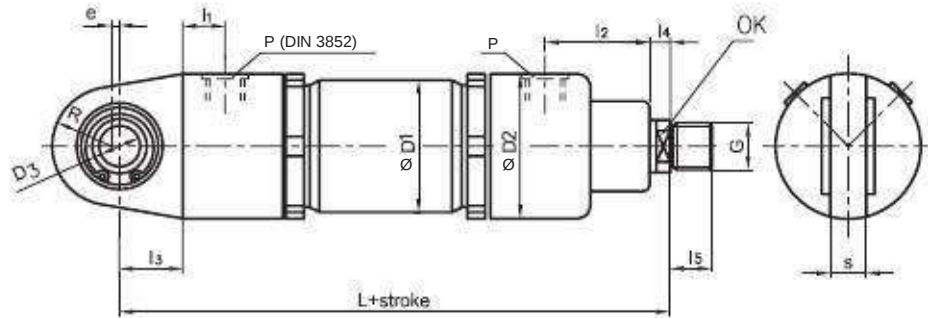
Ordering example:

For C-100/56 the head I1G-A50 or E1G-B50 head may be ordered.

Doubled-acting cylinders

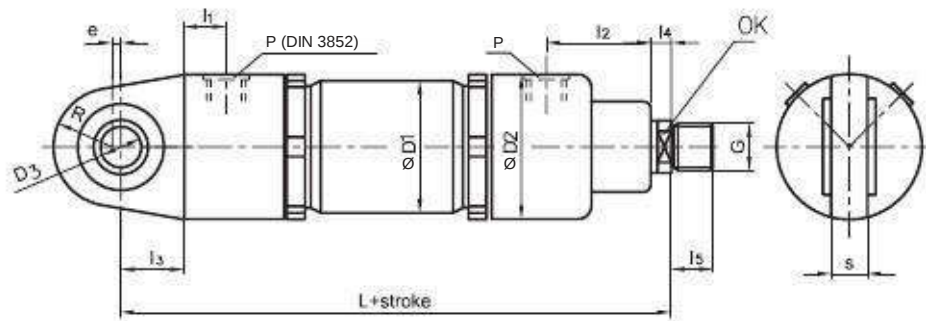
CYLINDER MOUNTING DRAWINGS

Design "A"



Nominal size	L	P	ØD	ØD	ØD3	G	l1	l2	l3	l4	l5	R	S	e	OK
			12H8												
A - 40/22	187	M20x1,5	54	68	25	M16x1,5	23	50	30	10	16	28	23	4	17
A - 50/28	200	M22x1,5	63,5	76	30	M22x1,5	23	54	32	10	22	32	28	2	22
A - 63/36	204		76	95	35	M28x1,5	24	54	38	10	28	39	30	3	30
A - 80/45	236	M27x2	95	114	40	M35x1,5	26	65	45	16	35	47	35	3	36
A - 100/56	262		122	132	50	M45x1,5	28	67	55	16	45	58	40	5	46
A - 125/70	285	M33x2	146	165	60	M58x1,5	30	73	65	15	58	65	50	5	60
A - 140/80	307		165	180	70	M65x1,5	34	77	75	14	65	77	55	5	70
A - 160/90	328	M42x2	185	200	80	M80x2	37	85	80	16	80	88	60	7	75
A - 180/100	353		205	220	80		40	98	80	16	80	88	60	7	80
A - 200/110	389	M48x2	230	247	90	M100x2	42	103	90	20	100	103	65	10	95
A - 225/125	447		267	280	100	M110x2	50	124	105	27	110	115	70	10	110
A - 250/140	504		298	330	110	M120x2	55	156	115	27	120	132	80	10	120

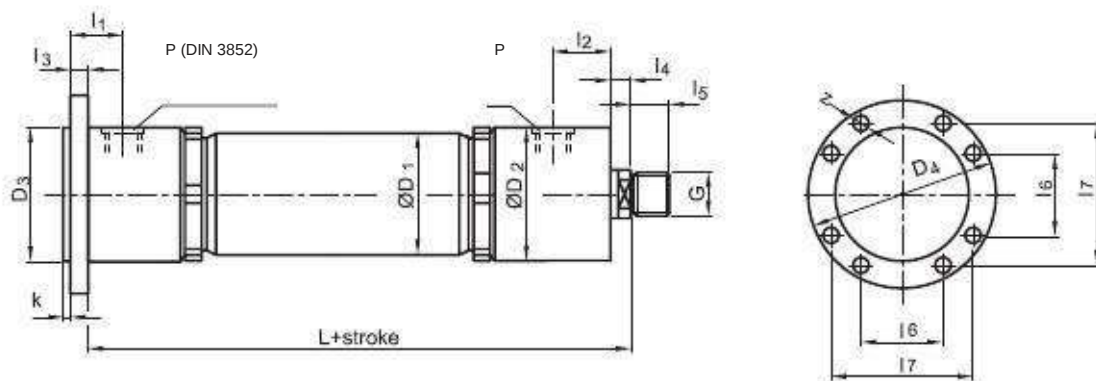
Design "B"



Nominal size	L	P	ØD	ØD	ØD	G	l1	l2	l3	l4	l5	R	S	e	OK
			123												
B - 40/22	187	M20x1,5	54	68	25	M16x1,5	23	50	30	10	16	28	23	4	17
B - 50/28	200	M22x1,5	63,5	76	30	M22x1,5	23	54	32	10	22	32	28	2	22
B - 63/36	204		76	95	35	M28x1,5	24	54	38	10	28	39	30	3	30
B - 80/45	236	M27x2	95	114	40	M35x1,5	26	65	45	16	35	47	35	3	36
B - 100/56	262		122	132	50	M45x1,5	28	67	55	16	45	58	40	5	46
B - 125/70	285	M33x2	146	165	60	M58x1,5	30	73	65	15	58	65	50	5	60
B - 140/80	307		165	180	70	M65x1,5	34	77	75	14	65	77	55	5	70
B - 160/90	328	M42x2	185	200	80	M80x2	37	85	80	16	80	88	60	7	75
B - 180/100	353		205	220	80		40	98	80	16	80	88	60	7	80
B - 200/110	389	M48x2	230	247	90	M100x2	42	103	90	20	100	103	65	10	95
B - 225/125	447		267	280	100	M110x2	50	124	105	27	110	115	70	10	110
B - 250/140	504		298	330	110	M120x2	55	156	115	27	120	132	80	10	120

Doubled-acting cylinders

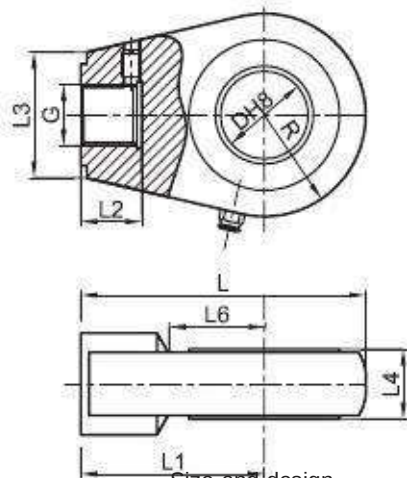
Design "F"



Nominal size	L	P	ØD1	ØD2	ØD3 e9	ØD4	G	l1	l2	l3	l4	l5	l6	l7	k	z	OK
F-40/22	172	M20x1,5	54	68	68	118	M16x1,5	35	47	12	10	16	41	87	3	11,5	17
F-50/28	181	M22x1,5	63,5	76	78	145	M22x1,5	39	51	16	10	22	52	105	3	14	22
F-63/36	183		76	95	98	160	M28x1,5	42	51	18	10	28	65	118	3	14	30
F-80/45	212		95	114	117	200	M35x1,5	50	62	24	16	35	83	149	3	18	36
F-100/56	231	M27x2	122	132	135	220	M45x1,5	54	62	26	16	45	97	162	5	18	46
F-125/70	252	M33x2	146	165	168	280	M58x1,5	58	68	28	15	58	126	208	5	23	60
F-140/80	272		165	180	183	289	M65x1,5	64	72	30	14	65	120	208	5	23	70
F-160/90	291		185	200	203	325		69	80	32	16	80	146	240	5	27	75
F-180/100	316	M42x2	205	220	223	380		72	93	32	16	80	167	270	5	30	80
F-200/110	342		230	247	250	420		74	98	32	20	100	190,5	300	5	33	95
F-225/125	375	M48x2	267	280	280	500		78	119	40	27	110	220	350	5	39	110
F-250/140	422		298	330	330	560		83	151	45	27	120	244	403	5	46	120

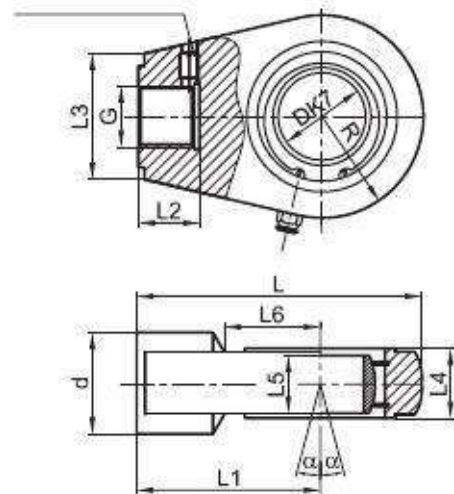
Doubled-acting cylinders

HEADS MOUNTING DRAWINGS
Design "A"



Design "B"

fixing screw



Nomina, diameter D	Ordering designation	Size and design of cylinder A, B, D or F	G	R	L	L1	L2	L3	L4	L5	d	L6	α
25	E1G-A25	40/22	M16x1,5	28	80	50	16	36	23		28	30	8°
	E1G-B25									20			
30	E1G-A30	50/28	M22x1,5	32	94	60	22	40	28		32	34	7°
	E1G-B30									22			
35	E1G-A35	63/36	M28x1,5	39	112	70	28	50	30		40	38	7°
	E1G-B35									25			
40	E1G-A40	80/45	M35x1,5	47	136	85	35	60	35		51	42	7°
	E1G-B40									28			
	E1G-A50	100/56	M45x1,5	58	168	105	45	72	40		58	55	7°
50	E1G-B40									35			
	E1G-A60	125/70	M58x1,5	65	200	130	58	90	50		78	62	7°
60	E1G-B60									44			
	E1G-A70	140/80	M65x1,5	77	232	150	65	100	55		90	75	6°
70	E1G-B70									49			
	E1G-A80	160/90											
	E1G-B80									55			
80	E1G-A80		M80x2	88	265	170	80	129	60		110	77	6°
	E1G-B80	180/100											
	E1G-A90									55			
90	E1G-B90	200/110	M100x2	103	323	210	100	156	65		130	90	6°
	E1G-A100									60			
100	E1G-B100	225/125	M110x2	115	360	235	110	171	70		140	105	7°
	E1G-A100									70			
110	E1G-B110	225/140	M120x2	132	407	265	120	195	80		150	115	7°
										70			

For tolerance of diameter D see part 5 (swivel bearings)

B