

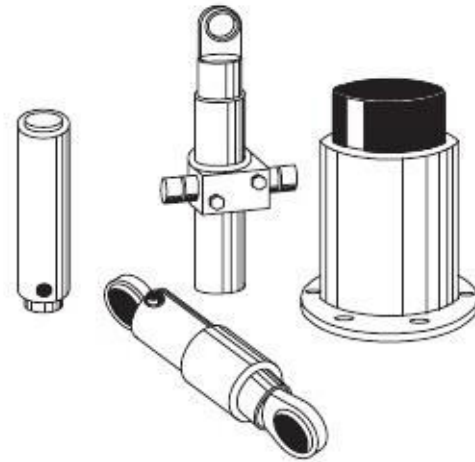
C



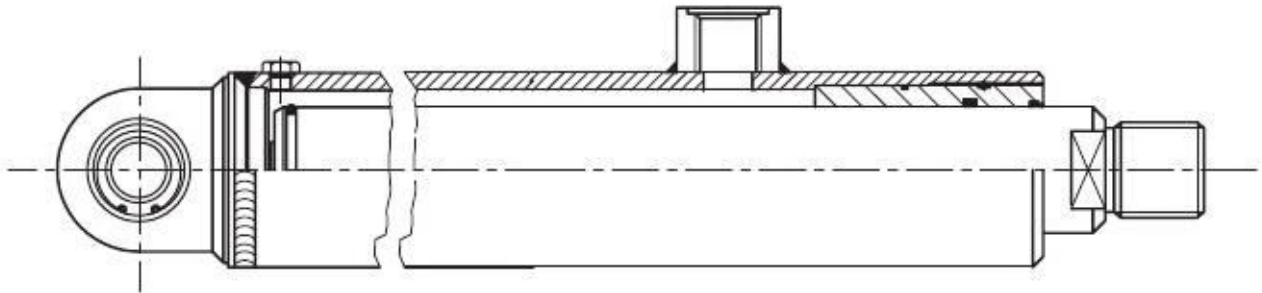
DESCRIPTION

Plunger cylinders are applied in the hydraulics systems, where return stroke of the piston rod is achieved by means of the load and piston rod gravity. They are very often used in the hydraulic systems for lifts, fork-lift trucks, vertical presses for rubber and plastics, etc.

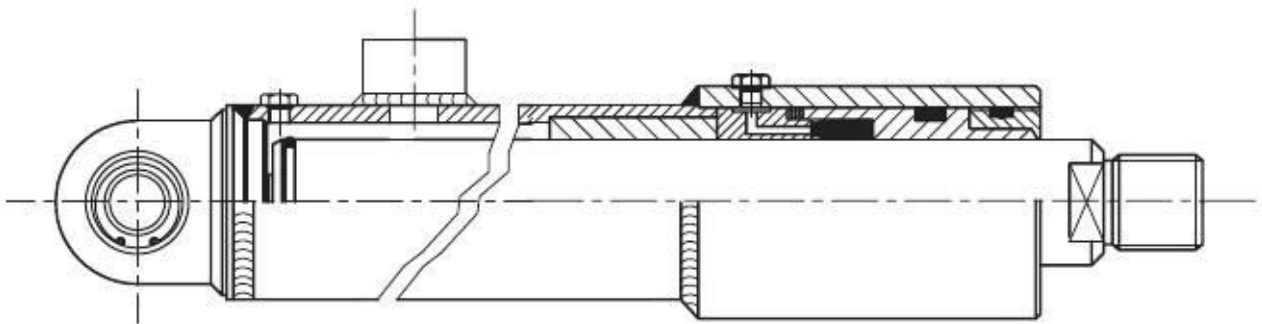
The plunger cylinders are made of high quality materials.
Piston rods are made of hardened steel, while sliding surfaces are hard-chromium plated.
High-grade sealing material contributes to long service life and high reliability of hydraulic cylinders under all service duties.



CYLINDER FOR PRESSURE OF 160 bar (TYPE P1B)



CYLINDER FOR PRESSURES OF 250 bar and 320 bar (TYPE P2B and P3B)

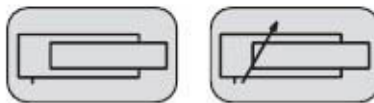


Plunger cylinders

Type P

TECHNICAL DATA

Symbol



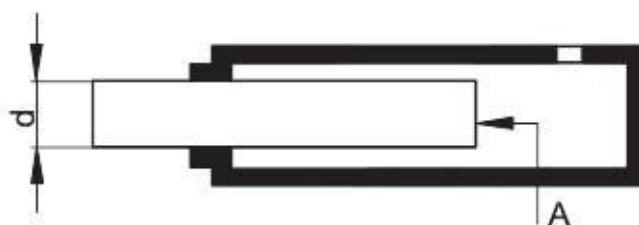
GENERAL

Line connection	threaded ports
Loading direction	along the cylinder axis
Vent plug position	according to buyers wish
Ambient temperature [°C]	to +50

HYDRAULIC

Nominal pressure [bar]	160	250	320
Stroke [mm]	upon request		
Forces [kN]	in separate table		
Working fluid	mineral oil		
	viscosity [mm s ²]	10 to 400	
	temperature [°C]	-20 to +80	

WORKING AREAS AND FORCES FOR NOMINAL DIAMETERS AND PRESSURE



d [mm]	A [mm ²]	force [kN]		
		pressure [bar]		
		160	250	320
20	3,14	5,03	7,85	10,05
22	3,80	6,08	9,50	12,16
25	4,91	7,85	12,27	15,71
28	6,16	9,85	15,39	19,71
32	8,04	12,87	20,11	25,74
36	10,18	16,29	25,45	32,57
40	12,57	20,11	31,42	40,21
45	15,90	25,45	39,76	50,89
50	19,63	31,42	49,09	62,83
56	24,63	39,41	61,58	78,82
63	31,17	49,88	77,93	99,75
70	38,48	61,58	96,21	123,15
80	50,27	80,42	125,66	160,85
90	63,62	101,79	159,04	203,58
100	78,54	125,66	196,35	251,33
110	95,03	152,05	237,58	304,11
125	122,72	196,35	306,80	392,70
140	153,94	246,30	384,85	492,60
160	201,06	321,70	502,65	643,40
180	254,47	407,15	636,17	814,30
200	314,16	502,65	785,40	1005,31
220	380,13	608,21	950,33	1218,42
250	490,87	785,40	1227,18	1570,80
280	615,75	985,20	1539,38	1970,41
320	804,25	1286,80	2010,62	2573,59

Plunger cylinders

Type P

DESIGNATION

CYLINDER

Nominal pressure [bar]

- 1 = 160
- 2 = 250
- 3 = 320

Mounting mode:



A = with bolt eye



B = with swivel bearing



C = with trunnion



D = with head flange



F = with end flange



H = with foot

S = special design

P ** — d x H / *

Piston cushioning variant:

- 0 = without cushioning
- 1 = both-end cushioning
- 2 = piston side cushioning
- 3 = piston rod side cushioning

Stroke
(upon request)

Piston rod diameter Ød
(according to the table)

Note:

On, the basis of the formed designation, manufacturer will send definite mounting drawing with production number.

Ordering example:

The plunger cylinder for 250 bar pressure, with swivel bearing, having piston rod diameter 40mm, stroke 500 mm, with both-end cushioning, bears the following ordering designation:
P2B - 40x500/1.

HEADS (see double acting cylinders types E1 or V1)

G - **

Mounting mode

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

Nominal diameter
bolt eye or swivel bearing (to the table)

Ordering example

For B-40 cylinder the G-A40 or G-B40 head may be ordered.



Plunger cylinders

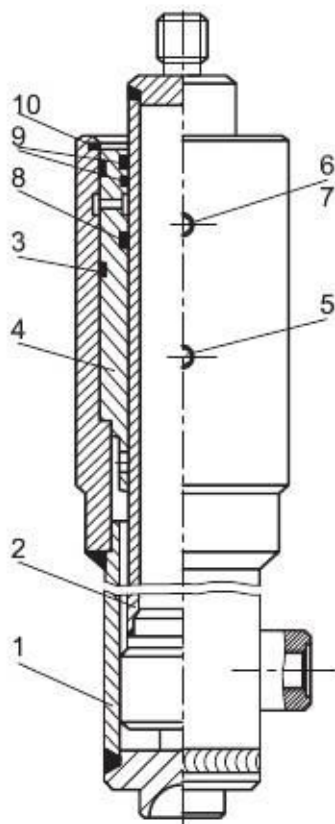
For lifts

DESCRIPTION

- Two types of design:
 - D-direct
 - I-indirect
- Cylinders are fabricated of high-grade steel tubes.
- Piston rods are made of hardened steel, while sliding surfaces are hard-chromium plated.

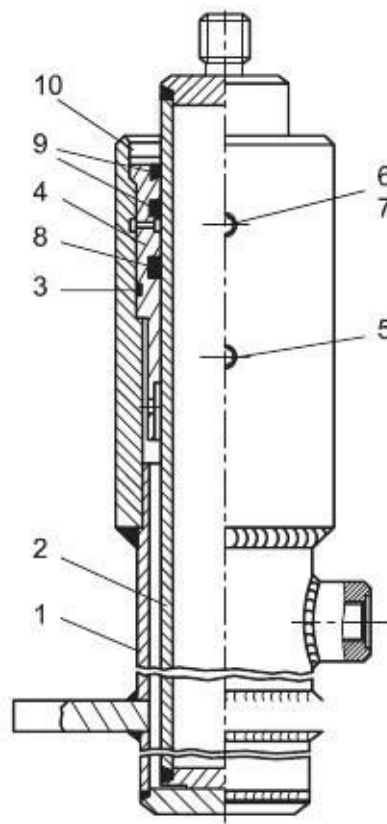
- High-quality sealing material contributes to long service life and high reliability under all service duties.
- For longer strokes, cylinder and plunger tubes can be manufactured from two parts joined together by means of threads.

Type - indirect (I)

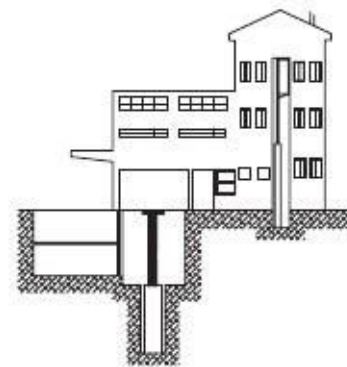


1. Cylinder assy
2. Plunger assy
3. O-ring
4. Guide
5. Vent plug

Type - direct (D)



6. Fitting
7. MG washer
8. Seal
9. Wiper
10. Circlip



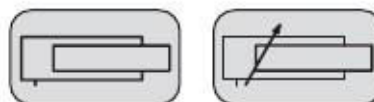
C

Plunger cylinders

For lifts

TECHNICAL DATA

Symbol



GENERAL

Connection form	to DIN 3852
Mounting position	optional
Loading direction	along the cylinder axis
Ambient temperature [°C]	up to +50°C

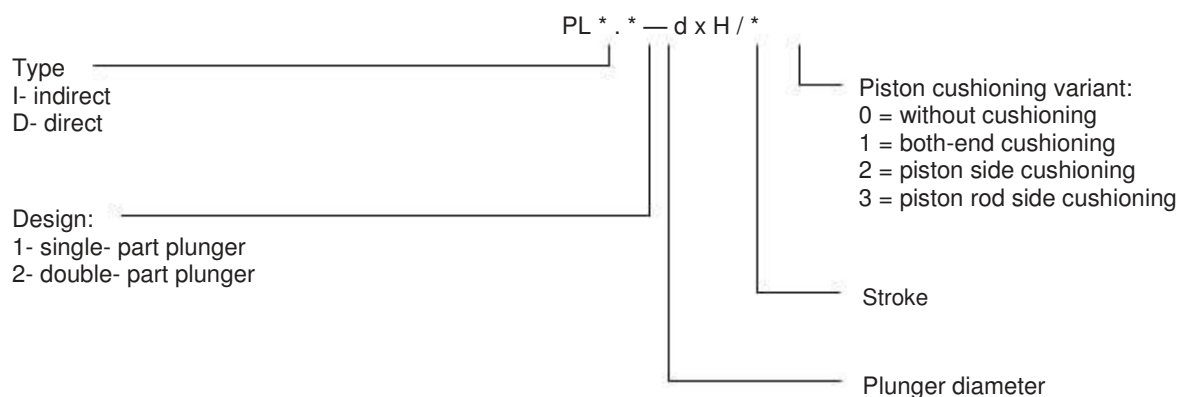
HYDRAULIC

Force [kN]	in separate table	
Pressure [bar]	nominal	63
	max	80
Stroke [mm]	upon request	
Plunger speed [m/s]	max 0,5	
Working fluid	mineral oil	
	viscosity [mm ² /s]	10 to 400
	temperature [°C]	-20 to +80

FORCE

Nominal diameter d [mm]	70	90	110	125	140	180	220
Force F [kN] at 63 [bar]	24	40	60	77	97	160	239

DESIGNATION



Ordering example:

Plunger cylinder for lifts, type-indirect double-part cylinder and plunger, having plunger diameter d = 125 mm, stroke H = 7800 mm with cushioning in the plunger extended end position, bears the following ordering designation:

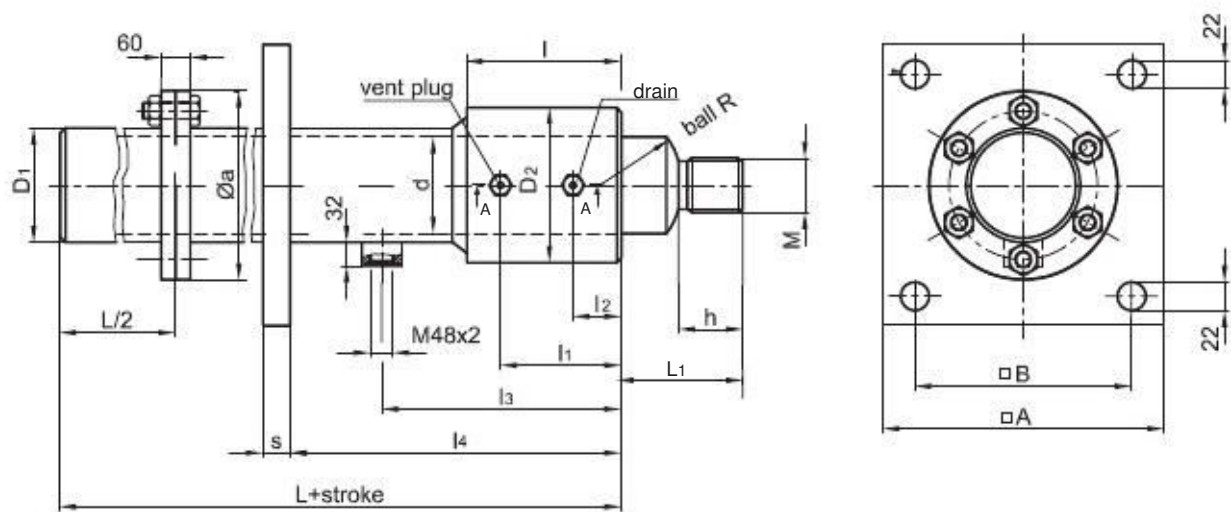
PL12-125x7800/2

Plunger cylinders

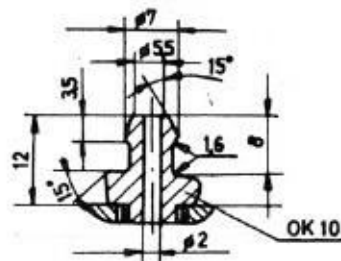
For lifts

MOUNTING DRAWINGS

Type D



Partial section A-A

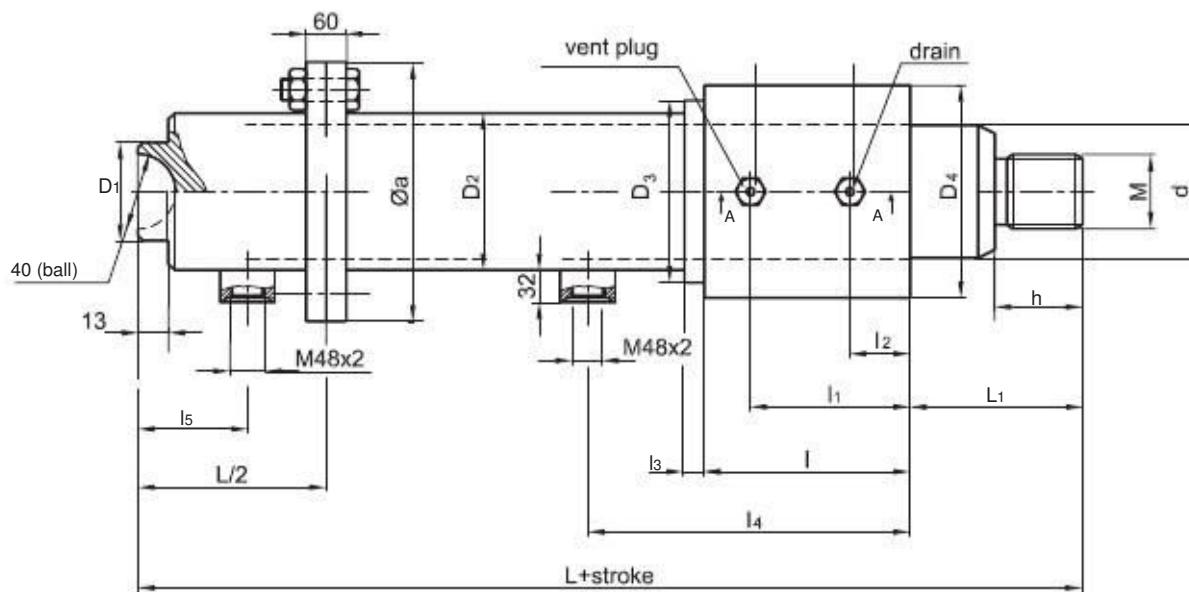


d	70	90	110	125	140	180	220
L	430	430	435	435	680	680	680
L_1	145	145	145	145	145	145	145
h	55	55	55	55	55	55	55
M	30	30	30	30	30	30	30
D_1	108	133	139,7	168,3	193,7	229	273
ϕa	205	205	205	235	270	830	830
D_2	127	152,4	166	193,7	230	244	298,5
A	340	340	340	400	400	500	500
B	270	270	270	330	330	400	400
S	25	25	25	25	25	25	45
I	290	320	320	320	320	555	555
l_1	220	230	230	230	230	485	485
l_2	55	60	60	80	60	20	80
l_3	380	380	380	380	380	800	800
l_4	490	490	490	490	490	840	840
R	100	100	100	100	150	150	150

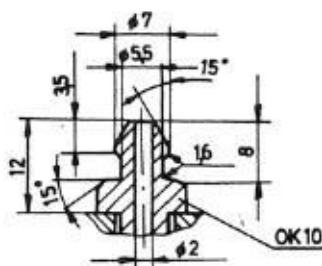
Plunger cylinders

For lifts

Type I



Partial section A-A



d	45	60	70	80	90	100	110	125	140	180	220
L	420	440	440	440	440	440	440	440	445	668	668
L ₁	120	120	120	120	120	120	120	120	120	120	120
h	55	55	55	55	55	55	55	55	55	55	55
M	30	30	30	30	30	30	30	30	30	30	30
D ₁	70	70	70	70	70	70	70	70	70	70	70
a			205	205	205	205	205	235	270	330	330
D ₂			108	114,3	133	139,7	139,7	168,3	193,7	229	273
D ₃	76,1	95	115	125	145	155	155	180	210	236	290
D ₄		115	127	133	152,7	166	166	193,7	230	244	298,5
L	101,6	122	270	270	270	270	270	270	270	505	505
L ₁		270	230	230	230	230	230	230	230	455	455
L ₂		230	60	60	60	60	60	60	60	80	80
L ₃	220	60	50	50	50	50	50	50	50	50	50
L ₄	55	50	400	400	400	400	400	400	400	600	600
L ₅	50	400	100	100	100	100	100	100	100	100	100
	400										
	100										