Rexroth
Bosch Group

Power Limiting Valve LV 06 (Constant Horsepower Control)

Control Elements for Series 5 and Series E/C

RE 95546/05.87

replaces 01.82

Ordering code

LV	06	1	A	5

Description
Power limiting valve — LV

Size
Size — 06

Model [1])
Threaded connections — 1
O-ring connections — 2
O-ring and threaded connections — 3

Type of connection
without subplate — O
with subplate — A

Series [2])
Series E/C — 0
Series 5 — 5

Ordering Example
LV06.1.A.5
Power limiting valve size 6 with threaded connections and subplate, for series 5

[1]) For model variations see unit dimensions.
[2]) When mounting direct on a pump, the correct valve must be used. When mounting separately, the LV 06 is independent of the pump model.

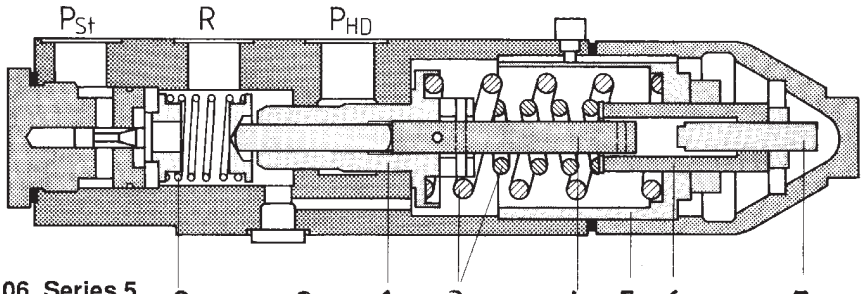
Description

Power limiting valve LV 06 consists of a direct operated relief valve and a stepped spool (1), which is loaded on both sides by the pilot control spring (2) and the regulator spring set (3), and which is hydraulically operated by the main system pressure.

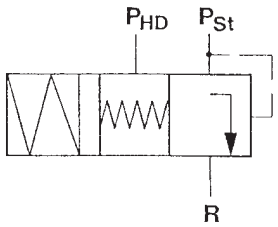
In hydrostatic drives, it is often required to alter the output flow of the pump in such a manner that the pre-determined input drive torque is not exceeded, even with varying working pressures. This means that, at a constant drive speed, the input power must be limited.

Design details

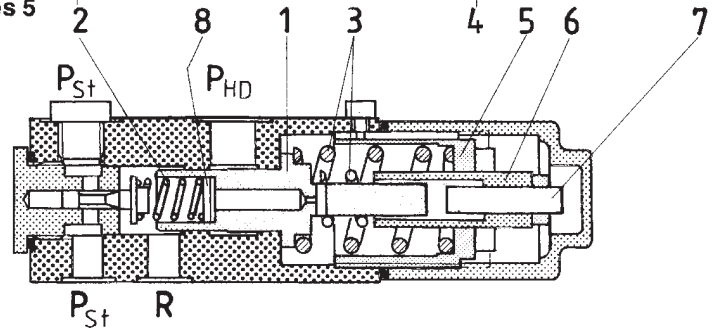
LV 06, Series E/C



Symbol



LV 06, Series 5



1 stepped spool
2 pilot spring
3 regulating spring set
4 screw
5 threaded cap
6 hollow screw
7 screw
8 shims

Connections
p_{HD} operating pressure
p_{St} pilot pressure
R return line

The setting of the pilot spring (2) is achieved by means of screw (4) or by shims (8). The two parts of the regulating spring set (3) are set completely independent of each other by the threaded cap (5) and the hollow screw (6). The end stop is set by screw (7).

Technical data (partly to VDI 3276)

Design: direct operated, seated type pressure relief valve

Mounting: flanged model with O-ring seals or threaded connections

Pipe connections and connection sizes:
see unit dimensions

Weight (kg)	Series E/C	Series 5
without subplate	4,5	2,3
with subplate	6,5	4,0

Mounting position: optional

Direction of flow: from P_{St} to R

Operating pressure range
High pressure side: p_{HD} = 0...400 bar
Pilot pressure side: p_{St} = 0...60 bar

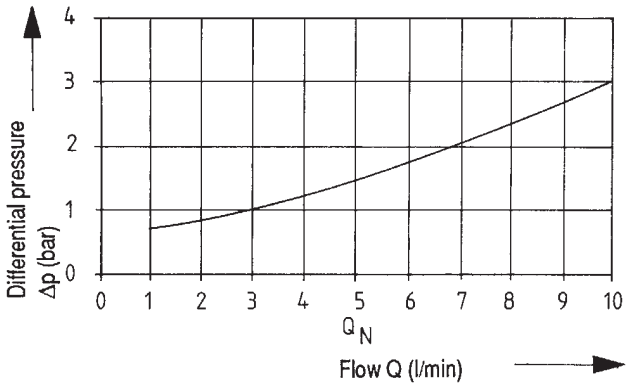
Pressure setting range (pilot pressure side)
p_{St} = 10...28 or 10...45 bar (alternative settings on enquiry)
The pressure setting range must be stated in clear text when ordering.

Fluid temperature range
$\delta_{m\,min}...\delta_{m\,max}$ = – 20° C... + 80° C
Viscosity range $\nu_{min.}..\nu_{max}$ = 10...1000 mm²/s
Nominal flow Q_N = 5 l/min

Operating curves

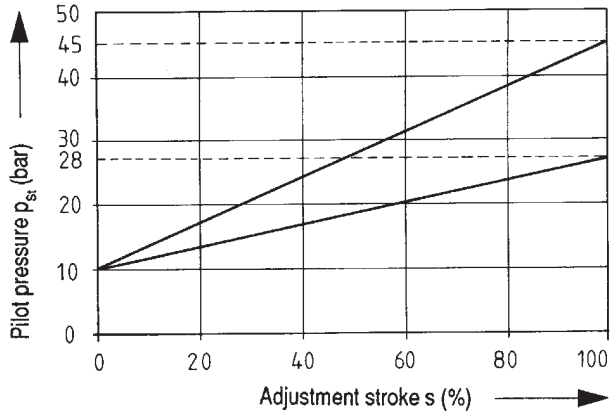
Δp-Q-curve

ν = 35 mm²/s
δ = 50° C



Pilot pressure curve

Q_N = 5 l/min
ν = 35 mm²/s
δ = 50° C

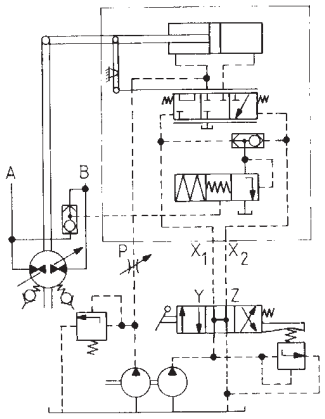


Co-ordination with control devices

Direct mounting
Direct mounting on the HD control (series 5) and also on control type S 3041 (series E/C) is possible (note point 5 in ordering code).
Note that control type S 3041 is changed when LV 06 is fitted, to S 3141.

Separate mounting
Power limiting valve LV 06 can be fitted in the pilot circuit of all axial piston units with pressure dependent control devices, independent of the build series, if it is installed separately.

Application example
Port P_{St} is connected via a shuttle valve with the pilot circuit of the control device, while port P_{HD} is connected via another shuttle valve into the main circuit of the axial piston pump. If the operating pressure exceeds the pre-load of the regulating spring for the start of control, the stepped piston moves against the spring set and so reduces the load on the pilot control spring and, in turn, the pilot pressure, so that the predetermined maximum drive power at a constant drive speed is never exceeded at any operating point.



Power curves
The power curves follow extensively the power curves laid down in DIN 42973, and the rated powers of axial piston units with built-on regulating devices.
For the various power curves available, according to unit series and size, see pages 3 to 5.

Power overshoot
The variation in regulated value of a power limiting valve is very small, as the response time is 0,02 sec. When used with control device S 3041, or the HD control, the actual variation is greater, as the minimum setting time of the pump is limited to 0,15 sec. or 0,2 sec. respectively.
For further details of control tolerances, see catalogue sheet "Control Elements Type S", series E and C.

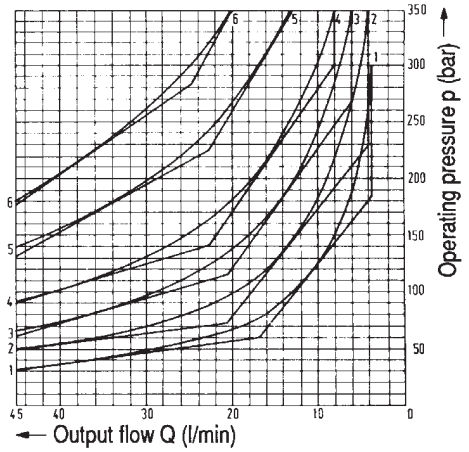
Power Limiting valve LV 06

Power curves, series E (for control device S 3141)

Size 31

Curve No.	Drive power P kW	Drive torque M Nm
1	3	20
2	4	27
3	5,5	37
4	7,5	49
5	11	74
6	15	98

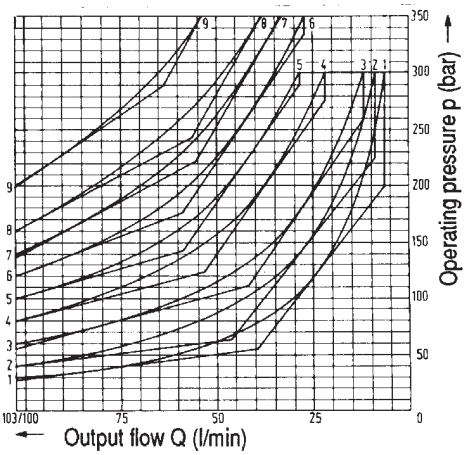
Output flow and drive power are taken for a standard speed n_N = 1450 rpm



Size 71

Curve No.	Drive power P kW	Drive torque M Nm
1	5,5	37
2	7,5	49
3	11	74
4	15	99
5	18,5	123
6	22	148
7	26	173
8	30	197
9	37	247

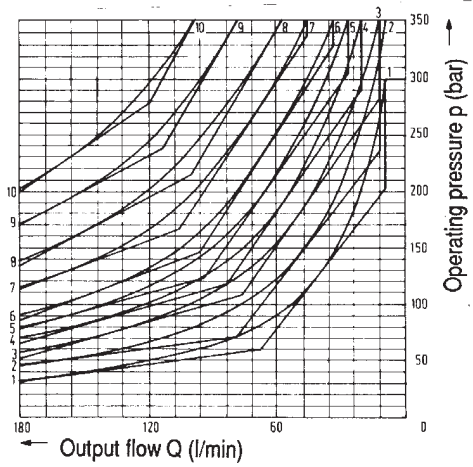
Output flow and drive power are taken for a standard speed n_N = 1450 rpm



Size 125

Curve No.	Drive power P kW	Drive torque M Nm
1	11	74
2	15	98
3	18,5	123
4	22	148
5	26	172
6	30	196
7	37	246
8	45	296
9	55	370
10	66	444

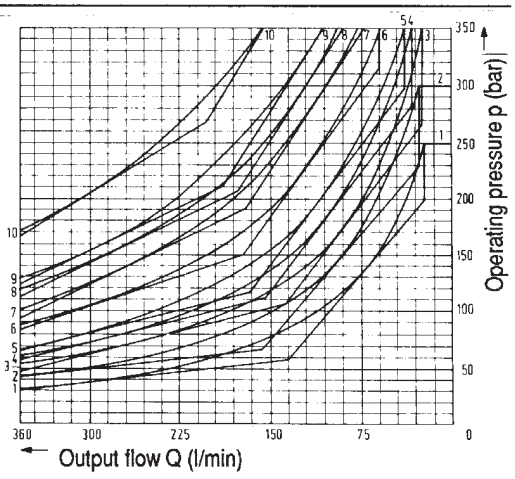
Output flow and drive power are taken for a standard speed n_N = 1450 rpm



Size 250

Curve No.	Drive power P kW	Drive torque M Nm
1	22	148
2	30	198
3	37	248
4	40	273
5	45	296
6	59	398
7	66	446
8	75	494
9	90	595
10	110	745

Output flow and drive power are taken for a standard speed n_N = 1450 rpm



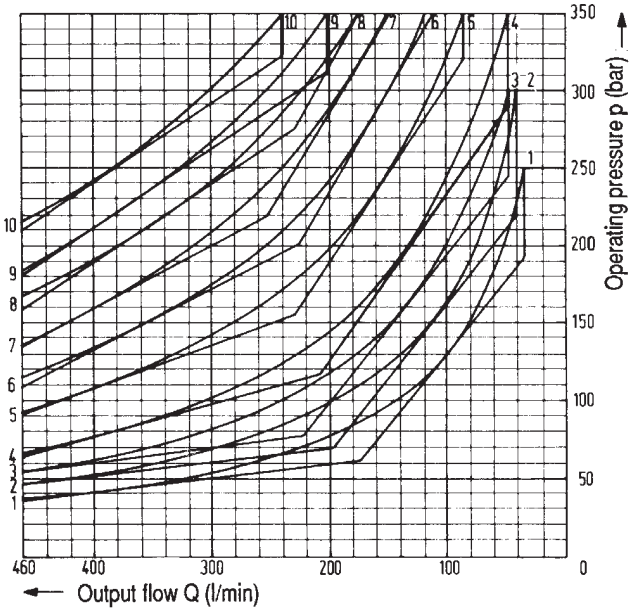
Power Limiting valve LV 06

Power curves, series C (for control device S 3141)

Size 481

Curve No.	Drive power P kW	Drive torque M Nm
1	30	300
2	37	370
3	45	440
4	55	550
5	75	740
6	90	920
7	110	1110
8	132	1330
9	147	1470
10	172	1740

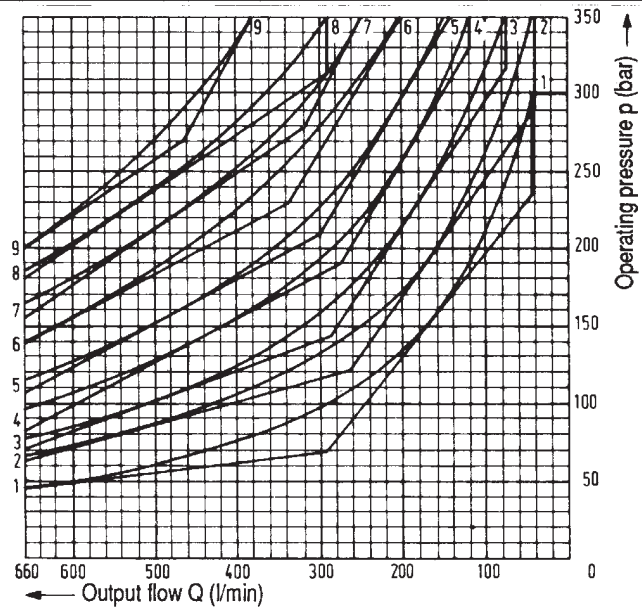
Output flow and drive power are taken for a standard speed n_N = 970 rpm



Size 900

Curve No.	Drive power P kW	Drive torque M Nm
1	55	720
2	75	950
3	90	1190
4	110	1430
5	132	1720
6	160	2100
7	186	2440
8	220	2860
9	243	3150

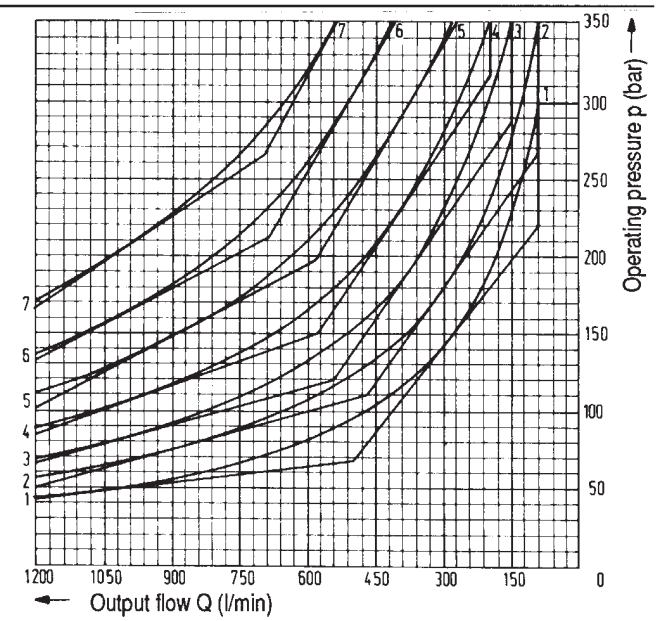
Output flow and drive power are taken for a standard speed n_N = 750 rpm



Size 2000

Curve No.	Drive power P kW	Drive torque M Nm
1	92	1500
2	118	1900
3	147	2400
4	184	3000
5	236	3800
6	295	4760
7	370	5900

Output flow and drive power are taken for a standard speed n_N = 600 rpm



When mounting control device type S 3141 on the Brueninghaus double pumps type ET, the power curves are necessarily determined by the transmission ratio.

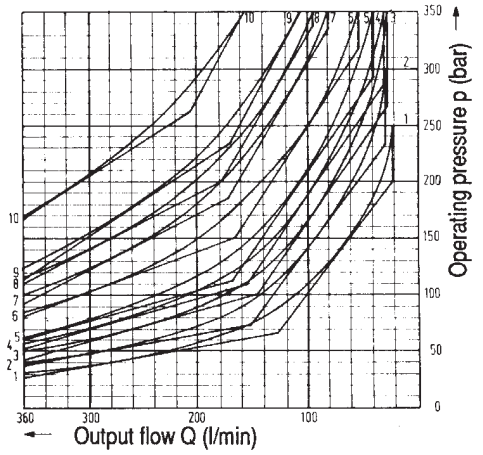
Power Limiting valve LV 06

Power curves, series 5 (for HD control with constant horsepower control)

Size 250

Curve No.	Drive power P kW	Drive torque M Nm
1	22	145
2	30	194
3	37	242
4	40	267
5	44	290
6	55	363
7	66	437
8	74	485
9	88	582
10	110	726

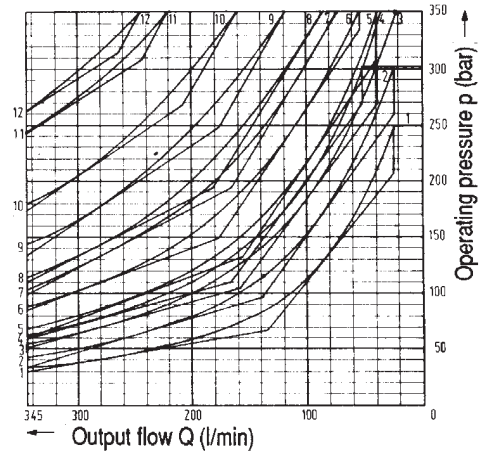
Output flow and drive power are taken for a standard speed n_N = 1450 rpm



Size 355

Curve No.	Drive power P kW	Drive torque M Nm
1	22	217
2	30	285
3	37	362
4	40	398
5	44	435
6	55	543
7	66	647
8	74	726
9	88	863
10	110	1079
11	147	1452
12	160	1580

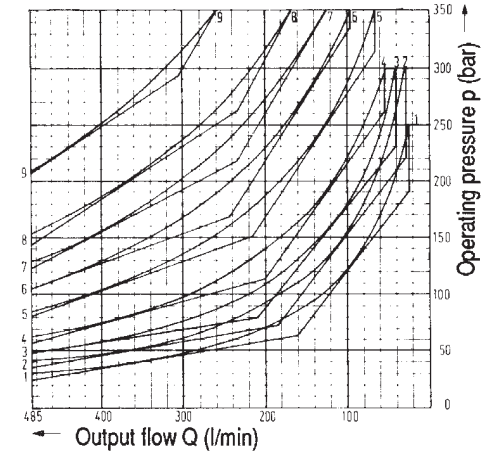
Output flow and drive power are taken for a standard speed n_N = 970 rpm



Size 500

Curve No.	Drive power P kW	Drive torque M Nm
1	30	289
2	37	362
3	44	435
4	55	543
5	74	724
6	90	907
7	110	1086
8	132	1304
9	180	1774

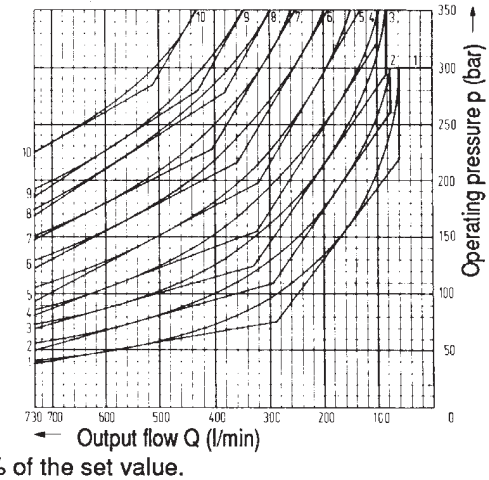
Output flow and drive power are taken for a standard speed n_N = 970 rpm



Size 1000

Curve No.	Drive power P kW	Drive torque M Nm
1	55	706
2	75	932
3	90	1167
4	110	1403
5	132	1687
6	160	2060
7	188	2394
8	220	2806
9	243	3090
10	290	3845

Output flow and drive power are taken for a standard speed n_N = 730 rpm

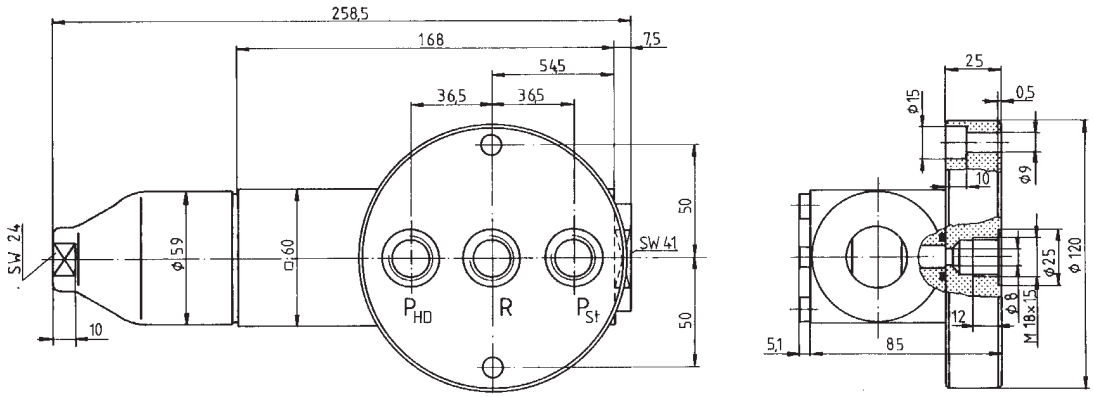


The control device is set to the nominal envelope curve with a variation of ± 5 % of the set value.

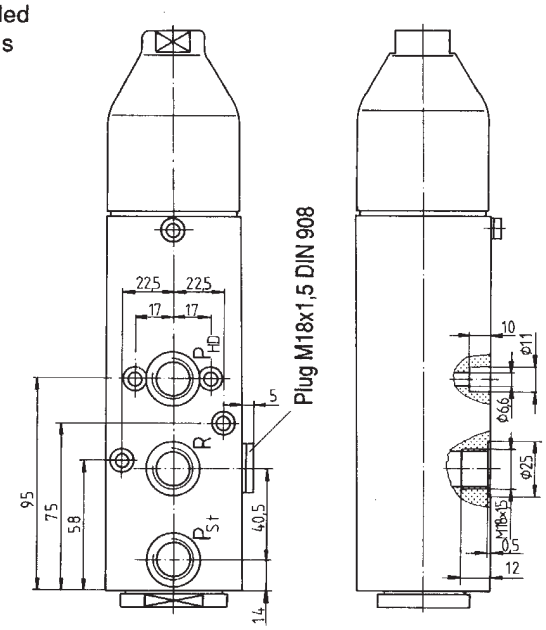
Unit dimensions

LV 06, Series E/C

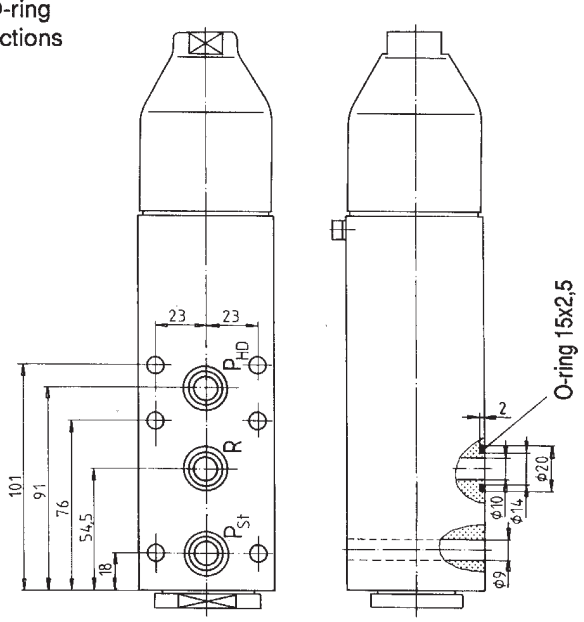
Type LV06.2.A.0
with threaded
subplate



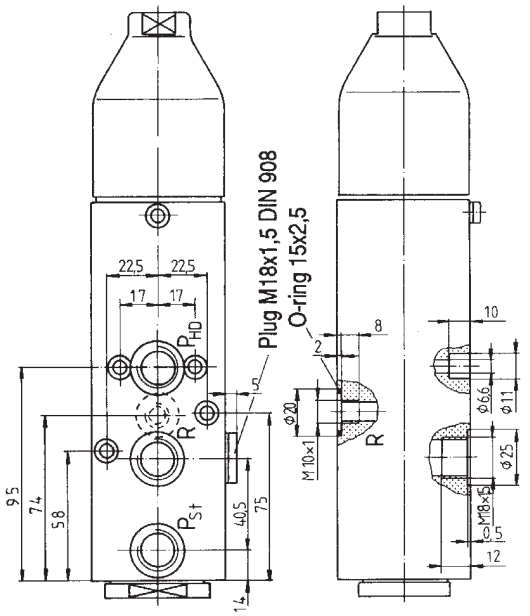
Type LV06.1.0.0
with threaded
connections



Type LV06.2.0.0
with O-ring
connections



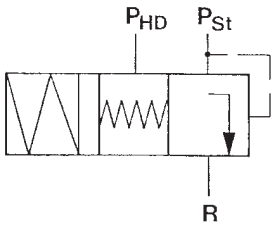
Type LV 06.3.0.0
with O-ring and
threaded connections



State model required when ordering.

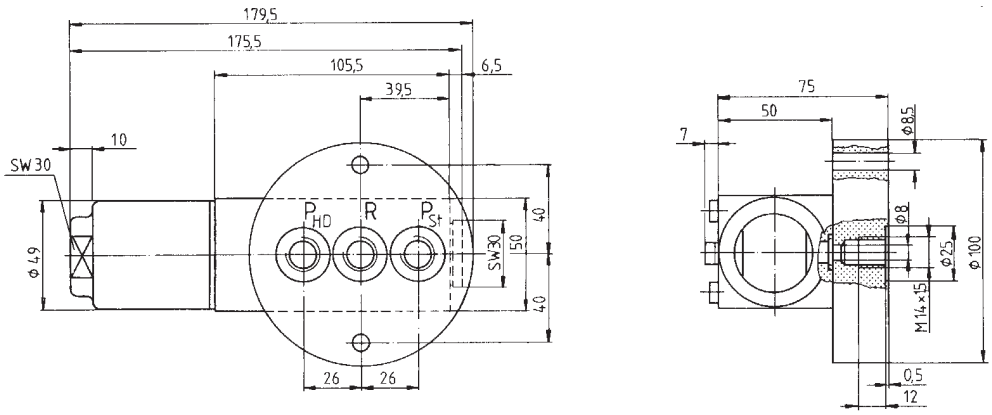
Port designation stamped in body.

p_{HD} = operating pressure
p_{St} = pilot pressure
R = return line

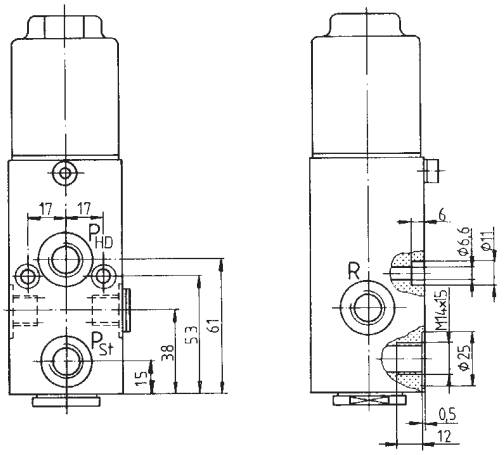


LV 06, Series 5

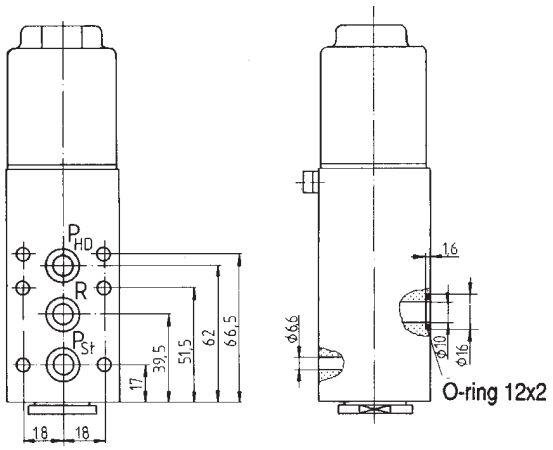
Type LV06.2.A.5
with threaded
subplate



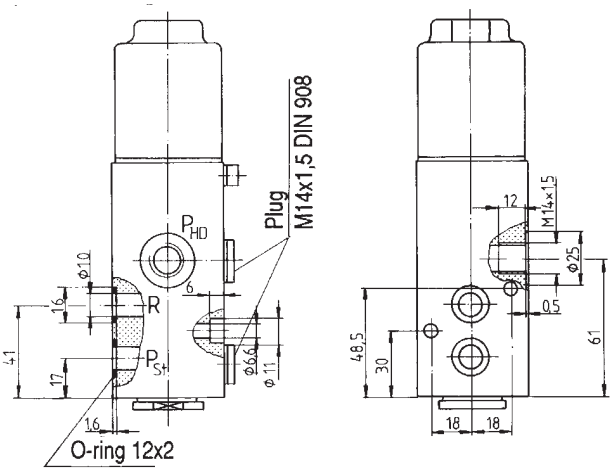
Type LV06.1.0.5
with threaded
connections



Type LV06.2.0.5
with O-ring
connections



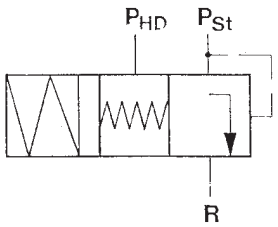
Type LV 06.3.0.5
with O-ring and
threaded connections



State model required when ordering.

Port designation stamped in body.

p_{HD} = operating pressure
p_{St} = pilot pressure
R = return line



Bosch Rexroth AG
Mobile Hydraulics
Product Segment Axial Piston Units
Plant Horb
An den Kelterwiesen 14
72160 Horb, Germany
Telefon +49 (0) 74 51 92-0
Telefax +49 (0) 74 51 82 21
info.brm-ak@boschrexroth.de
www.boschrexroth.com/bri