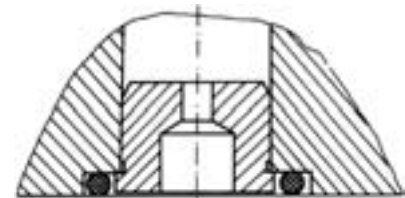
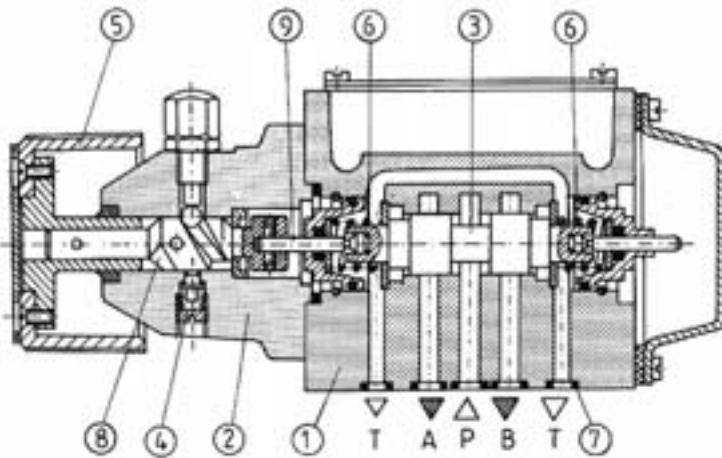


Directional spool valves are used to control the direction of fluid flow and thus the direction of movement or holding position of a user (cylinder or hydraulic motor).



DESCRIPTION OF OPERATION



Throttle insert in port P

Annular ports are made around the longitudinal bore in the housing 1. The annular ports cut through the longitudinal bore forming control lands in the housing. The moveable control spool 3 is placed in the main port. If the spool is shifted, it connects or separates the ports in the housing. Various control functions result directly from the shape of the control spool. Shift of the spool follows rotary motion of the knob 5

what causes the spindle 8 and the lifter 9 to move. Positioning of the control spool is by the detent 4 while the springs 6 serve only to eliminate clearances.

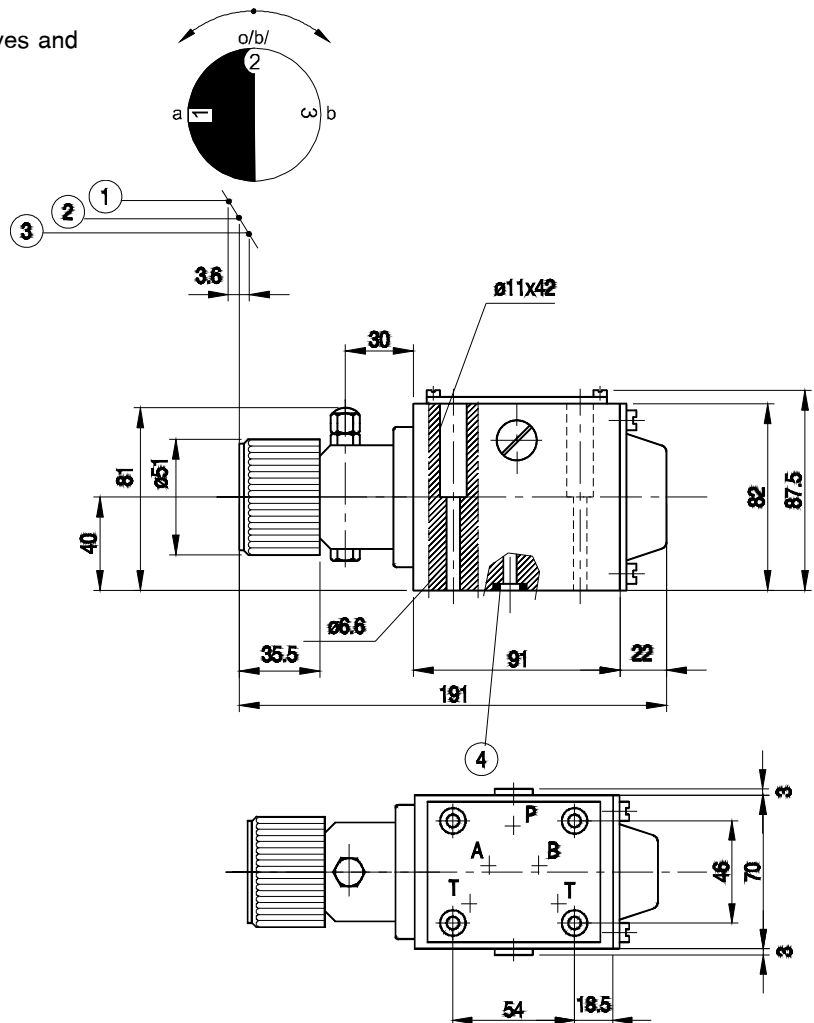
Sealing of the directional valve to a subplate is achieved by means of suitable rings 7.

TECHNAICAL DATA

Hydraulic fluid	Mineral oil, phosphate ester	
Required filtration	up to 16 µm	
Recommended filtration	up to 10 µm	
Nominal fluid viscosity	37 mm ² at temp. of 328 K	
Viscosity range	2.8 to 380 mm ² /s	
Optimum working temperature (fluid in a tank)	313 - 328 K	
Fluid temperature range	243 - 343 K	
Maximum admissible operating pressure	Ports P, A, B	Port X
	31.5 MPa	15 MPa
Flow section in position „0”	Spool type W	Spool type Q
	3 % of nominal section	6 % of nominal section
Torque on rotary knob	70 - 135 Ncm	
Weight	3.7 kg	

OVERALL AND MOUNTING DIMENSIONS

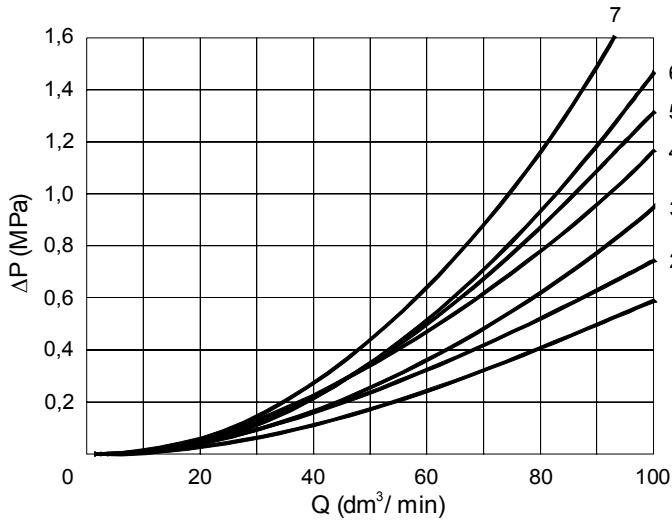
- 1 - Position „b” for three-position directional valves
- 2 - Position „0” for three-position directional valves and position „a” for two-position valves
- 3 - Position „a” for three-position directional valves and two-position directional valves
- 4 - O-ring 12 × 2 - 5 pieces



Admissible surface roughness and flatness deviation for a subplate face.

PERFORMANCE CURVES : measured at $v = 41 \text{ mm}^2/\text{s}$ and $T = 323 \text{ K}$

Flow resistance for various spool types



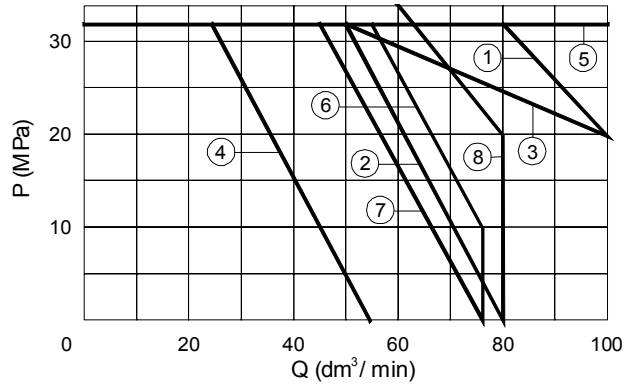
Flow limits

- 1 - Spool types C, D, E, M, V, Y
- 2 - Non applicable to WMD 10
- 3 - Spool types J, L, Q, U, W
- 4 - Spool types A
- 5 - Non applicable to WMD 10
- 6 - Spool type H
- 7 - Non applicable to WMD 10
- 8 - Spool type F, G, P, R, T

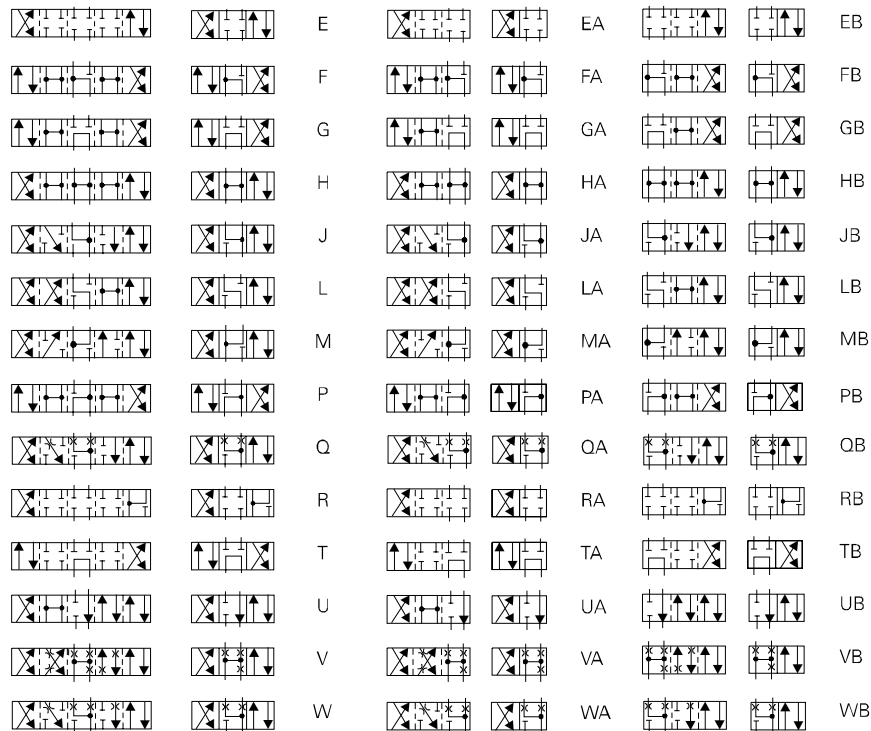
Note:

The flow limits refer to typical application of 4-way directional control valve i.e. with using two lines e.g. P to A and B to T at the same time. In case of using 4-way directional control valve with one flow line e.g. P to A (B plugged) or A to T (B plugged) actual flow limits are considerably lower.

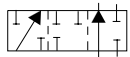
Spool type	Flow direction					
	P-A	P-B	A-T	B-T	P-T	A-B
A	2	2	-	-	-	-
B	2	2	-	-	-	-
C	2	2	3	3	-	-
D	2	2	3	3	-	-
E	2	2	4	4	-	-
F	2	3	3	5	-	-
G	3	3	4	6	4	-
H	1	1	4	5	-	-
J	2	2	3	3	-	-
L	2	2	3	5	-	-
M	1	1	5	5	-	-
P	3	2	5	3	-	-
Q	2	2	4	4	-	-
R	2	4	3	-	-	7
T	3	5	5	6	4	-
U	2	2	3	5	-	-
V	2	2	4	4	-	-
W	2	2	5	5	-	-
Y	2	2	3	3	-	-



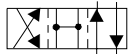
Schemes for control spools



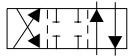
Three - position



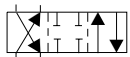
A



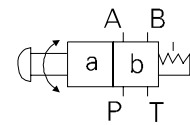
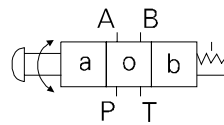
C



D



Y



Scheme for three and two-position directional valve, hand rotary knob operated

Two-position

HOW TO ORDER

Orders coded in the way showed below should be forwarded to the manufacturer.



Number of service ports

3 = 3
4 = 4

Control spool type

See schemes on page 3 and above

Series number:

50 = 50
(50 - 59) - Installation and connection dimensions unchanged

Additional requirements in clear text (to be agreed with the manufacturer)

Sealing

For fluids on mineral oil base = with no designation
For fluids on phosphate ester base = V

Throttle insert

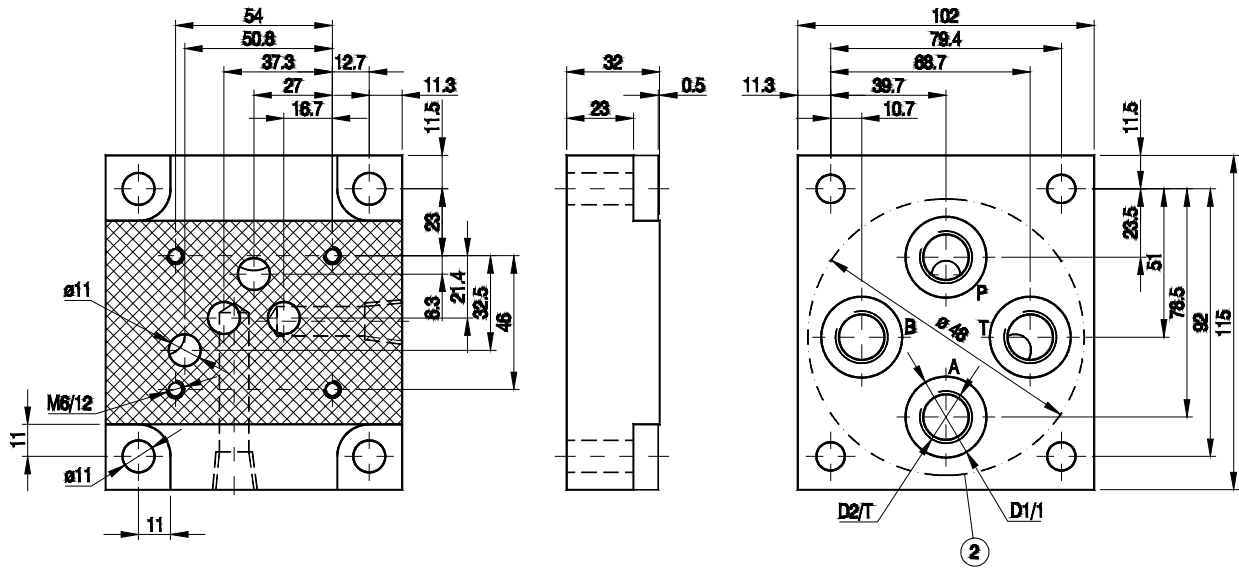
Without throttle insert = with no code
Throttle insert \varnothing 0.8 mm = B08
Throttle insert \varnothing 1.0 mm = B10
Throttle insert \varnothing 1.2 mm = B12
Throttle insert \varnothing 3.0 mm = B30

Control spool positioning

With detent = F

Coding example : 4 WMD 10 E50/F

MOUNTING DIMENSIONS FOR SUBPLATE



Subplate type	D1	D2	T	Weight	Mounting bolts	Md
G 89/01	25	G 1/4	12	2.3 kg	4 x M6 x 50 - 10.9 PN-87/M-82302 (DIN 912)	15 Nm
G 66/01	28	G 3/8	12			
G 67/01	34	G 1/2	14			
G 67/02	36	M22x1.5	17			

Note : Subplate and mounting bolts must be ordered separately

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