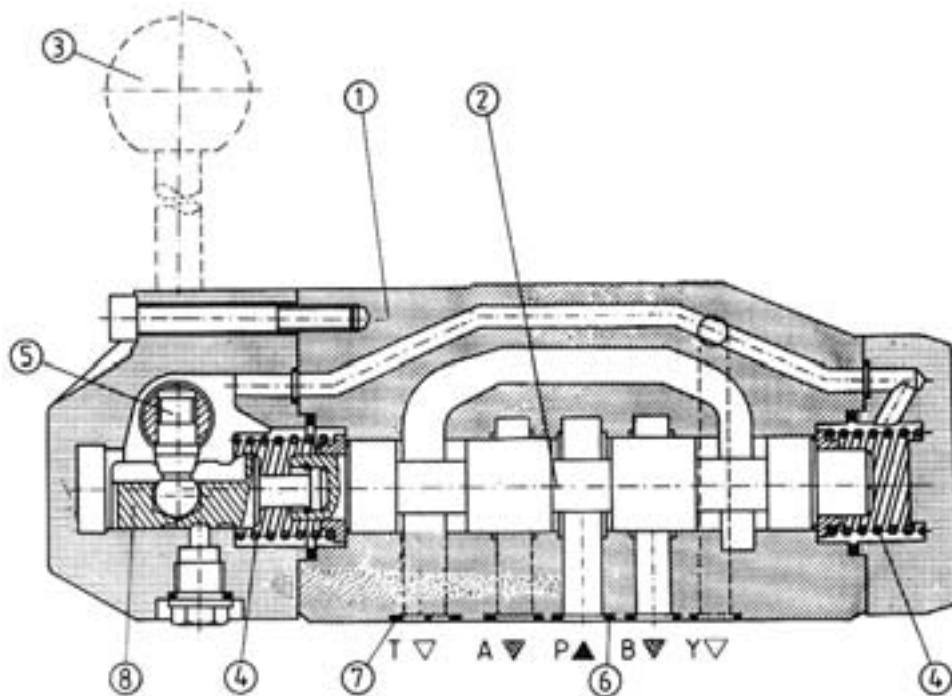


Directional spool valves are used to control the start, stop and direction of fluid flow and thus the direction of movement or holding position (cylinder or hydraulic motor) is determined. The valves can be installed in hydraulic circuit in any position together with a subplate.

The connecting surfaces are sealed with O-rings that are included with the valve.



DESCRIPTION OF OPERATION



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 2 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 shape of the control spool.

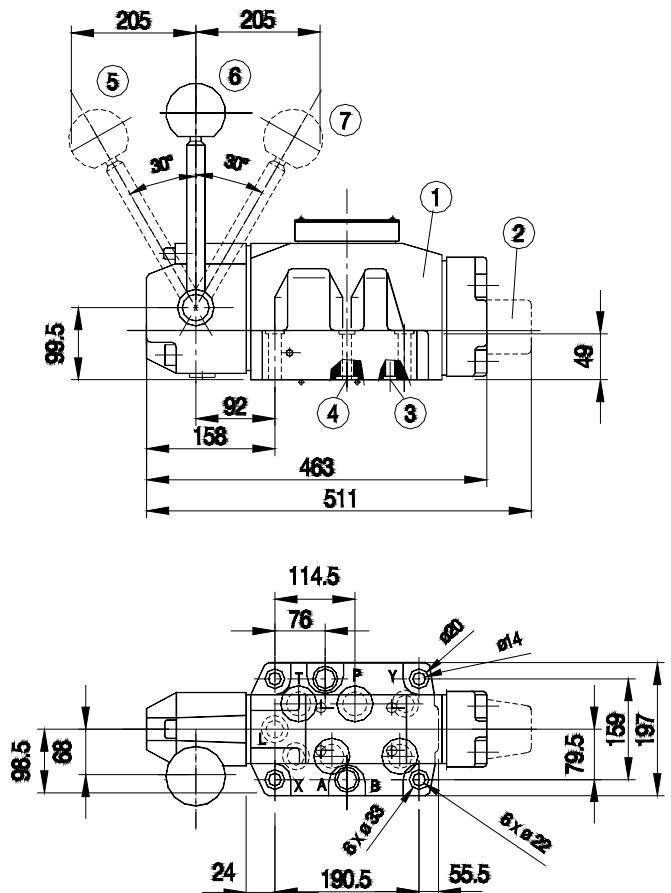
Movement of the control spool is caused by a change in position of the hand lever 2. The control spool together with control elements is spring returned to its rest position - in version with return springs.

The sealing rings are installed between the valve and a subplate to prevent leakage.

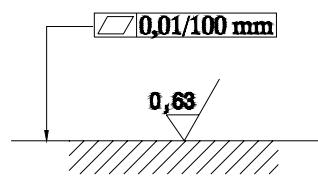
TECHNICAL DATA

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 35 MPa	Port T 25 MPa
Flow section in position „0”	Spool type Q and V 16 % of nominal section	Spool type W 3 % of nominal section
Operating force	With detent 100 N	With return springs 170 N
Weight	49 kg	

OVERALL AND MOUNTING DIMENSIONS

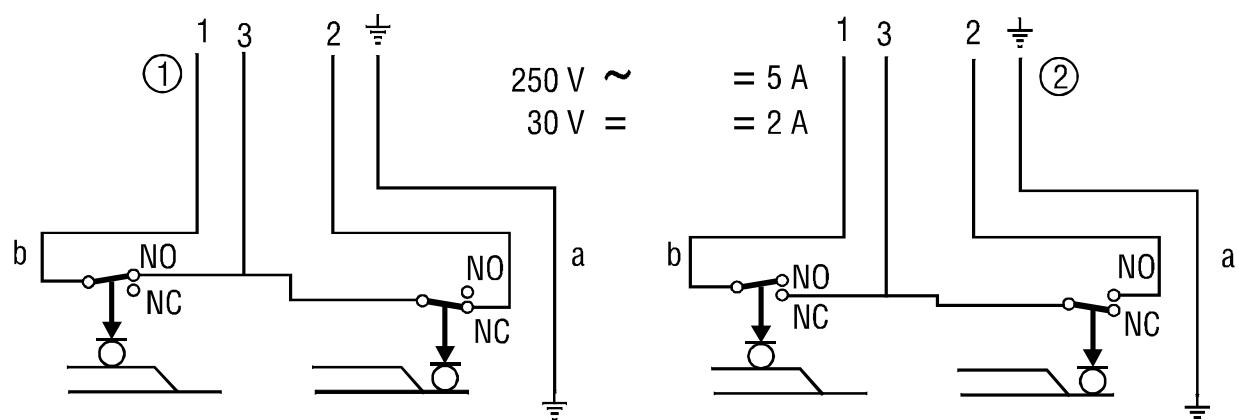
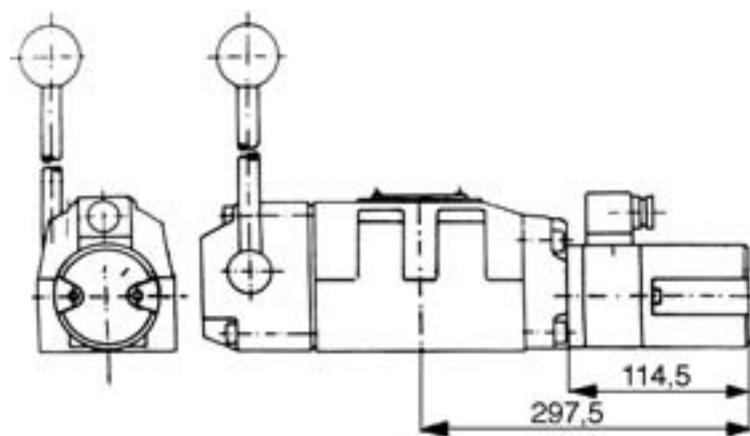


- Item 1 - Three-position valve spring centered
- Item 2 - Two-position valve
- Item 3 - O-ring 19.2 x 3 - 3 pieces
- Item 4 - O-ring 42 x 3 - 4 pieces
- Item 5 - Position „a” for two- and three-position directional valves
- Item 6 - Position „0” for three-position directional valves
- Item 7 - Position „b” for three- and two- position directional valves



Admissible surface roughness and flatness deviation for a subplate face.

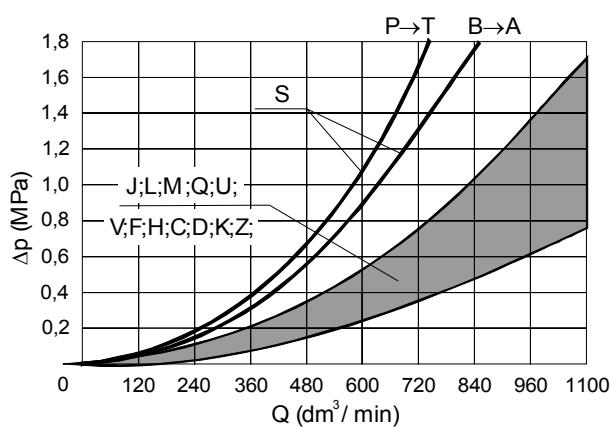
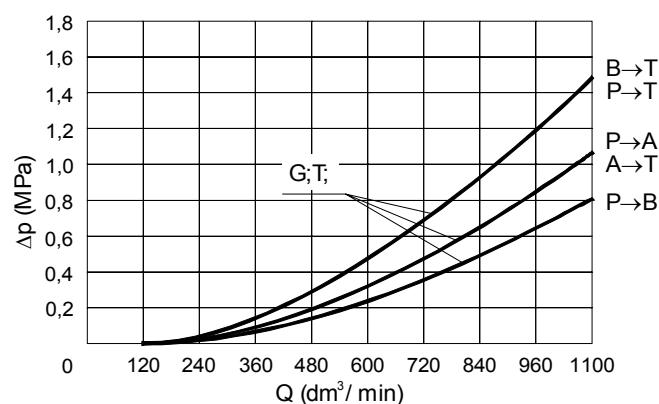
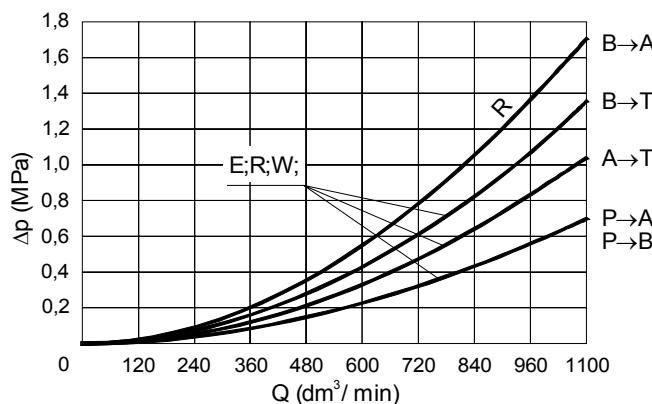
Limit switch



Electrical scheme for limit switch

1 - Scheme for limit switch normally closed 19
2 - Scheme for limit switch normally open 23

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

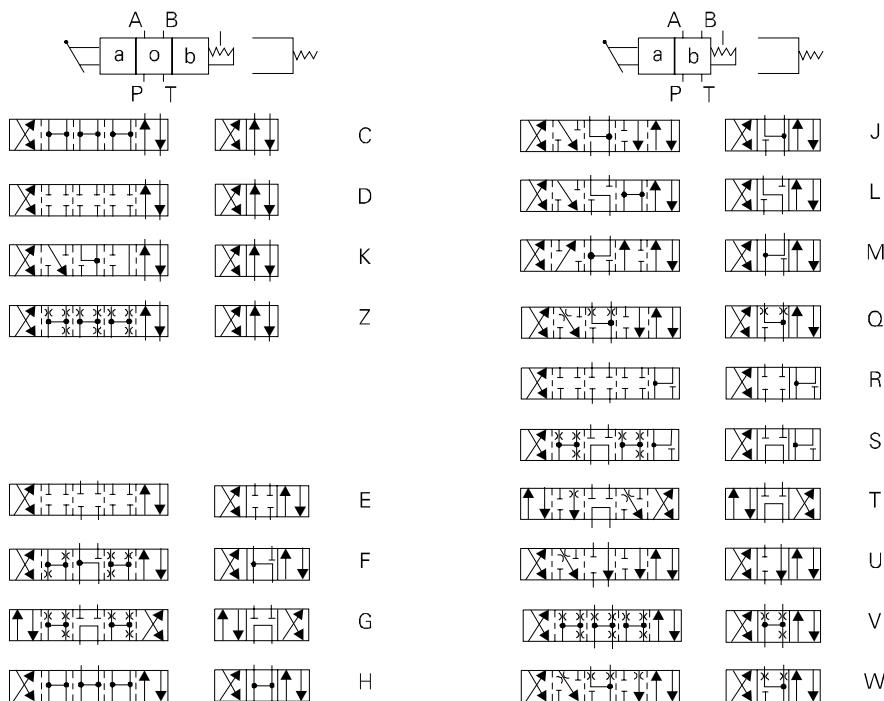


2 and 3-position valves, spring centered					
Spool types	Pressure (MPa)				
	7	14	21	28	35
E, J, L, M, Q, R, U, V, W,	110	105	860	750	680
F, G, H, S, T, C, D, K, Z	650	450	370	320	280
2- and 3-position valve with detent					
All spools	820	630	510	450	400

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.

SCHEMES



HOW TO ORDER

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

H-4WMM 32

*

Control spool type

See schemes above

Series number:

33 = 33

(32 - 39) - Installation and connection dimensions unchanged

Control spool positioning

Spring centering = no designation
With detent = F

Accessories

Limit switch (normally closed) = 19
Limit switch (normally open) = 23
Without limit switch = no code
Applicable only to three-position spools

Sealing

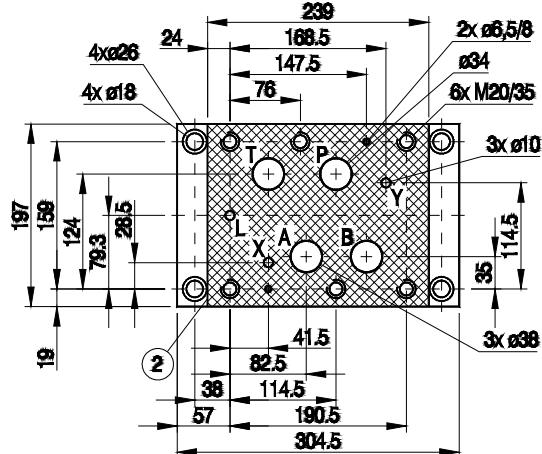
For fluids on mineral oil base = with no designation
For fluids on phosphate ester base = V

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

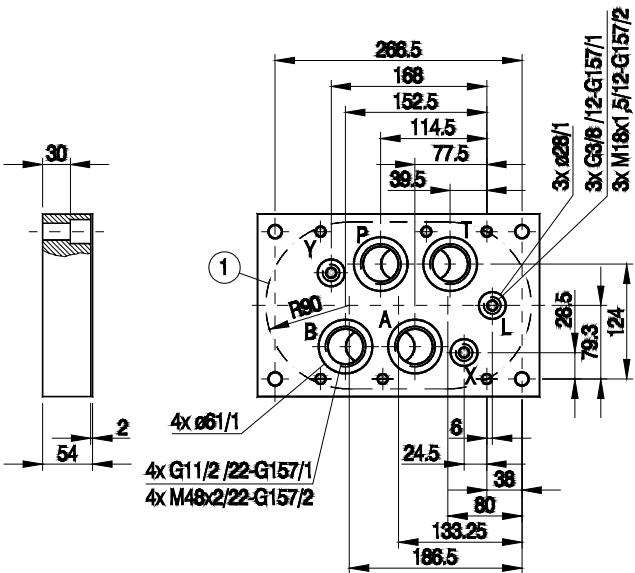
Coding example : H-4 WMM 32 E50/F

MOUNTING DIMENSIONS FOR SUBPLATE

G 157/01
G157/02



1 - Recess in subplate face
2 - Mounting face



Bolts mounting the valve to subplate M20 x 80 - 10.9 PN-74/M-82302 (DIN 912) - 6 pcs, tightening torque - 580 Nm.

Note : Subplate and mounting bolts must be ordered separately

Subplate weight approx. 20 kg

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