Directional spool valve type WE 10 electrically operated

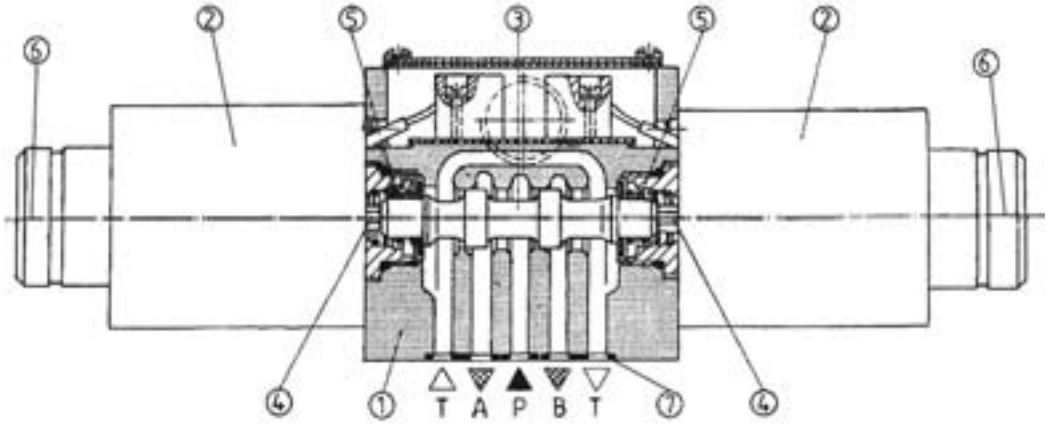
WK 491 050

04.2001r.

Size 10	31,5 MPa	up to 120 dm³/min

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

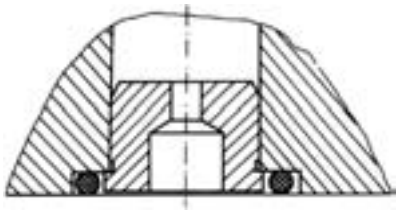


Annular ports are made around the longitudinal bore in the housing 1. The annular ports cut through the longitudinal bore forming control lands in the housing. The moveable control spool 3 is placed in the main port. If the spool is shifted, it connects or separates the ports in the housing. Various control functions result directly from shape of the control spool. Movement of the spool is caused by operation of the solenoid 2 via the lifter 4. Its return and centering in neutral position result from operation of the springs 5. The emergency buttons 6 allow the control spool to be offset without energising the solenoid.

The sealing O-rings 7 are put between the valve and a subplate to prevent leakage.

The directional spool valves are available in several versions: three-position, two-position with return spring, two-position without return spring, two-position with detent.

The directional valve is made in ,,dry'' version that is air gap solenoid is used.

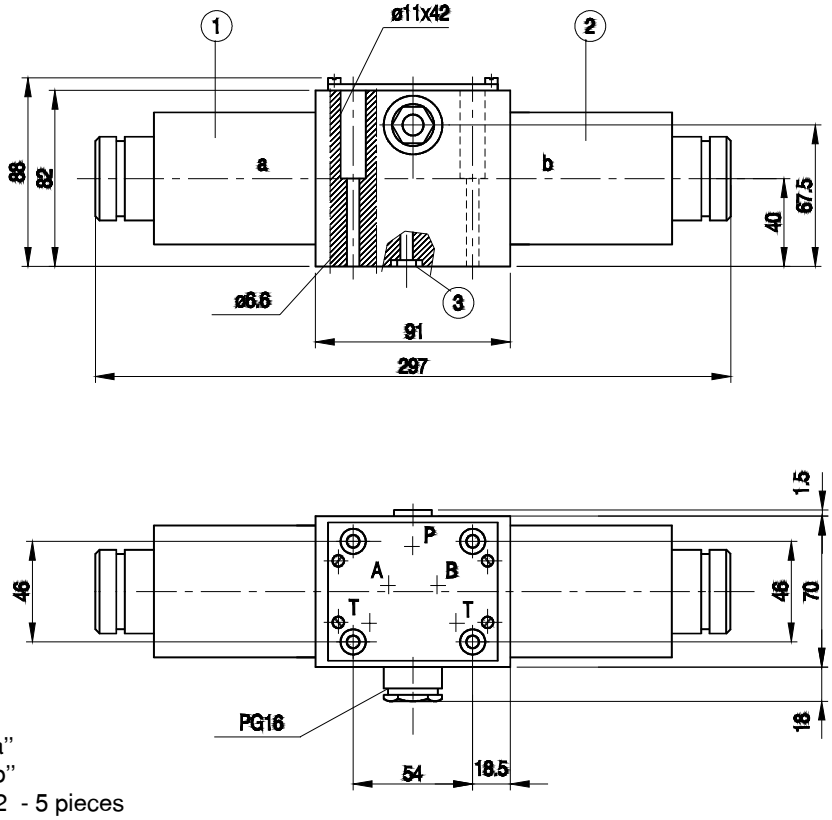


Mounting method for throttle insert in port P

TECHNAICAL DATA

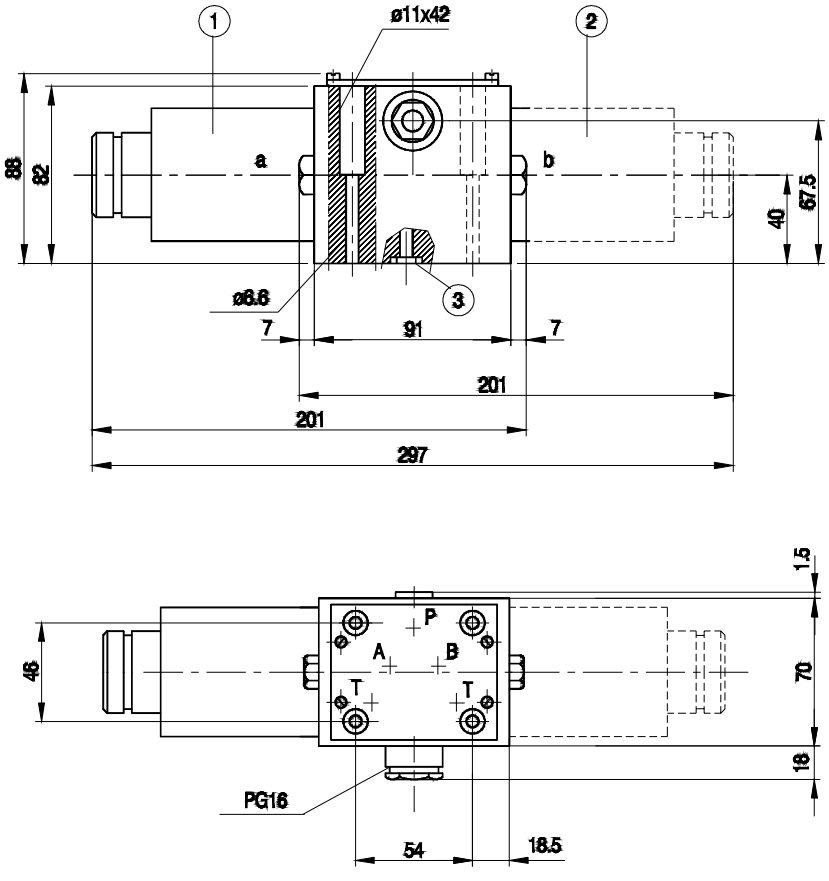
Hydraulic fluid	Mineral oil, phosphate ester			
Required filtration	up to 16 μm			
Recommended filtration	up to 10 μm			
Nominal fluid viscosity	37 mm^2 at temp. of 328 K			
Viscosity range	2.8 to 380 mm^2/s			
Optimum working temperature (fluid in a tank)	313 - 328 K			
Fluid temperature range	243 - 343 K			
Maximum admissible operating pressure	Ports P, A, B		Port X	
	31.5 MPa		15 MPa	
Power requirement	DC		AC	
	43 W		64 VA - holding current 400 VA - in-rush current	
Switching time	DC		AC	
	On	Off	On	Off
	60 ms	40 ms	20 ms	20 ms
Maximum switching frequency	DC		AC	
	15 000 1/h		7 200 1/h	
Flow section in position ,,0''	Spool type W		Spool type Q	
	3 % of nominal section		6 % of nominal section	
Insulation	IP 65			
Weight with 1 solenoid	4.8 kg max			
Weight with 2 solenoids	6.0 kg max			

OVERALL AND MOUNTING DIMENSIONS



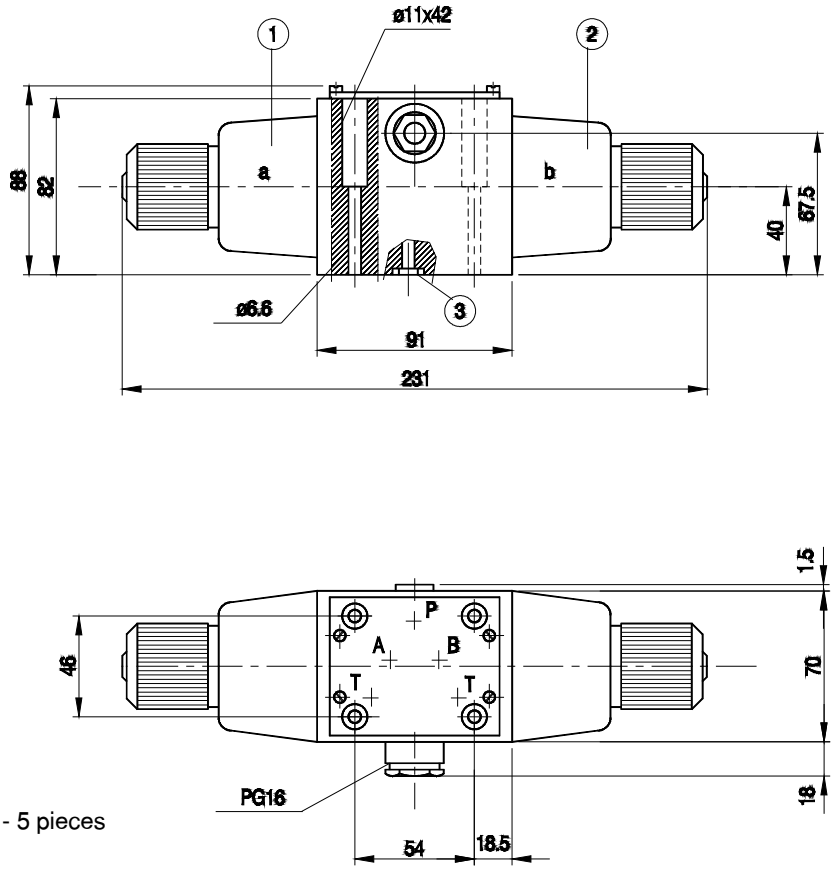
item 1 - Solenoid ,,a''
item 2 - Solenoid ,,b''
item 3 - O-ring 12 × 2 - 5 pieces

Overall dimensions for three-position directional valve with DC solenoids



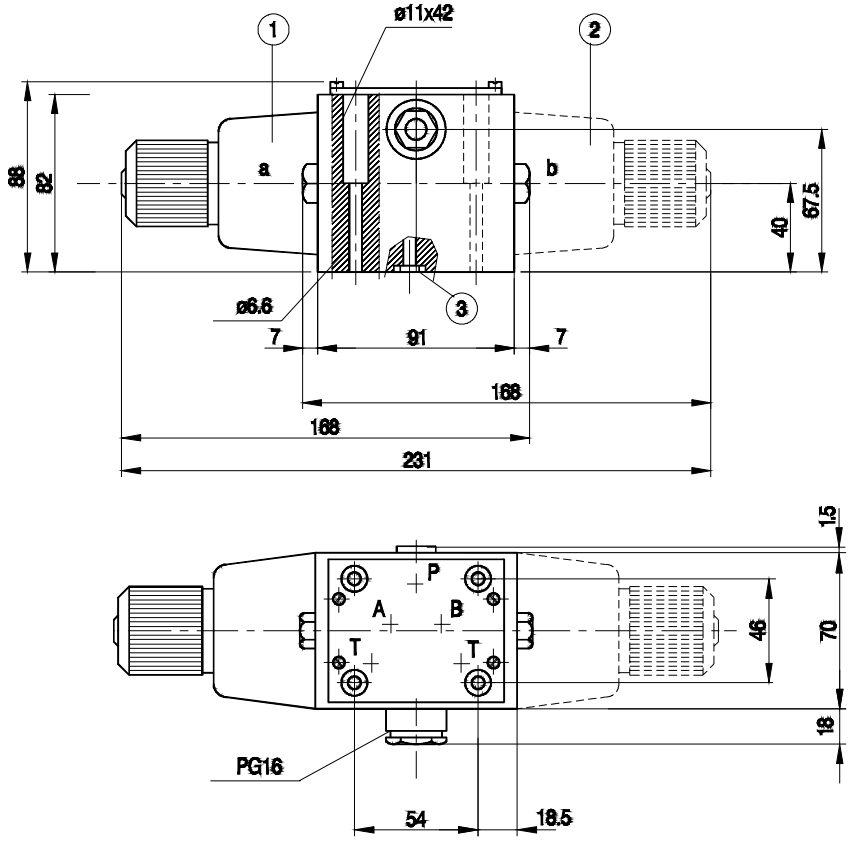
item 1 - Solenoid ,,a''
item 2 - Solenoid ,,b''
item 3 - O-ring 12 × 2 - 5 pieces

Overall dimensions for two-position directional valve with DC solenoids



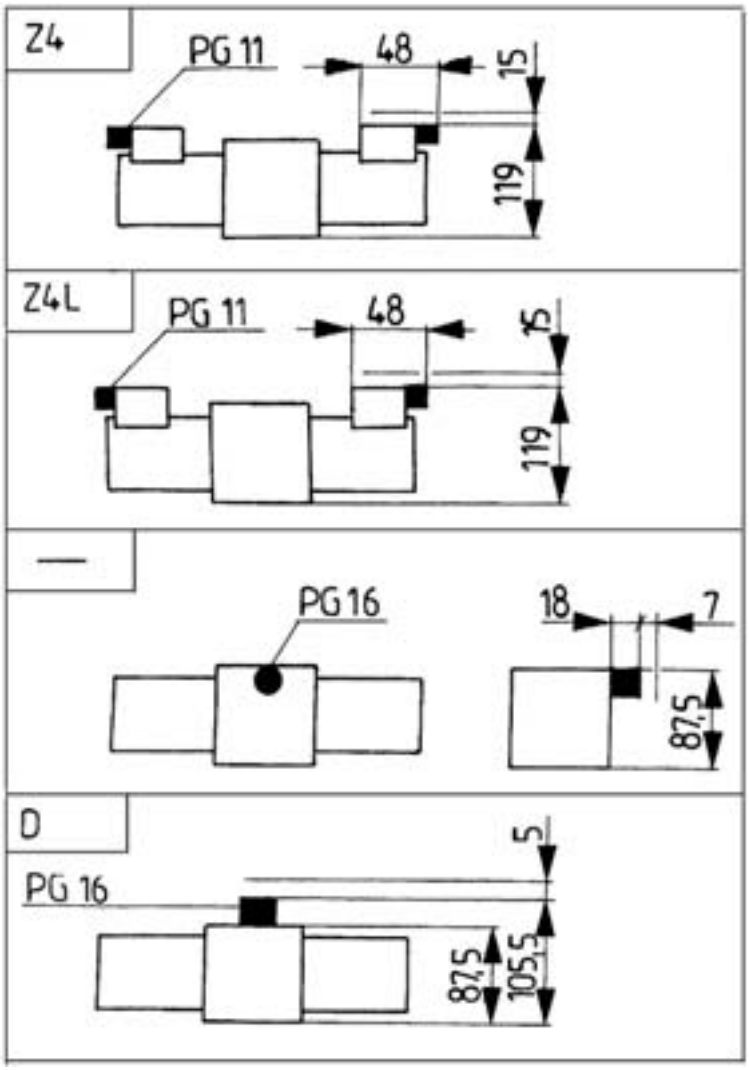
item 1 - Solenoid ,,a''
item 2 - Solenoid ,,b''
item 3 - O-ring 12 × 2 - 5 pieces

Overall dimensions for three-position directional valve with AC solenoids



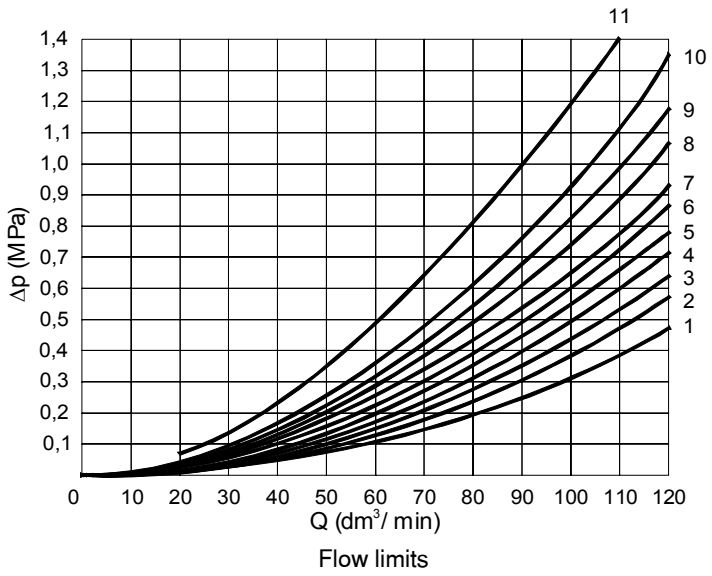
item 1 - Solenoid ,,a''
item 2 - Solenoid ,,b''
item 3 - O-ring 12 × 2 - 5 pieces

Overall dimensions for two-position directional valve with AC solenoids



Electrical connections

PERFORMANCE CURVES : measured at ν = 41 mm²/s and T = 323 K



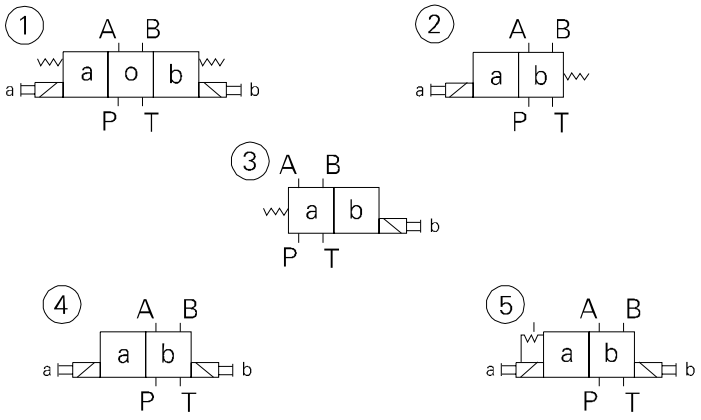
Flow limits

Spool type	Flow direction			
	P - A	P - B	A - T	B - T
A,B	4	4	-	-
C	4	4	5	6
D,Y	6	6	7	7
E	2	2	5	5
F	3	4	8	5
G	4	4	7	8
H	2	2	7	8
J	2	2	4	4
L	3	3	4	6
M	2	2	5	6
P	5	3	6	8
Q	2	3	2	4
R	4	7	5	-
T	4	4	7	8
U,V	3	3	4	4
W	3	3	5	6
	P - A	B - A	A - T	P - T
R	-	10	-	-

Note:
The flow limits referto 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 considetably lower.

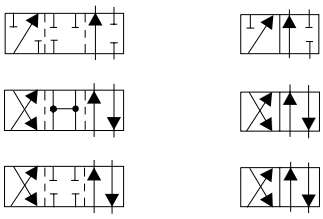
1 - Spool types C, D, E, M, V, Y
2 - Spool types F, G, P, R, T - for AC
3 - Spool types J, L, Q, U, W
4 - Spool types A, B
5 - Spool types O, C/OF, D/O, D/OF
6 - Spool type H
7 - Spool type A/O
8 - Spool type F, G, P, R, T - for DC

SCHEMES



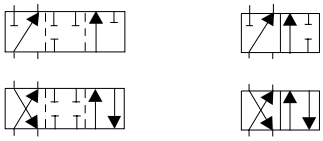
1 - Three-position directional valve
2 - Two-position directional valve, spring centered (spool types A, C, D)
3 - Two-position directional valve, spring centered (spool types B, Y)
4 - Two-position directional valve without return springs (spool types A/O, C/O, D/O)
5 - Two-position directional valve with detent (spool types A/OF, C/OF, D/OF)

development - per scheme 2



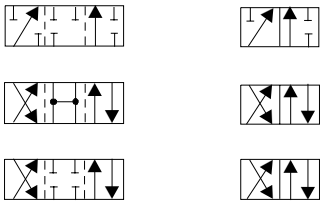
A
C
D

develpment - per scheme 3

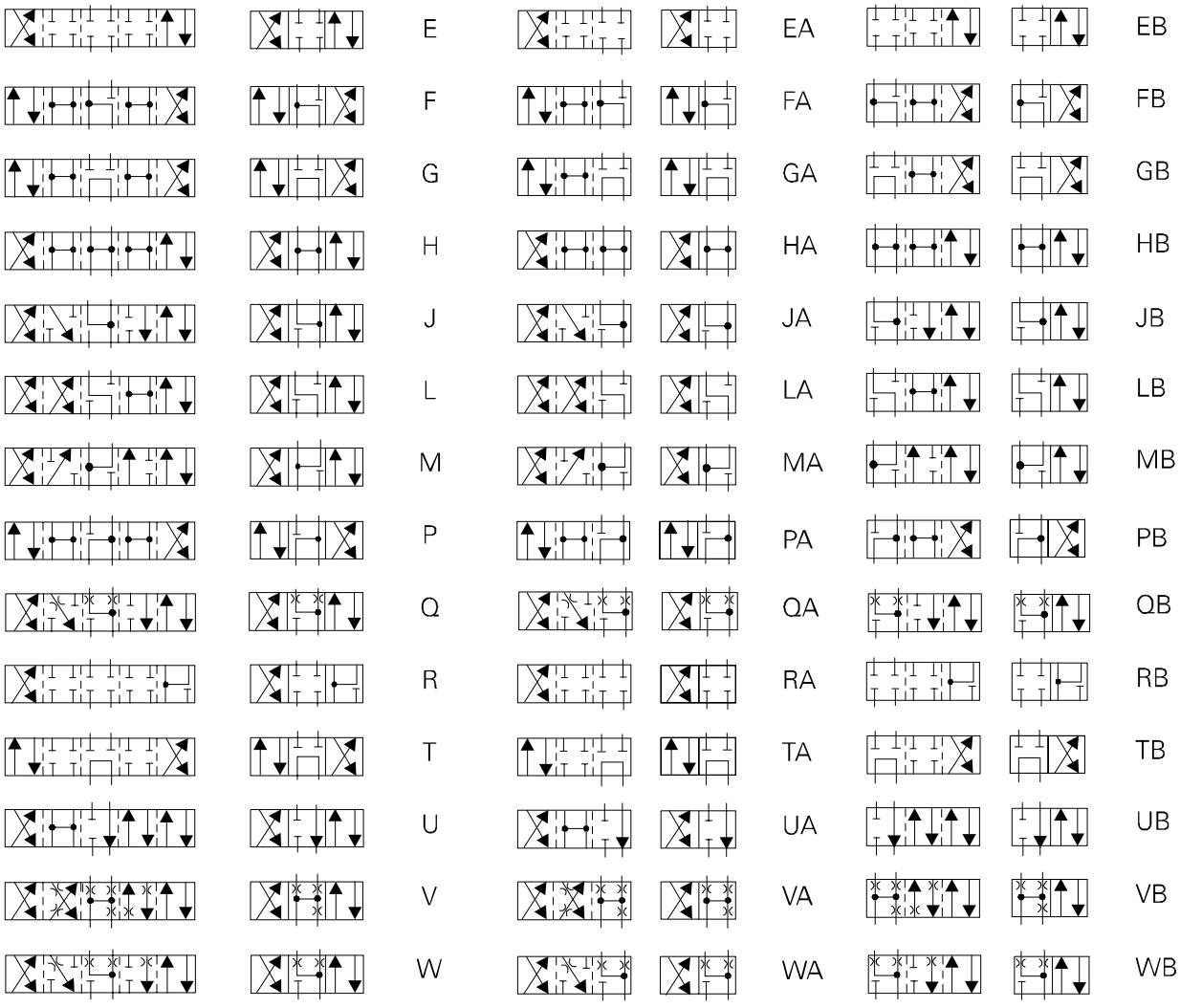


B
Y

development - per scheme 4 or 5



A.../0 ; A.../0F
C.../0 ; C.../0F
D.../0 ; D.../0F



development - per scheme 1

Spool schemes (two and three-position)

HOW TO ORDER

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

	WE 10		/							*

Number of service ports
3 = 3
4 = 4

Control spool type
See schemes on page 7

Series number:
20 = 20
(20 - 29) - Installation and connection dimensions unchanged

Control spool positioning
Spring centering = with no designation
Without spring return = O
Without spring return, with detent = OF

Voltage for solenoids

DC voltage	12 V	= G 12
DC voltage	24 V	= G 24
DC voltage	110 V	= G 110
AC voltage	110 V - 50 Hz (with rectifier)[1]	= W 110 - R
AC voltage	220 V - 50 Hz (with rectifier)[1]	= W 220 - R
AC voltage	110V - 50 Hz[2]	= W110 - 50
AC voltage	220V - 50 Hz[2]	= W220 - 50

Manual override
With manual override = with no designation
Without manual override = N

Electrical connections
Small plug-in connector = Z4
Small plug-in connector with lamps = Z4L
Cable entry on cover = D
Cable entry on side = no design.

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

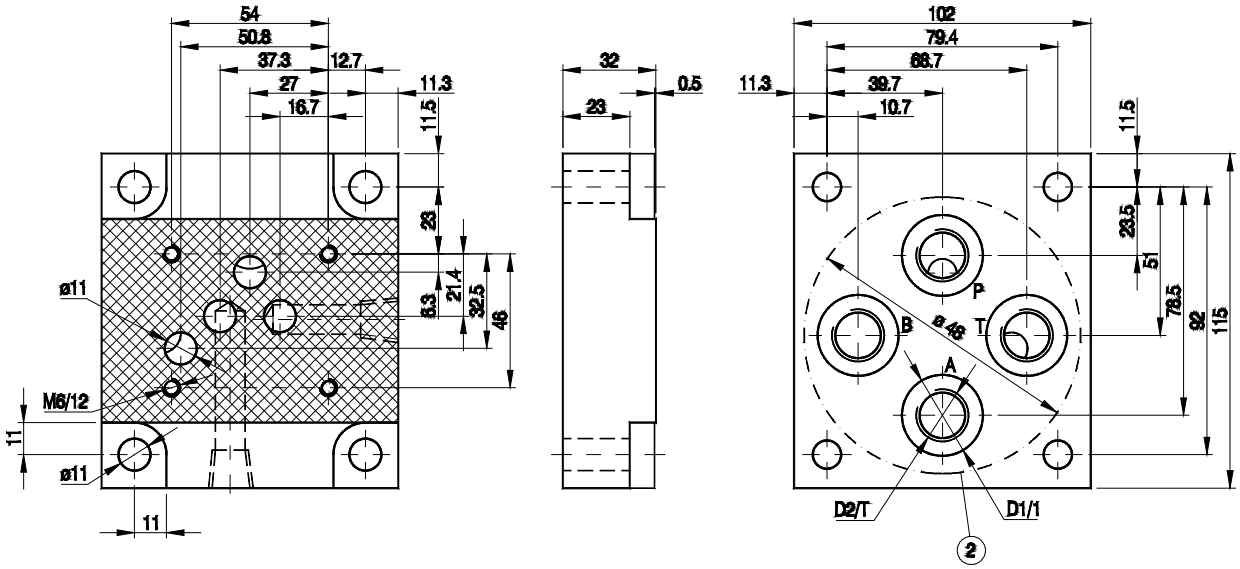
Sealing
For fluids on mineral oil base = with no designation
For fluids on phosphate ester base = V

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

Coding example : 4 WE 10E22/ G24 NZ4 B10

[1] In versions W110-R and W220-R DC proper solenoid and rectifier are used.
[2] To special order.

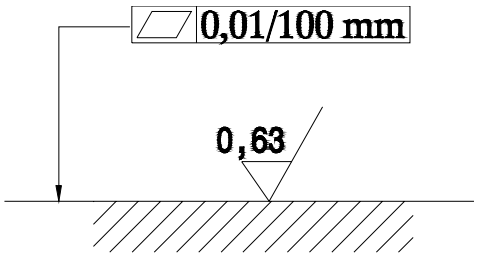
MOUNTING DIMENSIONS FOR SUBPLATE



1) Mounting surface of plate
2) Recess on the table

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-74/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



Permissible surface roughness and flatness deviation for a subplate face

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