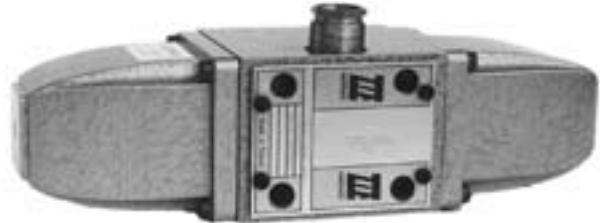
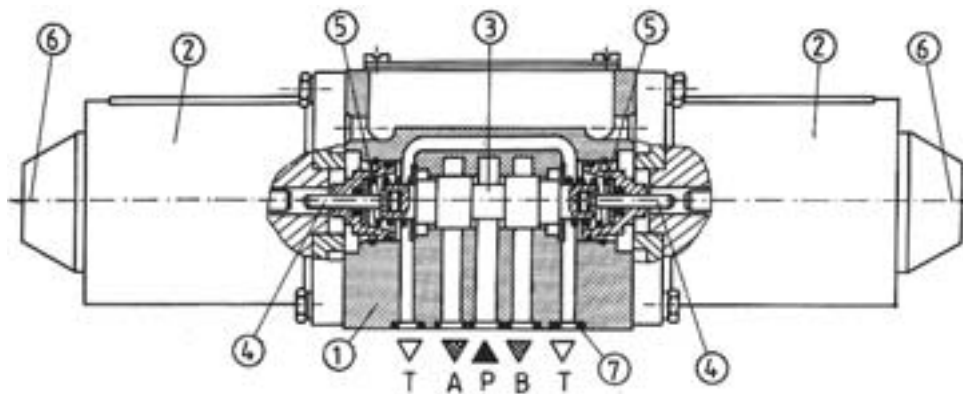


Directional spool valves are used to control the direction of fluid flow and thus the direction of movement or holding position of a user (cylinder or hydraulic motor).



DESCRIPTION OF OPERATION



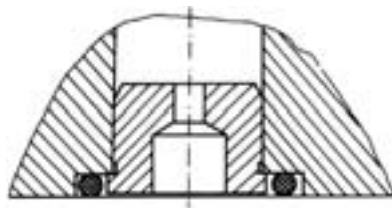
Annular ports are made around the longitudinal bore in the housing 1. The annular ports cut through the longitudinal bore forming control lands in the housing. The moveable control spool 3 is placed in the main port. If the spool is shifted, it connects or separates the ports in the housing. Various 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.

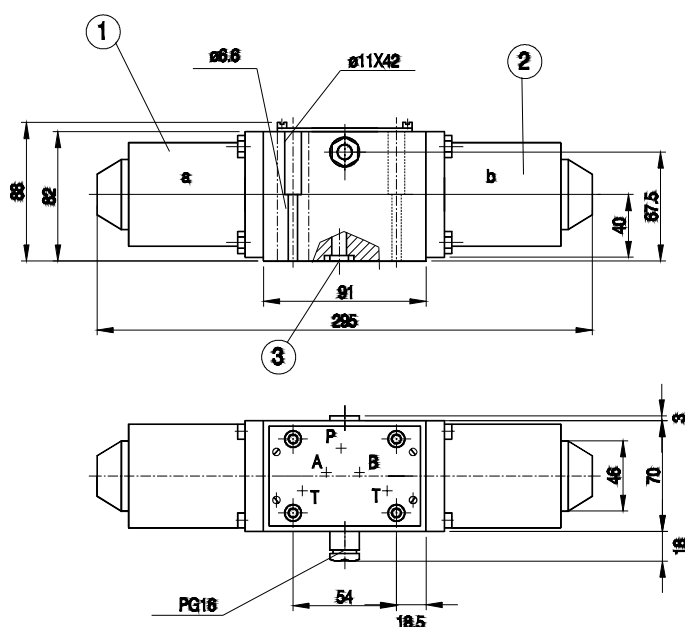


Mounting method for throttle insert in port P

TECHNAICAL DATA

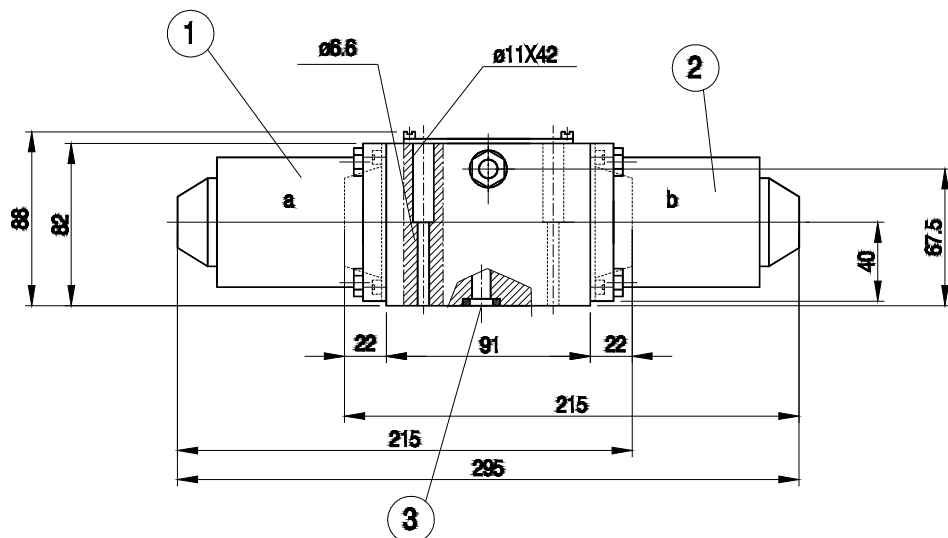
Hydraulic fluid	Mineral oil, phosphate ester			
Required filtration	up to 16 μm			
Recommended filtration	up to 10 μm			
Nominal fluid viscosity	37 mm² at temp. of 328 K			
Viscosity range	2.8 to 380 mm²/s			
Optimum working temperature (fluid in a tank)	313 - 328 K			
Fluid temperature range	243 - 343 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
	up to 60 ms	up to 40 ms	up to 20 ms	up to 20ms
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



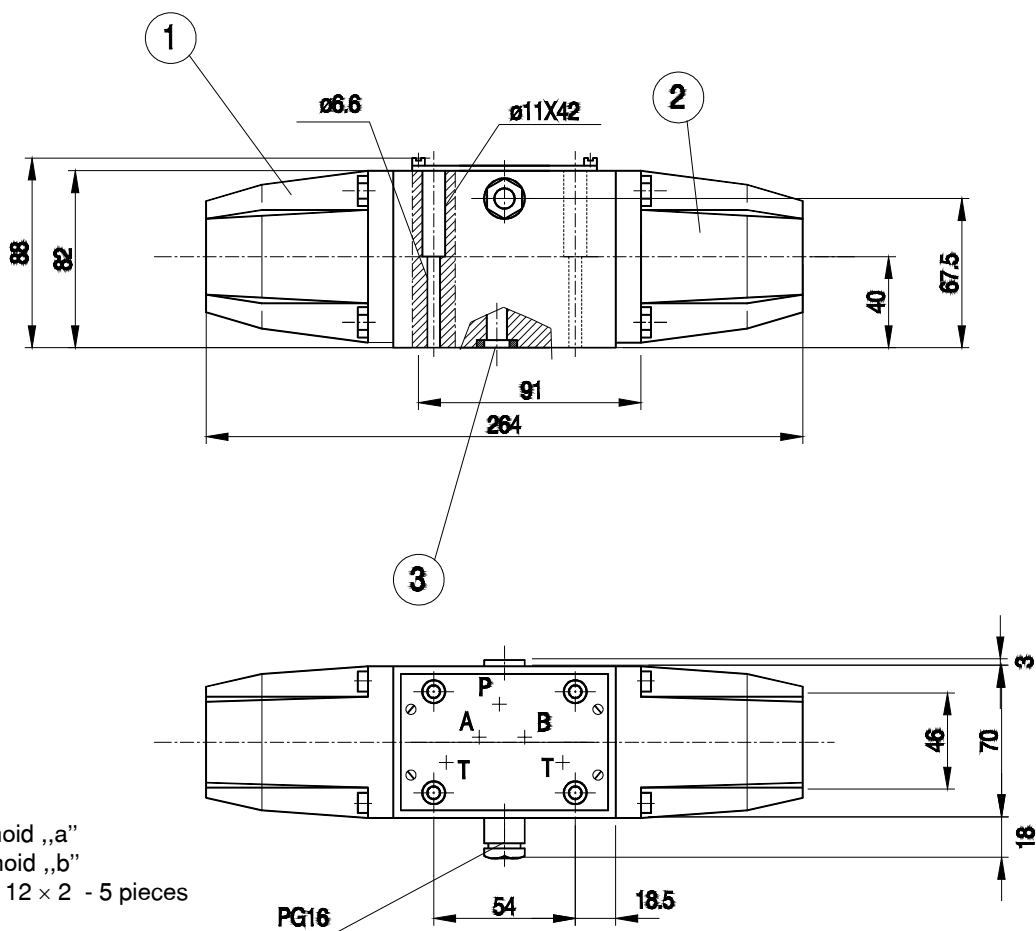
- item 1 - Solenoid „a”
- item 2 - Solenoid „b”
- item 3 - O-ring 12 × 2 - 5 pieces

Overall dimensions for three-position directional valve with DC solenoids



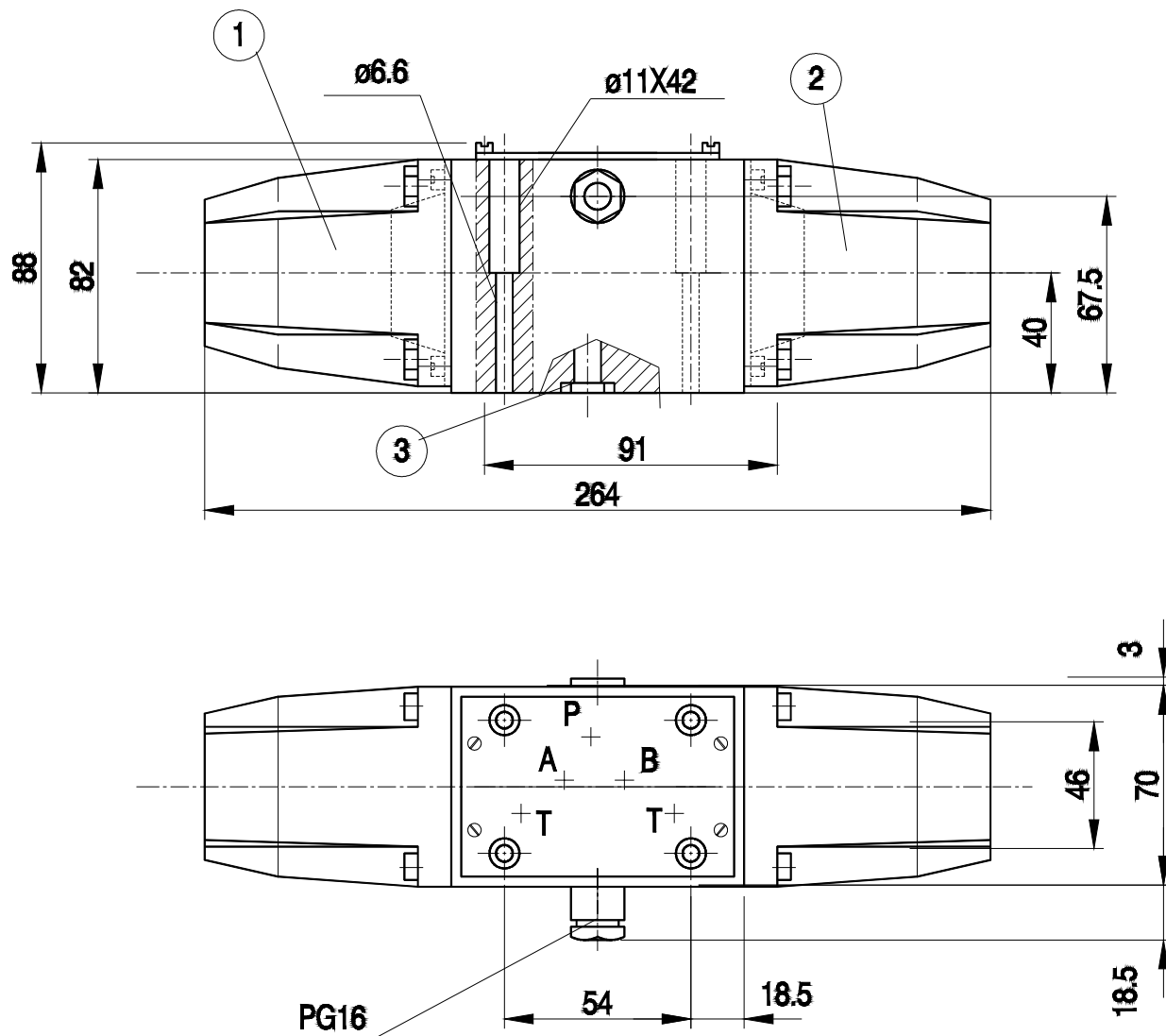
- item 1 - Solenoid „a”
 item 2 - Solenoid „b”
 item 3 - O-ring 12 × 2 - 5 pieces

Overall dimensions for two-position directional valve with DC solenoids



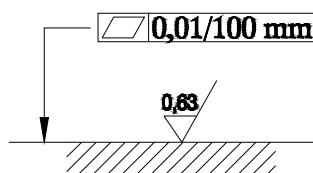
- item 1 - Solenoid „a”
 item 2 - Solenoid „b”
 item 3 - O-ring 12 × 2 - 5 pieces

Overall dimensions for three-position directional valve with AC solenoids

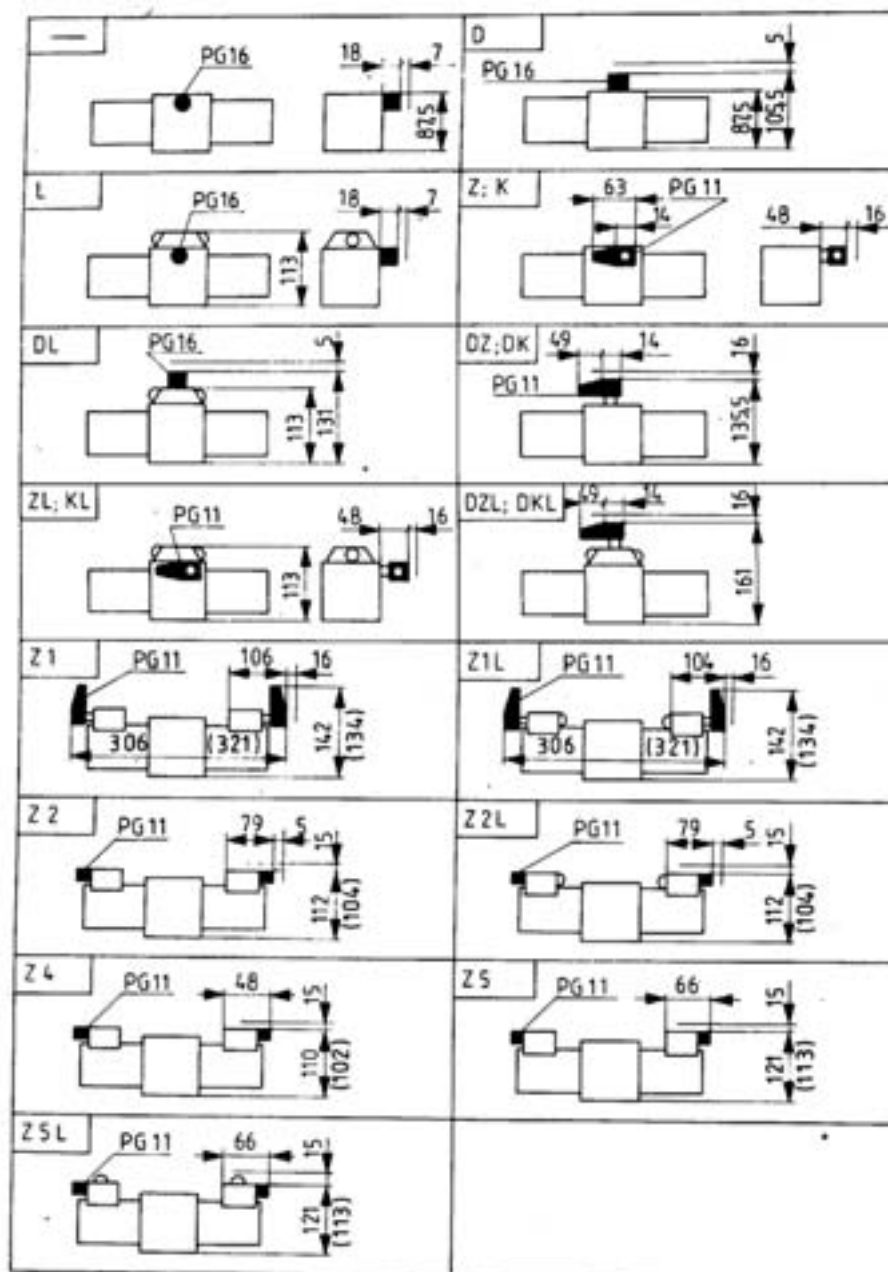


- item 1 - Solenoid „a”
- item 2 - Solenoid „b”
- item 3 - O-ring 12 × 2 - 5 pieces

Overall dimensions for two-position directional valve with AC solenoids



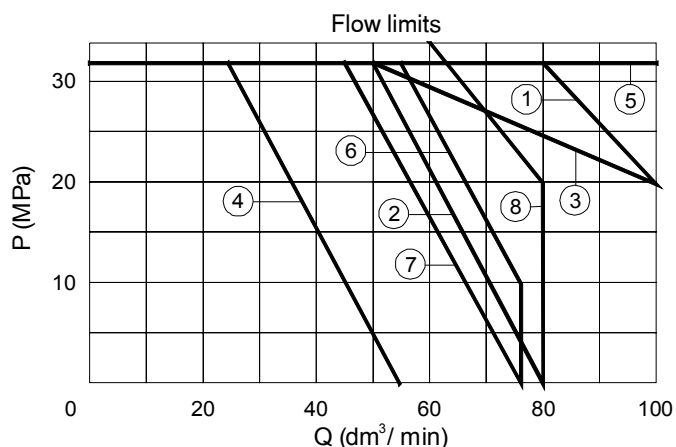
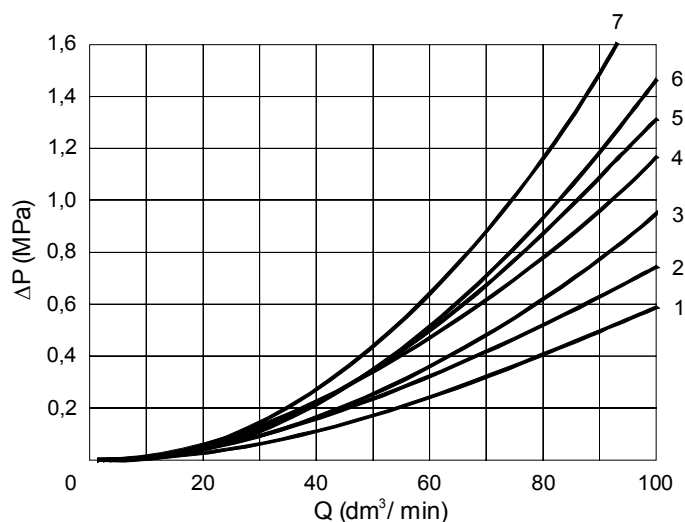
Permissible surface roughness and flatness deviation for a subplate face



Electrical connections

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

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	4	-	-
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	-	-

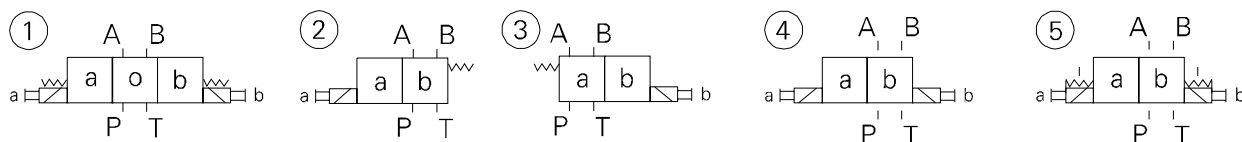


- 1 - Spool types C, D, E, M, V, Y
- 2 - Spool types F, G, P, R, T - for AC
- 3 - Spool types J, L, Q, U, W
- 4 - Spool types A, B
- 5 - Spool types O, C/OF, D/O, D/OF
- 6 - Spool type H
- 7 - Spool type A/O
- 8 - Spool type F, G, P, R, T - for DC

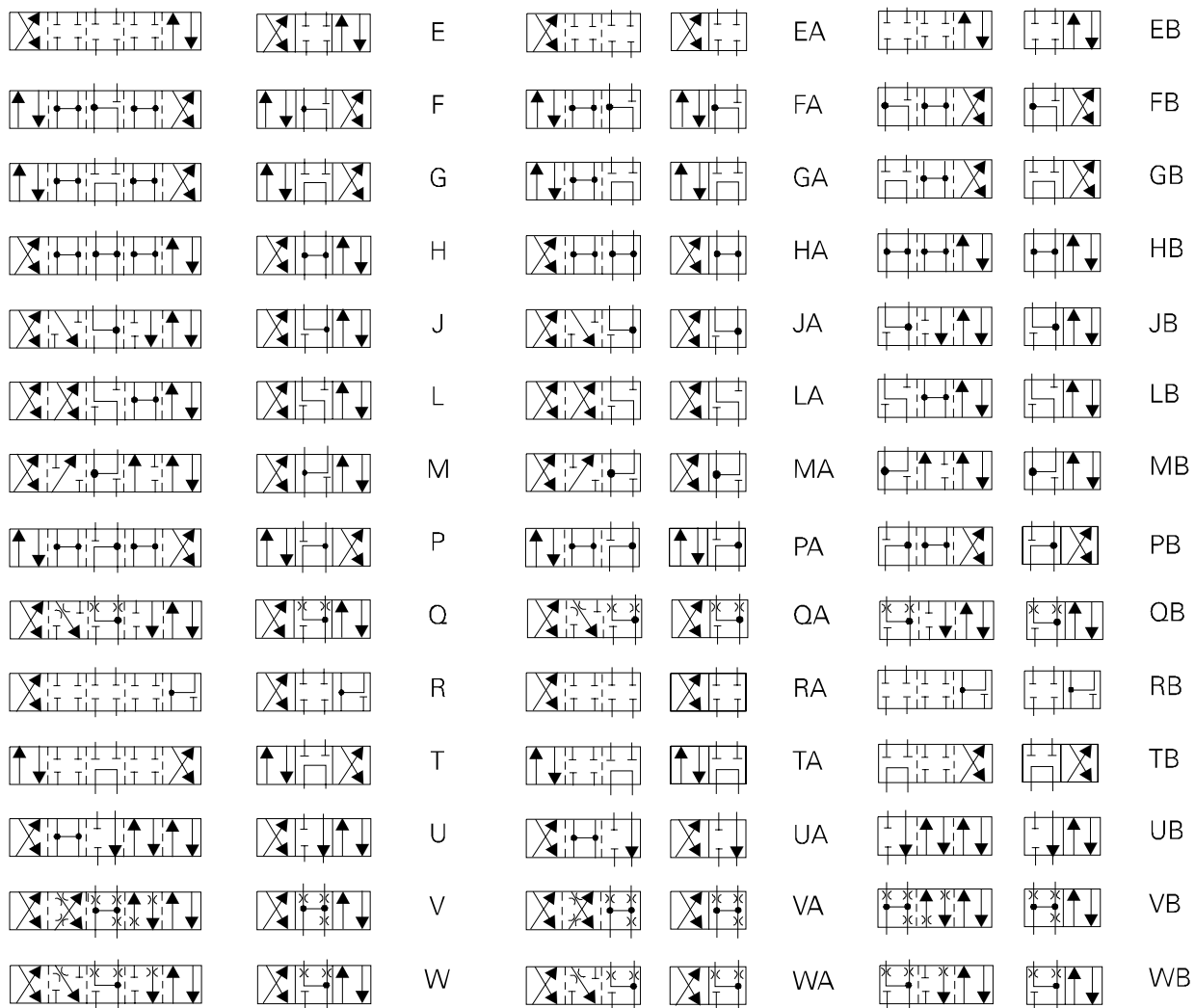
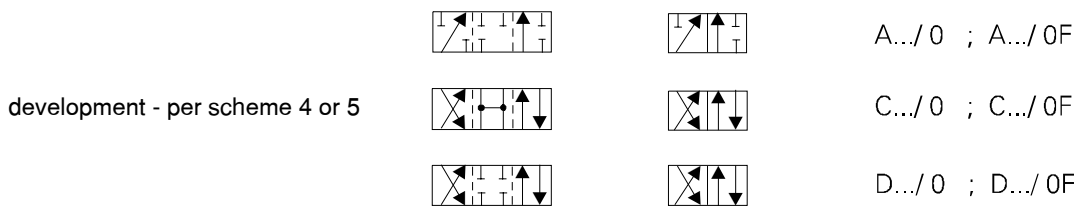
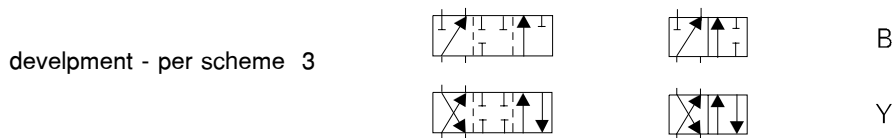
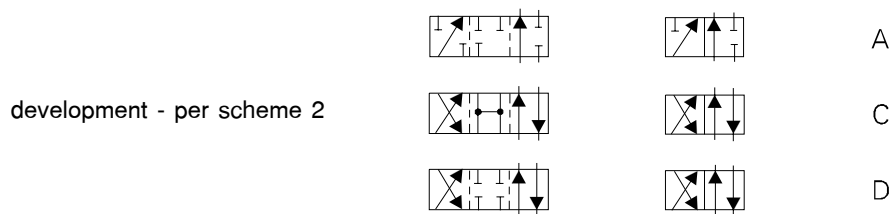
Note:

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



- 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 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:

50 = 50
(50 - 59) - 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 = W 110 - 50
AC voltage 220 V - 50 Hz = W 220 - 50

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 Ø 0.8 mm = B08
Throttle insert Ø 1.0 mm = B10
Throttle insert Ø 1.2 mm = B12
Throttle insert Ø 3.0 mm = B30

Electrical connections

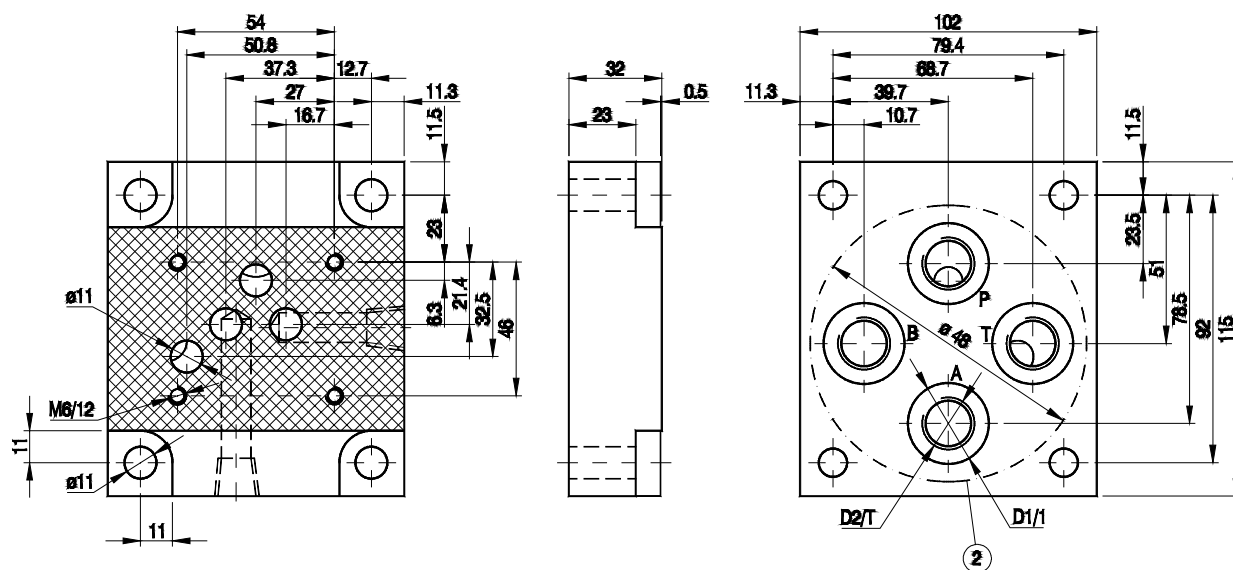
Side cable entry = with no designation
Side cable entry with lamps = L
Cable entry on cover with lamps = DL
Plug-in connector on side with lamps = ZL, KL
Plug-in connector = Z1
Plug-in connector = Z2
Small plug-in connector = Z4
Large plug-in connector with lamps = Z5L
Cable entry on cover = D
Plug-in connector on side = Z, K
Plug-in connector on cover = DZ, DK
Plug-in connector on cover with lamps = DZL, DKL
Plug-in connector with lamps = Z1L
Plug-in connector with lamps = Z2L
Large plug-in connector = Z5

Manual override

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

Coding example : 4 WE 10E50/ G24 NZ4 B10

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

PONAR WADOWICE S.A.
ul. Wojska Polskiego 29
34-100 Wadowice
tel. 033/ 823 39 43, 823 30 41
fax 033/ 873 48 80
e-mail: ponar@ponar-wadowice.pl

