Directional seated valves with various actuations

These directional seated valves with various actuation modes comprise manifold mounting valves that use spring-loaded balls as valve elements and therefore do not show any leakage. The actuation element used moves the valve to the appropriate switching position using an angled lever and tappet.

The basic versions are designed as 2/2- and 3/2-way directional valves. 3/3- and 4/3-way functions are possible if two valves are housed in one valve block, whereas 4/2-way functions require an additional intermediate plate. The variants of size G..-22 can be used as a reinforced version for fluctuating, pulsating continuous loading and high switching frequency in the upper pressure range.

Connection blocks can be flange-mounted to incorporate the valves into the pipe systems. Optional additional functions in the connection blocks (e.g. pressure-limiting or bypass check valve) extend the range of applications of this valve type. It is possible to combine several valves connected in parallel in one valve bank (type VB).

Nomen-clature:	**Directional seated valve, zero leakage**
Design:	**Individual valve, manifold mounting combination with sub-plates for pipe connection**
Actuation:	**Solenoid Pressure (hydraulic, pneumatic) Mechanical (roller, pin) Manual (hand lever, adjusting knob)**
p_{max}:	**350 ... 700 bar**
Q_{max}:	**6 ... 120 lpm**

Features and benefits:

- Zero-leakage ball valve construction with high switching reliability
- Solenoid, pressure, mechanical or manual actuation
- Low shifting forces and gentle, smooth switching
- Operating pressures up to 700 bar

Intended applications:

- Machine tools (cutting and non-cutting)
- Clamping equipment, punching tools, jigs
- Rubber and plastics machinery
- Oil hydraulics and pneumatics

Design and order coding example

G | R2 | - 3 | R | - 1/2 | - G24

Solenoid voltage 12V DC, 24V DC, 110V AC, 230V AC

Indiv. connection blocks for pipe connection

Additional versions:

- Connection blocks with by-pass check valve or pressure limiting valve between P and R
- Connection block with bridge rectifier circuit. Check valves in "GRAETZ"-circuitry ensure flow direction through the valve

Additional elements

- With check valve insert for port P
- With check valve insert for port P
- With return pressure stop for port R
- Lift monitoring (size 3 and 4)

Size Size 0 to 4

- Size 1 also available with industrial connection hole pattern NG 6 (CETOP), type NG

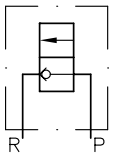
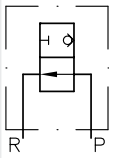
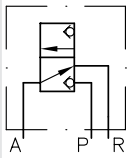
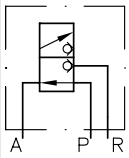
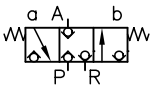
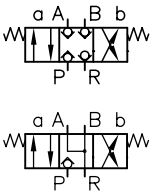
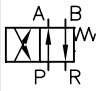
Function

- 2/2-way directional valve (R2, S2)
- 3/2-way directional valve (3, Z3)
- 3/3-way directional valve (21, 39)
- 4/3-way directional valve (22, 48, 49)
- 4/2-way directional valve (4, Z4)

Actuation

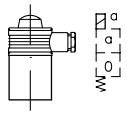
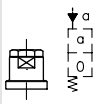
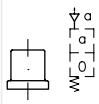
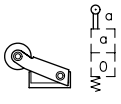
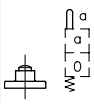
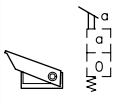
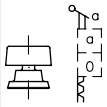
- Solenoid (G, WG)
- Hydraulic (H)
- Pneumatic (P)
- Mechanical (K, T, F, D)

Function

2/2-way directional valve		3/2-way directional valve		3/3-way directional valve	4/3-way directional valve	4/2-way directional valve	
R2	S2	3	Z3	21, 39	22, 48, 49	4	Z4
							

- Simplified symbols for 3/3-, 4/3- and 4/2-way functions
- Type 21, 22 not in size 4
- Type 39, 48, 49 only in size 22
- Type 4, Z4 only in size 1

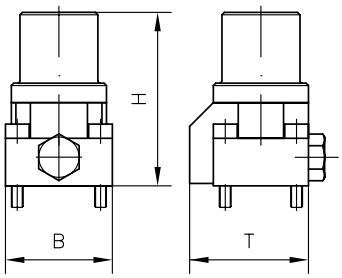
Actuation:

Solenoid		Pressure		Mechanical		Manual	
		Hydraulic	Pneumatic	Roller	Pin	Hand lever	Turn knob
G	WG	H	P	K	T	F	D
							
Solenoid voltages: 12V DC, 24V DC (type G) 230V AC (type WG)		Control pressure $p_{contr.\ max}$ [bar]:		Shifting force [N]:		Shifting force [N]:	Shifting torque [Ncm]:
		400... 700	15	25... 80	51... 20	25... 80	45... 98
		Control pressure $p_{contr.\ min}$ [bar]:		Shifting travel [mm]:		Shifting travel [mm]:	
		9... 16	2.5... 4	10.5... 30	4 and 5	20.5... 45	

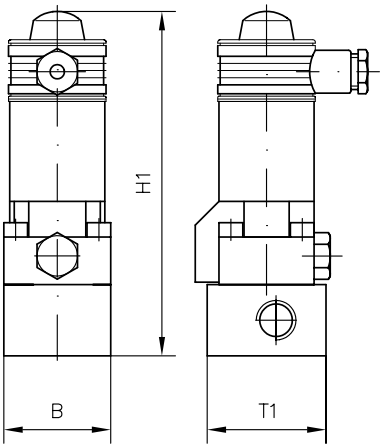
- Valve with solenoid actuation also available in ATEX-compliant version (24V DC)

General parameters and dimensions

Individual valve



Valve with connection block



	Dimensions						
Size	**H_{max}**	**$H1_{max}$**	**B**		**T_{max}**	**T1**	**m_{max} [kg]**
			2/2- and 3/2-way	**3/3- and 4/3-way**			
0	90.5	110.5	36	75	41.5	40.0	0.8/1.0
12	115	145	45	92	50	50	1.4/1.9
2, 22	126.5; 134.5	156.5; 161.5	56; 56	116; 116	62.5; 67.5	56; 56	2.9/3.9; 3.0/4.0
3	162	202	70	144	91.5	70	5.7/7.1
4	226	226	80	162	127	125	16.3/20.1

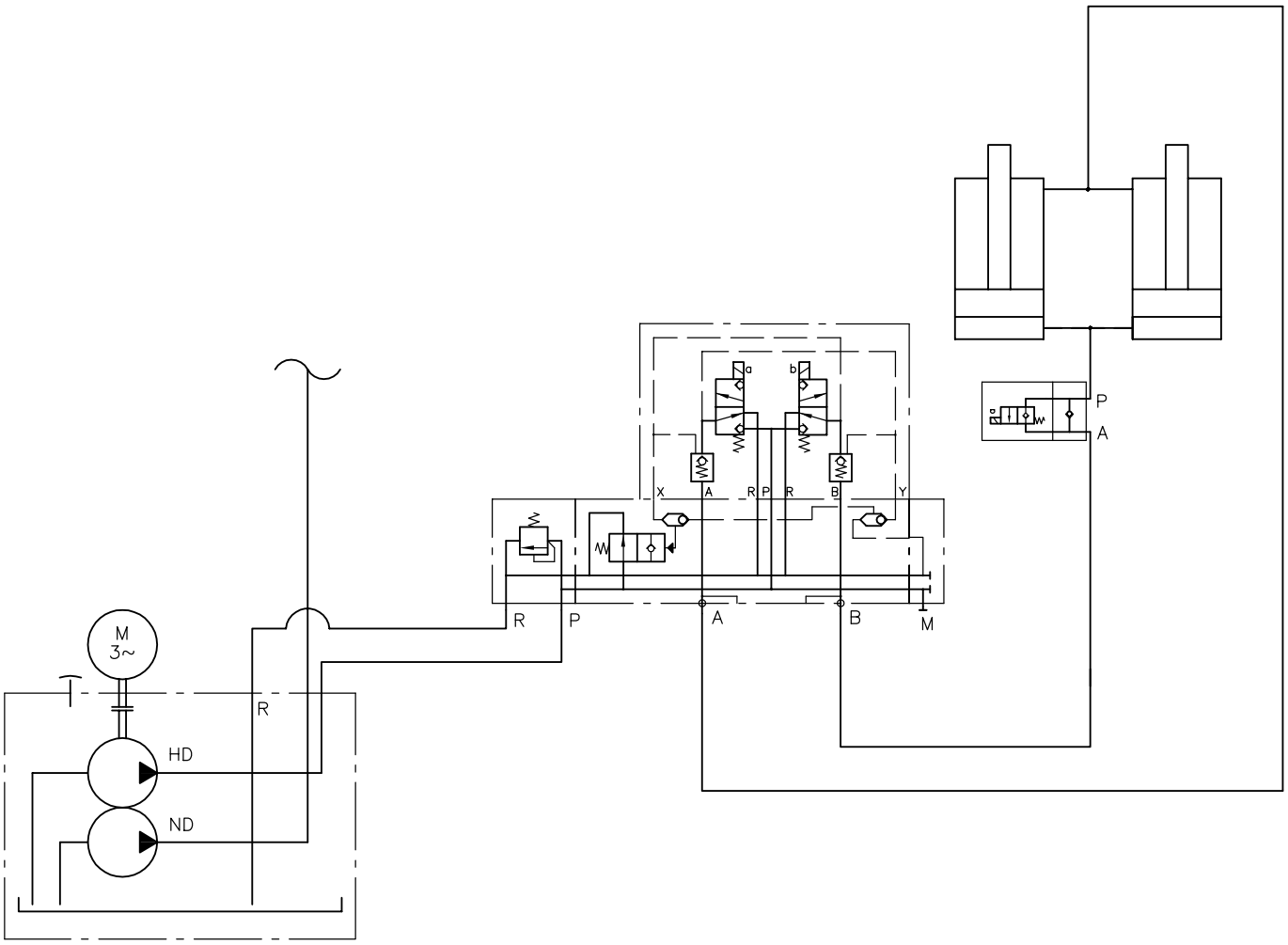
	Q_{max} [lpm]	p_{max} [bar]								Ports (BSPP)
Size		**Solenoid**		**Pressure**		**Mechanical**		**Manual**		
		G	**WG**	**H**	**P**	**K**	**T**	**F**	**D**	**P, R, A, B**
0	6	300... 500		500	-	-		-	500	G 1/4
12	12	350... 500 (700)		500... 700		400... 700		400... 700		G 1/4 and G 3/8
2, 22	25	350... 500 (700)		500		400... 500		400... 500		G 3/8 and G 1/2
3	65	350... 400		400		350	-	350	-	G 1/2 and G 3/4
4	120	350		-		-				G 3/4 and G 1

Example circuit:

RZ 4.0/2-12.3-B 75-V 5.5
- 3 x 690/400 V 50 Hz

VB 22 AM 1/500
-G 49/U 22
-8 E-2-G 24

GR 2-12-3/8 C-G 24



Associated technical data sheets:

- Directional seated valves: D 7300
- Directional seated valves with standard connection diagram (CETOP3, NG 6): D 7300 N
- Directional seated valves with lift monitoring: **D 7300 H**

Valve banks:

- Valve banks type VB: D 7302

Plugs:

- With LEDs etc.: D 7163
- With economy circuit: D 7813, D 7833