

2/2-way directional seated valve cartridges type EM, EMP and EMC

These 2/2-way ball seated directional valves are either directly or pilot actuated by a solenoid. With the directly actuated version the valve passage is opened or closed by a cone whereas with the piloted a piloting duct of a stepped piston is opened or closed generating a pressure difference at the opposing facial areas of the piston forcing it in the open or closed position. Type EMP is a proportional valve, acting like a throttle but with zero leakage in blocked position. The dampened version will increase the switching time for on/off controls (hydraulic ramp). The wet armature solenoids for the valve actuation are pressure resistant, where all moving internal parts are flushed by oil. There is a wide range of connection blocks either for pipe connection or for banjo bolt mounting, which may feature optional elements such as drain valve, by-pass throttle, pressure switch, 2-way flow control valve etc.

Features and benefits:

- Zero leakage in blocked state
- Directly switching up to approx. 3 lpm and piloted up to 160 lpm
- Minimized back pressure even at high flows
- Long service life due to hardened valve seats

Intended applications:

- Cranes and lifting equipment
- Road construction industry
- Materials handling, industrial trucks etc.
- Handling and assembly robots, etc.

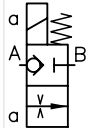
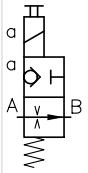
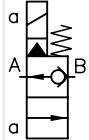
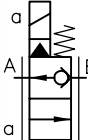
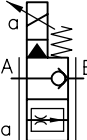
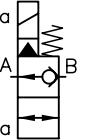
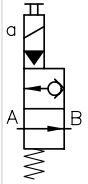
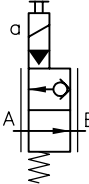
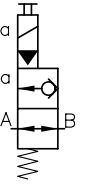


Nomenclature:	Directional seated valve, zero leakage
Design:	Screw-in valve Combination Combination with connection block for pipe connection Combination with connection block for swivel fitting Combination with connection block for manifold mounting
Actuation:	Solenoid
p_{max}:	450 bar
Q_{max}:	1 ... 160 lpm

Design and order coding example

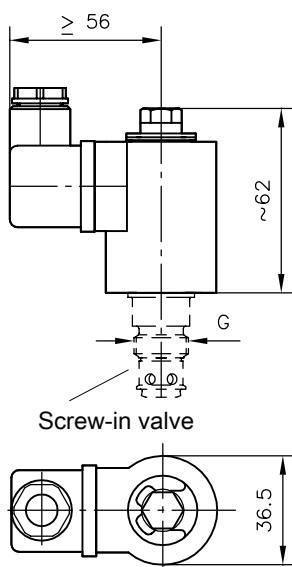
EM 21	V	- 3/8	- G24	
			Solenoid voltage	12V DC, 24V DC, 110V AC, 230V AC
			Versions with	<ul style="list-style-type: none"> ■ Versions with M12-plug and 8-Watt solenoid ■ Quarter-turn plug, plugs of Co. KOSTAL or AMP
		Connection blocks	Versions with	<ul style="list-style-type: none"> ■ Drain valve ■ Drain valve and drop-rate braking valve ■ Drain valve and by-pass check valve ■ Bypass- throttle ■ Pressure switch ■ 2-way flow controller
	Function			<ul style="list-style-type: none"> ■ V - 2/2-way valve (NC-type) ■ S - 2/2-way valve (NO-type)
Basic type, size				<ul style="list-style-type: none"> ■ Type EM: ON/OFF-valve, size 1 to 4 ■ Type EMP: Prop. valve, size 1 to 4 ■ Type EMC: proportional valve, load compensated, size 3

Function

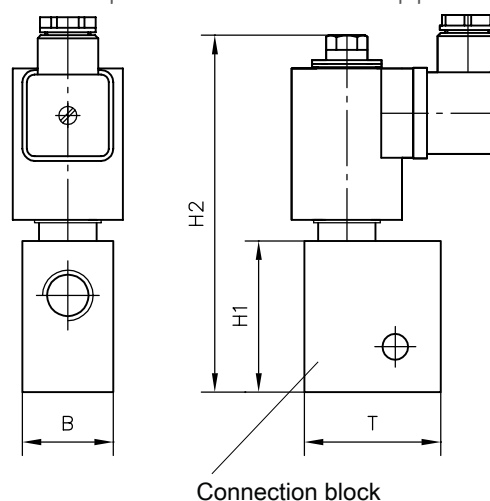
	Flow in arrowed direction			Arbitrary flow direction	Flow in arrowed direction			Arbitrary flow direction
	Energized open				Energized closed			
Directly actuated	EM .1 D 				EM .1 DS 			
Pilot actuated	EM .1 V 	EMP .1 V 	EMC .31 V 	EM .2 V 	EM .1 S 	EMP .1 S 	EM .2 S 	

General parameters and dimensions

Screw-in valve



Valve compl. with connection block for pipe connection



			Screw-in valve		Valve with connection block					
	Q _{max} [lpm]	p _{max} [bar]	G	m [kg]	Ports (BSPP)	Dimensions [mm]				m [kg]
						H1	H2	B	T	
EM 11 (D, DS)	5	450	M 14 x 1.5	0.3	G 1/4	40	approx. 120	20	35	0.6
EM 21 (D, DS)	3	400	M 18 x 1.5	0.35	G 1/4	50	approx. 120	30	45	0.7
EM 1.. (V, S)	20	450	M 14 x 1.5	0.3	G 1/4	40	approx. 120	20	35	0.6
					G 3/8			25	45	
EM/EMP 2.. (V, S)	40	400	M 18 x 1.5	0.35	G 3/8	50	approx. 120	30	45	0.7
					G 1/2				50	
EM/EMP 3.. (V, S)	80	400	M 18 x 1.5	0.4	G 1/2	60	approx. 133	40	55	1.0
					G 3/4				60	
EM/EMP 4.. (V, S)	160	400	M 33 x 2	0.6	G 3/4	70	approx. 150	40	65	1.2
					G 1				50	

- Pressure above 300 bar only with manifolds made of steel. Pay attention to the possibly reduced rigidity of the thread with other materials (e.g. iron, light alloy).

Example circuit:

KA 442 LFK/HH 13.1/13.1

-SS-A 1 F 3/200

-BA 2

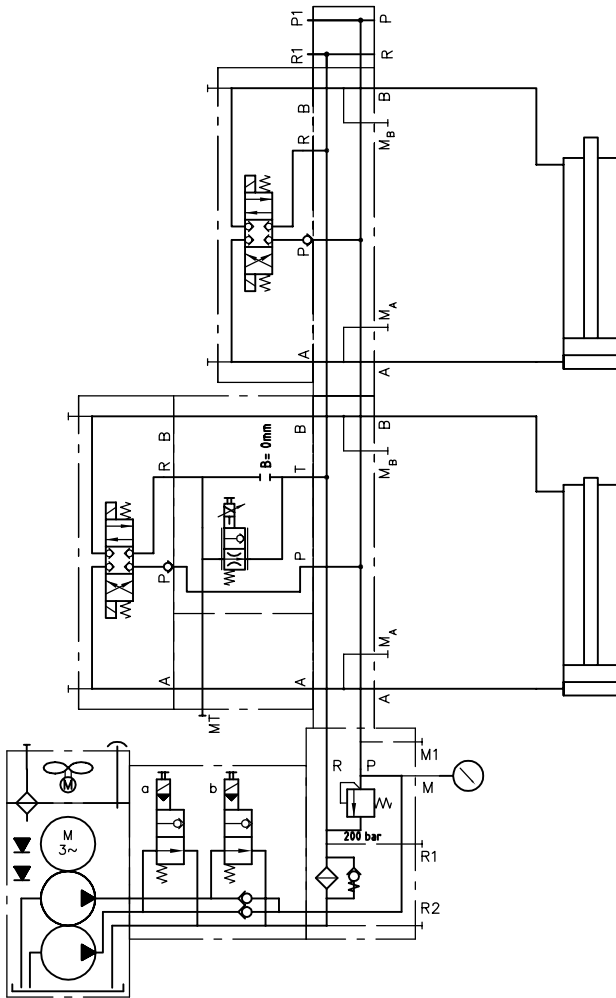
-NBVP 16 G/R-GM/NZP 16 TSPG/TB 0/3

-NBVP 16 G/R-GM/3

-2-G 24

-X 84 G-9/250

-3 x 400/230V 50 Hz-4.0 kW/24V DC



Suitable products:

- Intermediate plates NG 6 type NZP: [D 7788 Z](#)
- Connection blocks type HMPL and HMPV: [D 7700-2](#), [D 7700-3](#), [D 7700 CAN](#), [D 7700 H](#)
- Lifting/lowering valves type HSV: [D 7032](#)
- Lifting modules type HST, HMT etc.:

Associated technical data sheets:

- Directional seated valves type EM, EMP: [D 7490/1](#), [D 7490/1E](#)

Accessories:

- Pressure switches type DG 3., DG 5E: [D 5440](#), [D 5440 E/1](#)
- Drop rate braking valve type SB, SQ, SJ: [D 6920](#), [D 7395](#)
- Suitable prop. amplifier type EV1M2 (module), EV1G1 (module) and EV1D (module): [D 7831/1](#), [D 7837](#), [D 7831 D](#)

Plugs:

- With LED etc.: [D 7163](#)
- With economy circuit: [D 7813](#), [D 7833](#)