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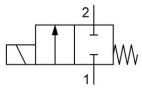
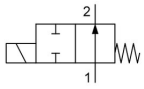
2/2-Way solenoid valve - direct-acting
Series 21A



de-energized closed



de-energized open

Design type	2/2-way solenoid valve with elastic seal, direct-acting, normally closed (de-energized closed) or de-energized open
Connection	G1/8"...G1/2" according to ISO228/1
Materials	Body Brass, Guide tube Stainless steel, Internal parts Stainless steel similar 1.4104, Seal NBR, EPDM, Ruby, FKM or PTFE (only for normally closed valves)
Mounting type	Installation in rigid piping system or via mounting thread
Mounting position	any
Application range	gaseous and liquid media that do not attack the materials used
Viscosity	max. 12mm^2/s (cst)
Switching time	10...30ms
Medium temperature	depending on the sealing material and Solenoid coil
Ambient temperature	see table "Solenoid coils"

Electrical data:

Coil type	Type BDA, Connector width 32mm (Standard coil) Type BDV, Connector width 32mm (Coil for humid environment) Type GDH/GDV, Connector width 32mm (Coil for higher pressures, Coil for humid environment)
Electrical connection	connector according to EN175301-803 form A (see separate data sheet)
Voltage type	AC and DC voltage
Standard voltage	230V/50-60Hz, 24V/50-60Hz, 24VDC
Special voltages	12...380V/50Hz or 60Hz, 12...220VDC
Permissible voltage fluctuation	AC +10%/-15% DC +10%/-5%
Power consumption	see table "Power consumption of the solenoid coils"
Duty cycle	100% Duty cycle (continuous operation)
Degree of protection	IP65 to EN 60529 with correctly mounted device connector (protection against dust ingress and water jets)
Application note	When ordering please specify voltage and type of current. We recommend always installing a strainer upstream so that no malfunctions occur if the medium is contaminated. These valves can also be used for rough vacuum. The maximum rated housing pressure can be 40bar. The maximum switchable pressure is the differential pressure between valve inlet and outlet. For DC voltage, the specified differential pressure values apply for a medium temperature of max. 80°C and an ambient temperature of 40°C. At higher media temperatures, the permissible differential pressure decreases by 0.4% per °Celsius. ATEX: The valves may only be used for media that are not explosive.

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Type code

		21A	3	K	V	25	-	M	-	BDA	-	230V/50-60Hz
		G1/8"	3									
		G1/4"	2									
		G3/8"	5									
	Connection	G1/2"	8									
		de-energized closed		K								
	Function	de-energized open		Z								
		NBR			B							
		EPDM			E							
		PTFE only for normally closed valves de-energized			T							
		FKM			V							
	Seal	Ruby			R							
		1,5mm				15						
		2,0mm				20						
		2,5mm				25						
		3,0mm				30						
		4,5mm				45						
	Nominal size	5,5mm				55						
		without manual override (Leave blank)										
	Manual emergency override	mechanical manual override (only for normally closed valves de-energized, only nominal size 2 and 3 mm)						M				
		BDA Standard coil - Approval CE								BDA		
		BDV Coil for humid environment - Approval CE-CSA-UL-VDE								BDV		
		GDV Coil for higher pressures - Coil for humid environment - Approval CE-CSA-UL-VDE								GDV		
		GDH Coil for higher pressures - Coil for humid environment - Approval CE								GDH		
		Y1 Coil for ATEX Areas with 3 m Cable (only for normally closed valves de-energized)								Y1		
	Coil	Y2 Coil for ATEX Areas with 3 m Cable (only for normally closed valves de-energized)								Y2		
		230V/50-60Hz										230V/50-60Hz
		24V/50-60Hz										24V/50-60Hz
		24VDC										24VDC
		12...380V/50Hz or 60Hz										
	Voltage	12...220VDC										

Available nominal sizes depending on the thread and the seat seal

Connection thread	DN 1,5 mm	DN 2 mm	DN 2,5 mm	DN 3 mm	DN 4,5 mm	DN 5,5 mm
G 1/8"	B, E, V, R, T	B, E, V, R, T	B, E, V, R, T	B, E, V, R, T		
G 1/4"		B, E, V, R, T	B, E, V, R, T	B, E, V, R, T	B, E, V, T	B, E, V, T
G 3/8"					B, E, V, T	B, E, V, T
G 1/2"					B, E, V, T	B, E, V, T

Applications of the individual sealing materials

Material	Medium temperature	Application examples
NBR	-10...+90°C	Air, Water, neutral gases and liquids
EPDM	-10...+140°C	Hot water, Steam, Oxygen
Ruby*	-40...+180°C	Heavy fuel oil, aggressive media
PTFE*	-40...+180°C	aggressive media
FKM	-10...+140°C	Gasoline, Diesel, Air, Oils, Water, neutral gases and liquids

*With hard sealing materials such as ruby and PTFE, a normal, slight leakage of 2 cm³/min at a pressure of 1 bar may occur.

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Solenoid coils

Type	Degree of protection	Insert	Ambient temperature	Approvals
BDA	IP65	Medium temperature up to max. 120°C	-10...+40°C	CE
BDV	IP65	Medium temperature up to max. 180°C, high humidity	-20...+60°C	CE-CSA-UL-VDE
GDV.....S	IP65	Medium temperature up to max. 180°C, high humidity	-20...+60°C	CE
GDV.....Y	IP65	Medium temperature up to max. 180°C, high humidity	-20...+60°C	CE-CSA-UL-VDE
GDH	IP65	Medium temperature up to max. 180°C, high humidity	-20...+40°C	CE
Y1/Y2	Ex II 2G Ex mb IIC T4 Ex II 2D Ex mb tb IIIC T130°C	in hazardous area, Zones 1/2/21/22, ignition group T4, max. 80°C medium temperature	-20...+50°C	ATEX

Power consumption of the solenoid coils

Voltage	Tightening torque (Alternating current) VA	Holding force (Alternating current) VA	Holding force (Direct current) operating temperature W	Type
220-230V/50-60Hz	25	14,5	-	BDA08223DS
24V/50-60Hz	25	14,5	-	BDA08024DS
24VDC	-	-	8	BDA08024CS
380V/50-60Hz	25	14,5	-	BDA08380DS
115V/60Hz	25	14,5	-	BDA08115BS
110V/50-60Hz	25	14,5	-	BDA08110DS
48V/50Hz	25	14,5	-	BDA08048AS
42V/50Hz	25	14,5	-	BDA08042AS
110VDC	-	-	8	BDA08110CS
12VDC	-	-	8	BDA08012CS
230V/50Hz 240V/60Hz	25	16	-	BDV08230AY
24V/50-60Hz	25	17	-	BDV08024DY
24VDC	-	-	11	BDV08024CY
110V/50Hz 120V/60Hz	25	15	-	BDV08110AY
12VDC	-	-	14	GDH14012CS
48VDC	-	-	14	GDH14048CS
230V/50Hz 240V/60Hz	43	27	-	GDV14230AY
24V/50-60Hz	43	26	-	GDV14024DY
24VDC	-	-	14	GDV14024CY
110V/50Hz 120V/60Hz	43	23	-	GDV14110AY
220VDC	-	-	14	GDV14220CS
220-240V/50-60Hz	-	max. 9,2	-	Y1220-240V/50-60Hz
24VDC	-	-	10,1	Y124VDC
220-240V/50-60Hz	-	max. 9,2	-	Y2220-240V/50-60Hz
24VDC	-	-	10,1	Y224VDC

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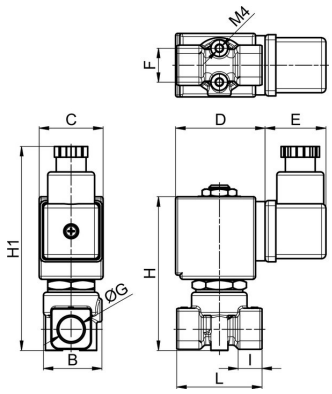
Permissible differential pressures in bar and Kv values

Seat seal	Nominal size DN[mm]	de-energized closed NC						de-energized open NO		Kv value [m³/h Water]
		Coil BD.		Coil Y1/Y2		Coil GD.		Coil BD., Y1/Y2	Coil GD.	
		AC	DC	AC	DC	AC	DC	AC and DC	AC and DC	
B, E, V, T	1,5	30	18	25	18	40	30	25	35	0,08
R	1,5	35	15	22	10	40	40	35	35	0,08
B, E, V, T	2,0	22	16	14	8	35	30	20	30	0,12
R	2,0	25	9	11	6	40	25	30	34	0,12
B, E, V, T	2,5	14	9	10	7	30	25	14	17	0,19
R	2,5	14	5	9	5	40	20	16	17	0,19
B, E, V, T	3	10	6	4	2	25	20	10	15	0,24
R	3	10	4	5	2,5	20	15	10	15	0,24
B, E, V	4,5	5	2	1,3	0,3	12	8	4	6	0,39
T	4,5	5	1,5	1,3	0,3	12	6	4	6	0,39
B, E, V	5,5	3	1	0,9	0,2	10	5	-	3,5	0,54
T	5,5	3,5	1	0,9	0,2	7	5	-	3,5	0,54

Dimensions



Connection G	B	C	D	E	F	H	H1	I	L	Weight [approx. kg]	Coil	Type
G1/8"	28	30	42	36	16	78	92	7	40	0,32	BD.	21A3
G1/8"	28	52	55	36	16	78	92	7	40	0,60	GD.	21A3
G1/8"	28	36	47	25	16	78	114	7	40	0,44	Y1/Y2	21A3

Connection G	B	C	D	E	F	H	H1	I	L	Weight [approx. kg]	Coil	Type
G1/4"	28	30	42	36	16	78	92	7	40	0,32	BD.	21A2
G1/4"	28	52	55	36	16	78	92	7	40	0,60	GD.	21A2
G1/4"	28	36	47	25	16	78	114	7	40	0,44	Y1/Y2	21A2

Connection G	B	C	D	E	F	H	H1	I	L	Weight [approx. kg]	Coil	Type
G3/8"	26	30	42	36	16	76	90	10	46	0,37	BD.	21A5
G3/8"	26	52	55	36	16	76	90	10	46	0,65	GD.	21A5
G3/8"	26	36	47	25	16	76	112	10	46	0,49	Y1/Y2	21A5

Connection G	B	C	D	E	F	H	H1	I	L	Weight [approx. kg]	Coil	Type
G1/2"	26	30	42	36	16	76	90	10	58	0,37	BD.	21A8
G1/2"	26	52	55	36	16	76	90	10	58	0,65	GD.	21A8
G1/2"	26	36	47	25	16	76	112	10	58	0,49	Y1/Y2	21A8

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