

# Water valve

## 2/2 directional valve

**RE 50235/05.08** 1/10  
Replaces: AB 21-23

### Type ABZAW

Nominal width 8 to 50  
Component series 1X  
Operating pressure 10/16 bar [145/232 psi]



H7557\_d

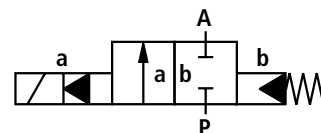
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### Features

- Water valves are suitable for cooling circuits of liquid fluids
- Electromagnetically indirectly operated
- Diaphragm valve with closing damping
- Simple, compact design
- Solenoid can be replaced without any tools
- Ideal for use as water valve to DIN EN 60730-2.8

### Symbol



Blocked in rest position

Information on available spare parts:  
[www.boschrexroth.com/spc](http://www.boschrexroth.com/spc)

## Ordering code

<b>Water valve</b>	<b>ABZ</b>	<b>A</b>	<b>W</b>	<b>—</b>	<b>—</b>	<b>K4</b>	<b>*</b>
<b>Power unit accessories</b>	= ABZ						Further details in clear text
<b>Valve</b>		= A					<b>Electrical connection</b> <sup>2)</sup>
<b>Water valve</b>			= W			<b>K4 =</b>	Individual connection by means of component plug 03 pd (2+PE) K4 to DIN EN 175301-803
<b>Nominal width</b>							<b>Voltage</b>
DN 8	= G1/4						<b>G24 =</b> DC voltage 24 V
DN 10	= G3/8	<sup>1)</sup> [N1/4]					<b>W220-50 =</b> AC voltage 220 V/50 Hz
DN 12	= G1/2	[N3/8]					<b>W110-50 =</b> AC voltage 110 V/50 Hz
DN 20	= G3/4	[N1/2]					
DN 25	= G1	[N3/4]					
DN 32	= G1 1/4	[N1]					
DN 40	= G1 1/2	[N1 1/4]					
DN 50	= G2	[N1 1/2]					
		[N2]					

**Order examples:**

**WASSERVENTIL ABZAW-G1/4-G24K4** Material no. **R901191664**

**WASSERVENTIL ABZAW-N1/4-G24K4** Material no. **R901203111**

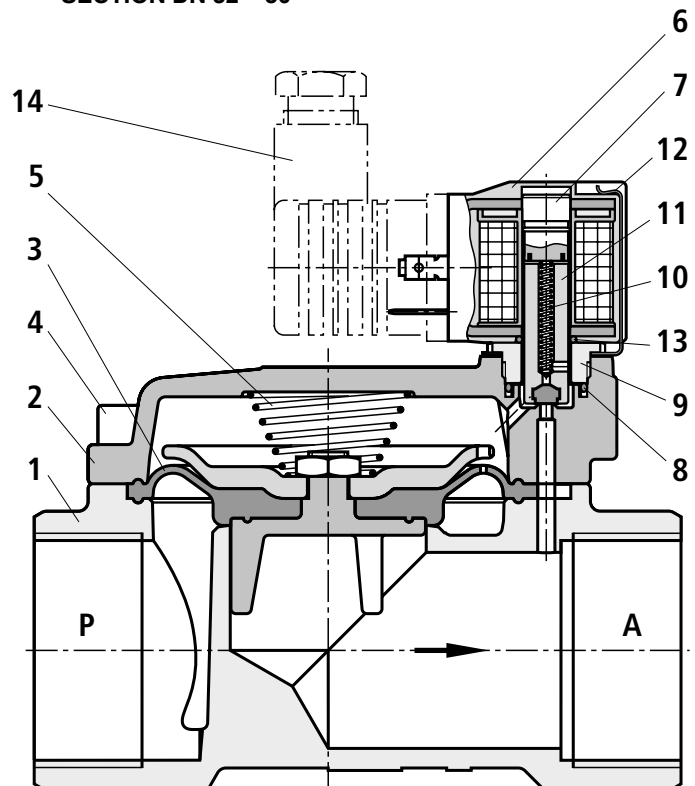
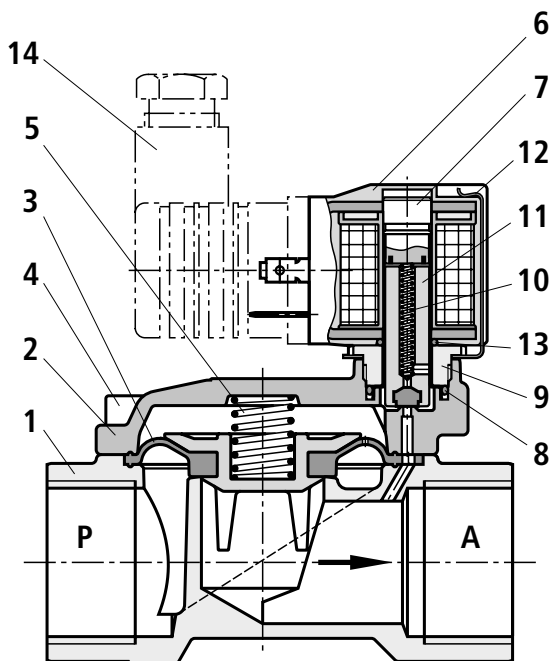
## Function, section

Electromagnetically operated 2/2 directional water valves according to this standard are poppet valves with hydraulic positive stop damping, in which a diaphragm blocks the flow.

The valves are actuated by a solenoid, the force of which is supported by the differential pressure between the valve inlet and the valve outlet ( $\Delta p_{min} = 0.1 \text{ bar [1.45 psi]}$ ).

**SECTION DN 8 – 25**

**SECTION DN 32 – 50**



- 1 Valve housing
- 2 Valve housing cover
- 3 Diaphragm
- 4 Hexagon socket head cap screw
- 5 Compression spring
- 6 Solenoid body
- 7 Solenoid sleeve
- 8 Seal ring
- 9 Threaded piece

- 10 Compression spring
- 11 Armature
- 12 Spring bracket
- 13 Seal ring
- 14 Mating connector (not included in the scope of supply)

**Technical data** (for applications outside these parameters, please consult us!)**General**

Installation orientation		Optional, preferably with solenoid pointing upwards
Ambient temperature range °C [°F]		0 to 50 [32 to 122]
Direction of flow		Fixed
Permissible temperature of operating medium (water) °C [°F]		0 to 90 [32 to 194]
Permissible viscosity of operating medium mm <sup>2</sup> /s (cSt) [in <sup>2</sup> /s] (cSt)		1 [0.00155]
Water quality	Supply/location	Resistance
Potable water	Municipal waterworks, sources	Resistant
Industrial water	Cooling tower circuit Company-owned wells	
Rivulet water River water	Rivulets Rivers	
Seawater, brackish water	Sea Vicinity to coasts	Not resistant
Density/specific weight at 20 °C [68 °F] Operating medium (water) g/cm <sup>3</sup>		0.9982
Materials	- Housing	Brass
	- Internal parts	Stainless steel, PVDF or brass
	- Seal	NBR

DN	Port size	Minimum pressure differential min. <sup>1)</sup>	Operating pressure max.	Q <sup>2)</sup> m <sup>3</sup> /h [US gal/h]	Q <sup>3)</sup> m <sup>3</sup> /h [US gal/h]
8	G1/4 [N1/4] <sup>4)</sup>	0.1 bar [1.45 psi]	16 bar [232 psi]	1.9 [501.93]	3.3 [871.77]
10	G3/8 [N3/8]			3.0 [792.52]	5.2 [1373.70]
12	G1/2 [N1/2]			3.8 [1003.85]	6.6 [1743.50]
20	G3/4 [N3/4]			6.1 [1611.45]	10.6 [2800.20]
25	G1 [N1]		9.5 [2509.63]	16.5 [4358.80]	
32	G1 1/4 [N1 1/4]		10 bar [145 psi]	23.0 [6075.96]	39.8 [10514.00]
40	G1 1/2 [N1 1/2]			25.0 [6604.30]	43.3 [11439.00]
50	G1 [N1]			41.0 [10831.05]	71.0 [18756.00]

<sup>1)</sup> Minimum pressure differential of  $\Delta p_{\min} = 0.1 \text{ bar [1.45 psi]}$

<sup>2)</sup> Water flow at +20 °C [+68 °F] at  $\Delta p 1 \text{ bar [14,7 psi]}$

<sup>3)</sup> Water flow at +20 °C [+68 °F] at  $\Delta p 3 \text{ bar [44 psi]}$

<sup>4)</sup> N1/4 = 1/4" NPT

**Contamination note:**

In the case of contaminated fluids, we recommend the use of a strainer according to AB 42-25.  
Strainer PN 16, filtration rating 0.250 mm [0.0098 in]

**Technical data** (for applications outside these parameters, please consult us!)**Electrical**

Type of protection to DIN EN 60529		IP 65
Duty cycle		100 %
DC voltage	VDC	6-220
AC voltage	VAC/Hz	6-250/50 or 60
Power consumption		
– Operation with AC current	Start-up	VA 15
	Holding	VA 12
– Operation with DC current	Start-up	W 8
	Holding	W 8

**Note on the EMC Directive:**

A suitable electrical circuitry of the valves must ensure that the limit values of the harmonized standards EN 50081-1 and EN 50082-1 are adhered to and that Directive 89/336/EEC (electromagnetic compatibility) is complied with.

**Note on the acceptance classification:**

Solenoid according to UL and CSA standard.

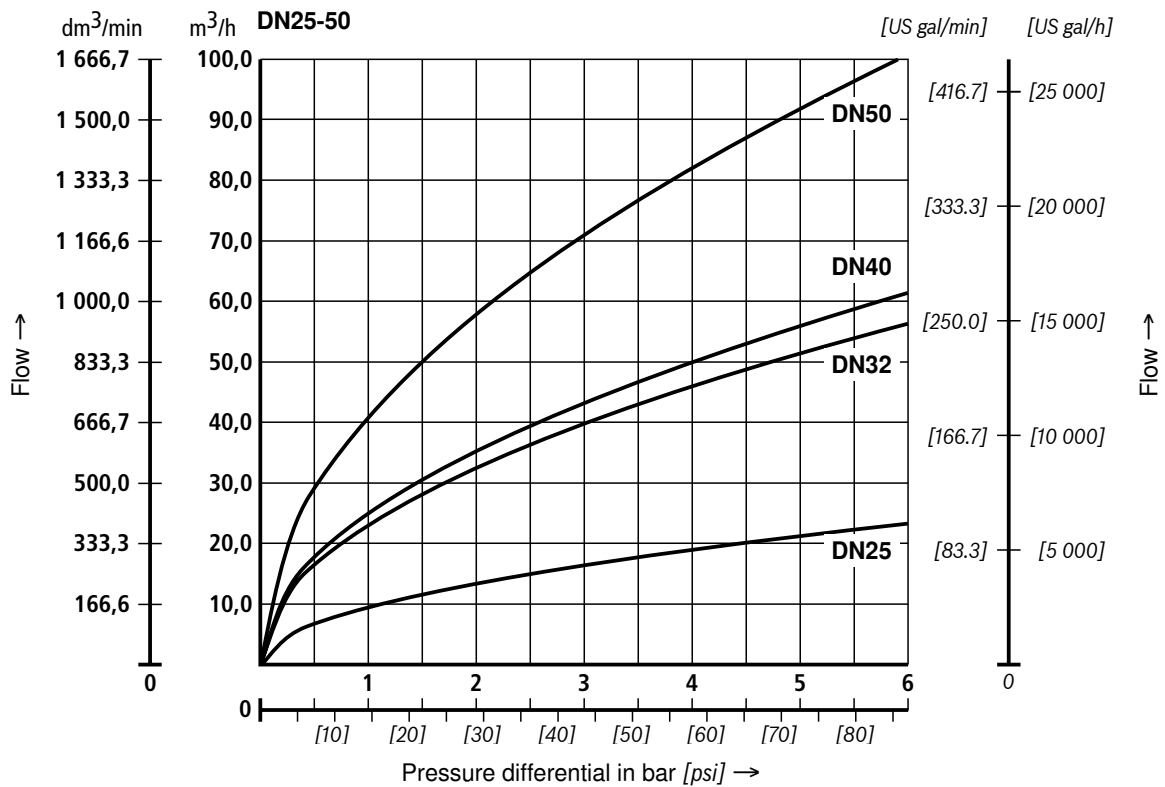
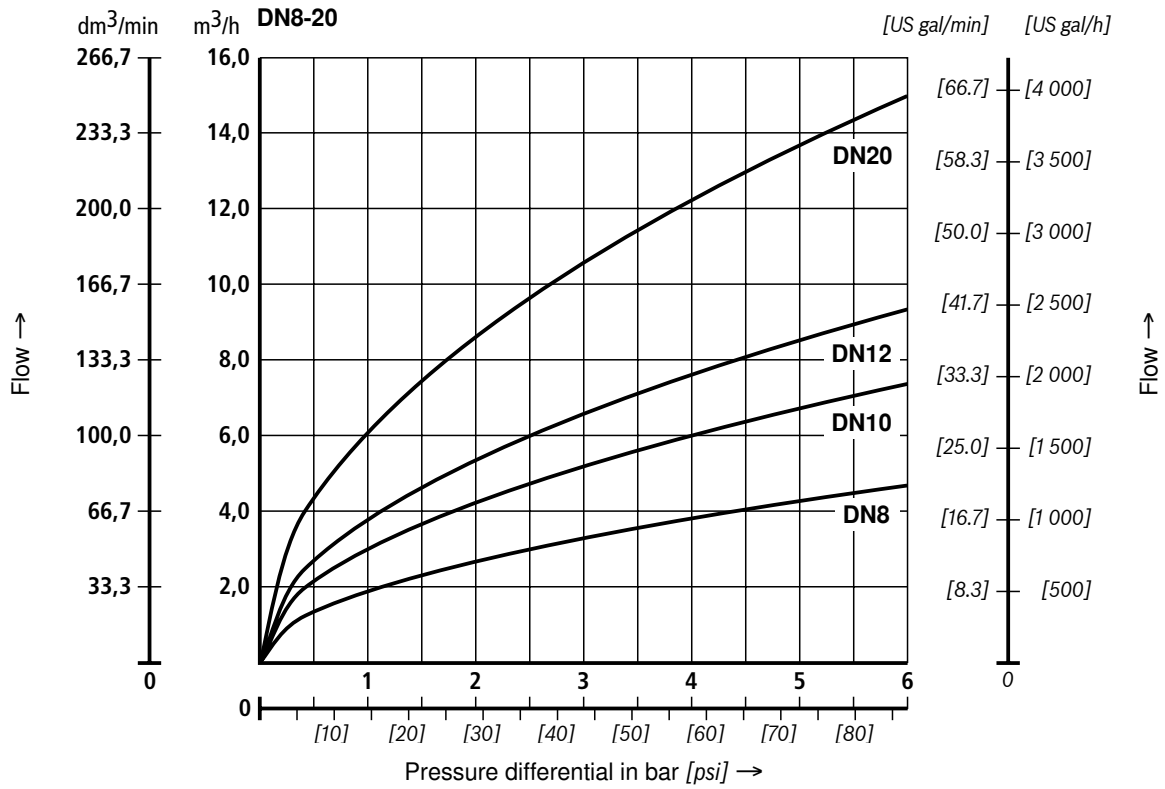
**Characteristic curves** (measured with water = 20 °C [68 °F])

Medium:  
Density:

Water  
 $\rho = 0.998 \text{ kg/dm}^3$

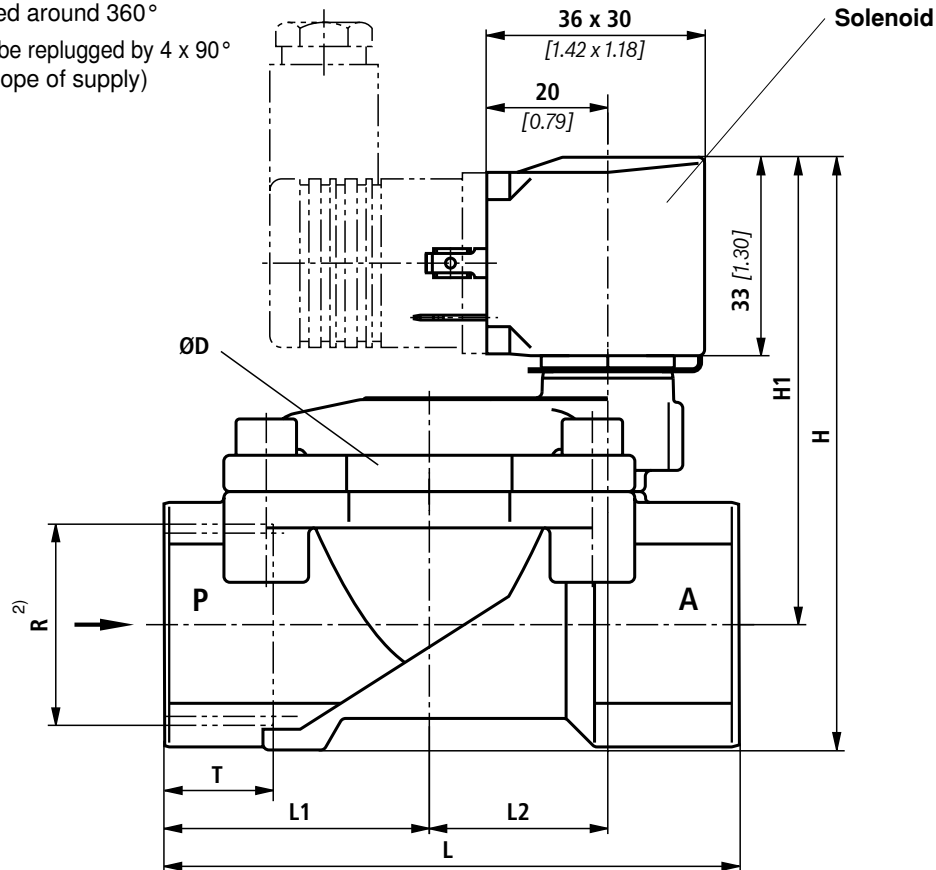
Temperature:  
Kinematic viscosity:

20 °C [68 °F]  
1 mm<sup>2</sup>/s [0.00155 in<sup>2</sup>/s]



**Unit dimensions** (dimensions in mm [inch])

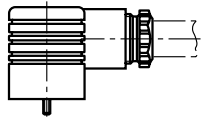
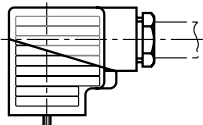
Solenoid can be rotated around 360°

Mating connectors can be replugged by 4 x 90°  
(not included in the scope of supply)

DN	Dimensions in mm [inch]								Designation: Water valve ABZAW-...G24K4	Material no.	Weight in kg [lbs]
	ØD	L	L1	L2	H	H1	R	T			
8	44	60	27.5	19.5	78.5	67.0	G1/4	12 [0.47]	G1/4	R901191664	0.470
	[1.73]	[2.36]	[1.08]	[0.77]	[3.09]	[2.64]	[N1/4] <sup>1)</sup>	10 [0.39]	[N1/4] <sup>1)</sup>	[R901203111]	[1.04]
10	44	60	27.5	19.5	78.5	67.0	G3/8	12 [0.47]	G3/8	R901191665	0.450
	[1.73]	[2.36]	[1.08]	[0.77]	[3.09]	[2.64]	[N3/8]	10.5 [0.41]	[N3/8]	[R901203112]	[0.99]
12	44	67	31.0	19.5	81.0	67.0	G1/2	14 [0.55]	G1/2	R901191666	0.500
	[1.73]	[2.64]	[1.22]	[0.77]	[3.19]	[2.64]	[N1/2]	13.5 [0.53]	[N1/2]	[R901203113]	[1.10]
20	50	80	36.5	24.0	88.0	71.5	G3/4	16 [0.63]	G3/4	R901191667	0.650
	[1.97]	[3.15]	[1.44]	[0.94]	[3.46]	[2.81]	[N3/4]	14 [0.55]	[N3/4]	[R901203114]	[1.43]
25	62	95	44.0	29.5	97.5	77.0	G1	18 [0.71]	G1	R901191668	0.950
	[2.44]	[3.74]	[1.73]	[1.16]	[3.84]	[3.03]	[N1]	17 [0.67]	[N1]	[R901203115]	[2.09]
32	92	132	60.0	44.5	124.5	95.5	G1 1/4	20 [0.79]	G1 1/4	R901191669	2.730
	[3.62]	[5.20]	[2.36]	[1.75]	[4.90]	[3.76]	[N1 1/4]	17 [0.67]	[N1 1/4]	[R901203116]	[6.02]
40	92	132	60.0	44.5	124.5	95.5	G1 1/2	22 [0.87]	G1 1/2	R901191670	2.530
	[3.62]	[5.20]	[2.36]	[1.75]	[4.90]	[3.76]	[N1 1/2]	17 [0.67]	[N1 1/2]	[R901203117]	[5.58]
50	109	160	74.0	54.5	142.5	108.0	G2	24 [0.94]	G2	R901191671	3.850
	[4.29]	[6.30]	[2.91]	[2.15]	[5.61]	[4.25]	[N2]	17.5 [0.69]	[N2]	[R901203118]	[8.49]

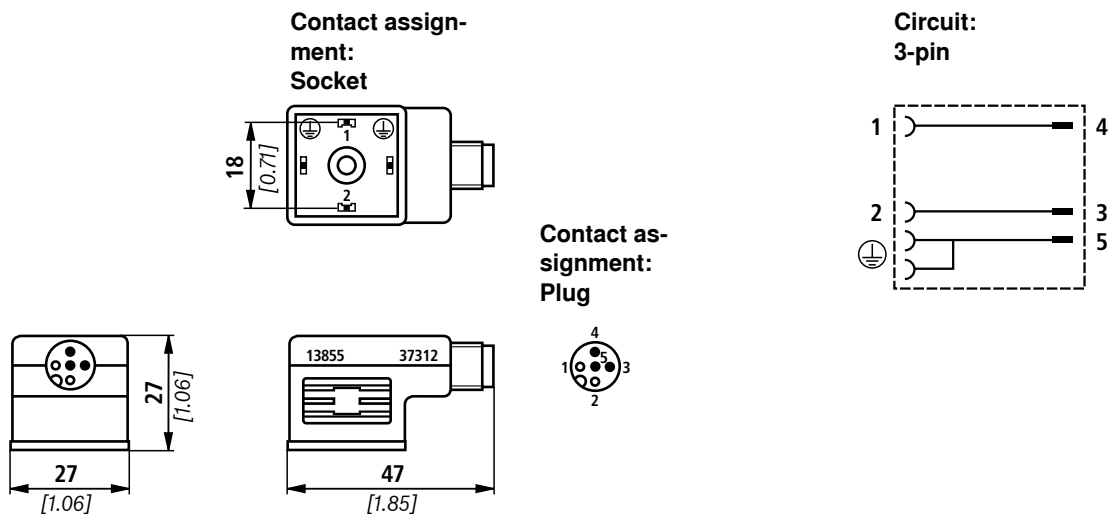
<sup>1)</sup> N1/4 = 1/4" NPT<sup>2)</sup> Female connection thread

**Mating connectors to DIN EN 175301-803 (separate order)**

For details and further mating connectors, see RE 08006					
<b>Connection</b>	<b>Color</b>	<b>Material no.</b>			
		Without circuitry	With indicator lamp 12 ... 240 V	With rectifier 12 ... 240 V	With indicator lamp and Zener diode suppressor circuit 24 V
M16 x 1.5	schwarz	<b>R901017011</b>	<b>R901017022</b>	<b>R901017025</b>	<b>R901017026</b>

**Adapter from cable connector to K4 component plug M12 x 1 (separate order, dimensions in mm [inch])**

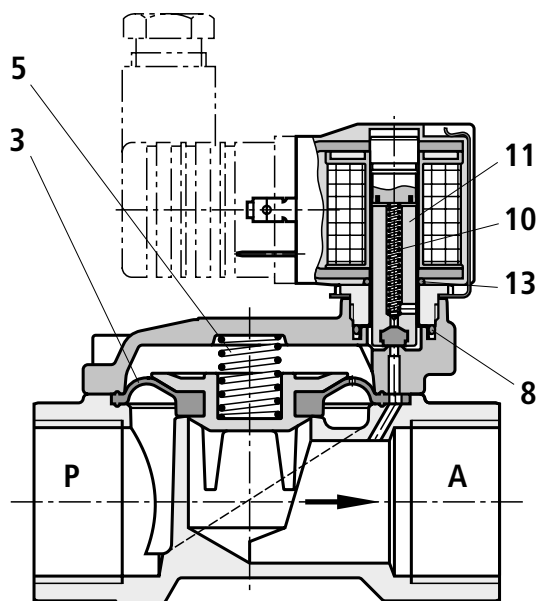
Cable connector 3P 7000-41421-0000000 Material no. R900993715



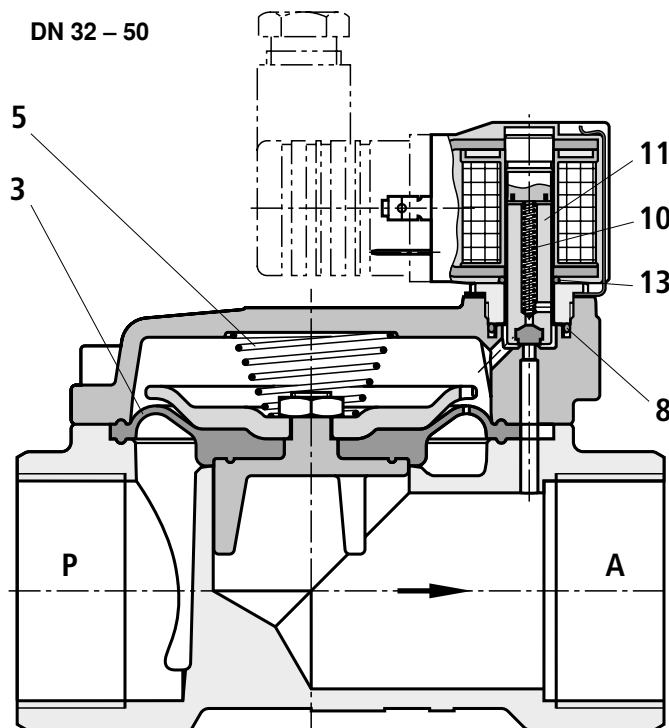
## Spare parts

### Repair kit

DN 8 – 25



DN 32 – 50



<sup>2)</sup> N1 = 1" NPT

<sup>2)</sup> N1 1/4 = 1 1/4" NPT

- 3 Diaphragm
- 5 Compression spring
- 8 Seal ring
- 10 Compression spring
- 11 Armature
- 13 Seal ring

Nominal widths			Designation: REPAIR KIT ...	Material number
DN 8, DN 10, DN 12	G1/4, G3/8, G1/2	[N1/4 <sup>3)</sup> , N3/8, N1/2]	ABZAW-08-12	R901204182
DN 20	G3/4	[N3/4]	ABZAW-20	R901204178
DN 25	G1	[N1]	ABZAW-25	R901204179
DN 32, DN 40	G1 1/4, G1 1/2	[N1 1/4, N1 1/2]	ABZAW-32-40	R901204180
DN 50	G2	[N2]	ABZAW-50	R901204181

The repair kit consists of items 3, 5, 8, 10, 11, 13

<sup>3)</sup> N1/4 = 1/4" NPT

### Spare solenoid for all nominal widths

**MAGNET ABZAW-G24** Material no. **R901204184**



## Notes on the installation

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- Make sure that there is sufficient **clearance around the valve**. This simplifies checks during operation and maintenance work.
- The valve can heat up during operation. Never paint the solenoid coil and the housing of the solenoid. Never cover the valve with heat insulation material.
- Fluids may only be directed through the valve in the specified direction of flow. An arrow on the valve housing shows the direction of flow. A reversal of the direction of flow must be prevented by taking appropriate measures, e.g. installation of check valves.

### **Note!**

The direction of flow indicated on the valve must be adhered to in order that the valve can perform its intended function.

Pipes must be connected to the valve stress-free and vibration-free.

After mounting, check the installation for leakage and function.

Maintenance, inspection and assembly work may only be carried out by authorized and qualified specialist personnel. Generally, work on the solenoid valve may only be carried out when the system is depressurized and has cooled down. The solenoid must be disconnected from the power supply. Preventive maintenance is recommended in dependence on the operating conditions and in the case of perceivable changes in the switching times. The operator is responsible for determining reasonable testing and maintenance intervals depending on the operating conditions of the valve.

Sediments, dirt, aged or worn out seals can lead to malfunction. The seals of solenoids must be included in the maintenance schedule to ensure that the specified type of protection is maintained.

### **Electrical connections:**

- Work on electrical connections may only be carried out by specialists
- Before carrying out work on electrical parts, disconnect the power supply
- After having connected the circular plug-in connection M12 x 1 fasten it by means of screws
- Only plug the circular plug-in connection M12 x 1 when it is disconnected from the power supply
- Do not overload contacts (see technical data)
- In the case of inductive loads, provide suppressor circuit!

## Use in explosive atmospheres according to Directive 94/9/EC (ATEX)

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- Valves on request

## Normative references

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EN 60076-11:2007

EN 60079-0:2006

EN 60079-14:2003

EN 175201-804:2000

EN 175301-803:2006

## Notes

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## Notes

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## Notes

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