

Data Sheet

Solenoid valve
Type **EV228BW**

Indirect latching servo operated valves for Drinking water



Solenoid valve range with drinking water approvals

- For water supply
- Houses and large apartments
 - Kitchen and bathrooms
- Commercial buildings
- Industrial buildings
- Zoning
- Laundry
- Diswashing
- Main inlet valves
- Machines and food processing
- Shut off, Heating and cooling with water and brine
- DZR Eco brass for neutral and slightly aggressive liquids and non-flammable gases
- SS for neutral and aggressive liquids and non-flammable gases

Features

- Clip-on coil
- Low power UN latching function
- Ambient temperature: Up to 70 °C
- Coil enclosure: Up to IP67
- Water hammer damped
- Built-in filter
- Body material in Eco brass (Lead free < 0,1 %) or Stainless steel
- New generation EPDM sealings recommended for drinking water

1 Portfolio overview

Table 1: Portfolio overview

Features	EV228BW UN (latching)	EV228BW UN (latching)
		
Body material	Eco brass	Stainless steel
DN [mm]	15 - 50	15 - 50
Connection	G1/2" - G2"	G1/2" - G2"
Sealing material	EPDM	EPDM
Function	UN (Latching) ⁽¹⁾	UN (Latching) ⁽¹⁾
K_v [m³/h]	4 - 40	4 - 40
Differential pressure range [bar]	0.3 - 10	0.3 - 10
Temperature range [°C]	-30 - 70	-30 - 70

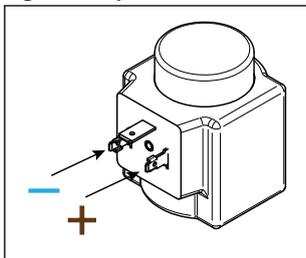
⁽¹⁾ UN latching control need a special controller to pole switch + and – . Can only use DC (Direct current) coils. UN, latching valves are only using power max. 1 to 2 sec. at each operation, open or close. See page 3 section 2.1. **Function UN, latching**

2 Functions

2.1 Function UN, latching

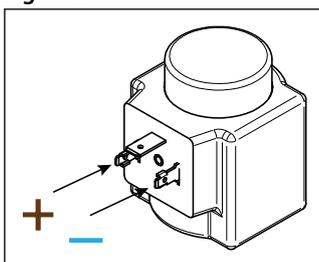
UN, latching valves are only using power max. 1 to 2 sec. at each operation, open or close.

Figure 1: Open



When - (minus) is supplied to the left terminal pin and + (plus) to the right (see figure 1), the pilot orifice (4) is opened. As the pilot orifice is larger than the equalizing orifice (7), the pressure across the diaphragm (5) drops and therefore it is lifted clear of the main orifice (6). The UN latching function means voltage - (minus) and + (plus) should only be supplied for max 1 to 2 sec. The permanent magnet (8) will hold the armature in open position. The valve is now open for flow and stay open as long as the minimum differential pressure across the valve is maintained. At high, low or no flow / differential pressure the latching actuator will stay open without energy consumption.

Figure 2: close

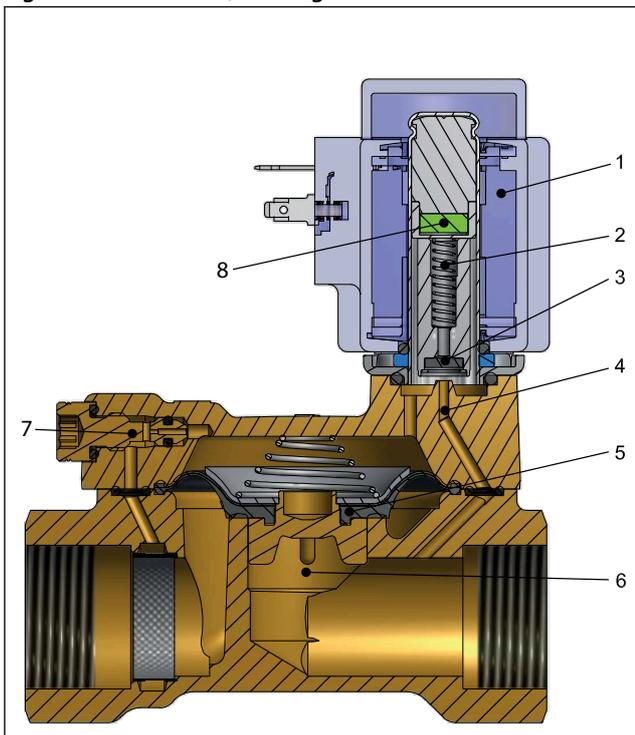


Switching poles

When + (plus) is supplied to the left terminal pin and - (minus) to the right (see figure 2), the force of the permanent magnet is nullified by the coil's magnetic field, and the valve plate is pressed down. The pressure across the diaphragm (5) is built up via the equalizing orifice (7). The diaphragm closes the main orifice (6) as soon as the pressure across the diaphragm is equivalent to the inlet pressure. + (Plus) and - (minus) should also, as for the opening be supplied for max. 1 to 2 sec. The valve will stay closed, until the poles are switched (see [Figure 1: Open](#))

Solenoid valve, Type EV228BW

Figure 3: Function UN, latching

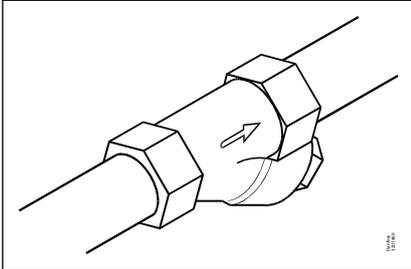


1.	Coil
2.	Armature spring
3.	Valve plate
4.	Pilot orifice
5.	Diaphragm
6.	Main orifice
7.	Equalizing orifice
8.	Permanent magnet

3 Applications

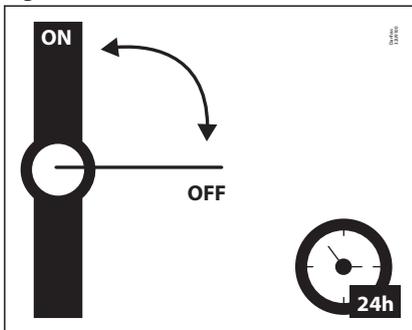
It is recommended to use a filter in front of the valve. Recommended filter 50 mesh (297 microns).

Figure 4: Filter



In water applications, exercise the valves at least once every 24 hours, meaning change the state of the valve. The valve exercise will minimize the risk of the valve sticking due to calcium carbonate, zinc or iron oxide build-up.

Figure 5: Exercise: Valve on/off



Guidelines for water

To minimize scaling, and corrosion attack it is recommended that the water passing the valve have the following values:

- Hardness 6-18 °dH to avoid scaling (chalk / lime stone build up).
- Conductivity 50 – 800 µS/cm to avoid brass dezincification and corrosion.
- Above 25°C media temperature avoid stagnant water inside the valve to avoid dezincification and corrosion attack.
- Drinking water (Ph 6-9)

4 Product specification

4.1 Technical data

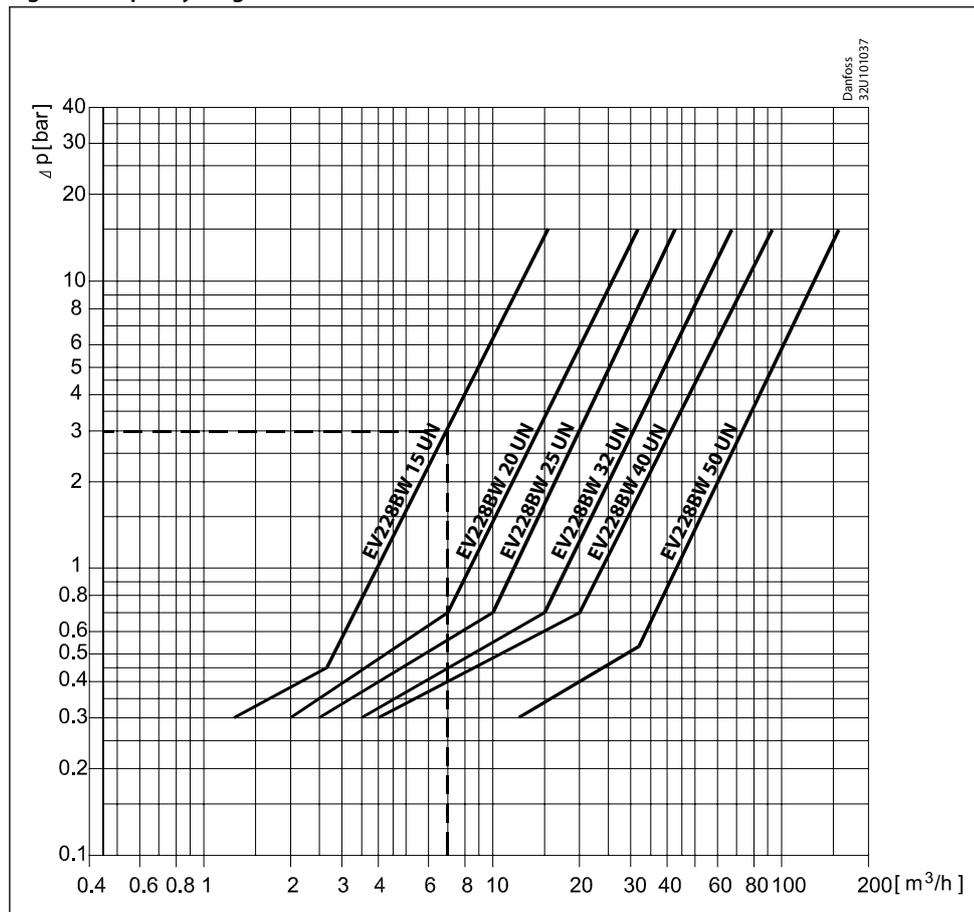
Table 2: Technical data

Media	EPDM	Drinking water
Media temperature [°C]	EV228BW EPDM	-30 - 70 °C (RISE 0-60 °C)
Ambient temperature [°C]	BB DC	Up 50 °C
K _v value [m³/h]	DN15	4 m³/h
	DN20	8 m³/h
	DN25	11 m³/h
	DN32	18 m³/h
	DN40	24 m³/h
	DN50	40 m³/h
Min. Opening differential pressure [bar]	0.3 bar	
Max. Opening differential pressure [bar]	10 bar	
Max. working pressure [bar]	10 bar	
Max. test pressure [bar]	15 bar	
Viscosity [cSt]	Max. 50 cSt	

Capacity diagram

Example, water: Capacity for EV228BW 15B at differential pressure of 3 bar: Approx. 7 m³/h

Figure 6: Capacity diagram



Time to open/close

Table 3: Time to open/close

Main type	EV228BW 15	EV228BW 20	EV228BW 25	EV228BW 32	EV228BW 40	EV228BW 50
Time to open [ms] ⁽¹⁾	40	40	300	1000	1500	5000
Time to close [ms] ⁽¹⁾	350	1000	1000	2500	4000	10000

⁽¹⁾ The times are indicative and apply to water. The exact times will depend on the pressure conditions. Closing times can be changed by replacement of the equalizing orifice.

Materials

Table 4: Materials

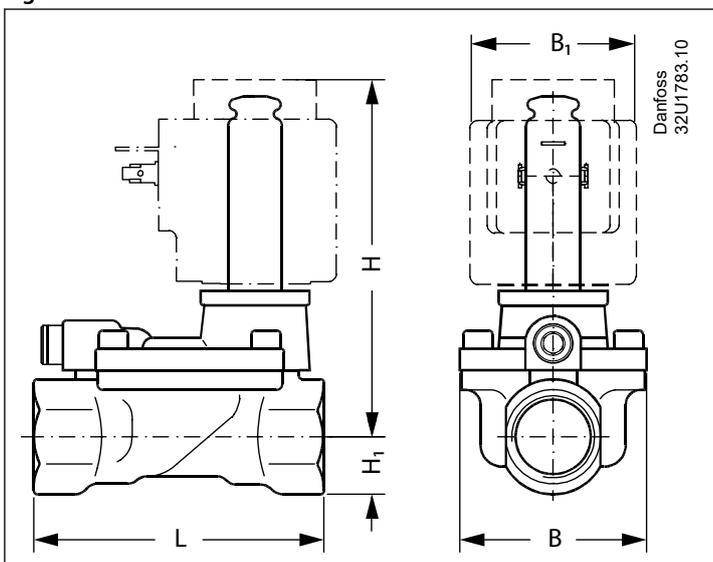
Components	Materials	Specifications
Valve body/cover	Eco brass	CW724R
	Stainless steel	W. no. 1.4404 / AISI 316L
Equalizing orifice	Eco brass	CW724R
	Stainless steel	W. no. 1.4404 / AISI 316L
Armature	Stainless steel	W.no. 1.4105 / AISI 430 FR
Armature tube	Stainless steel	W.no. 1.4306 / AISI 304 L
Armature stop	Stainless steel	W.no. 1.4105 / AISI 430 FR
Springs	Stainless steel	W.no. 1.4310 / AISI 301
O-rings	EPDM	
Valve plate	EPDM	
Diaphragm	EPDM	

4.2 Dimension and weight

Table 5: Dimension and weight

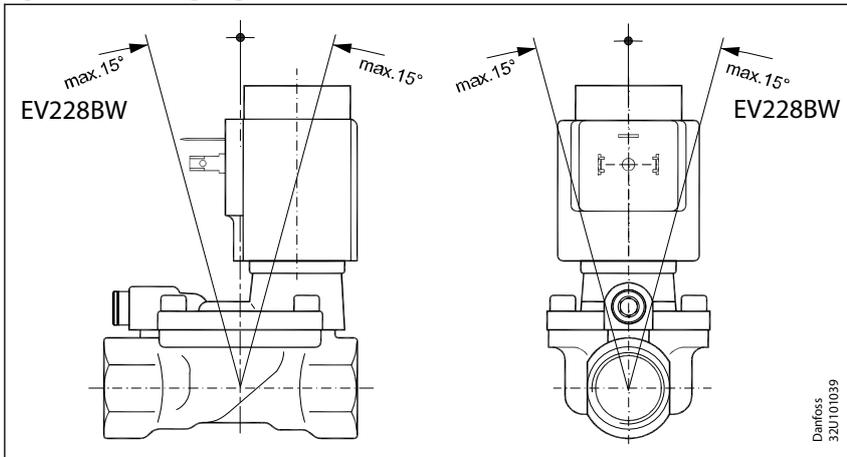
Type	L	B	B ₁ [mm] / coil type				H	H ₁	Weight without coil [kg]
	[mm]	[mm]	BA	BB / BE	BG / BO	BP	[mm]	[mm]	
EV228BW 15	80.0	52.0	32	46	68	45	99	15.0	0.7
EV228BW 20	90.0	58.0	32	46	68	45	103	18.0	0.9
EV228BW 25	109.0	70.0	32	46	68	45	113	22.0	1.3
EV228BW 32	120.0	82.0	32	46	68	45	120	27.0	2.0
EV228BW 40	130.0	95.0	32	46	68	45	129	32.0	3.0
EV228BW 50	162.0	113.0	32	46	68	45	135	37.0	4.8

Figure 7: Dimension



4.3 Mounting

Figure 8: Mounting angle



5 Ordering

5.1 Parts program

Table 6: Eco brass and stainless steel, valve body UN

ISO228/1 connection	Orifice	K _v value	Body material	Function
	[mm]	[m ³ /h]	Eco brass /Stainless steel	EV228BW UN , latching ⁽²⁾
G1/2	15	4	Eco brass	132U2400
			Stainless steel	132U2401
G3/4	20	8	Eco brass	132U2402
			Stainless steel	132U2403
G1	25	11	Eco brass	132U2404
			Stainless steel	132U2405
G11/4	32	18	Eco brass	132U2406
			Stainless steel	132U2407
G11/2	40	24	Eco brass	132U2408
			Stainless steel	132U2409
G2	50	40	Eco brass	132U2410
			Stainless steel	132U2411

⁽²⁾ UN latching control need a special controller to pole switch + and – . Can only use DC (Direct current) coils. See page 3 section 2.1 **Function UN, latching**

5.2 Accessories

Coil

BB High performance coils

Figure 9: BB High performance coils



Table 7: BB High performance coils

Type	Tambient	Supply voltage	Voltage variation	Frequency	Control	Power consumption		Code no.
	[°C]	[V]		[Hz]		[W]	[VA]	
BB012DS	-40 – 50	12	±10%	DC	UN (Latching)	13		018F7396
BB024DS	-40 – 50	24	±10%	DC	UN (Latching)	16		018F7397

Cable plug

Figure 10: Cable plug



Table 8: Cable plug

Cable plug size	Description	Code no.
DIN 18	Cable plug IP67	042N1256

Spare part kits

Table 9: Spare part kit DN15-50 in EPDM and stainless steel

Type	Actuator kit UN for EV228BW	Diaphragm kit for EV228BW
EV228BW DN 15	132U8082	132U8016
EV228BW DN 20	132U8082	132U8021
EV228BW DN 25	132U8082	132U8026
EV228BW DN 32	132U8082	132U8033
EV228BW DN 40	132U8082	132U8041
EV228BW DN 50	132U8082	132U8051
	<ol style="list-style-type: none"> 1. O-ring 2. 4 x Screws 3. Armature tube 4. Armature with spring 5. O-ring 	<ol style="list-style-type: none"> 1. 4 x Screws 2. 2 x O-rings 3. Equalizing orifice 4. Closing spring 5. Diaphragm 6. 2 x O-ring

6 Certificates, declarations and approvals

6.1 Directives, approvals and certificates

In accordance with

- Low Voltage Directive 2014/35/EU
- EN60730-1
- EN60730-2-8
- Pressure Equipment Directive 2014/68/EU
- RoHS Directive 2011/65/EU

6.2 Drinking water approvals

Figure 11: Rise



Valves are certified by RISE, notified body 1002. Valid in Denmark and Sweden. In accordance with Boverket Building Regulations (BBR 21, 2014-06-17) Certificate number SCO155-18

Figure 12: SINTEF



Valves are certified by SINTEF. Valid in Norway. In accordance with NKB Product rules nr. 13, pkt. 3.2 – 3.6 :

- NT VVS 100, pkt. 6.4.2 & 6.4.8
- EN ISO 6509

Figure 13: DTI



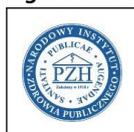
Inspection by DTI

Figure 14: ACS



Valves are certified by Carso according to ACS guidelines, Circulaire 2002/571.

Figure 15: PZH



Hygienic certificate B-BK-60210-1275/19. Issued by Polish National Institute of Public health (PZH).

Wetted materials in accordance with 4MS (4 member states Germany, Holland, France and UK), DVGW, BWGL, KTW and W270.

Solenoid valve, Type EV228BW

Figure 16: WRAS



Valves are examined, tested and found, when correctly installed, to comply with the requirements of the United Kingdom Water Supply (Water Fittings) Regulations and Scottish Water Byelaws.

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