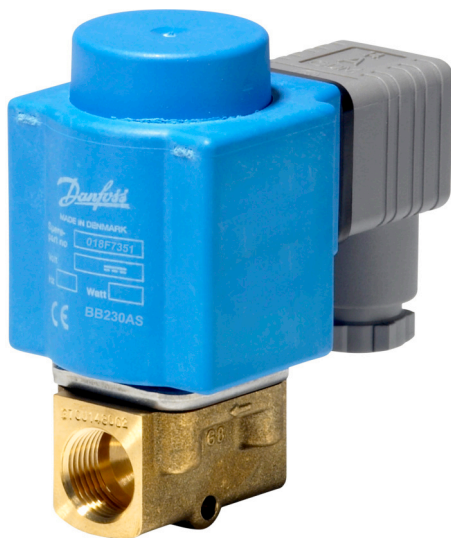


Data Sheet

Solenoid valve
Type **EV210BW**

Direct-operated for drinking water



EV210BW 1.5, 2, 3, 4.5 & 6 covers a wide range of direct-operated 2/2-way solenoid valves for universal use.

EV210BW is a very robust high performance valve program. This valve type is designed with EPDM seal, lead free dezincification resistant Eco brass for drinking water. It can be used in all kind of tough working conditions in demanding industrial applications:

- For water supply and control
- Dosing application
- Food processing
- Water treatment / Reverse Osmosis

Features

- For drinking water
- Clip on coil
- Ambient temperature: Up to 80 °C
- Coil enclosure: Up to IP67
- Body material in Eco brass (Lead % by weight < 0.1%)
- New generation EPDM sealings recommended for drinking water

1 Portfolio overview

Table 1: Portfolio overview

Features	EV210BW NC	EV210BW NO
		
Body material	Eco brass	Eco brass
DN [mm]	1.5 - 6	1.5 - 4.5
Connection	G 1/8 - G3/8	G1/8 - G3/8
Sealing material	EPDM	EPDM
Function	NC	NO
K_v [m³/h]	0.08 - 0.7	0.08 - 0.55
Differential pressure range [bar]	0 - 10	0 - 10
Temperature range [°C]	-30 - 90	-30 - 90

2 Functions

2.1 Function, NC

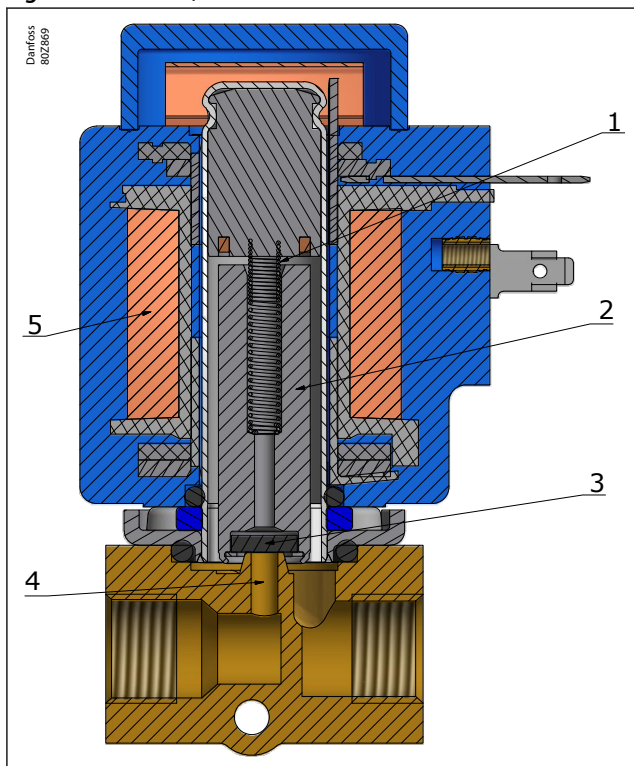
Coil voltage disconnected (closed)

When the voltage to the coil (5) is disconnected, the armature (2) with the valve plate (3) is pressed down against the valve orifice (4) by the closing spring (1) and the medium pressure. The valve will be closed for as long as the voltage to the coil is disconnected.

Coil voltage connected (open)

When voltage is applied to the coil(5), the armature (2) with the valve plate (3) is lifted clear of the valve orifice (4). The valve is now open for unimpeded flow and will be open for as long as there is voltage to the coil.

Figure 1: Function, NC



1	Closing spring
2	Armature
3	Valve plate
4	Valve orifice
5	Coil

2.2 Function, NO

Coil voltage disconnected (valve is open)

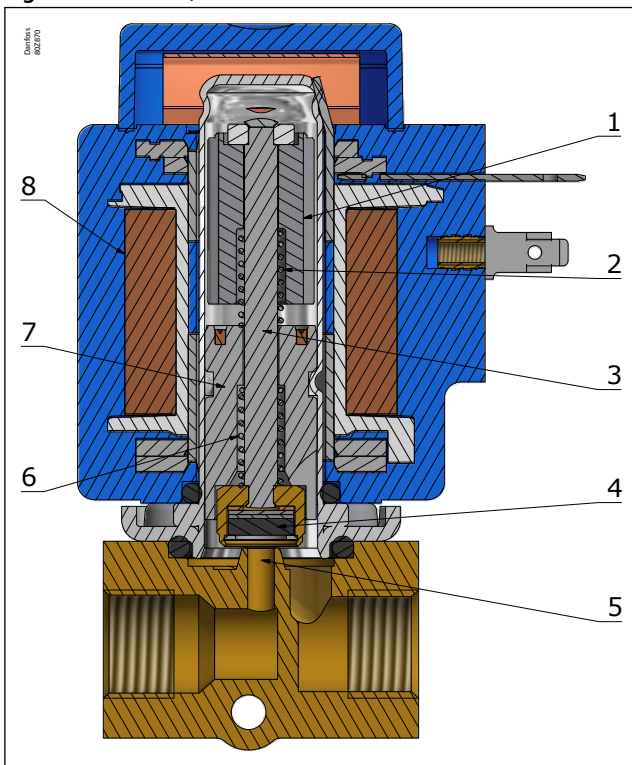
When the voltage to the coil (8) is disconnected, the valve orifice (5) is open, the opening spring (2) lifting the spindle (3) with the valve plate (4) clear of the orifice. The valve will be open for as long as the supply voltage to the coil is disconnected.

Coil voltage connected (valve is closed)

When voltage is applied to the coil (8), the magnetic field draws the valve's armature (1) down to touch the fixed base(7). The spindle (3) with the valve plate (4) is now pressed down against the valve orifice (5) by the closing spring (6). The valve will be closed for as long as there is voltage to the coil.

Solenoid valve - Type EV210BW

Figure 2: Function, NO

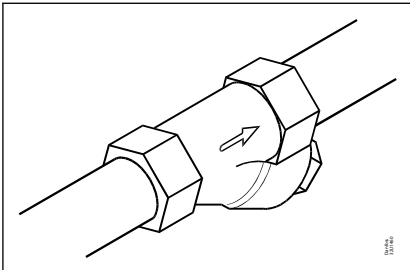


1	Armature
2	Opening spring
3	Spindle
4	Valve plate
5	Valve orifice
6	Closing spring
7	Fixed base
8	Coil

3 Applications

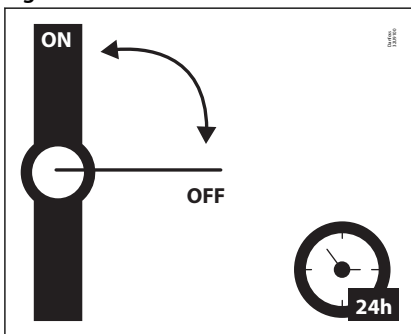
It is recommended to use a filter in front of the valve. Recommended filter 50 mesh (297 microns).

Figure 3: 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 4: 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]	EPDM	-30 - 90 °C
Ambient temperature [°C]	Up to 50 °C	
K _v value [m ³ /h]	DN1.5	0.08 m ³ /h
	DN2	0.15 m ³ /h
	DN3	0.30 m ³ /h
	DN4.5	0.55 m ³ /h
	DN6	0.70 m ³ /h
Min. Opening differential pressure [bar]	0 bar	
Max. Opening differential pressure [bar]	Up to 10 bar	
Max. working pressure [bar]	Up to 10 bar (Equal to max. differential pressure)	
Max. test pressure [bar]	15 bar	
Viscosity [cSt]	Max. 50 cSt	

Differential pressure range

Table 3: Differential pressure, NC

Connection ISO228-1	Orifice size	Differential pressure min. to max [bar]			
		NC			
		Suitable coils			
		BB/BE		BG	
		AC	DC	AC	DC
G1/8	1.5	0-10	0-10	0-10	0-10
G1/4	2.0	0-10	0-10	0-10	0-10
G1/4	3.0	0-10	0-10	0-10	0-10
G1/4, G3/8	4.5	0-10	0-4.5	0-10	0-9
G1/4, G3/8	6.0	0-4	0-2	0-6	0-4.5

Table 4: Differential pressure, NO

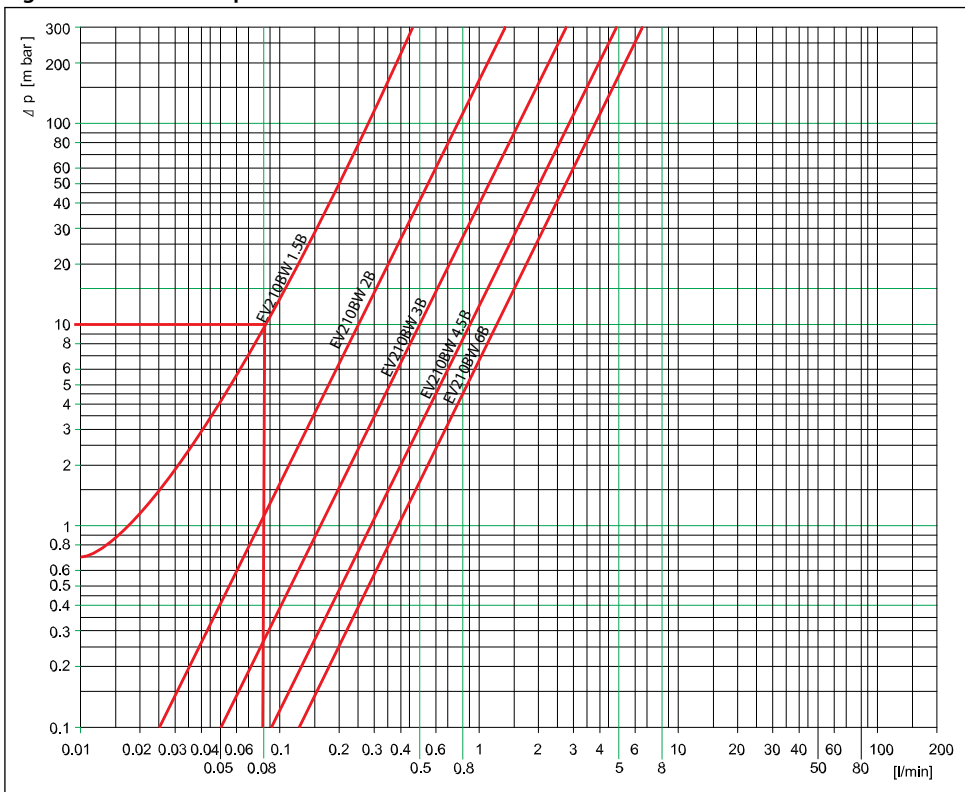
Connection ISO228-1	Orifice size	Differential pressure min. to max [bar]			
		NO			
		Suitable coils			
		BB/BE		BG	
		AC	DC	AC	DC
G1/8	1.5	0-10	0-10	0-10	0-10
G1/4	2.0	0-10	0-10	0-10	0-10
G1/4	3.0	0-5	0-5	0-5	0-5
G1/4, G3/8	4.5	0-2	0-2	0-2	0-2

Capacity diagrams

Example, water at low pressure: Capacity for EV210BW 1.5B at differential pressure of 10 mbar. Approx. 0.08 l / min

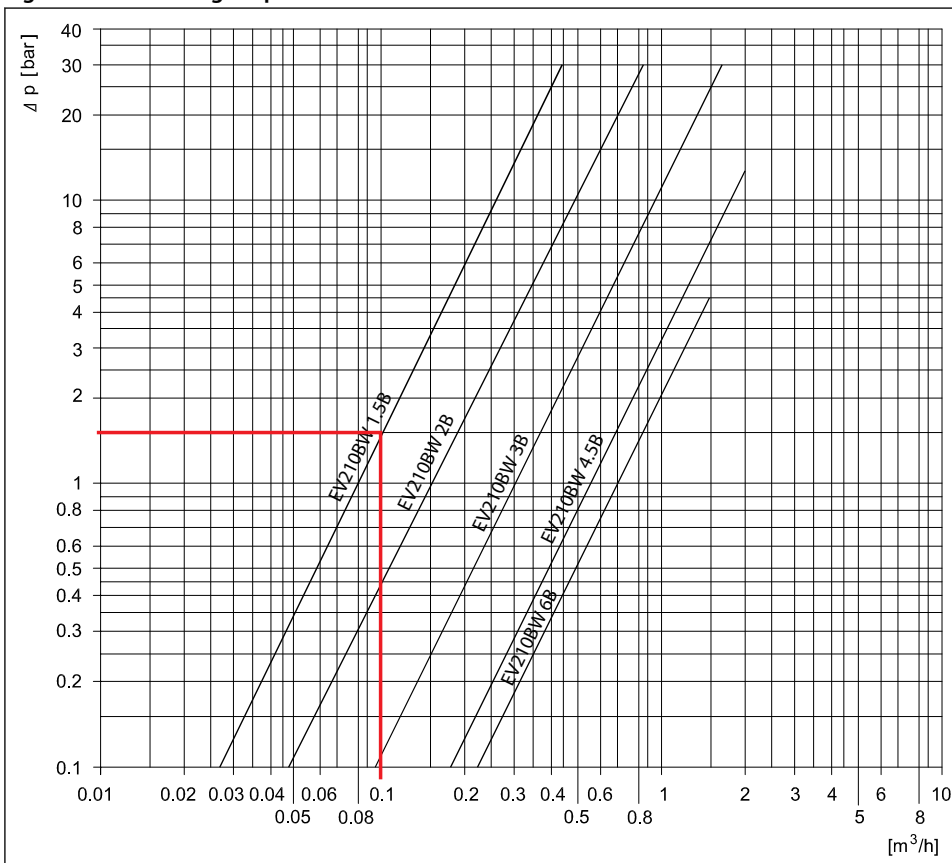
Solenoid valve - Type EV210BW

Figure 5: Water at low pressure



Example, water at higher pressure: Capacity for EV210BW 1.5B at differential pressure of 1.5 bar. Approx. 0.1 m³ / h

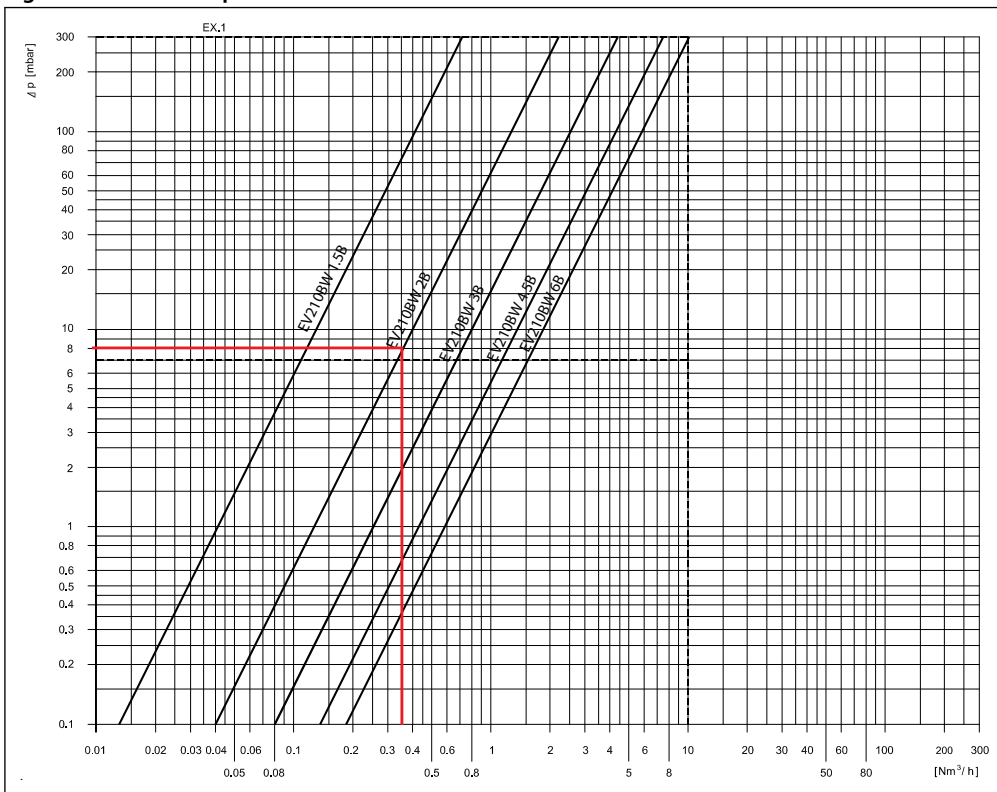
Figure 6: Water at higher pressure



Example, air at lower pressure: Capacity for EV210BW 2B at differential pressure of 8 mbar. Approx. 0.35 Nm³ / h

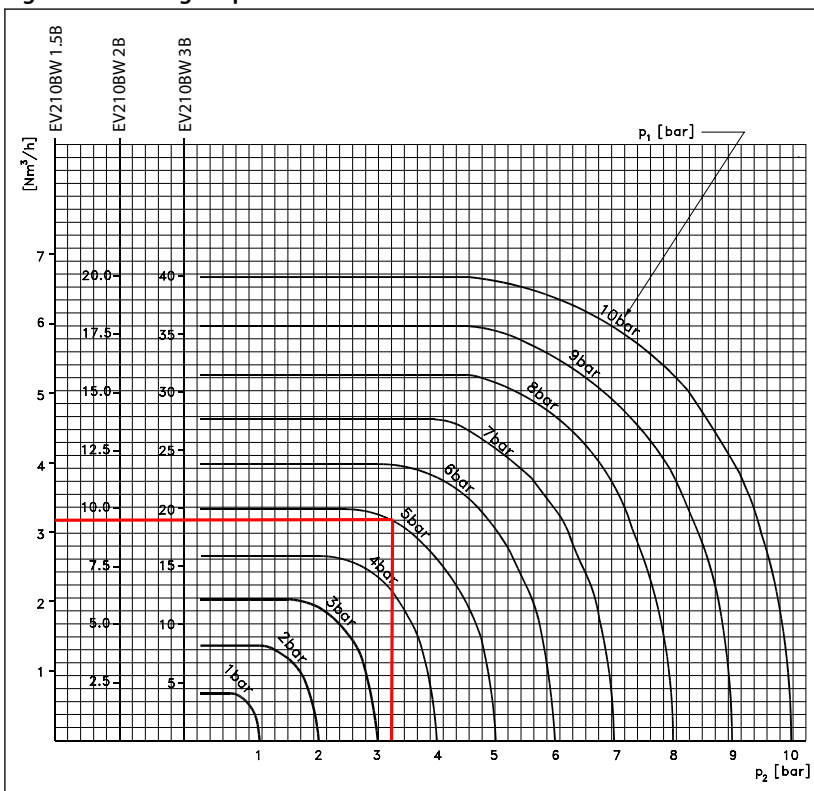
Solenoid valve - Type EV210BW

Figure 7: Air at lower pressure



Example, air at higher pressure: Capacity for EV210BW 2B at inlet pressure (p_1) of 5 bar and outlet pressure (p_2) of 3.25 bar. Approx. $9 \text{ Nm}^3 / \text{h}$

Figure 8: Air at higher pressure



Time to open/close

Table 5: Time to open/close

Type	EV210BW 1.5	EV210BW 2 NC	EV210BW 2 NO	EV210BW 3	EV210BW 4.5	EV210BW 6
Time to open[ms] ⁽¹⁾	10	10	20	20	20	20
Time to Close[ms] ⁽¹⁾	20	20	20	20	20	20

⁽¹⁾ The time is identical and apply to water. The exact time will depend on the pressure conditions.

Materials

Table 6: Materials

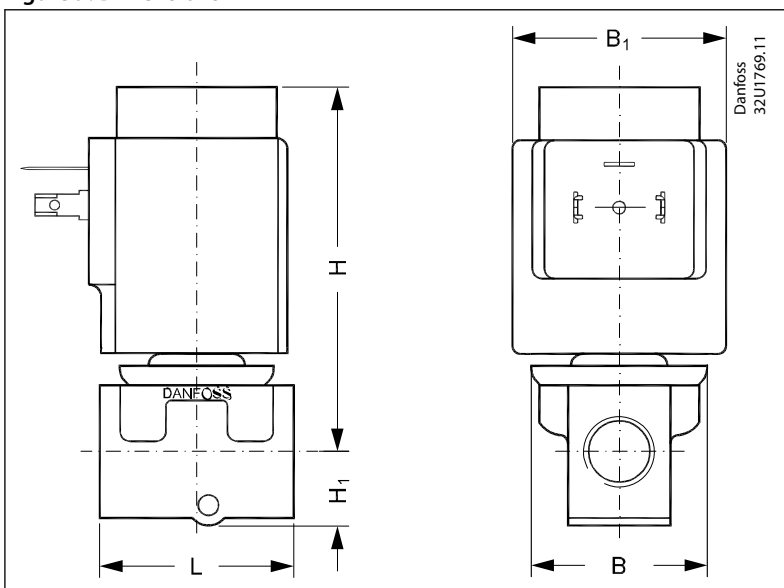
Components	Materials	Specifications
Valve body	Eco brass	CW724R
Armature	Stainless steel	W.no. 1.4105 / AISI 430 FR
Armature tube	Stainless steel	W.no. 1.4306 / AISI 304 L
Armature stop	Stainless steel	W.no. 1.4105 / AISI 430 FR
Springs	Stainless steel	W.no. 1.4310 / AISI 301
Valve plate	EPDM	
O-ring	EPDM	

4.2 Dimensions and weight

Table 7: Dimensions and weight

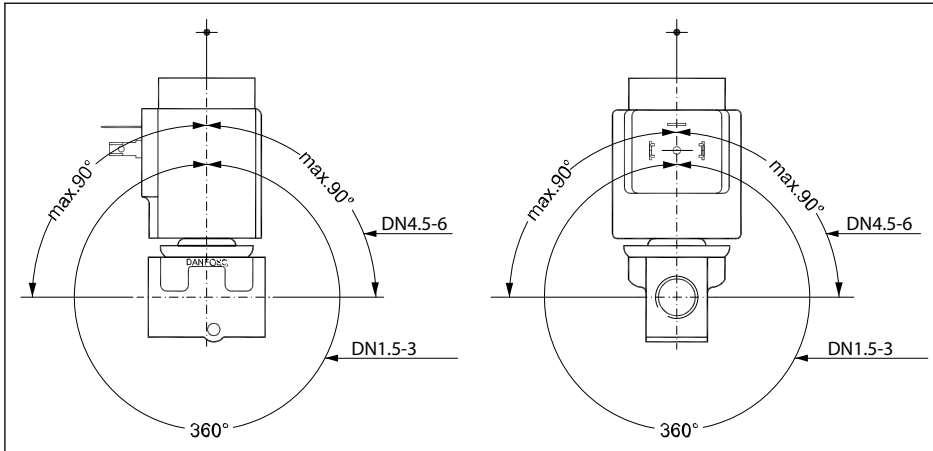
Type	Weight gross valve body without coil	L	B	B ₁ /coil type		H	H ₁
	[kg]			[mm]	[mm]		
EV210BW 1.5	0.15	35	34	46	68	12	70
EV210BW 2	0.15	35	34	46	68	12	70
EV210BW 3	0.20	38	34	46	68	11	70
EV210BW 4.5	0.20	38	34	46	68	11	70
EV210BW 6	0.22	46	34	46	68	16	73

Figure 9: Dimensions



4.3 Mounting

Figure 10: Mounting angle



5 Ordering

5.1 Parts program

Table 8: Eco brass, valve body NC and NO

ISO228/1 connection	Orifice	K _v value	Sealing	EV210BW	
	[mm]	[m ³ /h]	EPDM	NC	NO
G 1/8	1.5	0.08	EPDM	132U2100	132U2101
	2	0.15	EPDM	132U2300	132U2301
G 1/4	3	0.30	EPDM	132U3000	132U3001
	4.5	0.55	EPDM	132U4406	132U4407
	6	0.70	EPDM	132U4500	
G 3/8	4.5	0.55	EPDM	132U4400	132U4401
	6	0.7	EPDM	132U4502	

5.2 Accessories

Coil

Figure 11: BB, clip on



Table 9: BB, clip on

Type	Tambient	Supply voltage	Voltage variation	Frequency	Control	Power consumption		Code no.
	[°C]	[V]	[Hz]			[W]	[VA]	
BB024AS	-40 - 80	24	-15%, +10%	50	NC, NO	11	19	018F7358
BB230AS	-40 - 80	220 - 230	-15%, +10%	50	NC, NO	11	19	018F7351
BB012DS	-40 - 50	12	±10%	DC	NC, NO, UN (Latching)	13		018F7396
BB024DS	-40 - 50	24	±10%	DC	NC, NO, UN (Latching)	16		018F7397

EEC electronic coil controller

Figure 12: EEC Electronic coil controller



Table 10: EEC Electronic coil controller

Type	Tambient	Supply voltage	Voltage variation	Frequency	Control	Power consumption	Code no.
	[°C]	[V]		[Hz]		[W]	
BE240CS	-25 - 55	208 - 240	±10%	60	NC, NO	4	018F6783
		208 - 240	±10%	50	NC, NO	4	

Cable plug

Figure 13: Cable plug



Table 11: Cable plug

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

Universal electronic multi-timer Type ET 20 M

Figure 14: Type ET 20 M



Table 12: Type ET 20 M

Type	Voltage	Suitable for coil types	Code no.
	[V]		
BA024A	24 - 240	AL, AM, AS, AZ, BA, BD, BB	042N0185

Solenoid valve - Type EV210BW

Spare part kits

Table 13: Spare part kits DN 1.5 to DN 6

Type	Actuator kit NC	Actuator kit NO
EV210BW DN 1.5	132U8080	132U8003
EV210BW DN 2.0 - 4.5	132U8002	132U8003
EV210BW DN 6	132U8006	
	<ol style="list-style-type: none"> 1. 4 x Screws 2. Armature tube 3. Armature + spring 4. O-ring 	<ol style="list-style-type: none"> 1. 4 x Screws 2. NO actuator kit 3. O-ring

6 Certificates, declarations and approvals

6.1 Directives, approvals and certificates

In accordance with

- Low Voltage Directive 2014/35/EU
 - EN60730-1: 2011
 - EN60730-2-8: 2002
- Pressure Equipment Directive 2014/68/E
- RoHS Directive 2011/65/EU
 - Including amendment 2015/863/EU

6.2 Drinking water approvals

Figure 15: 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 16: 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 17: DTI



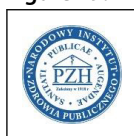
Inspection by DTI

Figure 18: ACS



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

Figure 19: 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 EV210BW

Figure 20: 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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