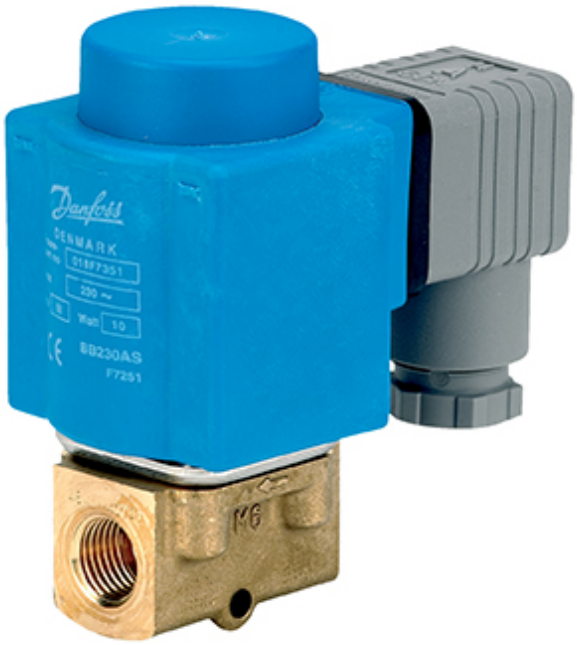
ENGINEERING TOMORROW

Data Sheet

Solenoid valve Type **EV210B**

Direct-operated 2/2-way solenoid valves for universal use.



EV210B covers a wide range of direct-operated 2/2-way solenoid valves for universal use.

EV210B are a very robust valves program with high performance and can be used in all kind of tough working conditions in demanding industrial applications such as control and closage.

Features and versions:

- For water, oil, compressed air and similar neutral media
- Clip on coil
- Ambient temperature: up to 80 °C
- Coil enclosure : up to IP67
- The valves can be used for vacuum
- EV210B brass version for water, oil, compressed air and similar neutral media
- EV210B stainless steel version for neutral and aggressive liquids and gasses

1 Portfolio overview

Table 1: Portfolio overview

Features	EV210B	EV210B
		
Body material	Brass	Stainless steel
DN [mm]	1.5 – 25	2-3
Connection	G ⅛ – G 1	G⅛-G¼
Sealing material	EPDM, FKM	EPDM
Function	NC, NO	NC
Kv [m³/h]	0.08-8.00	0.15-0.30
Differential pressure range [bar]	0 – 30	0-30
Temperature range [°C]	-30 – 120	-30-120

2 Functions

2.1 Function NC

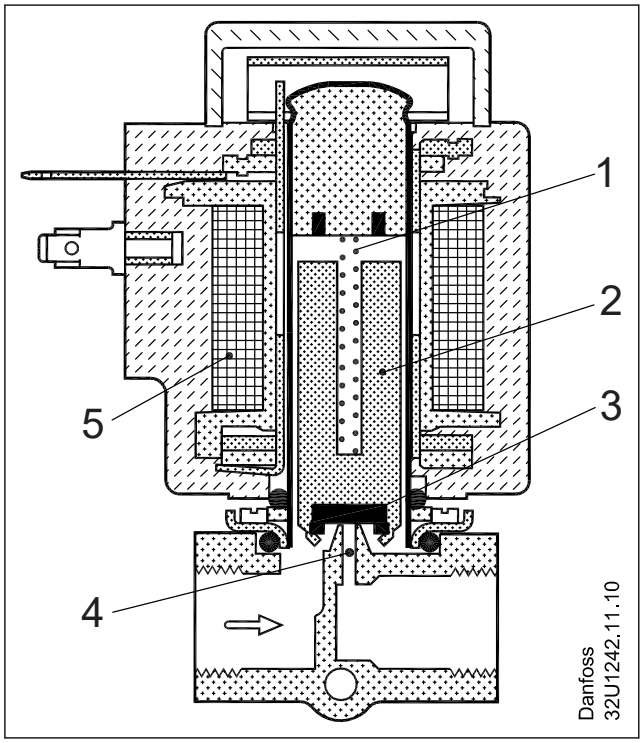
Coil voltage disconnected (closed):
When the voltage to the coil (5) is disconnected, the armature (2) with the valve plate (3) is pressed down against the valve orifice (4) by the closing spring (1) and the medium,s pressure.

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

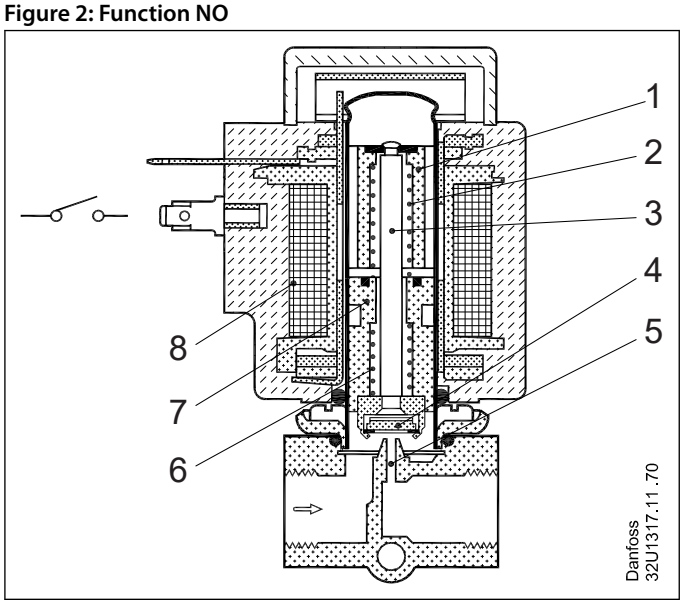
Coil voltage connected (open):
When the voltage to the coil(8) is disconnected, the valve orifice (5) is open, the opening spring (2) lifting the spindle (3) with the valve plate (4) clear of the orifice.

The valve will be open for as long as the supply voltage to the coil is disconnected.

Coil voltage disconnected (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.

Figure 2: Function NO

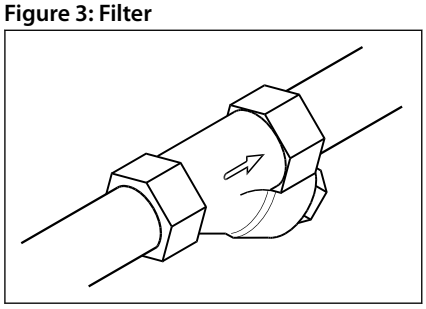


1	Armature
2	Opening spring
3	Spindle
4	Valve plate
5	Valve orifice
6	Closing spring
7	Fixed base
8	Coil

3 Applications

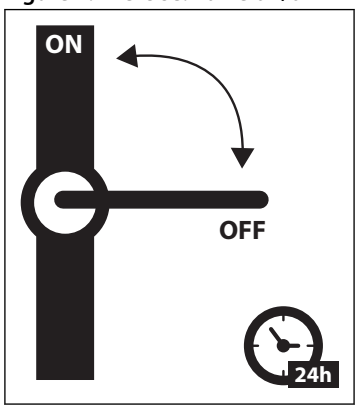
It is recommended to use a filter in front of the valve. Recommended filter 50 mesh (297 microns).

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



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

4 Product specification

4.1 Technical data

Table 2: Technical data

Media	EV210B brass	FKM	For oil, compressed air
		EPDM	For water
	EV210B stainless	EPDM	For neutral and aggressive liquids and gasses for neutral and aggressive liquids and gasses
Media temperature [°C]	EPDM		-30 - 120 °C
	FKM		-10 - 100 °C
Ambient temperature [°C]	Up to 80 °C		
Kv value [m³/h]	DN1.5		0.08 m³/h
	DN2		0.15 m³/h
	DN3		0.30 m³/h
	DN4.5		0.55 m³/h
	DN6		0.70 m³/h
	DN8		1 m³/h
	DN10		1.50 m³/h
	DN15 (G⅜)		2.50 m³/h
	DN15 (G½)		2.85 m³/h
	DN20		4.50 m³/h
	DN25		8.00 m³/h
Min. Opening differential pressure [bar]	0 bar		
Max. Opening differential pressure [bar]	Up to 30 bar		
Max. working pressure [bar]	Up to 30 bar (Equal to max. differential pressure)		
Max. test pressure [bar]	DN1.5 - 4.5		52.5 bar
	DN6 - 10		37.5 bar
	DN15 - 25		24 bar
Pressure	Pressure range can be extended to use in rough vacuum, typically up to 99% vacuum (10 mbar), depending on the application		
Low pressure steam	140 °C / 3.6 bar low pressure steam, orifice DN 1.5 – 4.5. • Low pressure steam: DN 1.5 – 3 Use coil type BB or BG, DN 4.5 Use coil type BG		
Viscosity [cSt]	Max. 50 cSt		

Differential pressure range

Table 3: Differential pressure range, NC

Connection ISO228-1	Orifice size	Differential pressure min. to max. [bar]						
		NC						
		Suitable coil type						
		BA		BD	BB/BE/BR/BY		BG	
		AC	DC	AC	AC	DC	AC	DC
G⅛, G¼	1.5	0-30	0-30	0-30	0-30	0-30	0-30	0-30
G⅛		0-16	0-16	0-16	0-16	0-16	0-16	0-16
G⅛, G¼	2.0	0-30	0-20	0-30	0-30	0-30	0-30	0-30
G⅛, G¼,G⅜	3.0	0-15	0-9	0-24	0-20	0-13	0-30	0-25
G¼, G⅜		0-15	0-9	0-16	0-16	0-13	0-16	0-16
G¼, G⅜	4.5	0-8	0-3.5	0-12	0-10	0-4.5	0-13	0-9
		0-8	0-3.5	0-12	0-10	0-4.5	0-13	0-9
G¼, G⅜	6.0	0-2.5	0-1	0-3.3	0-4	0-2	0-6	0-4.5
G⅜, G½	8.0	0-1.5	0-0.5	0-2	0-2	0-1.2	0-3	0-2.5
G⅜, G½	10.0	0-0.8	0-0.3	0-1.1	0-1.2	0-0.6	0-1.6	0-1.3
G⅜, G½	15.0	0-2.5		0-0.4	0-0.3	0-0.15	0-0.45	0-0.4
G¾	20.0				0-0.28	0-0.12	0-0.4	0-0.35
G1	25.0				0-0.25	0-0.9	0-0.35	0-0.2

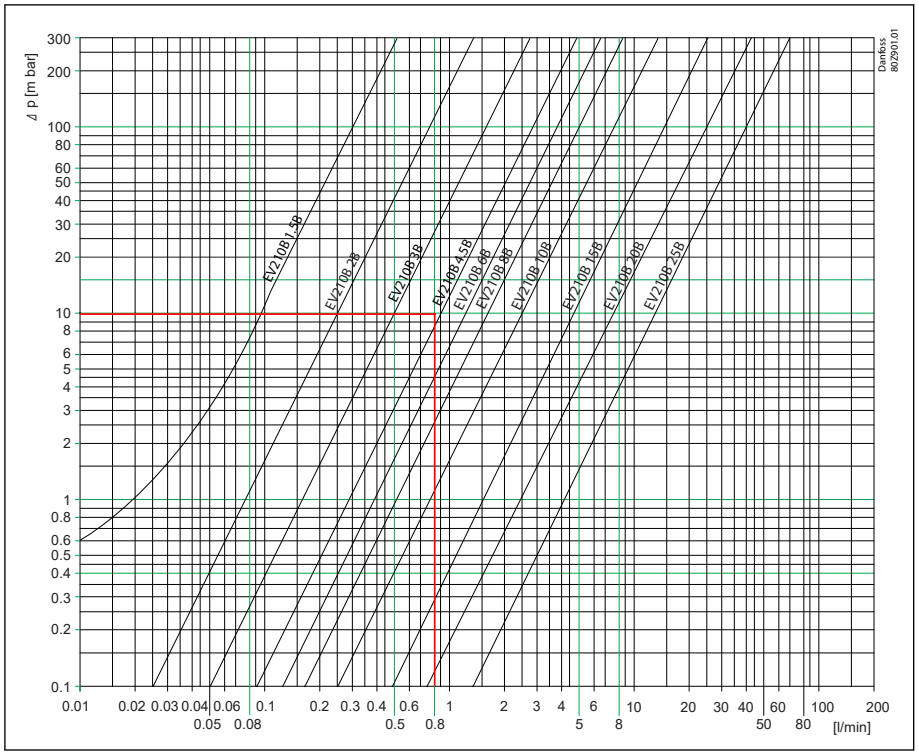
Table 4: Differential pressure range, NO

Connection ISO228-1	Orifice size	Differential pressure min. to max. [bar]						
		NO						
		Suitable coil type						
		BA		BD	BB/BE/BR/BY		BG	
		AC	DC	AC	AC	DC	AC	DC
G⅛	1.5	0-30	0-30	0-30	0-30	0-30	0-30	0-30
G⅛, G¼	2.0	0-12	0-12	0-12	0-12	0-12	0-12	0-12
G¼	3.0	0-5	0-5	0-5	0-5	0-5	0-5	0-5
G¼	4.5	0-2	0-2	0-2	0-2	0-2	0-2	0-2

Capacity diagrams

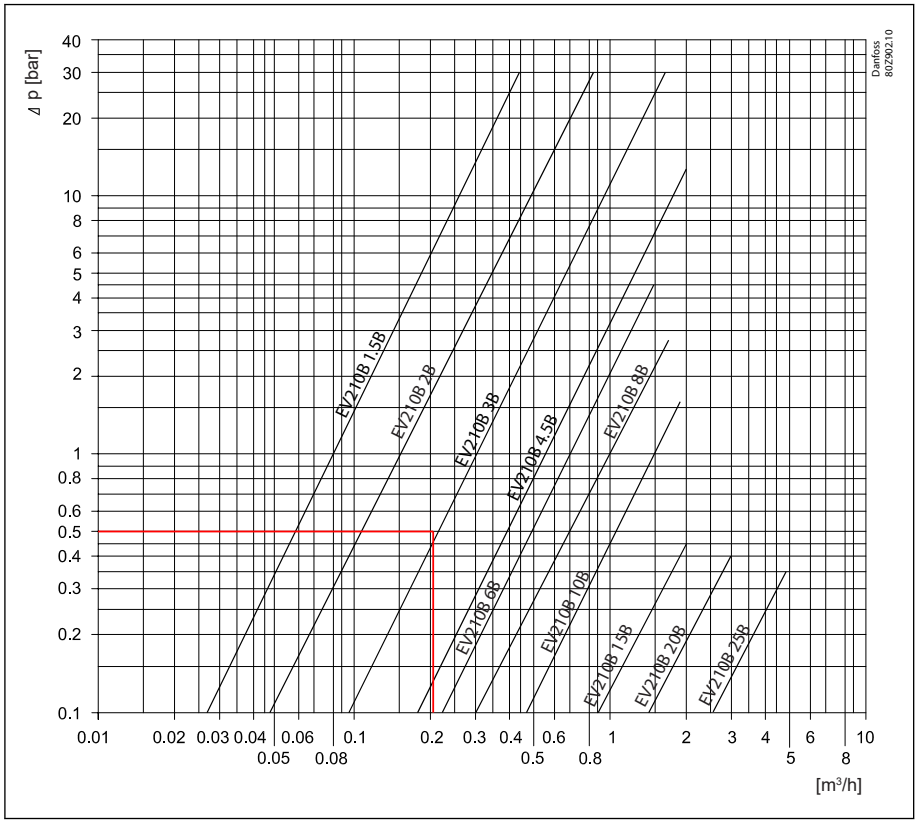
Example, water at low pressure: Capacity for EV210B 1.5B at differential pressure of 10 mbar. Approx. 0.08 l / min

Figure 5: Water at low pressure



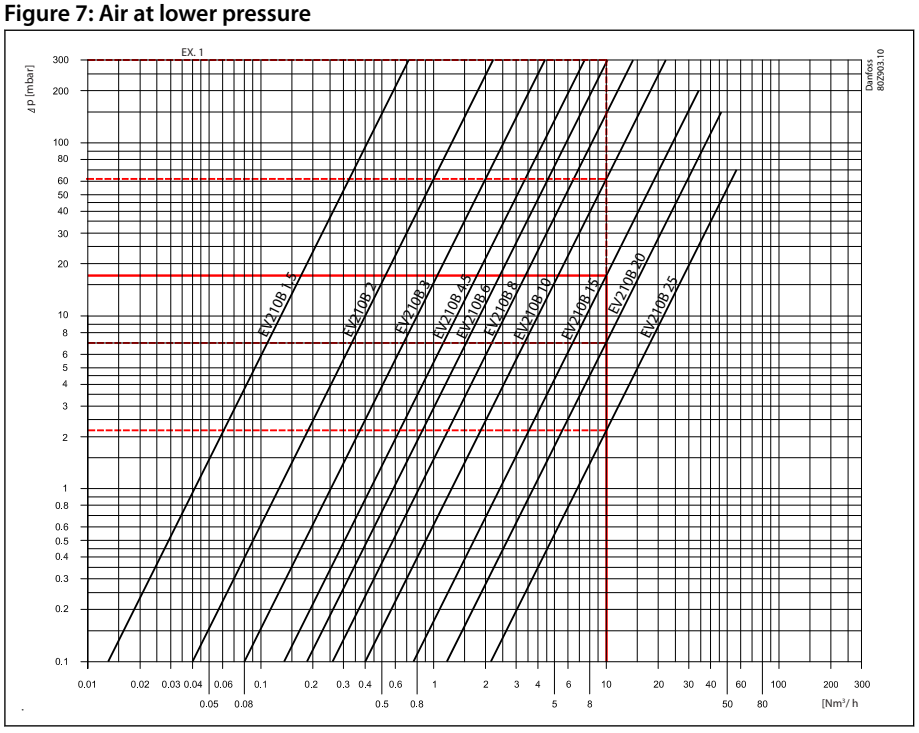
Example, water at higher pressure: Capacity for EV210B 3B at differential pressure of 0.5 bar. Approx. 0.21 m^3 / h

Figure 6: Water at higher pressure



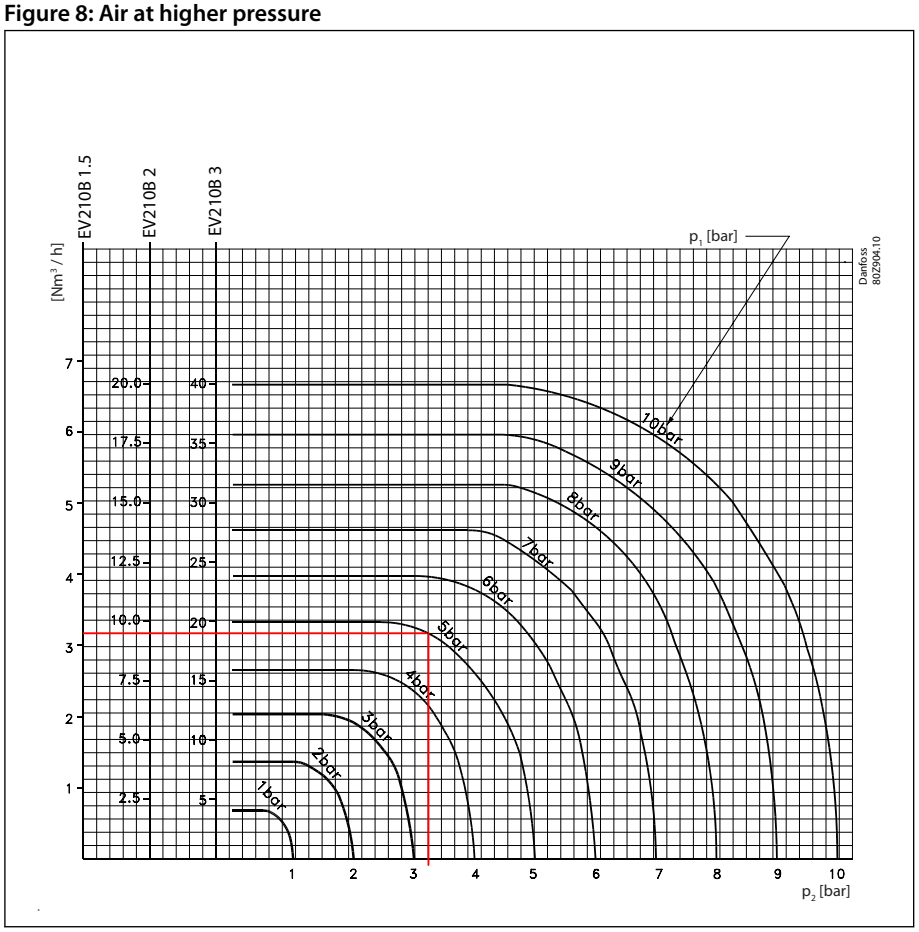
Example, air at lower pressure: Capacity for EV210B 15B at differential pressure of 17 mbar. Approx. 10 Nm^3 / h

Figure 7: Air at lower pressure



Example, air at higher pressure: Capacity for EV210B 2B at inlet pressure (p1) of 5 bar and outlet pressure (p2) of 3.25 bar. Approx. 9 Nm^3 / h

Figure 8: Air at higher pressure



Time to open/close

Table 5: EV210B/BW Brass valve body, NC time to open/close

Type	EV210B/BW 1.5 - 2	EV210B/BW 3-4.5	EV210B 6	EV210B 8 – 10	EV210B 15	EV210B 20	EV210B 25
Time to open [ms][1]	10	20	20	20	30	40	40
Time to close [ms][1]	20	20	20	30	50	50	70

[1] The times are indicative and apply to water. The exact times will depend on the pressure conditions.

Table 6: EV210B Brass valve body, NO time to open/close

Type	EV210B 1.5 - EV210B 4.5
Time to open [ms][1]	20
Time to close [ms][1]	20

[1] The times are indicative and apply to water. The exact times will depend on the pressure conditions.

Materials

Table 7: Materials

Components	Materials	Specifications
Valve body	Brass/Stainless steel	W. no. 2.0402/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
Valve plate	EPDM/FKM	
O-ring	EPDM/FKM	

4.2 Dimension and Weight

Table 8: Dimension and weight

Type	Weight gross valve body without coil	L	B	B_1 [mm]			H_1	H
	[kg]	[mm]	[mm]	Coil type BA / BD	Coil type BB / BE BR / BY	Coil type BG	[mm]	[mm]
EV210B 1.5 / EV210B 2B, NC	0.15	35	34	32	46	67	12	70
EV210B 3 / EV210B 4.5, NC	0.20	38	34	32	46	67	11	70
EV210B 6B, NC	0.22	46	34	32	46	67	16	73
EV210B 8 / EV210B 10B, NC	0.29	49	34	32	46	67	16	73
EV210B 15B, NC	0.45	58	53	32	46	67	13	93
EV210B 20B, NC	1.10	90	58	32	46	67	18	92
EV210B 25B, NC	1.10	90	58	32	46	67	23	96

Figure 9: Dimension, brass body

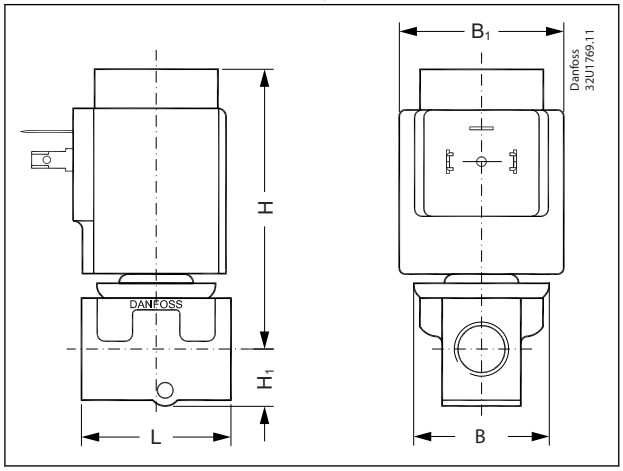
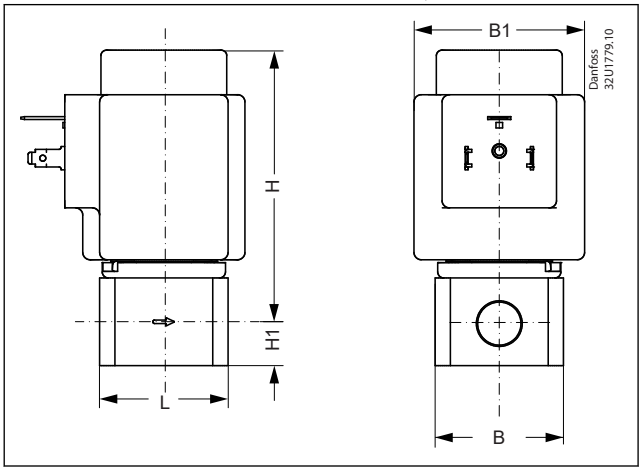
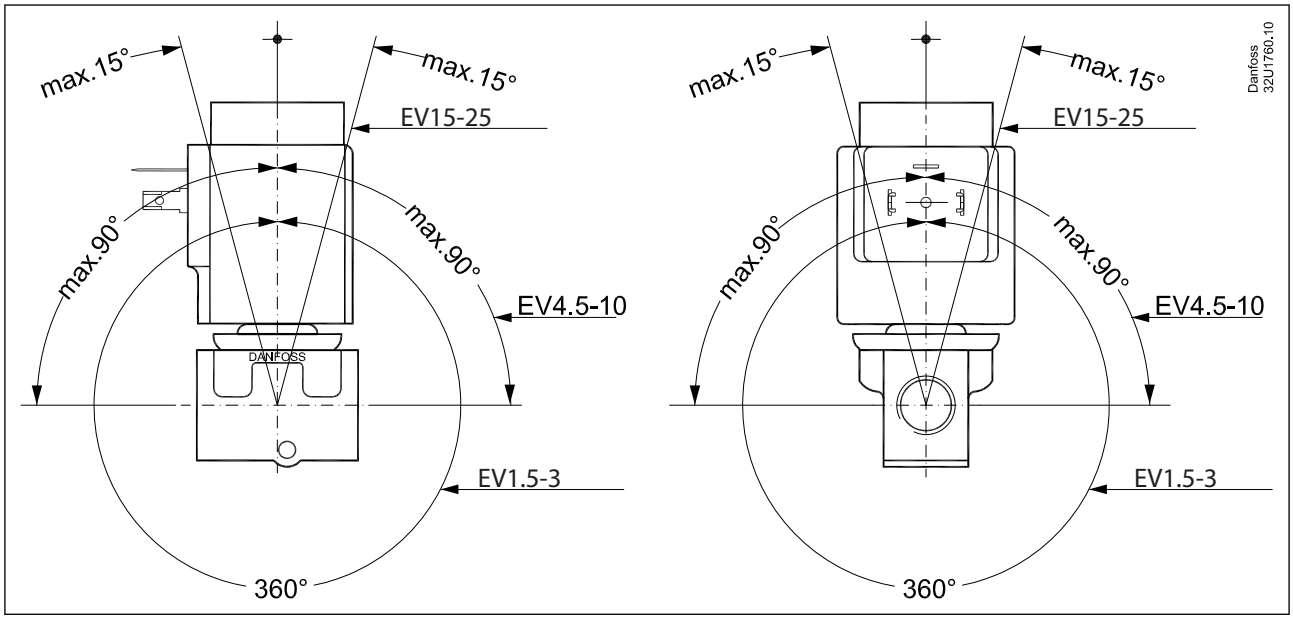


Figure 10: Dimension, stainless steel body



4.3 Mounting

Figure 11: Mounting angle



5 Ordering

5.1 Parts program

Table 9: Brass/SS, valve body NC and NO

Connection ISO228/1	Orifice	Kv value	Sealing	Function		
				EV210B		
				Brass		SS
	[mm]	[m^3/h]	EPDM/FKM	NC	NO	NC
G ⅛	1.5	0.08	EPDM	032U5701	032U3630	
			FKM	032U5702	032U3631	
	2.0	0.15	FKM	032U5704		
			EPDM		032U3632	032U3647
	3	0.30	EPDM	032U5705		
			FKM	032U5706		
	4.5	0.55	EPDM			032U3655
G ¼	1.5	0.08	FKM	032U3629		
			EPDM			
	2	0.15	EPDM	032U5707	032U3636	032U3651
			FKM	032U5708	032U3637	
	3	0.30	EPDM	032U5709	032U3638	032U3653
			FKM	032U5710	032U3639	
	4.5	0.55	EPDM	032U3600	032U3640	
			FKM	032U3601		032U3656
	6	0.70	EPDM	032U3602		
			FKM	032U3603		
G ⅜	3	0.30	EPDM	032U3642		
			FKM	032U3643		
	4.5	0.55	EPDM	032U3605		
			FKM	032U3606		
	6	0.70	EPDM	032U3607		
			FKM	032U3608		
	8.0	1.00	FKM	032U3610		
	10	1.50	EPDM	032U3611		
			FKM	032U3612		
	15	2.50	FKM	032U3614		
G ½	8	1.00	EPDM	032U3615		
			FKM	032U3616		
	10	1.50	EPDM	032U3617		
			FKM	032U3618		
	15	2.85	EPDM	032U3619		
			FKM	032U3620		
G ¾	20	4.50	EPDM	032U3621		
			FKM	032U3622		
G 1	25	8	EPDM	032U3623		
			FKM	032U3624		

5.2 Accessories

Coils

Table 10: Below coils can be used for EV210B

Coil	Type	Power consumption	Enclosure	Features
	BA / BD, screw on	8.5 - 15 W AC 14 W DC	IP00 with spade connector	IP20 with protective cap IP67 with cable plug
	BB/BY, clip on	11 - 16 W AC 14 - 16 W DC	IP00 with spade connector	IP20 with protective cap IP67 with cable plug
	BR, clip on	12 - 14 W AC 16 W DC	IP00 with spade connector	IP20 with protective cap, IP67 with cable plug Design for marine application
	BE, clip on	11 - 17 W AC 15 - 16 W DC	IP67	With terminal box
	BG, clip on	11 - 16 W AC 16 - 20 W DC	IP67	With terminal box

Cable plug

Figure 12: Cable plug

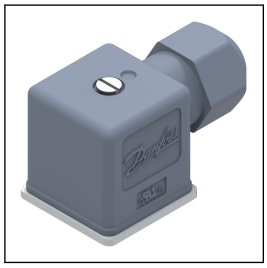


Table 11: Cable plug

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

Timer

Universal electronic multi-timer, Type ET20M

Figure 13: ET20M

Table 12: Timer

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

Mounting bracket

For EV210B/BW 1.5 – 4.5B in connection with synthetic tubes, pipes and similar.

Figure 14: Mounting bracket

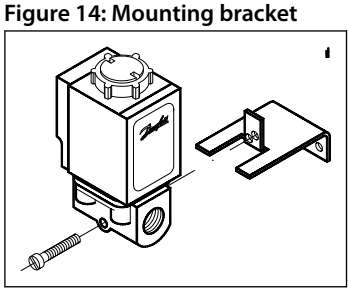


Table 13: Bracket

Description	Code no.
Brackets	032U1040

Isolating diaphragm kit for EV210B 1.5 – 4.5 NC

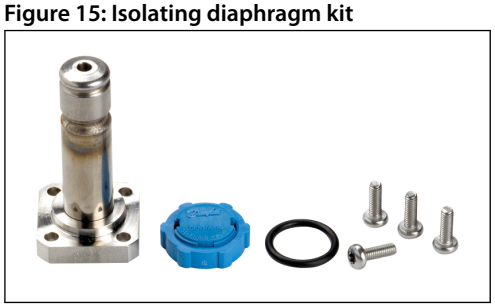
Avoids build-up of contaminates that can block movement of the armature. Permits use of more aggressive media that would normally attack the armature. Gel filled; guarantees operation after long periods of inactivity. The kit is suitable for orifice sizes up to DN 4.5 mm.

Table 14: Isolating diaphragm kit

Seal material	Media temperature [C°]	Code no.
EPDM	-20 - 50	042U1009
FKM	0 - 50	042U1010

The kit consist of:
Assembled isolating unit
O-ring
4 screws
Locking button Nut for coil

Figure 15: Isolating diaphragm kit



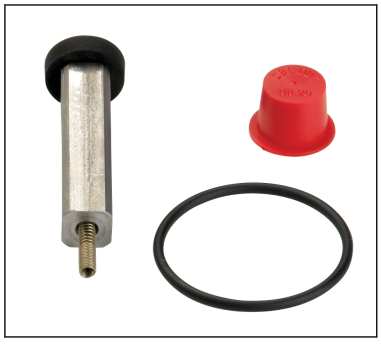
Spare parts kit, NC

Table 15: Spare parts

Valve type	Seal material	Code no.
EV210B 1.5, 2, 3, 4.5	FKM	032U2003
	EPDM	032U6000
EV210B 6, 8, 10	FKM	032U2011
	EPDM	032U2006
EV210B 15	FKM	032U2012
	EPDM	032U2013
EV210B 20	FKM	032U2014
	EPDM	032U2017
EV210B 25	FKM	032U2018
	EPDM	032U2019

The spare parts kit consists of:
Locking button
Nut for the coil
Armature with valve plate and spring
O-ring

Figure 16: Spare part kit



Spare parts kit, NO

Table 16: Spare parts

Valve type	Seal material	Code no.
EV210B 1.5, 2, 3, 4.5	FKM	032U2004
	EPDM	032U2005

The spare parts kit consists of: Armature tube 2 O-rings

Figure 17: Spare part kit

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