ENGINEERING
TOMORROW

Data Sheet

Solenoid valve
Type **EV251B**

Compact servo operated with assisted lift for general purpose

EV251B with assisted lift is especially suitable for applications such as closed systems with low and fluctuating pressure conditions or open systems with differential pressure down to 0 bar.

EV251B valves are supplied complete, including coil and plug.

Features and versions

- For water, oil, compressed air and similar neutral media
- Clip on coil
- Ambient temperature: Up to 80 °C
- Coil enclosure: IP65

1 Portfolio overview

Table 1: Portfolio overview

Features	EV251B
Body material	Brass
DN [mm]	10-22
Connection	G3/8" - G1"
Sealing material	NBR
Function	NC
K_v [m^3/h]	1.5-3.5
Differential pressure range [bar]	0-10
Temperature range [°C]	-10-90

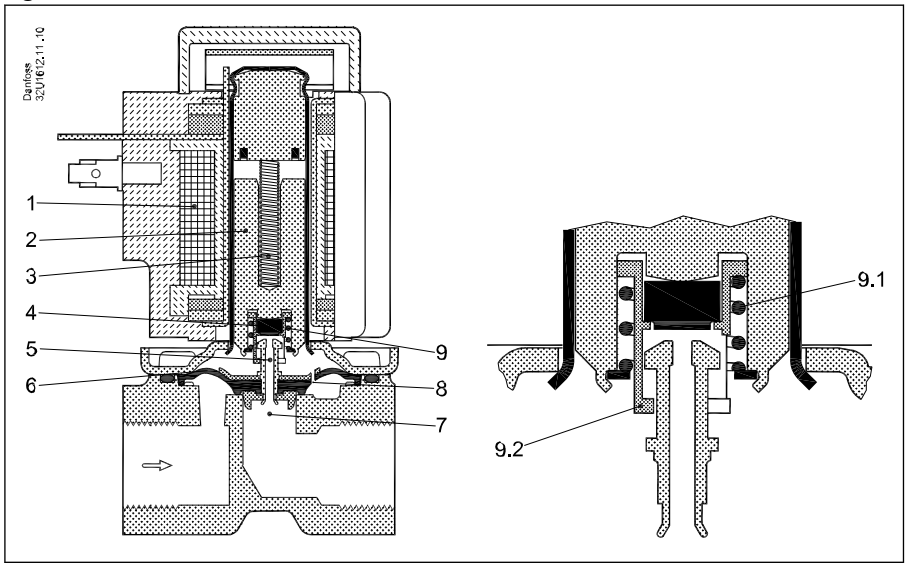
2 Function

2.1 Function NC

Coil voltage disconnected (closed)
When the supply voltage to the coil (1) is disconnected, the valve plate (4), is pressed down against the pilot orifice (5), by the closing spring (3). The pressure across the diaphragm (6), is built up via the equalizing orifice (8). The diaphragm closes the main orifice (7), when the pressure above the diaphragm exceeds the inlet pressure below due to the larger diameter of the upper side and the compression of the closing spring (3). The valve will be closed for as long as the voltage to the coil is disconnected.

Coil voltage connected (open)
When the voltage is applied to the coil, the armature (2), and the valve plate (4), are lifted clear of the pilot orifice (5). If there is a differential pressure across the valve, the pressure across the diaphragm (6), drops because the pilot orifice is larger than the equalizing orifice. This causes the diaphragm to be lifted clear of the main orifice (7). If there is no differential pressure across the valve, the armature (2) draws the diaphragm (6) clear of the main orifice (7), using the assist spring (9.1) and assist connector (9.2). The valve will be open for as long as there is voltage to the coil.

Figure 1: Function NC

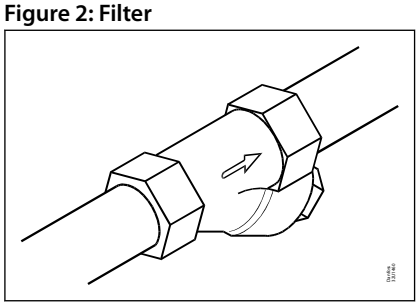


1	Coil
2	Armature
3	Closing spring
4	Valve plate
5	Pilot orifice
6	Diaphragm
7	Main orifice
8	Equalizing orifice
9	Assist
9.1	Assist spring
9.2	Assist connector

3 Application

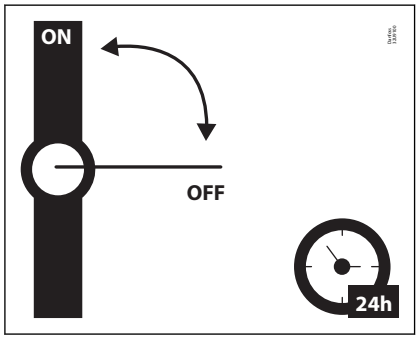
It is recommended to use a filter in front of the valve. Recommended filter 50 mesh (297 microns).

Figure 2: 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 3: 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

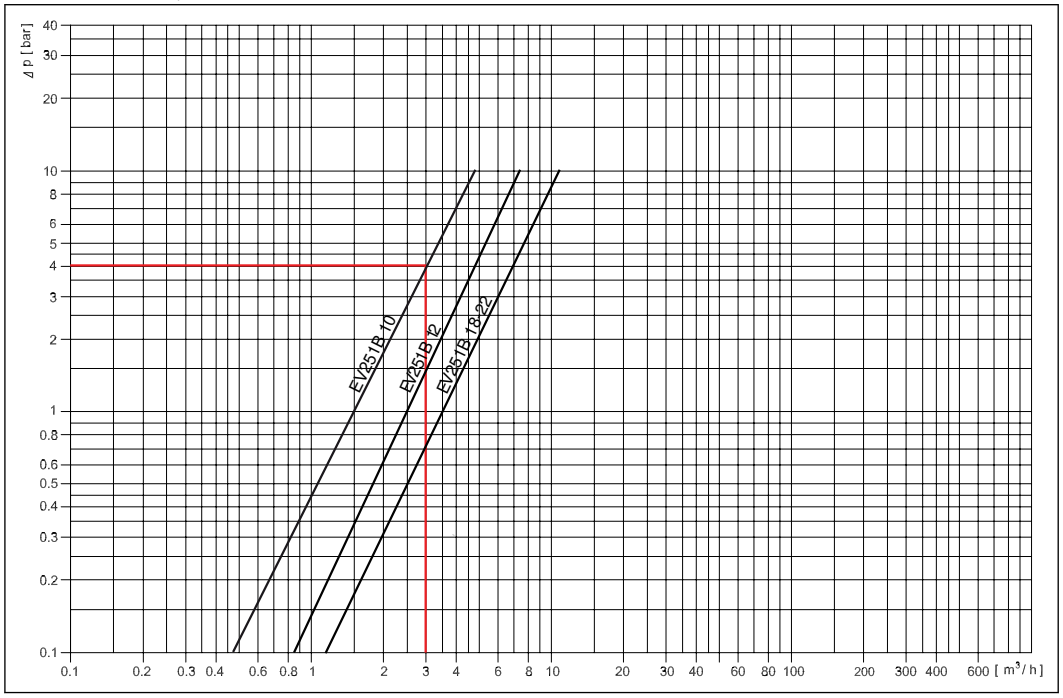
Table 2: Technical data

Media	NBR	For water, oil, compressed air and similar neutral media
Media temperature [°C]	NBR	-10-90°C
Ambient temperature [°C]	24V DC	Max 50°C
	24V/230V AC	Max 80°C
K_v value [m³/h]	DN10	1.5 m³/h
	DN12	2.5 m³/h
	DN18	3.5 m³/h
	DN22	3.5 m³/h
Min. Opening differential pressure [bar]	0 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 EV251B 10 at differential pressure of 4 bar. Approx. 3 m³/h

Figure 4: Capacity diagram 10-22



Time to open/close

Table 3: Time to open/close

Main type	EV251B 10B	EV251B 12B	EV251B 18B	EV251B 22B
Time to open [ms] (1)	50	60	200	200
Time to close [ms] (1)	300	300	500	500

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

Materials

Table 4: Materials

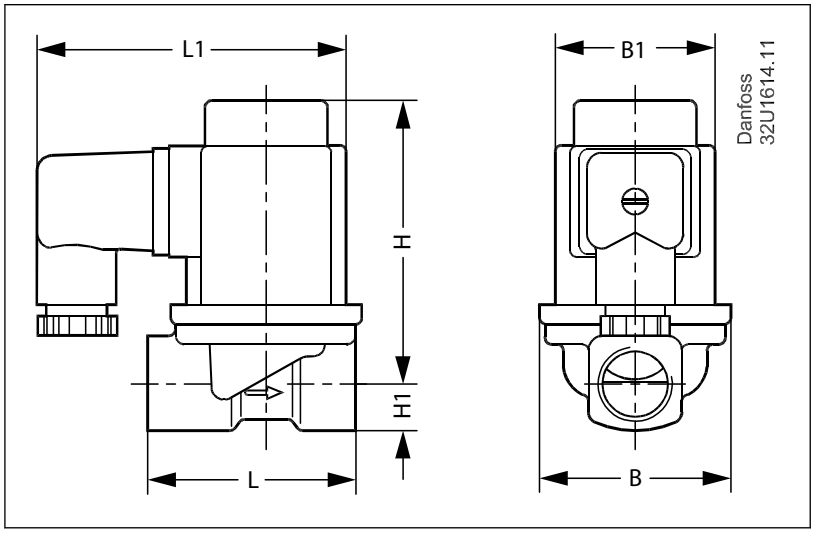
Components	Materials	Specifications
Valve body	Brass	W.no. 2.0402
Armature	Stainless steel	W. no. 1.4105 / AISI 430FR
Armature tube	Stainless steel	W. no. 1.4306 / AISI 304L
Armature stop	Stainless steel	W.no. 1.4105/AISI 430FR
Springs	Stainless steel	W. no. 1.4310 / AISI 301
O-rings	NBR (Only EV251B 10 - other version are without o-ring)	
Valve plate	NBR	W. no. 1.4122
Diaphragm	NBR	

4.2 Dimensions and weights

Table 5: Dimensions and weight, brass NC

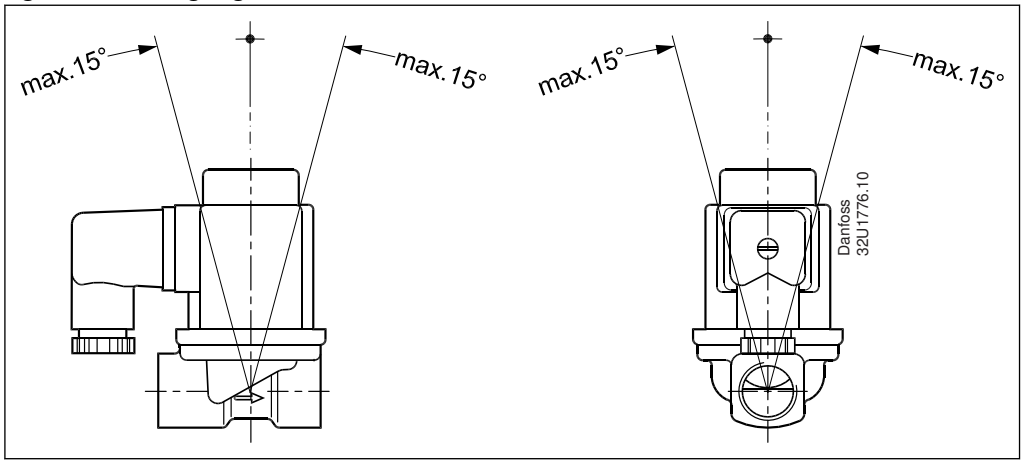
Type	Weight gross valve body with BB coil	L	L1	B	B1	H1	H
	[kg]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
EV251B 10	0.58	51.5	84	48	46	13	81
EV251B 12	0.64	58.0	84	54	46	13	81
EV251B 18	0.94	90.0	84	62	46	18	87
EV251B 22	0.94	90.0	84	62	46	18	91

Figure 5: Dimensions



4.3 Mounting

Figure 6: Mounting angle



5 Ordering

5.1 Parts program

Table 6: Brass, valve body NC

ISO228/1 connection	Orifice [mm]	K_v value [m³/h]	Sealing	Coil voltage/power consumption BB coil	Function NC
G3/8	10	1.5	NBR	24V DC 18W	032U538002
				24V 50Hz 10W	032U538016
				230V 50Hz 10W	032U538031
G1/2	12	2.5		24V DC 18W	032U538102
				24V 50Hz 10W	032U538116
				230V 50Hz 10W	032U538131
G3/4	18	3.5		24V DC 18W	032U538202
				24V 50Hz 10W	032U538216
				230V 50Hz 10W	032U538231
G1	22	3.5		24V DC 18W	032U538302
				24V 50Hz 10W	032U538316
				230V 50Hz 10W	032U538331

5.2 Accessories

Coil

Table 7: Coils used with EV251B

Coil	Type	Power consumption	Enclosure	Features
	BB, clip on	10 W AC. 18 W DC.	IP00 with spade connector	IP20 with protective cap IP65 with cable plug

Cable plug

Figure 7: Cable plug

Table 8: Cable plug

Type, Form A	Code no.
GDM 2011 (grey) cable plug according to DIN 43650-A PG11	042N0156

Universal electronic multi-timer Type ET 20 M

Figure 8: Type ET 20 M

Table 9: Universal electronic multi-timer Type ET 20 M

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

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