



# Solenoid valve

## EV251B

Compact servo operated with assisted lift for general purpose

## Description

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.

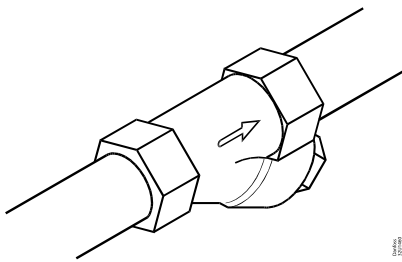
## Features & benefits

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

## Applications

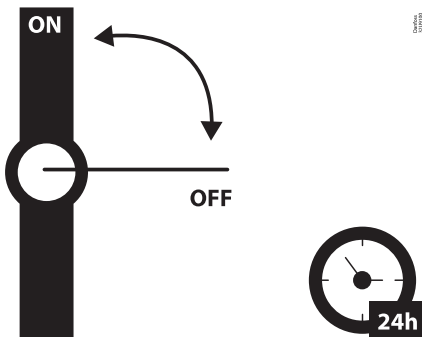
It is recommended to use a filter in front of the valve. Recommended filter 50 mesh (297 microns).

### 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.

### 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 avoids stagnant water inside the valve to avoid dezincification and corrosion attack.

## Ordering

### Product code numbers


Table: Brass, valve body NC

ISO228/1 connection	Orifice [mm]	K <sub>v</sub> value [m <sup>3</sup> /h]	Sealing	Coil voltage/power consumption BB coil	Function
					NC
G 3/8	10	1.5	NBR	24V DC 18W	032U538002
				24V 50Hz 10W	032U538016
				230V 50Hz 10W	032U538031
G 1/2	12	2.5		24V DC 18W	032U538102
				24V 50Hz 10W	032U538116
				230V 50Hz 10W	032U538131
G 3/4	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

### Accessories code numbers

#### Coil

Table: 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



Table: Cable plug

Cable plug size	Description	Code no.
DIN 18	Cable plug IP65	042N1278


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

Type	Voltage	Suitable for coil types	Code no.
ET20M	24 – 240	AL, AM, AS, AZ, BA, BD, BB	042N0185

## Overview

### Product portfolio

Table: Portfolio overview

Features	EV251B
	
<b>Body material</b>	Brass
<b>DN [mm]</b>	10 – 22
<b>Connection</b>	G 3/8" – G1"
<b>Sealing material</b>	NBR
<b>Function</b>	NC
<b>K<sub>v</sub> [m<sup>3</sup>/h]</b>	1.5 – 3.5
<b>Differential pressure range [bar]</b>	0 – 10
<b>Temperature range [°C]</b>	-10 – 90

## Functions

### 2.1 Function NC

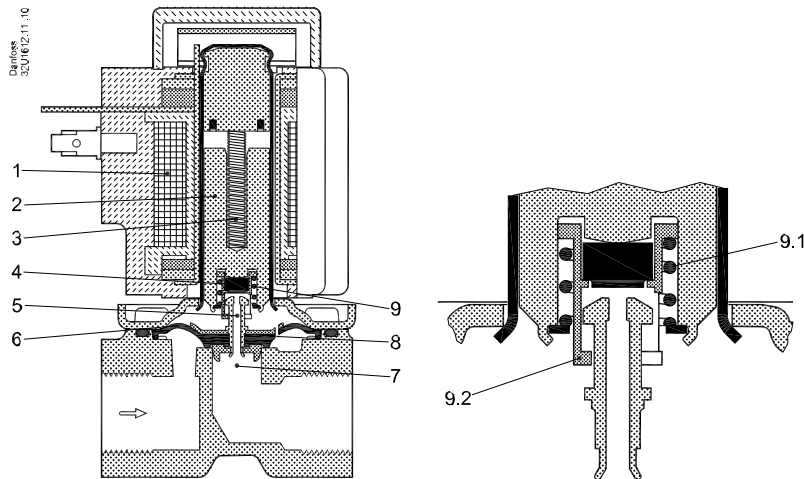
#### Coil voltage disconnected (closed)

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.

## 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

## Product details

### General data

Table: Technical data

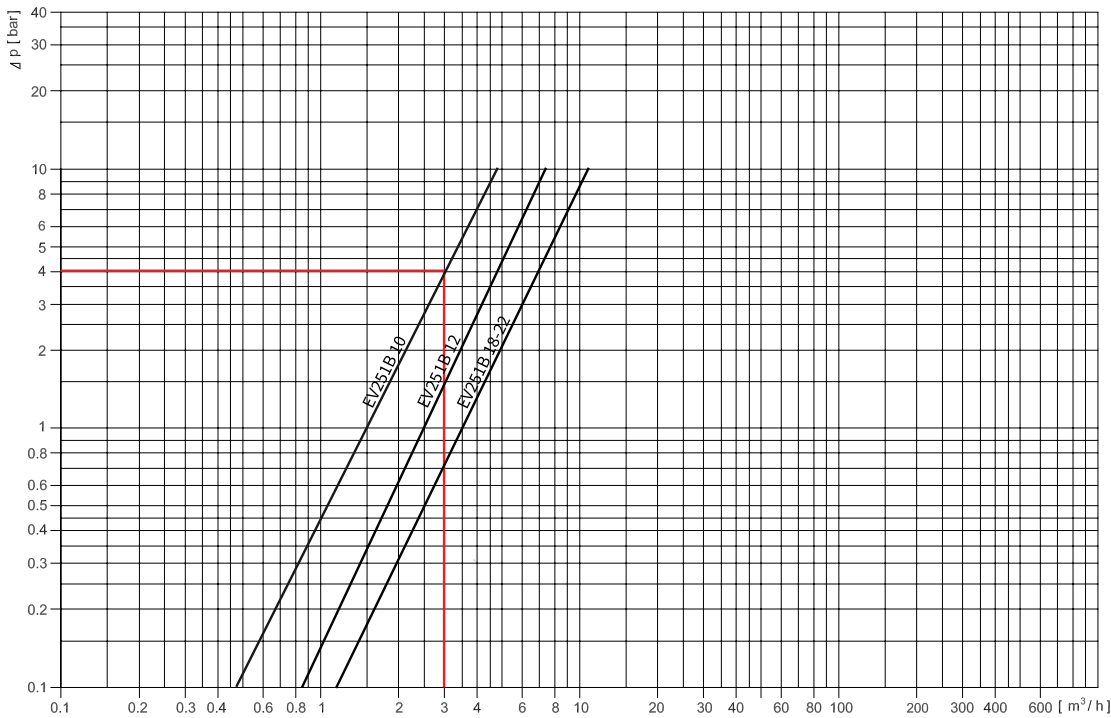
<b>Media</b>	NBR	For water, oil, compressed air and similar neutral media
<b>Media temperature</b>	NBR	-10 – 90 °C
<b>Ambient temperature</b>	24 V DC	Max 50 °C
	24 V / 230 V AC	Max 80 °C
<b>K<sub>v</sub> value</b>	DN10	1.5 m <sup>3</sup> /h
	DN12	2.5 m <sup>3</sup> /h
	DN18	3.5 m <sup>3</sup> /h
	DN22	3.5 m <sup>3</sup> /h
<b>Min. Opening differential pressure</b>	0 bar	
<b>Max. Opening differential pressure</b>	10 bar	
<b>Max. working pressure</b>	10 bar	
<b>Max. test pressure</b>	15 bar	
<b>Viscosity</b>	Max. 50 cSt	

## Capacity diagram

### Example, water:

Capacity for EV251B 10 at differential pressure of 4 bar. Approx. 3 m<sup>3</sup>/h

### Capacity diagram 10 – 22



**Table: Time to open/close**

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

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

**Table: Materials**

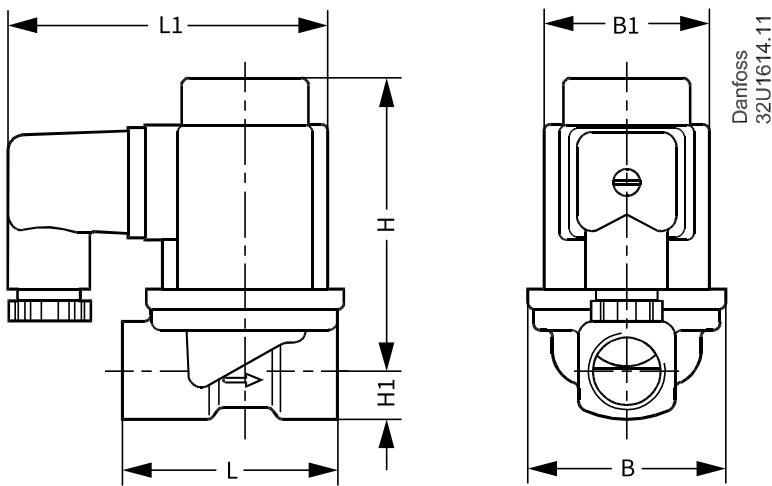
Components	Materials	Specifications
Valve body	Brass	W.no. 2.0402
Armature	Stainless steel	W. no. 1.4105 / AISI 430FR
Armature tube	Stainless steel	W. no. 1.4306 / AISI 304L
Armature stop	Stainless steel	W.no. 1.4105 / AISI 430FR
Springs	Stainless steel	W. no. 1.4310 / AISI 301
O-rings	NBR (Only EV251B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

## Dimensions

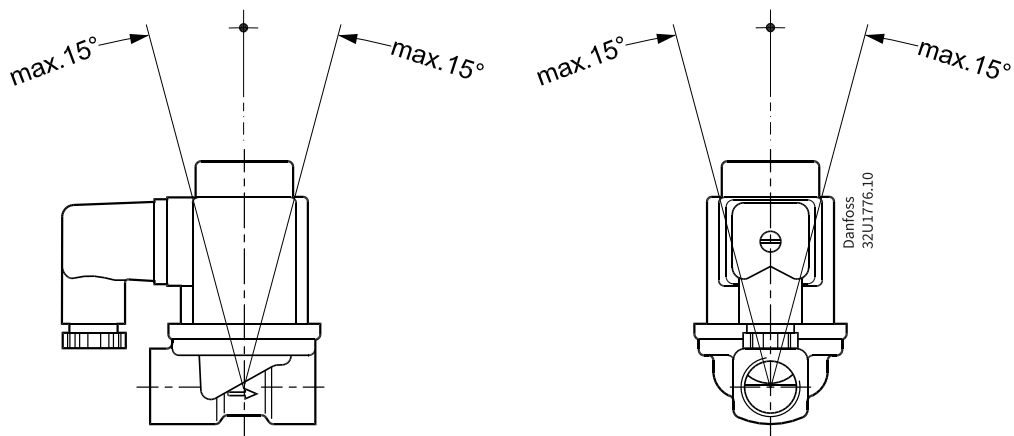
Table: Dimensions and weight, brass NC

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

### Dimensions



### Mounting angle in installation



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The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

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Manufacturer's Declaration	<a href="#">Danfoss MD 033F0699.00</a>	Danfoss	China RoHS
UA Declaration	<a href="#">Danfoss UA 8481</a>	Danfoss	UA RoHS
Export Control Declaration	<a href="#">Solenoid valves – Polymer, Bronze, Brass, Cast iron</a>	Danfoss	
Pressure Safety Certificate	<a href="#">LLC CDC EURO-TYSK UA.TR.089.1015.02-22</a>	LLC CDC EURO TYSK - Ukraine	PED, Pressure
EU Declaration	<a href="#">Danfoss EU 033F0683.05</a>	Danfoss	LVD, EU RoHS

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