

## Data Sheet

Solenoid valve  
Type **EV245B**

Servo piston operated for steam applications



EV245B is a servo piston operated 2/2-way solenoid valve for use in steam applications.

The servo piston operated design with PTFE seal on the main orifice and steel valve plate in the armature secures a reliable function and long life in steam applications.

**Features and versions**

- Specifically designed for steam applications, 160 - 185 °C
- Clip on coil
- Ambient temperature: Up to 40 °C
- Coil enclosure: IP65
- EV245B used with BQ coil
  - AC voltage up to 185 °C
- EV245B used with BN coil
  - DC voltage up to 160 °C
- EV245B used with BB coil
  - AC voltage up to 160 °C
  - DC voltage up to 140 °C
- Connection: ISO 228/1

## 1 Portfolio overview

Table 1: Portfolio overview

Features	EV245B
	
<b>Body material</b>	Brass
<b>DN [mm]</b>	15 - 20
<b>Connection</b>	G1/2" - G3/4"
<b>Sealing material</b>	PTFE
<b>Function</b>	NC
<b>K<sub>v</sub> [m<sup>3</sup>/h]</b>	4.5 - 5.5
<b>Differential pressure range [bar]</b>	0.1-10
<b>Temperature range [°C]</b>	0-185

## 2 Function

### 2.1 Function NC

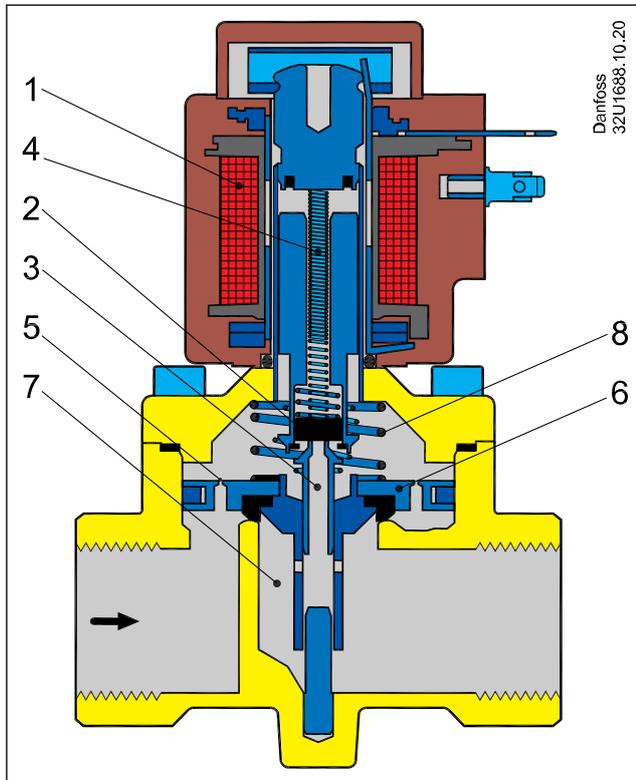
#### Coil voltage disconnected (closed)

When the voltage is disconnected, the valve plate (2) is pressed down against the pilot orifice (3) by the armature spring (4). The pressure across the piston (6) is built up via the equalizing orifice (5). The piston closes the main orifice (7) as soon as the pressure across the piston is equivalent to the inlet 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 (1), the pilot orifice (3) is opened. As the pilot orifice is larger than the equalizing orifice (5), the pressure across the piston (6) drops and therefore it is lifted clear of the main orifice (7). The valve is now open for unimpeded flow and will be open for as long as the minimum differential pressure across the valve is maintained, and for as long as there is voltage to the coil.

Figure 1: Function NC



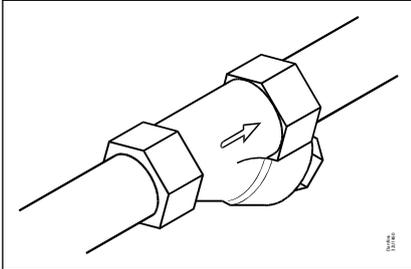
Danfoss  
32U1688.10.20

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

### 3 Application

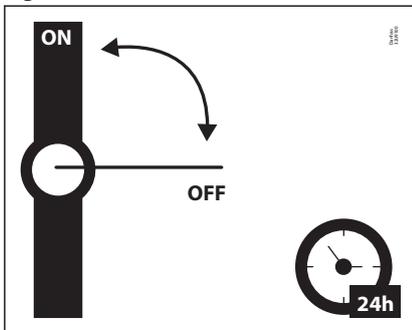
It is recommended to use a filter in front of the valve. Recommended filter 50 mesh (297 microns).

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

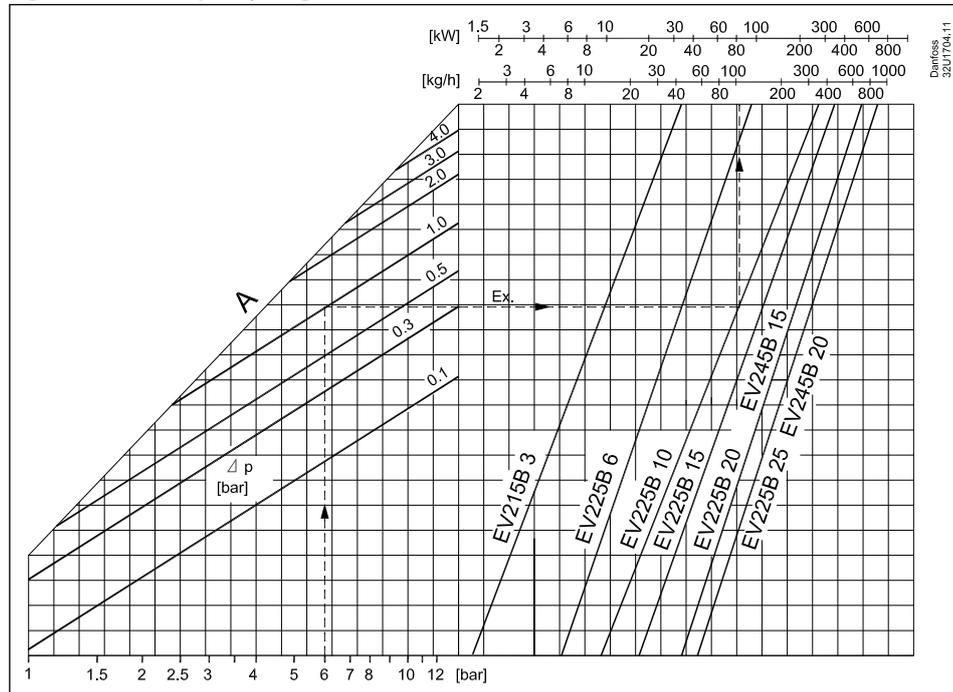
<b>Media</b>	PTFE	Steam
	BQ	0-185°C
<b>Media temperature [°C]</b>	BB AC	0-160°C
	BB AC	0-160°C
	BB DC	0-140°C
<b>Ambient temperature [°C]</b>	Max. 40 °C at a medium temperature of 185 °C	
<b>K<sub>v</sub> value [m³/h]</b>	DN15	4.5 m³/h
	DN20	5.5 m³/h
<b>Min. Opening differential pressure [bar]</b>	0.1 bar	
<b>Max. Opening differential pressure [bar]</b>	Up to 10 bar	
<b>Max. working pressure [bar]</b>	Up to 10 bar (Equal to max. working pressure)	
<b>Max. test pressure [bar]</b>	25 bar	
<b>Viscosity [cSt]</b>	Max. 50 cSt	

### Steam capacity diagrams

**Example:**

Capacity for EV245B 20BD inlet pressure (p<sub>1</sub>) of 6 bar absolute, at differential pressure at 1 bar.  
Approx. 100kg/h/80kW

Figure 4: Steam capacity diagrams



### Differential pressure range

Table 3: Differential pressure range

Connection ISO228/1	Coil type BQ AC	Coil type BN DC	Coil type BB AC	Coil type BB DC
	[Bar]	[Bar]	[Bar]	[Bar]
G1/2	0.1-10	0.1-5	0.1-5	0.1-3.6
G3/4	0.1-10	0.1-5	0.1-5	0.1-3.6

## Solenoid valve, Type EV245B

### Time to open/close

Table 4: Time to open/close

Main type	EV245B 15 – 20
Time to open [ms] <sup>(1)</sup>	200
Time to close [ms] <sup>(1)</sup>	2000

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

### Materials

Table 5: Materials

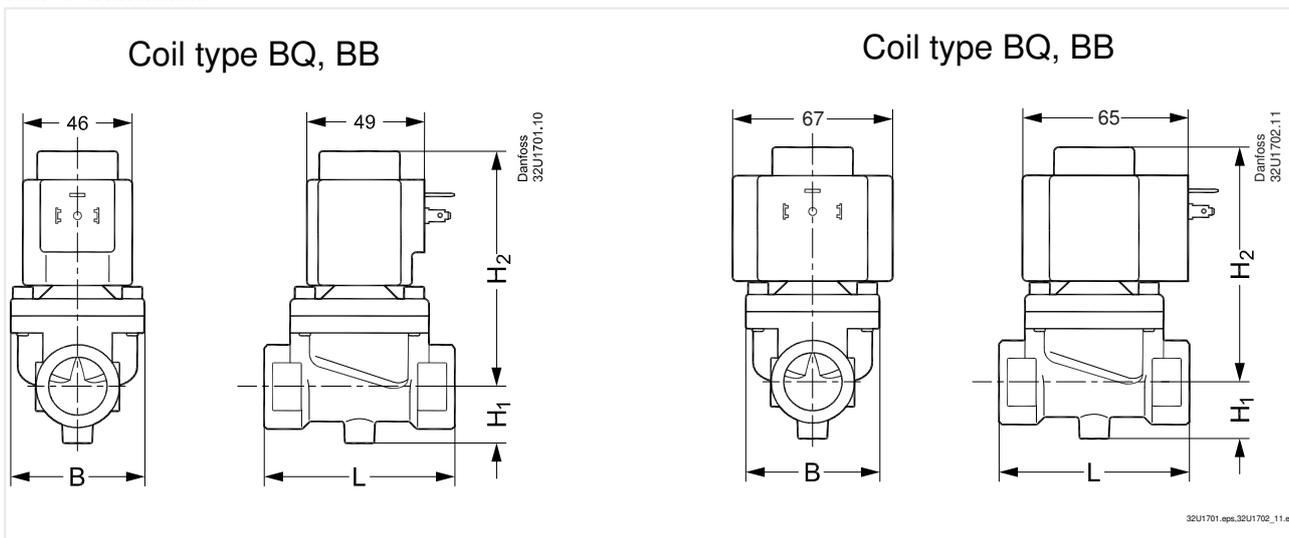
Components	Materials	Specifications
Valve body/cover	Brass	EN 12165, CW 617N
Armature/armature stop	Stainless steel	W. no. 1.4105 / AISI 430FR
Armature tube	Stainless steel	W. no. 1.4306 / AISI 304L
Springs	Stainless steel	W. no. 1.4310 / AISI 301
Piston seal	PTFE	
Piston ring	PTFE with graphite	
Valve plate	Stainless steel	W. no. 1.4122
External gasket	PTFE	

## 4.2 Dimensions and weights

Table 6: Dimensions and weights

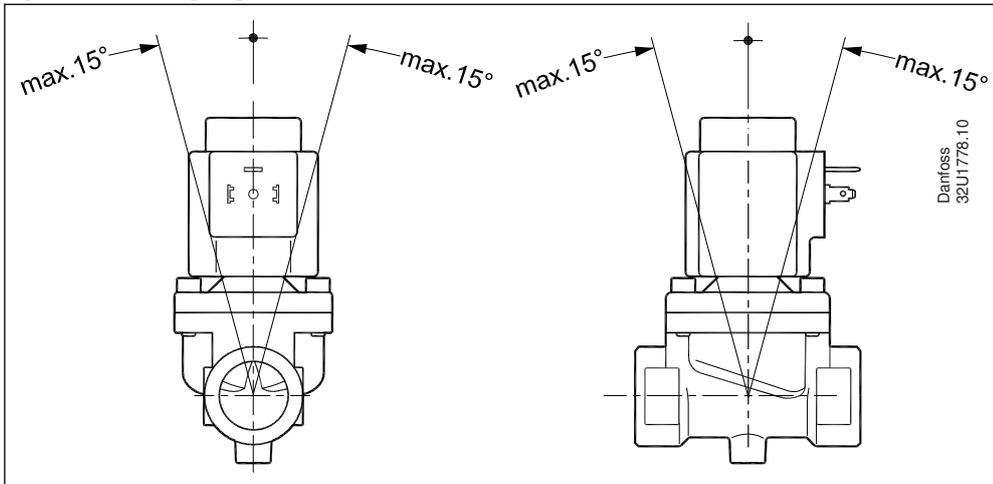
Type	L	B	H	H <sub>1</sub>	H <sub>2</sub>	Weight gross valve body with coil BQ, BB	Weight gross valve body with coil BN
	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]	[kg]
EV245B 15B	80.5	57	124	24	100	0.75	1.03
EV245B 20B	80.5	57	124	24	100	0.72	1.00

Table 7: Dimensions



### 4.3 Mounting

Figure 5: Mounting angle



## 5 Ordering

### 5.1 Parts program

Table 8: Brass, valve body NC

ISO228/1 connection	Orifice	K <sub>v</sub> value	Function
	[mm]	[m <sup>3</sup> /h]	NC
G1/2	15	4.5	032U3833
G3/4	20	5.5	032U3853

### 5.2 Accessories

#### Coil

#### Coil type BQ AC Steam coil to 185 °C

Figure 6: Coil type BQ AC



Table 9: Coil type BQ AC Steam coil to 185 °C

Type	Tambient [°C]	Supply voltage [V]	Voltage variation	Frequency [Hz]	Power consumption		Approval	Code no.
					[W]	[VA]		
BQ024CS	-40 – 40	24	-15%, 10%	50	10	17		018F4517
		24	-15%, 10%	60	9.0	16		
BQ120BS	40 – 40	110 / 120	-15%, 6%	60	13.5	19		018F4519
BQ240CS	-40 – 40	230	-15%, 6%	50	10	17		018F4511
		208 / 240	-6%, 6%	60	9.5	16		

#### Coil type BN DC Steam coils to 160 °C

Figure 7: Coil type BN DC



Table 10: Coil type BN DC Steam coils to 160 °C

Type	Tambient [°C]	Supply voltage [V]	Voltage variation	Frequency [Hz]	Power consumption		Approval	Code no.
					[W]	[VA]		
BN024DS	-40 – 50	24	±10%	DC	20			018F6968

## Solenoid valve, Type EV245B

### Coil type BB AC Steam coils to 160 °C

Figure 8: Coil type BB AC



Table 11: Coil type BB AC Steam coils

Type	Tambient [°C]	Supply voltage [V]	Voltage variation	Frequency [Hz]	Power consumption		Code no.
					[W]	[VA]	
BB024AS	-40 – 80	24	-15%, 10%	50	11	19	018F7358
BB115AS	-40 – 80	115	-15%, 10%	50	11	19	018F7361
BB230AS	-40 – 80	220 / 230	-15%, 10%	50	11	19	018F7351
BB240AS	-40 – 80	240	-15%, 10%	50	11	19	018F7352
BB440CS	-40 – 80	400	±10%	50	14	24	018F7353
		440	±10%	60	15	24	
BB024BS	-40 – 80	24	-15%, 10%	60	14	23	018F7365
BB110CS	-40 – 50	110	±10%	50	15	28	018F7360
		110	±10%	60	13	22	
BB230CS	-40 – 50	220 / 230	±10%	60	13	24	018F7363
		220 / 230	±10%	50	16	31	

### Coil type BB DC Steam coils to 140 °C

Table 12: Coil type BB DC Steam coils

Type	Tambient [°C]	Supply voltage [V]	Voltage variation	Frequency [Hz]	Power consumption		Code no.
					[W]	[VA]	
BB012DS	-40 – 50	12	±10%	DC	14		018F7396
BB024DS	-40 – 50	24	±10%	DC	16		018F7397

### Cable plug

Figure 9: Cable plug



Table 13: Cable plug

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

Solenoid valve, Type EV245B

Universal electronic multi-timer, Type ET 20 M

Figure 10: Type ET 20 M



Table 14: Universal electronic multi-timer, Type ET 20 M

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

Spare part

Table 15: Spare part kits for EV245B 15-20

Type	Seal material
EV245B (Coil: BQ, BN, BB, BR)	032U3121
	<ol style="list-style-type: none"> <li>1. Spring</li> <li>2. Assembled armature fitted on piston</li> <li>3. Gasket PTFE</li> </ol>

## 6 Online support

Danfoss offers a wide range of support along with our products, including digital product information, software, mobile apps, and expert guidance. See the possibilities below.

### The Danfoss Product Store



The Danfoss Product Store is your one-stop shop for everything product related—no matter where you are in the world or what area of the cooling industry you work in. Get quick access to essential information like product specs, code numbers, technical documentation, certifications, accessories, and more.

Start browsing at [store.danfoss.com](https://store.danfoss.com).

### Find technical documentation



Find the technical documentation you need to get your project up and running. Get direct access to our official collection of data sheets, certificates and declarations, manuals and guides, 3D models and drawings, case stories, brochures, and much more.

Start searching now at [www.danfoss.com/en/service-and-support/documentation](https://www.danfoss.com/en/service-and-support/documentation).

### Danfoss Learning



Danfoss Learning is a free online learning platform. It features courses and materials specifically designed to help engineers, installers, service technicians, and wholesalers better understand the products, applications, industry topics, and trends that will help you do your job better.

Create your Danfoss Learning account for free at [www.danfoss.com/en/service-and-support/learning](https://www.danfoss.com/en/service-and-support/learning).

### Get local information and support



Local Danfoss websites are the main sources for help and information about our company and products. Find product availability, get the latest regional news, or connect with a nearby expert—all in your own language.

Find your local Danfoss website here: [www.danfoss.com/en/choose-region](https://www.danfoss.com/en/choose-region).

### Spare Parts



Get access to the Danfoss spare parts and service kit catalog right from your smartphone. The app contains a wide range of components for air conditioning and refrigeration applications, such as valves, strainers, pressure switches, and sensors.

Download the Spare Parts app for free at [www.danfoss.com/en/service-and-support/downloads](https://www.danfoss.com/en/service-and-support/downloads).