Data sheet


# Solenoid valve

# EV260B

Proportional servo operated for water, brine and oil regulation

# Description

EV260B is a proportional (modulating) servo-operated 2-way solenoid valve with connections from 1/4" to 3/4". Through stepless regulation of the coil current, the armature can be placed in any position in the armature tube, thus setting the valve to any position between fully closed and fully open. The valve is fully open when the coil current has reached its maximum value.

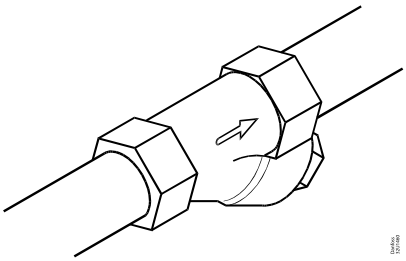
## Features & benefits

- For water, oil and similar neutral liquids
- Linear characteristic throughout the regulation range
- Closes on power failure (fail-safe function)
- Clip on coil
- Ambient temperature: Up to 50 °C
- Coil enclosure: Up to IP67
- Standard 4 – 20 mA or 0 – 10 V DC pilot signal

## Applications

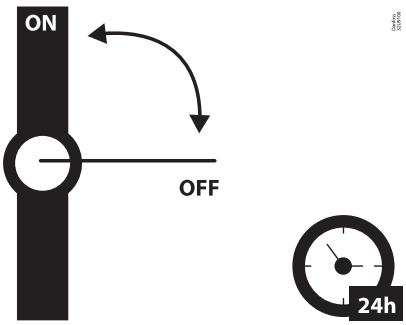
It is recommended to use a filter in front of the valve. Recommended filter 50 mesh (297 microns).

**Figure: 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: 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 / limestone 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 with G thread**

| ISO228/1 connection | Orifice | $K_v$ value | Function |
|---|---|---|---|
| | [mm] | [$m^3$/ h] | NC |
| G¼ | 6 | 0.8 | 032U8052 |
| G⅜ | 6 | 0.8 | 032U8053 |
| G⅜ | 10 | 1.3 | 032U8054 |
| G½ | 10 | 1.3 | 032U8055 |
| G½ | 15 | 2.1 | 032U8056 |
| G¾ | 20 | 5 | 032U8057 |

**Table: Brass, valve body NC with NPT thread**

| ISO228/1 connection | Orifice | $C_v$ value | Function |
|---|---|---|---|
| | [inch] | [US Gal / min] | NC |
| NPT ¼ | ¼ | 0.9 | 032U8062 |
| NPT ⅜ | ¼ | 0.9 | 032U8063 |
| NPT ½ | 9⁄16 | 2.4 | 032U8066 |
| NPT ¾ | ¾ | 5.8 | 032U8067 |

## Accessories code numbers

**Coil**

**Table: Below coils can be used with EV260B**

| Coil | Power consumption | Supply voltage | Enclosure | Features | Code no. |
|---|---|---|---|---|---|
|  | 20 W DC | 24 V full wave rectified | "IP67 only including seal kit 018Z0090" | Terminal box | 018Z6987 |
|  | 20 W DC | 21 – 30 V | "IP65 only including seal kit 018Z0090" | "With signal converter Pilot signal: 0 – 10 V 2 metre cable" | 018Z0290 |
|  | 20 W DC | 21 – 30 V | "IP65 only including seal kit 018Z0090" | "With signal converter Pilot signal: 4 – 20 mA 2 metre cable" | 018Z0291 |

### Universal electronic multi-timer, Type ET 20 M

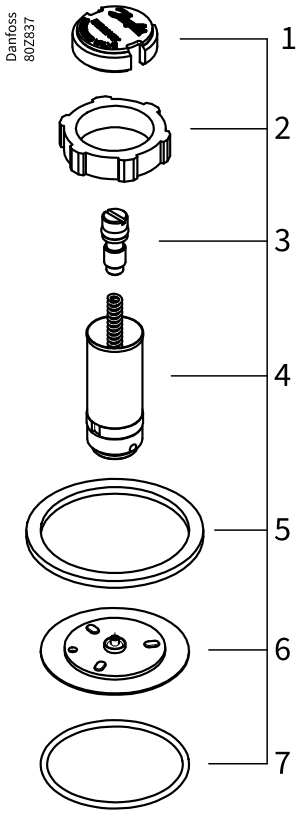
**Figure: Type ET 20 M**


**Table: Type ET 20 M**

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

## Spare parts code numbers

**Table: Spare parts kit**

| Type EV260B 6 – 20 | Spare part kit |
|---|---|
| | Sealing |
| | PTFE |
| EV260B 6 | 032U8039 |
| EV260B 10 | 032U8040 |
| EV260B 15 | 032U8041 |
| EV260B 20 | 032U8042 |
| |  |
| | 1. Locking button<br>2. Locking nut<br>3. Adjustment screw including o-ring<br>4. Complete armature with spring<br>5. O-ring<br>6. Diaphragm<br>7. O-ring |

# Overview

## Product portfolio

**Table: Portfolio overview**

| Features | EV260B |
|---|---|
| |  |
| **Body material** | Brass |
| **DN [mm]** | 6 – 20 |
| **DN [inch]** | ¼ – ¾ |
| **Connection G** | G ⅜" – G1" |
| **Connection NPT** | NPT ¼ – ¾ |
| **Sealing material** | PTFE |
| **Function** | NC |
| **$K_v$ [$m^3$/h]** | 0.8 – 5 |
| **$C_v$ [Gal / min]** | 0.9 – 5.8 |
| **Differential pressure range [bar]** | 0.5 – 10 |
| **Differential pressure range [psi]** | 7 – 156 |
| **Temperature range [°C]** | -10 – 80 |
| **Temperature range [°F]** | 14 – 176 |

# Functions

## Operation

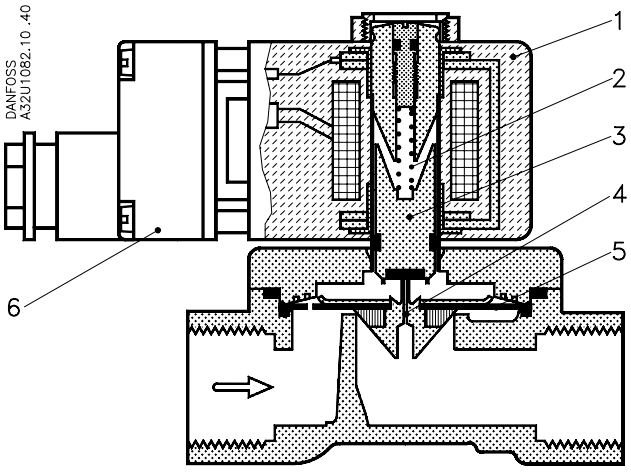
Proportional regulation of the opening and closing of the EV260B valves is achieved through stepless regulation of the coil current and thus of the pulling force of the solenoid coil.
PWM (Pulse Width Regulation) is recommended, to have the best regulation and avoid hysteresis.
When the coil current is increased, the pulling force of the coil (1) will at a certain point exceed the counteracting spring force of the closing spring (2). The armature (3) moves up, opening the pilot orifice (4) in the diaphragm (5), which due to the servo effect follows the armature's movement.
The valve is fully open when the coil current has reached its maximum value.
Through stepless regulation of the coil current the armature can be placed in any position in the armature tube, and the valve thus set to any position between closed and open.
The effective coil current range for EV260B proportional valves without signal converter is approx. 300 – 600 mA.
The EV260B valves are also available with a signal converter built in the coil's terminal box (6). The signal converter's output terminals are connected to the solenoid coil.

The signal converter regulates the coil current so that it is proportional to the input signal (pilot signal).

- The pilot signal may be a
  - 0 – 10 V DC voltage signal or
  - 4 – 20 mA current signal

**NOTE:**
The EV260B is not optimal as shut of valve at low differential pressures and when PTFE seal can be damaged by small particles.

**Figure: Function NC**




| | |
|---|---|
| **1.** | Coil |
| **2.** | Closing spring |
| **3.** | Closing spring |
| **4.** | Pilot orifice |
| **5.** | Diaphragm |
| **6.** | Terminal box |

# Product details

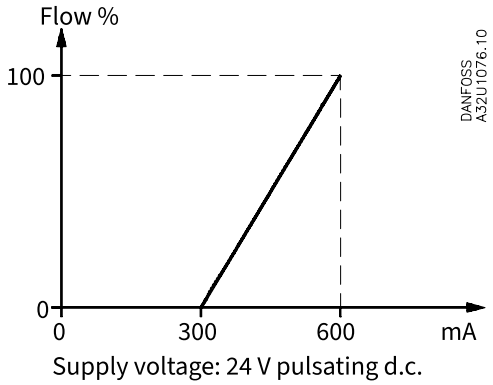
## General data

**Table: Technical data**

| | | |
|---|---|---|
| **Media** | PTFE | For water, oil and similar neutral liquids |
| **Media temperature** | PTFE | -10 – 80 °C / 14 – 176 °F |
| **Ambient temperature** | Up to 55 °C / 122 °F | |
| **$K_v$ value** | DN6 | 0.8 $m^3$/ h |
| | DN10 | 1.3 $m^3$/ h |
| | DN15 | 2.1 $m^3$/ h |
| | DN20 | 5 $m^3$/ h |
| **$C_v$ value** | ¼ inch | 0.9 US gal / min |
| | ⅜ inch | 1.5 US gal / min |
| | 9⁄16 inch | 2.4 US gal / min |
| | ¾ inch | 5.8 US gal / min |
| **Min. opening differential pressure** | 0.5 bar / 7 psi | |
| **Max. opening differential pressure** | 10 bar / 145 psi | |
| **Max. working pressure** | 10 bar / 145 psi | |
| **Max. test pressure** | 15 bar / 217 psi | |
| **Viscosity** | Max. 50 cSt | |
| **Rangeability and selection (DN6 – DN20)** | Since a proportional regulation valve, it is recommended that operation differential pressure is higher than 1 bar and that average (middle) flow by size (DN 6, 10, 15, 20) is selected to be about 50% of full flow at given differential pressure. This will give the best regulation. Regulation in the range 0 – 5% of full flow may shorten the life time or create noise. | |

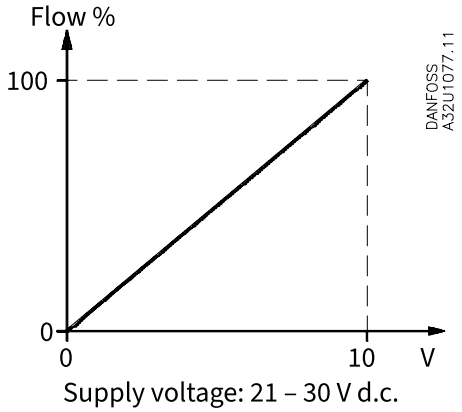
### Signal flow characteristics

**Figure: Coil type BK without signal converter**



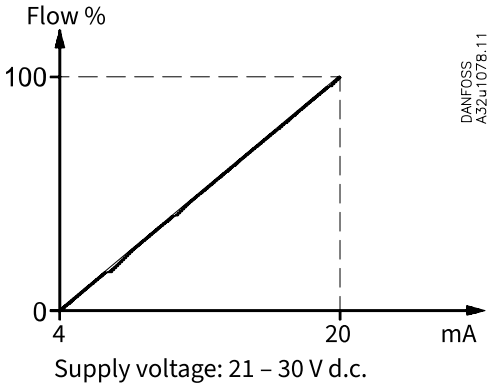

**Coil type BK without signal converter**
The basic version consists of a valve with a coil for pulsating direct current. The supply voltage of 24 V DC can be established with full wave rectified alternating current. The valve begins to open at a coil current of approx. 300 mA and is fully open at a coil current of approx. 600 mA. The ratio between coil current and flow between the two outer points is directly proportional.

**Figure: Coil type BM with signal converter and 0 – 10 V pilot signal**




**Coil type BM with signal converter and 0 – 10 V pilot signal**
The ratio between pilot signal and flow is directly proportional throughout the regulation range.

**Figure: Coil type BL with signal converter and 4 – 20 mA pilot signal**




**Coil type BL with signal converter and 4 – 20 mA pilot signal**
The ratio between pilot signal and flow is directly proportional throughout the regulation range.

## Materials

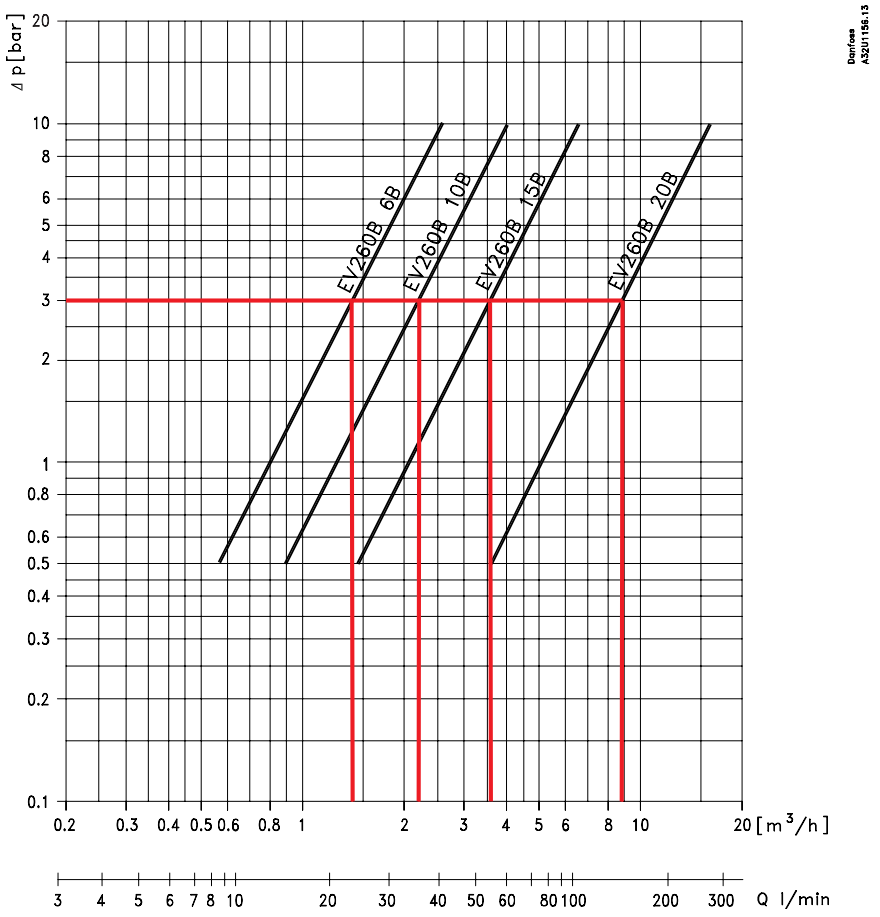
**Table: Materials**

| 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 |
| Spindle | Stainless steel | W.no. 1.4105 / AISI 430FR |
| Spring | Stainless steel | W.no. 1.4568 |
| O-rings | NBR / CR | |
| Valve plate | FKM | |
| Diaphragm | PTFE | |
| Seat and guide ring | PTFE | |

## Capacity

**Example:** Capacity for EV260B 6 at differential pressure of 3 bar: Approx. 1.4 $m^3/h$

**Figure: Capacity diagram**

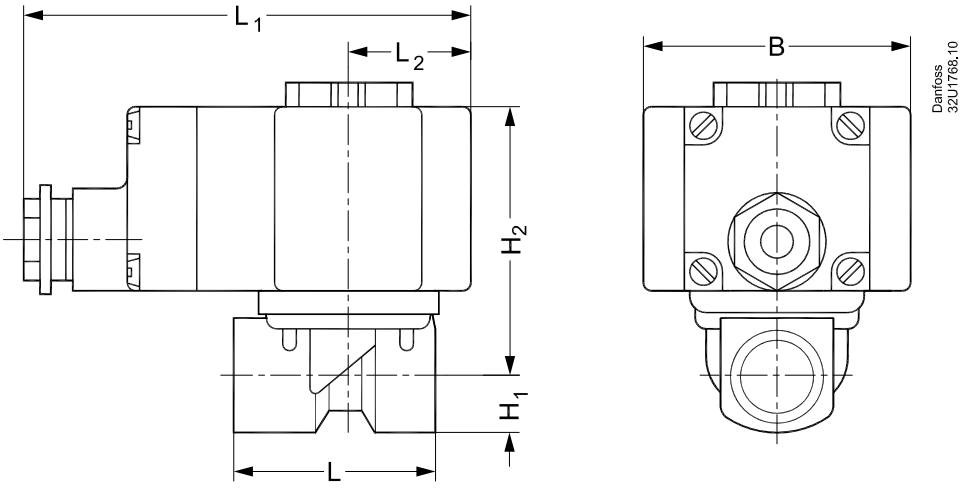


## Dimensions

### Table: Dimension and weight

| Type | Weight gross valve body without signal converter | Weight gross valve body with signal converter | L | $L_1$ with terminal box | $L_1$ with signal converter | $L_2$ | $H_1$ | $H_2$ | B |
|---|---|---|---|---|---|---|---|---|---|
| | [kg] | | [mm] | | | | | | |
| EV260B 6 | 1.02 | 1.22 | 62 | 112 | 128 | 30 | 13 | 71 | 68 |
| EV260B 10 | 1.02 | 1.22 | 62 | 112 | 128 | 30 | 13 | 71 | 68 |
| EV260B 15 | 1.17 | 1.37 | 81 | 112 | 128 | 30 | 13 | 71 | 68 |
| EV260B 20 | 1.71 | 1.91 | 98 | 112 | 128 | 30 | 13 | 71 | 68 |

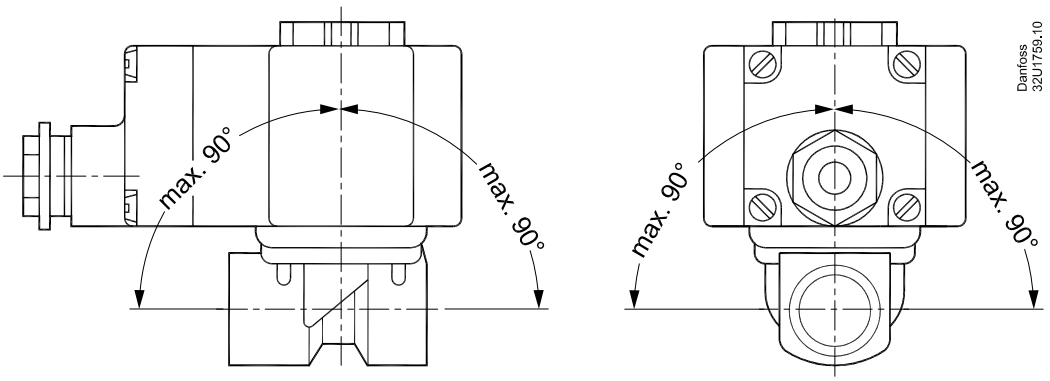
### Figure: Dimension




## Installation

## Mounting

### Figure: Mounting angle



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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.

| Approval type | Title | Certification body | Approval topic |
|---|---|---|---|
| Manufacturer's Declaration | Danfoss MD 033F1140.01 | Danfoss | EU RoHS |
| Manufacturer's Declaration | Danfoss MD 033F0232.AA | Danfoss | PED, Pressure |
| Manufacturer's Declaration | Danfoss MD 033F0699.00 | Danfoss | China RoHS |
| Export Control Declaration | Solenoid valves – Polymer, Bronze, Brass, Cast iron | Danfoss | |
| EU Declaration | Danfoss EU 033F0683.05 | Danfoss | LVD, EU RoHS |
| UA Declaration | Danfoss UA 8481 | Danfoss | UA RoHS |
| Pressure Safety Certificate | LLC CDC EURO-TYSK UA.TR.089.1015.02-22 | LLC CDC EURO TYSK - Ukraine | PED, Pressure |

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