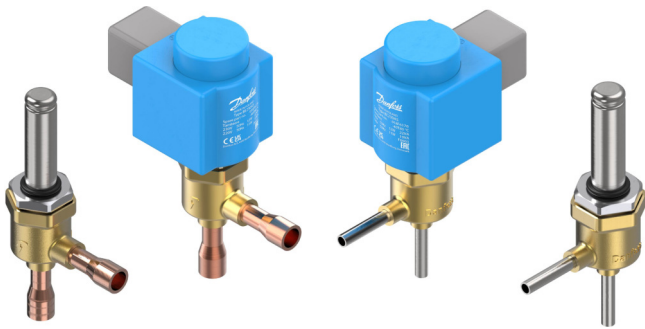


## Data Sheet

Solenoid Valve  
Type **EVT**

EVT high pressure range is a direct or servo operated solenoid valve specially designed to fit into CO<sub>2</sub> transcritical refrigeration systems. They can be applied in following applications:

- EVT 1.2 direct operated for oil return, pressure equalization/relief control, high pressure hot gas bypass/dump and hot gas defrost.
- EVT 2.0 and 3.0 servo operated for high pressure hot gas bypass/dump and hot gas defrost application.

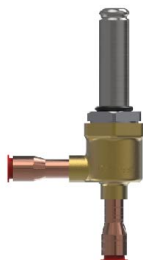

EVT valves and coils are sold separately.

**Features**

- Direct and servo operated mini piston solenoid valve with compact construction
- Simple and fast mounting of Danfoss Clip-on coil
- Designed for media temperature up to 150°C
- Working pressure up to 140 bar with standard coils
- Copper solder connections for brazing
- Stainless steel connections for Swagelok fittings
- Body material in ECO brass (lead free < 0.1%)
- Robust design ensures long lifetime
- Supplied in version normally closed (NC)
- In accordance with
  - RoHS II
  - REACH
  - LVD and PED

## Portfolio overview

Table 1: Portfolio overview

Features	EVT	EVT
		
Connection	Copper	Stainless steel
DN [mm]	1.2 – 3.0	1.2 – 3.0
Connection	ODF 3/8"	ODM 6mm
Max. working pressure [bar]	140	140
Function	NC	NC

## Functions

### Normally closed (NC)

#### Direct operated

EVT 1.2 is direct operated. This means that the valve can operate at 0bar differential pressure.

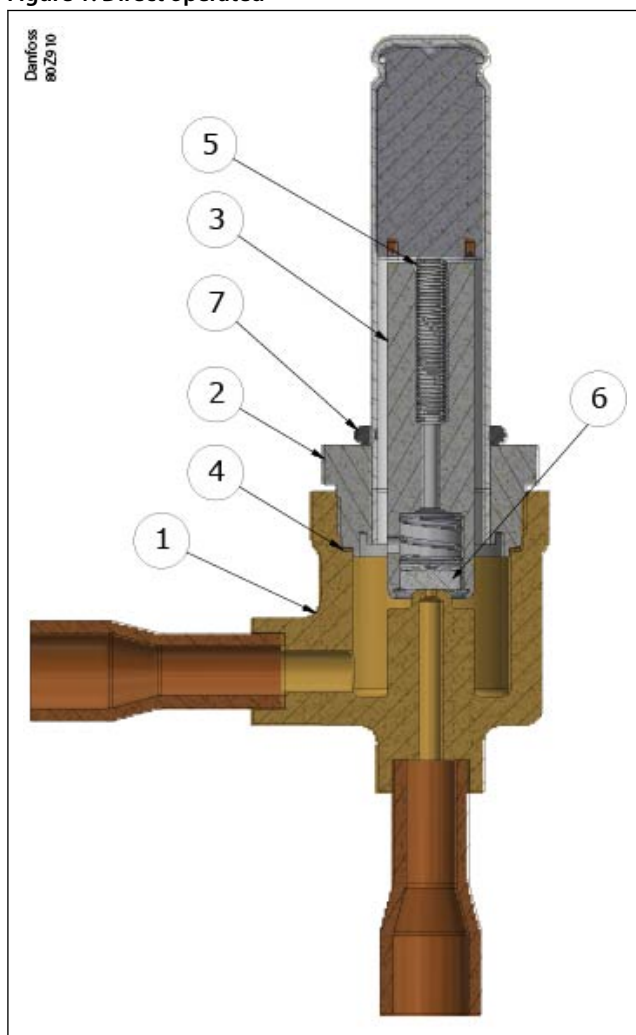
#### **Coil voltage disconnected (closed):**

When the voltage to the coil is disconnected, the armature (3) with the seat plate (6) is pressed down against the valve orifice by the closing spring (5) and inlet pressure. The valve will be closed for as long as the coil is disconnected.

#### **Coil voltage connected (open):**

The valve opens directly for full flow when the voltage is applied to coil, the armature (3) with seat plate is lifted clear of the valve orifice. The valve will be open for as long as there is voltage to the coil.

Figure 1: Direct operated



1	Valve housing
2	Cover
3	Armature assembly
4	Gasket
5	Armature spring
6	Seat plate
7	Coil O-ring

#### Servo operated

EVT 2.0 and 3.0 is servo operated piston solenoid valves. The servo piston principle results in a fast operating and compact valve that can open against a high differential pressure.

#### **Coil voltage disconnected (closed):**

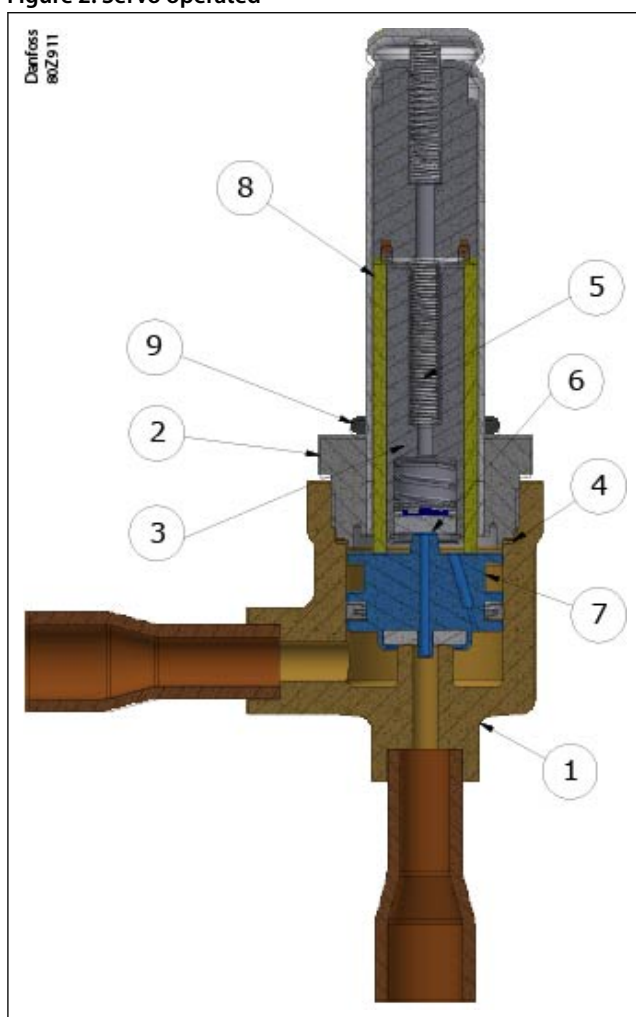
## Solenoid Valve, Type EVT

When the coil is disconnected, the armature (3) with seat plate (6) is pressed down against the pilot orifice by the armature spring (8). Via the equalization orifice in the piston (5), the pressure above the piston rises to the same value as the inlet pressure and the piston closes the main orifice. The valve will be closed for as long as the coil is disconnected.

### Coil voltage connected (open):

When current is applied to the coil, the armature (3) is drawn up into the magnetic field and opens the pilot orifice. This relieves the pressure above the piston (7), i.e. the space above the piston becomes connected to the outlet side of the valve. The differential pressure between inlet and outlet sides then presses the piston away from the main orifice and now the main orifice opens for full flow. Therefore, a minimum differential pressure of 2 bar is necessary to open the valve and 0.4 bar to keep it open.

Figure 2: Servo operated



1	Valve housing
2	Cover
3	Armature assembly
4	Gasket
5	Armature spring
6	Seat plate
7	Piston assembly
8	Guide pin
9	Coil O-ring

## Media

Table 2: Media

Refrigerants	R744 (CO <sub>2</sub> )
Oil	POE 60cST, 85cST (piston compressors); PAG 68cST, 100cST (piston and rotary compressors)
Media temperature range	-40 - 150 °C / -40 - 302 °F
Max. working pressure (PS/MWP)	140 bar / 2030.5 psi

**i NOTE:**

- Media temperature of 0°C or higher when operating the valve for oil management lines.
- Danfoss recommends that a suitable filter or filter drier (< 40 microns) should be installed ahead of each solenoid valve to keep scale, solder material and other foreign dirt and particles out of the valve.

## Product specification

### Technical data

#### Ambient temperature

-40°C to 50°C

#### Max. working pressure

140 bar with copper connections and stainless steel connections.

#### Flow capacity

- For  $K_v$  values please refer to the tables in Ordering.
- The  $K_v$  value of the water flow in [m<sup>3</sup>/h] at a pressure drop across valve of 1 bar,  $\rho = 1000 \text{ kg/m}^3$ .

#### Opening differential pressure range

Table 3: MOPD

Type	Opening differential pressure with standard coil $\Delta P$ [bar]	
	Min.	Max. (=MOPD) liquid
		220V-230V 50Hz / 018F6176
EVT 1.2 NC	0	110
EVT 2.0 NC	2	110
EVT 3.0 NC	2	110

#### NOTE:

EVT 2.0 and 3.0 need 0.4 bar to keep open and can't be used as relief valve if the differential pressure is lower than 0.4 bar.

### Valve selection based on capacity calculation

As for extended capacity calculations and valve selection based on capacities and refrigerants, please refer to Coolselector®2. Rated and extended capacities are calculated with Coolselector®2 calculation engine to ARI standards with the ASEREP equations based on laboratory measurements of selected valves.

### Identification

Figure 3: Identification

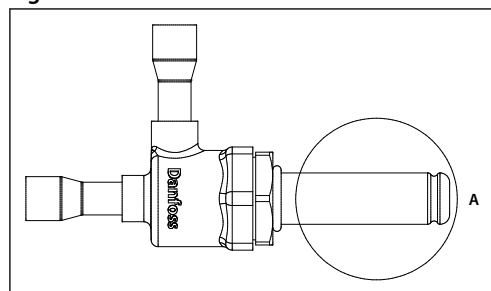
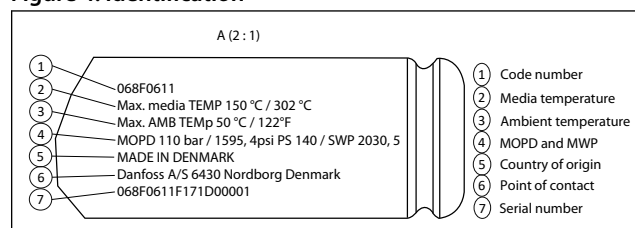


Figure 4: Identification



### Materials

Table 4: Materials

Pos. no.	Descriptions	Materials
1	Valve housing	ECO Brass
2	Cover	Stainless steel
3	Armature assembly	Stainless steel
4	Gasket	Copper
5	Spring	Stainless steel
6	Seat plate	PEEK
7	Piston	ECO Brass
8	Guide pin	Stainless steel

## Dimension and Weight

Figure 5: EVT ODF

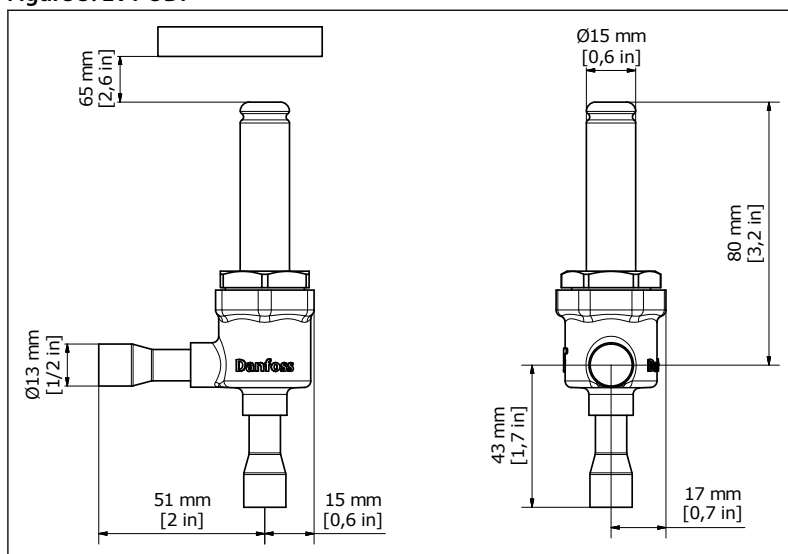


Figure 6: EVT ODM

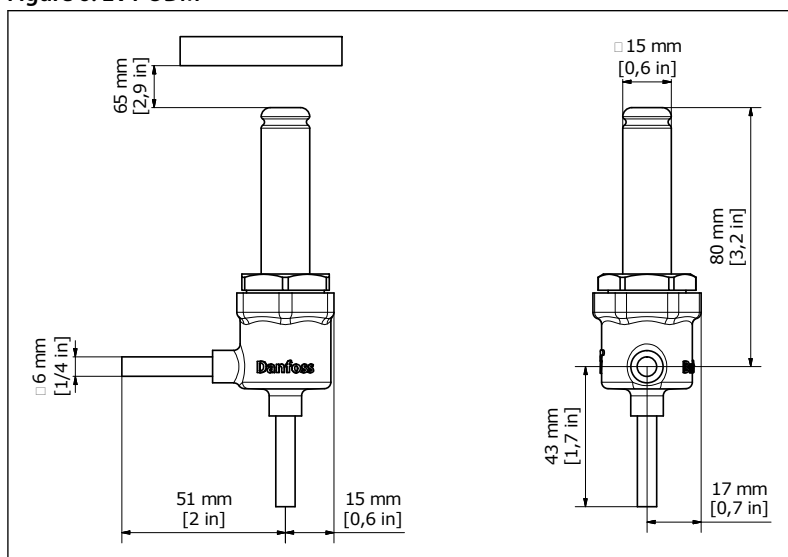


Table 5: Dimension and weight

Type	Net weight without coil
	[kg]
EVT 1.2	0.22 kg
EVT 2.0	0.24 kg
EVT 3.0	0.24 kg

**NOTE:**

Net weight of coil 018F6176 is approx. 0.27 kg.

## Ordering

### Parts program

Type	Connection size		K <sub>v</sub> value [m <sup>3</sup> /h]	Code no.	Packing
	ODF [in]	ODM [mm]			
	Copper	Stainless Steel			
EVT 1.2	3/8	-	0.05	068F0600	Multi-pack
				068F0625	I-pack
	-	6		068F0622	Multi-pack
				068F0626	I-pack
EVT 2.0	3/8	-	0.1	068F0601	Multi-pack
				068F0627	I-pack
	-	6		068F0621	Multi-pack
				068F0628	I-pack
EVT 3.0	3/8	-	0.23	068F0611	Multi-pack
				068F0629	I-pack
	-	6		068F0620	Multi-pack
				068F0630	I-pack

### Coils

Table 6: Coils

Type	Tambient	Supply voltage	Voltage variation	Frequency	Power consumption	Code no.
	[°C]	[V]		[Hz]		
BE230AS	-40T50	220	-15%, +10%	50	11 W	018F6176
		230	-15%, +10%	50	12 W	

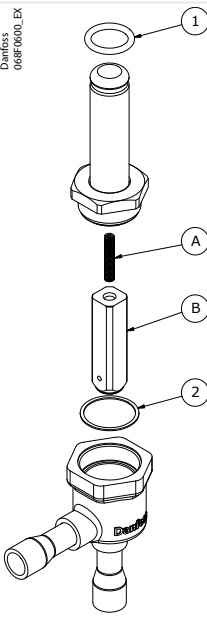
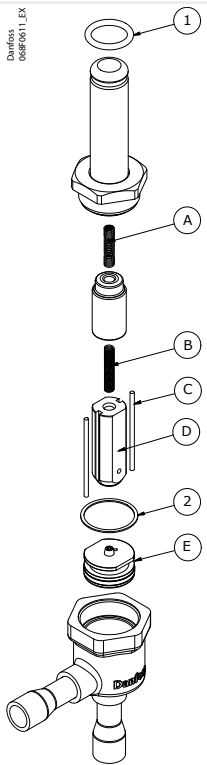


## Solenoid Valve, Type EVT

### Accessories

### Spare parts kits

Table 7: Spare part kits

Type	EVT 1.2	EVT 2.0 & 3.0
Seal Kit	068F0697	068F0697
Service Kit	068F0698	068F0699
	 <p><b>Seal kit contains:</b></p> <ol style="list-style-type: none"> <li>1. Coil O-ring</li> <li>2. Gasket</li> </ol> <p><b>Service kit contains:</b></p> <p>A Spring B Armature</p>	 <p><b>Seal kit contains:</b></p> <ol style="list-style-type: none"> <li>1. Coil O-ring</li> <li>2. Gasket</li> </ol> <p><b>Service kit contains:</b></p> <p>A Spring B Spring C Guided pins D Armature E Piston</p>

## Certificates, declarations and approvals

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.

Some approvals may change over time. You can check the most current status at [danfoss.com](https://danfoss.com) or contact your local Danfoss representative if you have any questions.

### **Valid approvals**

Table 8: Valid approvals

File name	Document type	Document topic	Approval authority
033F0688	EU declaration	LVD, EMC	Danfoss
033F1035	EU declaration	PED	Danfoss

## 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).

Any information, including, but not limited to information on selection of product, its application or use, product design, weight, dimensions, capacity or any other technical data in product manuals, catalogues descriptions, advertisements, etc. and whether made available in writing, orally, electronically, online or via download, shall be considered informative, and is only binding if and to the extent, explicit reference is made in a quotation or order confirmation. Danfoss cannot accept any responsibility for possible errors in catalogues, brochures, videos and other material. Danfoss reserves the right to alter its products without notice. This also applies to products ordered but not delivered provided that such alterations can be made without changes to form, fit or function of the product. All trademarks in this material are property of Danfoss A/S or Danfoss group companies. Danfoss and the Danfoss logo are trademarks of Danfoss A/S. All rights reserved.