



# Solenoid valve

## EV250BW

Servo operated with assist to open from 0 to 10 bar for drinking water applications

## Description

EV250BW 10,12,18 & 22 with assisted lift can operate from 0 – 10 bar differential pressure. This 2/2-way valve program is especially to use in applications with low differential pressure, but demanding moderate flow rates.

This valve type is designed with EPDM seal, lead free dezincification resistant Eco brass for drinking water applications:

- For water supply
- Houses and large apartments
- Kitchens and bathrooms
- Commercial buildings
- Industrial buildings
- Zoning
- Laundry
- Dish washing
- Main inlet valves
- Machine and food processing

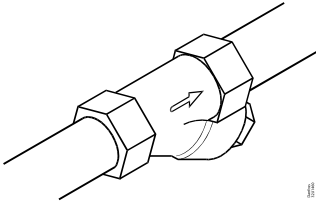
## Features & benefits

- Designed for drinking water
- Clip on coil
- Ambient temperature: Up to 50 °C
- Coil enclosure: Up to IP67
- Water hammer damped
- Body material in Eco brass (lead free < 0.1%) and dezincification resistance
- New generation EPDM sealings recommended for drinking water

## Applications

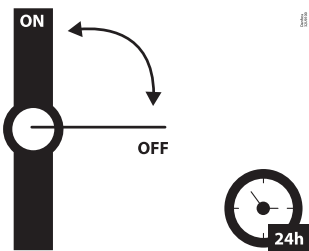
It is recommended to use a filter in front of the valve. Recommended filter 50 mesh (297 microns).

**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.

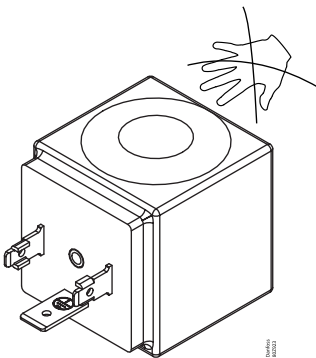
**Figure: Exercise - Valve on/of**



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

**Figure: Caution - Coil Risk**



### **WARNING:**

Risk of burns/fire if used for a continuous power-on time through hot coil surface.

- I do not touch the coil with bare hands
- I keep the coil away from highly flammable substances with low ignition point

## Ordering

### Product code numbers

Table: Eco brass, valve body NC and NO

Type	Connection standard	Connection type	Connection size [in]	Orifice size [mm]	Kv value [m <sup>3</sup> /h]	Seal Material	Function	Ambient temperature max. [°C]	Actuator	Code number
EV250BW	ISO 228-1	G	3/8	10.00	2.500	EPDM	NC	50	BW	132U2450
EV250BW	ISO 228-1	G	3/8	10.00	2.500	EPDM	NO	50	BW	132U2451
EV250BW	ISO 228-1	G	1/2	12.00	4.000	EPDM	NC	50	BW	132U2452
EV250BW	ISO 228-1	G	1/2	12.00	4.000	EPDM	NO	50	BW	132U2453
EV250BW	ISO 228-1	G	3/4	18.00	6.000	EPDM	NC	50	BW	132U2454
EV250BW	ISO 228-1	G	3/4	18.00	4.900	EPDM	NO	50	BW	132U2455
EV250BW	ISO 228-1	G	1	22.00	7.000	EPDM	NC	50	BW	132U2456
EV250BW	ISO 228-1	G	1	22.00	5.200	EPDM	NO	50	BW	132U2457

### Accessories code numbers

#### Coil

Figure: BB, clip on



Table : BB, clip on

Type	T <sub>ambient</sub> [°C]	Supply voltage [V]	Voltage variation	Frequency [Hz]	Control	Power consumption		Code no.
						[W]	[VA]	
BB024AS	-40 – 80	24	-15%, +10%	50	NO, NC	11	19	018F7358
BB230AS	-40 – 80	220 – 230	-15%, +10%	50	NO, NC	11	19	018F7351
BB012DS	-40 – 50	12	±10%	DC	NC, NO, UN (Latching)	13	–	018F7396
BB024DS	-40 – 50	24	±10%	DC	NC, NO, UN (Latching)	16	–	018F7397

## EEC controller and coil unit

Figure: EEC controller and coil unit



Table: EEC controller and coil unit

Type	T <sub>ambient</sub> [°C]	Supply voltage [V]	Voltage variation	Frequency [Hz]	Control	Power consumption [W]	Code no.
BE240CS	-25 – 55	208 – 240	±10%	60	NC, NO	4	018F6783
				50			

## Cable plug

Figure: Cable plug



Table: Cable plug

Cable plug size	Description	Code no.
DIN 18	Cable plug IP67	042N1256

## Universal electronic multi-timer, type ET20M

Figure: Type ET20M



Table: Type ET20M

Applications	Voltage [V AC]	To use with coil	Ambient temperature [°C]	Code no.
External adjustable timings from 1 to 45 minutes with 1 to 15 seconds drain open. With manual override (test button). Electrical connection DIN 43650 A / EN 175 301-803-A	24 – 240	BB	-10 – 50	042N0185

## Spare parts code numbers

Table: Spare part kits DN10 – 22, Eco brass and EPDM sealing



Type	Actuator kit NC	Actuator kit NO
EV250BW DN 10 G 3/8	132U8012	132U8017
EV250BW DN 12 G 1/2	132U8012	132U8017
EV250BW DN 18 G 3/4	132U8018	132U8019
EV250BW DN 22 G 1	132U8018	132U8019
	<p>1 O-ring coil                  2 4 x screws                  3 Armature tube                  4 O-ring                  5 4 x screws for cover                  6 Armature + spring                  7 Assist Spring                  8 Diaphragm</p>	<p>1 O-ring coil                  2 4 x screws                  3 Complete NO unit with cover, NO actuator, o-ring, 4 screws, diaphragm, assist spring</p>

Table: Filters for G1/2 and G3/4 (NC+NO)

Type	G1/2	G3/4
EV250BW DN 12 G1/2	132U8015	-
EV250BW DN 18 G3/4	-	132U8020
	<p>H-Filter 1/2-50/20 H14</p>	<p>H-Filter 3/4-50/20 H14</p>

## Overview

### Product portfolio

Features	EV250BW NC	EV250BW NO
		
<b>Body material</b>	Eco brass	Eco brass
<b>DN [mm]</b>	10 – 22	10 – 22
<b>Connection</b>	G $\frac{3}{8}$ " – G1"	G $\frac{3}{8}$ " – G1"
<b>Sealing material</b>	EPDM	EPDM
<b>Function</b>	NC	NO
<b>K<sub>v</sub> [m<sup>3</sup>/h]</b>	2.5 – 7	2.5 – 5.2
<b>Differential pressure range [bar]</b>	0 – 10	0 – 10
<b>Temperature range [°C]</b>	-30 – 90	-30 – 90

## Functions

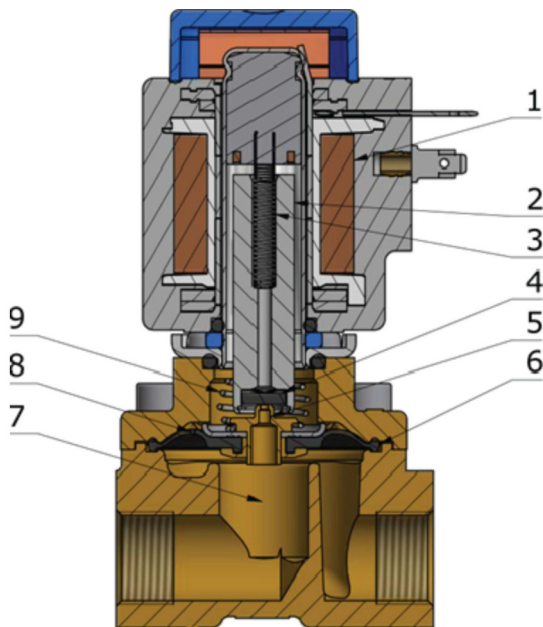
### Function NC

#### 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) as soon as the pressure across the diaphragm is equivalent to the inlet pressure below, due to the larger diameter of the upper side and/or the tension of the closing spring (3). The valve will be closed as long as the voltage to the coil is disconnected.

#### Coil voltage connected (open)

When 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 above the diaphragm (6) drops as the pilot orifice is larger than the equalizing orifice. Therefore, the diaphragm is 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 assisted lift (9). The valve will be open for as long as there is voltage to the coil.



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

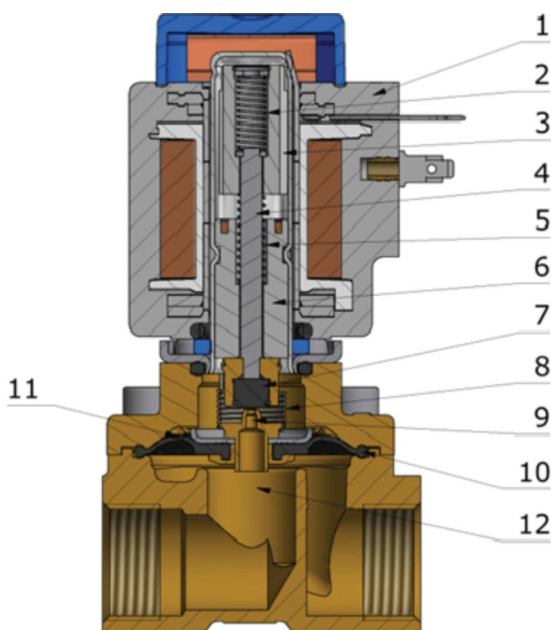
## Function, NO

### Coil voltage disconnected (valve is open)

When the supply voltage to the coil (1) is disconnected, the valve plate (7) are lifted clear of the pilot orifice (9) if there is a differential pressure across the valve. The pressure above the diaphragm (10) drops as the pilot orifice is larger than the equalizing orifice. Therefore the diaphragm is lifted clear of the main orifice (12). If there is no differential pressure across the valve, the opening spring (5) draws the diaphragm (10) clear of the main orifice (12) using the assisted lift (8). The valve will be open for as long as there is no voltage to the coil.

### Coil voltage connected (valve is closed)

When the supply voltage to the coil (1) is connected, the armature (3) will compress the opening spring (5) and the closing spring will push the spindle (4) valve plate down against the pilot orifice (9). The pressure across the diaphragm (10) is built up via the equalizing orifice (11). The diaphragm closes the main orifice (12) as soon as the pressure across the diaphragm is equivalent to the inlet pressure below, due to the larger diameter of the upper side and / or the tension of the closing spring (2). The valve will be closed as long as coil voltage is connected.



1	Coil
2	Closing spring
3	Armature
4	Spindle
5	Opening spring
6	Armature stop
7	Valve plate
8	Assisted lift
9	Pilot orifice
10	Diaphragm
11	Equalizing orifice
12	Main orifice

## Product details

### General data

Table: Technical data

<b>Media</b>	EPDM	Drinking water
<b>Media temperature</b>	EPDM	-30 – 90 °C
<b>Ambient temperature</b>	Up to 50 °C	
<b>K<sub>v</sub> value</b>	DN10	2.5 m <sup>3</sup> /h
	DN12	4 m <sup>3</sup> /h
	DN18 NC	6 m <sup>3</sup> /h
	DN18 NO	4.9 m <sup>3</sup> /h
	DN22 NC	7 m <sup>3</sup> /h
	DN22 NO	5.2 m <sup>3</sup> /h
<b>Min. Opening differential pressure</b>	0 bar	
<b>Max. Opening differential pressure</b>	Up to 10 bar	
<b>Max. working pressure</b>	Up to 10 bar (Equal to max. differential pressure)	
<b>Max. test pressure</b>	15 bar	
<b>Viscosity</b>	Max. 50 cSt	

Table: Time to open/close NC and NO

Type	EV250BW 10	EV250BW 12	EV250BW 18	EV250BW 22
Time to open [ms] <sup>(1)</sup>	100	100	150	150
Time to close [ms] <sup>(1)</sup>	100	100	100	100

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

### Materials

Table: Material

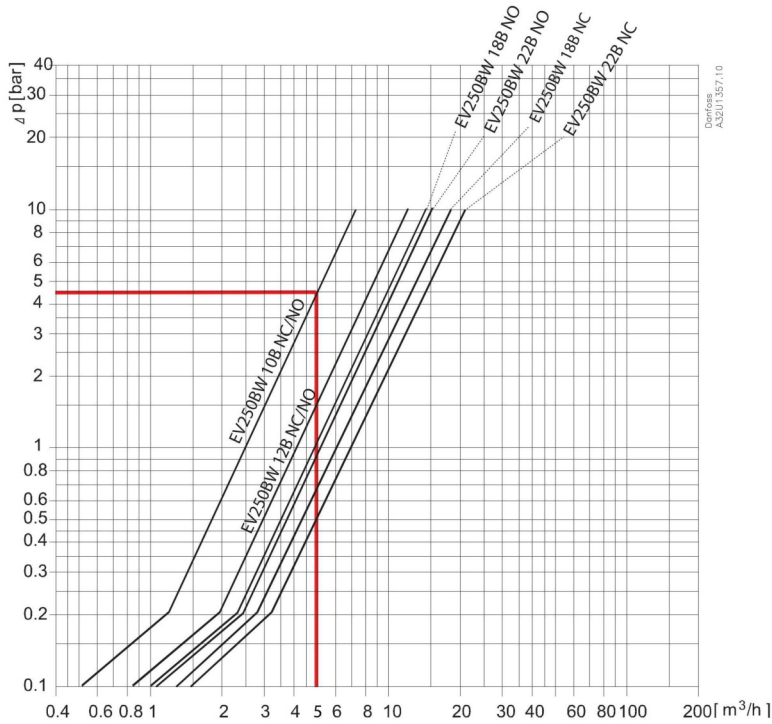
Components	Materials	Specifications
Valve body/cover	Eco brass	CW724R
Armature/armature stop	Stainless steel	W. no. 1.4105 / AISI 430FR
Armature tube	Stainless steel	W. no. 1.4306 / AISI 304L
Springs	Stainless steel	W. no. 1.4310 / AISI 301
O-ring	EPDM	–
Valve plate	EPDM	–
Diaphragm	EPDM	–

## Capacity

### Capacity diagram

Example, water: EV250BW 10 NC at 4.5 bar diff. pressure: Approx: 5 m<sup>3</sup>/h

Figure: Capacity diagram



## Pressure and temperature data

Table: Differential pressure range

Connection ISO228/1	Function	Differential pressure range min. to max. [bar]	
		Coil type	
		BB AC, BY, BE AC, BG AC/DC, BZ, BO	BB/BE/BY DC
		[Bar]	[Bar]
G <sup>3</sup> / <sub>8</sub> – G1	NC	0 – 10	0 – 6
	NO	0 – 10	0 – 10

## Dimensions

Table: Dimension and weight - Eco brass NC and NO

Type	Weight gross valve body without coil	L [mm]	B [mm]	B <sub>1</sub> [mm] / Coil type		H [mm]	H <sub>1</sub> [mm]
	[kg]			BB / BE	BG		
EV250BW 10	0.6	58	52.3	46	68	91	12.5
EV250BW 12	0.6	58	52.3	46	68	91	12.5
EV250BW 18	0.8	90.5	58	46	68	92	18
EV250BW 22	1.1	90	58	46	68	69.3	22.3

Figure: Dimension

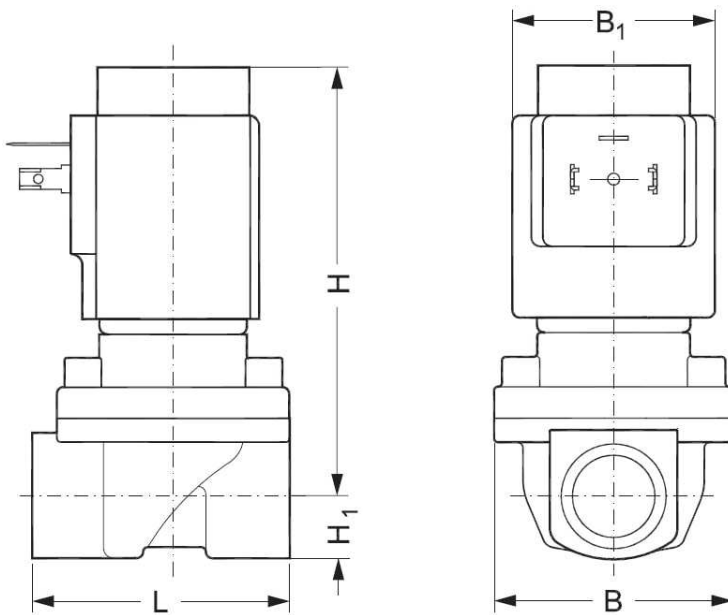
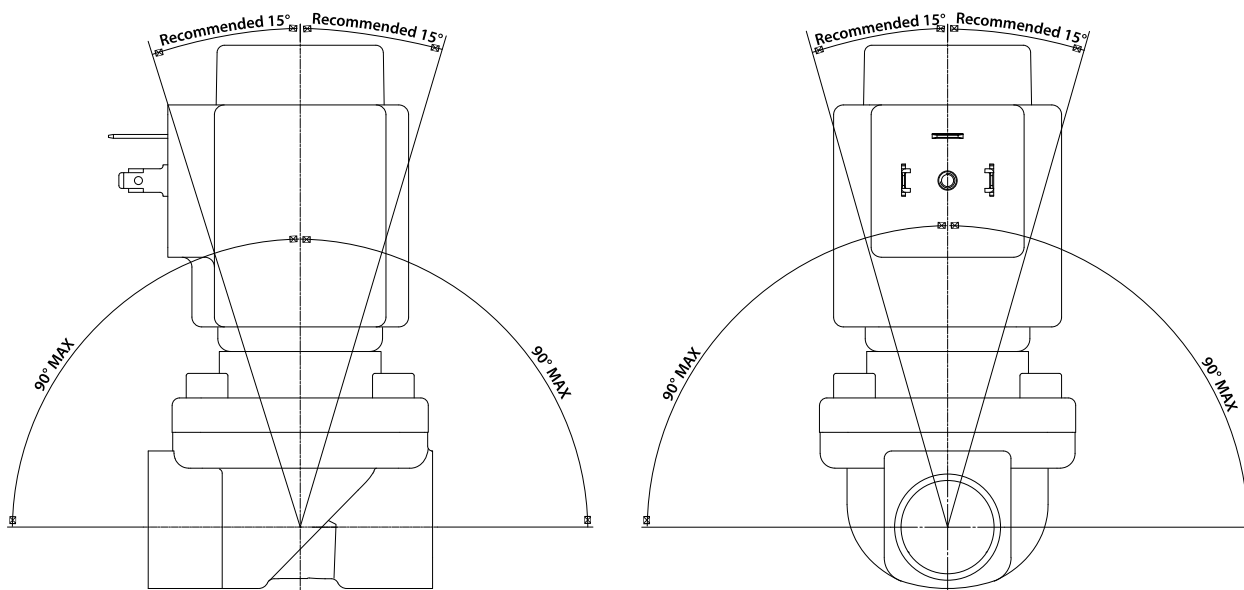


Figure: Mounting angle



## 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.

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
Hygienic Certificate	<a href="#">PZH B-BK-60110-1266/2023</a>	PZH - National Institute of Hygiene	Drinking Water
Hygienic Certificate	<a href="#">WRAS 2209035</a>	WRAS - Water Regulations Advisory Scheme	Drinking Water
Hygienic Certificate	<a href="#">Drinking water safety permit, Danfoss A/S, solenoid valve family No: 50326-6/2023/KTEF</a>	NNGYK - National Public Health & Pharmaceutical Center, Hungary	Drinking Water
Manufacturer's Declaration	<a href="#">Danfoss MD 033F0232.AA</a>	Danfoss	PED, Pressure
Hygienic Certificate	<a href="#">RISE SC0155-18</a>	RISE - Research Institute of Sweden AB	Drinking Water
Hygienic Certificate	<a href="#">SINTEF 3468</a>	SINTEF - SINTEF Byggforsk	Drinking Water
Manufacturer's Declaration	<a href="#">Danfoss MD 033F1135.00</a>	Danfoss	Drinking Water
Export Control Declaration	<a href="#">Solenoid valves – Polymer, Bronze, Brass, Cast iron</a>	Danfoss	
EU Declaration	<a href="#">Danfoss EU 033F0683.05</a>	Danfoss	LVD, EU RoHS
UA Declaration	<a href="#">Danfoss UA 8481</a>	Danfoss	UA RoHS
Mechanical Safety Certificate	<a href="#">UL MH7648</a>	UL - Underwriters Laboratories inc.	
Pressure Safety Certificate	<a href="#">LLC CDC EURO-TYSK</a> <a href="#">UA.TR.089.1015.02-22</a>	LLC CDC EURO TYSK - Ukraine	PED, Pressure

## Drinking water approvals

### Figure: Rise



Valves are certified by RISE, notified body 1002. Valid in Denmark and Sweden. In accordance with Boverket Building Regulations (BBR 21, 2014-06-17) Certificate number SCO155-18

### Figure: SINTEF



Valves are certified by SINTEF. Valid in Norway. In accordance with NKB Product rules nr. 13, pkt. 3.2 – 3.6:

- NT VVS 100, pkt. 6.4.2 & 6.4.8
- EN ISO 6509

### Figure: DTI



Inspection by DTI

### Figure: ACS



Valves are certified by Carso according to ACS guidelines, Circulaire 2002/571.

### Figure: PZH



Hygienic certificate B-BK-60210-1275/19. Issued by Polish National Institute of Public health (PZH).

Wetted materials in accordance with 4MS (4 member states Germany, Holland, France and UK), DVGW, BWGL, KTW and W270.

### Figure: WRAS



Valves are examined, tested and found, when correctly installed, to comply with the requirements of the United Kingdom Water Supply (Water Fittings) Regulations and Scottish Water Byelaws."

## Contact details

### Online support

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



#### The Danfoss Design center

Discover the Design Center, our advanced digital platform that streamlines product selection. With integrated tools and enhanced type pages, it's simpler than ever to access product information and documentation, and to select the right products. Check the availability of Danfoss products at partner locations and enjoy seamless transitions from selection to purchase with our basket-to-basket functionality. Whether you're buying from our distributors or directly from the Product Store, the Design Center simplifies your experience. Learn more at: [designcenter.danfoss.com](https://designcenter.danfoss.com).



#### The Danfoss product store

The Danfoss Product Store is a one-stop shop available 24/7 for our customers, no matter where you are in the world or what area of industry you work in. Browse our catalog, check product details and documentation, view your prices and product availability, and quickly finalize your purchase. Start browsing at: [store.danfoss.com](https://store.danfoss.com).



#### Danfoss Partner Portal/Product Data tool

Designed to support you with easy access to product data extracts, essential resources, tools, and information. The Partner Portal provides a centralized hub for product documentation, training materials, marketing assets, and technical support, ensuring you have everything you need to succeed and grow your business with Danfoss. The Partner Portal is available 24/7 at: [partner.danfoss.com](https://partner.danfoss.com) and is ready to support your business.



#### Find technical documentation

Find technical documentation you need to get your project up 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: [documentation.danfoss.com](https://documentation.danfoss.com).



#### 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. Find your local Danfoss website here: [learning.danfoss.com](https://learning.danfoss.com).



#### 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: [danfoss.com](https://danfoss.com).

#### Danfoss A/S

Climate Solutions . danfoss.com . +45 7488 2222

---

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 description, 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 products. 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.

---