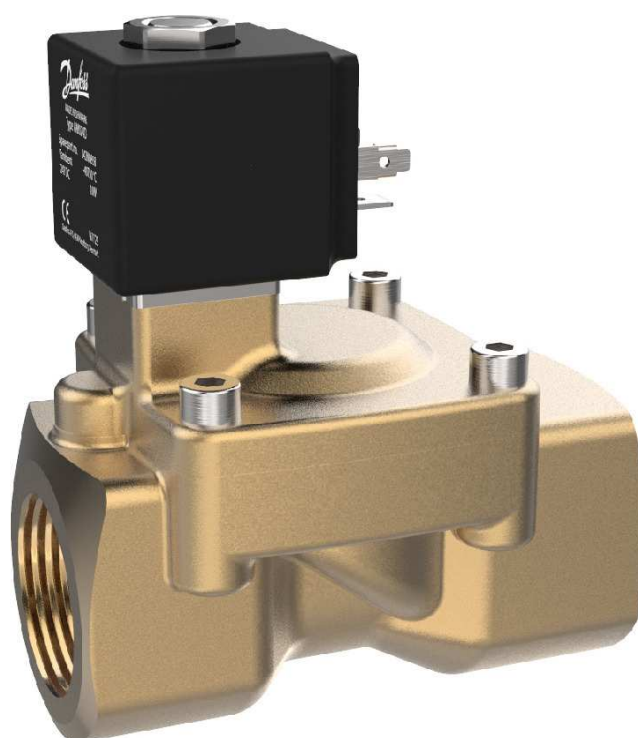




Solenoid valve

EV220A

Indirect servo operated for compact installation in various applications

Description

EV220A is a compact servo-operated 2/2-way solenoid valve program, especially designed for use in machines and equipment with limited space.

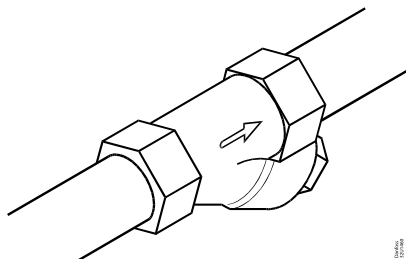
Features & benefits

- For water, oil, compressed air and similar neutral media
- Screw on coil
- Ambient temperatures: Up to 50 °C
- Enclosure: Up to IP65
- Low power consumption
- Liquid hammer damped

Applications

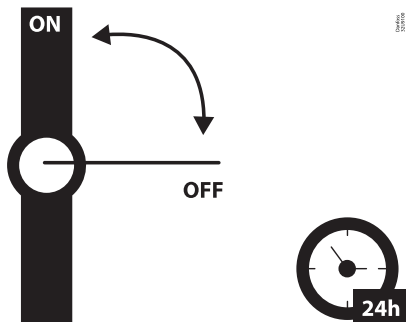
It is recommended to use a filter in front of the valve. Recommended filter 50 mesh (297 microns).

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/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 / 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

Connection standard	Connection type	Connection size [in]	Orifice size [mm]	Kv value [m ³ /h]	Seal Material	Function	Code number
ISO 228-1	G	1/4	6.00	1.000	EPDM	NC	042U4001
ISO 228-1	G	3/8	6.00	1.000	EPDM	NC	042U4002
ISO 228-1	G	1/4	6.00	1.000	NBR	NC	042U4003
ISO 228-1	G	3/8	6.00	1.000	NBR	NC	042U4004
ISO 228-1	G	1/4	6.00	1.000	FKM	NC	042U4005
ISO 228-1	G	3/8	10.00	1.600	EPDM	NC	042U4011
ISO 228-1	G	1/2	10.00	1.600	EPDM	NC	042U4012
ISO 228-1	G	3/8	10.00	1.600	NBR	NC	042U4013
ISO 228-1	G	1/2	10.00	1.600	NBR	NC	042U4014
ISO 228-1	G	3/8	10.00	1.600	FKM	NC	042U4015
ISO 228-1	G	1/2	10.00	1.600	FKM	NC	042U4016
ISO 228-1	G	1/2	12.00	2.500	EPDM	NC	042U4021
ISO 228-1	G	1/2	14.00	4.000	EPDM	NC	042U4022
ISO 228-1	G	1/2	12.00	2.500	NBR	NC	042U4023
ISO 228-1	G	1/2	14.00	4.000	NBR	NC	042U4024
ISO 228-1	G	1/2	12.00	2.500	FKM	NC	042U4025
ISO 228-1	G	1/2	14.00	4.000	FKM	NC	042U4026
ISO 228-1	G	3/4	18.00	7.000	EPDM	NC	042U4031
ISO 228-1	G	3/4	18.00	7.000	NBR	NC	042U4032
ISO 228-1	G	3/4	18.00	7.000	FKM	NC	042U4033
ISO 228-1	G	1	22.00	7.000	EPDM	NC	042U4041
ISO 228-1	G	1	22.00	7.000	NBR	NC	042U4042
ISO 228-1	G	1	22.00	7.000	FKM	NC	042U4043
ISO 228-1	G	1/4	6.00	1.000	NBR	NO	042U4053
ISO 228-1	G	1/4	6.00	1.000	FKM	NO	042U4055
ISO 228-1	G	1	22.00	7.000	EPDM	NC	042U4057
ISO 228-1	G	1/2	12.00	2.500	MIX	NO	042U406032
ISO 228-1	G	3/8	10.00	1.600	NBR	NO	042U4063
ISO 228-1	G	1/2	10.00	1.600	NBR	NO	042U4064
ISO 228-1	G	2	50.00	32.000	EPDM	NC	042U4068
ISO 228-1	G	1/2	12.00	2.500	NBR	NO	042U4073
ISO 228-1	G	1/2	14.00	4.000	NBR	NO	042U4074
ISO 228-1	G	3/4	18.00	7.000	NBR	NO	042U4082
ISO 228-1	G	1 1/4	32.00	15.000	NBR	NC	042U4084
ISO 228-1	G	1 1/4	32.00	15.000	EPDM	NC	042U4085
ISO 228-1	G	1 1/2	40.00	18.000	NBR	NC	042U4086
ISO 228-1	G	1 1/2	40.00	18.000	EPDM	NC	042U4087
ISO 228-1	G	2	50.00	32.000	NBR	NC	042U4088
ISO 228-1	G	2	50.00	32.000	EPDM	NC	042U4089
ISO 228-1	G	1	22.00	7.000	NBR	NO	042U4092
ISO 228-1	G	1 1/4	32.00	15.000	FKM	NC	042U4095
ISO 228-1	G	1 1/2	40.00	18.000	FKM	NC	042U4096
ISO 228-1	G	2	50.00	32.000	FKM	NC	042U4097
ISO 228-1	G	1/2	14.00	4.000	FKM	NO	042U4100



ISO 228-1	G	1/2	14.00	4.000	EPDM	NC	042U4315
ISO 228-1	G	1/2	14.00	4.000	EPDM	NC	042U4412
ANSI/ASME B1.20.1	NPT	1/4	6.00	1.000	NBR	NC	042U6003
ANSI/ASME B1.20.1	NPT	3/8	10.00	1.600	FKM	NC	042U6015



Accessories code numbers

Coil

Table: Below coil can be used with EV220A

Coil	Type	Power consumption	Enclosure
	AM	7.5 W AC 9.5 W DC	IP00 with spade connector 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: Type ET 20 M

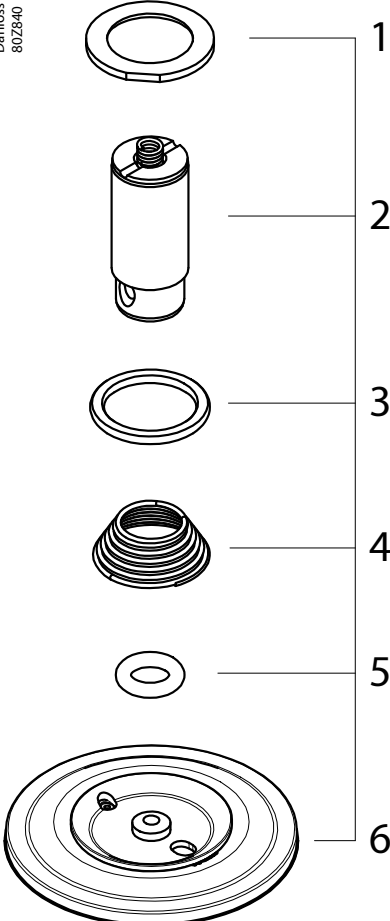
Type	Voltage [V]	Suitable for coil types	Code no
BA024A	24 – 240	AL, AM, AS, AZ, BA, BD, BB	042N0185



Spare parts code numbers

Table: Spare parts kit, NC version

Type	Sealing		
	FKM	EPDM	NBR
EV220A 6 – 10B	042U1002	042U1000	042U1001
EV220A 12 – 14B	042U1005	042U1003	042U1004
EV220A 18 – 22B	042U1008	042U1006	042U1007
EV220A 32B	–	042U1037	042U1038
EV220A 40B	–	042U1039	042U1040

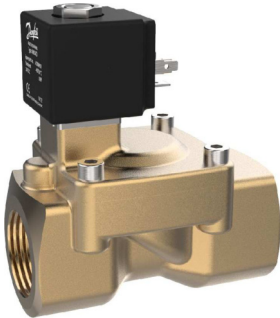
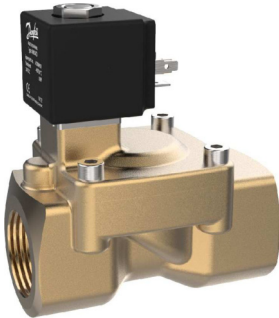
Type	Sealing		
	FKM	EPDM	NBR
EV220A 50B	–	042U1041	042U1042
Danfoss 80Z8-40  1 2 3 4 5 6			
	1. Plastic washer 2. Armature assembly 3. O-ring 4. Diaphragm spring 5. O-ring 6. Diaphragm assembly		



Overview

Product portfolio

Table: Portfolio overview

Features	EV220A NC	EV220A NO
		
Body material	Brass	Brass
DN [mm]	6 – 50	6 – 22
Connection	G1¼" – G2"	G1¼" – G1"
Sealing material	EPDM, NBR, FKM	NBR
K _v [m³/h]	1 – 32	1 – 7
Differential pressure range [bar]	0.2 – 16	0.2 – 16
Temperature range [°C]	-30 – 100	-10 – 90

Functions

Function, NC

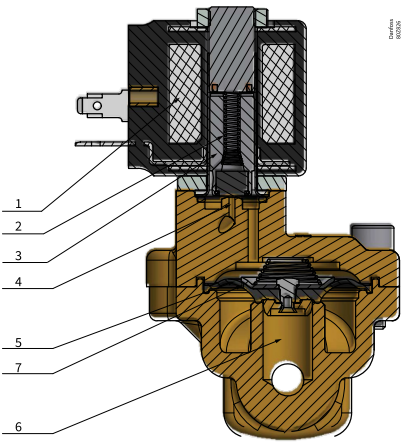
Coil voltage disconnected

When voltage is disconnected, the armature spring (2) presses the armature (3) down against the pilot orifice (4). Pressure builds up over the diaphragm (5) via the equalizing orifice (7). The diaphragm closes the main orifice (6) as soon as the pressure over the diaphragm equals the inlet pressure. The valve stays closed for as long as voltage remains disconnected.

Coil voltage connected (open)

When voltage is applied to the coil (1), the pilot orifice (4) is opened. Since the pilot orifice is larger than the equalizing orifice (7), pressure over the diaphragm (5) falls and the diaphragm is lifted clear of the main orifice (6). The valve stays open for as long as the required least differential pressure is present and voltage is applied to the coil.

Figure: Function, NC



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

Function, NO

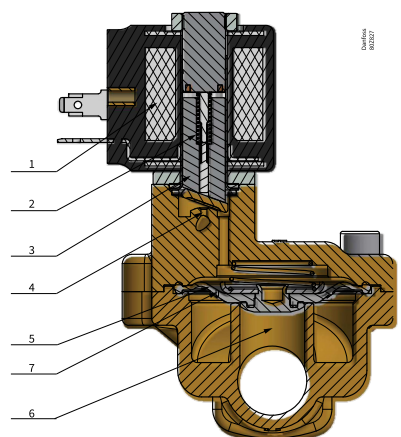
Coil voltage disconnected (Open)

When voltage is disconnected, the pilot orifice (4) is opened. Since the pilot orifice is larger than the equalizing orifice (6), pressure over the diaphragm (5) falls and the diaphragm is lifted clear of the main orifice (7). The valve stays open for as long as the required minimum differential pressure is present and voltage is applied to the coil.

Coil voltage connected (Close)

When voltage is applied to the coil (1), the armature spring (2) presses the armature (3) down against the pilot orifice (4). Pressure builds up over the diaphragm (5) via the equalizing orifice (6). The diaphragm closes the main orifice (7) as soon as the pressure over the diaphragm equals the inlet pressure. The valve stays closed for as long as voltage remains disconnected.

Figure: Function, NO



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

Product details

General data

Table: Technical data

Media	NBR	For compressed air and oil
	FKM	For oil and air
	EPDM	For water
Media temperature	NBR	-10 – 90 °C
	FKM	0 – 100 °C (For water max 60 °C)
	EPDM	-30 – 100 °C
Ambient temperature	-40 – 50 °C	
K _v value	DN6	1 m ³ /h
	DN10	1.6 m ³ /h
	DN12	2.5 m ³ /h
	DN14	4 m ³ /h
	DN18	7 m ³ /h
	DN22	7 m ³ /h
	DN32	15 m ³ /h
	DN40	18 m ³ /h
	DN50	32 m ³ /h
Min. Opening differential pressure	DN6 – DN10	0.2 bar
	DN12 – DN50	0.3 bar
Max. Opening differential pressure	DN6 – DN50 EPDM/NBR	16 bar
	DN6 – DN10 FKM	16 bar
	DN12 – DN50 FKM	10 bar
Max. working pressure	Up to 16 bar (Equal to max. differential pressure)	
Max. test pressure	DN6 – DN10	50 bar
	DN12 – DN50	25 bar
Viscosity	Max. 50 cSt	

Materials

Table: Materials

Components	Materials	Specification
Valve body/cover	Brass	W. no. 2.0401
Armature/armature stop	Stainless steel	W. no. 1.4105 / AISI 430FR
Armature tube	Stainless steel	W. no. 1.4303 / AISI 305
Spring	Stainless steel	W. no. 14310 / AISI 301
O-ring	NBR/EPDM/FKM	
Valve plate	NBR/EPDM/FKM	
Diaphragm	NBR/EPDM/FKM	



Capacity

Example for water: Capacity for EV220A at differential pressure of 3 bar: Approx. 7 m³h

Capacity diagram

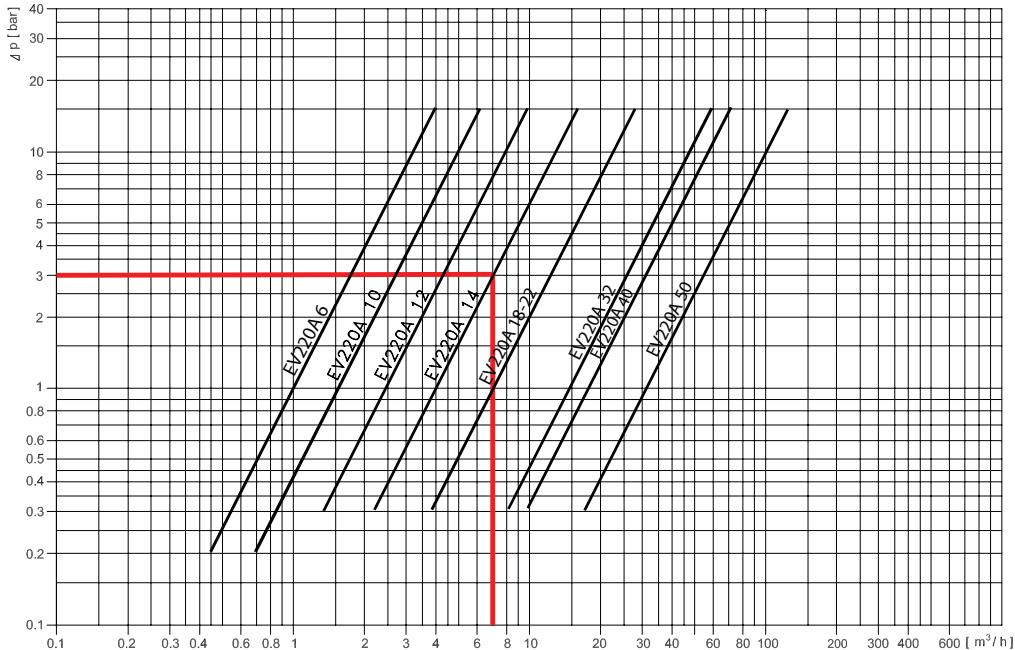


Table: Time to open/close

Type	EV220A 6B	EV220A 10B	EV220A 12B	EV220A 14B	EV220A 18B	EV220A 22B	EV220A 32B	EV220A 40B	EV220A 50B
Time to open [ms] ⁽¹⁾	40	50	60	100	200	200	2500	4000	5000
Time to close [ms] ⁽¹⁾	250	300	300	500	500	500	4000	6000	10000

⁽¹⁾ Times are indicative and apply to water. Exact times will depend on pressure conditions.

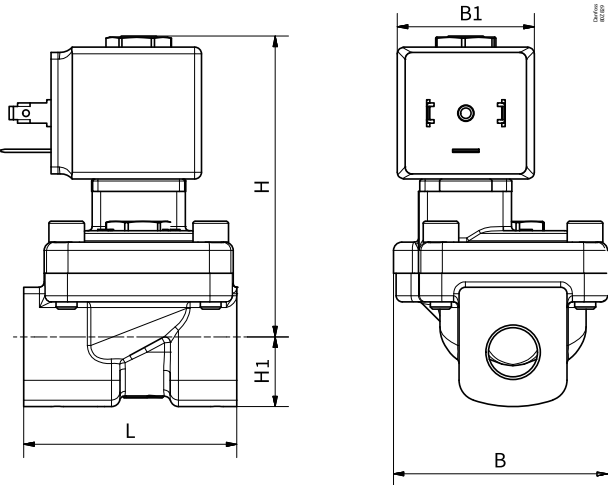


Dimensions

Table: Dimension and weight

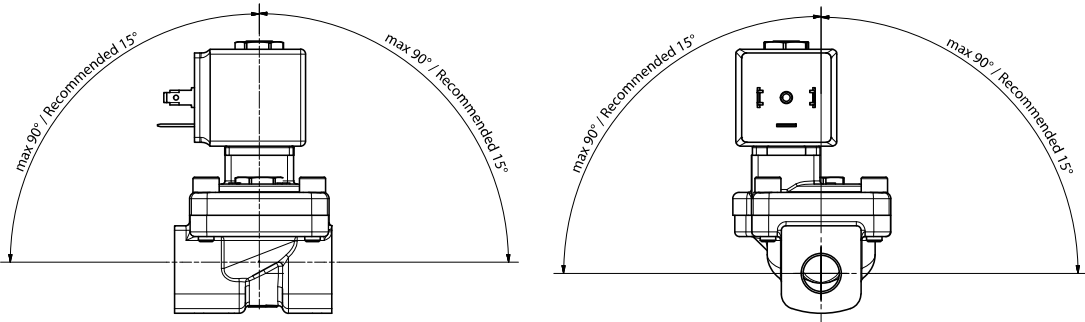
Type	Weight gross Valve body without coil [kg]	L [mm]	B [mm]	B1 [mm]	Coil AM [mm]	H1 [mm]	NC	NO
EV220A 6B	0.46	51	50	33	33	13	76	80
EV220A 10B	0.44	51	50	33	33	13	76	80
EV220A 12B	0.52	58	58	33	33	13	77	81
EV220A 14B	0.50	58	58	33	33	13	77	81
EV220A 18B	0.72	90	90	58	33	18	78	82
EV220A 22B	1	90	90	58	33	22	83	87
EV220A 32B	2	120	82	33	33	27	95	-
EV220A 40B	3.2	130	95	33	33	32	105	-
EV220A 50B	4.3	162	113	33	33	37	111	-

Dimension



Installation

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	WRAS 2109045	WRAS - Water Regulations Advisory Scheme	Drinking Water
Export Control Declaration	Solenoid valves – Polymer, Bronze, Brass, Cast iron	Danfoss	
Mechanical Safety Certificate	UL MH7648	UL - Underwriters Laboratories inc.	
Pressure Safety Certificate	LLC CDC EURO-TYSK UA.TR.089.1015.02-22	LLC CDC EURO TYSK - Ukraine	PED, Pressure
EU Declaration	Danfoss EU 033F0682.AA	Danfoss	EU RoHS, LVD, PED, Pressure
UK Declaration	Danfoss UK 033F1143.AB	Danfoss	UK RoHS, EMC, PED, Pressure
Manufacturer's Declaration	Danfoss MD 033F1140.01	Danfoss	EU RoHS
Manufacturer's Declaration	Danfoss MD 033F0232.AA	Danfoss	PED, Pressure
EU Declaration	Danfoss EU 033F0683.05	Danfoss	EU RoHS, LVD

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.



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.



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 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.



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.



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.

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.
