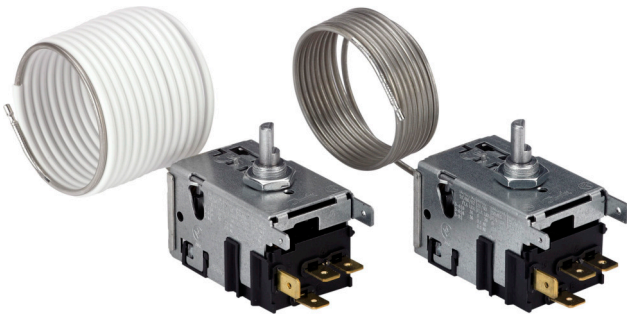


Data Sheet

# Service kit Type **B0 - B62**

Thermostat for refrigerators and freezers.



Electromechanical thermostat 077B is used to control the temperature in refrigerators, upright and chest freezers, liquid coolers, bottle coolers and small commercial refrigeration appliances. The thermostat can be used as an evaporator thermostat or a room thermostat.

The thermostats are available with normal function, fixed cut-in and cut-out temperature, constant or variable cut-in temperature for automatic defrost, and with a push button for semi-automatic defrost.

All thermostats have NC (Normally closed) main contacts; i.e. they cut out the compressor current circuit on decreasing temperature.

077B thermostats are available as a standard thermostat range, as a service kit range and as customer specified versions adapted to specific appliances.

Service kit thermostats are created with specifications and accessories that allow universal application in the aftermarket, for thermostat servicing on all types of refrigeration and freezing appliances.

Service kit thermostats have a wider regulating range than standard thermostats, and have differentials that ensure sufficient standstill to protect the compressor. They enable servicing on all refrigerating and freezing appliances independent of the make of thermostats, and are contained in practical boxes complete with electrical diagram and drawings of contents.

## Features

- Product identification data laser printed on product
  - Easy and lasting product identification.
- NC (Normally Closed) main contacts.
  - Cut-out of compressor on falling temperatures.
- Terminals with spade connectors 6.3 x 0.8 mm, 4.8 x 0.8 mm or combinations.
  - Fits into the majority of household and light commercial refrigerators and freezers.
- Electrical loads of 6/36 A or 8/40 A (FLA/LRA), designed for a minimum of 300.000 cycles at full load.
  - Reliable and lasting switching function.
- Service thermostat code no. delivered in Multipack
  - Service thermostats include relevant accessories and installation guides.

## Portfolio

The complete 077B portfolio is very large, but the majority of 077B products are produced to order, as specified by manufacturers of refrigeration appliances. This data sheet covers the aftermarket version of the 077B thermostats, i.e. thermostats designed to replace made to order versions in an appliance service situation.

The primary differences between made to order versions and service thermostats can be summarized as follows.

**Table 1: 077B portfolio summary**

	077B service kits	077B made to order
Warm cut-out [°C]	See <a href="#">Ordering</a> for individual code no.	In range from ~-30 – 15 °C in steps of 0.1 °C
Warm cut-in [°C]	See <a href="#">Ordering</a> for individual code no.	In range from ~-23 – 20 °C in steps of 0.1 °C
Cold cut-out [°C]	See <a href="#">Ordering</a> for individual code no.	In range from ~-40 – 39 °C in steps of 0.1 °C
Cold cut-in [°C]	See <a href="#">Ordering</a> for individual code no.	In range from ~-33 – 12 °C in steps of 0.1 °C
Capillary tube length	0.6 m 0.9 m 1.0 m 1.2 m 1.3 m 1.6 m 2.0 m 2.3 m	0.6 - 2.9 m
Connection terminals	4.8 x 0.8 mm All 6.3 – 4.8 x 0.8 Mix 6.3 x 0.8 mm All	4.8 x 0.8 mm All 6.3 – 4.8 x 0.8 Mix 6.3 x 0.8 mm All Terminal 4 single
Barometric pressure setting	1013 hPa (760 mm Hg)	Altitude adjusted
Approvals	BEAB UL EAC	
Accessories	Includes mounting accessories	Customer specified
Packing	Individually packed with instructions	Industrial packs

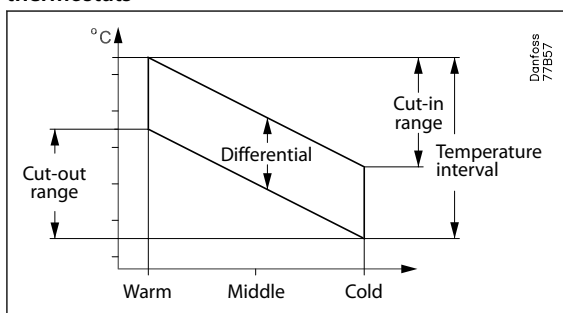
## Functions

### **Thermostat function**

The thermostat regulates by cutting off or cutting in current to the compressor. Depending on the temperature registered by the thermostat sensor, the thermostat controls the compressor by powering it (cut-in) or depoweringing it (cut-off). The thermostat can be used either as an evaporator thermostat or a room thermostat.

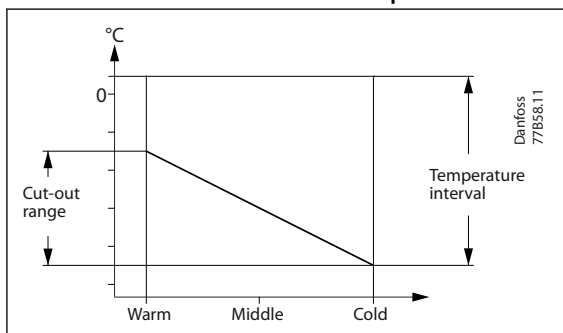
All normal function thermostats have a cut-out temperature range and a cut-in temperature range. The differential is defined as the difference between cut-in and cut-out temperatures. However, the temperature settings of fixed function thermostats are non-adjustable.

**Figure 1: Cut-in, cut-out and differential for normal thermostats**



On thermostats with constant cut-in temperature, B6 type, the terms “differential” and “cut-in temperature range” do not apply. The only relevant terms are “cut-out temperature range” and “temperature interval”.

**Figure 2: Cut-out and temperature interval for thermostats with constant cut-in temperature**



### **Function and operation mode**

The description covers the 077B types used as Service thermostats. Function and operation modes for the entire portfolio are described in the data sheet "Thermostats for refrigerators and freezers, 077B"

Table 2: Function and operation mode B0 and B02 versions

Function	Operation mode	Type	Description
		B0	Without extra functionality
		B02	With auxiliary contact <b>NOTE:</b> Cant be used in combination with Low torque cam.
		B02	With auxiliary contact

Table 3: Function and operation mode B20 and B3 versions

Function	Operation mode	Type	Description
		B20	With signal contact that cuts in on rising temperature
		B3	With signal contact, cutting out on rising temperature

Table 4: Function and operation mode B4 versions

Function	Operation mode	Type	Description
		B4	With push button defrost

Table 5: Function and operation mode B62 versions

Function	Operation mode	Type	Description
		B62	With constant cut-in temperature, automatic defrost and auxiliary contact <b>NOTE:</b> Can't be used in combination with Low torque cam.
		B62	With constant cut-in temperature, automatic defrost and auxiliary contact

## Applications

Thermostat 077B is used to control the temperature in refrigerators, upright and chest freezers, liquid coolers, bottle coolers and small commercial refrigeration appliances.

The thermostat can be used as an evaporator thermostat or a room thermostat.

The Service Thermostat version have a wider regulating range than standard thermostats, and are optimized for servicing on all refrigerating and freezing appliances independent of the make of thermostats.

077B thermostats are available with normal function, fixed cut-in and cut-out temperature, constant or variable cut-in temperature for automatic defrost, and with a pushbutton for semi-automatic defrost.

The thermostats can be supplied with the following supplementary functions:

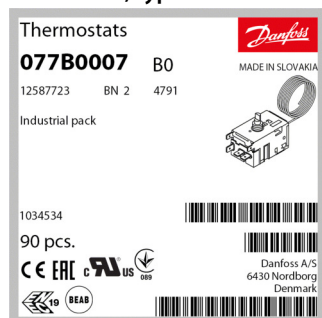
- Auxiliary contact
- Change-over contact
- Signal contact
- Signal contact + series contact
- Signal contact + super freeze-function and indication of same
- Enclosed Brake Device contacts for appliances charged with flammable refrigerants
- Low torque spindle stop turn

## Product specification

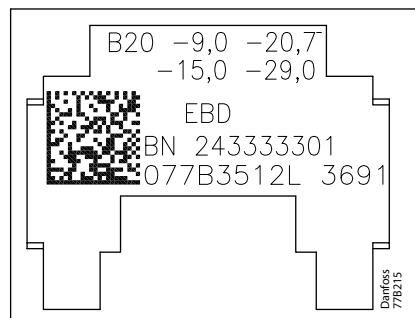
### Product identification

Relevant product data is available on the box label, and on the product laser engraving.

**Figure 3: Box label for 077B thermostat, type B0**



**Figure 4: Laser engraving on 077B thermostat**



**Table 6: Name plate**

077B identification keys (E.g. B0)	077B identification keys (E.g. B0 with low diff. contact system)

<b>t1</b>	Cut-in temp. in pos. warm	<b>077Bxxxx</b>	Danfoss code number
<b>t2</b>	Cut-in temp. in pos. cold	<b>077BxxxxL</b>	Danfoss code number
<b>t3</b>	Cut-out temp. in pos. warm	<b>ww</b>	Week no.
<b>t4</b>	Cut-out temp. in pos. cold	<b>y</b>	Year (last digit)
<b>mp</b>	Manufacturing place	<b>o</b>	No. of order this week
<b>EBD</b>	EBD function (optional)		

**Table 7: Label designation**

Position	Inscription	Explanation
Product engraving; Box label	B26 on laser engraving (pos. 1), B0 on label	Type of product
Box label	Thermostats	Product group
Product engraving; Box label	077B0007 (box), 077B2602 (laser engraving pos. 4)	Code number
Box label	12587723	Order no.
Box label	BN 2	Internal production line code
Box label	4791	Internal production time code
Box label	Made in Slovakia	Manufacturing site acc. to EN standards
Box label	Industrial pack	Packing format
Box label	1034534	Internal vendor code no.
Box label	90 pcs.	Quantity of products in pack
Box label	(Approval logos)	Approved by relevant approval authority (BEAB, CE, EAC, UL, ENEC, LLC-CDC)
Product engraving	BN (pos. 3)	Internal production line code

## Service kit, type B0 - B62

Position	Inscription	Explanation
Product engraving	115349472 (pos. 2)	Customer code number (for thermostats made to order)
Product engraving	3691 (pos. 6)	Internal production code denoting time of production
Product engraving	(pos. 11)	Data Matrix, ECC 200

### **i** NOTE:

Laser engravings are different depending on type and customer requirements.

## **Design and materials**

Figure 5: 077B design and materials cut-away

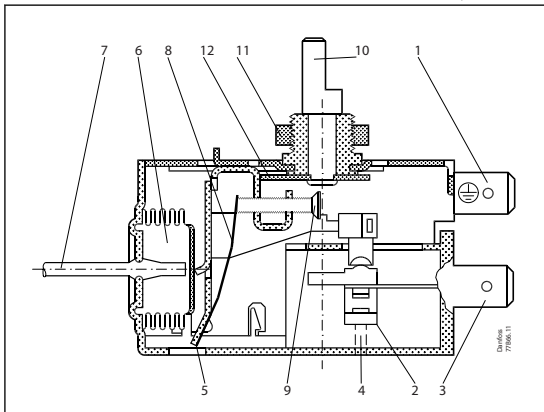


Table 8: 077B design and materials

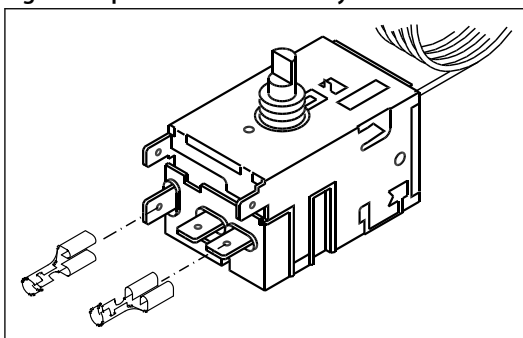
Position	Item	Material specification
1	Earth spade tab	Brass (AZ)
2	Contact system complete	Thermoplastic material, silver, brass (AZ)
3	Connection spade tab	CuZn
4	Differential screw	Zn
5	Main arm	Brass (AZ)
6	Bellows element	CuSn
7	Capillary tube/sensor	Copper/tin
8	Main spring	Spring steel
9	Cut out screw	Steel
10	Spindle	Zn
11	Nut	Steel
12	Range curve	Brass (AZ)

## **Electrical connections and specifications**

### Connections

077B thermostats are available with spade connectors in either 4.8 x 0.8 mm or 6.3 x 0.8 mm.

Figure 6: Spade tab connector layout



## Electrical specifications

The series contact cuts out when the spindle is turned to position “stop”. Both the main and signal contacts are cut out. The series contact withstands a max. load of 6/36 A or 8/40 A (FLA/LRA).

The auxiliary contact cuts out when the spindle is turned to position “stop”. The auxiliary contact can be used to cut out a heating element, for example, also in line with the main switch. The contact withstands 6/36 A 240 V AC / 50 Hz or 8/40 A 240 V AC / 50 Hz.

The signal contact is used to set off an alarm (audible or visual) when the sensor temperature exceeds 3 – 5 °C of the cut-in one. The signal contact withstands a max. load of 0.1 A NI (Resistive).

The reversing switch (changeover contact) is mainly used to control 3/2-way solenoid valves in dual temperature cabinets. The changeover contact withstands a max. load of 0.5 A NI (resistive) or 0.1 A (inductive).

The super function contact cuts in when the spindle is turned to position “super”. The compressor runtime is consequently unlimited. The super function contact withstands a max. load of 0.1 A NI (resistive).

**Table 9: Relay contact configuration**

Relay contacts	Functions	Type	Contact rating for Europe (250 V)	Contact rating for USA (240 V)
3-4	Main contact	B0, B02, B025, B04, B045, B2, B24, B25, B26, B3, B34, BB4, B5, B52, B53, B6, B62, B63	6 (6) A	FLA:6. RLA: 36
3-6	Auxiliary contact	B02, B52, B62	6 (6) A	FLA:6. RLA: 36
3-6	Signal contact	B2, B24, B25, B26	0.1 A	FLA:0.1. RLA: NI (Resistive)
3-6	Changeover contact	B025, B04, B53, B63	0.5 (0.1) A	FLA:0.1. RLA: 0.6
3-8	Super freezer contact	B26	0.1 A	FLA:0.1. RLA: NI (Resistive)
3-8	Series contact	B25	6 (6) A	FLA:6. RLA: 36

**NOTE:**

Relay contact ratings are the same for all thermostats in 077B series, including Service thermostats.

## Pressure and temperature

### Pressure data

Factory set barometric pressure for service thermostats: 760 mm Hg (1013 hPa).

**NOTE:**

Thermostats made to order can be delivered with alternative barometric settings for e.g. high-altitude application, which should be considered in case a service thermostat is applied.

### Temperature ranges

Service thermostats have these temperature settings

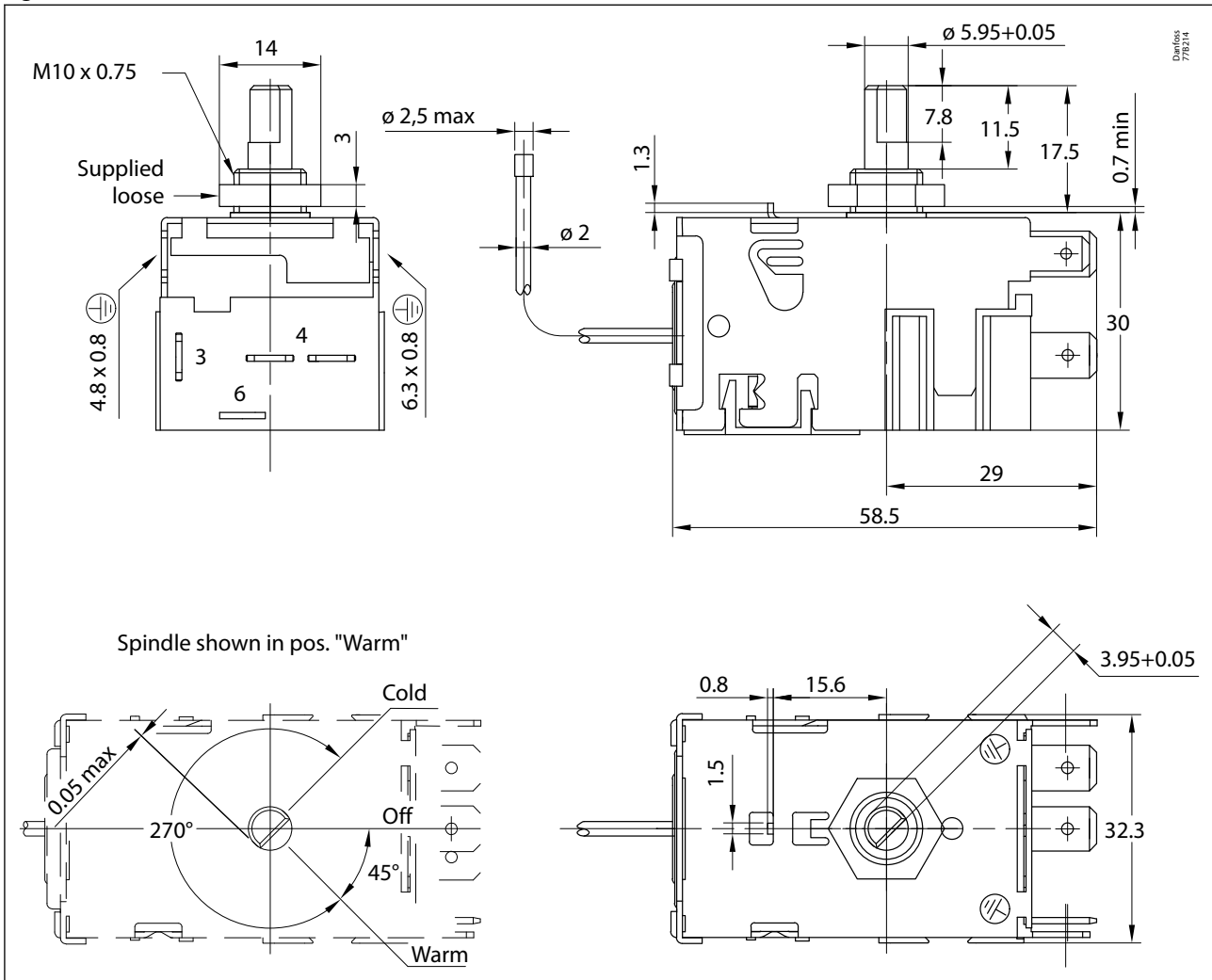
**Table 10: 077B temperature settings**

Description	Temperature range [°C]	Temperature range [°F]
Temperature interval	-42 – 11 °C	-44 – 52 °F
Cut-out temperature range	5 – 20 °C	41 – 68 °F
Differential (depending on spindle position and type)	3 – 5 °C	37 – 104 °F
Constant cut-in temperature (type 077B6 only)	1 – 11 °C	34 – 52 °F
Signal temperature	3 – 5°C higher than cut-in temperature	37 – 41 °F higher than cut-in temperature
Ambient temperature range	-25 – 65 °C	-13 – 149 °F



**Dimensions**

Figure 7: Dimensions



## Ordering

### Packing format definitions

- Single pack contains 1 item.
- Multipack contains several items, individually packed, so that customers can purchase 1 item and receive all relevant documentation.
- Industrial pack contains several items that are not individually packed. Industrial packs cannot be broken down, and will only contain documentation on pack level, not on item level.
- Pallet pack contains several items on a pallet.

### Service kits

Ordering data is provided in two separate tables, one with relevant selection criteria in °C and a second table with relevant selection criteria in °F.

### SI units

Table 11: Ordering 077B service thermostats, °C data

Type	Warm cut-out [°C]	Warm cut-in [°C]	Warm signal diff. [°C]	Warm defrost [°C]	Cold cut-out [°C]	Cold cut-in [°C]	Cold signal cut-in [°C]	Cap. tube length [m]	Pack format	Qty/ pack	Code no.
<b>B0</b>	-5.5 °C	2.0 °C			-25.0 °C	-13.5 °C		1.3 m	Multi pack	40 pc	077B7001
<b>B0</b>	-15.0 °C	-7.8 °C			-32.5 °C	-21.0 °C		2.3 m	Multi pack	40 pc	077B7005
<b>B0</b>	6.0 °C	11.5 °C			-8.5 °C	-1.0 °C		2.0 m	Multi pack	40 pc	077B7008
<b>B02</b>	-1.0 °C	3.5 °C			-11.0 °C	-5.5 °C		1.5 m	Multi pack	40 pc	077B7004
<b>B20</b>	-17.0 °C	-10.0 °C	4.0 °C		-34.5 °C	-24.0 °C	-18.0 °C	2.3 m	Multi pack	40 pc	077B7006
<b>B3</b>	-17.0 °C	-10.0 °C	4.0 °C		-34.5 °C	-24.0 °C	-19.0 °C	2.3 m	Multi pack	40 pc	077B7007
<b>B4</b>	-7.5 °C	0.0 °C		6.0 °C	-22.0 °C	-12.0 °C		1.3 m	Multi pack	40 pc	077B7002
<b>B62</b>	-11.0 °C	3.5 °C			-27.5 °C	3.5 °C		1.6 m	Multi pack	40 pc	077B7003

### Imp. units

Table 12: Ordering 077B service thermostats, °F data

Type	Warm cut-out [°F]	Warm cut-in [°F]	Warm signal diff. [°F]	Warm defrost [°F]	Cold cut-out [°F]	Cold cut-in [°F]	Cold signal cut-in [°F]	Cap. tube length [m]	Pack format	Qty/ pack	Code no.
<b>B0</b>	22.1 °F	35.6 °F			-13.0 °F	7.7 °F		51.2 in	Multi pack	40 pc	077B7001
<b>B0</b>	5.0 °F	18.0 °F			-26.5 °F	-5.8 °F		90.5 in	Multi pack	40 pc	077B7005
<b>B0</b>	42.8 °F	52.7 °F			16.7 °F	30.2 °F		78.7 in	Multi pack	40 pc	077B7008
<b>B02</b>	30.2 °F	38.3 °F			12.2 °F	22.1 °F		59.1 in	Multi pack	40 pc	077B7004
<b>B20</b>	1.4 °F	14.0 °F			-30.1 °F	-11.2 °F		90.5 in	Multi pack	40 pc	077B7006
<b>B3</b>	1.4 °F	14.0 °F			-30.1 °F	-11.2 °F		90.5 in	Multi pack	40 pc	077B7007
<b>B4</b>	18.5 °F	32.0 °F		42.8 °F	-7.6 °F	10.4 °F		51.2 in	Multi pack	40 pc	077B7002
<b>B62</b>	12.2 °F	38.3 °F			-17.5 °F	38.3 °F		63.0 in	Multi pack	40 pc	077B7003

### Accessories and spare parts

#### Spare parts

077B thermostats are not serviceable, and no spare parts are available.

#### Accessories

Danfoss offers a wide range of accessories in various colours, including items like dial plates, washers and knobs. In the list you will find a selection, but for specialized items contact your local Danfoss representative.

Figure 8: Accessories

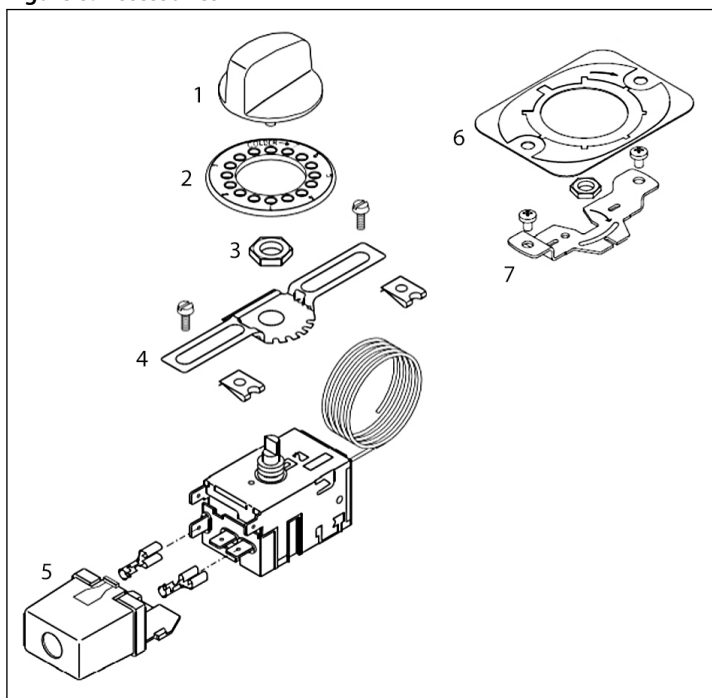


Table 13: Thermostat accessory

Type Designation	Item no.	Packing format	Qty/pack	Code no.
Dial plate	6	Industrial pack	475 pc	077B8943
Screw M4 x 6	7	Industrial pack	2.000 pc	077B8945
Handknob, white	1	Industrial pack	480 pc	077B8960
Mounting plate, low	4	Industrial pack	500 pc	077B8941
Washer, white	2	Industrial pack	480 pc	077B8970
Handknob, white Countersunked	1	Industrial pack	480 pc	077B8961
Nut	3	Industrial pack	1.500 pc	077B8992
Mounting plate	4	Industrial pack	500 pc	077B8842
Washer, black, White print 0-7	2	Industrial pack	480 pc	077B8976
Washer, white, Black print 0-7	2	Industrial pack	480 pc	077B8973
Terminal cover	5	Industrial pack	100 pc	077B8901
Washer, white, Black print 0-9	2	Industrial pack	480 pc	077B8974
Handknob, black Countersunked	1	Industrial pack	480 pc	077B8963
Dial plate	6	Industrial pack	575 pc	077B8942
Washer, black	2	Industrial pack	480 pc	077B8971
Mounting plate	4	Industrial pack	500 pc	077B8925
Mounting plate	4	Industrial pack	500 pc	077B8940

## 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 or contact your local Danfoss representative if you have any questions.

Electromechanical cold controls are generally classified as individual components, also when assembled in refrigeration appliances. Hence some regional authorities stipulate cold controls to be subject to an individual approval.

**Table 14: Certificates, declarations, and approvals**

File name	Document type	Document topic	Approval authority
БЛ08.В.01620	Electrical - Safety Certificate	LVD	EAC RU C-DK
C 1162N - CAT 0673.14	Electrical - Safety Certificate		BEAB
UL E31024	Electrical - Safety Certificate		UL
MD2012.2 EBD Rev. A2	Manufacturers Declaration	Packaging Directive/RoHS	Danfoss
EU.D 2018.11.A1	EC Declaration	LVD	Danfoss
IB-12-8-100	Explosive - Safety Certificate		IBExU
UA.089.D.00185-17	UA Declaration	EMCD/LVD	LLC CDC EURO-TYSK
IB-14-8-057	Explosive - Safety Certificate	Grilon	IBExU
China RoHS.A01	Manufacturers Declaration	China RoHS	Danfoss
MD2017 REACH.02	Manufacturers Declaration	REACH	Danfoss

### **ISO certification**

Danfoss Appliance Controls is certified by Bureau Veritas in ISO14001, ISO9001 and ISO45001.

## 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.

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