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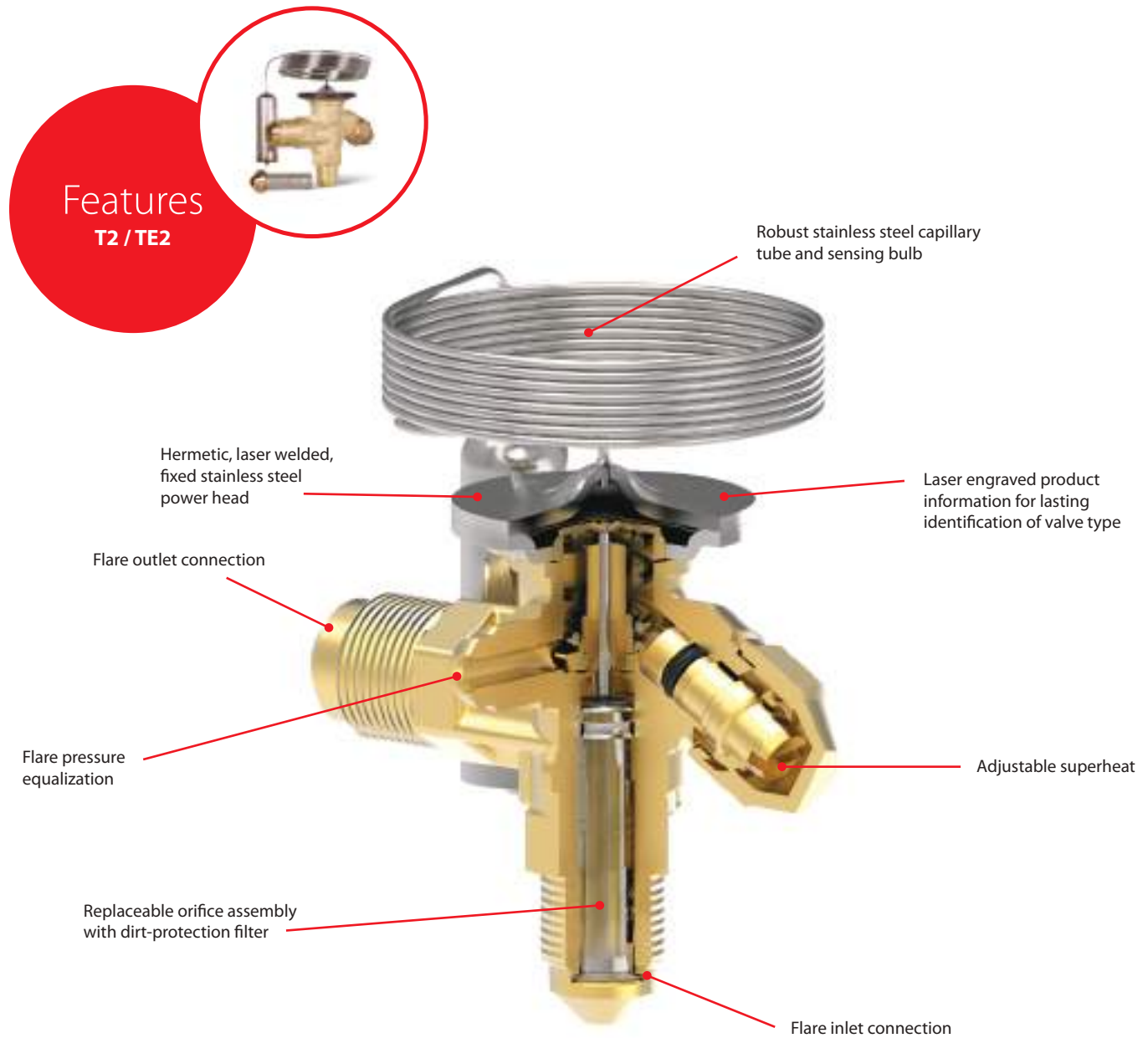
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## T2 / TE2 - Thermostatic Expansion Valves

Danfoss T2/TE2 brass body thermostatic expansion valves feature flare inlet and outlet connections. By pairing one valve body with one of eight replaceable orifices, a contractor can satisfy applications from  $-40\text{ }^{\circ}\text{F}$  to  $+50\text{ }^{\circ}\text{F}$  and from  $\frac{1}{8}$  to  $5\frac{3}{4}$  tons capacity (see capacity chart for specifics).



### Facts

#### Applications:

- Commercial refrigeration
- Self-contained refrigerators
- Transport refrigeration
- Supermarket refrigeration
- Temperature range:  $-40\text{ }^{\circ}\text{F}$  to  $+50\text{ }^{\circ}\text{F}$
- Capacity range:  $\frac{1}{8}$  to  $5\frac{3}{4}$  tons (varies by refrigerant)
- Refrigerants: R-22, R-407C, R-134a, R-404A, R-448A, R-449A
- Functional valve consists of valve body and orifice
- Flare/solder adaptor available

# Product Selection

## 1. Select Valve Body

Equalization	R-22	R-407C	R-404A	R-134a	R-448A	R-449A
Internal	068Z3206		068Z3400	068Z3346		068Z3728
External	068Z3209		068Z3403	068Z3348		068Z3727

All valves above have 3/8 in. x 1/2 in. flare connections and are designed for evaporator temperatures -40 °F to 50 °F (N charge). Other variations available, please contact your local Danfoss authorized wholesaler.

## 2. Select Orifice

A. T2/TE2 valve capacities are based on the installed orifice. To select the correct size, use one of the two methods below:

A. System characteristics: Select the orifice using appropriate refrigerant, evaporator temperature, and system capacity.

OR

B. Nominal capacity of the installed valve: Use the nominal capacity of the originally installed valve and match with the nominal capacity in chart (3rd column from left).

## Technical data and ordering

### T2 and TE2 (IF EXACT CAPACITY CANNOT FOUND, USE NEXT LARGER ORIFICE)

R-22		R-407C	Evaporator temperature (°F)										
Orifice size	Danfoss Code No.	Nominal capacity of installed valve <sup>1</sup> (tons)	-40	-30	-20	-10	0	10	20	30	40	50	
			Rated capacity <sup>2</sup> (tons)										
0X	068-2002	1/4	1/8	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	
00	068-2003	1/2	1/4	1/3	1/3	1/3	1/3	1/3	1/2	1/2	1/2	1/2	
01	068-2010	1	1/3	1/3	1/2	1/2	1/2	3/4	3/4	3/4	1	1	
02	068-2015	1 1/2	1/3	1/2	1/2	3/4	3/4	1	1	1 1/4	1 1/3	1 1/3	
03	068-2006	2 1/2	3/4	3/4	1	1	1 1/3	1 1/2	1 3/4	2	2 1/4	2 1/3	
04	068-2007	3 1/2	1	1	1 1/2	1 3/4	2	2 1/3	2 3/4	3	3 1/2	3 1/2	
05	068-2008	5	1 1/3	1 3/4	2	2 1/3	2 3/4	3	3 3/4	4 1/4	4 3/4	5	
06	068-2009	5 1/2	1 1/2	2	2 1/3	2 3/4	3	3 3/4	4 1/3	5	5 1/2	5 3/4	

R-404A		Evaporator temperature (°F)										
Orifice size	Danfoss Code No.	Nominal capacity of installed valve <sup>1</sup> (tons)	-40	-30	-20	-10	0	10	20	30	40	50
			Rated capacity <sup>2</sup> (tons)									
0X	068-2002	1/6	1/8	1/6	1/6	1/6	1/6	1/5	1/5	1/5	1/5	1/6
00	068-2003	1/3	1/5	1/5	1/4	1/4	1/3	1/3	1/3	1/3	1/3	1/3
01	068-2010	3/4	1/4	1/3	1/3	1/3	1/2	1/2	1/2	3/4	3/4	3/4
02	068-2015	1	1/4	1/3	1/3	1/2	1/2	3/4	3/4	1	1	1
03	068-2006	1 3/4	1/2	1/2	3/4	3/4	1	1 1/3	1 1/2	1 3/4	1 3/4	1 3/4
04	068-2007	2 3/4	3/4	3/4	1	1 1/3	1 1/2	2	2 1/3	2 1/2	3	3
05	068-2008	3 3/4	1	1	1 1/2	1 3/4	2	2 1/2	3	3 1/2	3 3/4	4
06	068-2009	4 1/2	1	1 1/3	1 3/4	2	2 1/2	3	3 3/4	4	4 1/2	4 1/2

R-134a		Evaporator temperature (°F)										
Orifice size	Danfoss Code No.	Nominal capacity of installed valve <sup>1</sup> (tons)	-40	-30	-20	-10	0	10	20	30	40	50
			Rated capacity <sup>2</sup> (tons)									
0X	068-2002	1/5	1/8	1/6	1/6	1/6	1/6	1/5	1/5	1/5	1/5	1/5
00	068-2003	1/3	1/6	1/5	1/5	1/4	1/4	1/4	1/4	1/3	1/3	1/3
01	068-2010	1/2	1/5	1/4	1/4	1/3	1/3	1/3	1/2	1/2	1/2	1/2
02	068-2015	3/4	1/4	1/4	1/3	1/3	1/3	1/2	1/2	1/2	3/4	3/4
03	068-2006	1 1/2	1/3	1/3	1/2	1/2	3/4	3/4	1	1	1 1/4	1 1/3
04	068-2007	1 3/4	1/2	1/2	3/4	3/4	1	1 1/4	1 1/3	1 1/2	1 3/4	2
05	068-2008	2 1/3	3/4	3/4	1	1	1 1/3	1 1/2	1 3/4	2	2 1/3	2 1/2
06	068-2009	3	3/4	1	1 1/4	1 1/3	1 1/2	2	2 1/4	2 1/2	2 3/4	3

R-448A			Evaporator temperature (°F)					
Orifice size	Danfoss Code No.	Nominal capacity of installed valve <sup>3</sup> (tons)	-40	-20	0	20	40	50
			Rated capacity <sup>2</sup> (tons)					
0X	<b>068-2002</b>	¼	¼	¼	¼	¼	¼	¼
00	<b>068-2003</b>	½	⅓	⅓	⅔	½	½	½
01	<b>068-2010</b>	1	⅔	½	¾	⅞	1	1
02	<b>068-2015</b>	1 ⅜	½	⅔	⅞	1 ½	1 ⅜	1 ½
03	<b>068-2006</b>	2 ½	⅞	1	1 ⅜	1 ⅞	2 ½	2 ½
04	<b>068-2007</b>	3 ⅜	1 ½	1 ⅜	2	2 ⅜	3 ⅜	4
05	<b>068-2008</b>	4 ⅜	1 ⅜	2	2 ¾	3 ⅜	4 ¾	5 ½
06	<b>068-2009</b>	5 ⅜	1 ⅞	2 ½	3 ⅓	4 ½	5 ¾	6 ¼

R-449A			Evaporator temperature (°F)					
Orifice size	Danfoss Code No.	Nominal capacity of installed valve <sup>3</sup> (tons)	-40	-20	0	20	40	50
			Rated capacity <sup>2</sup> (tons)					
0X	<b>068-2002</b>	¼	¼	¼	¼	¼	¼	¼
00	<b>068-2003</b>	½	⅓	⅓	⅔	½	½	½
01	<b>068-2010</b>	1	⅔	½	¾	⅞	1	1
02	<b>068-2015</b>	1 ½	½	⅔	⅞	1	1 ½	1 ½
03	<b>068-2006</b>	2 ½	⅞	1	1 ⅜	1 ⅞	2 ⅜	2 ½
04	<b>068-2007</b>	3 ⅜	1 ¼	1 ⅜	2	2 ¾	3 ½	3 ⅞
05	<b>068-2008</b>	4 ½	1 ⅜	2	2 ¾	3 ⅜	4 ⅜	5
06	<b>068-2009</b>	5 ⅜	1 ⅞	2 ½	3 ¼	4 ½	5 ⅜	6

All capacity data is in accordance to ARI 750-2007 except where noted.

<sup>1</sup> Nominal capacity based on ARI standards: Evaporating temperature = 40 °F, Liquid temperature = 100 °F, Condensing temperature = 110 °F

<sup>2</sup> Capacity based on condensing temperature of 95 °F and a vapor free liquid temperature of 88 °F ahead of the expansion valve.

<sup>3</sup> Condensing temperature = 100 °F

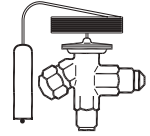
## Spare Parts and Accessories

Description	Danfoss Code No.
Bulb strap	<b>068U3507</b>

# Selection and Installation Instructions

## 1. Select Valve Body

Select the valve body based on refrigerant and need for internal or external equalization using the table on the previous page under “Select Valve Body.”



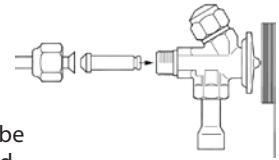
## 2. Select Orifice

T2/TE2 valve capacities are based on the installed orifice. To select the correct size orifice, use one of the two methods using the “Select Orifice” section on the previous page.



## 3. Assemble Valve and Install into System

- Slide the orifice into the valve body and secure using liquid line flare nut
- Attach evaporator inlet or distributor assembly to valve outlet flare nut
- Tighten both flare nuts
  - Specification for inlet is 26–33 ft.-lbs
  - Specification for outlet is 37–52 ft.-lbs
- Secure sensing bulb with enclosed bulb strap to suction line. Bulb should be located between 1:00 & 4:00 or 8:00 & 11:00 on the tube, and the strap should be tight enough that no bulb movement is possible.
- Wrap included insulation tape beginning one inch before the bulb and overlapping each wrap, finishing one inch beyond the bulb on the other end.



## 4. Adjust Superheat

- Remove the cap
- Make superheat adjustments  $\frac{1}{4}$  turn at a time ( $\frac{1}{4}$  turn  $\approx 1.75$  °F).
  - Turning clockwise increases superheat.
  - Turning counter-clockwise decreases superheat.
- Reinstall the cap



### Easy to carry kits for truck stock

All T2/TE2 valve bodies and orifice featured on the next page and a hex key for superheat adjustment.

**068Z7100**

Both TUA/TUAE valve bodies and orifices and T2/TE2 and orifices plus gaskets for TUA/TUAE and a hex key for superheat adjustment.

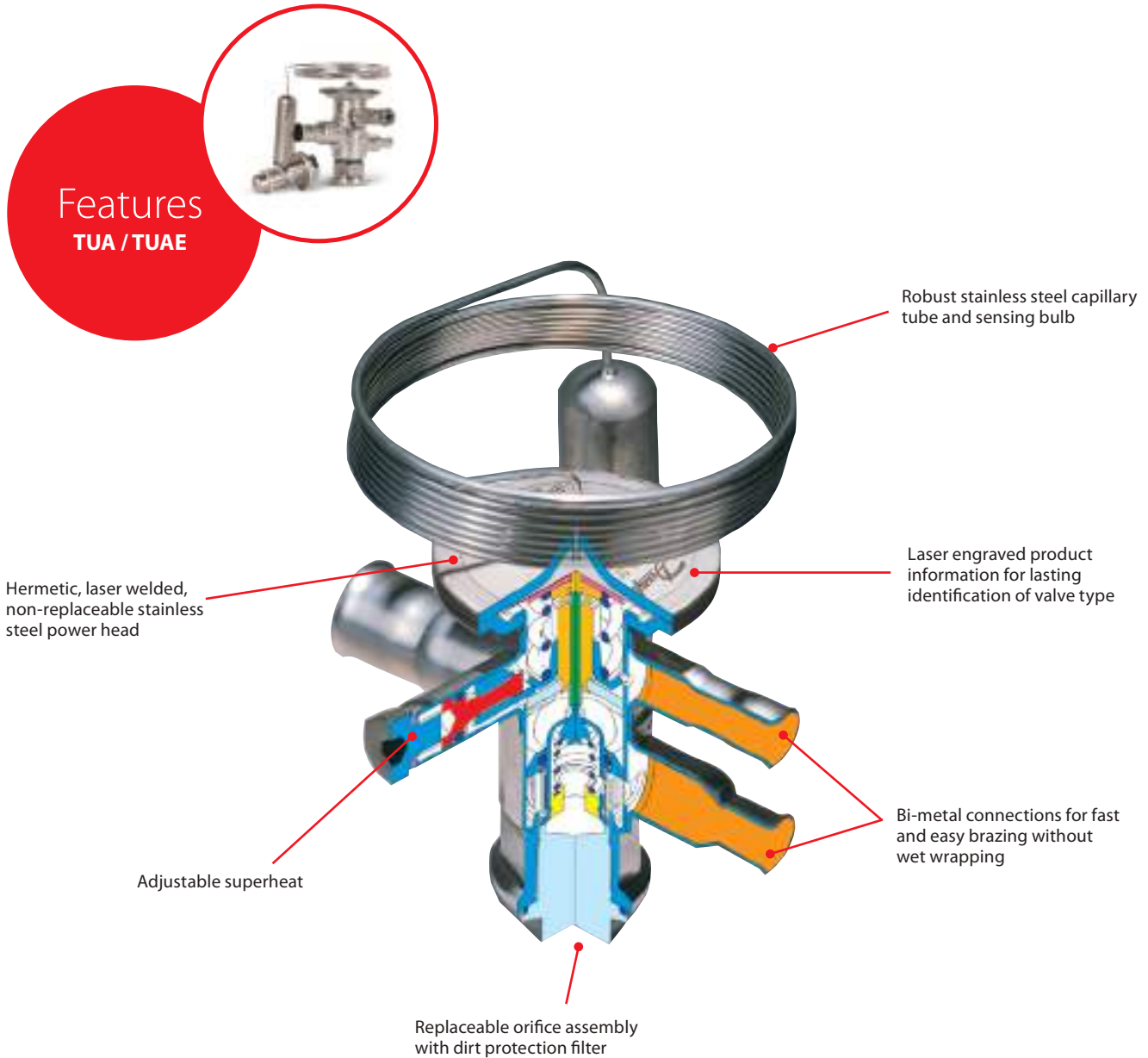
**068U7001**

Kits are plastic cases with foam inserts, all valves and orifices, and instructions for selection and installation of the valves. Empty kits and foam available upon request.



# TUA / TUAE - Thermostatic Expansion Valves

Danfoss TUA/TUAE stainless steel thermostatic expansion valves feature solder inlet and outlet connections. By pairing one valve body with one of ten replaceable orifices, a contractor can satisfy applications from  $-40^{\circ}\text{F}$  to  $+50^{\circ}\text{F}$  and up to  $4\frac{1}{2}$  tons capacity (see capacity chart for specifics).



## Facts

### Applications:

- Traditional refrigeration
- Self-contained refrigerators
- Transport refrigeration
- Supermarket refrigeration
- Temperature range:  $-40^{\circ}\text{F}$  to  $+50^{\circ}\text{F}$
- Capacity range:  $\frac{1}{8}$  to  $4\frac{1}{2}$  tons (varies by refrigerant)
- Refrigerants: R-22, R-407C, R-134a, R-404A
- Functional valve consists of valve body and orifice

Scan the QR Code for a video with more information on the TUA valve features and installation or visit <http://bit.ly/TUAINSTALL>



# Product Selection

## 1. Select Valve Body

Equalization	R-22	R-407C	R-404A	R-134a	R-448A	R-449A
Internal	068U2235		068U2285	068U2205	068U3859	068U3858
External	068U2237		068U2287	068U2207	068U3945	068U3946

All valves above have 3/8 in. x 1/2 in. solder ODF connections and are designed for evaporator temperature -40 °F to 50 °F (N charge). Other variation available, please contact your local Danfoss authorized wholesaler.

## 2. Select Orifice

TUA/TUAE valve capacities are based on the installed orifice. To select the correct size, use one of the two methods below:

A. System characteristics: Select the orifice using appropriate refrigerant, evaporator temperature, and system capacity.

OR

B. Nominal capacity of the installed valve: Use the nominal capacity of the originally installed valve and match with the nominal capacity in chart (3rd column from left).

## Technical data and ordering

### TUA and TUAE (IF EXACT CAPACITY CANNOT BE FOUND, USE NEXT LARGER ORIFICE)

R-22			R-407C			Evaporator temperature (°F)							
Orifice size	Danfoss Code No.	Nominal capacity of installed valve <sup>1</sup> (tons)	-40	-30	-20	-10	0	10	20	30	40	50	
			Rated capacity <sup>2</sup> (tons)										
0	068U1030	1/8	1/15	1/15	1/15	1/10	1/8	1/8	1/6	1/6	1/6	1/5	
1	068U1031	1/5	1/10	1/8	1/8	1/6	1/6	1/5	1/5	1/5	1/4	1/4	
2	068U1032	1/4	1/10	1/8	1/6	1/6	1/5	1/4	1/4	1/4	1/3	1/3	
3	068U1033	1/3	1/8	1/6	1/5	1/4	1/4	1/3	1/3	1/3	1/3	1/3	
4	068U1034	1/2	1/4	1/4	1/4	1/3	1/3	1/2	1/2	1/2	3/4	3/4	
5	068U1035	3/4	1/3	1/3	1/3	1/2	1/2	3/4	3/4	3/4	1	1	
6	068U1036	1 1/2	1/2	1/2	1/2	3/4	3/4	1	1 1/4	1 1/4	1 1/2	1 1/2	
7	068U1037	2	1/2	3/4	3/4	1	1	1 1/3	1 1/2	1 3/4	2	2	
8	068U1038	2 3/4	1	1	1 1/3	1 1/2	1 3/4	2	2 1/3	2 1/2	3	3	
9	068U1039	4	1 1/3	1 1/2	1 3/4	2	2 1/2	2 3/4	3 1/4	3 1/2	4	4 1/2	

R-404A			Evaporator temperature (°F)									
Orifice size	Danfoss Code No.	Nominal capacity of installed valve <sup>1</sup> (tons)	-40	-30	-20	-10	0	10	20	30	40	50
			Rated capacity <sup>2</sup> (tons)									
0	068U1030	1/8	1/20	1/20	1/15	1/15	1/10	1/10	1/8	1/8	1/8	1/8
1	068U1031	1/5	1/15	1/15	1/10	1/8	1/8	1/6	1/6	1/5	1/5	1/5
2	068U1032	1/4	1/15	1/15	1/10	1/8	1/6	1/5	1/5	1/4	1/4	1/4
3	068U1033	1/3	1/10	1/8	1/8	1/6	1/5	1/4	1/4	1/3	1/3	1/3
4	068U1034	1/2	1/6	1/5	1/4	1/4	1/3	1/3	1/2	1/2	1/2	1/2
5	068U1035	3/4	1/5	1/4	1/3	1/3	1/2	1/2	1/2	3/4	3/4	3/4
6	068U1036	1 1/4	1/3	1/3	1/2	1/2	3/4	3/4	1	1	1	1 1/3
7	068U1037	1 1/2	1/3	1/2	1/2	3/4	1	1	1 1/3	1 1/2	1 1/2	1 3/4
8	068U1038	2 1/3	1/2	3/4	1	1	1 1/3	1 1/2	2	2	2 1/3	2 1/2
9	068U1039	3 1/3	3/4	1	1 1/3	1 1/2	2	2 1/4	2 1/2	3	3 1/2	3 3/4

R-134a			Evaporator temperature (°F)									
Orifice size	Danfoss Code No.	Nominal capacity of installed valve <sup>1</sup> (tons)	-40	-30	-20	-10	0	10	20	30	40	50
			Rated capacity <sup>2</sup> (tons)									
0	068U1030	1/8	1/30	1/20	1/20	1/20	1/15	1/15	1/10	1/10	1/8	1/8
1	068U1031	1/5	1/20	1/15	1/15	1/10	1/10	1/8	1/8	1/6	1/6	1/5
2	068U1032	1/3	1/15	1/15	1/15	1/10	1/8	1/6	1/6	1/5	1/5	1/5
3	068U1033	1/4	1/15	1/10	1/8	1/6	1/6	1/5	1/5	1/4	1/4	1/4
4	068U1034	1/3	1/8	1/6	1/5	1/5	1/4	1/4	1/3	1/3	1/3	1/2
5	068U1035	1/2	1/5	1/5	1/4	1/4	1/3	1/3	1/2	1/2	1/2	1/2
6	068U1036	3/4	1/4	1/4	1/3	1/3	1/2	1/2	3/4	3/4	1	1
7	068U1037	1 1/4	1/3	1/3	1/2	1/2	3/4	3/4	1	1	1 1/4	1 1/2
8	068U1038	1 3/4	1/2	1/2	3/4	3/4	1	1 1/4	1 1/2	1 3/4	2	2
9	068U1039	2 1/2	3/4	1	1	1 1/3	1 1/2	1 3/4	2	2 1/3	2 3/4	3

R-448A			Evaporator temperature (°F)					
Orifice size	Danfoss Code No.	Nominal capacity of installed valve <sup>3</sup> (tons)	-40	-20	0	20	40	50
			Rated capacity <sup>2</sup> (tons)					
0	068U1030	½	¾ <sub>25</sub>	½ <sub>0</sub>	¼	¼	¼	¼
1	068U1031	¼	½ <sub>0</sub>	¼	¼	¼	¼	¼
2	068U1032	⅓	⅓	¼	¼	¼	¼	¼
3	068U1033	⅔	¼	¼	¼	¼	¼	¼
4	068U1034	¾	¼	¼	¼	¼	¼	¼
5	068U1035	1	¼	¼	¼	¼	¼	¼
6	068U1036	1 ½	¼	¼	¼	¼	¼	¼
7	068U1037	2	¼	¼	¼	¼	¼	¼
8	068U1038	3	¼	¼	¼	¼	¼	¼
9	068U1039	4	¼	¼	¼	¼	¼	¼

R-449A			Evaporator temperature (°F)					
Orifice size	Danfoss Code No.	Nominal capacity of installed valve <sup>3</sup> (tons)	-40	-20	0	20	40	50
			Rated capacity <sup>2</sup> (tons)					
0	068U1030	½	¾ <sub>25</sub>	½ <sub>0</sub>	¼	¼	¼	¼
1	068U1031	¼	½ <sub>0</sub>	¼	¼	¼	¼	¼
2	068U1032	⅓	⅓	¼	¼	¼	¼	¼
3	068U1033	⅔	¼	¼	¼	¼	¼	¼
4	068U1034	¾	¼	¼	¼	¼	¼	¼
5	068U1035	1	¼	¼	¼	¼	¼	¼
6	068U1036	1 ½	¼	¼	¼	¼	¼	¼
7	068U1037	2	¼	¼	¼	¼	¼	¼
8	068U1038	2 ½	¼	¼	¼	¼	¼	¼
9	068U1039	4	¼	¼	¼	¼	¼	¼

All capacity data is in accordance to ARI 750-2007 except where noted.

<sup>1</sup> Nominal capacity based on ARI standards: Evaporating temperature = 40 °F, Liquid temperature = 100 °F, Condensing temperature = 110 °F

<sup>2</sup> Capacity based on condensing temperature of 95 °F and a vapor free liquid temperature of 85 °F ahead of the expansion valve.

<sup>3</sup> Condensing temperature = 100 °F

## Spare Parts and Accessories

Description	Danfoss Code No.
Bulb strap	068U3507
Metal Gasket (24 pcs)	068U0015
Filter for orifices 0–4 (clear, 24 pcs)	068U1706
Filter for orifices 5–9 (blue, 24 pcs)	068U0016

# Selection and Installation Instructions

## 1. Select Valve Body

Select the valve body based on refrigerant and need for internal or external equalization using the table on the previous page under "Select Valve Body."



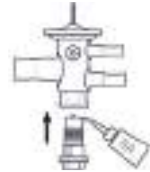
## 2. Select Orifice

1. Select one of ten orifices using the "Select Orifice" section on the previous page.  
2. Prior to installing into system, verify that only mesh portions of the screen cover the orifice inlet.



## 3. Assemble Valve

1. Place one drop of refrigerant oil between the screen cage and the pushpin.
  2. Verify that the metal gasket is seated on the base of the orifice.
  3. Tighten orifice into valve (specification is 26–30 ft.-lbs.). In addition to eliminating leaks, proper torquing insures proper superheat control.
- ▶ Replace the metal washer/gasket that is mounted at the base of the orifice every time you change the orifice assembly or remove it from the valve body.



## 4. Braze Valve into System

1. Clean and insert copper tubing into appropriate connection on valve.
  2. Direct torch at copper tubing until it begins to color (10–15 seconds).
  3. Briefly direct torch on valve connection (2–5 seconds).
  4. Apply brazing alloy until it flows.  
Do not try to fill the ridge. Attempts to do so may clog the connector.
- ▶ Sweat connections using any common brazing alloy (minimum 5% silver). As internal connector surface is copper, connections are copper to copper, and there is no need for use of high content silver solder or flux.
- ▶ **NO WET WRAP REQUIRED**
5. Secure sensing bulb with enclosed bulb strap to suction line. Bulb should be located between 1:00 & 4:00 or 8:00 & 11:00 on the tube, and the strap should be tight enough that no bulb movement is possible.
  6. Wrap included insulation tape beginning one inch before the bulb and overlapping each wrap, finishing one inch beyond the bulb on the other end.

## 5. Adjust Superheat

1. Remove the cap with a  $\frac{5}{32}$  inch hex key.
  2. Make superheat adjustments  $\frac{1}{4}$  turn at a time ( $\frac{1}{4}$  turn  $\approx 1^\circ\text{F}$ ).
    - Turning clockwise increases superheat.
    - Turning counter-clockwise decreases superheat.
  3. Reinstall the cap.
- ▶ Expansion valves on low temperature systems may require minor adjustment as the factory setting is for medium temperature systems.



### Easy to carry kits for truck stock

All TUA/TUAE valve bodies and orifice featured on the next page and a hex key for superheat adjustment.

**068U7000**

Both TUA/TUAE valve bodies and orifices and T2/TE2 and orifices plus gaskets for TUA/TUAE and a hex key for superheat adjustment.

**068U7001**

Kits are plastic cases with foam inserts, all valves and orifices, and instructions for selection and installation of the valves. Empty kits and foam available upon request.

# TUA - Thermostatic Expansion Valves for Ice Machines

These kits are designed with contractors in mind to help save time and money by providing a universal valve that can easily be adapted to replace most OEM specific TXVs. Two kits are available, each with a valve body and a selection of three orifice sizes, copper fittings (two elbows and one reducer), a patented bulb strap, and insulation tape.



## Facts

### Applications:

- Ice machines
- Ice machine capacity: 75 to 2300 pounds per day
- Two kits available
- Each kit contains:
  - Exchangeable orifice thermostatic expansion valve
  - Selection of (3) orifice sizes
  - Copper fittings (2 elbows and 1 reducer)
  - Copper bulb strap
  - Insulation tape
  - Installation guide

## Selection and installation instructions

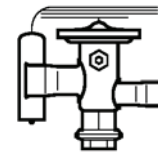
1. Determine the type of machine (cube, flake, or nugget), output of the machine in pounds of ice per 24 hours, and the number of expansion devices installed.
  2. Divide the output in pounds of ice by the number of expansion valves.
  3. Use the appropriate selection table below under Technical data and ordering to determine the correct orifice size for the ice output per expansion valve.
  4. Adhere to start up and performance measurements as specified in the Instructions included with the kit.
- After the new valve is installed and the machine is back in operation, it is important to verify appropriate superheat performance. Cube ice machines typically start cycles with high superheat, which decreases as a harvest cycle approaches.

A properly sized and adjusted valve will assure adequate capacity during all phases of the freeze cycle and positive superheat through the cycle. As the valve nears the end of the freeze cycle it is imperative that you accurately measure the evaporator superheat.

1. Inspect the ice for sufficient production.
2. Inspect the suction line just before the compressor for any frost that could indicate liquid flooding.
3. Measure superheat at the end of the freeze cycle.
4. If superheat is between 10 °F and 18 °F, ice is forming appropriately, and there is no sign of liquid flooding, the installation is complete.
5. If superheat is below 10 °F, increase superheat.
6. If superheat is above 18 °F, decrease superheat.
7. If after adjusting superheat you still see too low superheat or liquid flooding, please install the next smaller orifice and repeat this process.
8. If after adjusting superheat you still see too high superheat or insufficient ice formation, please install the next larger orifice and repeat this process.

If superheat adjustment is necessary, follow these steps:

1. Remove the cap with a  $\frac{5}{32}$  inch hex key.
2. Make superheat adjustments  $\frac{1}{4}$  turn at a time ( $\frac{1}{4}$  turn  $\approx$  1 °F).
  - Turning clockwise increases superheat.
  - Turning counter-clockwise decreases superheat.
3. Reinstall the cap.



## Technical data and ordering

### TUA for Ice Machines

Machine Size	Estimated orifice size	lbs. of ice/24 hrs. per valve		Danfoss Code No.
		Cuber	Flaker/Nugget	
small	1	75–150	75–200	<b>068U4900<sup>1</sup></b>
	3	151–350	201–500	
	5	351–600	501–950	
large	7	601–1200	951–1650	<b>068U4901<sup>2</sup></b>
	8	1201–1800	1651–2300	

Ice machine kits contain valve, (3) orifices in corresponding tables, (2) elbow fittings, (1) reducer, copper bulb strap, insulation tape, and instructions.

<sup>1</sup>Valve in 068U4900 kit above has straightway  $\frac{1}{4}$  in.  $\times$   $\frac{3}{8}$  in. ODF connections

<sup>2</sup>Valve in 068U4901 kit above has straightway  $\frac{3}{8}$  in.  $\times$   $\frac{1}{2}$  in. ODF connections

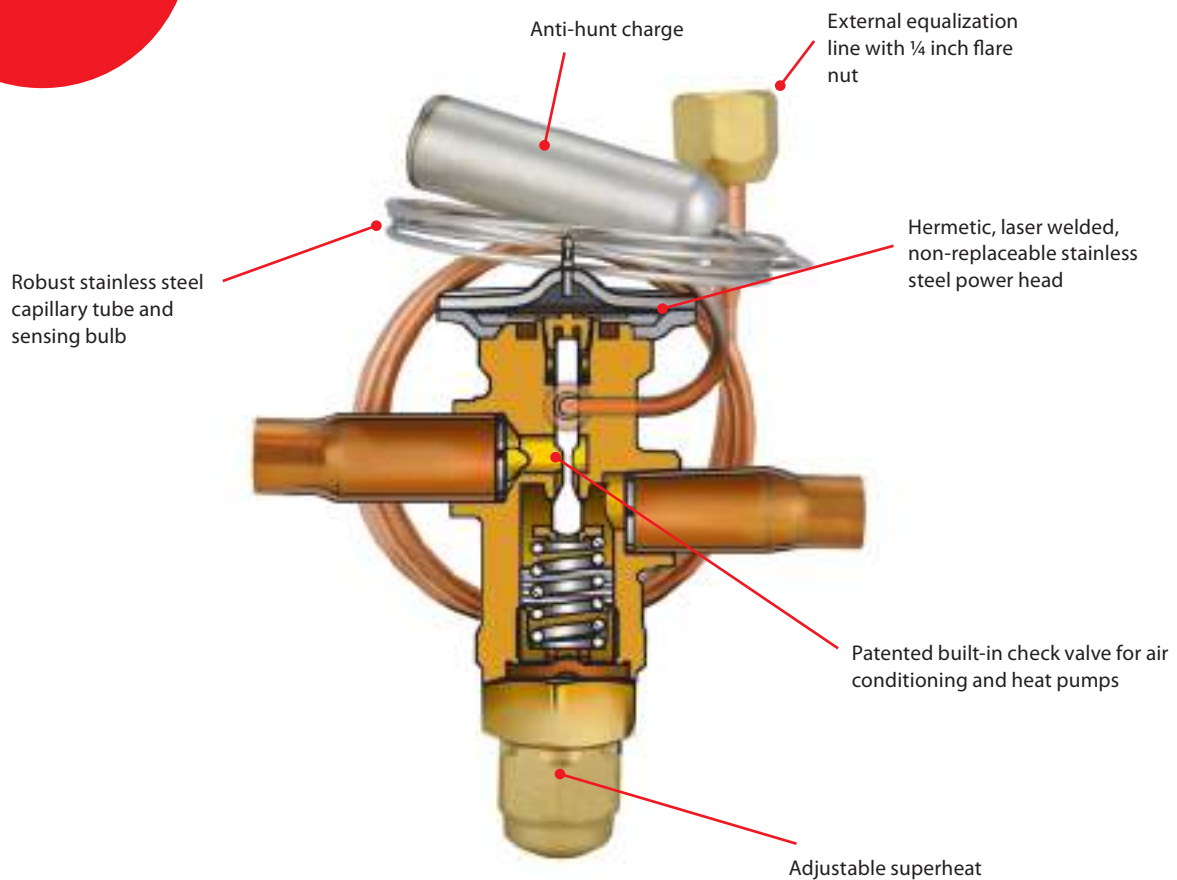
Scan the QR Code for a video with more information on the TUA ice machine kits or visit <http://bit.ly/TUAicekit>



## TR6 - Thermostatic Expansion Valve Kits

Danfoss TR6 kits include a valve, aeroquip, chatleff, and 3/8 inch flare fittings for evaporator connections, insulating tape, a bulb strap and instructions for easy installation in the field. All valves have a balanced port design which reduces the influence from varying condensing pressures. The valves feature a built-in check valve for heat pump applications and an anti-hunt bulb charge, optimized for residential A/C requirements.

### Features TR6



### Facts

#### Applications:

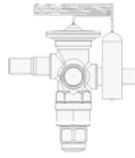
- Residential air conditioning systems
- Rooftop units
- Heat pumps
- Light commercial air conditioning systems
- Chillers
- Split systems

- Refrigerants: R-22, R-407C, R-410A
- Capacity range: 3 to 7 Tons
- Temperature range: 15 °F to 60 °F

#### Kits Include:

- Thermostatic expansion valve
- Aeroquip, chatleff, 3/8 inch flare fittings
- Insulating tape
- Bulb strap
- Installation guide

# Ordering



## R-22 / R-407C and R-410A

Valve type	Orifice no.	Rated capacity						Connections solder ODF		Code no. Multi pack <sup>1</sup>
		R410A <sup>2</sup>		R-407C		R-22		Inlet x Outlet [in.]	Pressure equalization [in.]	
		[KW]	[TR]	[KW]	[TR]	[KW]	[TR]			
TR6	3	-	-	9.8	2.8	11	3.1	3/8 x 3/8	1/4	<b>067L5855</b>
TR6	4	-	-	13.8	3.9	15.5	4.4	3/8 x 3/8	1/4	<b>067L5856</b>
TR6	5	-	-	16.4	4.7	18.4	5.2	3/8 x 3/8	1/4	<b>067L5857</b>
TR6	6	-	-	17.4	4.9	19.6	5.6	3/8 x 3/8	1/4	<b>067L5858</b>
TR6	7	-	-	20.9	6	23.8	6.8	3/8 x 3/8	1/4	<b>067L5859</b>
TR6	3	11.3	3.2	-	-	-	-	3/8 x 3/8	1/4	<b>067L5955</b>
TR6	4	15.9	4.5	-	-	-	-	3/8 x 3/8	1/4	<b>067L5956</b>
TR6	5	19	5.4	-	-	-	-	3/8 x 3/8	1/4	<b>067L5957</b>
TR6	6	20.2	5.8	-	-	-	-	3/8 x 3/8	1/4	<b>067L5958</b>
TR6	7	24.5	7	-	-	-	-	3/8 x 3/8	1/4	<b>067L5959</b>

<sup>1</sup> Kit part numbers consist of a valve, bulb strap, insulation tape, installation guide, and the following connectors:  
 1 Chatleff female 3/4 in. connector  
 1 Aeroquip female 5/8 in. connector  
 1 Flare 3/8 in. connector

Temperature range = -10 to 15 °C / 15 to 60 °F = 4 K / 7.2 °F  
 TR6 with fixed superheat setting are available upon request.  
 Single pack = 1 valve kit in a box  
 Industrial pack = 12 pieces in one box

<sup>2</sup> The rated capacity is based on:  
 Evaporating temperature  $t_e$ : 4.4 °C / 40 °F  
 Condensing temperature  $t_c$ : 38 °C / 100 °F  
 Refrigerant temperature ahead of valve  $t_1$ : 37 °C / 98 °F



Easy to carry kits for truck stock	Danfoss Code No.
All (3) R-410A TR6 valve kit (pictured left)	<b>067L7000</b>
All (4) R-22/407C TR6 valve kits	<b>067L7001</b>

## Spare Parts and Accessories

Description	Danfoss Code No.
Bulb strap	<b>068U3507</b>
Fitting 3/8 in. ODM x Chatleff	<b>119F3965</b>
Fitting 3/8 in. ODM x Aeroquip	<b>119F3966</b>

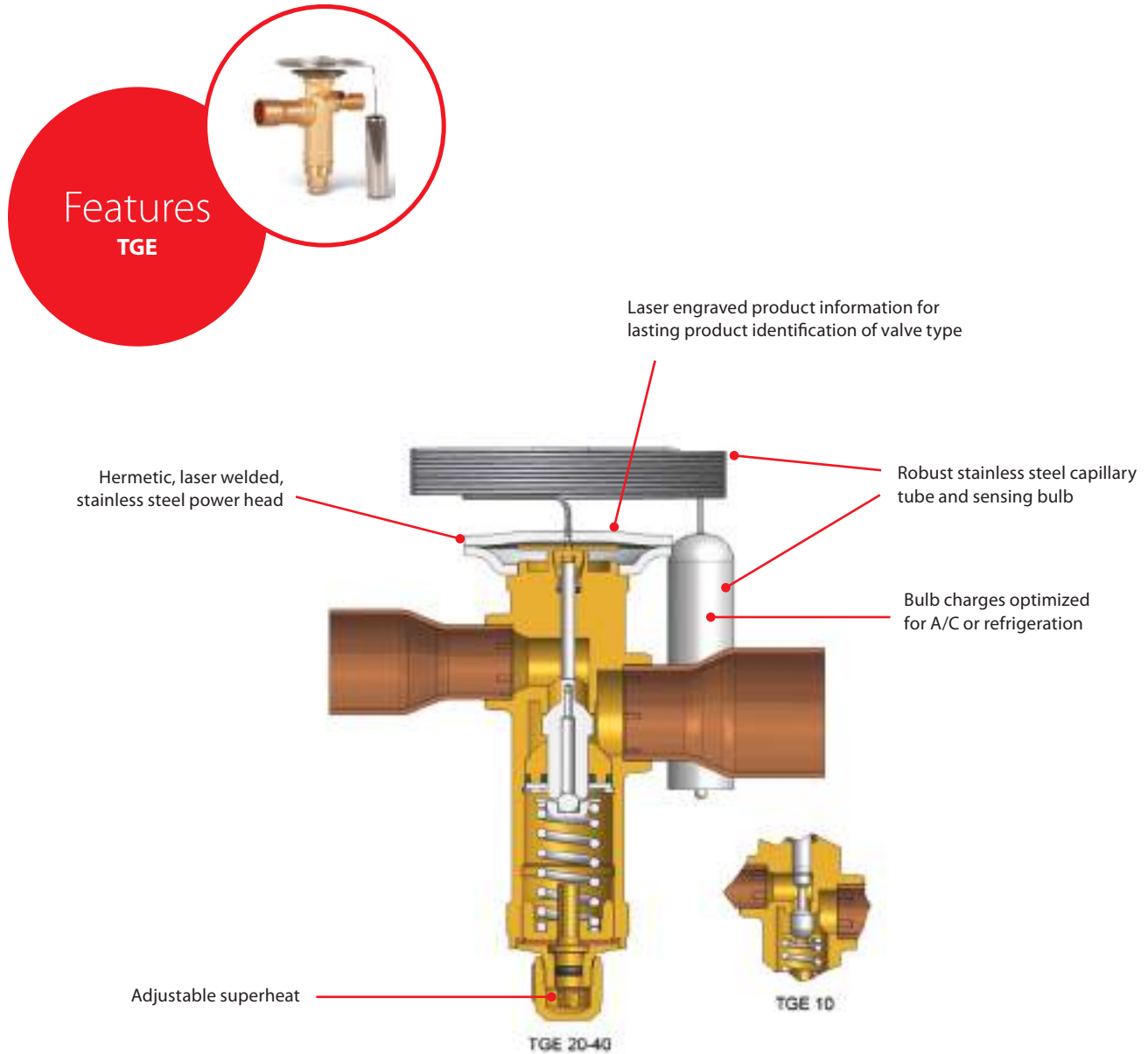
Scan the QR Code for a video with more information on TR6 valve features or visit <http://bit.ly/TR6Features>





# TGE - Thermostatic Expansion Valves

Danfoss TGE thermostatic expansion valves are designed for commercial air conditioning and refrigeration. They feature a balanced port design which reduces the influence from varying condensing pressures. The air conditioning valves in this catalog feature an anti-hunt charge optimized for A/C applications and the refrigeration valves are designed for stable operation across a wide temperature range.

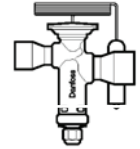


## Facts

### Applications:

- Traditional refrigeration
- Residential air conditioning systems
- Rooftops
- Commercial air conditioning systems
- Chillers
- Refrigerants: R-22, R-407C, R-410A, R-404A, R-507A, R-134a
- Capacity range: 9 to 46 tons (varies by refrigerant)
- Temperature range:
  - Refrigeration Valves: -40 °F to +50 °F
  - Air Conditioning Valves: -22 °F to +60 °F
- Balanced port

# Technical data and ordering



## TGE

Danfoss Type	Competitor Model Numbers	Nominal capacity (tons) <sup>3</sup>	Solder ODF connection (in.)	Danfoss Code No.
<b>R-22, MAH charge<sup>1</sup></b>		<b>R-407C, MAH charge<sup>1</sup></b>		
TGEX 10	SVE-5, EVRE-5	6	½ × ⅝	<b>067N9403</b>
TGEX 10	SVE-5, EVRE-5	6	½ × ⅞	<b>067N9404</b>
TGEX 10	SVE-6, EVRE-6	7 ½	⅝ × ⅞	<b>067N9406</b>
TGEX 10	SVE-6, EVRE-6	7 ½	⅝ × 1 ⅛	<b>067N9483</b>
TGEX 10	SVE-8, SVE-10, EBSVE 8, EVRE 8, EVRE 10	11	⅝ × ⅞	<b>067N9407</b>
TGEX 20	EBSVE 11, EVRE 12	12	⅝ × ⅞	<b>067N9409</b>
TGEX 20	EBSVE15, OVE 15	15	⅝ × 1 ⅛	<b>067N9411</b>
TGEX 20	EBSVE15, OVE 15	15	⅞ × 1 ⅛	<b>067N9412</b>
TGEX 20		18	⅞ × 1 ⅛	<b>067N9413</b>
TGEX 40	EBSVE 20, OVE 20	26	⅞ × 1 ⅜	<b>067N9415</b>
TGEX 40	OVE 30	30	1 ⅛ × 1 ⅜	<b>067N9418</b>
TGEX 40	OVE 40	38	2 ⅛ × 1 ⅜	<b>067N9419</b>
<b>R-410A, MAH charge<sup>1</sup></b>				
TGEL 10	ERZE-8	9	⅝ × ⅞	<b>067N9206</b>
TGEL 10	ERZE-12.5	13	⅝ × ⅞	<b>067N9207</b>
TGEL 20	ERZE-15	15	⅝ × ⅞	<b>067N9209</b>
TGEL 20	ERZE-15	15	⅝ × 1 ⅛	<b>067N9210</b>
TGEL 20	OZE-20	23	⅞ × 1 ⅛	<b>067N9213</b>
TGEL 20	OZE-20	23	1 ⅛ × 1 ⅛	<b>067N9284</b>
TGEL 40	OZE-25	31	⅞ × 1 ⅛	<b>067N9285</b>
TGEL 40	OZE-25	31	⅞ × 1 ⅜	<b>067N9215</b>
TGEL 40	OZE-35	35	1 ⅛ × 1 ⅜	<b>067N9218</b>
TGEL 40		46	1 ⅛ × 1 ⅜	<b>067N9219</b>
<b>R-134a, N charge<sup>2</sup></b>				
TGEN 10	SJE-5, SJE-6, EBSJE-5	7	⅝ × 1 ⅛	<b>067N5158</b>
TGEN 20	EBSJE-7	8	⅝ × ⅞	<b>067N5159</b>
TGEN 20	EBSJE-12, OJE-12	12	⅞ × 1 ⅛	<b>067N5163</b>
TGEN 40	OJE-16	17	1 ⅛ × 1 ⅛	<b>067N5254</b>
TGEN 40		20	1 ⅛ × 1 ⅛	<b>067N5255</b>
TGEN 40	OJE-23	25	1 ⅛ × 1 ⅜	<b>067N5169</b>
<b>R-404A, N charge<sup>2</sup></b>		<b>R-507A, N charge<sup>2</sup></b>		
TGES 10	SSE-3	4	½ × ⅞	<b>067N6151</b>
TGES 10	SSE-4	5	½ × ⅞	<b>067N6166</b>
TGES 10	SSE-4	5	⅝ × ⅞	<b>067N6150</b>
TGES 10	SSE-6, SSE-7, EBSSE-6	7 ½	⅝ × ⅞	<b>067N6154</b>
TGES 20	EBSSE-7.5	9	⅝ × ⅞	<b>067N6158</b>
TGES 20	EBSSE-10, OSE-9	11	⅝ × ⅞	<b>067N6188</b>
TGES 20	EBSSE-10, OSE-9	11	⅝ × 1 ⅛	<b>067N6155</b>
TGES 20	EBSSE-10, OSE-9	11	⅞ × 1 ⅛	<b>067N6181</b>
TGES 20	EBSSE-13, OSE-12	13	⅞ × 1 ⅛	<b>067N6162</b>
TGES 20	OSE-21	21	1 ⅛ × 1 ⅜	<b>067N6186</b>

<sup>1</sup>MAH charge: -22 °F to 60 °F, Maximum operating temperature = 300 °F

<sup>2</sup>N charge: -40 °F to 50 °F, Maximum operating temperature = 210 °F

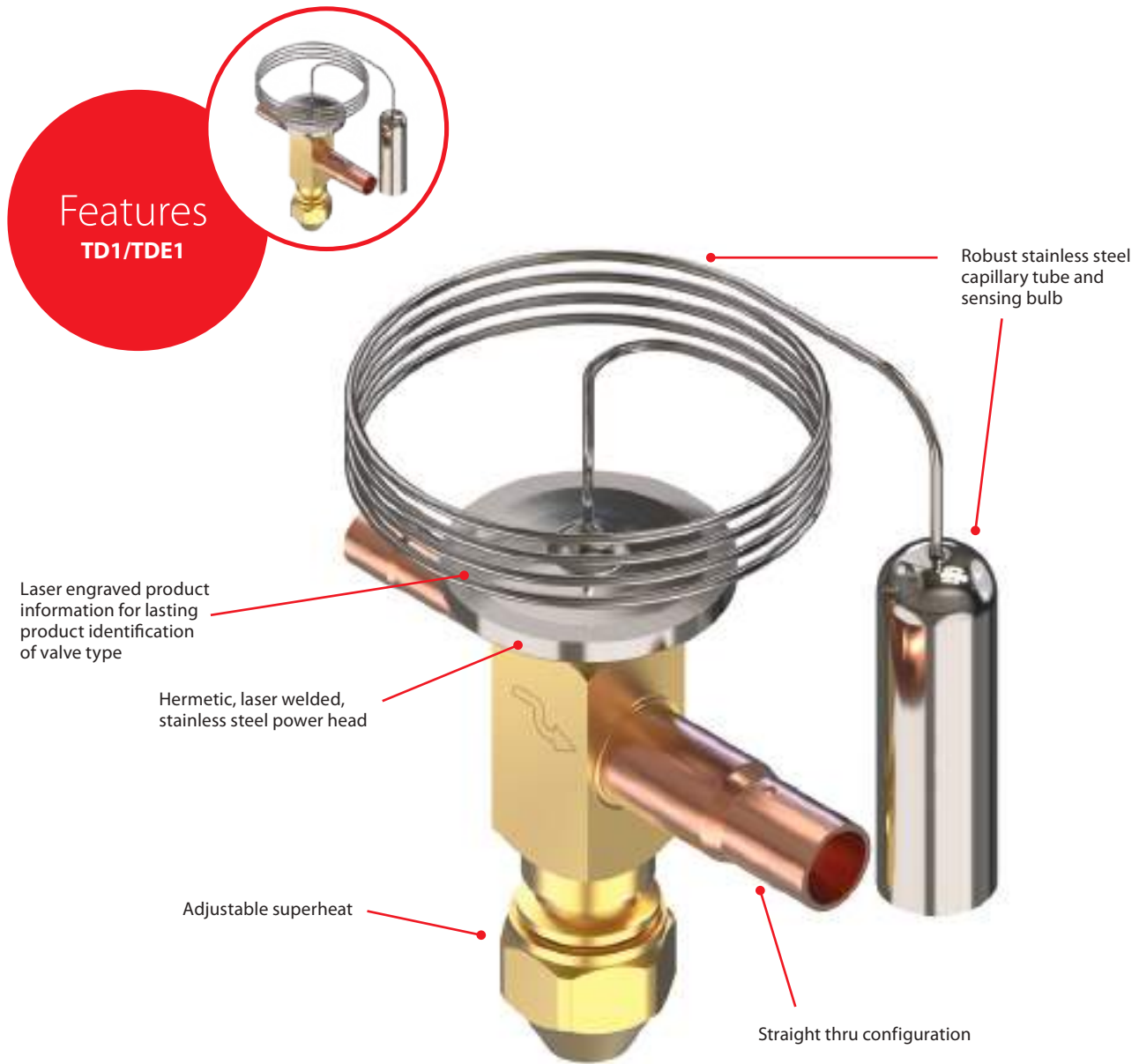
<sup>3</sup>Nominal capacity based on ARI standard: Evaporating temperature = 40 °F, Liquid temperature = 100 °F, Condensing temperature = 110 °F

## Spare Parts and Accessories

Description	Danfoss Code No.
Bulb strap	<b>067N0557</b>

# TD1/TDE1 - Thermostatic Expansion Valves

The Danfoss TD1/TDE1 range of thermostatic expansion valves are designed for small commercial refrigeration applications. TD1/TDE1 TXVs have been proven to achieve energy savings and quicker pull-down times when compared to a capillary tube. Danfoss TD1/TDE1 is UL approved and is available in a straight through configuration for refrigerants R-134a, R-404A, and R-290.



## Facts

### Applications:

- GDMs
- Ice cream cabinets
- small ice machines
- refrigerated beverage dispensers
- specialty cooling
- transport refrigeration
- reach-in fridges
- small chillers
- small refrigeration units
- Temperature range:  $-40^{\circ}\text{F}$ – $+50^{\circ}\text{F}$
- Capacity range: 1/10–2 tons
- Refrigerants: R-134a, R-513A, R-404A, R-290, R-448A/9A

# Technical data and ordering

## TD1/TDE1 Thermostatic Expansion Valves

Model no.	Capacity* in TR MBP	Capacity* in TR LBP	Orifice size	Range	Inlet size (in.)	Outlet size (in.)	Equalization size (in.)	Superheat	Danfoss Code No.
<b>R-134a<sup>1</sup></b>									
TD1-0 R134a	1/8	3/50	0	-40~+50 °F	3/8	1/2	—	Adjustable	<b>068N7671</b>
TD1-1 R134a	1/5	1/10	1						<b>068N7672</b>
TD1-2 R134a	1/3	1/5	2						<b>068N7673</b>
TD1-3 R134a	1/2	1/3	3						<b>068N7674</b>
TD1-4 R134a	3/4	1/2	4						<b>068N7675</b>
TD1-5 R134a	1	1/2	5						<b>068N7676</b>
TDE1-3 R134a	1/2	1/3	3						<b>068N7690</b>
TDE1-4 R134a	3/4	1/2	4						<b>068N7677</b>
TDE1-5 R134a	1	1/2	5						<b>068N7678</b>
<b>R-404A</b>									
TD1-0 R404A	1/4	1/10	0	-40~+50 °F	3/8	1/2	—	Adjustable	<b>068N7679</b>
TD1-1 R404A	1/3	1/6	1						<b>068N7680</b>
TD1-2 R404A	1/2	2/7	2						<b>068N7663</b>
TD1-3 R404A	2/3	1/2	3						<b>068N7664</b>
TD1-4 R404A	1	3/4	4						<b>068N7665</b>
TD1-5 R404A	1 1/2	3/4	5						<b>068N7666</b>
TDE1-3 R404A	2/3	1/2	3						<b>068N7667</b>
TDE1-4 R404A	1	3/4	4						<b>068N7668</b>
TDE1-5 R404A	1 1/2	3/4	5						<b>068N7669</b>
<b>R-290</b>									
TD1-0 R290	1/4	1/8	0	-40~+50 °F	3/8	1/2	—	Adjustable	<b>068N7681</b>
TD1-1 R290	1/3	1/5	1						<b>068N7682</b>
TD1-2 R290	1/2	3/8	2						<b>068N7683</b>
TD1-3 R290	3/4	1/2	3						<b>068N7684</b>
TD1-4 R290	1 1/4	3/4	4						<b>068N7685</b>
TD1-5 R290	2	1	5						<b>068N7686</b>
TDE1-3 R290	3/4	1/2	3						<b>068N7687</b>
TDE1-4 R290	1 1/4	3/4	4						<b>068N7688</b>
TDE1-5 R290	2	1	5						<b>068N7689</b>
<b>R-448A<sup>2</sup></b>									
TD1-0 R448A/R449A	1/4	1/8	0	-40~+50 °F	3/8	1/2	—	Adjustable	<b>068N7691</b>
TD1-1 R448A/R449A	1/3	1/5	1						<b>068N7692</b>
TD1-2 R448A/R449A	2/3	1/3	2						<b>068N7693</b>
TD1-3 R448A/R449A	3/4	2/3	3						<b>068N7694</b>
TD1-4 R448A/R449A	1 1/4	3/4	4						<b>068N7695</b>
TD1-5 R448A/R449A	2 1/8	1	5						<b>068N7696</b>
TDE1-3 R448A/R449A	1	2/3	3						<b>068N7697</b>
TDE1-4 R448A/R449A	1 1/4	3/4	4						<b>068N7698</b>
TDE1-5 R448A/R449A	2 1/8	1	5						<b>068N7699</b>

\*The rated capacity is based on:

Evaporating temp. Te = +41 °F MBP/-20 °F LBP

Condensing temp. Tc = +90 °F

Refrigerant temp. ahead of the value = +82 °F

Included in package: bulb strap

<sup>1</sup> Compatible with R-513A

<sup>2</sup> Compatible with R-449A

## Spare Parts

Code No.	Description	Pack mode	Order multiple
<b>068U3505</b>	Bulb strap; 0.4 mm thick, max. 28 mm diameter tube	Industrial	45
<b>068U3507</b>	Bulb strap; 0.4 mm thick, max. 28 mm diameter tube	Single	1

# AK-RC 251 - Optyma™ Control for Walk-in Coolers and Freezers

The Optyma™ **Control** is designed with both upgrades and new room installs in mind. This electronic controller eliminates the need for mechanical thermostats in cooling applications along with defrost timers in freezer applications. The Optyma™ **Control** features a weatherproof enclosure and can reduce installation time by up to 60% and improve room efficiency by up to 30%.



Quick and easy to mount

Compatible with standard ¾ in. fittings

Simple to wire



Packaged with two NTC sensors: 5 ft. and 10 ft.

## Technical data and ordering

### AK-RC 251

Power supply	100 - 240VAC, 50/60 Hz, autodetect
Probe temperature range	- 58 to + 211 °F
IP rating	IP65
Display	3 ½ digits, up to 15 symbols/indicators (application dependent)
Inputs	2 NTC temperature sensors (included) 2 digital inputs (1 accepts NTC)
Sensors included in kit	2 NTC, 5 ft & 10 ft
Operating conditions	+ 14 to + 122 °F
Storage conditions	- 22 to +140 °F
Relays	1 x 16A SPDT (AUX 2) • NO: UL - 60730: 5 FLA 30 LRA, 240VAC • NO: UL - 60730: RES 10A, 240VAC • NC: UL - 60370: 5A, 240VAC 2 x 20A SPDT (DEFROST, AUX 1) • NO: UL - 60370: 9 FLA 54 LRA, 240VAC • NO: UL - 60370: RES 12A, 240VAC • NC: UL - 60370: RES 6A, 240VAC 2 x 16A SPST (FAN, COOL) • UL - 60370: 5 FLA 30 LRA, 240VAC • UL - 60370: RES 10A, 240VAC
Internal buzzer	Yes
Communication	Modbus (Connection to Danfoss system manager in development)
Dimensions	11.40 in (W) x 5.55 in (H) x 3.32 in (D)

## Technical data and ordering

### Optyma Control

Voltage	Danfoss Code No.
100–240VAC, 50/60 Hz, autodetect	<b>080Z5000</b>

### Spare Parts and Accessories

Description	Quantity	Danfoss Code No.
Sensor EKS 221 NTC 10K 1.5m cable	150	<b>084N3200</b>
Sensor EKS 221 NTC 10K 8.5m cable	50	<b>084N3208</b>
Sensor EKS 221 NTC 10K 3.5m cable	1	<b>084N3210</b>

For more details on sensors, please consult EKS 221 technical documentation.



Scan this QR Code for more information about the Optyma™ **Control**

# ERC 213 - Electronic Temperature Control

The ERC 213 is designed to meet the needs of today's refrigeration technician. Its universal fit, easy setup, and capacity to work with any common temperature sensor make it the obvious choice when replacing an electronic temperature control.



Compatible with all common temperature sensors

Kitted with two temperature sensors



Easy to install (attachment clips included)

Quick five-step set up process

## Technical data and ordering

### ERC 213



Voltage	Applications	Danfoss Code No.
115V 50/60 Hz	Compressor or solenoid for pump down, defrost, and fan	<b>080G3411</b>
220V 50/60 Hz		<b>080G3412</b>



Scan the QR Code for a step-by-step set up video or visit [http://bit.ly/ERC213\\_video](http://bit.ly/ERC213_video)

## Spare Parts and Accessories

Description	Danfoss Code No.
EKA183B Programming Key, ERC 21X	<b>080G9741</b>
Sensor EKS 221 NTC 10K 3.5m cable	<b>084N3210</b>

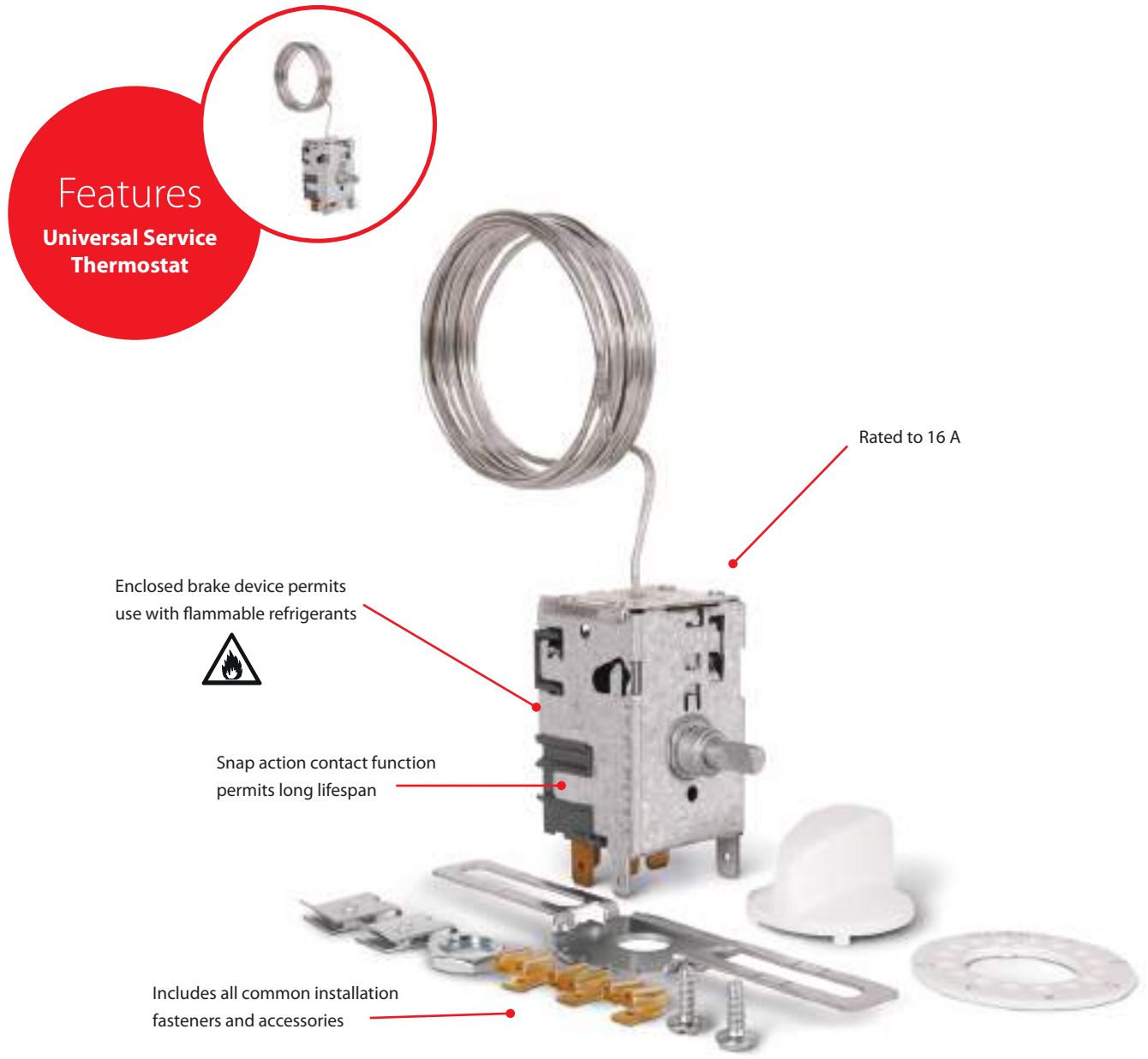
## Facts

Applications:

- Traditional refrigeration
- Walk-ins
- Chillers
- Controls:
  - defrost
  - fan
  - compressor/solenoid for pump down
- Temperature range:
  - operating conditions: 14 °F to 131 °F
  - storage conditions: -40 °F to 158 °F
- 4 inputs:
  - 2 analog
  - 1 analog/digital
  - 1 digital

# Universal Service Thermostat

Danfoss universal service thermostats are kitted with all the necessary accessories for standard applications, ensuring a quick and easy installation. Thanks to the integrated enclosed brake device, these controls can be safely used in isobutene or propane refrigeration systems.



Features  
Universal Service  
Thermostat

Enclosed brake device permits use with flammable refrigerants



Snap action contact function permits long lifespan

Rated to 16 A

Includes all common installation fasteners and accessories

## Facts

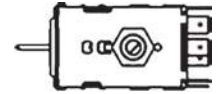
### Applications:

- Traditional refrigeration
- Self-contained refrigerators
- Reach-ins
- Bottle coolers
- Under counter refrigerators
- Eight kit options
- Fixed cut-in and constant differential options available
- Enclosed brake device permits use with flammable refrigerants
- Contact Load: 16 A (120V)

### Kit includes:

- Thermostat
- Mounting bracket
- Adjustment knob
- Fasteners

# Technical data and ordering



## Universal Service Thermostat

Application	Operation mode	Temperature Range (°F)			Sensor type	Capillary tube length (in.)	Competitor Model No.	Danfoss Code No.
		Warm pos. cut-in/cut-out	Middle pos. cut-in/cut-out	Cold pos. cut-in/cut-out				
Refrigerator	Constant Cut-in	38/28	38/19	38/9	Coiled Bulb	39	A12-1506 A12-710 A12-711	<b>077Z7010</b>
Refrigerator	Constant Cut-in	41/29.5	41/23.5	41/17	Straight Sensor	84	A12-700 A12-701 A12-1560 A12-712	<b>077Z7011</b>
Refrigerator/ Freezer	Adaptable Constant Differential	36/26	21.5/9	3/-14	Straight Sensor	42	A30-180 A30-182 A30-184 A30-185	<b>077Z7012</b>
Refrigerator/ Freezer	Adaptable Constant Differential	36/26	21.5/9	3/-14	Straight Sensor	84	A30-181 A30-183 A30-260 A30-263	<b>077Z7013</b>
Low Temp. Freezer	Adaptable Constant Differential	16.5/7	4.0/-7.5	-11/-25.5	Straight Sensor	84	A30-301 A30-307	<b>077Z7014</b>
Low Temp. Freezer	Adaptable Constant Differential	9.5/3	-3/-11	-18.5/-29	Straight Sensor	42	A30-310 A30-311 A30-313	<b>077Z7015</b>
Low Temp. Freezer	Adaptable Constant Differential	9.5/3	-3/-11	-18.5/-29	Straight Sensor	84	A30-308 A30-314	<b>077Z7016</b>
Refrigerator	Adaptable Constant Differential	47/36.5	37.5/25.0	25.5/10.0	Straight Sensor	66	A22-391 A22-1112	<b>077Z7017</b>

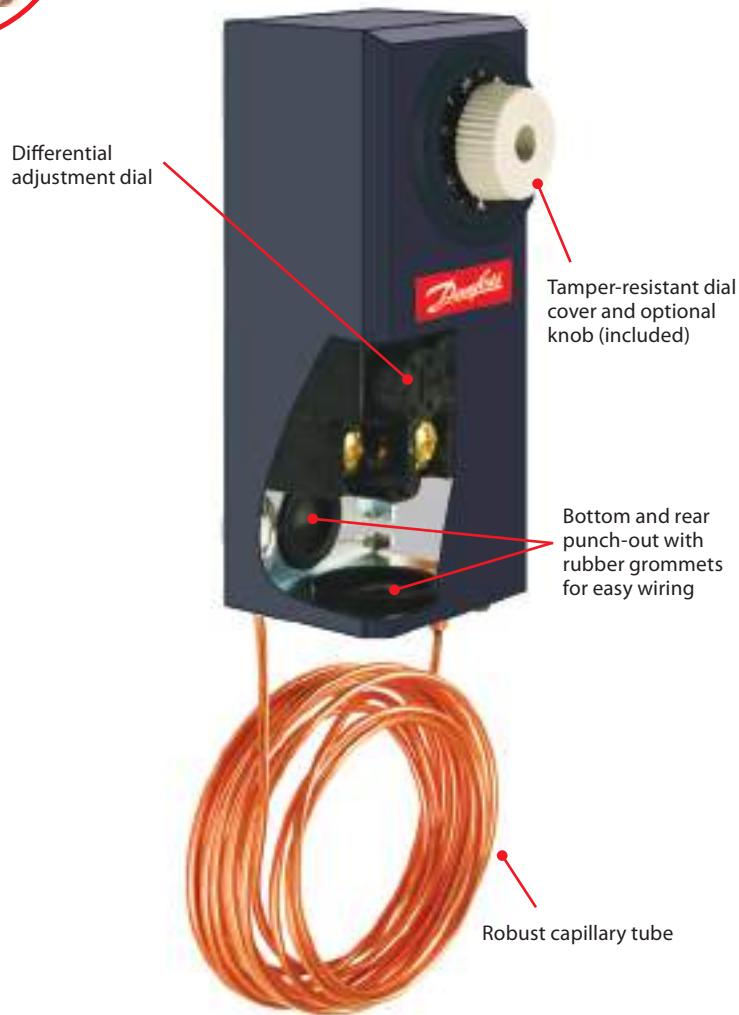
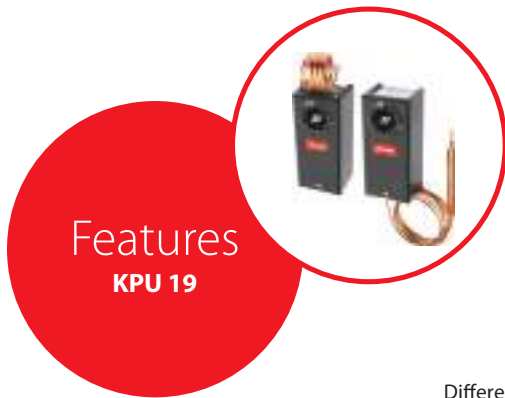
All controls feature an enclosed brake device to permit use with flammable refrigerants and are kitted with adjustment knob, installation fasteners, and mounting bracket.

Contact Load	120V		240V	
	Full Load Amps	16A	8A	
	Locked Rotor Amps	96A	40A	



## KPU 19 - Thermostats

The KPU 19 thermostats are designed for easy installation and service with bottom and rear knockouts, differential adjustment dial, a tamper-resistant design, and a robust thermoplastic housing.



### Facts

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#### Applications:

- Traditional refrigeration
- Air conditioning
- Ventilating systems
- Heating systems
- Ambient temperature:  $-30^{\circ}\text{F}$  to  $+158^{\circ}\text{F}$  (bulb sensor);  $-30^{\circ}\text{F}$  to  $+140^{\circ}\text{F}$  (room sensor)
- Switch: Single pole changeover switch (SPDT) and single pole non-changeover switch (SPST)
- Enclosure: NEMA 1
- Cable entry:  $\frac{7}{8}$  inch cable entry for  $\frac{1}{2}$  inch male pipe thread connection (conduit boss) or similar screwed cable entry

# Technical data and ordering



## KPU 19 Thermostats

KPU Series	Bulb type	Range (°F)	Contact/Reset	Capillary tube length (in.)	Maximum bulb temperature (°F)	Competitor part no.	Danfoss Type	Danfoss Code No.
KPU 19	Remote bulb	-30 to 80	SPDT/Auto	120	140	A19ABC-24C A19ABC-37C A19ABC-74C A19AAC-4C A19AAF-20C	KPU19	<b>060L2150</b> <sup>1</sup>
KPU 19		-30 to 80	SPST/Auto	80	140	A19AAD-5C A19ABA-40C A19AAD-12C	KPU19	<b>060L2151</b> <sup>1</sup>
KPU 19	Room bulb	-30 to 80	SPDT/Auto	Room sensor	140	A19BBC-2C A19BAB-3C A19BAC-1C A19BAF-1C	KPU19	<b>060L2152</b>

<sup>1</sup> As 060L1250 is SPDT, 060L2150 can replace competitor parts crossed to both 060L2150 and 060L2151.

Contact Load	Resistive load		0.5~16A/120V AC 0.5~8A/240V AC
	Inductive load	Full load	0.5~16A/120V AC 0.5~8A/240V AC
		Locked rotor	96A/120V AC 48A/240V AC
	Pilot duty		125VA/240V DC



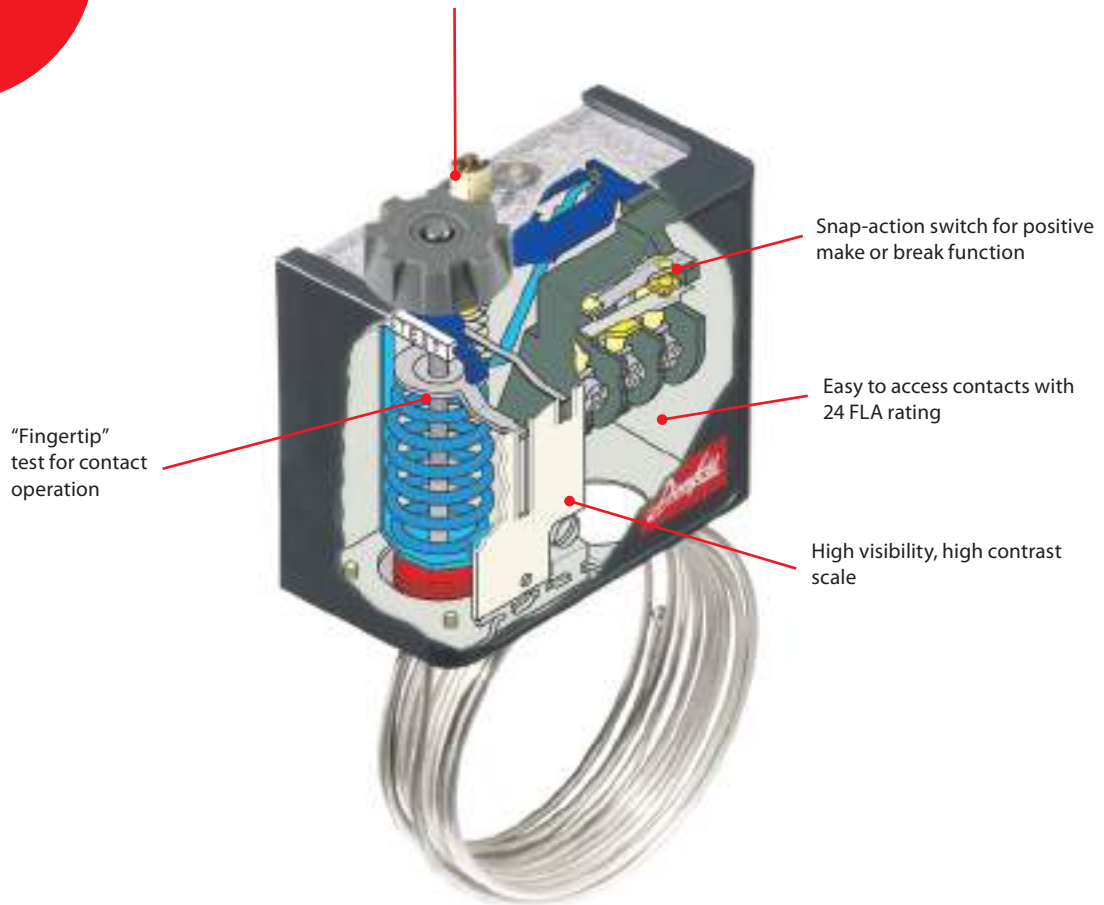
Scan the QR Code for a video of a KPU 19 temperature control replacement or visit [http://bit.ly/KPU19\\_video](http://bit.ly/KPU19_video)

# KPU 60/70 - Thermostats

KPU 60/70 thermostats are designed to be technician-friendly by functioning as easy and direct replacements for most controls on the market and feature snap-action switches, highly visible contrast scales, fingertip contact testing, and are easily adjustable using a standard refrigeration wrench.



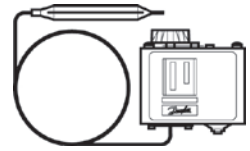
Easy adjustment of temperature setting with hand knob (all but models with manual reset). Differential setting adjusted with standard refrigeration wrench. A set screw prevents settings from migrating.



## Facts

### Applications:

- Traditional refrigeration
  - Air conditioning
  - Ventilating systems
  - Heating systems
- Ambient temperature: -40 °F to +122 °F (175 °F for maximum 2 hours)
  - Switch: Single pole double throw (SPDT)
  - Enclosure: NEMA 1
  - Cable entry: 7/8 inch cable entry for 1/2 inch male pipe thread connection (conduit boss) or similar screwed cable entry



# Technical data and ordering

## KPU 60/70 Thermostats

Danfoss Type	Bulb type	Range (°F)	Contact/Reset	Capillary tube length (in.)	Differential		Maximum bulb temperature (°F)	Competitor part no.	Danfoss Code No.
					at lowest temp. setting	at highest temp. setting			
KPU 61	Straight capillary tube <sup>1</sup>	-20 to 60	SPDT/Auto	80	10 to 40	2.5 to 13	250	O10-1416 O10-1010 O16-111 O10-1419	<b>060L5201</b>
KPU 61	Remote air coil <sup>1</sup>	-20 to 60	SPDT/Auto	80	10 to 40	2.5 to 13	250	O10-1408 O10-1409 O10-1473 O16-104 O10-1410	<b>060L5203</b>
KPU 62	Room sensor <sup>1</sup>	-20 to 60	SPDT/Auto	Room sensor	10 to 40	2.5 to 13	250	O10-1072 O10-1418 O16-594 O60-101	<b>060L5206</b>
KPU 68	Room sensor <sup>1</sup>	25 to 95	SPDT/Auto	Room sensor	8 to 45	3 to 13	250	O10-1802 O16-595 O10-301 O16-165	<b>060L5215</b>
KPU 73	Remote bulb <sup>2</sup>	-15 to 60	SPDT/Auto	80	6.5 to 32	5 to 50	175	O60-100 O60-120	<b>060L5208</b>
KPU 71	Remote bulb <sup>2</sup>	25 to 70	SPDT/Auto	80	5.5 to 18	4 to 16	175		<b>060L5218</b>
KPU 77	Remote bulb <sup>2</sup>	60 to 140	SPDT/Auto	80	6 to 18	6.3 to 18	265	O60-200 A19AAF-12C A19AAB-4C A19ABB-2C A19ABB-7C	<b>060L5223</b>

<sup>1</sup> Bulb must be installed in colder position than thermostat housing and capillary tube.

<sup>2</sup> Temperature variations in excess of 70 °F between sensing bulb, housing, and capillary tube will influence scale accuracy.

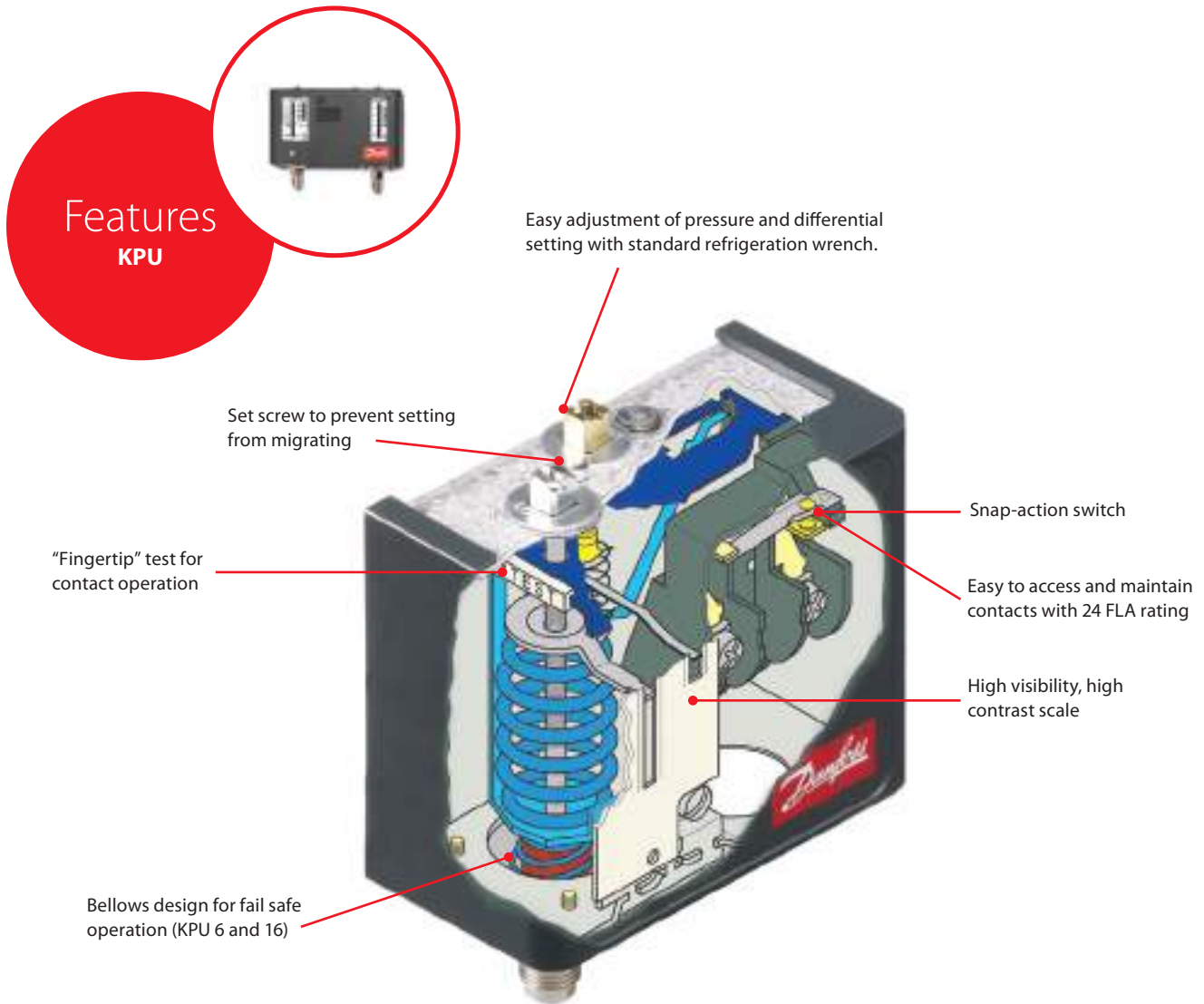
Contact Load	Resistive load		24A/120V AC 24A/240V AC
	Inductive load	Full load	24A/120V AC 24A/240V AC
		Locked rotor	144A/120V AC 144A/240V AC
	Pilot duty		12W/120V DC



Scan the QR Code for a video of a KPU 60/70 temperature control replacement or visit [http://bit.ly/KPU6070\\_video](http://bit.ly/KPU6070_video)

# KPU - Pressure Switches

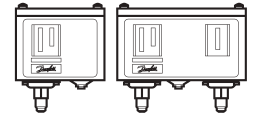
KPU pressure switches are designed to be contractor friendly and used in refrigeration and air-conditioning systems to protect the systems from excessively low suction or high discharge pressure. They can also be applied to start and stop compressors and the fans of air-cooled condensers. KPU pressure switches, in single and dual versions, cover a comprehensive range of applications and are designed for use with fluorinated and non-aggressive refrigerants. Most KPU pressure controls can be used with R-410a systems with only a few code numbers.



## Facts

### Applications:

- Commercial air conditioning
- Commercial refrigeration
- Supermarket Refrigeration
- Food processing and storage
- Product Types
  - Low Pressure
  - High Pressure
  - Dual Pressure
- Maximum working/test pressure
  - LP controls: 245/290 psig
  - HP controls: 505/505 psig
  - KPU 6 and 16 on HP side: 675/675 psig
- Refrigerants: R-22, R-134a, R-404A, R-407A, R-407C, R-407F, R-422B, R-422D, R-438A, R-448A, R-449A, R-450A, R-452A, R-507A, R-513A, R-410A (only KPU 1, 2, 6, 16)
- Ambient temperature: -40 to +150 °F (175 °F for max. 2 hours)
- Enclosure: NEMA 1
- Cable entry: 3/8 inch cable entry for 1/2 inch male pipe thread connection (conduit boss) or similar screwed cable entry
- Pressure connection: 1/4 inch M flare or 3/16 inch capillary tube with 1/4 inch flare nut
- KPU 6W, 6B, and 16B feature "dual bellows" on high pressure side to prevent leaks in the case of a bellows rupture



# Technical data and ordering

## KPU Pressure Switches

Danfoss Type	Pressure	Reset	Contact system	Range (in. Hg/psig)	Differential (psig)	Max. working pressure (psig)	Competitor part no. <sup>1</sup>	Danfoss Code No.	
								¼ in. M flare	36 in. capillary tubes with ¼ in. flare nuts
KPU 1	Low	Automatic	SPDT	6 to 108	10 to 60	250	O10-1483 P70AB-2C	<b>060-5231</b>	<b>060-5233</b>
KPU 2	Low	Automatic	SPST (NO)	6 to 73	6 to 30	250	O10-1402 P70AB-12C P170AB-12C	<b>060-5237</b>	<b>060-5235</b>
KPU 2	Low	Automatic	SPDT	6 to 73	6 to 30	250		<b>060-5239</b>	<b>060-5240</b>
KPU1B	Low	Manual	SPDT	28 to 100	10.2	250		<b>060-5232</b>	<b>060-5234</b>
KPU 5	Fan cycling	Automatic	SPST (NO)	100 to 465	25 to 85	510	O10-2054 P70AA-118C	<b>060-5241</b>	<b>060-5242</b>
KPU 6W <sup>2</sup>	High	Automatic	SPDT	100 to 600	58 to 145	675	O16-108 P170CA-400C P70CA-3C	<b>060-5243</b>	<b>060-5245</b>
KPU 6B <sup>2</sup>	High	Manual	SPDT	100 to 600	60	675	P70DA-1C	<b>060-5244</b>	<b>060-5246</b>

## KPU Dual Pressure Switches

Danfoss Type	Low pressure side		High pressure side		Rest		Contact system (LP/HP)	Max. working pressure (low/high side) (psig)	Competitor part no. <sup>1</sup>	Danfoss Code No.	
	Range (in. Hg/psig)	Differential (psig)	Range (psig)	Differential (psig)	Low pressure side	High pressure side				¼ in. M flare	36 in. capillary tubes with ¼ flare nuts
KPU 15	6 to 108	10 to 60	100 to 465	60	Automatic	Automatic	SPST (NO/NC)	250/510	O12-1549 P170LB-1C	<b>060-5247</b>	<b>060-5248</b>
KPU 15B	6 to 108	10 to 60	100 to 465		Automatic	Manual	SPST (NO/NC)	250/510	P70LB-1C P70MA-1C	<b>060-5249</b>	<b>060-5250</b>
KPU 16B	6 to 108	10 to 60	100 to 600		Convertible <sup>3</sup>	Convertible <sup>3</sup>	SPDT/ SPST (NO)	250/675	O12-4834 P170LB-1C P70LB-1C P70MA-1C	<b>060-5253</b>	<b>060-5254</b>

<sup>1</sup> Competitor part no. equipped with capillary tube for all but P170LB-1C which has flare connections.

<sup>2</sup> KPU 6 and the high pressure side of KPU 16 are designed with fail-safe double bellows.

<sup>3</sup> Convertible reset controls can be adjusted for either automatic or manual reset. Adjust reset setting to match product being replaced.

All controls are supplied with universal mounting bracket and mounting screws.

Ambient temperature: -40 °F to +122 °F (175 °F for maximum 2 hours).

KPU 1, 2, 6, 16 suitable for all HFC refrigerants, including R-410A.

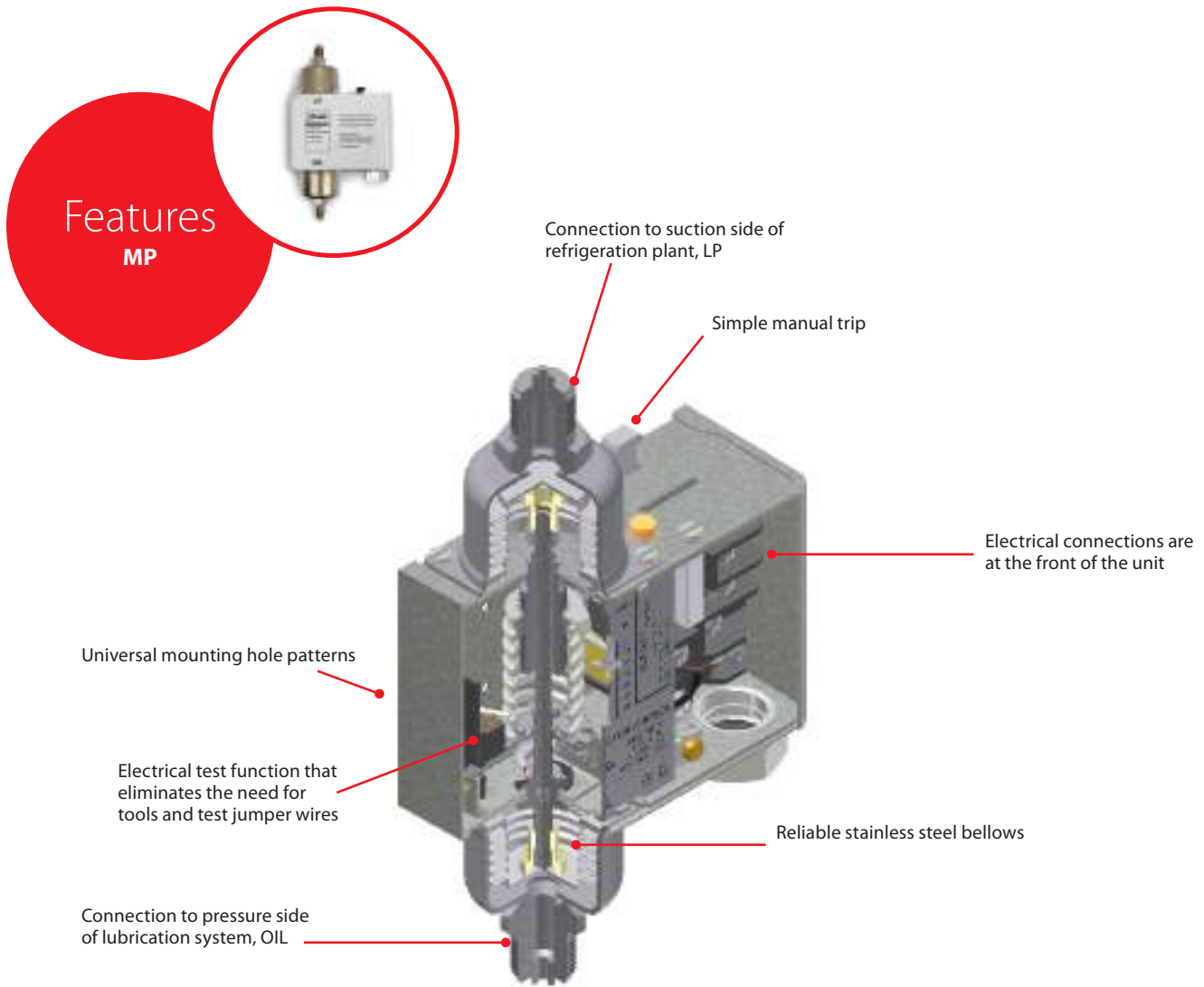
	120/240 VAC
Alternating Current	
Motor Full Load Amps (FLA)	24
Locked Rotor Amps (LRA)	144
Direct Current	240 V DC: 12W pilot duty

## Spare Parts and Accessories

Description	Type(s) applied to	Danfoss Code No.
Capillary tube; 39 in. with ¼ in. flare coupling nuts on each end	KPU with ¼ in. M flare	<b>060-017166</b>

# MP - Differential Pressure Switch / Lube Oil Protection Switch

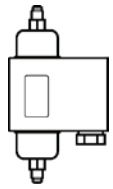
MP 54 and MP 55 oil differential pressure switches are used to protect refrigeration compressors against low oil pressure. These switches are compatible with HCFC and non-flammable HFC refrigerants.



## Facts

### Applications:

- Commercial refrigeration
- Commercial air conditioning
- Supermarket Refrigeration
- Food processing and storage
- Product Types
  - Fixed Differential (MP 54)
  - Adjustable Differential (MP 55)
- Refrigerants: HCFC and non-flammable HFC refrigerants
- Max working/test pressure: 245 psig/320 psig
- Ambient temperature: The time relay is temperature-compensated in the range -40 °F to +140 °F
- Enclosure: ~NEMA 1
- Cable entry: Integral ½ inch female NPSM swivel cable connector for ½ inch male pipe thread connector.
- Pressure connection: ¼ inch M flare or 36 inch capillary tube with ¼ inch flare nut



# Technical data and ordering

## MP - Differential Pressure Control / Lube Oil Protection Control

Danfoss Type	Control differential $\Delta p$ (psig)	LP side Regulation range (in. Hg/psig)	Time relay delay time seconds	Competitor Code Nos.	Danfoss Code No.	Competitor Code Nos.	Danfoss Code No.
				¼ in. M flare		36 in. capillary tubes with ¼ in. flare nuts	
MP54	6	29 to 175	45	P145NCA/B-82C	<b>060B200891</b>	P45NCA-82C 3321-009	<b>060B205091</b>
	9	29 to 175	90	3321-001	<b>060B200266</b>		
	9	29 to 175	120	P145NCA/B-12C P31-5827 3321-001	<b>060B200391</b> <sup>2</sup>	P45NCA-12C P30-5826 3321-010	<b>060B205391</b> <sup>2</sup>
MP55	4.3 to 65	29 to 175	45			P288AA-18/2C P30-3601 3321-014/5 <sup>3</sup>	<b>060B205491</b>
	4.3 to 65	29 to 175	60	P128AA-2C	<b>060B201291</b> <sup>1</sup>		
	4.3 to 65	29 to 175	120	P128AA-17C	<b>060B200791</b>	P28AA-17C P28NA-5C P30-3801 3321-014/5 <sup>3</sup>	<b>060B205791</b>

<sup>1</sup> With glow lamp that remains on during normal operation of compressor.

Note: When time delay is energized which also means that min. permissible oil pressure (differential  $\Delta p$ ) is reached, light goes out.

<sup>2</sup> Three-wire hook-up with jumper that is provided in the box with control.

<sup>3</sup> The 3321 series controls feature adjustable delay and fixed differential. The differential for 3321-014 controls is set at 15 psig and 3321-015 is at 30 psig. Select control with appropriate delay time.

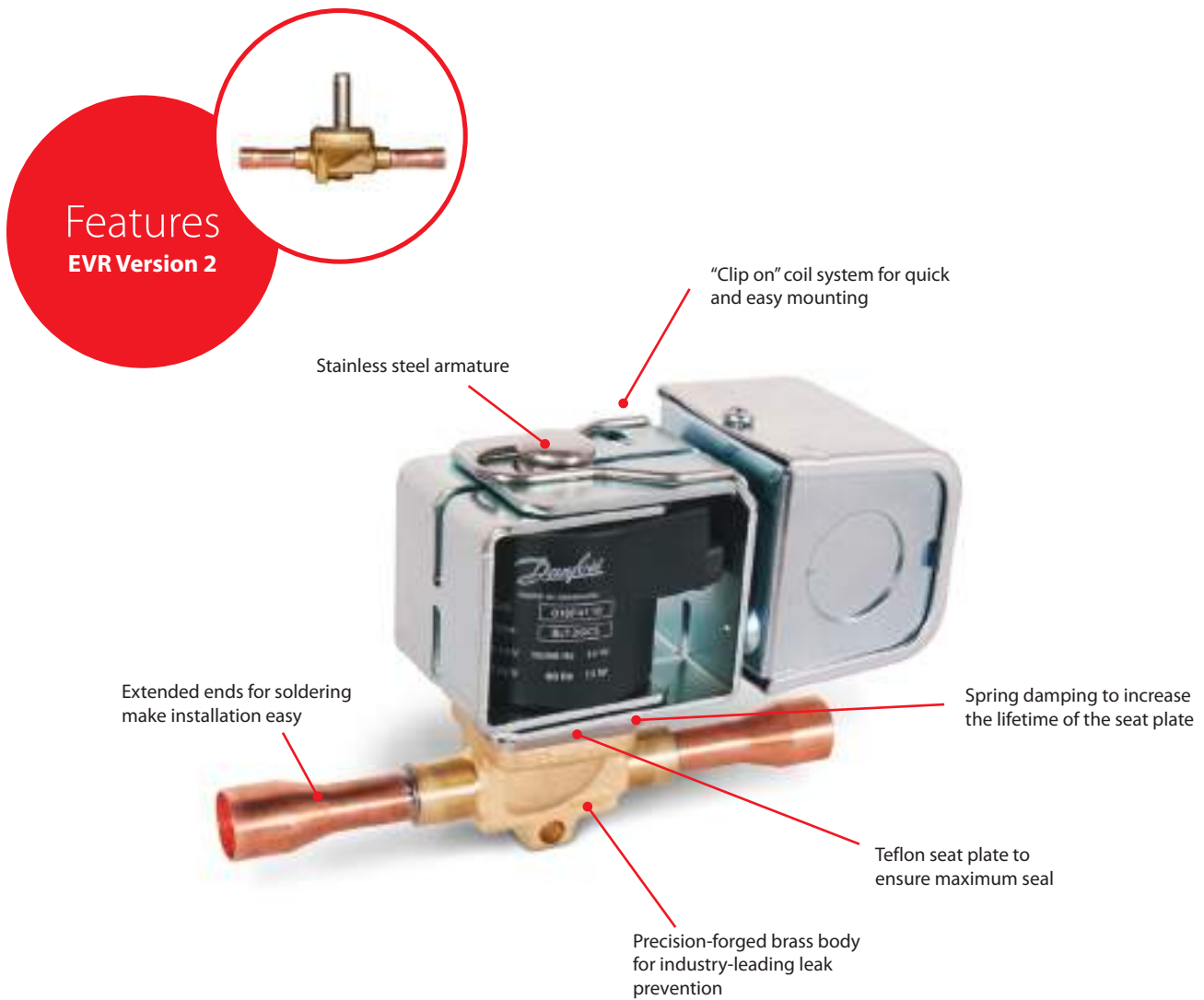
## Spare Parts and Accessories

Description	Type(s) applied to	Danfoss Code No.
Capillary tube; 39 in. with ¼ in. flare coupling nuts on each end	MP with ¼ in. M flare	<b>060-017166</b>



## EVR Version 2 - Solenoid Valves

EVR Version 2 solenoid valves are direct or servo-operated solenoid valves for liquid, suction, and hot gas lines. They are suitable for all refrigeration, freezing, and air conditioning applications and are compatible with fluorinated refrigerants. The valves can be delivered as normally open or closed as well as with or without manual operation.



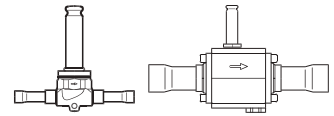
### Facts

#### Applications:

- Commercial refrigeration
- Freezers
- Air conditioning units
- Commercial refrigeration
- Supermarket Refrigeration
- Refrigerants: Use with any fluorinated refrigerant
- Maximum working pressure:
  - EVR 2–EVR 8: 655 psig
  - EVR 10: 655 psig
  - EVR 15–EVR 40: 655 psig
- Temperature range: –40 °F to +220 °F
- Connections:
  - Flare connections up to 5/8 inch
  - Solder connections up to 2 1/8 inch
- Available in normally open and normally closed
- Available with or without manual stem
- Coil available with junction box (NEMA 2) and conduit boss (NEMA 4)

# Technical data and ordering

## EVR Version 2 Solenoid valves



Danfoss Type	Rated capacity (liquid tons)			Solder ODF connection (in.)	Port size (in.)	Max. working pressure (psig)	Danfoss Code No. <sup>1</sup>	
	R-22	R-134a	R-404A				with manual stem	without manual stem
	R-407C		R-507A					
EVR 3	1.66	1.54	1.07	¼	⅝	655		<b>032F1206</b>
EVR 3	1.66	1.54	1.07	⅜	⅝	655		<b>032F1204</b>
EVR 6	5.47	5.07	3.51	⅜	1⅝ <sub>64</sub>	655	<b>032L7116</b>	<b>032L1212</b>
EVR 6	5.47	5.07	3.51	½	1⅝ <sub>64</sub>	655	<b>032L7144</b>	<b>032L1209</b>
EVR 8	6.52	6.03	4.18	½	⅝ <sub>16</sub>	655	<b>032L7148</b>	<b>032L7121</b>
EVR 10	11.50	10.64	7.38	⅝	⅜	655	<b>032L7149</b>	<b>032L1214</b>
EVR 15	17.71	16.39	11.37	⅝	⅞ <sub>16</sub>	655		<b>032L1228</b>
EVR 18	23.18	21.46	14.88	⅞	1⅞ <sub>32</sub>	655	<b>032L1004</b>	
EVR 20	36.76	34.04	23.60	⅞	⅞	655	<b>032L1254</b>	<b>032L1240</b>
EVR 22	41.93	38.82	26.92	1 ⅛	1⅝ <sub>16</sub>	655	<b>032L7137</b>	<b>032L7145</b>
EVR 25	60.19	55.72	38.64	1 ⅜	1	655	<b>032L2207</b>	<b>032L2208</b>
EVR 32	102.85	95.23	66.03	1 ⅝	⅞	655	<b>032L1103</b>	<b>032L1104</b>

<sup>1</sup> Valve body is normally closed (NC) and excludes coil. Additional code nos. available in Coolselector or contact Danfoss.

## Coils for Solenoid Valves



Voltage (V)	Frequency (Hz)	Power consumption (W)	Danfoss Type (junction box) <sup>2</sup>	Length of wire (in.)	Danfoss Code no.	Danfoss Type (conduit boss) <sup>3</sup>	Length of wire (in.)	Danfoss Code No.
24	50/60	14	BJ024CS	7	<b>018F4100</b>	BX024CS	18	<b>018F4102</b>
110	50/60	16	BJ120CS	7	<b>018F4110</b>	BX120CS	18	<b>018F4112</b>
120	60	15						
208-240	60	14	BJ240CS	7	<b>018F4120</b>	BX240CS	18	<b>018F4122</b>
230	50	17						

<sup>2</sup> Enclosure rating for BJ coils is NEMA 2 ~ IP 12-32

<sup>3</sup> Enclosure rating for BX coils is NEMA 4 ~ IP 54

## Dual Voltage/Dual Frequency Coil



Coil Type	Voltage (V)	Frequency (Hz)	Power consumption (W)	Danfoss Type (junction box) <sup>4</sup>	Length of wire (in.)	Danfoss Code no.	Danfoss Type (conduit boss) <sup>5</sup>	Length of wire (in.)	Danfoss Code No.
EVR	110	50	12	BT240CS	7	<b>018F4180</b>	BU240CS	7	<b>018F4181</b>
	110-120	60							
	230	50							
	208-240	60							

<sup>4</sup> Enclosure rating for BT coils is NEMA 2 ~ IP 12-32

<sup>5</sup> Enclosure rating for BU coils is NEMA 4 ~ IP 54

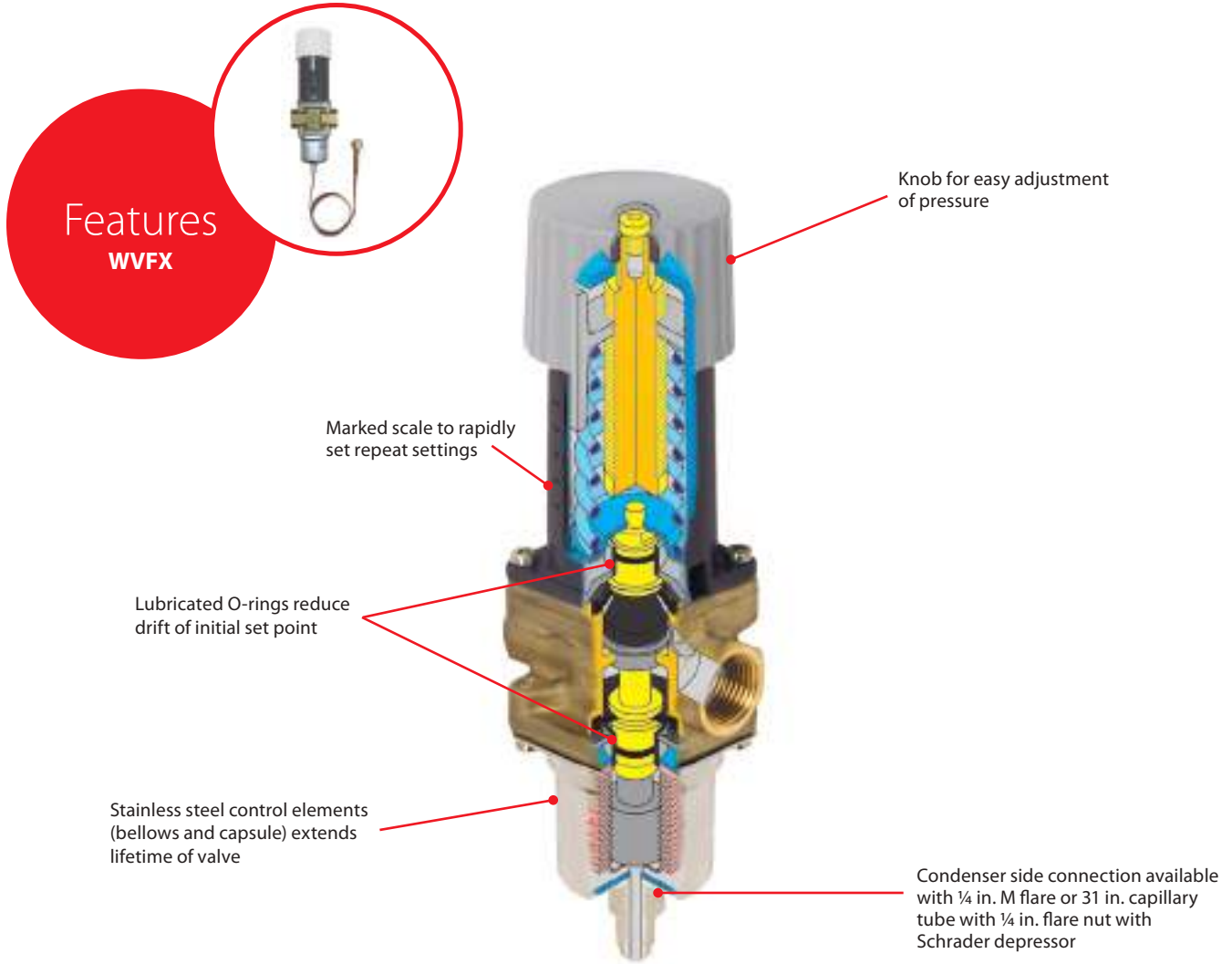
## Spare Parts and Accessories

Description	Version(s) applied to	Type(s) applied to	Danfoss Code No.
Permanent magnet coil for servicing and testing	1, 2	all	<b>018F0091</b>
Service kit (NC); O-ring, (4) screws, armature assembly, rubber gasket, compression spring	1, 2	EVR 3	<b>032F0181</b>
Seal kit (NC); O-ring for armature tube, rubber gasket, O-ring for steel cover, support ring	1	EVR 6, 8	<b>032F8165</b>
Service kit (NC); diaphragm assembly, O-ring for armature tube, (4) screws T20, (4) screws T15, armature assembly, rubber gasket, O-ring for steel cover, support ring, compression spring	1	EVR 6, 8	<b>032F8166</b>
Seal kit (NC/NO); O-ring for armature tube, rubber gasket, support ring	2	EVR 6, 8	<b>032L0548</b>
Service kit (NC); diaphragm assembly, O-ring, (4) screws, armature assembly, rubber gasket, support ring, compression ring	2	EVR 6, 8	<b>032L0550</b>
Service kit (NC); diaphragm assembly, O-ring, (4) screws, armature assembly, rubber gasket, compression spring	1	EVR 10	<b>032F0185</b>
Service kit (NC); diaphragm assembly, O-ring, (4) screws, armature assembly, rubber gasket, compression spring	2	EVR 10	<b>032L0552</b>
Seal kit (NC/NO); O-ring for armature tube, (3) rubber gasket (1 ea. for EVR 10, 15, 20) (4) refrigeration gasket (2 ea. For EVR 15, 20)	1, 2	EVR 10, 15, 20	<b>032F8196</b>
Service kit (NC); diaphragm assembly, O-ring, (4) screws, armature assembly, rubber gasket, (2) refrigeration gasket (flange connections), compression spring	2	EVR 15, 18, 20, 22	<b>032L0554</b>
Service kit (NC); diaphragm assembly, O-ring, (4) screws, armature assembly, rubber gasket, refrigeration gasket, compression spring	1	EVR 15, 18	<b>032F0187</b>
Service kit (NC); diaphragm assembly, O-ring, (4) screws, armature assembly, rubber gasket, refrigeration gasket, compression spring	1	EVR 20, 22	<b>032F0189</b>
Manual spindle; spindle assembly	1	EVR 20, 22	<b>032F0193</b>
Seal kit (NC); (2) Al. gasket, (3) O-rings, rubber gasket	1, 2	EVR 25	<b>032F2326</b>
Piston service kit (NC); (2) O-ring, compression spring, piston assembly, insert block, rubber gasket, piston ring	1, 2	EVR 25	<b>032F2326</b>
Piston service kit (NC); (5) O-rings, Al. gasket, piston assembly, insert block, piston ring, compression spring, refrigeration gasket	1, 2	EVR 32	<b>042H0172</b>
Pilot service kit (NC); (2) Al. gaskets, O-ring, orifice, armature tube, armature assembly, compression spring	1, 2	EVR 25, 32	<b>042H0165</b>
Seal kit (NC); (4) O-rings, (2) Al. gaskets	1, 2	EVR 32	<b>032F2327</b>

To determine the version of EVR, read the code number engraved on the armature. Codes beginning with 032F, 032G and 042H are V1; codes beginning with 032L are V2. Kits for types not included in catalog may be available; contact Danfoss for more information.

# WVFX - Pressure Controlled Water Valves

Pressure controlled water valves type WVFX are used for regulating the flow of water in refrigeration systems with water cooled condensers. Water valves regulate water flow and thereby maintain constant condensing pressure. At shut-down, cooling water flow is shut off automatically. WVFX valves are designed as wide-range, general purpose water valves, and are particularly popular among contractor customers for their easy to set scale and exceptional set point stability.



## Facts

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### Applications:

- Refrigeration systems with water-cooled condensers
- Refrigerants: HCFC and HFC
- Connections
  - Water side: 3/8 inch to 1 inch (NPT)
  - Condenser side: 1/4 inch M flare or 3/16 inch capillary tube with 1/4 inch flare nut with Schrader depressor
- Max working/test pressure
  - Water side: 380/420 psig or 655/870 psig
  - Condenser side: 230/350 psig
- Opens on rising condensing pressure



# Technical data and ordering

## WVFX - Pressure Controlled Water Valves

Danfoss Type	Competitor Part No.	Connection		Range (psig)	Condenser side		Water side		Flow coefficient, Cv valve (gal/min)	Danfoss Code No.
		Water side (NPT)	Condenser side		Maximum working pressure (psig)	Maximum test pressure (psig)	Maximum working pressure (psig)	Maximum test pressure (psig)		
WVFX 10	V46AA-1C <sup>1</sup>	3/8	1/4 in. M flare	60 to 333	380	420	230	350	1.6	<b>003N5006</b>
WVFX 10	V46AA-1C	3/8	31 in. capillary tube with 1/4 in. flare nut <sup>2</sup>						1.6	<b>003N5025</b>
WVFX 15	V46AB-1C <sup>1</sup>	1/2	1/4 in. M flare						2.2	<b>003N6006</b>
WVFX 15	V46AB-1C	1/2	31 in. capillary tube with 1/4 in. flare nut <sup>2</sup>						2.2	<b>003N6025</b>
WVFX 20	V46AC-1C <sup>1</sup>	3/4	1/4 in. M flare						3.9	<b>003N7006</b>
WVFX 20	V46AC-1C	3/4	31 in. capillary tube with 1/4 in. flare nut <sup>2</sup>						3.9	<b>003N7025</b>
WVFX 25	V46AD-1C <sup>1</sup>	1	1/4 in. M flare						6.4	<b>003N8006</b>
WVFX 25	V46AD-1C	1	31 in. capillary tube with 1/4 in. flare nut <sup>2</sup>						6.4	<b>003N8025</b>

<sup>1</sup> Competitor valve equipped with capillary tube as in code no. directly below. See below for capillary tube spare part (code no. 060-017166) to attach to this code no.

<sup>2</sup> Schrader depressor installed at end of capillary tube.

Length of valve from top of knob to bottom of control element is 8.07 in. for WVFX 10, 15, 20, and 8.46 in. for WVFX 25.

Temperature range: -13 to +265 °F

Maximum differential pressure: 145 psig

## WVFX – Pressure Controlled Water Valves for High Pressure Refrigerants

Danfoss Type	Competitor Part No.	Connection		Range (psig)	Condenser side		Water side		Flow coefficient, Cv valve (gal/min)	Danfoss Code No.
		Water side (NPT)	Condenser side		Maximum working pressure (psig)	Maximum test pressure (psig)	Maximum working pressure (psig)	Maximum test pressure (psig)		
WVFX 10	V246GA1-001C	3/8	1/4 in. M flare	218 to 420	655	870	232	348	1.6	<b>003N1810</b>
WVFX 15	V246GB1-001C	1/2							2.2	<b>003N2810</b>
WVFX 20	V246GC1-001C	3/4							3.9	<b>003N3810</b>
WVFX 25	V246GD1-001C	1							6.4	<b>003N4810</b>

Temperature range: -13 to 265 °F

Maximum differential pressure: 145 psig

## Spare Parts and Accessories

Description	Type(s) applied to	Danfoss Code No.
Rebuild kit; valve disc, (2) O-rings, (8) screws, (2) diaphragms, grease, and key	WVFX 10,15	<b>003N4006</b>
Rebuild kit; valve disc, (2) O-rings, (8) screws, (2) diaphragms, grease, and key	WVFX 20	<b>003N4007</b>
Rebuild kit; valve disc, (2) O-rings, (8) screws, (2) diaphragms, grease, and key	WVFX 25	<b>003N4008</b>
Capillary tube; 39 in. (1m) with 1/4 in. (6mm) flare coupling nuts on each end	WVFX with 1/4 M flare	<b>060-017166</b>
Bracket for WVFX 10–25	all	<b>003N0388</b>

## KVP/KVL/KVR/NRD/KVC/CPCE - Pressure Regulators

Danfoss has a variety of pressure regulators to control the low and high pressure sides and efficient function of a refrigeration system under varying load conditions.

Pressure regulators include:

- Evaporator Pressure Regulator (KVP)
- Crankcase Pressure Regulator (KVL)
- Condensing Pressure Regulator (KVR)
- Differential Pressure Regulator (NRD)
- Hot Gas Bypass Valves (KVC/CPCE)

KVP/KVL/KVR/  
NRD/KVC/CPCE

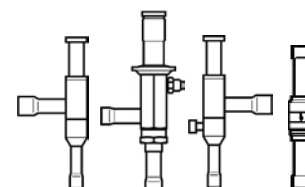


### Facts

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- All valves available for use with any CFC, HCFC, or HFC refrigerant, except R-410A
- Very stable and accurate pressure regulation
- Hermetic brazed construction 100% leak tested
- Available with flare and ODF solder connections
- Stainless steel bellows for extended lifetime
- Built-in valve seat dampening design
- Pressure regulation side
  - KVP/KVR—opens on a rise in pressure
  - KVC/KVL—opens on a fall in pressure

# Technical data and ordering



## KVP/KVL/KVR/NRD/KVC/CPCE - Pressure Regulators

Application	Danfoss Type	Rated capacity (tons)				Solder ODF connection (in.)	Setting range (psig)	Factory setting (psig)	Maximum working pressure (psig)	Maximum test pressure (psig)	Minimum temp. of medium (°F)	Maximum temp of medium (°F)	Danfoss Code No.
		R-22	R-134a	R-404A	R-407C								
Evaporating Pressure Regulator	KVP 12	1.30	0.90	1.20	1.20	½	0 to 80	29	260	286	-50	265	034L0023
	KVP 15	1.30	0.90	1.20	1.20	¾	0 to 80	29	260	286	-50	265	034L0029
	KVP 22	1.30	0.90	1.20	1.20	¾	0 to 80	29	260	286	-50	265	034L0025
	KVP 28	2.80	1.90	2.40	2.60	1 ½	0 to 80	29	260	286	-50	265	034L0026
	KVP 35	2.80	1.90	2.40	2.60	1 ¾	0 to 80	29	260	286	-50	265	034L0032
Crankcase Pressure Regulator	KVL 12	1.20	0.80	1.00	1.10	½	3 to 87	29	260	286	-75	266	034L0043
	KVL 15	1.20	0.80	1.00	1.10	¾	3 to 87	29	260	286	-75	266	034L0049
	KVL 22	1.20	0.80	1.00	1.10	¾	3 to 87	29	260	286	-75	266	034L0045
	KVL 28	4.10	2.60	3.40	3.80	1 ½	3 to 87	29	260	286	-75	266	034L0046
	KVL 35	4.10	2.60	3.40	3.80	1 ¾	3 to 87	29	260	286	-75	266	034L0052
Condensing Pressure Regulator	KVR 12	Liquid: 12.70 Hot gas: 4.13	Liquid: 11.80 Hot gas: 3.03	Liquid: 8.20 Hot gas: 3.27	Liquid: 13.80 Hot gas: 4.50	½	73 to 254	145	406	450	-50	266	034L0093
	KVR 15	Liquid: 12.70 Hot gas: 4.13	Liquid: 11.80 Hot gas: 3.03	Liquid: 8.20 Hot gas: 3.27	Liquid: 13.80 Hot gas: 4.50	¾	73 to 254	145	406	450	-50	266	034L0097
	KVR 22	Liquid: 12.70 Hot gas: 4.13	Liquid: 11.80 Hot gas: 3.03	Liquid: 8.20 Hot gas: 3.27	Liquid: 13.80 Hot gas: 4.50	¾	73 to 254	145	406	450	-50	266	034L0094
	KVR 28	Liquid: 32.60 Hot gas: 10.93	Liquid: 30.20 Hot gas: 8.04	Liquid: 20.90 Hot gas: 8.66	Liquid: 35.50 Hot gas: 11.91	1 ½	73 to 254	145	406	450	-50	266	034L0095
	KVR 35	Liquid: 32.60 Hot gas: 10.93	Liquid: 30.20 Hot gas: 8.04	Liquid: 20.90 Hot gas: 8.66	Liquid: 35.50 Hot gas: 11.91	1 ¾	73 to 254	145	406	450	-50	266	034L0100
Differential Pressure Regulator	NRD 12s <sup>1</sup>					½	73 to 254	145	667	870	-50	266	020-1132
Hot Gas Bypass	KVC 12	2.14	1.36	2.02	2.31	½	3 to 87	29	406	450	-50	266	034L0143
	KVC 15	4.17	2.65	3.93	4.50	¾	3 to 87	29	406	450	-50	266	034L0147
	KVC 22	5.35	3.41	5.04	5.78	¾	3 to 87	29	406	450	-50	266	034L0144
	CPCE 12	6.20	4.30	6.30	6.70	½	0 to 87	5.8	406	450	-58	285	034N0082
	CPCE 15	9.20	6.30	9.10	9.90	¾	0 to 87	5.8	406	450	-58	285	034N0083
CPCE 22	12.20	8.40	12.10	12.20	¾	0 to 87	5.8	406	450	-58	285	034N0084	

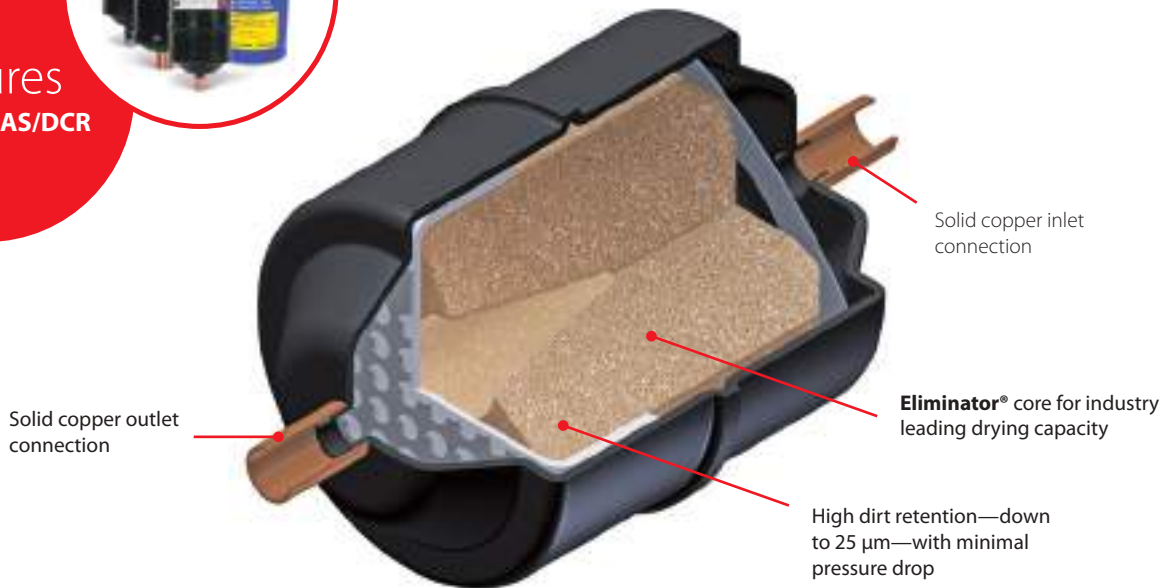
<sup>1</sup> NRD generally used in conjunction with a KVR to regulate the condensing pressure.

## Spare Parts and Accessories

Description	Type(s) applied to	Danfoss Code No.
Schrader valve	all KVP, KVR	034L0006

# DCL/DCB/DAS/DCR - Filter Driers

Danfoss filter driers function as simple drop-in replacements for most driers sold in the aftermarket or installed on equipment by manufacturers. All Danfoss filter driers are constructed with a solid core design to maximize moisture removal while minimizing pressure drop. These driers use a mixture of molecular sieve and activated alumina to both adsorb system moisture and capture acid and prevent solid contaminants from entering the system. The Danfoss 1.5 cubic inch hermetic filter drier can be used in hydrocarbon systems to provide exceptional protection while minimizing charge requirements.



## Nomenclature / Model No.

**D A S 16 4 s VV**

Filter drier ——— **D**

Solid Core ——— **A**

Application ——— **S**

Size (volume) ——— **16**

Connection ——— **4**

Connection type ——— **s**

Access valves ——— **VV**

**A:** Core with 30% molecular sieve/  
70% activated alumina (burn-out)  
**C:** Core with 80% molecular sieve/  
20% activated alumina  
**M:** Core with 100% molecular sieve

**B:** Bi-flow  
**L:** Liquid line  
**S:** Suction line

**1.5:** 1.5 in.<sup>3</sup>  
**03:** 3 in.<sup>3</sup>  
**05:** 5 in.<sup>3</sup>  
**08:** 8 in.<sup>3</sup>  
**16:** 16 in.<sup>3</sup>  
**30:** 30 in.<sup>3</sup>  
**41:** 41 in.<sup>3</sup>  
**60:** 60 in.<sup>3</sup>  
**75:** 75 in.<sup>3</sup>

	Inlet	Outlet
<b>(blank)</b>	none	none
<b>V</b>	Schrader valve	none
<b>VV</b>	Schrader valve	Schrader valve

**(blank):** Flare connection  
**s:** Solder connection

Connection  
(filter connection in 1/8 in. increments)  
**2/CAP:** 1/4 in. inlet x cap tube outlet  
**2:** 1/4 in.  
**2.5:** 5/16 in.  
**3:** 3/8 in.  
**4:** 1/2 in.  
**5:** 5/8 in.  
**6:** 3/4 in.  
**7:** 7/8 in.  
**9:** 1 1/8 in.

# Technical data and ordering

## DCL/DCB Liquid Line/Bi-flow Filter Driers

Danfoss Type	Connection (in.)	Max. working pressure (psig)	Drying capacity (lbs. of refrigerant) <sup>2</sup>								Liquid capacity (tons) <sup>2</sup>				Danfoss Code No.
			R-134a		R-404A		R-22		R-410A		R-134a	R-404A	R-22	R-410A	
			75 °F	125 °F	75 °F	125 °F	75 °F	125 °F	75 °F	125 °F					
DCL 1.52/2.8mms	¼ solder	667	5.10	4.60	5.30	5.10	5.10	4.60	4.60	4.20	0.80	0.50	0.90	0.80	<b>023Z8255</b>
DCL 032s	¼ solder	667	8.50	8.00	9.10	8.70	8.60	8.00	7.80	7.20	1.90	1.42	2.12	2.11	<b>023Z5013<sup>1</sup></b>
DCL 032	¼ flare	667	8.50	8.00	9.10	8.70	8.60	8.00	7.80	7.20	1.90	1.42	2.12	2.11	<b>023Z5000<sup>1</sup></b>
DCL 052s	¼ solder	667	13.60	12.80	14.60	13.80	13.80	12.70	12.40	11.40	2.18	1.60	2.40	2.37	<b>023Z5018</b>
DCL 052	¼ flare	667	13.60	12.80	14.60	13.80	13.80	12.70	12.40	11.40	2.18	1.60	2.40	2.37	<b>023Z5002</b>
DCL 053s	¾ solder	667	13.60	12.80	14.60	13.80	13.80	12.70	12.40	11.40	3.66	2.79	4.10	4.15	<b>023Z5019</b>
DCL 053	¾ flare	667	13.60	12.80	14.60	13.80	13.80	12.70	12.40	11.40	3.66	2.79	4.10	4.15	<b>023Z5003</b>
DCL 082s	¼ solder	667	21.70	20.50	23.30	22.10	22.00	20.30	19.80	18.20	2.18	1.55	2.37	2.28	<b>023Z5022</b>
DCL 082	¼ flare	667	21.70	20.50	23.30	22.10	22.00	20.30	19.80	18.20	2.18	1.55	2.37	2.28	<b>023Z5004</b>
DCL 083s	¾ solder	667	21.70	20.50	23.30	22.10	22.00	20.30	19.80	18.20	4.03	3.12	4.56	4.65	<b>023Z5023</b>
DCL 084s	½ solder	667	21.70	20.50	23.30	22.10	22.00	20.30	19.80	18.20	8.14	6.07	9.03	8.99	<b>023Z5026</b>
DCL 084	½ flare	667	21.70	20.50	23.30	22.10	22.00	20.30	19.80	18.20	8.14	6.07	9.03	8.99	<b>023Z5006</b>
DCL 162	¼ flare	667	47.70	45.10	51.30	48.60	48.30	44.70	43.50	40.10	2.18	1.54	2.36	2.28	<b>023Z5007</b>
DCL 163s	¾ solder	667	47.70	45.10	51.30	48.60	48.30	44.70	43.50	40.10	4.64	3.18	4.95	4.67	<b>023Z5029</b>
DCL 163	¾ flare	667	47.70	45.10	51.30	48.60	48.30	44.70	43.50	40.10	4.64	3.18	4.95	4.67	<b>023Z5008</b>
DCL 164s	½ solder	667	47.70	45.10	51.30	48.60	48.30	44.70	43.50	40.10	9.15	6.69	10.07	9.90	<b>023Z5032</b>
DCL 165s	¾ solder	667	47.70	45.10	51.30	48.60	48.30	44.70	43.50	40.10	12.69	10.41	14.74	15.59	<b>023Z5033</b>
DCL 165	¾ flare	667	47.70	45.10	51.30	48.60	48.30	44.70	43.50	40.10	12.69	10.41	14.74	15.59	<b>023Z5010</b>
DCL 303s	¾ solder	667	100.50	95.00	108.00	102.40	101.80	94.10	91.60	84.40	4.46	3.00	4.72	4.40	<b>023Z0030</b>
DCL 303	¾ flare	667	100.50	95.00	108.00	102.40	101.80	94.10	91.60	84.40	4.46	3.00	4.72	4.40	<b>023Z0012</b>
DCL 304s	½ solder	667	100.50	95.00	108.00	102.40	101.80	94.10	91.60	84.40	9.24	7.11	10.41	10.58	<b>023Z0031</b>
DCL 304	½ flare	667	100.50	95.00	108.00	102.40	101.80	94.10	91.60	84.40	9.24	7.11	10.41	10.58	<b>023Z0013</b>
DCL 305s	¾ solder	667	100.50	95.00	108.00	102.40	101.80	94.10	91.60	84.40	13.00	10.51	14.99	15.72	<b>023Z0032</b>
DCL 305	¾ flare	667	100.50	95.00	108.00	102.40	101.80	94.10	91.60	84.40	13.00	10.51	14.99	15.72	<b>023Z0014</b>
DCL 307s	¾ solder	667	100.50	95.00	108.00	102.40	101.80	94.10	91.60	84.40	18.27	15.34	21.44	23.05	<b>023Z0034</b>
DCL 415s	¾ solder	667	139.50	131.90	150.00	142.20	141.30	130.70	127.30	117.30	15.78	11.9	17.61	17.66	<b>023Z0105</b>
DCL 417s	¾ solder	500	139.50	131.90	150.00	142.20	141.30	130.70	127.30	117.30	18.98	16.01	22.32	24.08	<b>023Z0106</b>
DCL 607s	¾ solder	667	200.90	189.90	216.00	204.80	203.50	188.20	183.30	168.90	19.93	19.94	25.16	30.71	<b>023Z0036</b>
DCB 083s	¾ solder	667	15.60	14.70	16.70	15.80	15.60	14.50	14.10	13.00	2.10	1.50	2.30	2.30	<b>023Z1433</b>
DCB 163s	¾ solder	667	29.30	27.70	31.50	29.90	29.70	27.50	26.80	24.60	5.10	3.70	5.70	5.70	<b>023Z1437</b>
DCB 164s	½ solder	667	29.30	27.70	31.50	29.90	29.70	27.50	26.80	24.60	8.00	5.70	9.10	9.10	<b>023Z1436</b>
DCB 165s	¾ solder	667	29.30	27.70	31.50	29.90	29.70	27.50	26.80	24.60	10.60	8.30	11.40	11.40	<b>023Z1435</b>

<sup>1</sup> Wire mesh in filter drier outlet.

## DAS Suction Line Filter Driers

Danfoss Type	Connection (in.)	Max. working pressure (psig)	Rated capacity (tons) <sup>2</sup>			Acid capacity (oz.)	Danfoss Code No.
			R-134a	R-404A	R-22		
					R-410A		
DAS 164sVV	½ solder	500	1.70	2.40	6.30	0.30	<b>023Z1009</b>
DAS 165sVV	¾ solder		2.70	3.70	4.30	0.30	<b>023Z1010</b>
DAS 166sVV	¾ solder		3.40	4.90	5.70	0.30	<b>023Z1011</b>
DAS 167sVV	¾ solder		3.90	5.40	6.30	0.30	<b>023Z1012</b>
DAS 306sVV	¾ solder		4.00	5.40	6.30	0.64	<b>023Z1014</b>
DAS 307sVV	¾ solder		4.60	6.30	7.40	0.64	<b>023Z1015</b>
DAS 309sVV	1½ solder		5.70	7.70	8.90	0.64	<b>023Z1016</b>
DAS 419sVV	1½ solder		6.30	8.60	10.00	0.86	<b>023Z1018</b>

<sup>2</sup> For rated capacities for R-290, R-600, R-448A, R-449A, R-452A, and other HFO, HC, HFC, and HCFC refrigerants not listed, see Coolselector or contact Danfoss.

## DCR Filter Drier Cores

Danfoss Type	Material	Danfoss Code No.
DCR core insert, type 48-DM solid core	100% molecular sieve	<b>023U1392</b>
DCR core insert, type 48-DC solid core	80% molecular sieve & 20% activated alumina	<b>023U4381</b>
DCR core insert, type 48-DA solid core	30% molecular sieve & 70% activated alumina	<b>023U5381</b>
DCR core insert, type 48-F strainer		<b>023U1921</b>



## DCL with Schrader valve - Filter Driers

The Danfoss 1.5 hermetic filter driers include a Schrader valve, making servicing the system easy and convenient, and convertible outlet for fitting on capillary tube or ¼ inch system connection. Thanks to the solid core, Danfoss ELIMINATOR® filter driers offer exceptional drying capacity to protect the system against harmful acids and moisture. The DCL 1.5 cubic inch filter drier with Schrader makes an excellent upgrade in replacing loose bead driers due to superior drying and small internal volume.



### Facts

#### Applications:

- Traditional refrigeration
- Air conditioning units
- Transport refrigeration
- Connections:
  - Inlet: ¼ inch solder and ¼ inch service port
  - Outlet: Capillary tube outlet can be trimmed down to ¼ inch
- Refrigerants: R-22, R-32, R-134a, R-404A, R-410A, R-407C/F, R-23, R-1234yf, R-1234ze, R-452A, R-444B, R-449A, R-448A, R-450A, R-507. For other refrigerants, please contact Danfoss.
- Available with 1.5, 3, and 5 cubic inch solid core volumes
- 80% molecular sieve and 20% activated alumina core

## Technical data and ordering

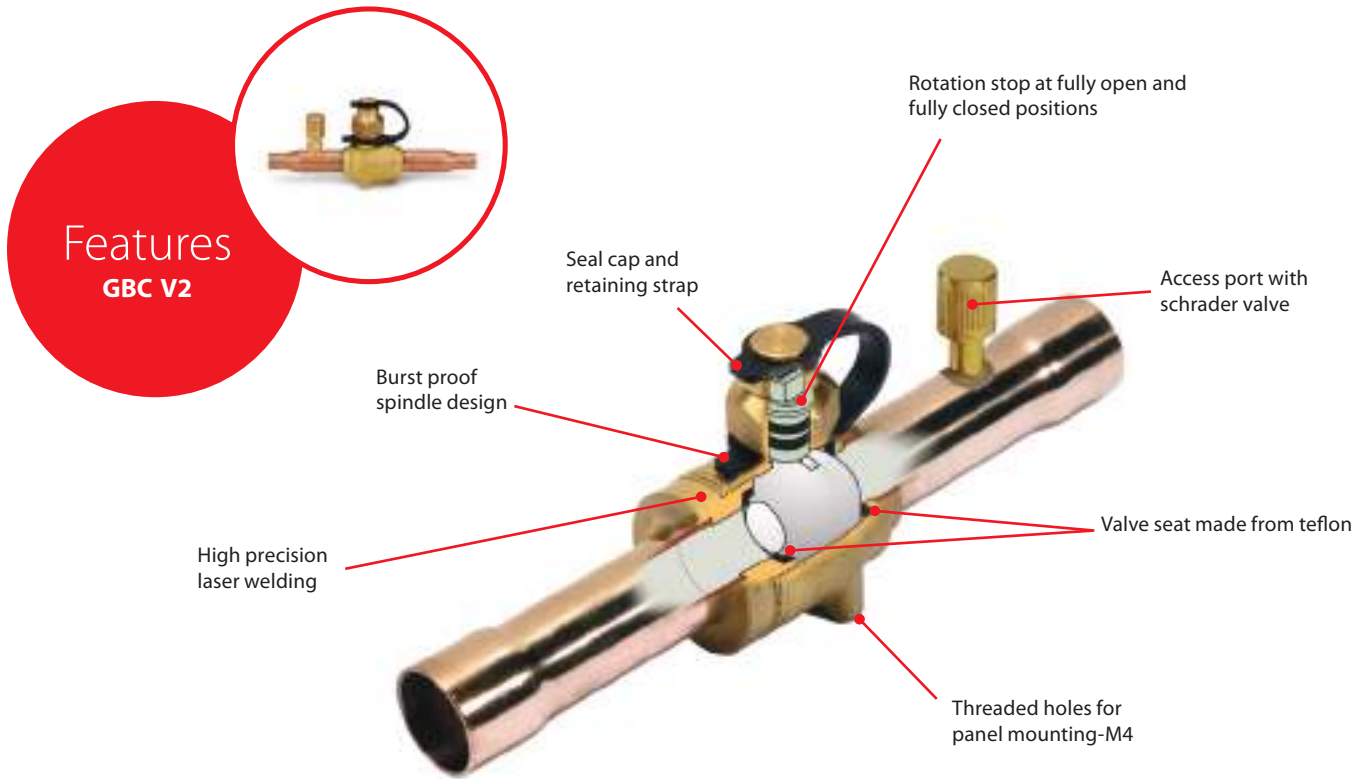
### DCL with Schrader valve - Filter Drier



Danfoss Type	Connection inlet (in.)/ outlet	Max. working pressure (psig)	Drying capacity (lbs. of refrigerant)										Liquid capacity (tons)					Danfoss Code No.
			R-134a		R-404A		R-22		R-407C		R-410A		R-134a	R-404C	R-22	R-407C	R-410A	
			75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F						
DCL 1.52/ CAPsV	¼/capillary tube	667	5.2	4.8	5.5	5.2	5.3	4.9	5.1	4.7	4.7	4.2	1.0	0.7	1.1	1.0	1.0	<b>023Z8261</b>
DCL 032/ CAPsV	¼/capillary tube	667	8.4	7.7	8.8	8.3	8.5	7.8	8.2	7.6	7.6	6.8	1.2	0.8	1.3	1.2	1.2	<b>023Z5174</b>
DCL 052/ CAPsV	¼/capillary tube	667	13.5	12.4	14.1	13.4	13.6	12.5	13.1	12.1	12.3	10.9	1.2	0.8	1.3	1.2	1.2	<b>023Z5181</b>

## GBC V2 - Ball Valves

Danfoss GBC ball valves are manually operated shut-off valves suitable for bi-directional flow. The design, weld, and choice of the sealing material enable these ball valves to meet the most demanding requirements and provide years of leak-free performance.



### Product Selection

Danfoss Type	Solder ODF connection (in.)	Flow Coefficient, $C_v$ value <sup>1</sup> (gal/min)	Working pressure (psig)	Danfoss Code No. <sup>1</sup>
GBC 6s	¼	2.12	650	<b>009L8050</b>
GBC 10s	⅜	9.29		<b>009L8051</b>
GBC 12s	½	15.22		<b>009L8052</b>
GBC 16s	⅝	18.10		<b>009L8053</b>
GBC 18s	¾	25.35		<b>009L8054</b>
GBC 22s	7⁄8	38.54		<b>009L8065</b>
GBC 28s	1 ¼	71.96		<b>009L8066</b>
GBC 35s	1 ⅜	107.23		<b>009L8067</b>
GBC 42s	1 ⅝	155.78		<b>009L8068</b>
GBC 54s	2 ⅛	277.57		<b>009L8059</b>
GBC 67s	2 ⅝	424.69	<b>009L8069</b>	

<sup>1</sup> All valves listed in table above are Full Port.

### Spare Parts and Accessories

Description	Type(s) applied to	Danfoss Code No.
Ball valve service kit	GBC 6, 10, 12, 16, 18, 22	<b>009G7012</b>
Ball valve service kit	GBC 28, 35	<b>009G7014</b>
Ball valve service kit	GBC 42, 54, 67	<b>009G7016</b>

Codes listed above are for GBC V1; for GBC V2 spare parts and accessories, contact Danfoss.

### Seal Cap Kit

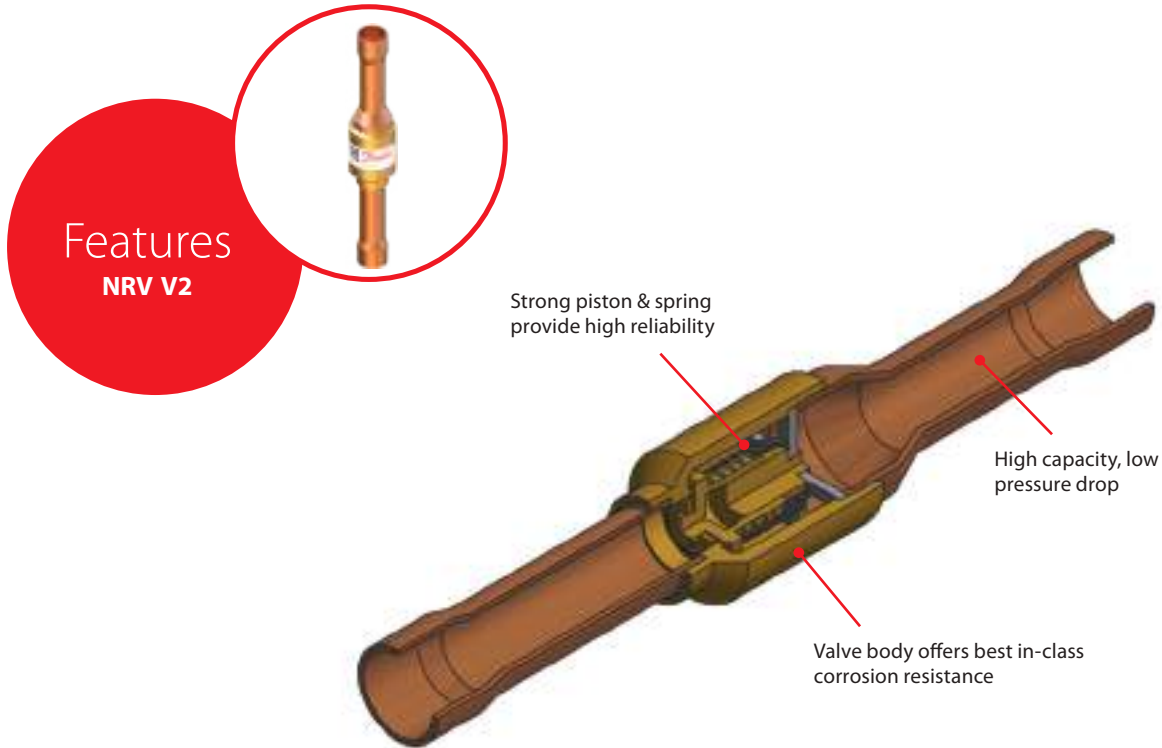
Type	Valve connection size	Industrial pack (no. of pcs)	Code no. for 009GXXXX series	Code no. for 009LXXXX 650 psig series
	in.			
GBC 6s – GBC 12s	¼–½	6	<b>009G7210</b>	<b>009L7209</b>
GBC 16s – GBC 22s	⅝–7⁄8	6		<b>009L7210</b>
GBC 28s – GBC 35s	1 ¼–1 ⅜	4	<b>009G7211</b>	—
		3	—	<b>009L7211</b>
GBC 42s – GBC 79s	1 ⅝–3 ⅛	4	<b>009G7212</b>	—
		3	—	<b>009L7212</b>

### Bracket Kit

Type	Valve connection size	Industrial pack (no. of pcs)	Code no. for 009GXXXX series	Code no. for 009LXXXX 650 psig series
	in.			
GBC 6s – GBC 12s	¼–½	12	<b>009G7084</b>	<b>009G7089</b>
GBC 16s	⅝	12		<b>009G7084</b>
GBC 18s – GBC 22s	¾–7⁄8	12	<b>009G7085</b>	
GBC 28s	1 ¼	10	<b>009G7086</b>	
GBC 35s	1 ⅜	5	<b>009G7087</b>	
GBC 42s	1 ⅝	4	<b>009G7088</b>	

## NRV V2 - Check Valves

NRV V2 one-piece check valves are used in liquid suction and hot gas lines in refrigeration and air conditioning applications. NRV valves ensure the correct flow direction and prevent back-condensation from a warm part of the system to the cold evaporator. The hermetic design of solder version meets environmental demands for today and the future. The built-in damping piston makes the valves suitable for installation in lines where pulsation can occur, e.g., in a compressor discharge line.



### Product Selection

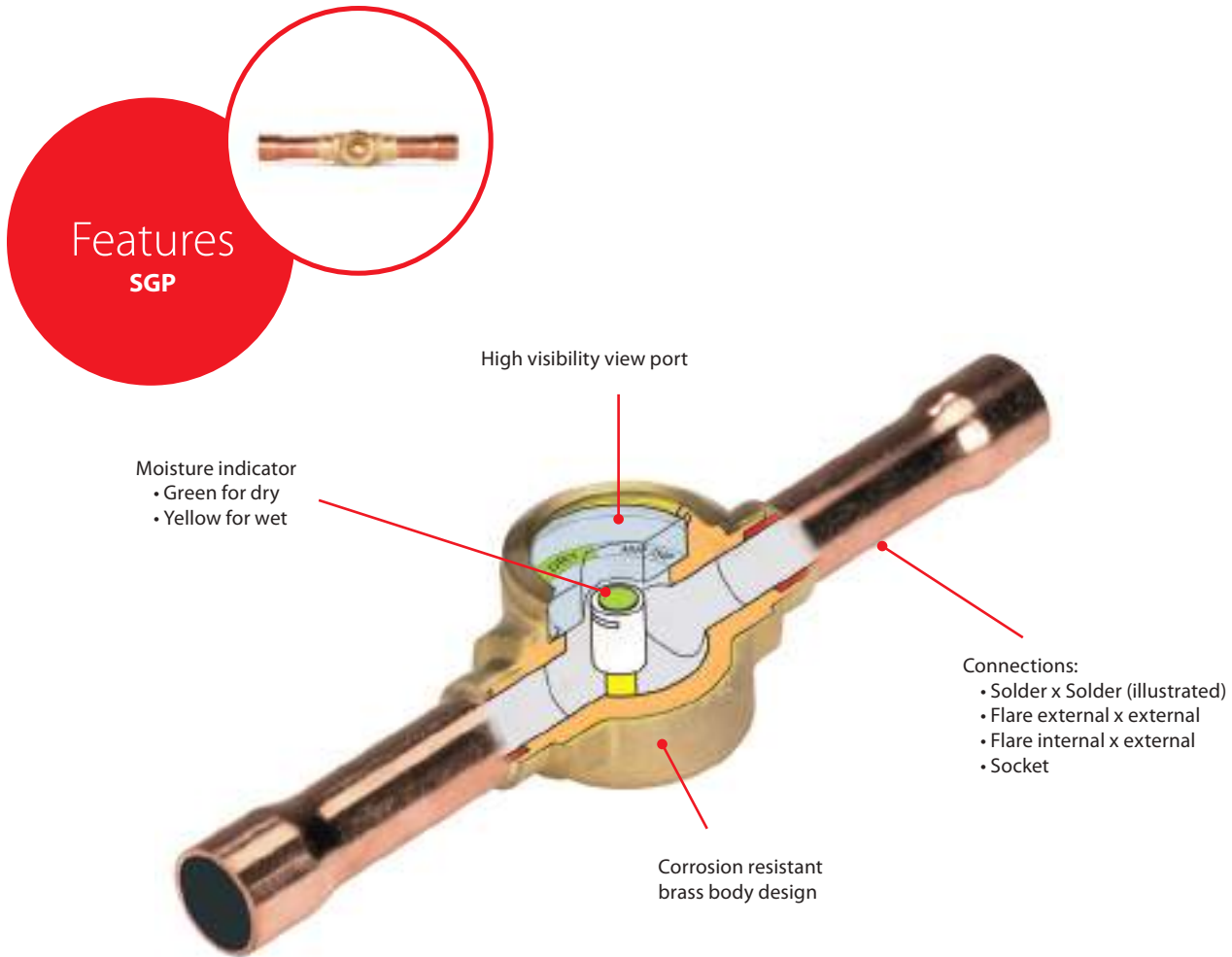
Valve Type	Connection Type	Connection	Min. OPD $\Delta p^1$	$C_v$ value <sup>2</sup>	Danfoss Code No.
		in.	psi	gal./min.	
NRV 6s V2	Straightway, solder	¼	0.58	0.77	<b>020B1010</b>
NRV 10s V2	Straightway, solder	¾	0.58	1.90	<b>020B1011</b>
NRV 12s V2	Straightway, solder	½	0.29	2.89	<b>020B1012</b>
NRV 16s V2	Straightway, solder	¾	0.29	4.62	<b>020B1018</b>

<sup>1</sup>  $\Delta p$  = Minimum Opening Pressure Differential

<sup>2</sup> The  $C_v$  value is the flow of water in gal./min. at a pressure drop across valve of 14.5 psi;  $\rho = 62.4 \text{ lbs./ft}^3 = 8.34 \text{ lbs./gal.}$

# SGP - Sight Glasses

Danfoss sight glasses with hard crystal view ports are designed to accurately indicate the presence of moisture in refrigeration and air-conditioning systems. When system moisture content rises above permissible levels, the “dry/green” indicator will change to yellow indicating a “wet” system. The indication of dangerous moisture levels is essential in helping prevent the formation of harmful acids which are detrimental to the system. The SGP sight glass is simply the best-made sight glass available today.



## Product Selection

Danfoss Type	Version	Connection (in.)	Ambient temperature (°F)	Maximum working pressure (psig)	Danfoss Code No.
SGP 6 N	Flare int. x ext. <sup>1</sup>	¼ x ¼	-60 to 175	750	<b>014L0171</b>
SGP 10 N		⅜ x ⅜			<b>014L0172</b>
SGP 12 N		½ x ½			<b>014L0173</b>
SGP 6s N	ODF x ODF solder	¼ x ¼			<b>014L0181</b>
SGP 10s N		⅜ x ⅜			<b>014L0182</b>
SGP 12s N		½ x ½			<b>014L0183</b>
SGP 16s N		⅝ x ⅝			<b>014L0145</b>
SGP 22s N		⅞ x ⅞			<b>014L0186</b>
SGP ½ RN	NPT	½			<b>014L0006</b>

<sup>1</sup> Can be screwed directly onto Danfoss filter drier.

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