MAKING MODERN LIVING POSSIBLE

Quick Select Guide

Automatic controls, condensing units, compressors and heat exchangers for HVAC/R wholesalers, contractors and installers



22

products in this Quick Select Guide

The most frequently used HVAC/R products from Danfoss. A time saving tool to find exactly what you are looking for.

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Coolselector® – Select the right component the coolest way

As the world gets more complicated we all need support to make the right choices.
Danfoss helps you make the right selections for the other components that you will need in your professional daily life. Coolselector® calculates for you the performance of the component at your conditions, not just according to the standards.

Select the right component the coolest way

Do you pick your solenoid valve for your walk-in by connection size alone?
Maybe you could actually go for a size smaller, or maybe the cold room would have done better if you had optimized the selection of that particular valve to the flow. Most professionals know that selecting a thermostatic expansion valve can turn out to be a tricky task if the conditions are not exactly standard conditions. You will need to take superheat, sub cooling and pressure drop into consideration to find the optimal valve with the right orifice. But also other components require consideration before selecting the best valve for the purpose. Even the solenoid valve should be checked for the specific performance under the conditions you intend to expose it to.

Coolselector® helps you optimize the choice of component and even tells you how the component behaves at the conditions given.
With the new version of Coolselector® you have all the components required to control a commercial refrigeration system. Danfoss has now included the well-known compressor and condensing unit selection program RS+3 in Coolselector® which means that you no longer have to open several programs to calculate a compressor, a solenoid valve and an expansion valve. You can now do this in just one program.
The new section with compressors and condensing units also includes compressors for heat pumps which mean that you easily can select the best suited compressor for heat pump applications. Danfoss has kept the familiar and user friendly interface from RS+3 and just extended the content in accordance with the additional compressors. Coolselector® will continue development and enhancement and offers you automatic-updates also in future. Please do not hesitate and go to the web address: coolselector.danfoss.com to download the program.

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Introduction and Overview

Danfoss T2/TE2 are brass body thermostatic expansion valves which feature flare inlet and outlet connections (1,2).

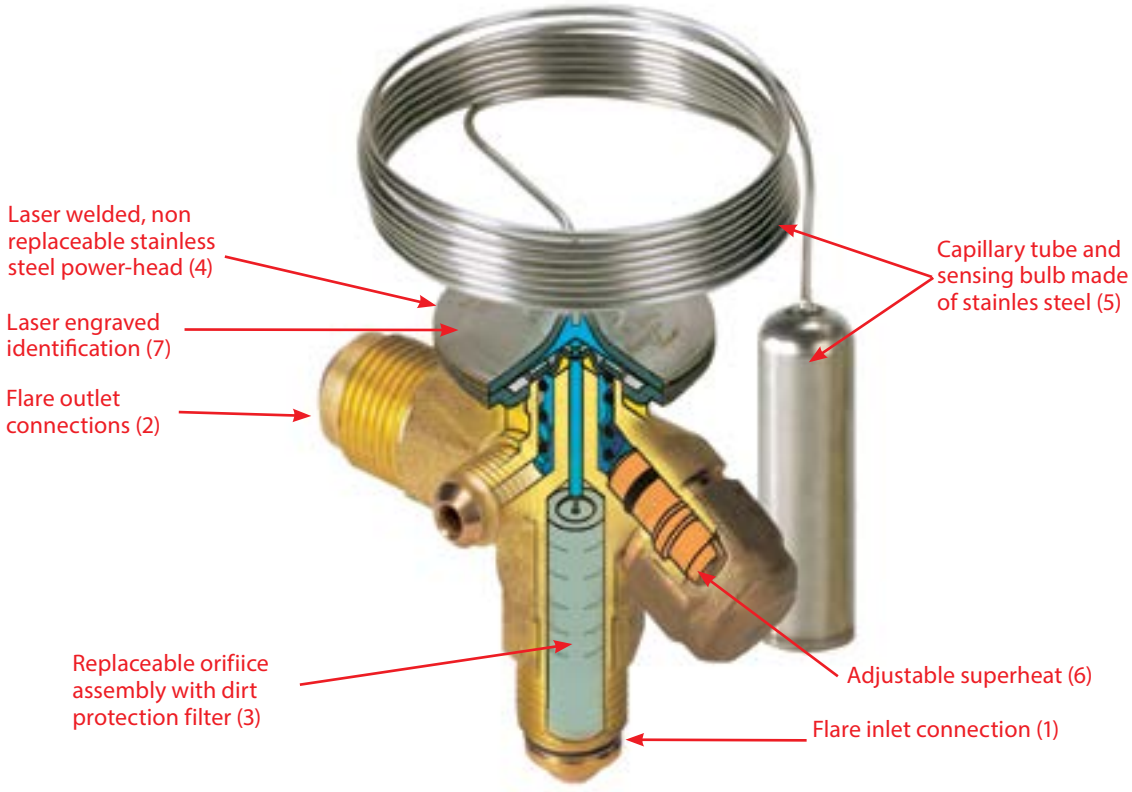


Several contractor friendly features are built into the valve. The replaceable orifice assembly (3) design permits easy sizing of the valve from 1/10 to 5½ tons with dirt protection filter. The valve's body includes a laser-welded, non-replaceable steel power-head (4) which significantly reduces power-head failures and preserves the diaphragm's integrity, the primary cause of a failure. The capillary tube and sensing bulb are made of stainless steel (5) as it's tougher than copper and more resistant to breakage. T2/TE2 valves feature adjustable superheat (6). Last, all identification information is laser engraved on the power-head for durable identification - no paper labels to fall off the valve (7).

Examples of typical applications include:

- Traditional refrigeration systems
- Air conditioning systems
- Transport refrigeration systems

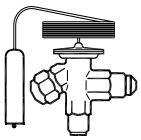
By pairing one valve body with one of eight replaceable orifices, a contractor can satisfy applications from -40 to +50°F and 1/10 to 5 ½ tons capacity (capacity dependent on refrigerant).



Selection Instructions

1. Select Valve Body

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



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 "Orifice Selection" section on the following page.



3. Assemble Valve and Install into System

1. Slide the orifice into the valve body and secure using liquid line flare nut
2. Attach evaporator inlet or distributor assembly to valve outlet flare nut
3. Tighten both flare nuts
    - Specification for inlet is 26-33 ft.-lbs
    - Specification for outlet inlet is 37-52 ft.-lbs



4. Adjust Superheat

1. Remove the cap
2. Make superheat adjustments ¼ turn at a time (¼ turn ≈ 1.75°F).
    - Turning clockwise increases superheat.
    - Turning counter-clockwise decreases superheat.
3. Reinstall the cap

Product Selection

1. Valve Body Selection

Equalization	R-22	R-404A	R-134a
Internal	**068Z3206**	**068Z3400**	**068Z3346**
External	**068Z3209**	**068Z3403**	**068Z3348**

All valves above have ⅜" x ⅜" flare connections and are designed for evaporator temperatures -40°F to 50°F (N charge). Other variations available upon request.

2. Orifice Selection

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).

Easy to carry kits for truck stock

All T2/TE2 valve bodies and orifices featured on this page and a wrench (pictured middle)	**068Z7100**
Both TUA/TUAE valve bodies and orifices and T2/TE2 valve bodies and orifices plus gaskets for TUA/TUAE and a wrench (pictured bottom)	**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.



IF EXACT CAPACITY IS NOT FOUND, USE NEXT LARGER ORIFICE

R-22			Evaporator Temperature (°F)							
Orifice Size	Danfoss Code No.	Nominal capacity of installed valve[1] (tons)	-40	-30	-20	-10	0	25	35	45
			Rated Capacity[2] (tons)							
0X	**068-2002**	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2
00	**068-2003**	0.5	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5
01	**068-2010**	1.0	0.4	0.5	0.5	0.6	0.7	0.9	0.9	1.0
02	**068-2015**	1.3	0.4	0.5	0.6	0.7	0.8	1.1	1.3	1.3
03	**068-2006**	2.2	0.7	0.9	1.0	1.2	1.4	1.9	2.1	2.3
04	**068-2007**	3.3	1.1	1.3	1.5	1.8	2.1	2.9	3.2	3.4
05	**068-2008**	4.6	1.4	1.7	2.0	2.3	2.7	3.9	4.4	4.7
06	**068-2009**	5.4	1.7	2.0	2.3	2.7	3.2	4.6	5.2	5.6
R-134a			**Evaporator Temperature (°F)**							
Orifice Size	Danfoss Code No.	Nominal capacity of installed valve[1] (tons)	-40	-30	-20	-10	0	25	35	45
			Rated Capacity[2] (tons)							
0X	**068-2002**	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
00	**068-2003**	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
01	**068-2010**	0.6	0.2	0.2	0.3	0.3	0.4	0.5	0.6	0.6
02	**068-2015**	0.7	0.2	0.3	0.3	0.4	0.4	0.6	0.7	0.7
03	**068-2006**	1.2	0.4	0.5	0.5	0.6	0.7	1.0	1.2	1.3
04	**068-2007**	1.8	0.6	0.7	0.8	0.9	1.1	1.5	1.7	1.9
05	**068-2008**	2.4	0.8	0.9	1.0	1.2	1.4	2.0	2.2	2.5
06	**068-2009**	2.8	0.9	1.1	1.2	1.4	1.7	2.4	2.7	3.0
R-404A			**Evaporator Temperature (°F)**							
Orifice Size	Danfoss Code No.	Nominal capacity of installed valve[1] (tons)	-40	-30	-20	-10	0	25	35	45
			Rated Capacity[2] (tons)							
0X	**068-2002**	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
00	**068-2003**	0.4	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4
01	**068-2010**	0.8	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.8
02	**068-2015**	1.1	0.3	0.4	0.5	0.6	0.7	1.0	1.1	1.1
03	**068-2006**	1.8	0.5	0.6	0.8	1.0	1.1	1.6	1.8	1.8
04	**068-2007**	2.9	0.8	0.9	1.2	1.4	1.7	2.5	2.8	2.9
05	**068-2008**	3.8	1.0	1.2	1.5	1.8	2.2	3.3	3.7	3.8
06	**068-2009**	4.5	1.2	1.5	1.8	2.2	2.7	4.0	4.4	4.5

[1] Nominal capacity based on condensing temperature of 100°F, an evaporator temperature of 40°F, refrigerant temperature of 98° ahead of the valve.
[2] Capacity based on condensing temperature of 90°F and a vapor free liquid temperature of 80°F ahead of the expansion valve.

Introduction and Overview

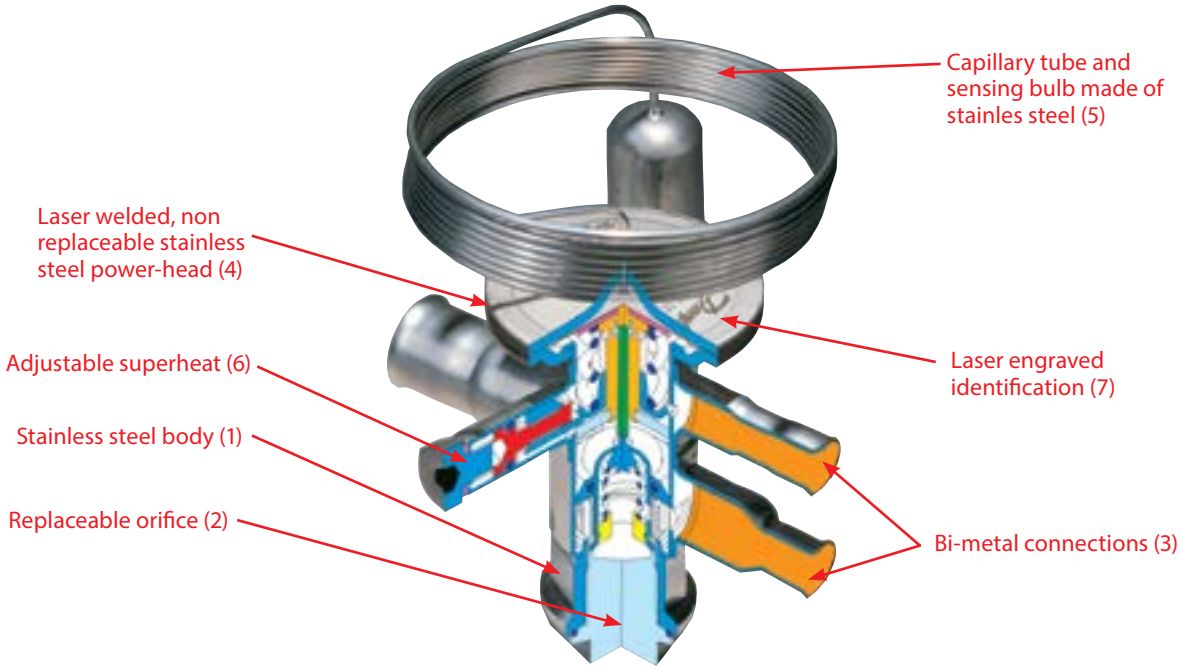


Danfoss TUA/TUAE are stainless steel (1) thermostatic expansion valves designed for use in a wide range of applications with several contractor friendly features built-in. The replaceable orifice (2) design permits easy sizing of the valve from 1/10 to 4½ tons and allows for easy access to the screen for cleaning. Bi-metal connections (3) of stainless steel and copper allow for fast, easy and cost-effective brazing – there is no need to wet wrap the valve. The valve's body includes a laser-welded, non-replaceable stainless steel power-head (4) which significantly reduces power-head failures and preserves the diaphragm's integrity, the primary cause of a failure. The capillary tube and sensing bulb are made of stainless steel (5) as it's tougher than copper and more resistant to breakage. TUA/TUAE valves feature adjustable superheat (6). Last, all identification information is laser engraved on the power-head for durable identification (7) – no paper labels to fall off the valve.

Due to their small size, light weight and rapid installation time, TUA/TUA valves are particularly suited for new installations or when replacing a valve in a small space. Examples of typical applications include:

- Ice machines (see pages 10-11 for specific TUA for ice machines)
- Single and multiple door refrigerators and freezers
- Walk-ins
- Glass door merchandisers
- Vending machines
- Display cases
- Air conditioning systems
- Transport refrigeration

By pairing one valve body with one of ten replaceable orifices, a contractor can satisfy applications from -40 to +50°F and 1/10 to 4 ½ tons capacity (capacity dependent on refrigerant).



Selection Instructions

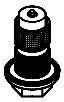
1. Select Valve Body

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



2. Select Orifice

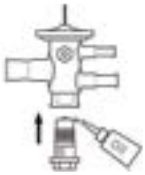
1. Select one of ten orifices using the "Orifice Selection" section on the following page.
2. Prior to installing into system, verify that only mesh portions of the screen cover the orifice inlet.



3. Assemble Valve

1. Place one drop of 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

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, recommended 15% silver). As internal connector surface is copper, connections are copper to copper, and there is no need for use of high silver content solder.

► *NO WET WRAP REQUIRED*

5. Adjust Superheat

1. Remove the cap with a 5⁄32" Allen wrench.
2. Make superheat adjustments ¼ turn at a time (¼ turn ≈ 1°F).
   - Turning clockwise increases superheat.
   - Turning counter-clockwise decreases superheat.
3. Reinstall the cap.

► Expansion valves on low temperature systems may require more adjustment as the factory setting is for medium temperature systems.

Scan the QR Code for a video with more information on TUA valve features and installation.

Product Selection

1. Valve Body Selection

Equalization	R-22	R-404A	R-134a
Internal	068U2235	068U2285	068U2205
External	068U2237	068U2287	068U2207

All valves above have ⅜" x ½" solder ODF connections and are designed for evaporator temperatures -40°F to 50°F (N charge). Other variations available upon request.

2. Orifice Selection

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).

Easy to carry kits for truck stock

All TUA/TUAE valve bodies and orifices featured on this page, gaskets and a wrench (pictured top)	068U7000
Both TUA/TUAE valve bodies and orifices and T2/TE2 valve bodies and orifices plus gaskets for TUA/TUAE and a wrench (pictured bottom)	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.



IF EXACT CAPACITY IS NOT FOUND, USE NEXT LARGER ORIFICE

R-22			Evaporator Temperature (°F)							
Orifice Size	Danfoss Code No.	Nominal capacity of installed valve[1] (tons)	-40	-30	-20	-10	0	25	35	45
			Rated Capacity[2] (tons)							
0	068U1030	⅕	1/10	1/10	1/10	⅛	⅛	1/6	1/6	1/6
1	068U1031	¼	1/10	⅛	⅛	1/6	⅛	¼	¼	¼
2	068U1032	⅓	⅛	⅛	1/6	1/6	⅕	¼	¼	⅓
3	068U1033	½	1/6	1/6	¼	¼	⅓	⅓	⅓	½
4	068U1034	¾	¼	¼	⅓	⅓	½	½	½	¾
5	068U1035	1	⅓	⅓	½	½	½	¾	¾	1
6	068U1036	1½	½	½	¾	¾	¾	1	1	1½
7	068U1037	2	¾	¾	1	1	1	1½	1½	2
8	068U1038	3	1	1¼	1½	1¾	2	2½	2½	3
9	068U1039	4½	1½	1¾	2	2½	3	4	4¼	4½

R-134a			Evaporator Temperature (°F)							
Orifice Size	Danfoss Code No.	Nominal capacity of installed valve[1] (tons)	-40	-30	-20	-10	0	25	35	45
			Rated Capacity[2] (tons)							
0	068U1030	⅛	1/20	1/15	1/15	1/10	1/10	1/10	⅛	⅛
1	068U1031	⅕	1/20	1/15	1/15	1/10	⅛	1/6	⅕	1/6
2	068U1032	¼	1/15	1/15	1/10	⅛	⅛	⅕	¼	¼
3	068U1033	⅓	1/10	1/10	⅛	1/6	1/6	¼	⅓	⅓
4	068U1034	½	⅛	1/6	1/6	¼	⅓	½	½	½
5	068U1035	¾	1/6	¼	¼	⅓	⅓	½	¾	¾
6	068U1036	1	¼	⅓	⅓	½	½	1	1	1¼
7	068U1037	1½	⅓	½	½	¾	¾	1¼	1⅓	1½
8	068U1038	2	½	¾	¾	1	1⅓	2	2	2⅓
9	068U1039	3	¾	1	1⅓	1½	2	3	3¼	3½

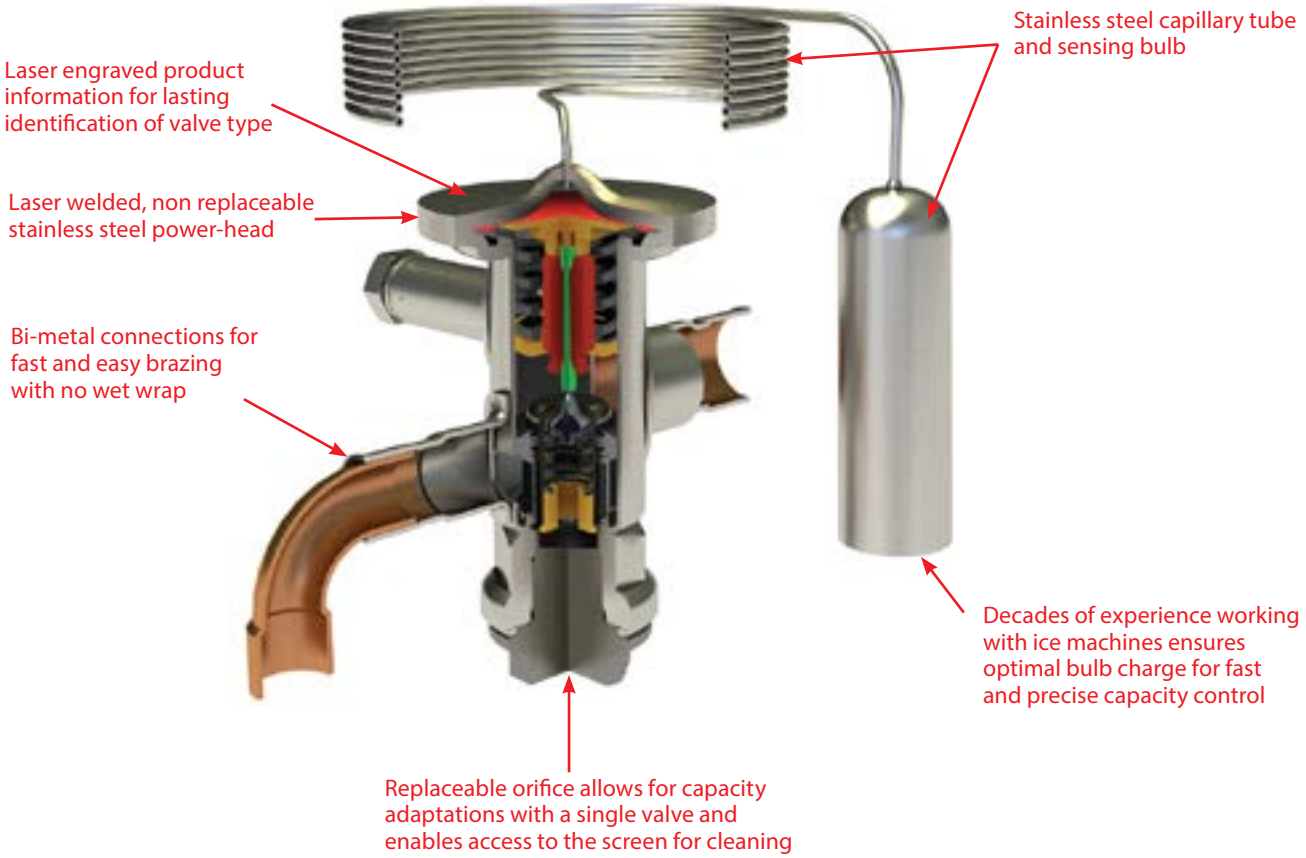
R-404A			Evaporator Temperature (°F)							
Orifice Size	Danfoss Code No.	Nominal capacity of installed valve[1] (tons)	-40	-30	-20	-10	0	25	35	45
			Rated Capacity[2] (tons)							
0	068U1030	⅛	1/20	1/15	1/15	1/10	1/10	1/10	⅛	⅛
1	068U1031	⅕	1/15	1/15	1/10	⅛	⅛	1/6	1/6	1/6
2	068U1032	¼	1/10	1/10	⅛	⅛	1/6	¼	¼	¼
3	068U1033	⅓	⅛	⅛	1/6	1/6	¼	⅓	⅓	⅓
4	068U1034	½	1/6	⅕	¼	⅓	⅓	½	½	½
5	068U1035	¾	¼	¼	⅓	⅓	½	½	¾	¾
6	068U1036	1	⅓	⅓	½	½	¾	1	1	1
7	068U1037	1½	½	½	¾	¾	1	1⅓	1½	1½
8	068U1038	2½	¾	1	1	1⅓	1½	2	2¼	2½
9	068U1039	3½	1	1⅓	1½	2	2¼	3	3⅓	3½

[1] Nominal capacity based on condensing temperature of 90°F, a vapor free liquid temperature of 80°F ahead of the expansion valve and an evaporator temperature of 40°F.
[2] Capacity based on condensing temperature of 90°F and a vapor free liquid temperature of 80°F ahead of the expansion valve.

Introduction and Overview

TUA universal thermostatic expansion valve kits for ice machines. These kits are designed with the contractor in mind to help save time and money by providing a universal valve that can easily be adapted to replace most OEM specific thermostatic expansion valves. Two kits were developed, each of which include an exchangeable orifice valve and a selection of (3) orifice sizes covering ice machines ranging from 75 to 2300 pounds of ice per day. The kits also includes copper fittings (2 elbows and 1 reducer), copper bulb strap, insulation tape and instructions to allow for replacement of most OEM expansion valve originally installed.





Selection 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 Product Selection 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 6°F and 10°F, ice is forming appropriately, and there is no sign of liquid flooding, the installation is complete.
5. If superheat is below 6°F then increase superheat.
6. If superheat is above 10°F then 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
1. Remove the cap with a 5⁄32″ Allen wrench.
2. Make superheat adjustments ¼ turn at a time (¼ turn ≈ 1°F).
   - Turning clockwise increases superheat.
   - Turning counter-clockwise decreases superheat.
3. Reinstall the cap.

Product Selection

Expansion valve kit for small ice machines

Danfoss Code No. 068U4900[1]		
Cuber	**Flaker/Nugget**	
Nameplate lbs. of ice/24 hrs per valve		Estimated orifice size
75 to 150	75 to 200	1
151 to 350	201 to 500	3
351 to 600	501 to 950	5

Valve in kit above has straightway ¼″ x ⅜″ ODF connections.

Expansion valve kit for large ice machines

Danfoss Code No. 068U4901[1]		
Cuber	**Flaker/Nugget**	
Nameplate lbs. of ice/24 hrs per valve		Estimated orifice size
351 to 600	501 to 950	5
601 to 1200	951 to 1650	7
1201 to 1800	1651 to 2300	8

Valve in kit above has straightway ⅜″ x ½″ ODF connections.

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

Introduction and Overview

Building on Danfoss' leading OEM position, Danfoss offers the Universal TR6 kit for aftermarket installations.

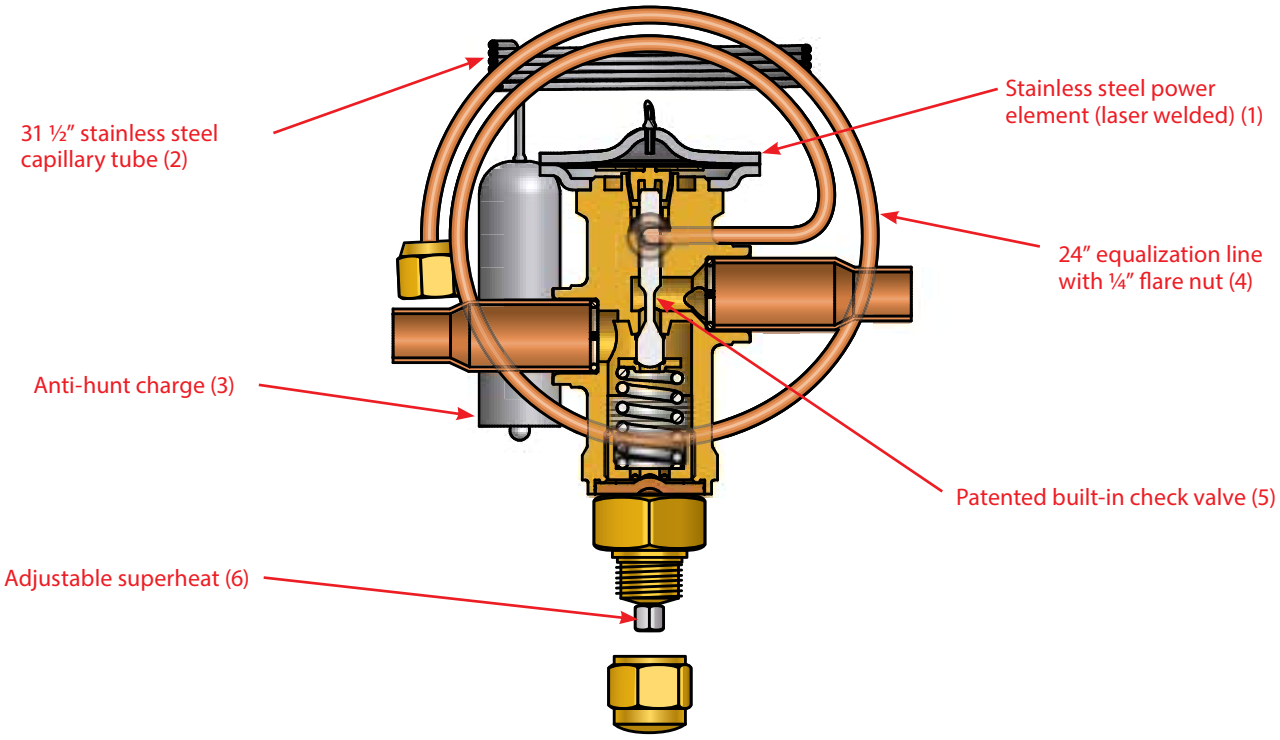
These kits are ideal for use in installation such as:

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



The hermetic tight design meets environmental demands for today and the future. The TR6 valves are available for R-22 and R-410A systems. The TR6 design incorporates a hot-pressed brass body with the entire laser-welded power element (1), including the 31 ½" capillary tube (2) and sensing bulb with anti-hunt charge (3) which is fabricated from stainless steel. The valves are supplied standard with straightway ⅜" x ⅜" ODF connections, fixed orifice and with 24" external equalization line with ¼" flare nut (4). The aftermarket versions are delivered with internal check valve (5) and with external superheat adjustment spindle (6) for field retrofit.

All valves are of a balanced port design which reduces the influence from varying condensing pressures. The TR6 valves listed on the next page are delivered with Aeroquip and Chatleff fittings for evaporator connections, insulating tape, a bulb strap and instructions for easy installation in the field.



Product Selection

Select valve using system capacity and refrigerant.

Refrigerant	System Capacity (tons)	Solder ODF connection (in.)	Weight (lbs.)	Danfoss Code No.[1]
R-410A	1½ - 3	⅜ x ⅜	0.67	**067L5955**
	3½ - 4			**067L5956**
	4½- 5			**067L5957**
R-22	1½ - 2			**067L5856**
	2½ - 3			**067L5857**
	3½ - 4			**067L5858**
	5 - 6			**067L5859**

[1] The valve kits listed above are standard aftermarket valves and are built with straightway connections, internal check valve, 24" equalization line with ¼" flare nut, fixed orifice and adjustable superheat spindle.

These kits are supplied with the valve, Aeroquip and Chatleff fittings, insulation tape, bulb strap and instructions. If additional bulb straps or fittings are needed, see page 55 for Code Nos. to order.

Easy to carry kits for truck stock

All (3) R-410A TR6 valve kits (pictured left)	**067L7000**
All (4) R-22 TR6 valve kits (pictured right)	**067L7001**



Introduction and Overview

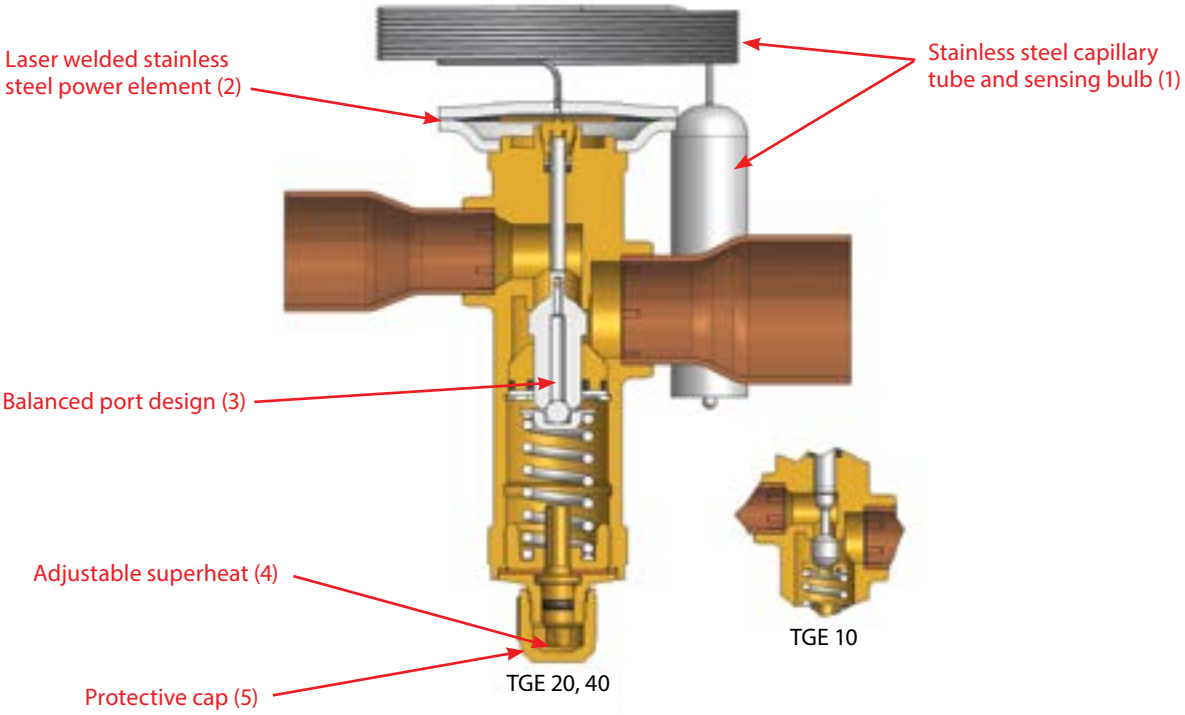
TGE is a series of thermostatic expansion valves for R-22/R-407C, R-134a, R-404A and R-410A with fixed orifice. The hermetic tight design meets the environmental demands for today and future in a wide range of applications that include:

- Commercial air conditioning systems
- Heat pumps
- Chillers
- Transport refrigeration
- Other refrigeration systems



Features and specifications include:

- Stainless steel capillary tube and sensing bulb (1) for superior strength and durability.
- Laser welded stainless steel power element for superior joint strength and operational lifetime (2)
- Balanced port design (3) prevents changes in pressure drop across valve from influencing operation. Inlet of TGE 10 is balanced port while inlet and outlet of TGE 20 and TGE 40 are balanced port.
- Easy adjustment of superheat (4) and protective cap (5).
- R-22 / R-407C and R-410A models designed for evaporator temperatures -22°F to 60°F feature Danfoss' MAH (MOP Anti-Hunt) charge which reduces valve hunting during evaporator load changes in air conditioning applications.
- R-134a, R-404A and R-507 models designed for evaporator temperatures -40°F to 50°F (N charge).
- Designed for bi-flow operations to meet the needs of various applications.
- Maximum working pressure: 667 psig



Product Selection

Danfoss Type	Competitor Mode Nos.		Nomimal capacity (tons)[3]	Solder ODF connection (in.)	Weight (lbs.)	Danfoss Code No.
R-22 / R-407C, MAH charge[1]						
TGEX 10	SVE-5, EVRE-5	HFES-5H	6	½ x ⅝	0.81	**067N9403**
TGEX 10			6	½ x ⅞	0.81	**067N9404**
TGEX 10	SVE-6, EVRE-6		7½	⅝ x ⅞	0.81	**067N9406**
TGEX 10			7½	⅝ x 1⅛	0.81	**067N9483**
TGEX 10	SVE-8, SVE-10, EBSVE 8, EVRE 8, EVRE 10	HFES-8H, HFES-10H, TRAE-10H	11	⅝ x ⅞	0.81	**067N9407**
TGEX 20	EBSVE 11, EVRE 12		12	⅝x ⅞	1.27	**067N9409**
TGEX 20	EBSVE15, OVE 15	HFES-15H, TRAE-15H	15	⅝ x 1⅛	1.27	**067N9411**
TGEX 20			15	⅞ x 1⅛	1.27	**067N9412**
TGEX 20			18	⅞ x 1⅛	1.27	**067N9413**
TGEX 40	EBSVE 20, OVE 20	HFES-20H, TRAE 20H	26	⅞ x 1⅜	2.05	**067N9415**
TGEX 40	OVE 30	TRAE 30H	30	1⅛ x 1⅜	2.05	**067N9418**
TGEX 40	OVE 40	TRAE 40H	38	1⅛ x 1⅜	2.05	**067N9419**
R-410A, MAH charge[1]						
TGEL 10	ERZE-8		9	⅝ x ⅞	0.81	**067N9206**
TGEL 10	ERZE-12.5	TFES-12Z	13	⅝ x ⅞	0.81	**067N9207**
TGEL 20	ERZE-15	TFES-16Z	15	⅝ x ⅞	1.27	**067N9209**
TGEL 20			15	⅝ x 1⅛	1.27	**067N9210**
TGEL 20	OZE-20		23	⅞ x 1⅛	1.27	**067N9213**
TGEL 20			23	1⅛ x 1⅛	1.27	**067N9284**
TGEL 40	OZE-25		31	⅞ x 1⅛	2.05	**067N9285**
TGEL 40			31	⅞ x 1⅜	2.05	**067N9215**
TGEL 40	OZE-35		35	1⅛ x 1⅜	2.05	**067N9218**
TGEL 40			46	1⅛ x 1⅜	2.05	**067N9219**
R-134a, N charge[2]						
TGEN 10	SJE-5, SJE-6, EBSJE-5	HFES-6M	7	⅝ x 1⅛	0.81	**067N5158**
TGEN 20	EBSJE-7	HFES-7.5M	8	⅝ x ⅞	1.27	**067N5159**
TGEN 20	EBSJE-12, OJE-12	HFES-11M	12	⅞ x 1⅛	1.27	**067N5163**
TGEN 40	OJE-16	HFES-14M, TRAE-13M, TRAE-14M	17	1⅛ x 1⅛	2.05	**067N5254**
TGEN 40			20	1⅛ x 1⅛	2.05	**067N5255**
TGEN 40	OJE-23	TRAE-22M	25	1⅛ x 1⅜	2.05	**067N5169**
R-404A / R-507, N charge[2]						
TGES 10	SSE-3	HFES-3.5S	4	½ x ⅞	0.81	**067N6151**
TGES 10	SSE-4	HFES-5S	5	½ x ⅞	0.81	**067N6166**
TGES 10			5	⅝ x ⅞	0.81	**067N6150**
TGES 10	SSE-6, SSE-7, EBSSE-6	HFES-7S	7½	⅝ x ⅞	0.81	**067N6154**
TGES 20	EBSSE-7.5	TRAE-8S	9	⅝ x ⅞	1.27	**067N6158**
TGES 20	EBSSE-10, OSE-9	HFES-10S	11	⅝ x ⅞	1.27	**067N6188**
TGES 20			11	⅝ x 1⅛	1.27	**067N6155**
TGES 20			11	⅞ x 1⅛	1.27	**067N6181**
TGES 20	EBSSE-13, OSE-12	HFES-13S, TRAE-12S	13	⅞ x 1⅛	1.27	**067N6162**
TGES 20	OSE-21	TRAE-20S	21	1⅛ x 1⅜	2.05	**067N6186**

[1] MAH charge: -22°F to 60°F, Maximumum operating temperature = 300°F
[2] N charge: -40°F to 50°F, Maximumum operating temperature = 210°F
[3] Nominal capacity based on ARI standard: Evaporating temperature = 40°F, Liquid temperature = 98°F, Condensing temperature = 100°F

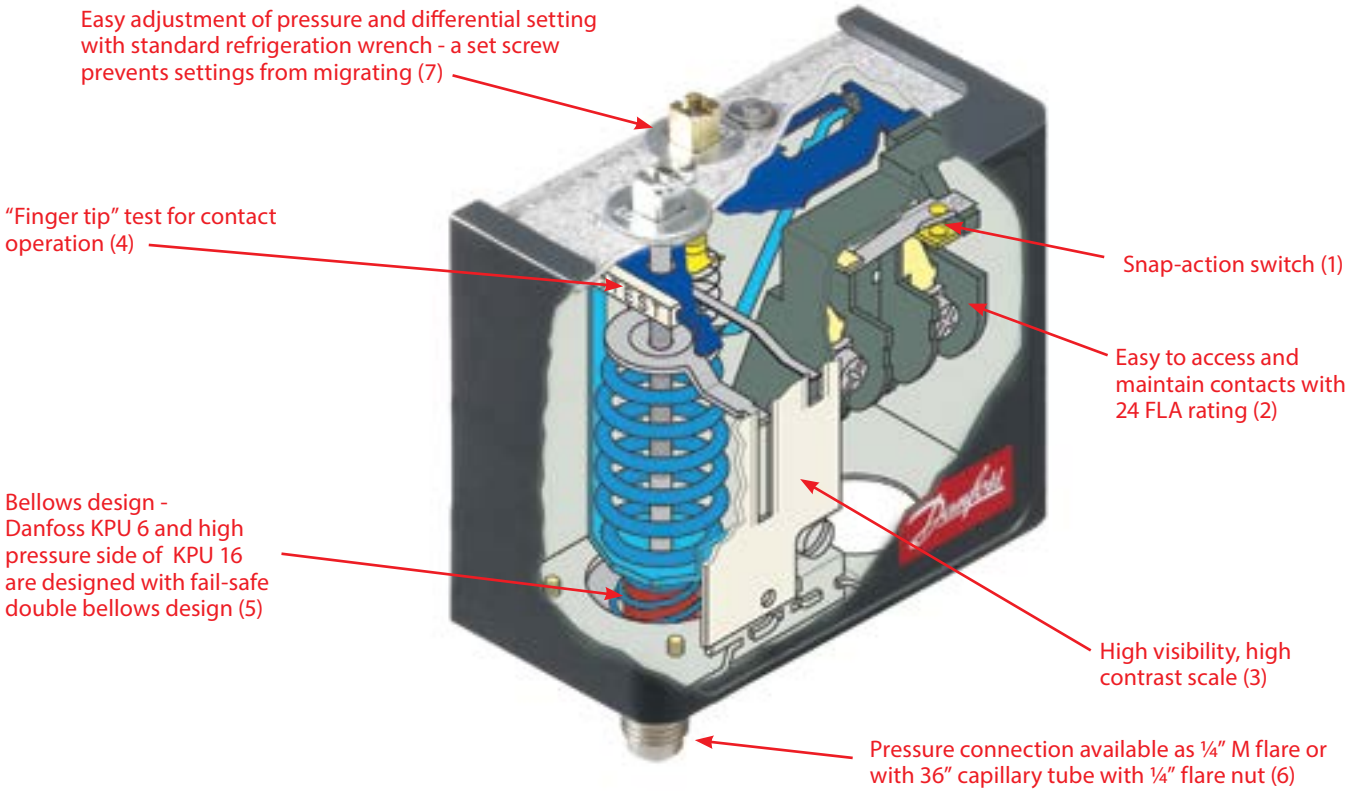
Introduction and Overview

KPU pressure controls are designed for use in refrigeration and air-conditioning systems to protect the systems from excessively low suction pressure or too high discharge pressure. They can also be applied to start and stop compressors and the fans of air-cooled condensers. KPU pressure controls, 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 on R-410A systems.



Danfoss KPU pressure controls are specifically designed for the North American aftermarket. These products are designed with a universal bolt pattern, snap-action switch (1), easy to access and maintain contacts with 24 FLA rating (2), high visibility, high contrast scale (3), "finger tip" test for contact operation (4), easy access wiring. Danfoss KPU 6 and high pressure side of KPU 16 are designed with fail-safe double bellows design (5)– assuring no loss of refrigerant even if a bellows ruptures. KPU pressure controls function as easy and direct replacements for most competitor controls. Other features include:

- Pressure connection available as ¼" M flare or with 36" capillary tube with ¼" flare nut (6)
- Easy adjustment of pressure and differential setting with standard refrigeration wrench - a set screw prevents settings from migrating (7)
- Automatic, manual or convertible reset versions available



Product Selection

Low Pressure, High Pressure and Fan Cycling Controls

Pressure	Danfoss Type	Competitor Part No.[1]	Danfoss Code No.				Reset	Contact system	Range (psig)	Differential (psig)	Maximum Working Pressure (psig)
			¼" M flare	Weight (lbs)	36" capillary tube with ¼" flare nut	Weight (lbs.)					
Low	KPU 1	O10-1483	**060-5231**	0.765	**060-5233**	0.91	Automatic	SPDT	6 to 108	10 to 60	250
Low	KPU 2	O10-1402	**060-5237**	0.765	**060-5235**	0.91	Automatic	SPST (open low)	6 to 73	6 to 30	250
Low	KPU 2		**060-5239**	0.765	**060-5240**	0.91	Automatic	SPDT	6 to 73	6 to 30	250
Low	KPU 1B	P70AB12 P70AB2	**060-5232**	0.765	**060-5234**	0.91	Manual	SPDT	28 to 100	10	250
Fan cycling	KPU 5	O10-2054 P70AA118	**060-5241**	0.765	**060-5242**	0.91	Automatic	SPST (open low)	100 to 465	25 to 85	510
High	KPU 6W[2]	O16-108	**060-5243**	0.765	**060-5245**	0.91	Automatic	SPDT	100 to 600	58 to 145	675
High	KPU 6B[2]		**060-5244**	0.765	**060-5246**	0.91	Manual	SPDT	100 to 600	60	675

Dual Pressure Controls

Danfoss Type	Competitor Part No.[1]	Danfoss Code No.				Low pressure side		High pressure side		Reset		Contact system	Maximum Working Pressure (low / high side) (psig)
		¼" M flare	Weight (lbs)	36" capillary tubes with ¼" flare nuts	Weight (lbs)	Range (psig)	Differential (psig)	Range (psig)	Differential (psig)	Low pressure side	High pressure side		
KPU 15	012-1549	**060-5247**	1.19	**060-5248**	1.5	6 to 108	10 to 60	100 to 465	60	Automatic	Automatic	SPST dual pressure (LP/HP)	250 / 510
KPU 15B	P170LB1[3] P70LB1 P70MA1	**060-5249**	1.19	**060-5250**	1.5	6 to 108	10 to 60	100 to 465	60	Automatic	Manual	SPST dual pressure (LP/HP)	250 / 510
KPU 16B[2]	O12-4834	**060-5253**	1.19	**060-5254**	1.5	6 to 108	10 to 60	100 to 600	60	Convertible[3]	Convertible[3]	SPDT LP/HP signal	250 / 675

[1] Competitor Part No. equipped with capillary tube for all but P170LB1[2] which has flare connection.
[2] KPU 6 and high pressure side of KPU 16 are designed with fail-safe double bellows.
[3] Convertible reset controls can be adjusted for either automatic or manual reset.
All controls are supplied with universal mounting bracket and mounting screws.
Ambient temperature: -40° to 122°F (175°F for maximum 2 hours)
KPU 1, 2, 6, 16 suitable for all HFC refrigerants, including R-410A.
See page 55 for capillary tube (Code No. 060-017166) to connect to controls with ¼" male flare connections (pictured below).



Technical Data

Contact Load

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

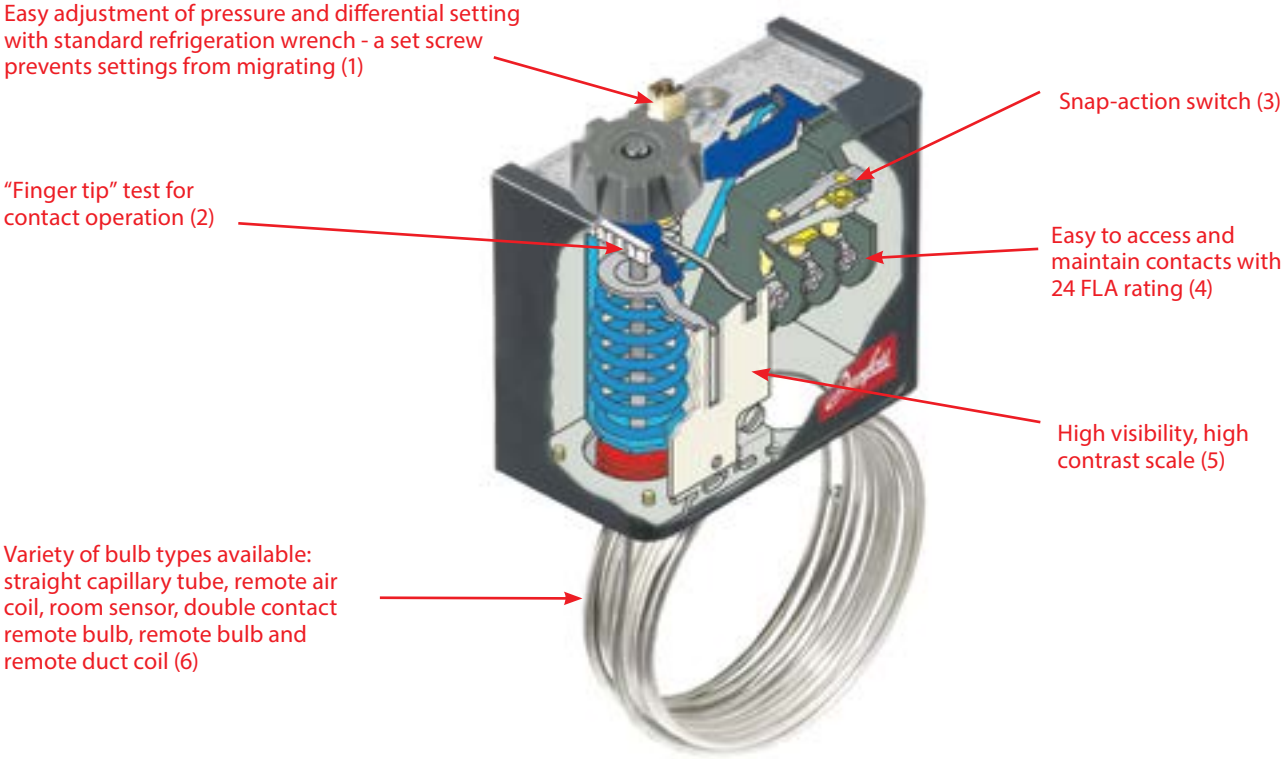
Introduction and Overview

KPU temperature controls are temperature controlled electrical switches, which are applied for regulation and safety monitoring of refrigeration and air conditioning systems. KPU controls are available with vapor charge or with adsorption charge. Temperature controls with adsorption charge are widely used to give frost protection, while vapor charged sensors are used where small differential is required. All KPU temperature controls have a single pole double throw (SPDT) contact system. The position of the switch depends on the thermostat setting and the bulb temperature.



KPU temperature controls function as easy and direct replacements for most competitor controls. Like the KPU pressure controls, Danfoss KPU temperature controls are specifically designed for the North American aftermarket with similar features and benefits. Some of the features include:

- Easy adjustment of pressure setting with hand knob (all but models with manual reset). Differential setting adjusted with standard refrigeration wrench. A set screw prevents settings from migrating. (1)
- "Finger tip" test for contact operation (2)
- Switch with snap-action function (3)
- Easy to access and maintain contacts with 24 FLA rating (4)
- High visibility, high contrast scale (5)
- Variety of bulb types available: straight capillary tube, remote air coil, room sensor, double contact remote bulb, remote bulb and remote duct coil (6)



Product Selection

Charge	Danfoss Type	Competitor Part No.	Danfoss Code No.	Weight (lbs.)	Bulb type	Capillary tube length (in.)	Reset	Range (°F)	Differential		Maximum bulb temperature (°F)
									at lowest temperature setting	at highest temperature setting	
Vapor[1]	KPU 61		**060L5201**	0.94	Straight capillary tube	80	Automatic	-20 to 60	8 to 40	2.5 to 13	250
	KPU 62	A19BBC2 O10-1072 O60-1418	**060L5206**	0.77	Room sensor	Room sensor	Automatic	-20 to 60	8 to 40	2.5 to 13	250
	KPU 68		**060L5215**	0.77	Room sensor	Room sensor	Automatic	25 to 95	8 to 45	3 to 30	250
Adsorption[2]	KPU 73	A19ABA40 A19ABC24 O10-1408 O10-1409	**060L5208**	0.94	Remote bulb	80	Automatic	-15 to 60	6 to 18	5 to 50	175
	KPU 71		**060L5218**	0.94	Remote bulb	80	Automatic	25 to 70	5.5 to 18	4 to 16	175
	KPU 77		**060L5223**	0.94	Remote bulb	80	Automatic	60 to 140	6 to 18	6.3 to 18	265

[1] Bulb must be installed in colder position than thermostat housing and capillary tube.
[2] Bulb can be placed warmer or colder than thermostat housing and capillary tube, but variations from 70°F ambient temperature will influence the scale accuracy.
All controls are supplied with universal mounting bracket and mounting screws.
Ambient temperature: -40° to 122°F (175°F for maximum 2 hours)

Technical Data

Contact Load

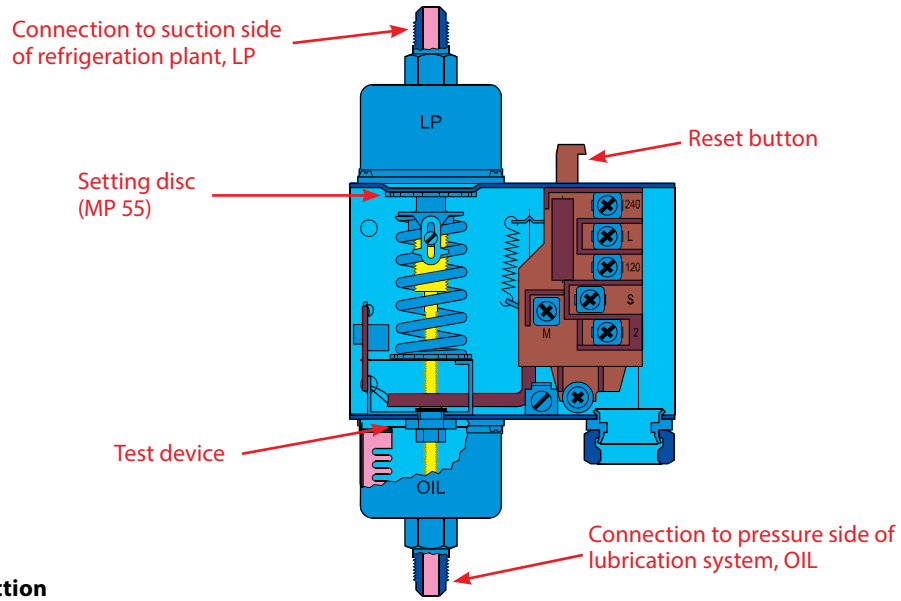
	120/240 VAC
Alternating Current	
Motor Full Load Amps (FLA)	24
Locked Rotor Amps (LRA)	144
Direct Current	240 V DC: 12W pilot duty

Introduction and Overview

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

- Reliable, long life stainless steel bellows
- Sturdy metal cover and universal mounting hole patterns
- Integral ½" swivel connection for electrical conduit
- Simple manual trip, electrical test function eliminates need of tools and test "jumper" wires
- Standard four-wire hook-up





Product Selection

Danfoss Type	Control differential Δp (psig)	Regulation range LP side	Time relay delay time (seconds)	Competitor Part Nos.	Danfoss Code No.	Competitor Part Nos.	Danfoss Code No.	Weight (lbs.)
				¼" M flare		36" capillary tubes with ¼" flare nuts		
MP 54	6	29 inHg to 175 psi	45	P145NCA/B-82C	**060B200866**	P45NCA-82C 3321-009	**060B205066**	1.8
	9	29 inHg to 175 psi	90	3321-001	**060B200266**			1.8
	9	29 inHg to 175 psi	120	P145NCA/B-12C P31-5827 3321-001	**060B200366**[2]	P45NCA-12C P30-5826 3321-010	**060B205366**[2]	1.8
MP 55	4.3 to 65	29 inHg to 175 psi	45			P288AA-18/2C P30-3601 3321-014/5[3]	**060B205466**	1.8
	4.3 to 65	29 inHg to 175 psi	60	P128AA-2C	**060B201266**[1]			1.8
	4.3 to 65	29 inHg to 175 psi	120	P128AA-17C	**060B200766**	P28AA-17C P28NA-5C P30-3801 3321-014/5[3]	**060B205766**	1.8

[1] 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 Δp) is reached, light goes out.
[2] Three-wire hook-up
[3] 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.
See page 55 for capillary tube (Code No. 060-017166) to connect to controls with ¼" male flare connections

Introduction and Overview

Danfoss offers a complete and flexible range of solenoid valves for use in refrigeration and A/C systems. EVR 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. Versions for high-pressure refrigerants are available by contacting Danfoss. The valves can be delivered as normally open or closed as well as with or without manual operation. Additionally, they have the following features:



- Wide range of coils for AC and DC voltages
- Temperature range from -40° to 220°F
- Flare connections up to 5/8"
- Solder connections up to 2 1/8"
- Solder versions have extended connections; no need to dismantle valve when soldering

Product Selection

Danfoss Type	Rated capacity R-22 / R-407C (liquid) (tons)	Rated capacity R-134a (liquid) (tons)	Rated capacity R-404A / R-507 (liquid) (tons)	Solder ODF Connection (in.)	Port size (in.)	Danfoss Code No.[1]		Weight (without coil) (lbs.)
						with manual stem	without manual stem	
EVR 3	2.03	1.55	1.4	1/4	1/8		**032F7105**	0.3
EVR 3	2.03	1.55	1.4	3/8	1/8		**032F1157**	0.3
EVR 6	5.83	4.43	4.01	3/8	15/64	**032F7116**	**032F7115**	0.4
EVR 6	5.83	4.43	4.01	1/2	15/64	**032F7144**	**032F1162**	0.4
EVR 8	8.01	6.09	5.52	1/2	5/16	**032F7148**	**032F7121**	0.4
EVR 10	13.8	10.5	9.53	5/8	3/8	**032F7149**	**032F1168**	0.8
EVR 15	18.9	14.4	13	5/8	9/16		**032F1171**	1.4
EVR 18	24.6	18.7	17	7/8	19/32	**032F1004**		1.4
EVR 20	36.4	27.7	25.1	7/8	7/8	**032F1177**	**032F1176**	2.4
EVR 22	43.7	33.3	30.1	1 1/8	15/16	**032F7137**	**032F7145**	2.4
EVR 25	72.8	55.4	50.2	1 3/8	1	**032F1194**	**032F1193**	6.7
EVR 32	116.5	88.7	80.3	1 5/8	7/8	**042H1179**	**042H1178**	8.5

[1] Valve body is normally closed (NC) and excludes coil. Additional Code Nos. available in Coolselector or contact Danfoss. Service kits are available on page 55 in the Spare Parts and Accessories section.

Coils

Voltage (V)	Frequency (Hz)	Power consumption (W)	Danfoss Type (Junction Box)[2]	Danfoss Code No.	Length of wire (in.)	Danfoss Type (Conduit Boss)[3]	Danfoss Code No.	Length of wire (in.)	Weight (lbs.)
24	50/60	14	BJ024CS	**018F4100**	7	BX024CS	**018F4102**	18	1
110	50/60	16	BJ120CS	**018F4110**	7	BX120CS	**018F4112**	18	
120	60	15							
208-240	60	14	BJ230CS	**018F4120**	7	BX230CS	**018F4122**	18	
230	50	17							



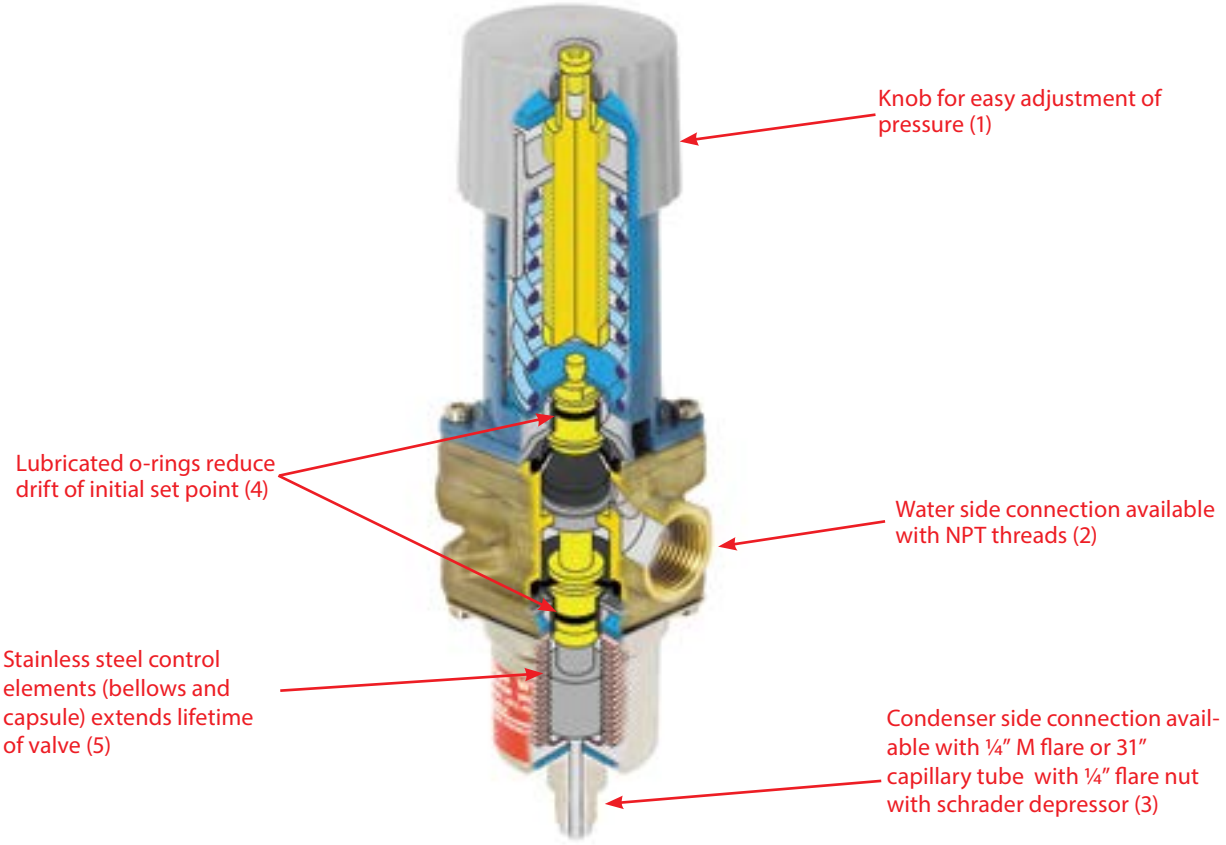
[2] Enclosure rating for BJ coils is NEMA 2 / IP12-32
[3] Enclosure rating for BX coils is NEMA 4 / IP 54

Introduction and Overview

WVFX pressure controller water regulating valves are used to regulate the flow of water in a refrigeration system with water-cooled condensers. Water valves regulate water flow thereby controlling and maintaining constant condensing pressure. At shut-down, cooling water flow is shut off automatically. The WVFX valves are designed as wide-range, general purpose valves. Additional features include:

- Complete flow range – 1.6 to 6.4 gal/min
- Knob for easy adjustment of pressure (1)
- Water side connection available with NPT threads – ⅜" to 1" (2)
- Condenser side connection available with ¼" M flare or 31" capillary tube with ¼" flare nut with schrader depressor (3)
- Lubricated o-rings reduce drift of initial set point (4)
- Stainless steel control elements (bellows and capsul) extends lifetime of valve (5)
- For HCFC and HFC refrigerants
- Needs no power – self acting
- Opens on rising condensing pressure
- Insensitive to dirt





Product Selection

Danfoss Type	Competitor Part No.	Connection		Range (psig)	Condenser side		Water side		Flow Coefficient, Cv value (gal/min)	Weight (lbs.)	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[1]	⅜	¼" M flare	60 to 333	380	420	230	350	1.6	2.55	**003N5006**
WVFX 10	V46AA-1C	⅜	31" capillary tube with ¼" flare nut[2]	60 to 333	380	420	230	350	1.6	2.72	**003N5025**
WVFX 15	V46AB-1C[1]	½	¼" M flare	60 to 333	380	420	230	350	2.2	2.48	**003N6006**
WVFX 15	V46AB-1C	½	31" capillary tube with ¼" flare nut[2]	60 to 333	380	420	230	350	2.2	2.64	**003N6025**
WVFX 20	V46AC-1C	¾	¼" M flare	60 to 333	380	420	230	350	3.9	2.53	**003N7006**
WVFX 20	V46AC-1C	¾	31" capillary tube with ¼" flare nut[2]	60 to 333	380	420	230	350	3.9	2.7	**003N7025**
WVFX 25	V46AD-1C[1]	1	¼" M flare	60 to 333	380	420	230	350	6.4	2.86	**003N8006**
WVFX 25	V46AD-1C	1	31" capillary tube with ¼" flare nut[2]	60 to 333	380	420	230	350	6.4	3.13	**003N8025**

[1] Competitor valve equipped with capillary tube as in Code No. directly below. Else, see page 55 for capillary tube spare part (Code No. 060-017166) to attach to this Code No. (pictured below).
[2] Schrader depressor installed at end of capillary tube.
Rebuild kits are available on page 55 in the Spare Parts and Accessories section.
Temperature range: -13 to 265°F
Opening differential pressure: 145 psig



Introduction and Overview

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 + NRD
- Hot Gas Bypass Valves, KVC/CPCE



Some of features include:

- 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 rising pressure
  - KVC/KVL – opens on a falling pressure

Product Selection

Application	Danfoss Type	Rated capacity (tons)				Solder ODF connection (in.)	Setting Range (psig)	Factory setting (psig)	Max. Working Pressure (psig)	Max. Test Pressure (psig)	Min. Temp. of Medium (°F)	Max. Temp of Medium (°F)	Weight (lbs.)	Danfoss Code No.
		R-22	R-134a	R-404A	R-407C									
Evaporating Pressure Regulator	KVP 12	1.3	0.9	1.2	1.2	½	0 to 80	29	261	26	-49	266	0.9	**034L0023**
	KVP 15	1.3	0.9	1.2	1.2	⅝	0 to 80	29	261	26	-49	266	0.9	**034L0029**
	KVP 22	1.3	0.9	1.2	1.2	⅞	0 to 80	29	261	26	-49	266	0.9	**034L0025**
	KVP 28	2.8	1.9	2.4	2.6	1⅛	0 to 80	29	261	40	-49	266	2	**034L0026**
	KVP 35	2.8	1.9	2.4	2.6	1⅜	0 to 80	29	261	40	-49	266	2	**034L0032**
Crankcase Pressure Regulator	KVL 12	1.3	0.8	1	1.1	½	3 to 85	29	261	287	-76	266	0.9	**034L0043**
	KVL 15	1.3	0.8	1	1.1	⅝	3 to 85	29	261	287	-76	266	0.9	**034L0049**
	KVL 22	1.3	0.8	1	1.1	⅞	3 to 85	29	261	287	-76	266	0.9	**034L0045**
	KVL 28	4.1	2.6	3.4	3.8	1⅛	3 to 85	29	261	287	-76	266	2	**034L0046**
	KVL 35	4.1	2.6	3.4	3.8	1⅜	3 to 85	29	261	287	-76	266	2	**034L0052**
Condensing Pressure Regulator	KVR 12	Liquid: 12.7 Hot gas: 4.13	Liquid: 11.8 Hot gas: 3.03	Liquid: 8.2 Hot gas: 3.27	Liquid: 13.8 Hot gas: 4.5	½	70 to 250	145	400	450	-40	275	0.88	**034L0093**
	KVR 15	Liquid: 12.7 Hot gas: 4.13	Liquid: 11.8 Hot gas: 3.03	Liquid: 8.2 Hot gas: 3.27	Liquid: 13.8 Hot gas: 4.5	⅝	70 to 250	145	400	450	-40	275	0.88	**034L0097**
	KVR 22	Liquid: 12.7 Hot gas: 4.13	Liquid: 11.8 Hot gas: 3.03	Liquid: 8.2 Hot gas: 3.27	Liquid: 13.8 Hot gas: 4.5	⅞	70 to 250	145	400	450	-40	275	0.88	**034L0094**
	KVR 28	Liquid: 32.6 Hot gas: 10.93	Liquid: 30.2 Hot gas: 8.04	Liquid: 20.9 Hot gas: 8.66	Liquid: 35.5 Hot gas: 11.91	1⅛	70 to 250	145	400	450	-40	275	2.2	**034L0095**
	KVR 35	Liquid: 32.6 Hot gas: 10.93	Liquid: 30.2 Hot gas: 8.04	Liquid: 20.9 Hot gas: 8.66	Liquid: 35.5 Hot gas: 11.91	1⅜	70 to 250	145	400	450	-40	275	2.2	**034L0100**
Differential Pressure Regulator	NRD 12s[1]					½	70 to 250	145	400	530	-40	275	0.22	**020-1132**
Hot Gas Bypass	KVC 12	2.14	1.36	2.02	2.31	½	3 to 85	29	400	450	-49	266	0.88	**034L0143**
	KVC 15	4.17	2.65	3.93	4.5	⅝	3 to 85	29	400	450	-49	266	0.88	**034L0147**
	KVC 22	5.35	3.41	5.04	5.78	⅞	3 to 85	29	400	450	-49	266	0.88	**034L0144**
	CPCE 12	6.2	4.3	6.3	6.7	½	0 to 85	5.8	400	450	-50	285	2	**034N0082**
	CPCE 15	9.2	6.3	9.1	9.9	⅝	0 to 85	5.8	400	450	-50	285	2	**034N0083**
	CPCE 22	12.2	8.4	12.1	12.2	⅞	0 to 85	5.8	400	450	-50	285	2	**034N0084**

[1] NRD generally used in conjunction with a KVR to regulate the condensing pressure

Introduction and Overview

Danfoss DCL/DCB filter driers offer industry leading system protection. 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. Moisture can clog an expansion device with ice, reducing system efficiency, or can form acids which damage the compressor and other components. Solid contaminants can clog expansion devices and wear compressors prematurely. For aftermarket service, most contractors choose this blend of molecular sieve and activated alumina for both high moisture capacity and acid adsorption capacity. Type DAS are used in the suction line to clean up refrigeration and AC systems with fluorinated refrigerants after a compressor burn-out. The solid core adsorbs harmful acids as well as moisture to protect the compressor from premature failure.



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. Other product features and benefits are depicted in the picture below.



Nomenclature / Type

D C L 03 2 s VV

Filter drier

Solid Core
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

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

Size (volume)
03: 3 in³
05: 5 in³
08: 8 in³
16: 16 in³
30: 30 in³
41: 41 in³
60: 60 in³
75: 75 in³

Connection
(filter connection in ⅛ of an inch increments)
2: ¼″
2.5: 5⁄16″
3: ⅜″
4: ½″
5: ⅝″
6: ¾″
7: ⅞″
9: 1⅛″

Connection type
(blank): Flare connection
s: Solder connection

Access valves

	Inlet	Outlet
(blank)	none	none
V	Schrader valve	none
VV	Schrader valve	Schrader valve

Product Selection

Danfoss Type	Connection (in.)	Danfoss Code No.	Maximum Working Pressure (psig)	Weight (lbs.)	Drying capacity (lbs. refrigerant)								Liquid Capacity (tons)			
					R-134a		R-404A, R-507		R-407C, R-410A		R-22		R-134a	R-404A, R-507	R-407C, R-410A	R-22
					75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F				
DCL 032s	¼ solder	**023Z5013**[1]	667	0.39	8.5	8	9.1	8.7	8.6	8	7.8	7.2	1.9	1.42	2.12	2.11
DCL 032	¼ flare	**023Z5000**[1]	667	0.44	8.5	8	9.1	8.7	8.6	8	7.8	7.2	1.9	1.42	2.12	2.11
DCL 052s	¼ solder	**023Z5018**	667	0.81	13.6	12.8	14.6	13.8	13.8	12.7	12.4	11.4	2.18	1.6	2.4	2.37
DCL 052	¼ flare	**023Z5002**	667	0.86	13.6	12.8	14.6	13.8	13.8	12.7	12.4	11.4	2.18	1.6	2.4	2.37
DCL 053s	⅜ solder	**023Z5019**	667	0.84	13.6	12.8	14.6	13.8	13.8	12.7	12.4	11.4	3.66	2.79	4.1	4.15
DCL 053	⅜ flare	**023Z5003**	667	0.92	13.6	12.8	14.6	13.8	13.8	12.7	12.4	11.4	3.66	2.79	4.1	4.15
DCL 082s	¼ solder	**023Z5022**	667	0.84	21.7	20.5	23.3	22.1	22	20.3	19.8	18.2	2.18	1.55	2.37	2.28
DCL 082	¼ flare	**023Z5004**	667	0.88	21.7	20.5	23.3	22.1	22	20.3	19.8	18.2	2.18	1.55	2.37	2.28
DCL 083s	⅜ solder	**023Z5023**	667	0.86	21.7	20.5	23.3	22.1	22	20.3	19.8	18.2	4.03	3.12	4.56	4.65
DCL 084s	½ solder	**023Z5026**	667	0.88	21.7	20.5	23.3	22.1	22	20.3	19.8	18.2	8.14	6.07	9.03	8.99
DCL 084	½ flare	**023Z5006**	667	1.06	21.7	20.5	23.3	22.1	22	20.3	19.8	18.2	8.14	6.07	9.03	8.99
DCL 162	¼ flare	**023Z5007**	667	1.74	47.7	45.1	51.3	48.6	48.3	44.7	43.5	40.1	2.18	1.54	2.36	2.28
DCL 163s	⅜ solder	**023Z5029**	667	1.72	47.7	45.1	51.3	48.6	48.3	44.7	43.5	40.1	4.64	3.18	4.95	4.67
DCL 163	⅜ flare	**023Z5008**	667	1.80	47.7	45.1	51.3	48.6	48.3	44.7	43.5	40.1	4.64	3.18	4.95	4.67
DCL 164s	½ solder	**023Z5032**	667	1.74	47.7	45.1	51.3	48.6	48.3	44.7	43.5	40.1	9.15	6.69	10.07	9.9
DCL 165s	⅝ solder	**023Z5033**	667	1.76	47.7	45.1	51.3	48.6	48.3	44.7	43.5	40.1	12.69	10.41	14.74	15.59
DCL 165	⅝ flare	**023Z5010**	667	2.00	47.7	45.1	51.3	48.6	48.3	44.7	43.5	40.1	12.69	10.41	14.74	15.59
DCL 303s	⅜ solder	**023Z0030**	667	2.84	100.5	95	108	102.4	101.8	94.1	91.6	84.4	4.46	3	4.72	4.4
DCL 303	⅜ flare	**023Z0012**	667	2.93	100.5	95	108	102.4	101.8	94.1	91.6	84.4	4.46	3	4.72	4.4
DCL 304s	½ solder	**023Z0031**	667	2.86	100.5	95	108	102.4	101.8	94.1	91.6	84.4	9.24	7.11	10.41	10.58
DCL 304	½ flare	**023Z0013**	667	3.04	100.5	95	108	102.4	101.8	94.1	91.6	84.4	9.24	7.11	10.41	10.58
DCL 305s	⅝ solder	**023Z0032**	667	2.88	100.5	95	108	102.4	101.8	94.1	91.6	84.4	13	10.51	14.99	15.72
DCL 305	⅝ flare	**023Z0014**	667	3.12	100.5	95	108	102.4	101.8	94.1	91.6	84.4	13	10.51	14.99	15.72
DCL 307s	⅞ solder	**023Z0034**	507	2.97	100.5	95	108	102.4	101.8	94.1	91.6	84.4	18.27	15.34	21.44	23.05
DCL 415s	⅝ solder	**023Z0105**	667	4.49	139.5	131.9	150	142.2	141.3	130.7	127.3	117.3	15.78	11.9	17.61	17.66
DCL 415	⅝ flare	**023Z0103**	667	4.29	139.5	131.9	150	142.2	141.3	130.7	127.3	117.3	15.78	11.9	17.61	17.66
DCL 417s	⅞ solder	**023Z0106**	507	4.58	139.5	131.9	150	142.2	141.3	130.7	127.3	117.3	18.98	16.01	22.32	24.08
DCL 607s	⅞ solder	**023Z0036**	507	5.26	200.9	189.9	216	204.8	203.5	188.2	183.3	168.9	19.93	19.94	25.16	30.71
DCB 083s	⅜ solder	**023Z1433**	667	1.1	15.6	14.7	16.7	15.8	15.6	14.5	14.1	13	2.1	1.5	2.3	2.3
DCB 163s	⅜ solder	**023Z1437**	667	1.8	29.3	27.7	31.5	29.9	29.7	27.5	26.8	24.6	5.1	3.7	5.7	5.7
DCB 164s	½ solder	**023Z1436**	667	1.8	29.3	27.7	31.5	29.9	29.7	27.5	26.8	24.6	8	5.7	9.1	9.1
DCB 165s	⅝ solder	**023Z1435**	667	2.0	29.3	27.7	31.5	29.9	29.7	27.5	26.8	24.6	10.6	8.3	11.4	11.4

[1] Wire mesh in filter drier outlet

Danfoss Type	Connection (in.)	Danfoss Code no.	Maximum Working Pressure (psig)	Weight (lbs)	Rated capacity (tons)			Acid capacity (oz.)
					R-134a	R-404A	R-22 / R-410A	
DAS 164sVV	½ solder	**023Z1009**	500	2.03	1.7	2.4	6.3	0.3
DAS 165sVV	⅝ solder	**023Z1010**	500	1.9	2.7	3.7	4.3	0.3
DAS 166sVV	¾ solder	**023Z1011**	500	1.9	3.4	4.9	5.7	0.3
DAS 167sVV	⅞ solder	**023Z1012**	500	1.9	3.9	5.4	6.3	0.3
DAS 306sVV	¾ solder	**023Z1014**	500	2.9	4	5.4	6.3	0.64
DAS 307sVV	⅞ solder	**023Z1015**	500	2.9	4.6	6.3	7.4	0.64
DAS 309sVV	1⅛ solder	**023Z1016**	500	3.0	5.7	7.7	8.9	0.64
DAS 419sVV	1⅛ solder	**023Z1018**	500	4.6	6.3	8.6	10	0.86

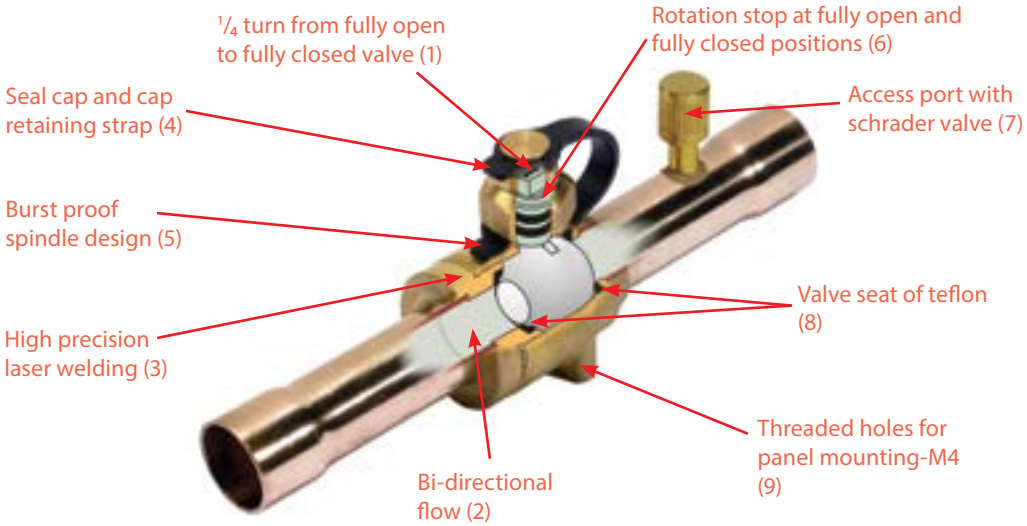
Danfoss Type	Material	Danfoss Code No.
DCR core insert, type 48-DM solid core	100% molecular sieve	**023U1392**
DCR core insert, type 48-DC solid core	80% molecular sieve & 20% activated alumina	**023U4381**
DCR core insert, type 48-DA solid core	30% molecular sieve & 70% activated alumina	**023U5381**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

Introduction and Overview

GBC valves are used in liquid, suction and hot gas lines in all refrigeration and air-conditioning systems with fluorinated refrigerants. Danfoss GBC ball valves are manually operated shut-off valves suitable for bi-directional flow (1,2).
The design is based on years of experience.
The valve concept includes a high precision laser welding (3) ensuring both a strong and a light slim line valve body design. The design, weld, and choice of the sealing material enables the ball valves to meet the most demanding requirements, for example, the high working pressure when operating with R-410A. Additional features include:



- Seal cap with retaining strap (4)
- Burst proof spindle design prevents liquid from being trapped internally (5)
- Rotation stops and position indicator (6)
- Access port with schrader valve saves money if service of the system is necessary (7)
- Valve seat of teflon to secure maximum tightness and a long lifetime (8)
- Threaded holes for panel mounting holes – M4 (9)
- Full flow with minimum pressure drop
- Slim-line design ensures easy operational handling



Product Selection

Danfoss Type	Solder ODF connection (in.)	Flow Coefficient, C_v value (gal/min)	Working pressure (psig)	Test pressure (psig)	Weight (lbs.)	Danfoss Code No.
GBC6s	¼	2.27	650	940	0.52	**009G8050**
GBC10s	⅜	6.57	650	940	0.52	**009G8051**
GBC12s	½	12.23	650	940	0.54	**009G8052**
GBC16s	⅝	16.31	650	940	0.54	**009G8053**
GBC18s	¾	23.61	650	940	0.86	**009G8054**
GBC22s	⅞	32.56	650	940	0.94	**009G8065**
GBC28s	1⅛	60.05	650	940	1.96	**009G8066**
GBC35s	1⅜	93.51	650	940	3.09	**009G8067**
GBC42s	1⅝	139.96	650	940	4.91	**009G8068**
GBC54s	2⅛	260.05	650	940	9.32	**009G8059**
GBC67s	2⅝	358.36	650	725	12.46	**009G8069**

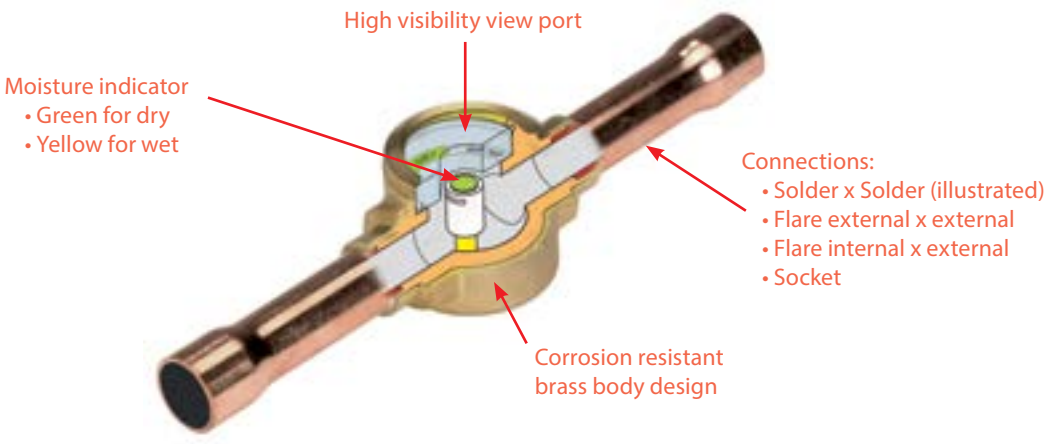
All valves listed in table above are Full Port.

Introduction and Overview

Danfoss sight glasses 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.

Danfoss offers two types of sight glasses; inline and vessel mount. Inline sight glass, type SGP N is used in the system’s liquid line to indicate both the condition and moisture content of the refrigerant. They incorporate an indicator which changes color dependent on the moisture content. Type SGP N is recommended for HFC refrigerants. Vessel sight glasses, type SGP RN are specially designed to be mounted directly on either a receiver or the compressor crankcase to indicate liquid level. Type SGP RN are available with a refrigerant moisture indicator which can be used with all fluorinated refrigerants.





Product Selection

Danfoss Type	Version	Solder ODF connection (in.)	Ambient Temperature (°F)	Maximum working pressure (psig)	Weight (lbs.)	Danfoss Code No.
SGP 6 N	Flare int. x ext.[1]	¼ x ¼	-60 to 175	750	0.22	**014L0171**
SGP 10 N		⅜ x ⅜		750	0.44	**014L0172**
SGP 12 N		½ x ½		750	0.66	**014L0173**
SGP 6s N	ODF x ODF solder	¼ x ¼		750	0.22	**014L0181**
SGP 10s N		⅜ x ⅜		750	0.22	**014L0182**
SGP 12s N		½ x ½		750	0.44	**014L0183**
SGP 16s N		⅝ x ⅝		750	0.44	**014L0145**
SGP 22s N		⅞ x ⅞		750	0.44	**014L0186**
SGP ½ RN	NPT	½		750	0.22	**014L0006**

[1] Can be screwed directly onto Danfoss filter drier.

Introduction and Overview

Specially optimized for use in mobile, household and light commercial applications, these hermetic reciprocating compressors provide high cooling capacity in an energy saving design. The compressor series can be used with multiple refrigerants including R-134a and R-404A (refrigerant dependent on model) that are perfect for cooling needs from 190 to 10800 Btu/h based on ASHRAE conditions.



Product features and options include:

- Compact construction
- Durable housing
- Optimized motor technology
- Wide voltage range
- Easy installation at lower cost
- Low noise and high energy efficiency
- Robust in tough operating conditions

Product Range

Cooling Capacity[1] (Btu/h)

190 — 10800



BD **T** **N** **S**

[1] Capacity range based on product range represented on following page. For complete range of models (refrigerant, capacity and voltage codes) available, check Coolselector or contact Danfoss.

Product Selection

Refrigerant	Voltage/ Phase/ Frequency	Horse Power Rating (hp)	HS/ LS	Competitor Model Nos.		Danfoss Model No.	Danfoss Standard Compressor Code No.	Cooling Capacity[1] (Btu/h)									Weight (lbs.)[2]	Danfoss Single Packed Code No.[3]
								LBP Evaporator temperature (°F)			MBP Evaporator temperature (°F)			HBP Evaporator temperature (°F)				
								-30	-13	0	0	+20	+40	+25	+45	+50		
R-134a	12-24 DC, 100-240/1/ 50/60	multi-speed				BD35F	101Z0204		194	299	221	421					9.5	**195B0679**
R-134a	12-24 DC, 100-240/1/ 50/60	multi-speed				BD50F	101Z0203		242	370	305	545					9.5	**195B0678**
R-134a	115/1/60	1/10	LS			TL2.5G	102G3257		226	340	249	495	860	575	970	1087	14.7	**195B0592**
R-134a	115/1/60	1/10+	HS	AZA0370YXA AEA3414YXA	EMIS30HHR EM30HHR	TL4G	102G3460		320	516	393	732	1225	840	1375	1530	16.7	**195B0003**
R-134a	115/1/60	¼	HS	AEA1360YXA AEA3425YXA	NEK6160Z	NF5.5FX	105G5623	374	701	1035	845	1442	2293	1633	2562		22.0	**195B0259**
R-134a	115/1/60	¼	HS	AEA3430YXA AEA4430YXA	FF7.5HBK FF8.5BK (R-12) FF8.5HBK	NF7FX	105G5723	465	830	1206	1022	1708	2700	1925	3006		22.0	**195B0467**
R-134a	115/1/60	⅓	HS	AEA3440YXA AEA4440YXA	FFI10HBX FF11.5BK (R-12) NEK6178K	NF11FX	105G5945	553	1046	1568	1333	2279	3638	2575	4056		22.0	**195B0388**
R-134a	115/1/60	⅓+	HS	AEA2410YXA AEA4448YXA	FFI12HBX FFI12BX (R-12)	SC12G	104G7250	499	1126	1769	1344	2536	4242	2908	4765	5333	27.7	**195B0042**
R-134a	115/1/60	½+	HS		T6213Z	SC15G	104G7550		1266	2059	1556	3040	4969	3473	5544	6162	27.7	**195B0099**
R-134a	115/1/60	½+	HS	AEA2413YXA AKA4460YXA	NT6215Z NEK6214Z	SC18G	104G7800		1582	2462	1882	3479	5586	3950	6217	6896	30.2	**195B0694**
R-404A	115/1/60	⅕	HS			TF4CLX	102U2114	421	714	1008	791	1285	1953				17.9	**195B0666**
R-404A	115/1/60	¼	HS	AEA2380ZXA		TFS4.5CLX	102U2115	569	933	1297							17.9	**195B0667**
R-404A	115/1/60	⅓	HS	AEA9415ZXA AEA9422ZXA	NEK2121GK NEK6181GK	NF5.5CLX	105F1621	789	1276	1759	1384	2209	3334				22.2	**195B0348**
R-404A	115/1/60	⅓+	HS	AEA2411ZXA AKA9427ZXA	NEK2125GK	NF7CLX	105F1721	960	1587	2209	1727	2789	4237				22.2	**195B0304**
R-404A	115/1/60	½	HS	AJA2419ZXA	NEK2134GK	SC10CL	104L1503	776	1683	2562	1742	3111	5012	3532	5585		27.7	**195B0147**
R-404A	115/1/60	½+	HS	AKA9438ZXA	NEK6213GK NT6217GKV	SC12CLX.2	104L1696	1419	2496	3525							27.7	**195B0491**
R-404A	115/1/60	¾	HS	AJA2425ZXA	NEK2150GK	SC12MLX	104L1606				2640	4391	6865	4962	7654		30.2	**195B0510**
R-404A	115/1/60	¾	HS	AJA2431ZXA	NEK2150GK NT2168GKV	SC15CLX.2	104L1853	1834	3118	4391							30.9	**195B0701**
R-404A	115/1/60	¾	HS	AKA9455ZXA		SC18MLX	104L2105			5025	3894	6296	9691	7082	10776		30.9	**195B0702**
R-404A	115/1/60	¾	HS	AJA2431ZXD	NT2168GKV	SC18CLX.2	104L2198	2198	3611	4873	3942	5929					30.9	**195B0464**

[1] Capacity at ASHRAE conditions below. For other conditions and/or speeds, check Coolselector or contact Danfoss.
[2] Weight without electrical and non-electrical equipment
[3] Code No. shipped with compressor and required electrical and non-electrical accessories
Full range of models (refrigerant, capacity and voltage codes) available. Check Coolselector or contact Danfoss.

Test conditions	ASHRAE (LBP)	ASHRAE (MBP)	ASHRAE (HBP)
Condensing temperature	110°F	130°F	130°F
Ambient and suction gas temperature	90°F	95°F	95°F
Liquid temperature	90°F	115°F	115°F
Speed	3500	3500	

Introduction and Overview

Optyma™ is the widest range of hermetic condensing units on the market.
Optyma™ condensing unit is available with high capacity models of reciprocating and scroll compressors so to cover a large range of commercial refrigeration applications, reducing costs and complexity of the systems.
All Optyma™ condensing units are extremely efficient and reliable. That means less energy consumption and less running costs, less
cost for service and maintenance.

Condensing units are made to order.
Please contact Danfoss for availability.



Nomenclature / Model No.

U C G C 0033 U WC000 B

Application
L: low
H: medium / high
U: universal low / medium / high

Design
C: air cooled condenser, single fan, hermetic compressor
G: air cooled condenser, dual fan, hermetic compressor

Refrigerant
G: R-134a
H: R-404A, R-507
M: R-22
Z: R-404A, R-134a, R-507, R-407C

Condenser size
sized to 110°F ambient

Horsepower (hp) rating
hp rating in hundreths of hp
e.g. 0033 = ⅓ hp, 1000 = 10 hp

Certification
R: UL recognized
U: UL listed

Version
W: wholesale model
A: power cord
B: power cord, receiver
C: electical box, power cord, receiver
D: electrical box, receiver, low pressure control, cartridge fan cycling control
E: electrical box, receiver, dual pressure control, cartridge fan cycling control, larger than 3 hp units use KPU fan cycling control
F: WE + filter drier, sight glass, solenoid valve with coil

Electrical code
B: compressor & fan(s), 115V, 1ph, 60Hz
N: compressor & fan(s), 230V, 1ph, 60Hz
Q: compressor 208-230V, 3 ph, 60 Hz; fan(s) 230V, 1ph, 60Hz
R: compressor 460V, 3 ph, 60 Hz; fan(s) 460V, 1ph, 60Hz

Product Selection

R-22 MBP			Ambient temperature (°F)	Capacity (Btu/h) ASHRAE[1] at evaporating temperatire (°F)									
Competitor Model No.	Danfoss Model No.	Danfoss Code No.		0	5	10	15	20	25	30	35	40	45
AJA9470 F3AHA100	HCMC0100UWD000N	**114N2355**	90		4803	5320	5914	6507	7180	7853	8611	9368	10194
			95		4635	5103	5661	6219	6866	7513	8252	8990	9799
			100			4887	5409	5931	6552	7173	7893	8612	9405
			110				4975	5437	6011	6584			
AWG4520 V3AH015H V3AH020H AWG4524 F3ADB201	HCMC0200UWF300N HCMC0200UWF300Q HCMC0200UWF300R	**114N6604 114N6605 114N6606**	90	7055	8384	9811	11334	12895	14607	16411	18304	20210	22266
			95	6604	7897	9283	10762	12275	13932	15676	17506	19347	21331
			100	6157	7413	8758	10190	11654	13256	14941	16706	18480	20392
			110	5274	6453	7711	9047	10409	11897	13460	15094	16736	18503
F3ADB301 V3AH030H F3ADB325	HCMC0250UWF300N HCMC0250UWF300Q HCMC0250UWF300R	**114N6608 114N6609 114N6610**	90	10824	12557	14289	16210	18131	20243	22355	24596	26926	29352
			95	10265	11956	13647	15517	17387	19433	21479	23647	25907	28250
			100	7324	9071	10819	12838	14858	17188	19518	22098	24853	27114
			110	8587	10142	11696	13402	15107	16958	18809	20748	22752	
AVA4540 F3ADB325 V3AH032H	HCMC0300UWF300N HCMC0300UWF300Q	**114N6620 114N6621**	90	14865	17222	19578	22225	24871	27827	30783	33990	37316	40861
			95	14023	16350	18677	21288	23899	26809	29719	32866	36131	39604
			100			15361	18314	21268	24642	28015	31724	34939	38350
			110			16012	18499	20986	23743	26500	29465		
AGA4553 F3ADB401 V3AH040H	HGMC0400UWF300N HGMC0400UWF300Q HGMC0400UWF300R	**114N6627 114N6628 114N6629**	90	17905	20868	23832	27120	30409	34069	37730	41686	45823	50282
			95	16899	19776	22653	25843	29032	32579	36125	39938	43931	48241
			100	15892	18685	21478	24567	27657	31078	34499	38191	42040	46190
			110	13949	16563	19178	22051	24924	28098	31271	34693	38240	
AGA4563 V3AH050H F3ADA501	HGMC0500UWF300N HGMC0500UWF300Q HGMC0500UWF300R	**114N6635 114N6636 114N6637**	90	24237	27665	31093	35054	39016	43503	47990	52867	57998	63425
			95	23083	26401	29719	33546	37374	41712	46050	50741	55653	60919
			100	21987	25191	28395	32085	35775	39948	44121	48636	53366	58423
			110	20012	22966	25920	29323	32725	36571	40417	44575	48922	

[1]Ambient temperature = 90°F, Return gas = 65°F, Subcooling = 5°F
Condensing units are made to order. Please contact Danfoss for availability.

R-134a MBP			Ambient temperature (°F)	Capacity (Btu/h) ASHRAE[1] at evaporating temperatire (°F)									
Competitor Model Nos.	Danfoss Model No.	Danfoss Code No.		0	5	10	15	20	25	30	35	40	45
AEA3425 M2FH0020 M2FH0024	UCGC0020RWA000B	**114N2017**	90	1052	1196	1339	1505	1671	1860	2049	2260	2472	2699
			95	1009	1148	1287	1447	1607	1790	1972	2176	2380	2601
			100	966	1100	1234	1388	1543	1719	1895	2092	2289	2502
			110	880	1004	1128	1271	1415	1577	1740	1923	2106	2304
AEA4430 M2FH0026	UCGC0025RWB000B	**114N2019**	90	1193	1353	1514	1699	1884	2095	2306	2541	2776	3029
			95	1151	1306	1461	1639	1818	2022	2225	2452	2680	2924
			100	1109	1258	1407	1580	1752	1948	2144	2364	2583	2819
			110	1024	1163	1301	1461	1620	1802	1983	2186	2389	
AEA4440 AEA4448 M2FHA033	HCGC0033UWC000B	**114N2022**	90		1709	1927	2179	2431	2717	3004	3324	3644	3986
			95		1648	1858	2101	2345	2622	2898	3208	3517	3848
			100		1586	1789	2024	2259	2526	2793	3091	3390	3709
			110		1462	1651	1869	2087	2335	2582	2859	3136	3433
AKA4460 AKA7437 M2FH0049	UCGC0050UWC000B	**114N2024**	90	2339	2682	3025	3420	3815	4264	4713	5212	5712	6249
			95	2245	2579	2913	3295	3678	4109	4541	5020	5499	6011
			100	2150	2476	2801	3171	3540	3954	4368	4827	5285	5774
			110	1961	2270	2578	2922	3265	3645	4024	4441	4857	5299
AJA4492 AJA7465 FTAHA074 FTAHA075 FTAHB074 FTAMA074 FTAMA075	HCGC0075UWC000B HCGC0075UWC000N	**114N2027** **114N2028**	90		4596	5079	5774	6470	7325	8180	9129	10077	11052
			95		4276	4771	5453	6135	6952	7769	8660	9551	10458
			100		3956	4463	5131	5800	6578	7357	8190	9024	9863
			110				4582	5224	5936	6647	7383	8119	
AJA4512 FTAHA100 FTAHA101	HCGC0100UWD000N	**114N2029**	90		6529	7098	7794	8491	9273	10055	10885	11715	12555
			95		6003	6566	7242	7918	8670	9421	10211	11001	11797
			100			6034	6690	7346	8067	8788	9538	10288	11038
			110				5586	6202	6861	7520			

[1]Ambient temperature = 90°F, Return gas = 65°F, Subcooling = 5°F
Condensing units are made to order. Please contact Danfoss for availability.

R-404A MBP			Ambient temperature (°F)	Capacity (Btu/h) ASHRAE[1] at evaporating temperatire (°F)									
Competitor Model No.	Danfoss Model No.	Danfoss Code No.		0	5	10	15	20	25	30	35	40	45
AEA9415 M4FH0022	UCHC0020RWA000B	**114N2316**	90	961	1071	1181	1301	1422	1552	1682	1819	1956	2098
			95	909	1014	1119	1234	1349	1473	1597	1727	1857	1991
			100	857	957	1057	1166	1276	1393	1511	1634	1757	1884
			110	766	857	947	1047	1146	1252	1358	1469		
AEA9422 M4FH0025	UCHC0025RWB000B	**114N2318**	90	1625	1808	1992	2198	2405	2634	2864	3115	3367	3635
			95	1553	1730	1906	2105	2303	2524	2744	2985	3227	3484
			100	1482	1652	1821	2011	2202	2413	2624	2856	3087	3334
			110	1340	1495	1650	1824	1999	2192	2385	2596	2808	
AKA9429 M4FHA036	UCHC0033UWC000B	**114N2321**	90	1971	2194	2417	2666	2915	3188	3461	3756	4052	4340
			95	1882	2096	2310	2548	2787	3049	3311	3594	3877	4153
			100	1792	1997	2203	2431	2659	2910	3160	3431	3702	3966
			110	1659	1851	2043	2256	2470	2704	2937	3190		
AKA9440 M4FH0050	UCHC0050UWC000B UCHC0050UWC000N	**114N2324 114N2325**	90	2519	2838	3158	3518	3878	4279	4679	5119	5560	6030
			95	2386	2695	3004	3351	3699	4086	4472	4897	5323	5778
			100	2253	2551	2849	3185	3520	3893	4265	4676	5086	5525
			110	2154	2444	2734	3060	3386	3748	4110	4509	4908	5335
AJA7480 FJAMA100 FJAMA101 FJAMA106 FJAFA100	HCHC0100UWD000N	**114N2332**	90		4964	5543	6205	6867	7614	8360	9194	10027	10928
			95		4791	5319	5943	6566	7284	8002	8815	9629	10515
			100			5095	5680	6265	6954	7644	8437	9230	10101
			110				5230	5749	6388	7027	7784	8540	
AWA7512 FJAMA125 FJAMA126 FJAMA150	HCZC0150UWF300Q HCZC0150UWF300R	**114N6402 114N6403**	90	6365	7471	8647	9891	11153	12524	13954	15440	16921	18503
			95	5950	7009	8134	9323	10528	11835	13199	14614	16025	17531
			100	5529	6542	7616	8750	9897	11141	12438	13783	15124	16554
			110	4686	5600	6570	7591	8623	9740	10902	12108	13308	14588
AWA7515 VJAF017H FJAMA200	HCZC0200UWF300N HCZC0200UWF300Q HCZC0200UWF300R	**114N6404 114N6405 114N6406**	90	8793	10070	11423	12848	14286	15836	17439	19089	20716	22434
			95	8315	9529	10814	12164	13525	14990	16504	18061	19596	21217
			100	7818	8969	10185	11461	12744	14125	15551	17017	18461	19986
			110	6778	7801	8877	10003	11133	12346	13598	14883	16149	17497
VJAF025H	HCZC0250UWF300N HCZC0250UWF300Q	**114N6408 114N6409**	90	11258	12870	14483	16253	18023	19974	21992	24108	26223	28532
			95	10640	12182	13723	15412	17101	18963	20887	22903	24920	27134
			100	10008	11478	12947	14554	16162	17933	19765	21689	23613	25720
			110	8732	10057	11382	12827	14273	15867	17518	19256	20994	
AVA7523 FJAMA300 VJAF030H FJAMA325	HCZC0300UWF300N HCZC0300UWF300Q HCZC0300UWF300R	**114N6420 114N6421 114N6422**	90	15776	18105	20434	22974	25514	28281	31145	34130	37115	40306
			95	14841	17062	19284	21704	24125	26775	29493	32347	35201	38255
			100	13910	16023	18136	20438	22739	25260	27846	30557	33268	36201
			110	12102	14000	15898	17964	20031	22301	24644			
VJAF035Z VJAF035H	HGZC0400UWF300N HGZC0400UWF300Q HGZC0400UWF300R	**114N6427 114N6428 114N6429**	90	20074	23089	26103	29451	32798	36521	40377	44475	48573	53103
			95	18817	21706	24596	27802	31008	34575	38286	42213	46140	50500
			100	17545	20307	23068	26131	29194	32604	36155	39922	43689	47866
			110	15020	17523	20026	22804	25583	28683	31918	35364	38809	

[1]Ambient temperature = 90°F, Return gas = 65°F, Subcooling = 5°F
Condensing units are made to order. Please contact Danfoss for availability.

R-404A MBP			Ambient temperature (°F)	Capacity (Btu/h) ASHRAE[1] at evaporating temperatire (°F)									
Competitor Model No.	Danfoss Model No.	Danfoss Code No.		0	5	10	15	20	25	30	35	40	45
FJAMB400 VJAF040Z VJAF040H FJAMB500 VJAF050Z	HGZC0500UWF300N HGZC0500UWF300Q HGZC0500UWF300R	**114N6435** **114N6436** **114N6437**	90	24167	27679	31192	35047	38902	43145	47507	52087	56667	61623
			95	22592	25935	29279	32946	36612	40649	44796	49160	53523	58258
			100	21011	24184	27357	30833	34310	38139	42094	46221	50349	54852
			110	17904	20734	23565	26663	29762	33179	36713	40415	44117	
FJAH100Z	HGZC1000UWF300Q HGZC1000UWF300R	**114N6445** **114N6446**	90	50572	57395	64218	71795	79372	87743	96495	105668	115042	
			95	47531	54059	60587	67833	75078	83083	91458	100240	109214	
			100	44478	50707	56936	63848	70760	78397	86396	94789	103367	
			110	38467	44098	49729	55982	62236	69152	76414	84053	91921	
CJDM1000	HGZC1200UWF300R	**114N6449**	90	58238	65784	73330	81645	89960	99106	108643	118562	128799	
			95	54773	61980	69186	77124	85063	93843	102910	112381	122060	
			100	51292	58154	65015	72574	80133	88502	97144	103232	115500	
			110	44431	50602	56773	63580	70387	77948	85814	94021	102497	
FJAH120Z FJAM130Z	HGZC1350UWF300R	**114N6452**	90	62293	70102	77911	86496	95082	104476	114193	124446	134767	
			95	58588	66047	73506	81708	89910	98881	108213	117877	127858	
			100	54893	61999	69105	76922	84739	93288	102196	111448	120991	
			110	47666	54091	60516	67557	74599	82383	90417	98880		

[1]Ambient temperature = 90°F, Return gas = 65°F, Subcooling = 5°F
Condensing units are made to order. Please contact Danfoss for availability.

R-404A LBP			Ambient temperature (°F)	Capacity (Btu/h) ASHRAE[1] at evaporating temperatire (°F)									
Competitor Model No.	Danfoss Model No.	Danfoss Code No.		-40	-35	-30	-25	-20	-15	-10	-5	0	5
	UCHC0020RWA000B	**114N2316**	90	327	387	447	520	593	679	764	862	961	1071
			95	301	359	417	487	557	639	721	815	909	1014
			100	276	332	388	455	521	600	678	767	857	957
			110	233	285	336	398	460	531	603	684	766	857
AEA2410	UCHC0025RWB000B	**114N2318**	90	595	693	791	909	1026	1165	1303	1464	1625	1808
			95	559	655	750	863	977	1111	1244	1399	1553	1730
			100	524	616	708	818	928	1056	1185	1334	1482	1652
			110	453	539	626	728	829	948	1067	1203	1340	1495
AEA2413 M4FL0033	UCHC0033UWC000B	**114N2321**	90	699	821	944	1090	1235	1406	1577	1774	1971	2194
			95	654	773	892	1033	1174	1338	1503	1692	1882	2096
			100	609	724	840	976	1112	1270	1429	1611	1792	1997
			110	543	653	763	891	1020	1169	1318	1489	1659	1851
AKA2422 M4FL0040	UCHC0050UWC000B UCHC0050UWC000N	**114N2324 114N2325**	90	710	885	1060	1267	1474	1716	1959	2239	2519	2838
			95	622	795	968	1170	1373	1608	1844	2115	2386	2695
			100	535	705	875	1073	1271	1500	1729	1991	2253	2551
			110	405	572	738	929	1120	1339	1557	1806	2055	2337
AJA2429 M4FL0051	LCHC0060UWC000B LCHC0060UWC000N	**114N2335 114N2336**	90	1274	1511	1748	2025	2303	2622	2941	3299	3658	4054
			95	1168	1395	1622	1887	2152	2455	2758	3099	3439	3815
			100	1063	1280	1497	1749	2000	2288	2576	2898	3221	3576
			110	876	1074	1272	1501	1729	1989	2249	2539		
M4FL0067 FJAFA075	LCHC0075UWC000B LCHC0075UWC000N	**114N2337 114N2338**	90	1380	1688	1996	2341	2686	3073	3460	3891	4322	4797
			95	1312	1622	1933	2278	2623	3009	3394	3823	4251	4722
			100		1557	1869	2214	2560	2944	3329	3755	4180	4647
			110				2087	2434	2816	3198	3618	4039	4498
AWA2448 FJALA100 FJALA101 FJALA103 FJALA102	LCHC0100UWD000N	**114N2339**	90	1779	2347	2915	3504	4093	4711	5329	5980	6630	7314
			95	1743	2211	2678	3246	3813	4409	5005	5632	6259	6916
			100		2074	2442	2988	3533	4107	4681	5284	5887	6518
			110				2471	2973	3503	4032	4588	5144	5723
AWA2479 AWA2490 AVA2510 FJALB200 FJALA225	LCZC0200UWF300N LCZC0201UWF300Q LCZC0201UWF300R	**114N6729 114N6730 114N6731**	90	4953	5934	6985	8061	9238	10472	11757	13038	14404	15799
			95	4585	5523	6525	7549	8666	9836	11052	12264	13553	14870
			100	4236	5131	6085	7056	8114	9220	10369	11510	12724	13961
			110	3586	4397	5254	6122	7063	8042	9054	10056	11117	12193
AVA2512 AVA2515 VJAL025Z FJALB301 VJAL035Z	LCZC0301UWF300N LCZC0301UWF300Q LCZC0301UWF300R	**114N6733 114N6734 114N6735**	90	6108	7619	9247	10912	12723	14600	16525	18408	20368	22317
			95	5628	7070	8614	10189	11894	13658	15460	17219	19045	20855
			100	5138	6512	7975	9460	11063	12714	14397	16033	17728	19402
			110	4140	5375	6679	7989	9391	10823	12272	13670	15106	16526
VJAL040Z VJAL050Z	LGZC0401UWF300N LGZC0401UWF300Q LGZC0401UWF300R	**114N6737 114N6738 114N6739**	90	8907	10928	13112	15368	17855	20487	23251	26032	29023	32109
			95	8170	10112	12209	14369	16747	19258	21891	24537	27379	30307
			100	7439	9304	11313	13378	15646	18037	20540	23050	25743	28514
			110	6009	7726	9551	11422	13469	15617	17858	20098	22494	24950

[1]Ambient temperature = 90°F, Return gas = 40°F, Subcooling = 5°F
Condensing units are made to order. Please contact Danfoss for availability.

R-404A LBP			Ambient temperature (°F)	Capacity (Btu/h) ASHRAE[1] at evaporating temperatire (°F)									
Competitor Model No.	Danfoss Model No.	Danfoss Code No.		-40	-35	-30	-25	-20	-15	-10	-5	0	5
CJDL0600	LGZC0600UWF300Q LGZC0600UWF300R	**114N6741 114N6742**	90	14093	16971	20081	23290	26827	30564	34487	38430	42667	47035
			95	12860	15622	18602	21669	25040	28594	32316	36051	40057	44180
			100	11606	14266	17106	20030	23235	26607	30130	33659	37437	41319
			110	9080	11509	14095	16720	19593	22601	25730	28850	32179	35585
CPDK0600	LGZC0751UWF300Q LGZC0750UWF300R	**114N6744 114N6745**	90	19051	22596	26384	30245	34439	38796	43286	47709	52359	57039
			95	17672	21054	24655	28312	32274	36379	40599	44747	49099	53470
			100	16289	19508	22921	26375	30105	33960	37912	41788	45844	49908
			110	13530	16417	19450	22497	25765	29120	32539	35872	39341	42795

[1]Ambient temperature = 90°F, Return gas = 40°F, Subcooling = 5°F
Condensing units are made to order. Please contact Danfoss for availability.

Introduction and Overview

Known for their legendary durability, Maneurop® reciprocating compressors from Danfoss are specially designed for applications with a wide range of operating conditions. Maneurop® MT and MTZ series compressors are of the hermetic reciprocating type and are designed for medium and high evaporating temperature applications.



The MT series is designed for use with the "traditional" R-22 refrigerant, using Danfoss mineral oil 160P as lubricant. The MT series can also be applied with several R-22 based refrigerant blends (substitute refrigerants), using 160 ABM alkylbenzene as lubricant. The MTZ series is specifically designed for use with the HFC refrigerants R-407C, R-134a, R-404A, and R-507A, using 160PZ polyester oil as lubricant. MT and MTZ compressors have a large internal free volume that protects against the risk of liquid hammering when liquid refrigerant enters the compressor.

MT and MTZ compressors are available in 16 different models with displacement ranging from 1.84 to 16.57 in^3/rev. Seven different motor voltage ranges are available for single and three phase power supplies at 50 and 60 Hz.

Nomenclature / Model No.

MT Z 64 HM 4 B VE -

Compressor types

Refrigerant & lubricant:
Blank: R-22, mineral oil
Z: R-407C, R-134a, R-404A, R-507, polyester oil

Motor power (divide by 12 to convert to hp)

Displacement code (in^3/rev)
JA: 1.84 **HL:** 5.87
JC: 2.33 **HM:** 6.57
JE: 2.93 **HN:** 7.38
JF: 3.29 **HP:** 8.29
JG: 3.69 **HS:** 10.45
JH: 4.14 **HU:** 13.15
HJ: 4.65 **HV:** 14.76
HK: 5.23 **HW:** 16.57

Motor voltage code
1: 208-230 V / 1 ph / 60 Hz
3: 200-230 V / 3 ph / 60 Hz
4: 400 V / 3 ph / 50 Hz
460 V / 3 ph / 60 Hz
5: 230 V / 1 ph / 50 Hz
6: 230 V / 3 ph / 50 Hz
7: 500 V / 3 ph / 50 Hz
575 V / 3 ph / 60 Hz
9: 380 V / 3 ph / 60 Hz

Generation index

Oil equalization port and sight glass

Option code

Product Selection

208-230/1/60		200-230/3/60		460/3/60		Nominal Cacapity (Btu/h)			Connection type rotolock (in.)	Connection with supplied sleeve (in. ODF)	No. cylinders	Weight (lbs.)
Danfoss Model No.[1]	Danfoss Code No.	Danfoss Model No.[1]	Danfoss Code No	Danfoss Model No.[1]	Danfoss Code No.	R-22[2]	R-134a[2]	R-404A / R-507[3]				
MT18JA1PVE	**MT18-1VI**	MT18JA3MVE	**MT18-3VI**	MT18JA4BVE	**MT18-4VI**	15903			1 x 1	½ x ⅜	1	46
MT22JC1TVE	**MT22-1VI**[4]	MT22JC3MVE	**MT22-3VI**	MT22JC4AVE	**MT22-4VI**	21975			1 x 1[(4)]	½ x ⅜[(4)]	1	46
MT28JE1RVE	**MT28-1VI**[4]	MT28JE3MVE	**MT28-3VI**	MT28JE4AVE	**MT28-4VI**	30231			1 x 1[(4)]	½ x ⅜[(4)]	1	51
MT32JF1MVE	**MT32-1VI**	MT32JF3EVE	**MT32-3VI**	MT32JF4DVE	**MT32-4VI**	33044			1¼ x 1	⅝ x ½	1	53
MT36JG1QVE	**MT36-1VI**	MT36JF3FVE	**MT36-3VI**	MT36JG4EVE	**MT36-4VI**	37992			1¼ x 1	⅝ x ½	1	55
MT40JH1NVE	**MT40-1VI**	MT40JH3FVE	**MT40-3VI**	MT40JH4EVE	**MT40-4VI**	42930			1¼ x 1	⅝ x ½	1	57
MT44HJ1FVE	**MT44-1VI**	MT44HJ3BVE	**MT44-3VI**	MT44HJ4AVE	**MT44-4VI**	43999			1¾ x 1¼	⅞ x ¾	2	82
MT50HK1GVE	**MT50-1VI**	MT50HK3CVE	**MT50-3VI**	MT50HK4BVE	**MT50-4VI**	50160			1¾ x 1¼	⅞ x ¾	2	82
MT56HL1EVE	**MT56-1VI**	MT56HL3BVE	**MT56-3VI**	MT56HL4AVE	**MT56-4VI**	56420			1¾ x 1¼	⅞ x ¾	2	86
MT64HM1FVE	**MT64-1VI**	MT64HM3DVE	**MT64-3VI**	MT64HM4CVE	**MT64-4VI**	64366			1¾ x 1¼	⅞ x ¾	2	86
		MT72HN3CVE	**MT72-3VI**	MT72HN4AVE	**MT72-4VI**	74561			1¾ x 1¼	⅞ x ¾	2	88
		MT80HP3CVE	**MT80-3VI**	MT80HP4AVE	**MT80-4VI**	84976			1¾ x 1¼	1⅛ x ¾	2	88
		MT100HS3DVE	**MT100-3VI**	MT100HS4DVE	**MT100-4VI**	95898			1¾ x 1¼	1⅛ x ¾	4	132
		MT125HU3DVE	**MT125-3VI**	MT125HU4DVE	**MT125-4VI**	124678			1¾ x 1¼	1⅛ x ¾	4	141
		MT144HV3VE	**MT144-3VI**	MT144HV4VE	**MT144-4VI**	140697			1¾ x 1¼	1⅛ x ¾	4	148
		MT160HW3DVE	**MT160-3VI**	MT160HW4DVE	**MT160-4VI**	156820			1¾ x 1¼	1⅛ x ¾	4	152
MTZ18JA1AVE	**MTZ18-1VI**	MTZ18JA3AVE	**MTZ18-3VI**	MTZ18JA4BVE	**MTZ18-4VI**		11200	8930	1 x 1	½ x ⅜	1	46
MTZ22JC1BVE	**MTZ22-1VI**[4]	MTZ22JC3AVE	**MTZ22-3VI**	MTZ22JC4AVE	**MTZ22-4VI**		14849	12306	1 x 1[(4)]	½ x ⅜[(4)]	1	46
MTZ28JE1AVE	**MTZ28-1VI**[4]	MTZ28JE3AVE	**MTZ28-3VI**	MTZ28JE4AVE	**MTZ28-4VI**		19276	15986	1 x 1[(4)]	½ x ⅜[(4)]	1	51
MTZ32JF1AVE	**MTZ32-1VI**	MTZ32JF3AVE	**MTZ32-3VI**	MTZ32JF4BVE	**MTZ32-4VI**		20949	17480	1¼ x 1	⅝ x ½	1	53
MTZ36JG1AVE	**MTZ36-1VI**	MTZ36JG3AVE	**MTZ36-3VI**	MTZ36JG4AVE	**MTZ36-4VI**		24482	20189	1¼ x 1	⅝ x ½	1	55
MTZ40JH1AVE	**MTZ40-1VI**	MTZ40JH3AVE	**MTZ40-3VI**	MTZ40JH4AVE	**MTZ40-4VI**		27864	23031	1¼ x 1	⅝ x ½	1	57
MTZ44HJ1AVE	**MTZ44-1VI**	MTZ44HJ3AVE	**MTZ44-3VI**	MTZ44HJ4AVE	**MTZ44-4VI**		30110	24323	1¾ x 1¼	⅞ x¾	2	77
MTZ50HK1BVE	**MTZ50-1VI**	MTZ50HK3BVE	**MTZ50-3VI**	MTZ50HK4BVE	**MTZ50-4VI**		34538	28590	1¾ x 1¼	⅞ x ¾	2	77
				MTZ56HL4AVE	**MTZ56-4VI**		38881	32451	1¾ x 1¼	⅞ x ¾	2	86
MTZ64HM1BVE	**MTZ64-1VI**	MTZ64HM3AVE	**MTZ64-3VI**	MTZ64HM4BVE	**MTZ64-4VI**		44404	38056	1¾ x 1¼	⅞ x ¾	2	82
		MTZ72HN3BVE	**MTZ72-3VI**	MTZ72HN4AVE	**MTZ72-4VI**		50000	40894	1¾ x 1¼	⅞ x ¾	2	88
		MTZ80HP3BVE	**MTZ80-3VI**	MTZ80HP4AVE	**MTZ80-4VI**		56336	46521	1¾ x 1¼	1⅛ x ¾	2	88
		MTZ100HS3VE	**MTZ100-3VI**	MTZ100HS4VE	**MTZ100-4VI**		63963	52953	1¾ x 1¼	1⅛ x ¾	4	132
		MTZ125HU3VE	**MTZ125-3VI**	MTZ125HU4VE	**MTZ125-4VI**		78906	68297	1¾ x 1¼	1⅛ x ¾	4	141
		MTZ144HV3VE	**MTZ144-3VI**	MTZ144HV4VE	**MTZ144-4VI**		96936	80472	1¾ x 1¼	1⅛ x ¾	4	148
		MTZ160HW3VE	**MTZ160-3VI**	MTZ160HW4VE	**MTZ160-4VI**		107631	87421	1¾ x 1¼	1⅛ x ¾	4	152

[1] These compressor models have threaded sight glass and ⅜" flare oil equalization line.
[2] Evaporator temperature = 45°F, condensing temperature = 130°F, superheat = 20°F, subcooling = 15°F
[3] Evaporator temperature = 20°F, condensing temperature = 120°F, superheat = 20°F, subcooling = 0°F
[4] Actual connection for MT and MTZ 22-28 (208-230/1/60) is rotolock 1¼" x 1" and connection with supplied sleeve is ⅝" x ½" ODF.
To determine the nominal capacity for R-407C, check Coolselector or visit our Online Datasheet Generator at www.danfoss.com/odsg.
See page 50 for Nominal capacitor values and relays.

Introduction and Overview

The Maneurop® NTZ series of reciprocating compressors from Danfoss Commercial Compressors are specially designed for low evaporating temperature applications for R-404A, R-507.

The NTZ series is optimized at -31°F with an extended evaporating temperature range from -49° to 14°F. The compressors can be operated at a suction gas temperature of 68°F even at low evaporating temperatures. A liquid injection system is not required. All components are of a high quality and precision to assure a long product life. NTZ compressors have a large internal free volume that helps to reduce the risk of liquid hammering. The electrical motor is fully suction gas cooled which means that no additional body cooling is required and it allows the compressors to be insulated with an acoustic hood.



Nomenclature / Model No.

NT Z 048 A 4 L R1 A

- **NT**: Compressor type — **NT:** low temperature reciprocating compressor
- **Z**: Refrigerant & lubricant — **Z:** R-404A, R-507, polyolester oil
- **048**: Displacement (cm³/rev)
- **A**: **A:** UL index indicator
- **4**: Motor voltage code
  - **1**: 208-230 V / 1 ph / 60 Hz
  - **3**: 200-230 V / 3 ph / 60 Hz
  - **4**: 400 V / 3 ph / 60 Hz; 460 V / 3 ph / 50 Hz
  - **5**: 230 V / 1 ph / 50 Hz
  - **9**: 380 V / 3 ph / 60 Hz
- **L**: Motor protection — **L:** Internal motor protection
- **R1**: Equipment version — **R1:** Rotolock connections, oil equalization, sight glass
- **A**: **A:** Evolution index

Product Selection

208-230/1/60			200-230/3/60			460/3/60			Connection type rotolock (in.)	Connection with supplied sleeve (in. ODF)	No. cylinders	Weight (lbs.)
Danfoss Model No.	Nominal Capacity[1] (Btu/h)	Danfoss Code No.[2]	Danfoss Model No.	Nominal Capacity[1] (Btu/h)	Danfoss Code No.[2]	Danfoss Model No.	Nominal Capacity[1] (Btu/h)	Danfoss Code No.[2]				
NTZ048A1LR1A	4547	**120F0072**	NTZ048A3LR1A	4490	**120F0026**	NTZ048A4LR1A	4490	**120F0001**	1¼ x 1	⅝ x ½	1	46
NTZ068A1LR1A	6649	**120F0073**	NTZ068A3LR1A	7518	**120F0027**	NTZ068A4LR1A	7518	**120F0002**	1¼ x 1	⅝ x ½	1	51
NTZ096A1LR1A	9155	**120F0074**	NTZ096A3LR1A	9110	**120F0028**	NTZ096A4LR1A	9110	**120F0003**	1¾ x 1¼	⅞ x ¾	2	77
NTZ108A1LR1A	10804	**120F0075**	NTZ108A3LR1A	10536	**120F0029**	NTZ108A4LR1A	10536	**120F0004**	1¾ x 1¼	⅞ x ¾	2	77
NTZ136A1LR1A	13900	**120F0076**	NTZ136A3LR1A	13900	**120F0030**	NTZ136A4LR1A	13900	**120F0005**	1¾ x 1¼	1⅛ x ¾	2	77
			NTZ215A3LR1A	21460	**120F0031**	NTZ215A4LR1A	21460	**120F0006**	1¾ x 1¼	1⅛ x ¾	4	137
			NTZ271A3LR1A	29788	**120F0032**	NTZ271A4LR1A	29788	**120F0007**	1¾ x 1¼	1⅛ x ¾	4	141

[1] Evaporating temperature = -25°F, condensing temperature = 105°F, superheat = 20°F, subcooling = 0°F
[2] Single compressor, threaded sight glass, ⅜" oil equalization connection
See page 50 for Nominal capacitor values and relays.

Introduction and Overview

Danfoss Residential and Light Commercial Air Conditioning Scroll Compressors install quickly and easily. These compressors feature a design that minimizes internal parts, decreasing overall weight, and significantly reducing the sound produced during operation. With a bolt pattern and liquid and suction line connections that match up almost identically to those of other major scroll compressor manufacturers, Danfoss scroll compressors can be used to replace compressors made by both Danfoss and other companies.





(See Code Nos. for wire harnesses on page 58)

Nomenclature / Model No.

HRM 025 U1L P6

Application:
H: high temperature / air conditioning

Family:
C: light commercial scroll
R: residential scroll
L: light commercial scroll (new platform)

Refrigerant & lubricant:
M: R-22, alkylbenzene lubricant
P: R-407C, PVE lubricant
H: R-410A, PVE lubricant
J: R-410A, PVE lubricant

Nominal capacity:
In thousand Btu/h at 60 Hz, ARI conditions

Model variation
T: design optimized for 45/130°F
U: design optimized for 45/100°F

Other features
6: none
7: threaded sight glass
8: brazed oil equalization line, brazed gas equalization port

Tubing and electrical connections
P: brazed connections, spade terminals
C: brazed connections, screw terminals



Motor protection
L: internal motor protection

Motor voltage code
1: 208-230V/1~/60 Hz
2: 200-220V/3~/50Hz & 208-230V/3~/60Hz
4: 380-400V/3~/50 Hz & 460V/3~/60 Hz
5: 220-240V/1~/50 Hz
7: 500V/3~/50 Hz & 575V/ 3~/60 Hz
9: 380V/3~/60 Hz

Scan the QR Code for a video of a scroll compressor replacement or visit http://bit.ly/resscroll

Product Selection

Refrigerant	Voltage/ Phase/ Frequency	Tons	Competitor Model No.	Danfoss Standard Model No.	Danfoss Wholesale Model No.	Solder ODF connection (in.)	Danfoss Wholesale Code No.	Weight (lbs.)
R-22	208-230/1/60	2	ZR25K-PFV	HRM025T1LP6	HRM025T1LP6	¾ x ½	**120U2780**	68
		2½	ZR28K*-PFV	HRM032U1LP6	HRM032U1LP6	¾ x ½	**120U0921**	68
			ZR32K*-PFV					
		3	ZR34K*-PFV	HRM034U1LP6	HRM038U1LP6	¾ x ½	**120U0931**	68
			ZR36K*-PFV	HRM038U1LP6				
		3½	ZR40K*-PFV	HRM040U1LP6	HRM042U1LP6	¾ x ½	**120U0941**	68
			ZR42K*-PFV	HRM042U1LP6				
		4	ZR47K*-PFV	HRM047U1LP6	HRM047U1LP6	⅞ x ½	**120U0951**	68
		4½	ZR54K*-TF5	HRM054U1LP6	HRM054U1LP6	⅞ x ½	**120U1511**	82
		5	ZR57K*-PFV	HRM058U1LP6	HRM060U1LP6	⅞ x ½	**120U1546**	82
			ZR61K*-PFV	HRM060U1LP6				
	208-230/3/60	3½	ZR42K*-TF5	HRM042U2LP6	HRM042U2LP6	¾ x ½	**120U1111**	68
		4	ZR47K*-TF5	HRM047U2LP6	HRM047U2LP6	⅞ x ½	**120U1131**	68
		4½	ZR54K*-TF5	HRM054U2LP6	HRM054U2LP6	⅞ x ½	**120U1871**	82
		5	ZR57K*-TF5	HRM058U2LP6	HRM060U2LP6	⅞ x ½	**120U1881**	82
			ZR61K*-TF5	HRM060U2LP6				
		6	ZR72K*-TF5	HLM072T2LC6	HLM075T2LC6	⅞ x ½	**120U1901**	82
				HLM075T2LC6				
		8	ZR81KC-TF5	HLM081T2LC6	HCM094T2LC6	1⅛ x ⅞	**120U0891**[1]	97
			ZR94KC-TF5	HCM094T2LC6				
		10	ZR125KC-TF5 ZR12M3*-TWC	HCM120T2LC6	HCM120T2LC6	1⅛ x ⅞	**120U0761**[1]	100
	460/3/60	4	ZR47K*-TFD	HRM047U4LP6	HRM047U4LP6	⅞ x ½	**120U1051**	71
		5	ZR57K*-TFD	HRM058U4LP6	HRM060U4LP6	⅞ x ½	**120U1736**	82
			ZR61K*-TFD	HRM060U4LP6				
		6	ZR72K*-TFD	HLM072T4LC6	HLM075T4LC6	⅞ x ½	**120U1761**	82
				HLM075T4LC6				
		7	ZR81KC-TFD	HLM078T4LC6	HLM081T4LC6	⅞x ¾	**120U1776**	82
				HLM081T4LC6				
		8	ZR94KC-TFD	HCM094T4LC6	HCM094T4LC6	1⅛ x ⅞	**120U0581**[1]	97
		9	ZR108KC-TFD	HCM109T4LC6	HCM109T4LC6	1⅛ x ⅞	**120U0366**[1]	100
			ZR11M3-TWD					
		10	ZR12M3-TWD	HCM120T4LC6	HCM120T4LC6	1⅛ x ⅞	**120U0391**[1]	100

[1] Additional adjustments may be required when replacing a competitor's compressor over 81K Btu/h, as suction and discharge connections may vary significantly.
Full range of models (refrigerant, tons and voltage codes) available. Check Coolselector or visit our Online Datasheet Generator at www.danfoss.com/odsg.
See page 50 for Nominal capacitor values and relays.

Refrigerant	Voltage/ Phase/ Frequency	Tons	Competitor Model No.	Danfoss Standard Model No.	Danfoss Wholesale Model No.	Solder ODF connection (in.)	Danfoss Wholesale Code No.	Weight (lbs.)
R-410A	208-230/1/60	2½	ZP29K5E-PFV	HRH029U1LP6	HRH032U1LP6	¾ x ½	**120U1141**	68
			ZP31K5E-PFV	HRH031U1LP6				
			ZP32K3E-PFV	HRH032U1LP6				
		3	ZP34K5E-PFV	HRH034U1LP6	HRH038U1LP6	¾ x ½	**120U1156**	68
			ZP36K*E-PFV	HRH036U1LP6				
			ZP38K*E-PFV	HRH038U1LP6				
		3½	ZP39K5E-PFV	HRH039U1LP6	HRH040U1LP6	⅞ x ½	**120U1161**	71
			ZP41K3E-PFV	HRH040U1LP6				
		4	ZP49K5E-PFV	HRH047U1LP6	HRH048U1LP6	⅞ x ½	**120U2582**	71
				HRH048U1LP6				
		4½	ZP50K3E-PFV	HRH050U1LP6	HRH054U1LP6	⅞ x ½	**120U1301**	82
			ZP51K5E-PFV					
			ZP54K*E-PFV	HRH054U1LP6				
		5	ZP57K*E-PFV	HRH056U1LP6	HLH061T1LP6	⅞ x ½	**120U2042**	82
			ZP61K5E-PFV	HLH061T1LP6				
	208-230/3/60	3	ZP36K*E-TF5	HRH036U2LP6	HRH040U2LP6	⅞ x ½	**120U1276**	68
			ZP38K*E-TF5	HRH038U2LP6				
			ZP41K3E-TF5	HRH040U2LP6				
		4	ZP49K5E-TF5	HRH047U2LP6	HRH050U2LP6	⅞ x ½	**120U2859**	68
				HRH048U2LP6				
			ZP50K3E-TF5	HRH050U2LP6				
		5½	ZP67KCE-TF5	HLH068T2LC6	HLH068T2LC6	⅞ x ½	**120U1481**	82
		6	ZP72KCE-TF5	HLJ072T2LC6	HLJ072T2LC6	⅞ x ½	**120U1486**	82
		7	ZP83KCE-TF5	HLJ083T2LC6	HLJ083T2LC6	⅞ x ½	**120U1491**[1]	82
		7½	ZP90KCE-TF5	HCJ090T2LC6	HCJ090T2LC6	1⅛ x ⅞	**120U2307**[1]	100
		8	ZP103KCE-TF5	HCJ105T2LC6	HCJ105T2LC6	1⅛ x ⅞	**120U2327**[1]	102
		10	ZP120KCE-TF5	HCJ120T2LC6	HCJ120T2LC6	1⅛ x ⅞	**120U2347**[1]	102
	460/3/60	3	ZP36K*E-TFD	HRH036U4LP6	HRH040U4LP6	⅞ x ½	**120U1211**	68
			ZP38K3E-TFD	HRH038U4LP6				
			ZP41K3E-TFD	HRH040U4LP6				
		4	ZP44K*E-TFD	HRH047U4LP6	HRH049U4LP6	⅞ x ½	**120U1366**	82
			ZP49K5E-TFD	HRH048U4LP6				
			ZP50K3E-TFD	HRH049U4LP6				
		5½	ZP67KCE-TFD	HLH068T4LC6	HLH068T4LC6	⅞ x ½	**120U1391**	82
		6	ZP72KCE-TFD	HLJ072T4LC6	HLJ072T4LC6	⅞ x ½	**120U1396**	82
		7	ZP83KCE-TFD	HLJ083T4LC6	HLJ083T4LC6	⅞ x ½	**120U1401**[1]	82
		7½	ZP90K*E-TFD	HCJ090T4LC6	HCJ090T4LC6	1⅛ x ⅞	**120U2302**[1]	100
		8	ZP104KCE-TFD	HCJ105T4LC6	HCJ105T4LC6	1⅛ x ⅞	**120U2322**[1]	100
		10	ZP120K*E-TFD	HCJ120T4LC6	HCJ120T4LC6	1⅛ x ⅞	**120U2342**[1]	100

[1] Additional adjustments may be required when replacing a competitor's compressor over 81K Btu/h, as suction and discharge connections may vary significantly.
Full range of models (refrigerant, tons and voltage codes) available. Check Coolselector or visit our Online Datasheet Generator at www.danfoss.com/odsg.
See page 50 for Nominal capacitor values and relays.

Introduction and Overview

Danfoss Performer® Universal Scroll Compressors are designed to serve as quick, easy replacements for most commercial air conditioning scroll compressors. These compressors come with a bolt pattern, suction and discharge lines, and performance characteristics that match up directly with some competitors' products.

Select compressor using the product selection table below based on refrigerant, nominal capacity, connection and voltage.



Nomenclature / Model No.

SM 115 A 4 Q C

Refrigerant & lubricant
SH: R-410A, POE lubricant
SM: R-22, mineral oil
SY: R-407C, POE lubricant
SZ: R-407C, R-134a,
(R-404A for SZ084 to 185), POE

Nominal capacity
in thousand Btu/h
at 60 Hz, ARI conditions

UL index

Motor voltage code
3: 200-230V/3~/60Hz
4: 380-400V/3~/50Hz & 460V/3~/60Hz
6: 230V/3~/50Hz
7: 500V/3~/50Hz & 575V/3~/60Hz
9: 380V/3~/60Hz

Evolution index

Version	Motor protection module	Connection	Module voltage	Applies to
V	Internal overload protector	brazed		084-090, 100, 110, 120, 148, 161
A		brazed		112, 124, 147
AL		brazed		90, 105, 120, 140, 161, 175, 184
C	Internal thermostat	brazed		115, 125, 160, 175, 185
Q		brazed		
R		rotolock		
J	Electronic protection module	brazed	24V DC	
P		brazed	24V AC	
U		brazed	115V	
X		brazed	230V	
K		rotolock	24V DC	
S		rotolock	24V AC	
W		rotolock	115V	
Y		rotolock	230V	
AF		brazed	24V DC	240, 300
AA		brazed	24V AC	
AB		brazed	115/230V	
MA		rotolock	24V AC	
MB		rotolock	115/230V	
CA		brazed	24V AC	380
CB		brazed	115/230V	
CF		brazed	24V DC	
AC	contact OEM			

Product Selection

Refrigerant	Voltage/ Phase/ Frequency	Tons	Competitor Model Nos.[1]		Danfoss Model No.	Solder ODF connection (in.)	Motor protection	Danfoss Code No.[2]	Weight (lbs.)	Solder sleeve adaptor set to rotolock connections
R-22	200-230/3/60	7½		ZR94KC-TF5	SM090S3VC	1⅛ x ¾	Internal overload protector	**SM090-3VI**	143	**7765005**
		9⅓	CSHA-093R	ZR108KC-TF5	SM115S3QC	1⅜ x ⅞	Internal thermostat,	**SM115-3QAI**	172	**7765006**
		10	CSHA-100R CSHS-100R	ZR125KC-TF5 ZR12M3-TWC	SM125S3QC	1⅜ x ⅞	Internal thermostat, external overload needed	**SM125-3QAI**	172	**7765006**
		12½	CSHA-125R	ZR16M3-TWC	SM160T3CC	1⅜ x ⅞	Internal thermostat, external overload needed	**SM160-3CBI**	198	**7765028**
		14	CSHA-140R CSHS-140R		SM175S3QC	1⅝ x 1⅛	Internal thermostat, external overload needed	**SM175-3QAI**	220	**7765028**
		15	CSHA-150R CSHS-150R	ZR190KC-TW5	SM185S3QC	1⅝ x 1⅛	Internal thermostat, external overload needed	**SM185-3QAI**	220	**7765028**
	460/3/60	7½		ZR94KC-TFD	SM090S4VC	1⅛ x ¾	Internal overload protector	**SM090-4VI**	128	**7765005**
		9⅓	CSHA-093K CSHS-093K	ZR108KC-TFD ZR11M3-TWD	SM115S4QC	1⅜ x ⅞	Internal thermostat, external overload needed	**SM115-4QAI**	172	**7765006**
		10	CSHA-100K CSHS-100K	ZR125KC-TFD ZR12M3-TWD	SM125S4QC	1⅜ x ⅞	Internal thermostat, external overload needed	**SM125-4QAI**	172	**7765006**
		12½	CSHA-125K	ZR160KC-TW5 ZR16M3-TWD	SM160T4CC	1⅜ x ⅞	Internal thermostat, external overload needed	**SM160-4CBI**	198	**7765028**
		14	CSHA-140K CSHS-140K		SM175S4QC	1⅝ x 1⅛	Internal thermostat, external overload needed	**SM175-4QAI**	220	**7765028**
		15	CSHA-150K CSHS-150K	ZR190KC-TWD	SM185S4QC	1⅝ x 1⅛	Internal thermostat, external overload needed	**SM185-4QAI**	220	**7765028**

[1] Competitor Model Nos. beginning "ZR" may have different footprint, suction, discharge or height compared to Danfoss Model No.

[2] Code Nos. ending "QAI" include threaded sight glass, ⅜" flare SAE oil equalization connection, brazed connections and mounting bracket.
Code Nos. ending "VI" and "CBI" are the same as "QAI" but exclude the mounting bracket.
Full range of models (refrigerant, tons and voltage codes) available. Check Coolselector or visit our Online Datasheet Generator at www.danfoss.com/odsg.

Product Selection

Refrigerant	Voltage/ Phase/ Frequency	Tons	Competitor Model Nos.[1]		Danfoss Model No.	Solder ODF connection (in.)	Motor protection	Danfoss Code No.	Weight (lbs.)	Solder sleeve adaptor set to rotolock connections
R-410A	200-230/3/60	7½	CSHD-089J CSHD-092J	ZP90KCE-TF5 ZP91KCE-TF5	SH090A3ALC	1⅛ x ⅞	Internal overload protector	**120H0001**	128	**120Z0125**
		8¾	CSHD-105J	ZP103KCE-TF5	SH105A3ALC	1⅜ x ⅞	Internal overload protector	**120H0209**	142	**120Z0405**
		10	CSHD-125J	ZP120KCE-TF5	SH120A3ALC	1⅜ x ⅞	Internal overload protector	**120H0011**	142	**120Z0405**
		11⅔	CSHD-142J	ZP137KCE-TF5	SH140A3ALC	1⅜ x ⅞	Internal overload protector	**120H0199**	148	**120Z0405**
		13½	CSHD-161J	ZP154KCE-TW5	SH161A3ALC	1⅜ x ⅞	Internal overload protector	**120H0021**	152	**120Z0405**
		14½			SH175A3ALC	1⅜ x ⅞	Internal overload protector	**120H0872**	159	**120Z0405**
		15		ZP182KCE-TW5	SH184A3ALC	1⅜ x ⅞	Internal overload protector	**120H0359**	159	**120Z0405**
		20		ZP235KCE-TW5[2]	SH240A3AAE	1⅝ x 1⅛	24V ac	**120H0289**	238	**7765028**
					SH240A3ABE		115/230V	**120H0297**		
		25		ZP285KCE-TW5[2] ZP295KCE-TWC[2]	SH295A3AAE	1⅝ x 1⅛	24V ac	**120H0851**	245	**7765028**
					SH295A3ABE		115/230V	**120H0853**		
		30		ZP385KCE-TWC[2] ZP385KCE-TW5[2]	SH380A3AAE	1⅝ x 1⅛	24V ac	**120H0151**	355	**7765028**
					SH380A3ABE		115/230V	**120H0152**		
	460/3/60	7½	CSHD-089K CSHD-092K	ZP90KCE-TFD	SH090A4ALC	1⅛ x ⅞	Internal overload protector	**120H0003**	128	**120Z0125**
		8¾	CSHD-105K	ZP103KCE-TFD	SH105A4ALC	1⅜ x ⅞	Internal overload protector	**120H0211**	142	**120Z0405**
		10	CSHD-125K	ZP120KCE-TFD	SH120A4ALC	1⅜ x ⅞	Internal overload protector	**120H0013**	142	**120Z0405**
		11⅔	CSHD-142K	ZP137KCE-TFD	SH140A4ALC	1⅜ x ⅞	Internal overload protector	**120H0201**	148	**120Z0405**
		13½	CSHD-161K	ZP154KCE-TFD[2] ZP154KCE-TWD[2]	SH161A4ALC	1⅜ x ⅞	Internal overload protector	**120H0023**	152	**120Z0405**
		14½			SH175A4ALC	1⅜ x ⅞	Internal overload protector	**120H0870**	159	**120Z0405**
		15		ZP182KCE-TWD[2]	SH184A4ALC	1⅜ x ⅞	Internal overload protector	**120H0361**	159	**120Z0405**
		20		ZP235KCE-TWD[2]	SH240A4AAE	1⅝ x 1⅛	24V ac	**120H0291**	238	**7765028**
					SH240A4ABE		115/230V	**120H0299**		
		25		ZP285KCE-TWD[2] ZP295KCE-TWD[2]	SH295A4AAE	1⅝ x 1⅛	24V ac	**120H0825**	245	**7765028**
					SH295A4ABE		115/230V	**120H0827**		
		30		ZP385KCE-TWD[2]	SH380A4AAE	1⅝ x 1⅛	24V ac	**120H0253**	355	**7765028**
					SH380A4ABE		115/230V	**120H0255**		

[1] Competitor Model Nos. beginning "ZP" may have different footprint, suction, discharge or height compared to Danfoss Model No.

[2] Control voltage of external motor protection module must be checked before crossing to Danfoss Model No with 24V ac or 115/230V motor protection module. Full range of models (refrigerant, tons and voltage codes) available. Check Coolselector or visit our Online Datasheet Generator at www.danfoss.com/odsg.

Danfoss Models	Start capacitor (µF)	Start capacitor voltage (V)	Run capacitor (µF)	Run capacitor voltage (V)	Start relay
MT/MTZ18 JA-1	100	330	25	440	3ARR3J4A4 (GE) / RVA6AMKL (Electrica)
MT/MTZ22 JC-1	100	330	45	440	
MT/MTZ28 JE-1	135	330	50	440	
MT/MTZ32 JF-1	100	330	45	440	
MT/MTZ36 JG-1	100	330	45	440	
MT/MTZ40 JH-1	100	330	55	440	
MT/MTZ44 HJ-1	135	330	45	440	
MT/MTZ50 HK-1	135	330	45	440	
MT/MTZ56 HL-1	200	330	55	440	
MT/MTZ64 HM-1	235	330	55	440	
NTZ048A1LR1A	100	330	25	440	3ARR3J4A4 (GE) / RVA6AMKL (Electrica)
NTZ068A1LR1A	135	330	50	440	
NTZ096A1LR1A	135	330	45	440	
NTZ108A1LR1A	135	330	45	440	
NTZ136A1LR1A	135	330	45	440	
HRM025-034	145-175	250	45	370	3ARR3*3M* (GE)
HRM038	88-108	330	55	370	3ARR3*3L* (GE)
HRM040-045	88-108	330	60	370	3ARR3*3L* (GE)
HRM047	88-108	250	60	370	3ARR3*3L* (GE)
HRM048	161-193	250	60	370	3ARR3*3L* (GE)
HRM051-054	161-193	250	70	370	3ARR3*3L* (GE)
HRM058T1-060T1	88-108	250	55	440	3ARR3*25S* (GE)
HRM058U1-060U1, HLM068-081	189-227	330	80	370	3ARR3*3L* (GE)
HRH031	145-175	250	45	370	3ARR3*3M* (GE)
HRH032-034	88-108	330	50	370	3ARR3*3L* (GE)
HRH036	88-108	330	55	370	3ARR3*3AL* (GE)
HRH038-040	88-108	330	60	370	3ARR3*3L* (GE)
HRH041-051	161-193	250	70	370	3ARR3*3L* (GE)
HRH054-056, HLH068, HLJ072-083	189-227	330	80	370	3ARR3*3L* (GE)

Introduction and Overview

The new Danfoss Micro Plate Heat Exchanger (MPHE) technology brings you stronger, lighter and slimmer heat exchangers that transfer heat even more efficiently than earlier models. The unique dimpled pattern improves flow across the plate and utilizes the surface more efficiently leading to higher heat transfer and more uniform velocities. The greater number of braze points offered by the dimpled geometry results in thinner and lighter plate materials being used while maintaining the strength and integrity needed when used with high pressure refrigerants. Additional features include:



- Up to 40% lighter than traditional heat exchangers
- Up to 35% hold up volume
- Two in one connections (NPT and ODF) on water side
- Capacities from 12K to 660K Btu/h (1 to 55 Tons)
- Wide range of refrigerants, including flammable refrigerants such as R-290, can be used.

Evaporator



Condenser



Product Selection

Danfoss Model No.	Can be used as	Nominal Capacity (kBtu/h)[1]	No. of Plates	Height (in.)	Width (in.)	Refrigerant Side			Water/Glycol Side				Weight (lbs.)	Danfoss Code No.
						Pressure Drop (psig)	Q3 Solder ODF Connection (in.)	Q4 Solder ODF Connection (in.)	Pressure Drop (psig)	Flow Rate (gpm)	Q1 Thread / Solder ODF (in.)	Q2 Thread / Solder ODF (in.)		
D22L	Evap. (E.) or Cond. (C.)	18 (E.)	14	12.3	3.0	2.8 (E.)	¼	⅜	4.3 (E.)	3.6 (E.)	¾" NPT / ⅝	¾" NPT / ⅝	0.9	**021H4840**
		12 (C)				0.13 (C.)			1.9 (C.)	2.4 (C.)				
D22L		24 (E.)	20	12.3	3.0	2.5 (E.)	¼	⅜	3.9 (E.)	4.8 (E.)	¾" NPT / ⅝	¾" NPT / ⅝	1.1	**021H4841**
		18 (C.)				0.13 (C.)			2.2 (C.)	3.6 (C.)				
D22L		36 (E.)	30	12.3	3.0	2.6 (E.)	⅜	½	4.2 (E.)	7.2 (E.)	¾" NPT / ⅝	¾" NPT / ⅝	1.2	**021H4842**
		30 (C.)				0.14 (C.)			2.9 (C.)	6 (C.)				
D22L		48 (E.)	40	12.3	3.0	2.8 (E.)	⅜	½	4.7 (E.)	9.6 (E.)	¾" NPT / ⅝	¾" NPT / ⅝	1.4	**021H4843**
		36 (C.)				0.11 (C.)			2.6 (C.)	7.2 (C.)				
D22L		60 (E.)	50	12.3	3.0	3.1 (E.)	⅜	½	5.2 (E.)	12 (E.)	¾" NPT / ⅝	¾" NPT / ⅝	1.6	**021H4844**
		48 (C.)				0.11 (C.)			3.3 (C.)	9.6 (C.)				
C62L-E	Evap.	72	26	20.7	4.7	85	⅜	⅝	4.6	14.4	1½" NPT / 1⅜	1½" NPT / 1⅜	4.1	**021H0240**
C62L-E		90	30	20.7	4.7	93	⅜	⅝	5.3	18	1½" NPT / 1⅜	1½" NPT / 1⅜	4.4	**021H0241**
C62L-E		120	40	20.7	4.7	91	½	⅞	5.5	24	1½" NPT / 1⅜	1½" NPT / 1⅜	5.1	**021H0242**
C62L-E		144	50	20.7	4.7	85	½	⅞	5.2	29	1½" NPT / 1⅜	1½" NPT / 1⅜	5.8	**021H0243**
C62L-E		180	70	20.7	4.7	72	⅝	1⅛	4.5	36	1½" NPT / 1⅜	1½" NPT / 1⅜	7.2	**021H0244**
C62L-E		240	90	20.7	4.7	76.3	⅝	1⅛	5.3	48	1½" NPT / 1⅜	1½" NPT / 1⅜	8.6	**021H0245**
C118L-E		240	50	24.1	7.3	31.5	⅝	1⅛	7.7	48	1½" NPT	1½" NPT	12.5	**021H0511**
C118L-E		360	64	24.1	7.3	29.7	⅞	1⅛	10.6	72	2" NPT	2" NPT	13.8	**021H0512**
C118L-E		420	70	24.1	7.3	42.8	⅞	1⅛	12.1	84	2" NPT	2" NPT	15.0	**021H0513**
C118L-E		480	80	24.1	7.3	42.8	⅞	1⅜	12.3	96	2" NPT	2" NPT	16.3	**021H0514**
C118L-E		540	100	24.1	7.3	37.3	⅞	1⅝	10.5	108	2" NPT	2" NPT	18.9	**021H0515**
C118L-E		600	120	24.1	7.3	32.8	1⅛	1⅝	9.4	120	2" NPT	2" NPT	21.5	**021H0516**
C118L-E		660	160	24.1	7.3	22.9	1⅛	2⅛	7.4	132	2" NPT	2" NPT	26.6	**021H0517**
C55L-C	Cond.	72	24	20.7	4.3	0.69	⅜	⅝	11.9	14.5	1" NPT / ⅞	1" NPT / ⅞	3.4	**021H3724**
C55L-C		90	30	20.7	4.3	0.67	⅜	⅝	12	18	1" NPT / ⅞	1" NPT / ⅞	3.8	**021H3725**
C55L-C		120	40	20.7	4.3	0.64	½	⅞	12.3	24	1" NPT / ⅞	1" NPT / ⅞	4.5	**021H3726**
C55L-C		144	50	20.7	4.3	0.57	½	⅞	11.6	29	1" NPT / ⅞	1" NPT / ⅞	5.1	**021H3727**
C55L-C		180	60	20.7	4.3	0.59	½	⅞	12.9	36.2	1" NPT / ⅞	1" NPT / ⅞	5.8	**021H3728**
C55L-C		240	70	20.7	4.3	0.72	⅝	⅞	16.9	48.2	1¼" NPT / 1⅛	1¼" NPT / 1⅛	6.5	**021H3729**
C55L-C		300	90	20.7	4.3	0.63	⅝	1⅛	17.3	60.3	1¼" NPT / 1⅛	1¼" NPT / 1⅛	7.8	**021H3730**
C62L-C		60	20	20.7	4.7	0.3	⅜	½	4.9	12	1½" NPT / 1⅜	1½" NPT / 1⅜	3.7	**021H0246**
C62L-C		90	30	20.7	4.7	0.28	⅜	⅝	5.0	18	1½" NPT / 1⅜	1½" NPT / 1⅜	4.4	**021H0247**
C62L-C		120	40	20.7	4.7	0.27	½	⅞	5.1	24	1½" NPT / 1⅜	1½" NPT / 1⅜	5.1	**021H0248**
C62L-C		180	60	20.7	4.7	0.24	⅝	⅞	5.5	36.2	1½" NPT / 1⅜	1½" NPT / 1⅜	6.5	**021H0249**
C62L-C		240	80	20.7	4.7	0.22	⅝	1⅛	6.0	48.2	1½" NPT / 1⅜	1½" NPT / 1⅜	7.9	**021H0250**
C62L-C		300	100	20.7	4.7	0.19	⅞	1⅛	6.6	60.3	1½" NPT / 1⅜	1½" NPT / 1⅜	9.3	**021H0251**
C118L-C		240	40	24.1	7.3	0.66	⅝	1⅛	11.1	48.2	1½" NPT / 1⅜	1½" NPT / 1⅜	11.2	**021H0518**
C118L-C		300	50	24.1	7.3	0.64	⅞	1⅛	11.2	60.3	1½" NPT / 1⅜	1½" NPT / 1⅜	12.5	**021H0519**
C118L-C		360	60	24.1	7.3	0.63	⅞	1⅛	11.3	72.3	1½" NPT / 1⅜	1½" NPT / 1⅜	13.8	**021H0520**
C118L-C		420	80	24.1	7.3	0.47	⅞	1⅜	9.1	85	2" NPT	2" NPT	16.3	**021H0521**

[1] Conditions for evaporator are: Refrigerant = R-410A, Evaporating temperature = 35°F, Inlet quality = 0.3, SH = 5°F, EWT = 55°F, LWT = 45°F
Conditions for condenser are: Refrigerant = R-410A, Inlet gas temperature = 165°F, Condensing temperature = 105°F, Subcooling = 5°F, EWT = 85°F, LWT = 95°F
For additional information, contact Danfoss or check our software program, Hexact, which can be downloaded at http://hexact.danfoss.com.

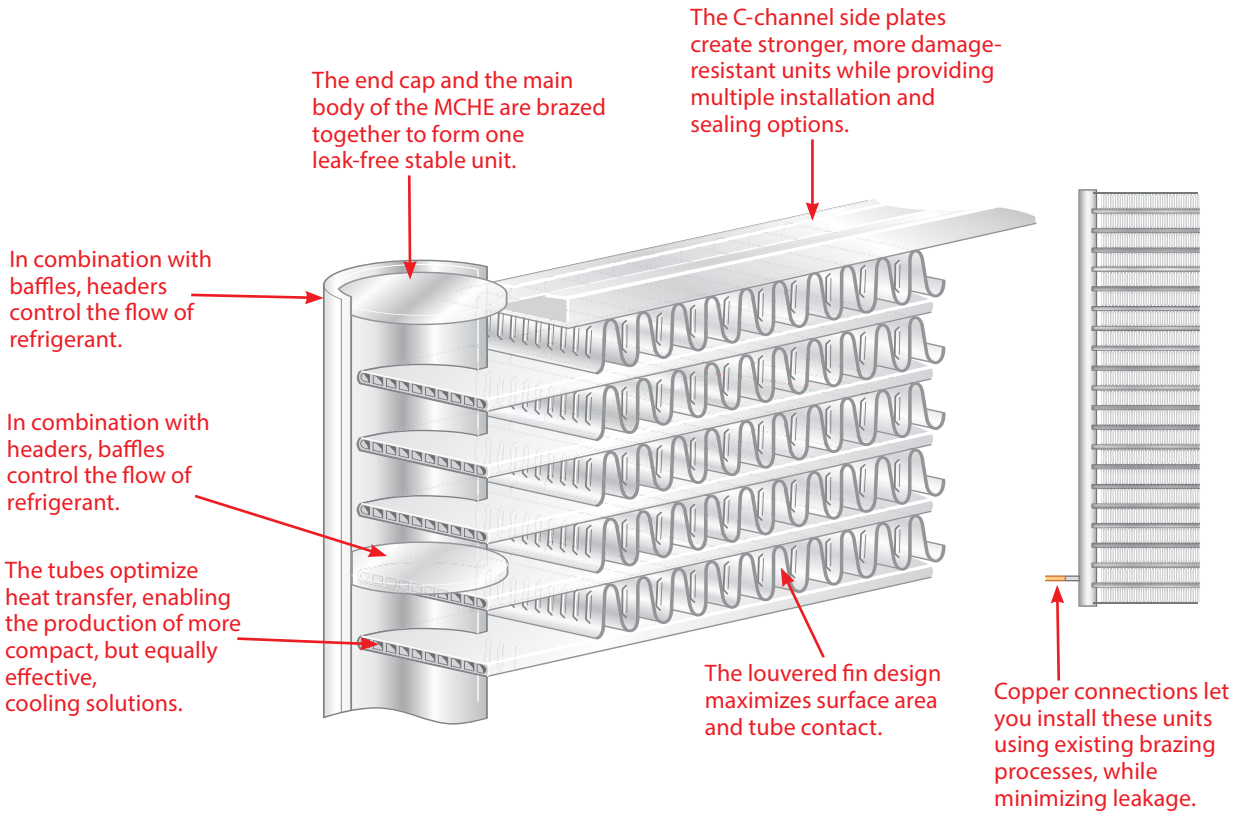
Introduction and Overview

Danfoss MicroChannel Heat Exchangers (MCHEs) provide several benefits as compared to traditional fin and tube coils:

- 60% reduction in weight due to compact all Aluminum design that has a high strength to weight ratio.
- 70% lower refrigerant charge and 60% lower weight reduces overall system and shipping costs.
- 100% aluminum construction makes the cost of MCHEs less vulnerable to raw material price fluctuations. Being made from a single metal, they are more resistant to galvanic corrosion than traditional copper coils.
- High thermal performance resulting from brazed connection between tubes and fins and smaller channels for the refrigerant flow.
- Lower air side pressure drop due to low profile tubes and less drag.



MCHEs are designed for high volume production. However, thanks to Danfoss' standard range of products, you can now buy just a few MCHEs. For the first time, small to medium-sized OEMs also have access to the most efficient condensers.



Product Selection

Danfoss Model No.	Flowpath Height (in.)	Flowpath Length (in.)	Tube Width (in.)	Header Diameter (in.)	Face Area (ft.²)	Face Velocity (ft./min.)	Flow (acfm)	Capacity (kBtu/h)[1] at ΔT (°F)			ΔP air (in. water)	Weight (lbs.)	Danfoss Single Packed Code No.[2]
								15°	25°	35°			
D1000-C	11.1	11	0.63	0.79	0.85	200	169	2.3	4.1	5.8	0.06	2	**021U0080**
						600	507	5.8	9.8	14	0.24		
						1000	846	7.8	13.2	18.9	0.49		
D1100-C	12.9	13.2	0.63	0.79	1.18	200	236	3.1	5.6	8.1	0.06	2.4	**021U0081**
						600	709	7.5	13.4	19.6	0.24		
						1000	1182	10	18.4	26.7	0.49		
D1200-C	16.2	16.1	0.63	0.79	1.82	200	364	5	8.8	12.6	0.06	3.5	**021U0082**
						600	1092	11.9	21.1	30.4	0.24		
						1000	1819	16.3	28.5	41	0.49		
D1300-C	19.6	19.7	0.63	0.79	2.67	200	535	6.8	11.9	17.8	0.06	5.1	**021U0083**
						600	1605	16.1	29.1	43.3	0.24		
						1000	2675	21.7	39.8	59.6	0.49		
D1400-C	29.6	29.5	0.63	0.79	6.06	200	1212	16.3	28.8	41.8	0.06	9.9	**021U0084**
						600	3636	39.1	69.3	100.5	0.24		
						1000	6060	34.6	94.3	136	0.49		
D1500-C	19.6	39.4	1	1.26	5.35	200	1070	16.4	28.2	40.6	0.07	14.3	**021U0095**
						600	3209	41.8	72.5	103.9	0.31		
						1000	5348	58	102.3	180.6	0.65		
D1600-C	24.4	49.2	0.63	0.79	8.33	200	1666	23.5	40.3	57.4	0.06	13.5	**021U0096**
						600	4997	54.4	92.8	132	0.24		
						1000	8329	70.9	119.3	168.8	0.49		
D1700-C	24.4	49.2	1	1.26	8.33	200	1666	25.8	44.3	63.4	0.07	21.4	**021U0085**
						600	4998	66.3	113.4	161.6	0.31		
						1000	8330	93.1	158.7	226.1	0.65		
D1800-C	47	39.4	1	1.26	12.84	200	2567	39.4	67.8	97.7	0.07	33.3	**021U0094**
						600	7701	100.6	174.8	250.7	0.31		
						1000	12836	143	247.5	353.9	0.65		
D1900-C	52.9	47.2	1	1.26	17.35	200	3470	53.7	92.4	132.3	0.07	43.7	**021U0086**
						600	10409	137.6	236.8	336.7	0.31		
						1000	17348	193.6	330.2	470.4	0.65		
D2000-C	40.9	74.8	1	1.26	21.53	200	4306	65.5	114.1	160.4	0.09	58.2	**021U0264**
						600	12917	168.9	290	413.9	0.34		
						1000	21528	236.8	407	581	0.68		

[1] For industrial packed Code No. for use in production then please contact Danfoss.

[2] Capacity is for R-410A. For other refrigerants, refer to conversions below:
R-22 = 0.93
R-134a = 0.92
R-404A/R-507 = 0.98

Introduction and Overview

The most commonly replaced spare parts and accessories for the products included in this Quick Select Guide are outlined in this section. For additional accessories please consult individual product Technical brochures or contact Danfoss.

Product Selection

Product, Type	Description	Danfoss Code No.	Type(s) applied to
Thermostatic Expansion Valves, Types TUA/TUAE/ T2/TE2	Bulb strap	**068U3507**	all
	Metal Gasket (24 pcs)	**068U0015**	TUA/TUAE
	Filter for orifices 0-4 (clear, 24 pcs)	**068U1706**	TUA/TUAE
	Filter for orifices 5-9 (blue, 24 pcs)	**068U0016**	all
Thermostatic Expansion Valves, Type TR6	Bulb strap	**068U3507**	all
	Fitting; ⅜" ODM x Chatleff	**119F3965**	
	Fitting; ⅜" ODM x Aeroquip	**119F3966**	
Thermostatic Expansion Valves, Type TGE	Bulb strap	**067N0557**	all
Pressure Controls, Types KPU/MP	Capillary tube; 39" with ¼" flare coupling nuts on each end	**060-017166**	KPU and MP with ¼" M flare
Solenoid Valves, Type EVR	Pernament magnet coil for servicing and testing	**018F0091**	all
	Service kit; o-ring, (4) screws, armature assembly, rubber gasket	**032F0181**	EVR 2, 3
	Service kit; diaphragm, o-ring for armature tube, (4) screws T20, (4) screws T15, armature assembly, rubber gasket, o-ring for steel cover, square gasket for steel cover, support ring	**032F8166**	EVR 6
	Service kit; diaphragm assembly, o-ring, (4) screws, armature assembly, rubber gasket	**032F0185**	EVR 10
	Service kit; diaphragm assembly, o-ring, (4) screws, armature assembly, rubber gasket, flange gasket	**032F0187**	EVR 15, 18
	Service kit; diaphragm assembly, o-ring, (4) screws, armature assembly, compression spring, rubber gasket	**032F0189**	EVR 20, 22
	Manual spindle	**032F0193**	EVR 20, 22
	Piston service kit; (2) o-ring, spring, piston assembly, plastic block, rubber gasket, piston ring	**032F3236**	EVR 25
	Pilot service kit; armature tube assembly, armature, (2) Al. gaskets, orifice, o-ring	**042H0161**	EVR 25
	Seal kit; (2) Al. gaskets, (3) o-rings, (2) rubber gaskets	**032F3235**	EVR 25
	Piston service kit; (5) o-rings, Al. gasket, piston assembly, platic block, gasket, piston ring, spring	**042H0172**	EVR 32
	Pilot service kit; (2) Al. gaskets, o-ring, orifice, armature tube assembly, armature	**042H0165**	EVR 32
	Seal kit; (4) o-rings, (2) Al. gaskets, gasket	**042H0160**	EVR 32
	Piston seal kit; (5) o-rings, Al. gasket, piston assembly, plastic block, gasket, piston ring, spring	**042H0173**	EVR 40
	Seal kit; (5) o-rings, (2) Al. gaskets, gasket	**042H0160**	EVR 40
Pressure Controlled Water Valves, Types WVFX	Rebuild kit; valve disc, (2) o-rings, (8) screws, (2) diaphragms, grease and key	**003N4006**	WVFX 10, 15
	Rebuild kit; valve disc, (2) o-rings, (8) screws, (2) diaphragms, grease and key	**003N4007**	WVFX 20
	Rebuild kit; valve disc, (2) o-rings, (8) screws, (2) diaphragms, grease and key	**003N4008**	WVFX 25
	Capillary tube; 39" with ¼" flare coupling nuts on each end	**060-017166**	WVFX with ¼" M flare
	Bracket	**003N0388**	all
Pressure Regulators, Types KVP/KVR/ KVL/KVC/CPCE	Seal kit; contains cap and rubber gasket	**034L0201**	KVP 12, 15, 22 KVR 12, 15, 22 all KVC, CPCE
	Seal kit; contains cap and rubber gasket	**034L0202**	KVP 28, 35 KVR 28, 35
	Schrader valve	**034L0006**	all KVP, KVR
	Seal kit for schrader valve	**034L0203**	all KVP, KVR

Product, Type	Description	Danfoss Code No.	Type(s) applied to
Condensing Units, Optyma™	Compressors, fan motors, fan blades, relays, capacitors	**various - contact Danfoss**	various
	Enclosure - E1	**119-6040**	⅛ to ⅝ hp
	Enclosure - E2	**119-6041**	⅝ to 2 hp
	Enclosure - E3	**119-6042**	2½ to 3 hp
	Enclosure - E4	**119-6043**	4 hp
	Enclosure - E5	**119-6044**	5 to 7 hp
	Enclosure - E6	**119-6045**	9 to 13½ hp
Reciprocating Compressors, Type MT/MTZ	Belt type crankcase heater; 54W, 230V	**7773106**	MT(Z) 018-040
	Belt type crankcase heater; 65W, 110V	**7773109**	MT(Z) 044-081
	Belt type crankcase heater; 65W, 230V	**7773107**	
	Belt type crankcase heater; 65W, 400V	**7773117**	
	Belt type crankcase heater; 65W, 460V	**120Z0466**	
	Belt type crankcase heater; 75W, 110V	**7773110**	MT(Z) 100-160
	Belt type crankcase heater; 75W, 230V	**7773108**	
	Belt type crankcase heater; 75W, 400V	**7773118**	
	Belt type crankcase heater; 75W, 460V	**120Z0464**	
	PTC heater	**PTC**	all
	Mounting kit - 1&2 cylinder compressors	**8156001**	MT(Z) 18-81
	Mounting kit - 4 cylinder compressors	**8156007**	MT(Z) 100-160
	Mineral oil, 160P; 2 liter can	**7754001**	all MT
	Mineral oil, 160P; 5 liter can	**7754002**	all MT
	POE lubricant, 160PZ; 1 liter can	**7754019**	all MTZ
	Oil sight glass and gasket	**8156019**	all
	Terminal box; include cover and clamp	**8156134**	MT(Z) 18-44 for 208-230/1/60 18-72 for 200-230/3/60 18-80 for 460/3/60
	Terminal box; include cover and clamp	**8156135**	MT(Z) 50-64 for 208-230/1/60 80-160 for 200-230/3/60 100-160 for 460/3/60
	Blue spray paint	**8154001**	all
	Gasket Set; 1 of each size gasket for the MT(Z) line	**8156009**	all - need 2 for: MT(Z)18 for 208-230 & 460 MT(Z)22-28 for 208-230/3 and 460
	Rotolock Service Valve Set (no gaskets) Suction and Discharge	**7703004**	MT(Z)18 for 208-230 & 460 MT(Z)22-28 for 208-230/3 and 460
	Rotolock Service Valve Set (no gaskets) Suction and Discharge	**7703005**	MT(Z) 22-40 for 208-230/1 MT(Z) 32-40 for 208-230/3 & 460
	Rotolock Service Valve Set (no gaskets) Suction and Discharge	**7703006**	MT(Z) 44 to 64 for 208-230/1 MT(Z) 44-72 for 208-230/3 and 460
	Rotolock Service Valve Set (no gaskets) Suction and Discharge	**7703009**	MT(Z)80 to 160 for 208-230/3 and 460

Product, Type	Description	Danfoss Code No.	Type(s) applied to
Reciprocating Compressors, Type MT/MTZ	Solder Sleeve P02 (1¾" rotolock, 1⅛" ODF)	**8153004**	Suction: MT(Z) 80-160 for 208-230/3 and 460
	Solder Sleeve P06 (1" rotolock, ½" ODF)	**8153007**	Suction: MT(Z) 18 for 208-230/1 MT(Z) 18-28 for 208-230/3 and 460 Discharge: MT(Z) 22-40 for 208-230/1 MT(Z) 32-40 for 208-230/3 and 460
	Solder Sleeve P04 (1¼" rotolock, ¾" ODF)	**8153008**	Discharge: MT(Z) 44-64 for 208-230/1 MT(Z) 44-160 for 208-230/3 and 460
	Solder Sleeve P01 (1" rotolock, ⅜" ODF)	**8153010**	Discharge: MT(Z) 18 for 208-230/1 MT(Z) 18-28 for 208-230/3 and 460
	Solder Sleeve P09 (1¼" rotolock, ⅝" ODF)	**8153011**	Suction: MT(Z) 22-40 for 208-230/1 MT(Z) 32-40 for 208-230/3 and 460
	Solder Sleeve P07 (1¾" rotolock, ⅞" ODF)	**8153013**	Suction: MT(Z) 44-64 for 208-230/1 MT(Z) 44-72 for 208-230/3 and 460
	Rotolock Nut, 1"	**8153122**	Suction: MT(Z) 18 for 208-230/1 MT(Z) 18-28 for 208-230/3 and 460 Discharge: MT(Z) 18-40 for 208-230/1 MT(Z) 18-40 for 208-230/3 and 460
	Rotolock Nut, 1¼"	**8153123**	Suction: MT(Z) 22-40 for 208-230/1 MT(Z) 32-40 for 208-230/3 and 460 Discharge: MT(Z) 44-64 for 208-230/1 MT(Z) 44-160 for 208-230/3 and 460
	Rotolock Nut, 1¾"	**8153124**	Suction: MT(Z) 44-64 for 208-230/1 MT(Z) 44-160 for 208-230/3 and 460

Product, Type	Description	Danfoss Code No.	Type(s) applied to
Scroll Compressors, Types HRM/HLM/ HCM/ HRH/HLH/ HLJ/HCJ	Wire harness; 5 feet, for 200-230V scroll compressor	**120Z5056**	all
	Wire harness; 5 feet, for 380-575V scroll compressor	**120Z5057**	all
	Belt type crankcase heater; 40W, 230V	**120Z0055**	HRM032-047, HRH031-040
	Belt type crankcase heater; 40W, 400V	**120Z0056**	
	Belt type crankcase heater; 50W, 230V	**120Z0057**	HRM048-060, HLM068-075, HRH044-056, HLH061-068, HLJ072-075
	Belt type crankcase heater; 50W, 400V	**120Z0058**	
	Belt type crankcase heater; 65W, 230V	**120Z0059**	HLM078-081, HCM094-120, HLJ083, HCJ090-120
	Belt type crankcase heater; 65W, 400V	**120Z0060**	
	Belt type crankcase heater; 70W, 230V	**120Z5040**	
	Belt type crankcase heater; 70W, 400/440V	**120Z5041**	
	POE lubricant ; 1 liter can	**120Z5033**	HRH, HLH except HLH061
	PVE lubricant, 210HV (FVC68D); 1 liter can	**120Z5034**	HRH, HLH, HLJ, HCJ
	Mounting kit for 1 compressor; 4 grommets, 4 sleeves, 4 bolts, 4 washers	**120Z5005**	all
	Terminal cover, spade terminals (round)	**120Z5015**	all
	Terminal cover, screw terminals (square)	**102Z5018**	all
Scroll Compressors, Type SM/SH	Solder sleeve adapter set (1¾" rotolock, 1⅛" ODF), (1¼" rotolock, ⅞" ODF)	**120Z0125**	SH090
	Solder sleeve adapter set (1¾" rotolock, 1⅜" ODF), (1¼" rotolock, ⅞" ODF) **diameter restrictor*	**7765006**	SM115, 125, 160 SH105, 120, 140, 161, 184
	Solder sleeve adapter set (1¾" rotolock, 1⅜" ODF), (1¼" rotolock, ⅞" ODF)	**120Z0405**	SM115, 160 SH105, 120, 140, 161, 184
	Solder sleeve adapter set (2¼" rotolock, 1⅝" ODF), (1¾" rotolock, ⅞" ODF)	**7765028**	SM175, 185 SH240, 380
	Belt type crankcase heater; 65W, 460V	**120Z0466**	SM115, 125, 160 SH090, 105, 120, 140, 161, 175, 184
	Belt type crankcase heater; 65W, 110V	**7773109**	
	Belt type crankcase heater; 65W, 230V	**7773107**	
	Belt type crankcase heater; 65W, 400V	**7773117**	
	Belt type crankcase heater; 65W, 400V	**120Z0039**	
	Belt type crankcase heater; 75W, 110V	**7773110**	SM175, 185 SH240, 295
	Belt type crankcase heater; 75W, 230V	**7773108**	
	Belt type crankcase heater; 75W, 400V	**7773118**	
	Belt type crankcase heater; 75W, 460V	**120Z0464**	
	Belt type crankcase heater; 130W, 110V	**7773121**	SH380
	Belt type crankcase heater; 130W, 230V	**7773122**	
	Belt type crankcase heater; 130W, 400V	**7773123**	
	Motor protection module, 24V DC	**120Z0141**	SM115, 125, 160, 185
	Motor protection module, 24V AC	**8169020**	SM115, 125, 160, 185
	Motor protection module, 230V	**8169021**	SM115, 125, 160, 185
	Motor protection module, 24V DC	**120Z0140**	SH240, 295, 380
	Motor protection module, 24V AC	**8169015**	SH240, 295, 380
	Motor protection module, 115/230V	**8169016**	SH240, 295, 380

Product, type	Description	Danfoss Code No.	Type(s) applied to
Scroll Compressors, Type SM/SH	Service kit for terminal box; includes cover, clamp, T block connector	**8156135**	SH090, 105, 120, 140, 161
	Terminal box, including cover	**8156139**	SM115, 125, 160, 175, 185
	Terminal box cover	**120Z0413**	SH140-3, 161-3, 184, 175
	Terminal box, including cover	**120Z0458**	SH240, 295, 380
	Mounting kit for 1 compressor; 4 grommets, 4 sleeves, 4 bolts, 4 washers	**8156138**	SM115-185
	Mounting kit for 1 compressor; 4 grommets, 4 sleeves, 4 bolts, 4 washers	**120Z0066**	SH090, 105, 120, 140, 161, 175, 184
	Mounting kit for 1 compressor; 4 rigid grommets, 4 sleeves, 4 bolts, 4 washers	**7777045**	SH240, 295, 380
	Mineral oil, 160P; 2 liter can	**7754001**	all SM
	Mineral oil, 160P; 5 liter can	**7754002**	all SM
	Blue spray paint	**8154001**	all
	Oil equalization adaptor. To connect ⅞" tube on 22mm oil sight glass connection; includes (1) 22mm to ⅞", (2) gaskets.	**120Z0164**	all SM, SH
	Oil equalization adaptor. To connect ½" tube on 22mm oil sight glass connection; includes (1) 22mm to ½", (2) gaskets.	**120Z0165**	all SM, SH
	Oil equalization adaptor kit for trio mounting; oil fittings, gasket and adaptors (copper pipes not included).	**7773112**	SM 160, 185

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