ENGINEERING TOMORROW

Data Sheet

# Thermostatic expansion valve Type **T 2** and **TE 2**

Thermostatic expansion valves maintain a constant superheat level at the evaporator outlet

Thermostatic expansion valves regulate the injection of refrigerant liquid into evaporators.

Injection is controlled by the refrigerant superheat.

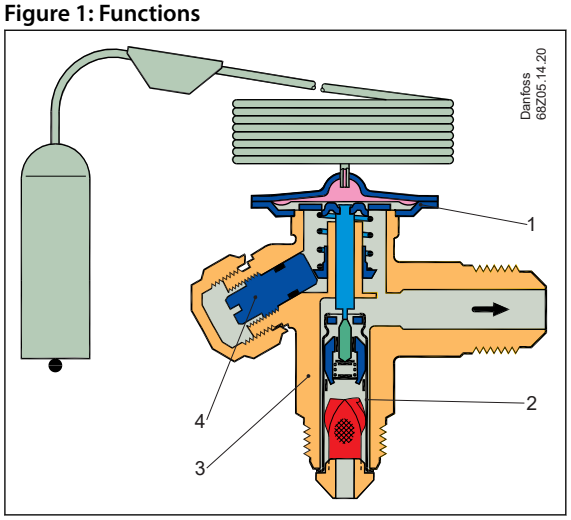
Therefore the valves are especially suitable for liquid injection in "dry" evaporators where the superheat at the evaporator outlet is proportional to the evaporator load.

## Features

- Large temperature range
  - Equally applicable to freezing, refrigeration and air conditioning applications.
- Interchangeable orifice assembly
  - easy storage
  - easy capacity matching
  - better service.
  - easy cleaning and replacement of filter
- Rated capacities from 1 to 20.5 kW / 0.3 to 5.8 TR for R407C
- Can be supplied with MOP (Max. Operating Pressure).
  - Protects the compressor motor against excessive evaporating pressure during normal operation
- Stainless steel bulb and Danfoss patented bulb strap
  - Fast and easy to install
  - Good temperature transfer from pipe to bulb
- Valves for special temperature ranges can be supplied
- Design protected

## Functions

**Figure 1: Functions**




| | |
|---|---|
| **1** | Thermostatic element (diaphragm) |
| **2** | Interchangeable orifice assembly |
| **3** | Valve body |
| **4** | Superheat setting spindle (see instructions) |

T2 and TE2 valves have an interchangeable orifice assembly.

The orifice assembly is suitable for all versions of valve body and refrigerants and in all evaporating temperature ranges.

The charge in the thermostatic element depends on the refrigerant and evaporating temperature range.

The valves are available with internal (T2) or external (TE2) pressure equalization.

External pressure equalization should always be used on systems with liquid distributors. The bulb gives fast and precise reaction to temperature changes in the evaporator. The bulb is fixed with a Danfoss patented bulb strap for quick, easy and reliable connection. The valves are able to withstand the effects that normally occur with hot gas defrosting.

To ensure long operating life, the valve cone and seat are made of a special alloy with particularly good wear qualities.

## Product specification

# Technical data

**Max. temperature**
Bulb, when valve is installed: 100 °C
Bulb, element not mounted: 60 °C

**Min. temperature**
T2 – TE2: -60 °C

**Max. test pressure**
PT = 38 bar

**Max. working pressure**
PS/MWP = 34 bar

**Table 1: Technical data**

| Refrigerant | Range N<br>-40 °C – 10 °C | Range NM<br>-40 °C – -5 °C | Range NL<br>-40 °C – -15 °C | Range B<br>-60 °C – -25 °C |
|---|---|---|---|---|
| | MOP-point in evaporating temperature $t_e$ and evaporating pressure $p_e$ [1] | | | |
| | 15 °C / 60 °F | 0 °C / 32 °F | -10 °C / 15 °F | -20 °C / -4 °F |
| R22 | 100 psig / 6.9 bar (abs) | 60 psig / 4.0 bar (abs) | 35 psig / 2.4 bar (abs) | 20 psig / 1.4 bar (abs) |
| R407C | 95 psig / 6.6 bar (abs) | – | – | – |
| R134a | 55 psig / 3.8 bar (abs) | 30 psig / 2.0 bar (abs) | 15 psig / 1.0 bar (abs) | – |
| R404A/R507 | 120 psig / 8.3 bar (abs) | 75 psig / 5.2 bar (abs) | 50 psig / 3.4 bar (abs) | 30 psig / 2.1 bar (abs) |

[1] Pe in bar gauge

**Superheat**
SS = static superheat
OS = opening superheat
SH = SS + OS = total superheat
$Q_{nom}$ = rated capacity
$Q_{max}$ = maximum capacity
Static superheat SS can be adjusted with setting spindle.
Standard superheat setting SS is 4K for all standard valves.
The opening superheat OS is 6 K from when opening begins to where the valve gives its rated capacity $Q_{nom}$.

**Example**
Static superheat SS = 5 K
Opening superheat OS = 6 K
Total superheat SH = 5 + 6 = 11 K

**Table 2: Range N: -40 to 50 °F**

| Orifice no. | Rated capacity in tons (TR) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R22 | R407C | R134a | R513A | R404A<br>R507 | R407A | R407F | R448A | R449A | R454C | R455A | R1234yf |
| 0X | 0.25 | 0.26 | 0.19 | 0.16 | 0.18 | 0.25 | 0.28 | 0.26 | 0.25 | 0.22 | 0.24 | 0.14 |
| 0 | 0.51 | 0.51 | 0.34 | 0.29 | 0.37 | 0.49 | 0.56 | 0.51 | 0.49 | 0.42 | 0.47 | 0.25 |
| 1 | 1 | 1 | 0.59 | 0.51 | 0.75 | 1 | 1.1 | 1 | 0.97 | 0.79 | 0.93 | 0.43 |
| 2 | 1.3 | 1.4 | 0.73 | 0.62 | 1 | 1.3 | 1.5 | 1.4 | 1.3 | 1 | 1.3 | 0.53 |
| 3 | 2.3 | 2.3 | 1.2 | 1 | 1.8 | 2.3 | 2.6 | 2.3 | 2.3 | 1.8 | 2.2 | 0.88 |
| 4 | 3.4 | 3.5 | 1.8 | 1.5 | 2.8 | 3.5 | 4.1 | 3.6 | 3.5 | 2.6 | 3.3 | 1.3 |
| 5 | 4.8 | 4.7 | 2.4 | 2 | 3.7 | 4.6 | 5.4 | 4.6 | 4.5 | 3.4 | 4.2 | 1.7 |
| 6 | 5.6 | 5.6 | 2.9 | 2.5 | 4.4 | 5.6 | 6.5 | 5.7 | 5.5 | 4.2 | 5.2 | 2.1 |

The rated capacity is based on:
Evaporating temperature te = 40 °F
Condensing temperature tc = 100 °F
Refrigerant temperature ahead of valve tl = 98 °F

**Table 3: Range N: -40 to 10 °C**

| Orifice no. | Rated capacity in kW | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R22 | R407C | R134a | R513A | R404A R507 | R407A | R407F | R448A | R449A | R454C | R455A | R1234yf |
| 0X | 0.9 | 0.92 | 0.68 | 0.58 | 0.64 | 0.88 | 1 | 0.9 | 0.88 | 0.77 | 0.86 | 0.49 |
| 0 | 1.8 | 1.8 | 1.2 | 1 | 1.3 | 1.7 | 2 | 1.8 | 1.7 | 1.5 | 1.7 | 0.87 |
| 1 | 3.5 | 3.5 | 2.1 | 1.8 | 2.6 | 3.4 | 3.9 | 3.5 | 3.4 | 2.8 | 3.3 | 1.5 |
| 2 | 4.7 | 4.8 | 2.6 | 2.2 | 3.7 | 4.7 | 5.4 | 4.8 | 4.6 | 3.6 | 4.4 | 1.8 |
| 3 | 8 | 8.1 | 4.3 | 3.7 | 6.3 | 8 | 9.2 | 8.1 | 7.9 | 6.2 | 7.6 | 3.1 |
| 4 | 12.1 | 12.4 | 6.4 | 5.4 | 9.9 | 12.4 | 14.3 | 12.6 | 12.1 | 9.3 | 11.5 | 4.6 |
| 5 | 16.7 | 16.5 | 8.4 | 6.9 | 13 | 16.3 | 19 | 16.3 | 15.7 | 11.8 | 14.7 | 5.9 |
| 6 | 19.7 | 19.7 | 10.1 | 8.6 | 15.5 | 19.6 | 22.9 | 19.8 | 19.1 | 14.8 | 18.3 | 7.3 |

The rated capacity is based on:
Evaporating temperature te = 4.4 °C
Condensing temperature tc = 38 °C
Refrigerant temperature ahead of valve tl = 37 °C

## Valve selection based on capacity calculation

As for extended capacity calculations and valve selection based on capacities and refrigerants, please refer to Coolselector®2. Rated and extended capacities are calculated with the Coolselector®2 calculation engine to ARI standards with the ASEREP equations based on laboratory measurements of selected valves.

## How to select a valve

Example:
Refrigerant = R407C
Q (capacity) = 1.1kW
Tcond (condensing temperature) = 25 °C
Tevap (evaporator temperature) = -30 °C
Tsub (subcooling temperature) = 2 K
Dpd (distributer pressure drop) = 1 bar
Q (capacity) = 1.1kW
fsub (subcooling correction factor) = 0.98
fp (distribution correction factor) = 0.96

$$\frac{Q}{fsub \times fp} = \text{selected capacity}$$

$$\frac{1.1}{0.98 \times 0.96} = 1.17 \text{ kW}$$

The selection will be: TE2 orifice 00 (1.21 kW > 1.17 kW)

**Table 4: Capacity in kW, range N -40 °C to 10 °C. Opening superheat sh= 6 K**

| Valve type | Orifice no. | Cond. temp. [°C] | Evaporating [°C] | | | |
|---|---|---|---|---|---|---|
| | | | -40 | -30 | -20 | -10 |
| T2 / TE2 | 0X | | 0.76 | 0.83 | 0.88 | 0.9 |
| T2 / TE2 | **00** | **25** | 0.99 | **1.21** | 1.42 | 1.6 |
| T2 / TE2 | 1 | | 1.41 | 1.8 | 2.27 | 2.77 |

**Table 5: Subcooling correction factor 'fsub'**

| Subcooling [K] | 2 | 4 | 10 | 15 |
|---|---|---|---|---|
| Correction factor | **0.98** | 1 | 1.07 | 1.12 |

**Table 6: Distributer correction factor 'fp' ***

| Pressure drop [bar] | | Evaporating [°C] | | | |
|---|---|---|---|---|---|
| | | -40 | -35 | -30 | -25 |
| "Pressure drop [bar]" | 0 | 1 | 1 | 1 | 1 |
| | 1 | 0.96 | 0.96 | 0.96 | 0.96 |
| | 1.5 | 0.94 | 0.94 | 0.94 | 0.94 |
| | 2 | 0.92 | 0.92 | 0.92 | 0.92 |

* Calculated at 32 °C condensing temperature

## Dimensions and weights

**Figure 2: Flare × flare (All dimentions are in mm)**

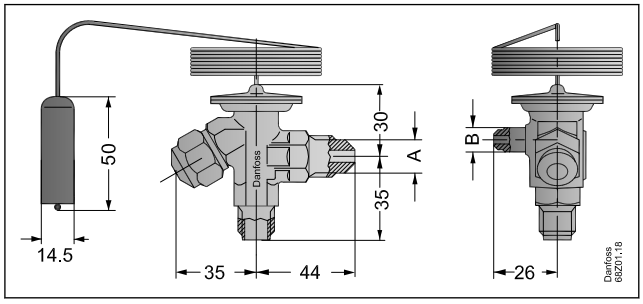



**Figure 3: Flare × solder (All dimentions are in mm)**

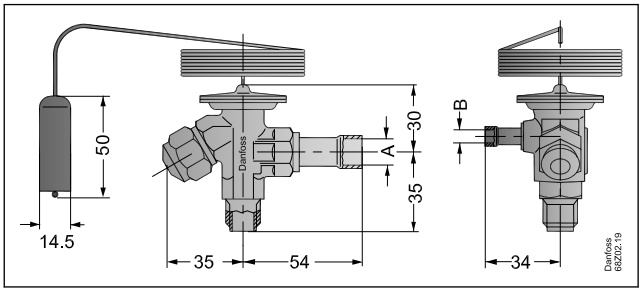



**Table 7: Dimensions and weights**

| | Outlet | Equalization | Weight |
|---|---|---|---|
| | A | B | [kg / lb] |
| Flare × flare | 1/2 " flare | 1/4 " flare | 0.3 / 0.7 |
| Flare × solder | 1/2 " solder<br>12 mm solder | 1/4 " solder<br>6 mm solder | 0.3 / 0.7 |

**Figure 4: Solder adaptor**

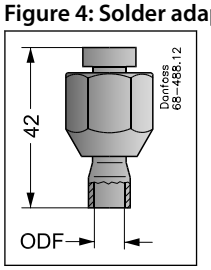
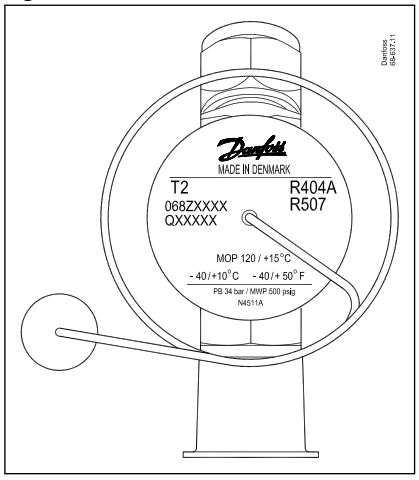



**Table 8: Solder adaptor**

| Solder ODF | | Weight |
|---|---|---|
| [in] | [mm] | [kg / lb] |
| 1/4 | 6 | 0.05 / 0.11 |
| 3/8 | 10 | 0.05 / 0.11 |

## Identification

**Figure 5: Identification**

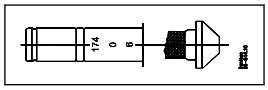



| | |
|---|---|
| **T2** | internal equalization |
| **TE2** | external equalization |
| **N** | Nordborg, Denmark (BE = Wuqing, China) |
| **45** | week |
| **11** | 2011 |
| **A** | Monday |

**Production place and date N4511A**

The thermostatic element has laser engraved data on top of the diaphragm. This engraving gives valve type (with code number), evaporating temperature range, MOP point, refrigerant, and max. working pressure. PS/MWP.

**Figure 6: Orifice assembly and filter for flare x flare version for T2 and TE2**




**Orifice assembly for T2 and TE2**

The orifice assembly is marked with the orifice size (e.g. 06) and week stamp + last number in the year (e.g. 174). The orifice assembly number is also given on the lid of its plastic container.

**Figure 7: Capillary tube label for T2 and TE2**

**Capillary tube label for T2 and TE2**

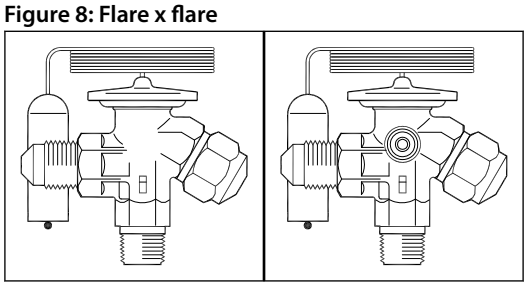
The label gives the orifice size (04) and consists of the lid of the orifice assembly plastic container. It can easily be fastened around the expansion valve capillary tube to clearly identify the valve size.

## Ordering

### T2/TE2 Thermostatic element with bulb strap

#### Flare x flare

**Figure 8: Flare x flare**



Capillary tube: 1.5 m
Range N = -40 – 10 °C
Range B = -60 – -25 °C
Range NM = -40 – -5 °C MOP 0 °C
Range NL = -40 – -15 °C MOP -10 °C

**Table 9: Flare x flare**

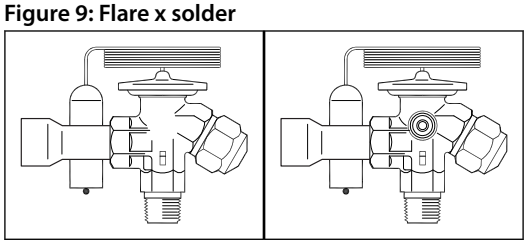
| Refrigerant | Type | Range | MOP | Pressure equliza-tion Flare | Connection flare inlet × outlet | | Code no. Multi pack |
|---|---|---|---|---|---|---|---|
| | | [°C] | [°C] | | [in] | [mm] | |
| R22/R407C [1] | T2 | -40 – 10 | – | – | 3/8 × 1/2 | 10×12 | 068Z3206 |
| | T2 | -40 – 10 | 15 | – | 3/8 × 1/2 | 10×12 | 068Z3208 |
| | T2 | -40 – -5 | 0 | – | 3/8 × 1/2 | 10×12 | 068Z3224 |
| | T2 | -40 – -15 | -10 | – | 3/8 × 1/2 | 10×12 | 068Z3226 |
| | T2 | -60 – -25 | – | – | 3/8 × 1/2 | 10×12 | 068Z3207 |
| | T2 | -60 – -25 | -20 | – | 3/8 × 1/2 | 10×12 | 068Z3228 |
| | TE2 | -40 – 10 | – | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3209 |
| | TE2 | -40 – 10 | 15 | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3211 |
| | TE2 | -40 – -5 | 0 | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3225 |
| | TE2 | -40 – -15 | -10 | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3227 |
| | TE2 | -60 – -25 | – | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3210 |
| | TE2 | -60 – -25 | -20 | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3229 |
| R407C | T2 | -40 – 10 | – | – | 3/8 × 1/2 | 10×12 | 068Z3496 |
| | T2 | -40 – 10 | 15 | – | 3/8 × 1/2 | 10×12 | 068Z3516 |
| | TE2 | -40 – 10 | – | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3501 |
| | TE2 | -40 – 10 | 15 | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3517 |
| R134a/R513A | T2 | -40 – 10 | – | – | 3/8 × 1/2 | 10×12 | 068Z3346 |
| | T2 | -40 – 10 | 15 | – | 3/8 × 1/2 | 10×12 | 068Z3347 |
| | T2 | -40 – -5 | 0 | – | 3/8 × 1/2 | 10×12 | 068Z3393 |
| | T2 | -40 – -15 | -10 | – | 3/8 × 1/2 | 10×12 | 068Z3369 |
| | TE2 | -40 – 10 | – | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3348 |
| | TE2 | -40 – 10 | 15 | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3349 |
| | TE2 | -40 – -5 | 0 | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3392 |
| | TE2 | -40 – -15 | -10 | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3370 |

| Refrigerant | Type | Range | MOP | Pressure equliza-tion Flare | Connection flare inlet × outlet | | Code no. Multi pack |
|---|---|---|---|---|---|---|---|
| | | [°C] | [°C] | | [in] | [mm] | |
| R404A/R507 | T2 | -40 – 10 | – | – | 3/8 × 1/2 | 10×12 | 068Z3400 |
| | T2 | -40 – 10 | 15 | – | 3/8 × 1/2 | 10×12 | 068Z3402 |
| | T2 | -40 – -5 | 0 | – | 3/8 × 1/2 | 10×12 | 068Z3406 |
| | T2 | -40 – -15 | -10 | – | 3/8 × 1/2 | 10×12 | 068Z3408 |
| | T2 | -60 – -25 | – | – | 3/8 × 1/2 | 10×12 | 068Z3401 |
| | T2 | -60 – -25 | -20 | – | 3/8 × 1/2 | 10×12 | 068Z3410 |
| | TE2 | -40 – 10 | – | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3403 |
| | TE2 | -40 – 10 | 15 | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3405 |
| | TE2 | -40 – -5 | 0 | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3407 |
| | TE2 | -40 – -15 | -10 | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3409 |
| | TE2 | -60 – -25 | – | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3404 |
| | TE2 | -60 – -25 | -20 | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3411 |
| R407F/R407A | T2 | -40 – 10 | – | – | 3/8 × 1/2 | 10×12 | 068Z3715 |
| | TE2 | -40 – 10 | – | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3714 |
| R448A/R449A | T2 | -40 – 10 | – | – | 3/8 × 1/2 | 10×12 | 068Z3727 |
| | TE2 | -40 – 10 | – | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3728 |
| | T2 | -40 – -15 | -10 | – | 3/8 × 1/2 | 10×12 | 068Z3675 |
| | T2 | -60 – -25 | -20 | – | 3/8 × 1/2 | 10×12 | 068Z3735 |
| | TE2 | -60 – -25 | -20 | ¼ in / 6 mm | 3/8 × 1/2 | 10×12 | 068Z3736 |
| R454C | T2 | -40 – 10 | - | – | 3/8 × 1/2 | 10x12 | 068Z7483 |
| | TE2 | -40 – 10 | - | ¼ in / 6 mm | 3/8 × 1/2 | 10x12 | 068Z7485 |
| R455A | T2 | -40 – 10 | - | – | 3/8 × 1/2 | 10x12 | 068Z7496 |
| | TE2 | -40 – 10 | - | ¼ in / 6 mm | 3/8 × 1/2 | 10x12 | 068Z7499 |
| R1234yf | T2 | -40 – 10 | - | – | 3/8 × 1/2 | 10x12 | 068Z7487 |
| | TE2 | -40 – 10 | - | ¼ in / 6 mm | 3/8 × 1/2 | 10x12 | 068Z7489 |

(1) For R407C plants. Please select valves from the dedicated R407C program

## Flare x solder

**Figure 9: Flare x solder**



Capillary tube:1.5 m
Range N=-40 – 10 °C
Range NL = -40 – -15 °C
Range B= -60 – -25 °C

**Table 10: Flare x solder**

| Refrigerant | Type | Range | MOP | Pressure equliza-tion Flare | Connection flare inlet × outlet | | Code no. Multi pack |
|---|---|---|---|---|---|---|---|
| | | [°C] | [°C] | | [in] | [mm] | |
| R22/R407C[1] | T2 | -40 – 10 | – | – | 3/8 × 1/2 | – | 068Z3281 |
| | T2 | -40 – 10 | – | – | – | 10×12 | 068Z3302 |
| | T2 | -40 – 10 | 15 | – | 3/8 × 1/2 | – | 068Z3287 |
| | T2 | -40 – 10 | 15 | – | – | 10×12 | 068Z3308 |
| | T2 | -40 – -15 | -10 | – | – | 10×12 | 068Z3366 |
| | T2 | -60 – -25 | – | – | 3/8 × 1/2 | – | 068Z3357 |
| | T2 | -60 – -25 | – | – | – | 10×12 | 068Z3361 |
| | T2 | -60 – -25 | -20 | – | 3/8 × 1/2 | – | 068Z3319 |
| | TE2 | -40 – 10 | – | ¼ in | 3/8 × 1/2 | – | 068Z3284 |
| | TE2 | -40 – 10 | – | 6 mm | – | 10×12 | 068Z3305 |
| | TE2 | -40 – 10 | 15 | ¼ in | 3/8 × 1/2 | – | 068Z3290 |
| | TE2 | -40 – 10 | 15 | 6 mm | – | 10×12 | 068Z3311 |
| | TE2 | -40 – -15 | -10 | 6 mm | – | 10×12 | 068Z3367 |
| | TE2 | -60 – -25 | – | ¼ in | 3/8 × 1/2 | – | 068Z3359 |
| | TE2 | -60 – -25 | – | 6 mm | – | 10×12 | 068Z3363 |
| | TE2 | -60 – -25 | -20 | ¼ in | 3/8 × 1/2 | – | 068Z3320 |
| R407C | T2 | -40 – 10 | – | – | – | 10×12 | 068Z3502 |
| | T2 | -40 – 10 | 15 | – | 3/8 × 1/2 | – | 068Z3329 |
| | T2 | -40 – 10 | 15 | – | – | 10×12 | 068Z3514 |
| | TE2 | -40 – 10 | – | ¼ in | 3/8 × 1/2 | – | 068Z3446 |
| | TE2 | -40 – 10 | – | 6 mm | – | 10×12 | 068Z3503 |
| | TE2 | -40 – 10 | 15 | ¼ in | 3/8 × 1/2 | – | 068Z3447 |
| | TE2 | -40 – 10 | 15 | 6 mm | – | 10×12 | 068Z3515 |
| R134a/R513A | T2 | -40 – 10 | – | – | 3/8 × 1/2 | – | 068Z3383 |
| | T2 | -40 – 10 | – | – | – | 10×12 | 068Z3384 |
| | T2 | -40 – 10 | 15 | – | 3/8 × 1/2 | – | 068Z3387 |
| | T2 | -40 – 10 | 15 | – | – | 10×12 | 068Z3388 |
| | TE2 | -40 – 10 | – | ¼ in | 3/8 × 1/2 | – | 068Z3385 |
| | TE2 | -40 – 10 | – | 6 mm | – | 10×12 | 068Z3386 |
| | TE2 | -40 – 10 | 15 | ¼ in | 3/8 × 1/2 | – | 068Z3389 |
| | TE2 | -40 – 10 | 15 | 6 mm | – | 10×12 | 068Z3390 |
| R404A/R507 | T2 | -40 – 10 | – | – | 3/8 × 1/2 | – | 068Z3414 |
| | T2 | -40 – 10 | – | – | – | 10×12 | 068Z3435 |
| | T2 | -40 – 10 | 15 | – | 3/8 × 1/2 | – | 068Z3416 |
| | T2 | -40 – 10 | 15 | – | – | 10×12 | 068Z3423 |
| | T2 | -40 – -15 | -10 | – | 3/8 × 1/2 | – | 068Z3429 |
| | T2 | -40 – -15 | -10 | – | – | 10×12 | 068Z3436 |
| | T2 | -60 – -25 | – | – | 3/8 × 1/2 | – | 068Z3418 |
| | T2 | -60 – -25 | – | – | – | 10×12 | 068Z3425 |
| | T2 | -60 – -25 | -20 | – | 3/8 × 1/2 | – | 068Z3420 |
| | T2 | -60 – -25 | -20 | – | – | 10×12 | 068Z3427 |
| | TE2 | -40 – 10 | – | ¼ in | 3/8 × 1/2 | – | 068Z3415 |
| | TE2 | -40 – 10 | – | 6 mm | – | 10×12 | 068Z3422 |
| | TE2 | -40 – 10 | 15 | 6 mm | – | 10×12 | 068Z3424 |
| | TE2 | -40 – 10 | 15 | ¼ in | 3/8 × 1/2 | – | 068Z3417 |
| | TE2 | -40 – -15 | -10 | ¼ in | 3/8 × 1/2 | – | 068Z3430 |
| | TE2 | -40 – -15 | -10 | 6 mm | – | 10×12 | 068Z3437 |
| | TE2 | -60 – -25 | – | ¼ in | 3/8 × 1/2 | – | 068Z3419 |
| | TE2 | -60 – -25 | – | 6 mm | – | 10×12 | 068Z3426 |
| | TE2 | -60 – -25 | -20 | ¼ in | 3/8 × 1/2 | – | 068Z3421 |
| | TE2 | -60 – -25 | -20 | 6 mm | – | 10×12 | 068Z3428 |
| R407F/R407A | T2 | -40 – 10 | – | – | 3/8 × 1/2 | – | 068Z3716 |
| | TE2 | -40 – 10 | – | ¼ in | 3/8 × 1/2 | – | 068Z3713 |

| Refrigerant | Type | Range | MOP | Pressure equliza-tion Flare | Connection flare inlet × outlet | | Code no. Multi pack |
|---|---|---|---|---|---|---|---|
| | | [°C] | [°C] | | [in] | [mm] | |
| R448A/R449A | T2 | -40 – 10 | – | – | 3/8 × 1/2 | – | 068Z3729 |
| | TE2 | -40 – 10 | – | ¼ in | 3/8 × 1/2 | – | 068Z3730 |
| | T2 | -40 – -15 | -10 | – | 3/8 × 1/2 | – | 068Z3664 |
| | T2 | -60 – -25 | -20 | – | 3/8 × 1/2 | – | 068Z3737 |
| | TE2 | -40 – -15 | -10 | ¼ in | 3/8 × 1/2 | – | 068Z3665 |
| | TE2 | -60 – -25 | -20 | ¼ in | 3/8 × 1/2 | – | 068Z3738 |
| | T2 | -40 – -15 | -10 | – | – | 10×12 | 068Z3674 |
| | TE2 | -60 – -25 | -20 | 6 mm | – | 10×12 | 068Z3672 |
| R452A | T2 | -40 – 10 | – | – | 3/8 × 1/2 | – | 068Z3806 |
| | TE2 | -40 – 10 | – | ¼ in | 3/8 × 1/2 | – | 068Z3807 |
| | T2 | -40 – 10 | – | – | – | 10×12 | 068Z3808 |
| | TE2 | -40 – 10 | – | 6 mm | – | 10×12 | 068Z3809 |
| R454C | T2 | -40 – 10 | – | – | 3/8 × 1/2 | – | 068Z7490 |
| | T2 | -40 – 10 | – | – | – | 10x12 | 068Z7484 |
| | TE2 | -40 – 10 | – | ¼ in | 3/8 × 1/2 | – | 068Z7492 |
| | TE2 | -40 – 10 | – | 6 mm | – | 10x12 | 068Z7486 |
| R455A | T2 | -40 – 10 | – | – | 3/8 × 1/2 | – | 068Z7494 |
| | T2 | -40 – 10 | – | – | – | 10x12 | 068Z7498 |
| | TE2 | -40 – 10 | – | ¼ in | 3/8 × 1/2 | – | 068Z7501 |
| | TE2 | -40 – 10 | – | 6 mm | – | 10x12 | 068Z7500 |
| R1234yf | T2 | -40 – 10 | – | – | 3/8 × 1/2 | – | 068Z7491 |
| | T2 | -40 – 10 | – | – | – | 10x12 | 068Z7488 |
| | TE2 | -40 – 10 | – | ¼ in | 3/8 × 1/2 | – | 068Z7493 |
| | TE2 | -40 – 10 | – | 6 mm | - | 10x12 | 068Z7495 |

(1) For R407C plants, please select valves from the dedicated R407C program

## Flare connections

**Figure 10: Flare connections**

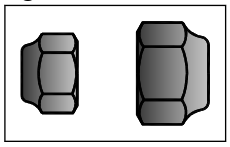


**Table 11: Flare connections**

| Connection for copper tubing with outside diameter | | Reducer for copper tubing with outside diameter | | Code no. |
|---|---|---|---|---|
| [in] | [mm] | [in] | [mm] | |
| 1/4 | 6 | – | – | 011L1101 |
| 3/8 | 10 | – | – | 011L1135 |
| 1/2 | 12 | – | – | 011L1103 |
| – | – | 1/4 | 6 | 011L1107 |

Example :
A TE2 thermostatic expansion valve consists of two parts + flare nuts if required:
- 1 thermostatic element
- 1 orifice assembly and flare nuts

When ordering one thermostatic expansion valve, TE2 with orifice 01, five code numbers are required:
- 1-off thermostatic element - 068Z3209
- 1-off orifice assembly 01 - 068-2010
- 1-off 3⁄8 in flare nut - 011L1135
- 1-off 1⁄2 in flare nut - 011L1103
- 1-off 1⁄4 in flare nut - 011L1101

## Orifice assembly with filter

**Figure 11: Orifice assembly with filter**

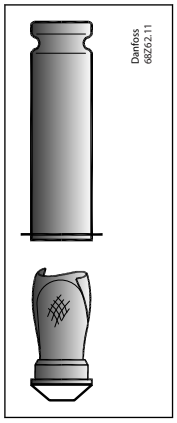



**Table 12: Orifice assembly with filter**

| Orifice no. | Code no. |
|---|---|
| 0X | 068-2002 |
| 00 | 068-2003 |
| 01 | 068-2010 |
| 02 | 068-2015 |
| 03 | 068-2006 |
| 04 | 068-2007 |
| 05 | 068-2008 |
| 06 | 068-2009 |

## Orifice assembly with filter for solder adaptor

**Figure 12: Orifice assembly with filter for solder adaptor**

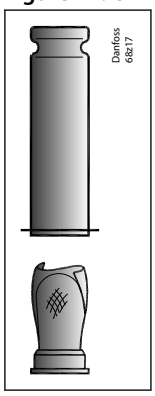



**Table 13: Orifice assembly with filter for solder adaptor**

| Orifice no. | Code no. |
|---|---|
| 0X | 068-2089 |
| 00 | 068-2090 |
| 01 | 068-2091 |
| 02 | 068-2092 |
| 03 | 068-2093 |
| 04 | 068-2094 |
| 05 | 068-2095 |
| 06 | 068-2096 |

## Filter

**Figure 13: Filter**

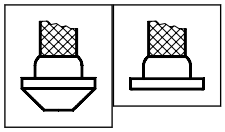
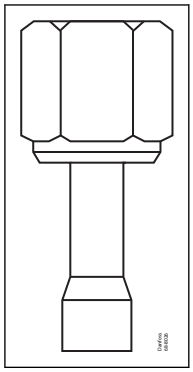


**Table 14: Filter**

| Filter type | Code no. Multi pack |
|---|---|
| For flare connection | 068-0003 |
| For solder adaptor | 068-0015 |

## Solder adaptor

**Figure 14: Solder adaptor**



The adaptor is for use with thermostatic expansion valves T2 and TE2 with flare × solder connections. When the adaptor is fitted correctly it meets the sealing requirements of DIN 8964.

The adaptor offers the following advantages:
- The orifice assembly can be replaced.
- The filter can be cleaned or replaced.

When using the solder adapter, a special orifice assembly is required. Please use the following tables to select both the appropriate adapter and orifice asembly.

Only in this way can the sealing requirements of DIN 8964 be fulfilled.

Solder adaptor for filter drier (FSA) must not be used in the T2 inlet.

**Table 15: Solder adaptor without orifice assembly and filter**

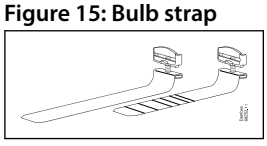
| Connection ODF solder | Code no. |
|---|---|
| 1⁄4 in | 068-2062 |
| 6 mm | 068-2063 |
| 3⁄8 in | 068-2060 |
| 10 mm | 068-2061 |

**Table 16: Filter for solder adaptor**

| Description | Code no. |
|---|---|
| Filter excl. orifice assembly | 068-0015 |

## Bulb strap (Danfoss patented)

**Figure 15: Bulb strap**



Each valve is delivered with a Danfoss patented bulb strap. Spares can be ordered.

**Table 17: Bulb strap (Danfoss patented)**

| Description | Pack mode | Quantity / pack | Code no. |
|---|---|---|---|
| Bulb strap 0.4 mm Max. 28 mm tube | I | 45 | 068U3505 |
| Bulb strap 0.4 mm Max. 50 mm tube | I | 45 | 068U3506 |
| Bulb strap 0.4 mm Max. 28 mm tube | M | 25 | 068U3507 |
| Bulb strap 0.4 mm Max. 50 mm tube | M | 25 | 068U3508 |

## Certificates, declarations, and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

Some approvals may change over time. You can check the most current status at danfoss.com or contact your local Danfoss representative if you have any questions.

**Table 18: Certificates, declarations, and approvals**

| File name | Document type | Document topic | Approval_authority |
|---|---|---|---|
| EAC RU Д-DK.БЛ08.B.00191_18 | EAC Declaration | Machinery & Equipment | EAC |
| Danfoss 068U9615.06 | Manufacturers Declaration | PED/RoHS | Danfoss |
| Danfoss 068Z9620.00 | Manufacturers Declaration | - | Danfoss |
| Danfoss 068-9601.00 | Manufacturers Declaration | - | Danfoss |
| UA.089.D.00188-17 | UA Declaration | PED | LLC CDC EURO TYSK |
| UA.TR-089.0993-17 | Pressure - Safety Certificate | PED | LLC CDC EURO TYSK |
| Danfoss 068U9616.01 | Manufacturers Declaration | China RoHS | Danfoss |

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