MAKING MODERN LIVING POSSIBLE

Technical leaflet

Thermostatic expansion valves with fixed orifice

Type TDE / TDEB

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Contents **Page**

Introduction

TDE/TDEB is a series of thermostatic expansion valves of the highest technical standards with dedicated design for use in applications such as:
- Air conditioning systems,
- Heat pumps,
- Water chillers,
- Refrigerated containers,
- Traditional refrigeration systems.

TDE is designed for soldering into hermetic systems and is supplied in straightway versions. The product programme includes standard single port versions (TDE) as well as a balanced port design (TDEB) developed especially for biflow applications.
TDE is available for ranges K, AC and N. All versions are available in both industrial and single packs.

This leaflet contains data and code numbers for TDE valves for refrigerants R22 and R407C. TDE valves for R134a are manufactured to order, and consequently no code numbers are available.

A note on type designation
TDE is the standard single port version, TDEB is the biflow balanced port version. The accompanying digit denotes the rated capacity in TR, whereas X denotes R22 refrigeration and Z is used for R407C types. Consequently TDEX 6 is a standard single port valve for R22 with a rated capacity of 6 TR (21 kW), whereas TDEBZ 16 is a biflow balanced port version for R407C with a rated capacity of 16 TR (56 kW).

Features

- *Versions with two-way balanced port*
- *Head pressure independent*
- *Versions for biflow application (excl. valves with MOP)*
- *Refrigerants: R22, R407C*
  TDE for R134a manufactured to order. Contact Danfoss for further information
- *Capacities from 10.5 to 140 kW (3 to 40 TR) for R22 and R407C*
- *Versions with MOP (Max. Operating Pressure) charge*
- *Versions with universal cross-ambient charge*
- *Versions with self-cleaning bleed*
- *Superheat adjustable during operation*
- *Compact and hermetically tight design*
- *Laser welded, stainless steel thermostatic element:*
  - optimum regulation ability
  - long diaphragm life
  - high pressure strength

Technical data

Max. bulb temp.	150°C with MOP 100°C without MOP	
Max. valve body temp.	120°C,	
short-term	150°C	
Max. working pressure	PS/MWP = 28 bar	
Max. test pressure	p' = 32 bar	
Equalizing connection	1/4 in./6 mm solder ODF	
Capillary tube length	TDE 3 - 7.5	1.5 m
	TDE 8 - 19	1.5 m
	TDE 20 - 40	3.0 m
Bleed	15% (on request)	

Biflow operation
TDEB with two-way balanced port and universal cross-ambient charge is designed for biflow operation. With flow in the opposite direction, the rated capacity is reduced by 15%.
TDE types with MOP charges cannot be used for biflow operation.

MOP valves

MOP-points

Refrigerant	Range **K** −25 → +10°C	Range **AC** −10 → +15°C
	MOP point for evaporating temperature t_e and evaporating pressure p_e [1])	
	t_e = +15°C/+60°F	t_e = +20°C/+68°F
R22	p_e = 100 psig/6.9 barg	p_e = 120 psig/8.5 barg
R407C	p_e = 95 psig/6.6 barg	p_e = 115 psig/8.0 barg

[1]) P_e in bar gauge

To avoid charge migration when MOP valves are used, the bulb temperature must be lower than the thermostatic element temperature.

Identification

Essential valve data is given on the element label.

Example, fig. 1

TDEX	=	Type (X: refrigerant R22/R407C)
8 TR	=	Rated capacity Q_{nom}. in Tons of Refrigeration
28 kW	=	Rated capacity Q_{nom}. in kW
R22/R407C	=	Refrigerant
−25/+10 °C	=	Evaporating temperature range (°C)
−15/+50 °F	=	Evaporating temperature range (°F)
068H4112	=	Code number
BP 15	=	Bleed 15 %
MOP 100	=	Max. Operation Pressure
PS 28 bar/ MWP 400 psig	=	Max. working pressure
288	=	Date marking (week 28, 1998)

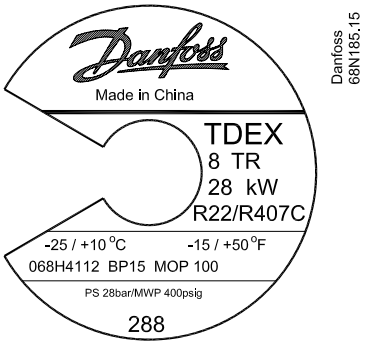


Fig. 1

Application

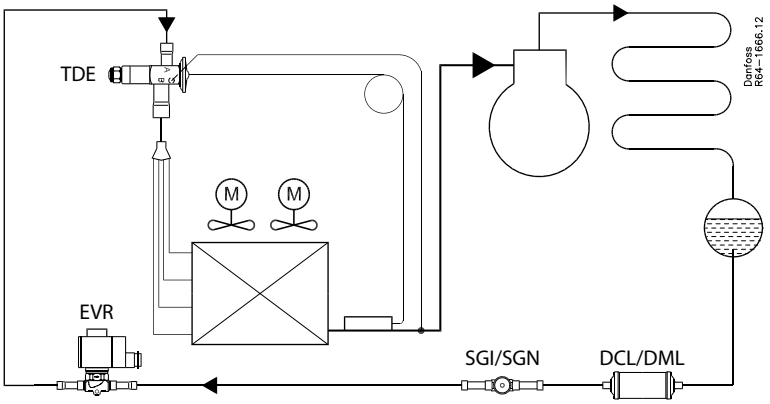


Fig. 2.
Traditional refrigeration plant

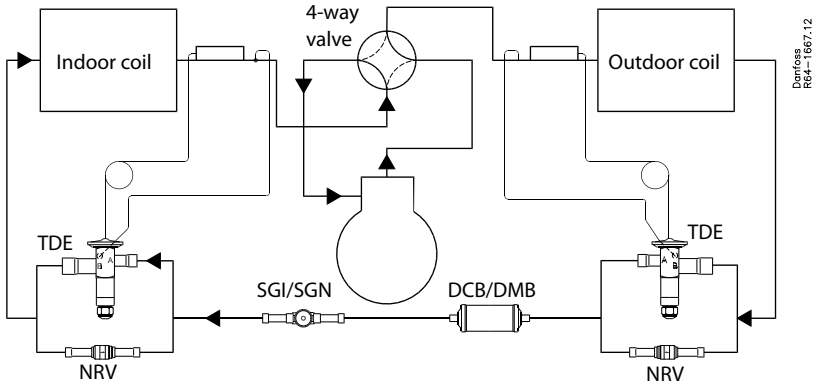


Fig. 3.
Conventional system with summer/winter operation

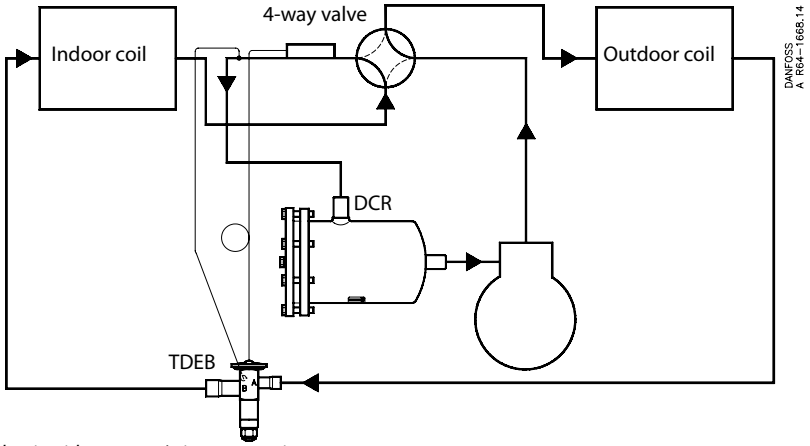


Fig. 4.
Simplified unit with summer/winter operation

Fig. 2 is a diagram of a traditional refrigeration plant where TDE is used for flow in one direction only.
Fig. 3 is a conventional split air conditioning/heat pump system with cooling/heating operation and two expansion valves with fixed direction of flow.
The system is shown in a cooling mode.
The system shown requires two thermostatic expansion valves, e.g. TDE, and two NRV check valves. SGI/SGN is placed in the liquid line before TDE, in this case with cooling as primary function.
Changeover between cooling and heating is performed via a 4-way solenoid valve.

Fig. 4 is similar to the previous system but as a compact unit with a short distance between evaporator and condenser. This system is also shown in a cooling condition.
The two expansion valves have been replaced by one TDEB biflow valve. Check valves are not required.
Changeover is by means of a 4-way valve.
A suction filter drier is often placed in suction lines just before the compressor.
The normal flow direction of TDEB is determined by the primary function, i.e. cooling or heating.

Design and function

1. Bulb with capillary tube
2. Thermostatic element
3. Thrust pad
4. Valve body
5. Throttling cone assembly
6. Setting spindle for static superheat SS
7. Setting spindle assembly
8. Protective cap

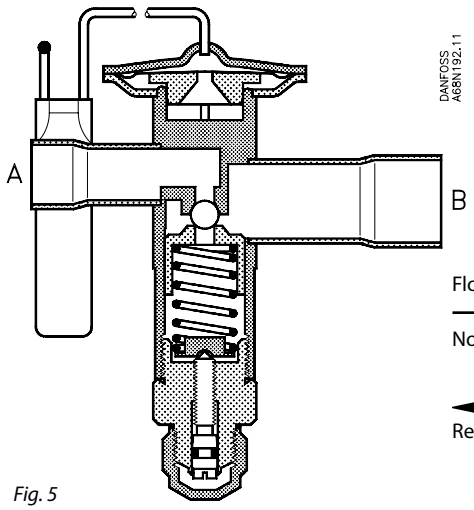


Fig. 5
Single port design (TDE)

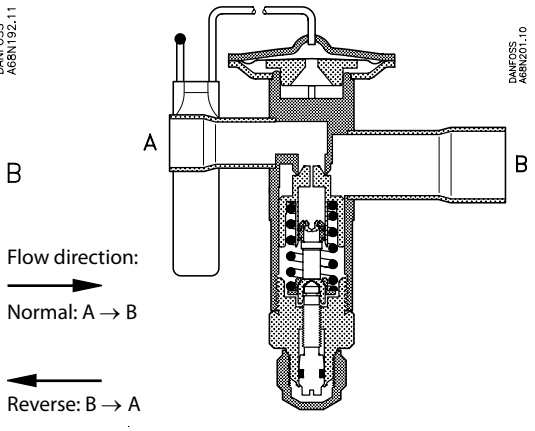


Fig. 6
Biflow balanced port design (TDEB)

TDE is designed with straight through solder connections, fixed orifice and thermostatic element. Two push pins in non-friction stuffing boxes connect the power assembly with the orifice.
The thermostatic element characteristics is designed to nominal capacity at less than 4K opening superheat in accordance with ANSI/ARI 750-87. The standard factory setting is 4K, so the operating or total measurable superheat is 8K as capacity table values.

Port design
The TDE series of thermostatic expansion valves features two different orifice designs: single port and balanced port.
TDE 3 - 7.5 are designed with single port.
TDE 8 - 19 is available in both single port versions (TDE) and balanced port versions (TDEB).
TDE 20 - 40 is designed with balanced port.

Port design and application
The choice between single or balanced port is based on an assessment of the power balance of the application. The power balance is expressed as static superheat variation as a function of the condensing pressure or pressure drop across the orifice.
For the TDE 8 - 19, where both single port and balanced port versions are available, the right selection for your application is based on the diagram in figure 7/8, which shows the variations in superheat as a function of the condensing pressure.
If TDE 8 - 19 is to be used for applications with two-way power balance (e.g. biflow applications) the balanced port versions must be used.

Fig. 7
Static superheat variation, TDE 8 - 19 (single port design)

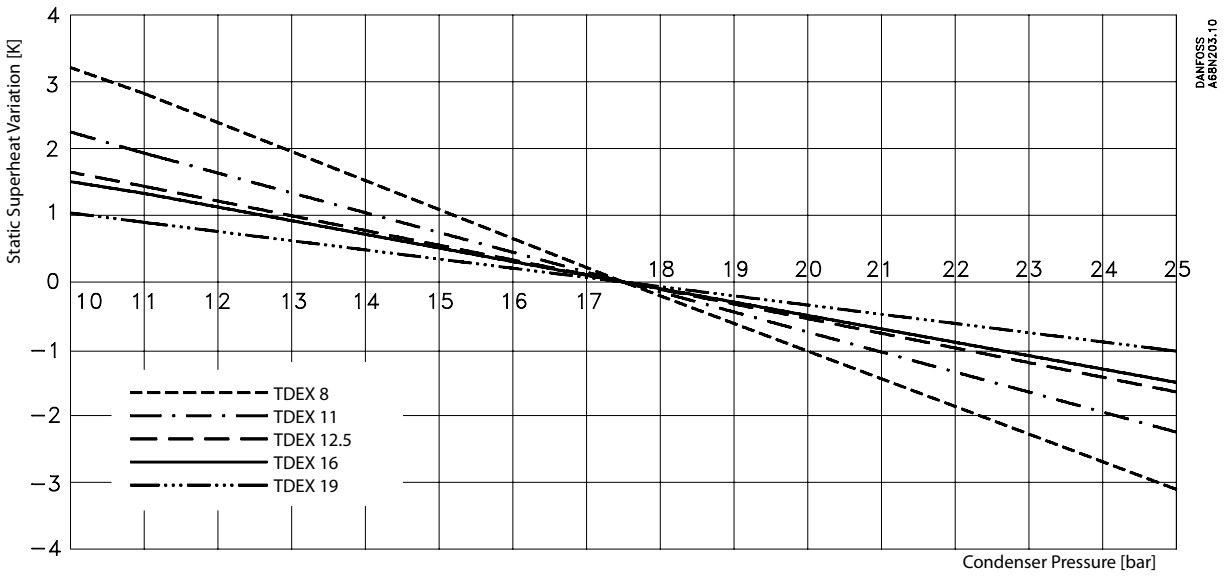
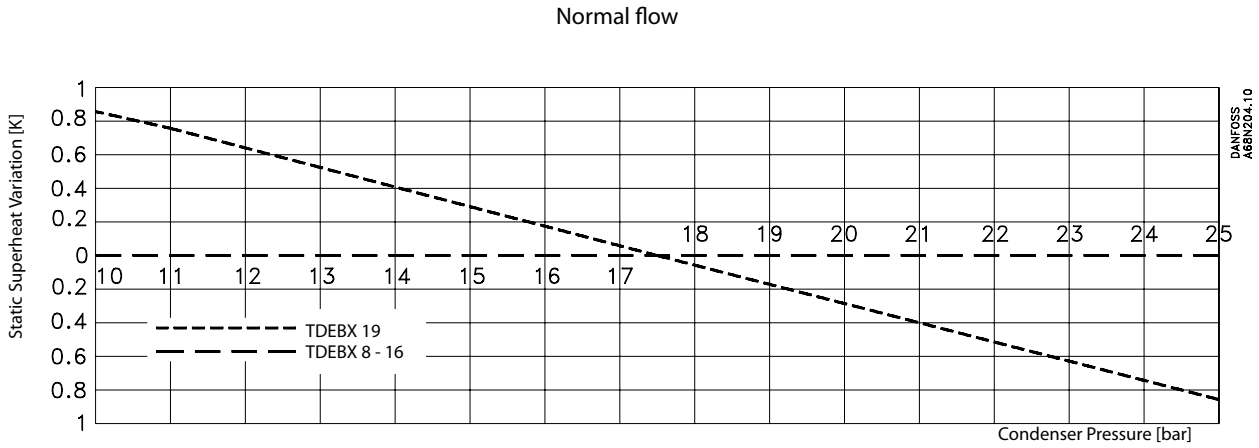


Fig. 8
Static superheat variation, TDEB 8 - 19 (balanced port design)



Static Superheat variation (fig. 7/8)
The factory setting of 4 K static superheat (SS) is made at 17.5 bar (abs.) – corresponding to 45°C condensing temperature. Consequently the superheat setting variation is 0 at 17.5 bar, as appears from the diagrams in fig. 7 and 8.
In normal flow direction the condensing pressure operates in the opening direction, and consequently SS *decreases* at values above 17.5 bar and *increases* at values below 17.5 bar. In bi-flow condition and with opposite flow direction the situation is reversed. When compared with normal flow direction the SS variation is twice the size.
The static superheat is adjustable, and as such it can be adapted to the given condensing pressure to match the factory setting.

Terminology (fig. 9)
SS = static superheat
OS = opening superheat
SH = SS + OS = total superheat

Example:
SS = 4 K
Static superheat SS is factory set at 4 K.

OS = 4 K
Opening superheat is 4 K from the beginning opening to the opening that gives the table capacity. (Nominal capacity).
The opening superheat is determined by the construction and cannot be changed.

SH = SS + OS = 4 + 4 = 8 K
Total superheat SH can be changed by changing SS (by using the setting spindle).

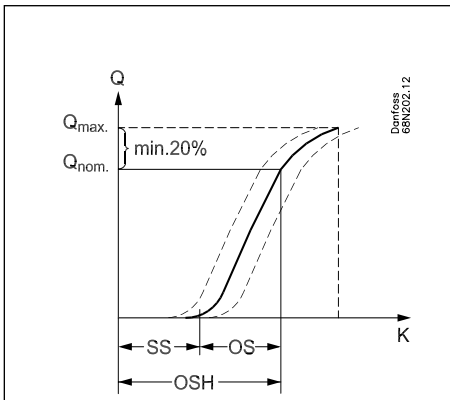


Fig. 9

Ordering

The valves and bulb straps are supplied in industrial packs or multipacks:
Industrial pack, TDE 3-7.5/12-off
Industrial pack, TDE 8-19/12-off
Industrial pack, TDE 20-40/8-off
Multipack, TDE 3-7.5/12-off
Multipack, TDE 8-19/8-off
Multipack, TDE 20-40/6-off

Program survey

Capacity	Refrigerant	Range	Temperature range	MOP	Ordering
3 - 40 TR	R22	K	–25 → +10°C	MOP 15°C	See page 9
	R22	AC	–10 → +15°C	MOP 20°C	See page 10
	R22	N	–40 → +10°C		
	R407C	K	–25 → +10°C	MOP 15°C	See page 12
	R407C	AC	–10 → +15°C	MOP 20°C	See page 13
	R407C	N	–40 → +10°C		
2 - 30 TR	R134a	K	–25 → +10°C	MOP 15°C	Manufactured to order, contact Danfoss
	R134a	N	–40 → +10°C		Manufactured to order, contact Danfoss

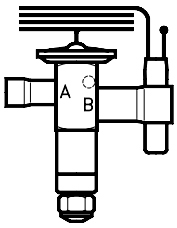
MOP valves
To avoid charge migration when MOP valves are used, the bulb temperature must be lower than the thermostatic element temperature.

MOP-points

Refrigerant	Range **K** –25 → +10°C	Range **AC** –10 → +15°C
	MOP point for evaporating temperature t_e and evaporating pressure p_e [1]	
	t_e = +15°C/+60°F	t_e = 20°C/+68°F
R22	100 psig/7 bar	120 psig/8.5 bar
R407C	95 psig/6.5 bar	115 psig/8 bar

[1]) p_e in bar gauge

Ordering
Standard range



Range K = –25 → +10°C with MOP 100 psig/8 bar abs.
Static superheat SS = 4 K

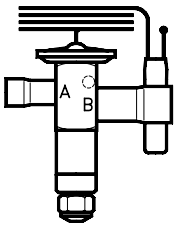
R22/R407C

Type and rated capacity $Q_{nom.}$ [1] TR	Rated capacity $Q_{nom.}$ [1] kW	Inch version: Connection Solder ODF × ODF A × B in.	Inch version: **Code no.** Multi pack [2]	Inch version: **Code no.** Industrial pack [2]	mm version: Connection Solder ODF × ODF A × B mm	mm version: **Code no.** Multi pack [2]	mm version: **Code no.** Industrial pack [2]
TDEX 3 - 7.5 Single port							
TDEX 3	10.5	3/8 × 5/8	**068H6200**	**068H4150**	10 × 16	068H5146	068H4156
TDEX 3	10.5	1/2 × 5/8	**068H6201**	**068H4151**	12 × 16	068H5147	068H4157
TDEX 4	14	1/2 × 7/8	**068H6202**	**068H4152**	12 × 22	068H6208	068H4158
TDEX 6	21	1/2 × 5/8	**068H6234**	**068H4184**	12 × 16	068H5145	068H4185
TDEX 6	21	1/2 × 7/8	**068H6203**	**068H4153**	12 × 22	068H6209	068H4159
TDEX 6	21	5/8 × 7/8	**068H6204**	**068H4154**	16 × 22	068H6210	068H4160
TDEX 7.5	26	5/8 × 7/8	**068H6205**	**068H4155**	16 × 22	068H6211	068H4161
TDEX 8 - 19 Single port							
TDEX 8	28	5/8 × 7/8	**068H6212**	**068H4162**	16 × 22	068H6219	068H4169
TDEX 11	38.5	5/8 × 7/8	**068H6213**	**068H4163**	16 × 22	068H6220	068H4170
TDEX 11	38.5	5/8 × 1 1/8	**068H6214**	**068H4164**	16 × 28	068H6221	068H4171
TDEX 12.5	44	5/8 × 7/8	**068H6215**	**068H4165**	16 × 22	068H6222	068H4172
TDEX 12.5	44	5/8 × 1 1/8	**068H6216**	**068H4166**	16 × 28	068H6223	068H4173
TDEX 16	56	5/8 × 1 1/8	**068H6236**	**068H4186**	16 × 28	068H6237	068H4187
TDEX 16	56	7/8 × 1 1/8	**068H6217**	**068H4167**	22 × 28	068H6224	068H4174
TDEX 19	66.5	7/8 × 1 1/8	**068H6218**	**068H4168**	22 × 28	068H6225	068H4175
TDEBX 8 - 19 Balanced port							
TDEBX 8	28	5/8 × 7/8	**068H7130**	**068H8000**	16 × 22	**068H7131**	**068H8001**
TDEBX 11	38.5	5/8 × 7/8	**068H7132**	**068H8002**	16 × 22	**068H7133**	**068H8003**
TDEBX 11	38.5	5/8 × 1 1/8	**068H7134**	**068H8004**	16 × 28	**068H7135**	**068H8005**
TDEBX 12.5	44	5/8 × 7/8	**068H7136**	**068H8006**	16 × 22	**068H7137**	**068H8007**
TDEBX 12.5	44	5/8 × 1 1/8	**068H7138**	**068H8008**	16 × 28	**068H7139**	**068H8009**
TDEBX 16	56	5/8 × 1 1/8	**068H7140**	**068H8010**	16 × 28	**068H7141**	**068H8011**
TDEBX 16	56	7/8 × 1 1/8	**068H7142**	**068H8012**	22 × 28	**068H7143**	**068H8013**
TDEBX 19	66.5	7/8 × 1 1/8	**068H7144**	**068H8014**	22 × 28	**068H7145**	**068H8015**
TDEBX 20 - 40 Balanced port							
TDEBX 20	70	7/8 × 1 1/8	**068H7146**	**068H8016**	22 × 28	**068H7147**	**068H8017**
TDEBX 26	91	7/8 × 1 3/8	**068H7148**	**068H8018**	22 × 35	**068H7149**	**068H8019**
TDEBX 30	105	7/8 × 1 3/8	**068H7150**	**068H8020**	22 × 35	**068H7151**	**068H8021**
TDEBX 30	105	1 1/8 × 1 3/8	**068H7152**	**068H8022**	28 × 35	**068H7153**	**068H8023**
TDEBX 40	140	1 1/8 × 1 3/8	**068H7154**	**068H8024**	28 × 35	**068H7155**	**068H8025**

[1] The rated capacity is based on:
-evaporating temperature t_e = 5°C
-liquid temperature t_l = 28°C
-condensing temperature t_c = 32°C

[2] Number of valves in industrial and multi pack: see Ordering

Ordering
Standard range - *continued*



Range AC = –10 → +15°C with MOP 120 psig/9 bar abs.
Static superheat SS = 4 K

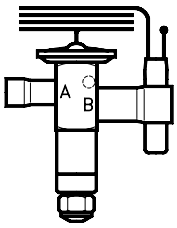
R22/R407C

Type and rated capacity $Q_{nom.}$ [1] TR	Rated capacity $Q_{nom.}$ [1] kW	Inch version Connection Solder ODF × ODF A × B in.	Code no. Multi pack [2]	Code no. Industrial pack [2]	mm version Connection Solder ODF × ODF A × B mm	Code no. Multi pack [2]	Code no. Industrial pack [2]
TDEX 3 - 7.5 Single port							
TDEX 3	10.5	3/8 × 5/8	**068H6100**	**068H4100**	10 × 16	**068H6106**	**068H4106**
TDEX 3	10.5	1/2 × 5/8	**068H6101**	**068H4101**	12 × 16	**068H6107**	**068H4107**
TDEX 4	14	1/2 × 7/8	**068H6102**	**068H4102**	12 × 22	**068H6108**	**068H4108**
TDEX 6	21	1/2 × 5/8	**068H6134**	**068H4134**	12 × 16	**068H6135**	**068H4135**
TDEX 6	21	1/2 × 7/8	**068H6103**	**068H4103**	12 × 22	**068H6109**	**068H4109**
TDEX 6	21	5/8 × 7/8	**068H6104**	**068H4104**	16 × 22	**068H6110**	**068H4110**
TDEX 7.5	26	5/8 × 7/8	**068H6105**	**068H4105**	16 × 22	**068H6111**	**068H4111**
TDEX 8 - 19 Single port							
TDEX 8	28	5/8 × 7/8	**068H6112**	**068H4112**	16 × 22	**068H6119**	**068H4119**
TDEX 11	38.5	5/8 × 7/8	**068H6113**	**068H4113**	16 × 22	**068H6120**	**068H4120**
TDEX 11	38.5	5/8 × 1 1/8	**068H6114**	**068H4114**	16 × 28	**068H6121**	**068H4121**
TDEX 12.5	44	5/8 × 7/8	**068H6115**	**068H4115**	16 × 22	**068H6122**	**068H4122**
TDEX 12.5	44	5/8 × 1 1/8	**068H6116**	**068H4116**	16 × 28	**068H6123**	**068H4123**
TDEX 16	56	5/8 × 1 1/8	**068H6136**	**068H4136**	16 × 28	**068H6137**	**068H4137**
TDEX 16	56	7/8 × 1 1/8	**068H6117**	**068H4117**	22 × 28	**068H6124**	**068H4124**
TDEX 19	66.5	7/8 × 1 1/8	**068H6118**	**068H4118**	22 × 28	**068H6125**	**068H4125**
TDEBX 8 - 19 Balanced port							
TDEBX 8	28	5/8 × 7/8	**068H7100**	**068H8026**	16 × 22	**068H7101**	**068H8027**
TDEBX 11	38.5	5/8 × 7/8	**068H7102**	**068H8028**	16 × 22	**068H7103**	**068H8029**
TDEBX 11	38.5	5/8 × 1 1/8	**068H7104**	**068H8030**	16 × 28	**068H7105**	**068H8031**
TDEBX 12.5	44	5/8 × 7/8	**068H7106**	**068H8032**	16 × 22	**068H7107**	**068H8033**
TDEBX 12.5	44	5/8 × 1 1/8	**068H7108**	**068H8034**	16 × 28	**068H7109**	**068H8035**
TDEBX 16	56	5/8 × 1 1/8	**068H7110**	**068H8036**	16 × 28	**068H7111**	**068H8037**
TDEBX 16	56	7/8 × 1 1/8	**068H7112**	**068H8038**	22 × 28	**068H7113**	**068H8039**
TDEBX 19	66.5	7/8 × 1 1/8	**068H7114**	**068H8040**	22 × 28	**068H7115**	**068H8041**
TDEBX 20 - 40 Balanced port							
TDEBX 20	70	7/8 × 1 1/8	**068H7116**	**068H8042**	22 × 28	**068H7117**	**068H8043**
TDEBX 26	91	7/8 × 1 3/8	**068H7118**	**068H8044**	22 × 35	**068H7119**	**068H8045**
TDEBX 30	105	7/8 × 1 3/8	**068H7120**	**068H8046**	22 × 35	**068H7121**	**068H8047**
TDEBX 30	105	1 1/8 × 1 3/8	**068H7122**	**068H8048**	28 × 35	**068H7123**	**068H8049**
TDEBX 40	140	1 1/8 × 1 3/8	**068H7124**	**068H8050**	28 × 35	**068H7125**	**068H8051**

[1] The rated capacity is based on:
-evaporating temperature t_e = 5°C
-liquid temperature t_l = 28°C
-condensing temperature t_c = 32°C

[2] Number of valves in industrial and multi pack: see Ordering

Ordering
Standard range - *continued*



Range N = –40 → +10°C
Static superheat SS = 4 K

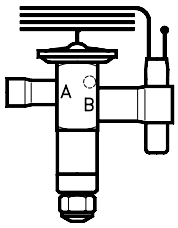
R22/R407C

Type and rated capacity $Q_{nom.}$ [1] TR	Rated capacity $Q_{nom.}$ [1] kW	Inch version: Connection Solder ODF × ODF A × B in.	Inch version: **Code no.** Multi pack [2]	Inch version: **Code no.** Industrial pack [2]	mm version: Connection Solder ODF × ODF A × B mm	mm version: **Code no.** Multi pack [2]	mm version: **Code no.** Industrial pack [2]
TDEX 3 - 7.5 Single port							
TDEX 3	10.5	3/8 × 5/8	**068H7050**	**068H5103**	10 × 16	**068H7051**	**068H8053**
TDEX 3	10.5	1/2 × 5/8	**068H7052**	**068H8054**	12 × 16	**068H7053**	**068H8055**
TDEX 4	14	1/2 × 7/8	**068H7054**	**068H8056**	12 × 22	**068H7055**	**068H8057**
TDEX 6	21	1/2 × 5/8	**068H7056**	**068H5100**	12 × 16	**068H7057**	**068H8059**
TDEX 6	21	1/2 × 7/8	**068H7058**	**068H8060**	12 × 22	**068H7059**	**068H8061**
TDEX 6	21	5/8 × 7/8	**068H7060**	**068H8062**	16 × 22	**068H7061**	**068H8063**
TDEX 7.5	26	5/8 × 7/8	**068H7062**	**068H5101**	16 × 22	**068H7063**	**068H8065**
TDEX 8 - 19 Single port							
TDEX 8	28	5/8 × 7/8	**068H8106**	**068H5128**	16 × 22	**068H8058**	**068H8067**
TDEX 11	38.5	5/8 × 7/8	**068H8108**	**068H8068**	16 × 22	**068H8109**	**068H8069**
TDEX 11	38.5	5/8 × 1 1/8	**068H8110**	**068H8070**	16 × 28	**068H8111**	**068H8071**
TDEX 12.5	44	5/8 × 7/8	**068H8112**	**068H5121**	16 × 22	**068H8113**	**068H8073**
TDEX 12.5	44	5/8 × 1 1/8	**068H8114**	**068H5122**	16 × 28	**068H8115**	**068H8075**
TDEX 16	56	5/8 × 1 1/8	**068H8116**	**068H5123**	16 × 28	**068H8117**	**068H8077**
TDEX 16	56	7/8 × 1 1/8	**068H8118**	**068H5127**	22 × 28	**068H8119**	**068H8079**
TDEX 19	66.5	7/8 × 1 1/8	**068H8120**	**068H5124**	22 × 28	**068H8121**	**068H8081**
TDEBX 8 - 19 Balanced port							
TDEBX 8	28	5/8 × 7/8	**068H7064**	**068H8082**	16 × 22	**068H7065**	**068H8083**
TDEBX 11	38.5	5/8 × 7/8	**068H7066**	**068H8084**	16 × 22	**068H7067**	**068H8085**
TDEBX 11	38.5	5/8 × 1 1/8	**068H7068**	**068H8086**	16 × 28	**068H7069**	**068H8087**
TDEBX 12.5	44	5/8 × 7/8	**068H7070**	**068H8088**	16 × 22	**068H7071**	**068H8089**
TDEBX 12.5	44	5/8 × 1 1/8	**068H7072**	**068H8090**	16 × 28	**068H7073**	**068H8091**
TDEBX 16	56	5/8 × 1 1/8	**068H7074**	**068H8092**	16 × 28	**068H7075**	**068H8093**
TDEBX 16	56	7/8 × 1 1/8	**068H7076**	**068H8094**	22 × 28	**068H7077**	**068H8095**
TDEBX 19	66.5	7/8 × 1 1/8	**068H7078**	**068H8096**	22 × 28	**068H7079**	**068H8097**
TDEBX 20 - 40 Balanced port							
TDEBX 20	70	7/8 × 1 1/8	**068H7080**	**068H8098**	22 × 28	**068H7081**	**068H8099**
TDEBX 26	91	7/8 × 1 3/8	**068H7082**	**068H8100**	22 × 35	**068H7083**	**068H8101**
TDEBX 30	105	7/8 × 1 3/8	**068H7084**	**068H8102**	22 × 35	**068H7085**	**068H8103**
TDEBX 30	105	1 1/8 × 1 3/8	**068H7086**	**068H8104**	28 × 35	**068H7087**	**068H8105**
TDEBX 40	140	1 1/8 × 1 3/8	**068H7088**	**068H8080**	28 × 35	**068H7089**	**068H8107**

[1] The rated capacity is based on:
-evaporating temperature t_e = 5°C
-liquid temperature t_l = 28°C
-condensing temperature t_c = 32°C

[2] Number of valves in industrial and multi pack: see Ordering

Ordering
Standard range - *continued*



Range K = –25 → +10°C with MOP 95 psig/7.5 bar abs.
Static superheat SS = 4 K

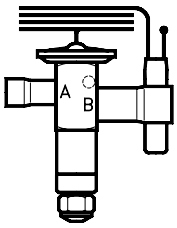
R407C

Type and rated capacity $Q_{nom.}$ [1] TR	Rated capacity $Q_{nom.}$ [1] kW	Inch version: Connection Solder ODF × ODF A × B in.	Inch version: **Code no.** Multi pack [2]	Inch version: **Code no.** Industrial pack [2]	mm version: Connection Solder ODF × ODF A × B mm	mm version: **Code no.** Multi pack [2]	mm version: **Code no.** Industrial pack [2]
TDEZ 3 - 7.5 Single port							
TDEZ 3	10.5	3/8 × 5/8	**068H7160**	**068H5150**	10 × 16	**068H7261**	**068H5156**
TDEZ 3	10.5	1/2 × 5/8	**068H7161**	**068H5151**	12 × 16	**068H7262**	**068H5157**
TDEZ 4	14	1/2 × 7/8	**068H7162**	**068H5152**	12 × 22	**068H7263**	**068H5158**
TDEZ 6	21	1/2 × 5/8	**068H7163**	**068H5184**	12 × 16	**068H7264**	**068H5185**
TDEZ 6	21	1/2 × 7/8	**068H7164**	**068H5153**	12 × 22	**068H7265**	**068H5159**
TDEZ 6	21	5/8 × 7/8	**068H7165**	**068H5154**	16 × 22	**068H7266**	**068H5160**
TDEZ 7.5	26	5/8 × 7/8	**068H7166**	**068H5155**	16 × 22	**068H7267**	**068H5161**
TDEZ 8 - 19 Single port							
TDEZ 8	28	5/8 × 7/8	**068H7167**	**068H5162**	16 × 22	**068H7268**	**068H5169**
TDEZ 11	38.5	5/8 × 7/8	**068H7168**	**068H5163**	16 × 22	**068H7269**	**068H5170**
TDEZ 11	38.5	5/8 × 1 1/8	**068H7169**	**068H5164**	16 × 28	**068H7270**	**068H5171**
TDEZ 12.5	44	5/8 × 7/8	**068H7170**	**068H5165**	16 × 22	**068H7271**	**068H5172**
TDEZ 12.5	44	5/8 × 1 1/8	**068H7171**	**068H5166**	16 × 28	**068H7272**	**068H5173**
TDEZ 16	56	5/8 × 1 1/8	**068H7172**	**068H5186**	16 × 28	**068H7273**	**068H5187**
TDEZ 16	56	7/8 × 1 1/8	**068H7173**	**068H5167**	22 × 28	**068H7274**	**068H5174**
TDEZ 19	66.5	7/8 × 1 1/8	**068H7174**	**068H5168**	22 × 28	**068H7275**	**068H5175**
TDEBZ 8 - 19 Balanced port							
TDEBZ 8	28	5/8 × 7/8	**068H7175**	**068H8122**	16 × 22	**068H7176**	**068H8123**
TDEBZ 11	38.5	5/8 × 7/8	**068H7177**	**068H8124**	16 × 22	**068H7178**	**068H8125**
TDEBZ 11	38.5	5/8 × 1 1/8	**068H7179**	**068H8126**	16 × 28	**068H7180**	**068H8127**
TDEBZ 12.5	44	5/8 × 7/8	**068H7181**	**068H8128**	16 × 22	**068H7182**	**068H8129**
TDEBZ 12.5	44	5/8 × 1 1/8	**068H7183**	**068H8130**	16 × 28	**068H7184**	**068H8131**
TDEBZ 16	56	5/8 × 1 1/8	**068H7185**	**068H8132**	16 × 28	**068H7186**	**068H8133**
TDEBZ 16	56	7/8 × 1 1/8	**068H7187**	**068H8134**	22 × 28	**068H7188**	**068H8135**
TDEBZ 19	66.5	7/8 × 1 1/8	**068H7189**	**068H8136**	22 × 28	**068H7190**	**068H8137**
TDEBZ 20 - 40 Balanced port							
TDEBZ 20	70	7/8 × 1 1/8	**068H7191**	**068H8138**	22 × 28	**068H7192**	**068H8139**
TDEBZ 26	91	7/8 × 1 3/8	**068H7193**	**068H8140**	22 × 35	**068H7194**	**068H8141**
TDEBZ 30	105	7/8 × 1 3/8	**068H7195**	**068H8142**	22 × 35	**068H7196**	**068H8143**
TDEBZ 30	105	1 1/8 × 1 3/8	**068H7197**	**068H8144**	28 × 35	**068H7198**	**068H8145**
TDEBZ 40	140	1 1/8 × 1 3/8	**068H7199**	**068H8146**	28 × 35	**068H7200**	**068H8147**

[1] The rated capacity is based on:
-evaporating temperature t_e = 5°C
-liquid temperature t_l = 28°C
-condensing temperature t_c = 32°C

[2] Number of valves in industrial and multi pack: see Ordering

Ordering
Standard range - *continued*



Range AC = –10 → +15°C with MOP 115 psig/9 bar abs.
Static superheat SS = 4 K

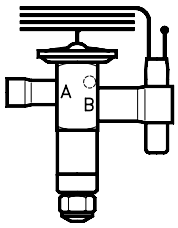
R407C

Type and rated capacity $Q_{nom.}$ [1] TR	Rated capacity $Q_{nom.}$ [1] kW	Inch version: Connection Solder ODF × ODF A × B in.	Inch version: **Code no.** Multi pack [2]	Inch version: **Code no.** Industrial pack [2]	mm version: Connection Solder ODF × ODF A × B mm	mm version: **Code no.** Multi pack [2]	mm version: **Code no.** Industrial pack [2]
TDEZ 3 - 7.5 Single port							
TDEZ 3	10.5	3/8 × 5/8	**068H7220**	**068H8148**	10 × 16	**068H7276**	**068H8149**
TDEZ 3	10.5	1/2 × 5/8	**068H7221**	**068H8150**	12 × 16	**068H7277**	**068H8151**
TDEZ 4	14	1/2 × 7/8	**068H7222**	**068H8152**	12 × 22	**068H7278**	**068H8153**
TDEZ 6	21	1/2 × 5/8	**068H7223**	**068H8154**	12 × 16	**068H7279**	**068H8155**
TDEZ 6	21	1/2 × 7/8	**068H7224**	**068H8156**	12 × 22	**068H7280**	**068H8157**
TDEZ 6	21	5/8 × 7/8	**068H7225**	**068H8158**	16 × 22	**068H7281**	**068H8159**
TDEZ 7.5	26	5/8 × 7/8	**068H7226**	**068H8160**	16 × 22	**068H7282**	**068H8161**
TDEZ 8 - 19 Single port							
TDEZ 8	28	5/8 × 7/8	**068H7227**	**068H8162**	16 × 22	**068H7283**	**068H8163**
TDEZ 11	38.5	5/8 × 7/8	**068H7228**	**068H8164**	16 × 22	**068H7284**	**068H8165**
TDEZ 11	38.5	5/8 × 1 1/8	**068H7229**	**068H8166**	16 × 28	**068H7285**	**068H8167**
TDEZ 12.5	44	5/8 × 7/8	**068H7230**	**068H8168**	16 × 22	**068H7286**	**068H8169**
TDEZ 12.5	44	5/8 × 1 1/8	**068H7231**	**068H8170**	16 × 28	**068H7287**	**068H8171**
TDEZ 16	56	5/8 × 1 1/8	**068H7232**	**068H8172**	16 × 28	**068H7288**	**068H8173**
TDEZ 16	56	7/8 × 1 1/8	**068H7233**	**068H8174**	22 × 28	**068H7289**	**068H8175**
TDEZ 19	66.5	7/8 × 1 1/8	**068H7234**	**068H8176**	22 × 28	**068H7290**	**068H8177**
TDEBZ 8 - 19 Balanced port							
TDEBZ 8	28	5/8 × 7/8	**068H7235**	**068H8178**	16 × 22	**068H7236**	**068H8179**
TDEBZ 11	38.5	5/8 × 7/8	**068H7237**	**068H8180**	16 × 22	**068H7238**	**068H8181**
TDEBZ 11	38.5	5/8 × 1 1/8	**068H7239**	**068H8182**	16 × 28	**068H7240**	**068H8183**
TDEBZ 12.5	44	5/8 × 7/8	**068H7241**	**068H8184**	16 × 22	**068H7242**	**068H8185**
TDEBZ 12.5	44	5/8 × 1 1/8	**068H7243**	**068H8186**	16 × 28	**068H7244**	**068H8187**
TDEBZ 16	56	5/8 × 1 1/8	**068H7245**	**068H8188**	16 × 28	**068H7246**	**068H8189**
TDEBZ 16	56	7/8 × 1 1/8	**068H7247**	**068H8190**	22 × 28	**068H7248**	**068H8191**
TDEBZ 19	66.5	7/8 × 1 1/8	**068H7249**	**068H8192**	22 × 28	**068H7250**	**068H8193**
TDEBZ 20 - 40 Balanced port							
TDEBZ 20	70	7/8 × 1 1/8	**068H7251**	**068H8194**	22 × 28	**068H7252**	**068H8195**
TDEBZ 26	91	7/8 × 1 3/8	**068H7253**	**068H8196**	22 × 35	**068H7254**	**068H8197**
TDEBZ 30	105	7/8 × 1 3/8	**068H7255**	**068H8198**	22 × 35	**068H7256**	**068H8199**
TDEBZ 30	105	1 1/8 × 1 3/8	**068H7257**	**068H8200**	28 × 35	**068H7258**	**068H8201**
TDEBZ 40	140	1 1/8 × 1 3/8	**068H7259**	**068H8202**	28 × 35	**068H7260**	**068H8203**

[1] The rated capacity is based on:
-evaporating temperature t_e = 5°C
-liquid temperature t_l = 28°C
-condensing temperature t_c = 32°C

[2] Number of valves in industrial and multi pack: see Ordering

Ordering
Standard range - *continued*



Range N = –40 → +10°C
Static superheat SS = 4 K

R407C

Type and rated capacity $Q_{nom.}$ [1] TR	Rated capacity $Q_{nom.}$ [1] kW	Inch version: Connection Solder ODF × ODF A × B in.	Inch version: **Code no.** Multi pack [2]	Inch version: **Code no.** Industrial pack [2]	mm version: Connection Solder ODF × ODF A × B mm	mm version: **Code no.** Multi pack [2]	mm version: **Code no.** Industrial pack [2]
TDEZ 3 - 7.5 Single port							
TDEZ 3	10.5	3/8 × 5/8	**068H7000**	**068H8204**	10 × 16	**068H7001**	**068H8205**
TDEZ 3	10.5	1/2 × 5/8	**068H7002**	**068H8206**	12 × 16	**068H7003**	**068H8207**
TDEZ 4	14	1/2 × 7/8	**068H7004**	**068H8208**	12 × 22	**068H7005**	**068H8209**
TDEZ 6	21	1/2 × 5/8	**068H7006**	**068H8210**	12 × 16	**068H7007**	**068H8211**
TDEZ 6	21	1/2 × 7/8	**068H7008**	**068H8212**	12 × 22	**068H7009**	**068H8213**
TDEZ 6	21	5/8 × 7/8	**068H7010**	**068H8214**	16 × 22	**068H7011**	**068H8215**
TDEZ 7.5	26	5/8 × 7/8	**068H7012**	**068H8216**	16 × 22	**068H7013**	**068H8217**
TDEZ 8 - 19 Single port							
TDEZ 8	28	5/8 × 7/8	**068H8260**	**068H8218**	16 × 22	**068H8261**	**068H8219**
TDEZ 11	38.5	5/8 × 7/8	**068H8262**	**068H8220**	16 × 22	**068H8263**	**068H8221**
TDEZ 11	38.5	5/8 × 1 1/8	**068H8264**	**068H8222**	16 × 28	**068H8265**	**068H8223**
TDEZ 12.5	44	5/8 × 7/8	**068H8266**	**068H8224**	16 × 22	**068H8267**	**068H8225**
TDEZ 12.5	44	5/8 × 1 1/8	**068H8268**	**068H8226**	16 × 28	**068H8269**	**068H8227**
TDEZ 16	56	5/8 × 1 1/8	**068H8270**	**068H8228**	16 × 28	**068H8271**	**068H8229**
TDEZ 16	56	7/8 × 1 1/8	**068H8272**	**068H8230**	22 × 28	**068H8273**	**068H8231**
TDEZ 19	66.5	7/8 × 1 1/8	**068H8274**	**068H8232**	22 × 28	**068H8275**	**068H8233**
TDEBZ 8 - 19 Balanced port							
TDEBZ 8	28	5/8 × 7/8	**068H7014**	**068H8234**	16 × 22	**068H7015**	**068H8235**
TDEBZ 11	38.5	5/8 × 7/8	**068H7016**	**068H8236**	16 × 22	**068H7017**	**068H8237**
TDEBZ 11	38.5	5/8 × 1 1/8	**068H7018**	**068H8238**	16 × 28	**068H7019**	**068H8239**
TDEBZ 12.5	44	5/8 × 7/8	**068H7020**	**068H8240**	16 × 22	**068H7021**	**068H8241**
TDEBZ 12.5	44	5/8 × 1 1/8	**068H7022**	**068H8242**	16 × 28	**068H7023**	**068H8243**
TDEBZ 16	56	5/8 × 1 1/8	**068H7024**	**068H8244**	16 × 28	**068H7025**	**068H8245**
TDEBZ 16	56	7/8 × 1 1/8	**068H7026**	**068H8246**	22 × 28	**068H7027**	**068H8247**
TDEBZ 19	66.5	7/8 × 1 1/8	**068H7028**	**068H8248**	22 × 28	**068H7029**	**068H8249**
TDEBZ 20 - 40 Balanced port							
TDEBZ 20	70	7/8 × 1 1/8	**068H7030**	**068H8250**	22 × 28	**068H7031**	**068H8251**
TDEBZ 26	91	7/8 × 1 3/8	**068H7032**	**068H8252**	22 × 35	**068H7033**	**068H8253**
TDEBZ 30	105	7/8 × 1 3/8	**068H7034**	**068H8254**	22 × 35	**068H7035**	**068H8255**
TDEBZ 30	105	1 1/8 × 1 3/8	**068H7036**	**068H8256**	28 × 35	**068H7037**	**068H8257**
TDEBZ 40	140	1 1/8 × 1 3/8	**068H7038**	**068H8258**	28 × 35	**068H7039**	**068H8259**

[1] The rated capacity is based on:
-evaporating temperature t_e = 5°C
-liquid temperature t_l = 28°C
-condensing temperature t_c = 32°C

[2] Number of valves in industrial and multi pack: see Ordering

Capacity

R22

Capacity in kW

Type and rated capacity Q_{nom} TR	Orifice no.	Pressure drop across the valve Δp bar								Pressure drop across the valve Δp bar							
		2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
		Evaporating temperature +15°C								**Evaporating temperature +10°C**							
TDEX 3	10	7.7	10.2	11.9	13.0	13.8	14.4	14.8	15.0	7.1	9.5	11.0	12.0	12.7	13.3	13.6	13.9
TDEX 4	20	10.3	13.8	16.0	17.5	18.6	19.3	19.9	20.2	9.6	12.8	14.8	16.1	17.1	17.8	18.3	18.6
TDEX 6	30	15.4	20.5	23.8	26.1	27.6	28.8	29.6	30.1	14.3	19.0	22.0	24.1	25.6	26.6	27.3	27.7
TDEX 7.5	40	19.3	25.7	29.8	32.6	34.6	36.0	36.8	37.6	17.9	23.8	27.4	30.0	31.8	33.1	33.9	34.1
TDEX 8	10	19.6	26.2	30.3	33.2	35.3	36.7	37.8	38.4	18.6	24.8	28.7	31.4	33.3	34.6	35.5	36.1
TDEX 11	20	27.3	36.5	42.2	46.3	49.2	51.1	52.5	53.5	25.8	34.3	39.6	43.3	46.0	47.9	49.1	49.9
TDEX 12.5	30	31.4	41.9	48.6	53.1	56.4	58.7	60.4	61.4	29.6	39.3	45.5	49.8	52.7	54.8	56.2	57.1
TDEX 16	40	40.5	53.9	62.5	68.4	72.8	75.4	77.5	78.7	38.0	50.4	58.3	63.7	67.5	69.9	72.0	73.1
TDEX 19	50	48.4	64.5	74.4	81.6	86.5	90.1	92.2	93.9	45.3	60.2	69.6	75.9	80.3	83.5	85.6	86.0
TDEX 20	10	50.5	67.3	78.0	85.5	90.5	94.4	97.0	98.6	47.4	63.1	72.9	79.7	84.7	88.0	90.3	91.8
TDEX 26	20	65.8	87.7	102	111	118	123	126	128	61.7	82.2	94.8	104	110	114	117	119
TDEX 30	30	76.8	102	118	130	137	143	147	149	71.7	95.2	110	120	127	132	136	138
TDEX 40	40	102	136	158	172	182	189	194	197	95.6	127	146	159	169	175	180	182
		Evaporating temperature +5°C								**Evaporating temperature 0°C**							
TDEX 3	10	6.6	8.7	10.1	11.1	11.7	12.1	12.5	12.7	6.0	8.0	9.2	10.0	10.6	11.0	11.3	11.5
TDEX 4	20	8.9	11.7	13.6	14.8	15.7	16.3	16.7	17.0	8.1	10.7	12.3	13.5	14.2	14.8	15.2	15.4
TDEX 6	30	13.2	17.5	20.2	22.1	23.4	24.3	25.0	25.3	12.1	16.0	18.4	20.1	21.2	22.0	22.6	22.9
TDEX 7.5	40	16.4	21.8	25.1	27.4	29.0	30.1	30.9	31.4	15.0	19.8	22.8	24.8	26.2	27.2	27.9	28.3
TDEX 8	10	17.6	23.4	27.0	29.5	31.2	32.4	33.3	33.9	16.6	22.0	25.3	27.6	29.2	30.4	31.1	31.6
TDEX 11	20	24.2	32.1	37.0	40.4	42.8	44.5	45.6	46.3	22.6	29.9	34.3	37.4	39.6	41.1	42.2	42.8
TDEX 12.5	30	27.7	36.7	42.3	46.3	48.9	50.8	52.1	53.0	25.8	34.1	39.2	42.7	45.1	46.9	48.0	48.8
TDEX 16	40	35.4	47.0	54.1	59.0	62.4	64.8	66.5	67.5	32.9	43.4	49.9	54.3	57.4	59.5	61.3	61.9
TDEX 19	50	42.2	55.9	64.3	69.9	74.2	77.0	79.0	80.1	39.1	51.5	59.2	64.7	68.1	70.7	72.3	73.3
TDEX 20	10	44.4	58.8	67.8	74.0	78.4	81.3	83.6	85.0	41.3	54.6	62.7	68.4	72.3	75.2	77.0	78.1
TDEX 26	20	57.6	76.4	87.8	95.9	101.7	105.5	108.2	110.4	53.4	70.5	80.9	88.3	93.3	96.9	99.3	101
TDEX 30	30	66.6	88.1	102	111	118	121	125	127	61.5	81.0	93.2	102	107	111	114	116
TDEX 40	40	88.7	118	135	147	155	161	165	168	81.7	108	124	135	142	147	151	153
		Evaporating temperature –5°C								**Evaporating temperature –10°C**							
TDEX 3	10	5.5	7.2	8.3	9.1	9.6	9.9	10.2	10.3	5.0	6.5	7.5	8.1	8.5	8.9	9.1	9.2
TDEX 4	20	7.4	9.7	11.2	12.1	12.8	13.3	13.6	13.8	6.6	8.7	10.0	10.8	11.4	11.9	12.1	12.3
TDEX 6	30	11.0	14.5	16.6	18.1	19.1	19.8	20.4	20.6	10.0	13.0	14.9	16.2	17.1	17.7	18.1	18.4
TDEX 7.5	40	13.6	17.9	20.5	22.4	23.5	24.4	25.0	25.3	12.2	16.0	18.3	19.9	21.0	21.7	22.2	22.5
TDEX 8	10	15.7	20.6	23.7	25.8	27.2	28.3	29.0	29.4	14.7	19.3	22.1	24.0	25.3	26.3	26.9	27.3
TDEX 11	20	21.0	27.7	31.8	34.6	36.5	37.9	38.8	39.3	19.5	25.6	29.2	31.8	33.5	34.7	35.5	36.0
TDEX 12.5	30	23.9	31.5	36.1	39.3	41.6	43.0	44.1	44.7	22.1	29.0	33.1	36.0	37.9	39.3	40.2	40.7
TDEX 16	40	30.3	39.9	45.7	49.7	52.4	54.3	55.6	56.4	27.8	36.4	41.6	45.2	47.6	49.3	50.4	51.1
TDEX 19	50	36.0	47.3	54.1	58.8	62.1	64.3	65.0	66.7	32.9	43.0	49.3	53.4	56.5	58.2	59.5	60.3
TDEX 20	10	38.2	50.4	57.8	62.9	66.4	68.8	70.5	71.5	35.3	46.3	52.9	57.5	60.6	62.8	64.4	65.1
TDEX 26	20	49.2	64.8	74.4	80.7	85.2	88.5	90.4	91.8	45.2	59.2	67.7	73.4	77.4	80.2	82.0	83.1
TDEX 30	30	56.4	74.2	85.1	92.5	97.5	101	103	105	51.4	67.3	77.0	83.5	88.1	91.2	93.2	94.5
TDEX 40	40	74.8	98.3	112	122	129	133	137	138	68.3	89.3	102	110	116	120	123	124
		Evaporating temperature –15°C								**Evaporating temperature –20°C**							
TDEX 3	10	4.4	5.8	6.6	7.2	7.6	7.8	8.0	8.1	3.9	5.1	5.8	6.3	6.7	6.9	7.0	7.1
TDEX 4	20	5.9	7.8	8.9	9.6	10.1	10.5	10.7	10.9	5.3	6.9	7.8	8.5	8.9	9.2	9.4	9.5
TDEX 6	30	8.9	11.6	13.3	14.4	15.1	15.7	16.0	16.2	7.9	10.3	11.7	12.6	13.3	13.7	14.0	14.2
TDEX 7.5	40	10.9	14.2	16.3	17.6	18.5	19.2	19.6	19.9	9.7	12.6	14.3	15.5	16.3	16.8	17.2	17.4
TDEX 8	10	13.8	18.0	20.6	22.3	23.5	24.3	24.9	25.2	12.9	16.8	19.2	20.7	21.8	22.5	23.0	23.3
TDEX 11	20	18.0	23.5	26.8	29.1	30.6	31.7	32.4	32.7	16.6	21.6	24.6	26.5	27.9	28.8	29.5	29.9
TDEX 12.5	30	20.3	26.5	30.2	32.8	34.5	35.7	36.5	36.9	18.6	24.2	27.5	29.7	31.3	32.3	33.0	33.4
TDEX 16	40	25.4	33.1	37.8	40.8	43.0	44.5	45.4	46.0	23.0	29.9	34.0	36.7	38.6	39.9	40.7	41.1
TDEX 19	50	29.9	39.0	44.6	48.2	50.7	52.4	53.6	54.2	27.1	35.3	40.0	43.3	45.5	47.2	47.9	48.5
TDEX 20	10	32.4	42.3	48.3	52.3	55.1	57.0	58.3	59.0	29.7	38.5	43.9	47.5	49.9	51.6	52.7	53.3
TDEX 26	20	41.2	53.7	61.3	66.2	69.9	72.3	74.0	74.8	37.4	48.6	55.3	59.9	62.8	64.9	66.2	67.0
TDEX 30	30	46.6	60.8	69.4	75.1	78.9	81.7	83.5	85.0	42.1	54.6	62.0	67.2	70.5	72.9	74.4	75.2
TDEX 40	40	61.8	80.4	91.6	99.1	104	108	110	111	55.5	72.0	81.9	88.4	92.8	95.8	97.7	98.8

Capacity

Capacity in kW

R22

Type and rated capacity Q_{nom} TR	Orifice no.	Pressure drop across the valve Δp bar								Pressure drop across the valve Δp bar							
		2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
Evaporating temperature –25°C										**Evaporating temperature –30°C**							
TDEX 3	10	3.5	4.5	5.1	5.5	5.8	6.0	6.1	6.2	3.0	3.9	4.4	4.8	5.0	5.2	5.3	5.3
TDEX 4	20	4.6	6.0	6.8	7.4	7.7	8.0	8.2	8.3	4.0	5.2	5.9	6.4	6.7	6.9	7.0	7.1
TDEX 6	30	7.0	9.0	10.2	11.0	11.6	12.0	12.2	12.3	6.1	7.8	8.9	9.6	10.0	10.3	10.5	10.6
TDEX 7.5	40	8.5	11.0	12.5	13.5	14.1	14.6	14.9	15.1	7.4	9.5	10.7	11.6	12.2	12.6	12.8	13.0
TDEX 8	10	12.1	15.7	17.8	19.2	20.2	20.8	21.2	21.5	11.3	14.6	16.5	17.8	18.7	19.2	19.6	19.8
TDEX 11	20	15.2	19.7	22.4	24.2	25.4	26.2	26.7	27.0	14.0	18.0	20.3	21.9	23.0	23.7	24.1	24.4
TDEX 12.5	30	17.0	22.0	24.9	26.9	28.2	29.1	29.3	30.1	15.4	19.9	22.5	24.2	25.4	26.3	26.7	27.0
TDEX 16	40	20.8	26.9	30.5	32.9	34.5	35.6	36.3	36.7	18.7	24.0	27.2	29.3	30.7	31.6	32.3	32.6
TDEX 19	50	24.4	31.6	35.8	38.7	49.5	41.8	42.6	43.1	21.9	28.2	31.9	34.4	36.0	37.1	37.8	38.1
TDEX 20	10	27.0	35.0	39.7	42.9	45.1	46.5	47.4	47.8	24.6	31.7	35.8	38.6	40.5	41.8	42.6	43.0
TDEX 26	20	33.7	43.6	49.5	53.4	56.1	57.9	59.1	59.7	30.3	39.1	44.2	47.6	49.9	51.4	52.4	52.9
TDEX 30	30	37.7	48.7	55.3	59.6	62.6	64.6	65.8	66.6	33.6	43.3	49.0	52.7	55.2	56.9	58.0	58.6
TDEX 40	40	49.7	64.1	72.7	78.3	82.2	84.7	86.4	87.3	44.1	56.7	64.1	69.0	72.3	74.4	75.9	76.6
Evaporating temperature –35°C										**Evaporating temperature –40°C**							
TDEX 3	10	2.6	3.4	3.8	4.1	4.3	4.4	4.5	4.6	2.3	2.9	3.2	3.5	3.6	3.8	3.8	3.9
TDEX 4	20	3.5	4.5	5.1	5.5	5.7	5.9	6.0	6.1	3.0	3.8	4.3	4.6	4.9	5.0	5.1	5.1
TDEX 6	30	5.3	6.7	7.6	8.2	8.6	8.8	9.0	9.1	4.5	5.8	6.5	7.0	7.3	7.5	7.6	7.7
TDEX 7.5	40	6.4	8.2	9.3	10.0	10.4	10.8	11.0	11.1	5.5	7.0	7.9	8.5	8.9	9.1	9.3	9.4
TDEX 8	10	10.6	13.5	15.3	16.5	17.2	17.8	18.1	18.3	9.9	12.6	14.2	15.3	16.0	16.4	16.7	16.9
TDEX 11	20	12.8	16.4	18.5	19.9	20.8	21.4	21.8	22.0	11.7	14.9	16.8	18.0	18.8	19.4	19.7	19.9
TDEX 12.5	30	14.0	18.0	20.3	21.8	22.8	25.5	24.0	24.2	12.7	16.2	18.3	19.6	20.5	21.1	21.4	21.6
TDEX 16	40	16.7	21.4	24.2	26.0	27.2	28.0	28.5	28.8	14.9	19.0	21.4	23.0	24.0	24.7	25.1	25.4
TDEX 19	50	19.6	25.1	28.3	30.4	31.8	32.8	33.3	33.6	17.5	22.2	25.0	26.8	28.1	28.8	29.3	29.6
TDEX 20	10	22.3	28.6	32.3	34.7	36.4	37.5	38.1	38.5	20.2	25.8	29.1	31.2	32.6	33.6	34.1	34.4
TDEX 26	20	27.1	34.8	39.3	42.3	44.2	45.5	46.3	46.8	24.2	30.9	34.9	37.4	39.1	40.2	40.9	41.2
TDEX 30	30	29.8	38.2	43.1	46.4	48.5	49.9	50.8	51.3	26.3	33.6	37.8	40.6	42.4	43.6	44.4	44.7
TDEX 40	40	39.0	50.0	56.4	60.5	63.3	65.2	66.4	66.9	34.3	43.8	49.2	52.8	55.2	56.7	57.7	58.1

Correction for subcooling Δt_{sub}

The evaporator capacity used must be corrected if the subcooling deviates from 4 K.
The corrected capacity can be obtained by dividing the required evaporator capacity by the correction factor given across, and then selecting from the tables.

Note: Flash gas can form if subcooling is too low.

Δt_{sub}	4 K	10 K	15 K	20 K	25 K	30 K
Correction factor	1.00	1.07	1.13	1.19	1.25	1.32

Capacity

R407C

Capacity in kW

Type and rated capacity Q_{nom} TR	Orifice no.	Pressure drop across the valve Δp bar								Pressure drop across the valve Δp bar							
		2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
		Evaporating temperature +15°C								**Evaporating temperature +10°C**							
TDEZ 3	10	8.0	10.5	12.1	13.1	13.7	14.1	14.3	14.3	7.4	9.8	11.2	12.1	12.7	13.0	13.2	13.2
TDEZ 4	20	10.8	14.2	16.3	17.6	18.5	19.0	19.2	19.3	10.0	13.2	15.1	16.3	17.1	17.5	17.8	17.8
TDEZ 6	30	16.1	21.2	24.3	26.2	27.5	28.3	28.6	28.7	15.0	19.7	22.5	24.3	25.4	26.1	26.4	26.4
TDEZ 7.5	40	20.1	26.5	30.4	32.8	34.4	35.2	35.7	35.8	18.7	24.5	28.0	30.3	31.6	32.5	32.8	32.9
TDEZ 8	10	20.4	27.0	30.9	33.5	35.1	36.1	36.5	36.6	19.4	25.6	29.3	31.6	33.1	34.0	34.4	34.5
TDEZ 11	20	28.5	37.6	43.1	46.7	48.8	50.2	50.8	50.9	26.9	35.4	40.5	43.7	45.8	47.0	47.6	47.6
TDEZ 12.5	30	32.8	43.2	49.6	53.5	56.1	57.6	58.4	58.5	30.9	40.6	46.4	50.1	52.4	53.9	54.5	54.6
TDEZ 16	40	42.2	55.6	63.6	69.0	72.1	74.0	74.9	75.0	39.7	52.1	59.4	64.2	66.9	68.9	69.6	69.8
TDEZ 19	50	50.5	66.6	76.0	82.1	85.7	88.1	89.2	89.2	47.3	62.1	70.7	76.5	79.9	81.9	82.8	82.8
TDEZ 20	10	52.6	69.5	79.6	86.2	90.2	92.6	93.8	93.9	49.5	65.1	74.4	80.5	84.2	86.4	87.5	87.7
TDEZ 26	20	68.7	90.4	104	112	117	121	122	122	64.5	84.6	96.7	104	109	112	113	114
TDEZ 30	30	80.1	105	121	130	137	140	142	142	74.9	98.3	112	121	127	130	131	131
TDEZ 40	40	107	140	160	173	181	186	188	187	99.8	131	149	161	168	172	174	174
		Evaporating temperature +5°C								**Evaporating temperature 0°C**							
TDEZ 3	10	6.9	9.0	10.3	11.1	11.6	11.9	12.1	12.1	6.3	8.2	9.4	10.1	10.5	10.8	10.9	10.9
TDEZ 4	20	9.2	12.1	13.8	14.9	15.6	16.0	16.2	16.2	8.5	11.1	12.6	13.5	14.2	14.5	14.7	14.7
TDEZ 6	30	13.8	18.1	20.6	22.3	23.2	23.9	24.1	24.1	12.7	16.5	18.8	20.2	21.1	21.6	21.9	21.8
TDEZ 7.5	40	17.2	22.5	25.6	27.6	28.8	29.5	30.0	29.9	15.6	20.4	23.2	24.9	26.1	26.7	26.9	27.1
TDEZ 8	10	18.4	24.1	27.5	29.7	31.1	31.9	32.3	32.3	17.4	22.7	25.8	27.8	29.0	29.8	30.1	30.1
TDEZ 11	20	25.3	33.1	37.8	40.7	42.6	43.7	44.1	44.2	23.6	30.8	35.0	37.7	39.4	40.3	40.7	40.7
TDEZ 12.5	30	28.9	37.9	43.2	46.5	48.7	49.9	50.5	50.5	26.9	35.1	39.9	42.9	44.9	46.0	46.4	46.4
TDEZ 16	40	37.0	48.4	55.2	59.4	62.3	63.6	64.3	64.3	34.3	44.6	50.8	54.6	56.9	58.3	58.9	58.8
TDEZ 19	50	44.0	57.6	65.8	70.6	73.8	75.3	76.3	76.2	40.8	53.1	60.3	64.8	67.5	69.1	69.8	69.7
TDEZ 20	10	46.3	60.7	69.2	74.6	77.9	80.0	80.9	81.0	43.1	56.2	64.0	68.8	71.7	73.6	74.3	74.4
TDEZ 26	20	60.1	78.8	89.7	96.7	101	104	105	105	55.7	72.8	82.6	88.8	92.7	94.9	95.3	95.8
TDEZ 30	30	69.6	90.9	104	112	117	120	121	121	64.2	83.5	94.8	102	107	109	110	110
TDEZ 40	40	92.6	121	138	148	154	158	159	159	85.2	111	126	135	141	144	145	145
		Evaporating temperature –5°C								**Evaporating temperature –10°C**							
TDEZ 3	10	5.7	7.5	8.5	9.1	9.5	9.7	9.8	9.8	5.2	6.7	7.6	8.1	8.4	8.6	8.7	8.7
TDEZ 4	20	7.7	10.0	11.3	12.2	12.7	13.0	13.1	13.1	6.9	8.9	10.1	10.8	11.3	11.5	11.6	11.6
TDEZ 6	30	11.5	14.9	16.9	18.2	19.0	19.4	19.6	19.6	10.3	13.4	15.1	16.2	16.9	17.3	17.4	17.3
TDEZ 7.5	40	14.2	18.4	20.9	22.4	23.3	23.8	24.1	24.0	12.7	16.4	18.6	19.9	20.7	21.1	21.3	21.3
TDEZ 8	10	16.3	21.2	24.1	25.9	27.0	27.7	27.9	27.9	15.3	19.8	22.4	24.1	25.1	25.6	25.8	25.8
TDEZ 11	20	21.9	28.5	32.3	34.7	36.2	37.0	37.4	37.3	20.3	26.3	29.7	31.8	33.1	33.8	34.1	34.1
TDEZ 12.5	30	24.9	32.4	36.7	39.5	41.1	42.0	42.4	42.4	23.0	29.7	33.6	36.1	37.4	38.3	38.6	38.5
TDEZ 16	40	31.6	41.0	46.4	49.8	51.9	53.1	53.5	53.5	28.9	37.4	42.2	45.2	47.0	47.9	48.3	48.2
TDEZ 19	50	37.5	48.6	55.0	59.0	61.4	62.8	63.3	63.2	34.2	44.2	49.9	53.4	55.5	56.6	57.0	56.9
TDEZ 20	10	39.9	51.8	58.7	63.1	65.9	67.3	68.0	67.9	36.7	47.5	53.7	57.5	59.9	61.2	61.7	61.5
TDEZ 26	20	51.3	66.6	75.5	81.0	84.4	86.3	87.1	87.0	47.0	60.7	68.4	73.4	76.3	78.0	78.7	78.5
TDEZ 30	30	58.8	76.1	86.4	92.7	96.0	98.7	99.5	99.4	53.4	68.9	78.0	83.5	86.8	88.6	89.3	89.0
TDEZ 40	40	77.9	101	114	122	127	130	131	131	70.8	91.4	103	110	115	117	118	117
		Evaporating temperature –15°C								**Evaporating temperature –20°C**							
TDEZ 3	10	4.6	5.9	6.7	7.2	7.4	7.6	7.7	7.6	4.1	5.2	5.9	6.3	6.5	6.6	6.7	6.7
TDEZ 4	20	6.2	7.9	8.9	9.6	9.9	10.2	10.2	10.2	5.4	7.0	7.8	8.4	8.7	8.9	8.9	8.9
TDEZ 6	30	9.2	11.9	13.4	14.3	14.9	15.2	15.3	15.2	8.1	10.4	11.7	12.5	13.0	13.2	13.3	13.3
TDEZ 7.5	40	11.3	14.5	16.4	17.5	18.2	18.6	18.7	18.6	10.0	12.8	14.3	15.3	15.9	16.2	16.3	16.2
TDEZ 8	10	14.3	18.5	20.8	22.3	23.2	23.6	23.8	23.8	13.4	17.1	19.3	20.6	21.4	21.8	21.9	21.8
TDEZ 11	20	18.7	24.1	27.1	29.0	30.1	30.7	31.0	30.9	17.1	22.0	24.7	26.3	27.3	27.8	28.0	27.9
TDEZ 12.5	30	21.1	27.1	30.5	32.7	33.9	34.6	34.9	34.8	19.2	24.6	27.6	29.5	30.6	31.2	31.4	31.3
TDEZ 16	40	26.3	33.8	38.1	40.6	42.2	43.0	43.3	43.2	23.8	30.4	34.1	36.4	37.7	38.4	38.6	38.5
TDEZ 19	50	31.1	39.9	44.9	47.9	49.7	50.7	51.0	50.8	28.0	35.8	40.2	42.8	44.4	45.2	45.4	45.2
TDEZ 20	10	33.6	43.3	48.8	52.2	54.2	55.3	55.7	55.5	30.6	39.3	44.1	47.1	48.8	49.7	50.0	49.8
TDEZ 26	20	42.7	54.9	61.7	66.1	68.7	70.0	70.5	70.3	38.6	49.4	55.6	59.2	61.3	62.5	62.9	62.6
TDEZ 30	30	48.3	62.3	69.9	74.7	77.6	79.1	79.6	79.3	43.3	55.5	62.4	66.4	68.8	70.1	70.5	70.1
TDEZ 40	40	64.0	82.1	92.3	98.5	102	104	105	104	57.3	73.1	82.1	87.4	90.5	92.1	92.5	92.1

Capacity

R407C

Capacity in kW

Type and rated capacity Q_{nom} TR	Orifice no.	Pressure drop across the valve Δp bar								Pressure drop across the valve Δp bar							
		2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
Evaporating temperature –25°C										**Evaporating temperature –30°C**							
TDEZ 3	10	3.6	4.5	5.1	5.4	5.6	5.7	5.8	5.7	3.1	3.9	4.4	4.7	4.8	4.9	4.9	4.9
TDEZ 4	20	4.8	6.1	6.8	7.3	7.5	7.6	7.7	7.6	4.1	5.2	5.9	6.2	6.4	6.5	6.6	6.5
TDEZ 6	30	7.1	9.1	10.2	10.9	11.2	11.4	11.5	11.4	6.2	7.9	8.8	9.3	9.6	9.8	9.8	9.8
TDEZ 7.5	40	8.7	11.1	12.4	13.2	13.7	14.0	14.0	13.9	7.5	9.6	10.7	11.4	11.7	11.9	12.0	11.9
TDEZ 8	10	12.5	15.9	17.8	19.0	19.7	20.0	20.1	20.0	11.6	14.7	16.5	17.5	18.1	18.4	18.4	18.3
TDEZ 11	20	15.7	20.0	22.4	23.8	24.7	25.1	25.2	25.1	14.3	18.1	20.3	21.5	22.2	22.6	22.7	22.5
TDEZ 12.5	30	17.5	22.3	24.9	26.5	27.5	27.9	28.1	27.9	15.8	20.1	22.4	23.8	24.6	25.0	25.0	24.9
TDEZ 16	40	21.4	27.2	30.4	32.4	33.5	34.1	34.2	34.0	19.1	24.2	27.0	28.7	29.6	30.1	30.2	30.0
TDEZ 19	50	25.1	32.0	35.7	38.0	39.3	40.0	40.2	39.9	22.4	28.4	31.7	33.6	34.7	35.2	35.3	35.1
TDEZ 20	10	27.8	35.5	39.7	42.3	43.8	44.6	44.8	44.6	25.1	31.9	35.7	37.9	39.2	39.8	39.9	39.7
TDEZ 26	20	34.7	44.2	49.5	52.6	54.5	55.4	55.7	55.4	31.0	39.3	43.9	46.6	48.2	48.8	49.1	48.7
TDEZ 30	30	38.6	49.3	55.2	58.7	60.7	61.7	62.0	61.6	34.3	43.5	48.5	51.5	53.2	54.0	54.2	53.8
TDEZ 40	40	51.0	64.9	72.4	77.0	79.6	80.9	81.2	80.8	45.0	57.0	63.5	67.4	69.7	70.6	70.8	70.3
Evaporating temperature –35°C										**Evaporating temperature –40°C**							
TDEZ 3	10	2.7	3.4	3.7	4.0	4.1	4.2	4.2	4.1	2.3	2.9	3.2	3.3	3.5	3.5	3.5	3.5
TDEZ 4	20	3.5	4.5	5.0	5.3	5.5	5.5	5.6	5.5	3.0	3.8	4.2	4.5	4.6	4.7	4.7	4.6
TDEZ 6	30	5.3	6.7	7.5	7.9	8.2	8.3	8.3	8.3	4.5	5.7	6.3	6.7	6.9	7.0	7.0	6.9
TDEZ 7.5	40	6.5	8.2	9.1	9.7	10.0	10.1	10.1	10.1	5.5	6.9	7.7	8.1	8.4	8.5	8.5	8.4
TDEZ 8	10	10.8	13.6	15.2	16.1	16.6	16.9	16.9	16.8	10.0	12.6	14.0	14.8	15.3	15.5	15.5	15.3
TDEZ 11	20	13.0	16.4	18.3	19.4	20.0	20.3	20.3	20.2	11.8	14.8	16.5	17.4	17.9	18.2	18.2	18.0
TDEZ 12.5	30	14.3	18.0	20.1	21.3	21.9	22.2	22.3	22.1	12.9	16.1	17.9	19.0	19.5	19.8	19.8	19.6
TDEZ 16	40	17.0	21.4	23.9	25.3	26.1	26.4	26.5	26.3	15.1	18.9	21.0	22.2	22.8	23.1	23.1	22.9
TDEZ 19	50	19.9	25.1	27.9	29.5	30.4	30.9	30.9	30.7	17.6	22.1	24.5	25.9	26.6	26.9	27.0	26.7
TDEZ 20	10	22.7	28.7	31.9	33.8	34.9	35.4	35.5	35.2	20.4	25.7	28.5	30.2	31.1	31.5	31.5	31.2
TDEZ 26	20	27.6	34.8	38.7	41.1	42.4	43.0	43.0	42.7	24.4	30.7	34.1	36.0	37.1	37.6	37.6	37.3
TDEZ 30	30	30.3	38.2	42.5	45.0	46.4	47.0	47.1	46.7	26.6	33.3	36.9	39.1	40.2	40.7	40.7	40.4
TDEZ 40	40	39.6	49.8	55.4	58.6	60.5	61.3	61.4	60.8	34.6	43.3	48.0	50.7	52.2	52.9	52.9	52.4

Correction for subcooling Δt_{sub}

The evaporator capacity used must be corrected if the subcooling deviates from 4 K.
The corrected capacity can be obtained by dividing the required evaporator capacity by the correction factor given across, and then selecting from the tables.

Note: Flash gas can form if subcooling is too low.

Δt_{sub}	4 K	10 K	15 K	20 K	25 K	30 K
Correction factor	1.00	1.07	1.13	1.19	1.25	1.32

Sizing

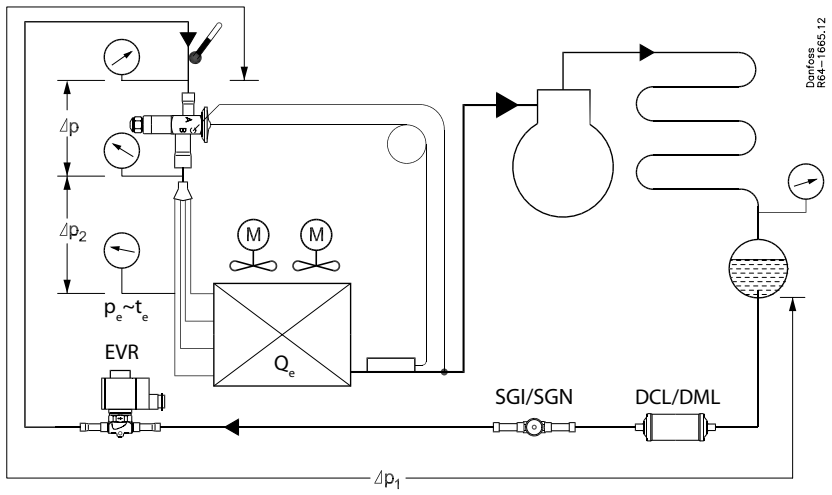


Fig. 10

Sizing example

Refrigerant		R22
Evaporator capacity	Q_e =	20 kW
Evaporator with several sections, i.e. a valve with distributor is required		
Evaporating temperature	t_e =	0°C
	p_e =	4 bar
Condensing temperature	t_c =	+36°C
	p_c =	13 bar
Refrigrant liquid temperature	t_l =	+26°C

Subcooling Δtsub = 36–26 = 10 K

From the data supplied determine pressure drop Δp in TDE.
Pressure drop Δp_1 in liquid lines, pipe bends, filter, sight glass, solenoid valve, etc. can be assumed to be 0.5 bar.
Pressure drop Δp_2 in the liquid distributor can also be assumed as 0.5 bar.

From the diagram it can be seen that evaporating pressure p_e is equal to
$p_c - \Delta p - \Delta p_1 - \Delta p_2$.
Thus, pressure drop Δp in TDE equals
$p_c - p_e - \Delta p_1 - \Delta p_2 = 13 - 4 - 0.5 - 0.5 = 8$ bar.

Pressure drop in risers, etc. is not taken into account.

The correction factor at Δt_{sub} = 10 K is 1.07.
The corrected evaporator capacity thus becomes 20 divided by 1.07 = 18.7 kW

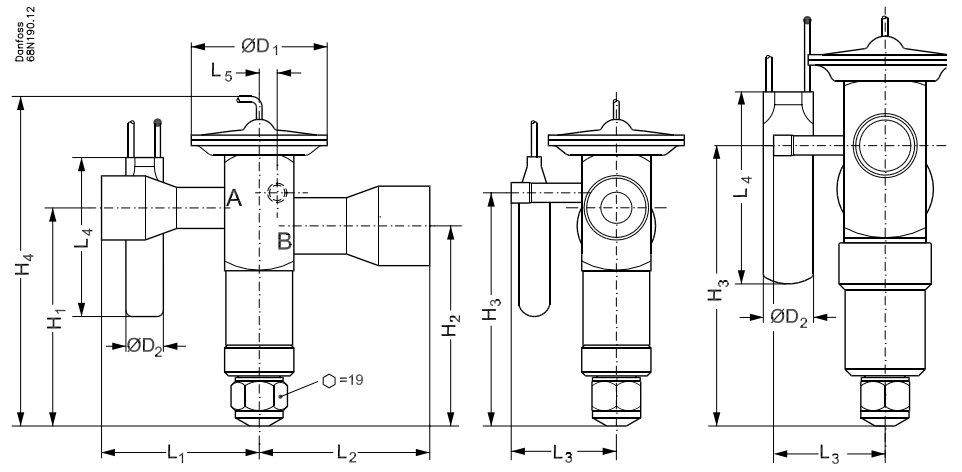
Since the capacity of the expansion valve must be equal to or slightly higher than the corrected evaporator capacity of 18.7 kW, a TDEX 6 giving 20.1 kW would be a suitable choice (See example below).

Capacity in kW

R22

Type and rated capacity Qnom TR	Orifice no.	Pressure drop across the valve Δp bar								Pressure drop across the valve Δp bar							
		2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
		Evaporating temperature +5°C								**Evaporating temperature 0°C**							
TDEX 3	10	6.6	8.7	10.1	11.1	11.7	12.1	12.5	12.7	6.0	8.0	9.2	10.0	10.6	11.0	11.3	11.5
TDEX 4	20	8.9	11.7	13.6	14.8	15.7	16.3	16.7	17.0	8.1	10.7	12.3	13.5	14.2	14.8	15.2	15.4
TDEX 6	30	13.2	17.5	20.2	22.1	23.4	24.3	25.0	25.3	12.1	16.0	18.4	20.1	21.2	22.0	22.6	22.9
TDEX 7.5	40	16.4	21.8	25.1	27.4	29.0	30.1	30.9	31.4	15.0	19.8	22.8	24.8	26.2	27.2	27.9	28.3
TDEX 8	10	17.6	23.4	27.0	29.5	31.2	32.4	33.3	33.9	16.6	22.0	25.3	27.6	29.2	30.4	31.1	31.6
TDEX 11	20	24.2	32.1	37.0	40.4	42.8	44.5	45.6	46.3	22.6	29.9	34.3	37.4	39.6	41.1	42.2	42.8
TDEX 12.5	30	27.7	36.7	42.3	46.3	48.9	50.8	52.1	53.0	25.8	34.1	39.2	42.7	45.1	46.9	48.0	48.8
TDEX 16	40	35.4	47.0	54.1	59.0	62.4	64.8	66.5	67.5	32.9	43.4	49.9	54.3	57.4	59.5	61.3	61.9
TDEX 19	50	42.2	55.9	64.3	69.9	74.2	77.0	79.0	80.1	39.1	51.5	59.2	64.7	68.1	70.7	72.3	73.3
TDEX 20	10	44.4	58.8	67.8	74.0	78.4	81.3	83.6	85.0	41.3	54.6	62.7	68.4	72.3	75.2	77.0	78.1
TDEX 26	20	57.6	76.4	87.8	95.9	101.7	105.5	108.2	110.4	53.4	70.5	80.9	88.3	93.3	96.9	99.3	101
TDEX 30	30	66.6	88.1	102	111	118	121	125	127	61.5	81.0	93.2	102	107	111	114	116
TDEX 40	40	88.7	118	135	147	155	161	165	168	81.7	108	124	135	142	147	151	153

Dimensions and weights



TDE 3-7.5, 8-19 *TDE 20-40*

Fig. 10

Type	Connection inlet × outlet ODF solder mm	Capillary tube length m	H_1 mm	H_2 mm	H_3 mm	H_4 mm	L_1 mm	L_2 mm	L_3 mm	L_4 mm	L_5 mm	$ØD_1$ mm	$ØD_2$ mm	Weight kg
TDE 3-7.5	3/8 × 5/8 10 × 16	1.5	70.5	64.5	74.5	117	41	44	38.5	62	5	45	14	0.4
	1/2 × 5/8 12 × 16						41.5							
	1/2 × 7/8 12 × 22							59						
	5/8 × 7/8 16 × 22						44							
TDE 8-19	5/8 × 7/8 16 × 22	1.5	85	78	91	137	46.5	61.5	41	62	7	53	14	0.6
	5/8 × 1 1/8 16 × 28							66.5						
	7/8 × 1 1/8 22 × 28						61.5							
TDE 20-40	7/8 × 1 1/8 22 × 28	3.0	109.5	92.5	109.5	170	63.5	68.5	43.5	75	10	60	19	1.1
	7/8 × 1 3/8 22 × 35							73.5						
	1 1/8 × 1 3/8 28 × 35						68.5							