

Data sheet

Solenoid valves

Type EVUL



EVUL solenoid valves are designed to fit into compact refrigeration systems. Available in pilot operated versions they can be applied in liquid, suction, and hot gas lines.

EVUL solenoid valves can be used in many different refrigeration systems and are specially designed for:

- Commercial refrigeration systems
- Refrigeration appliances
- Liquid coolers
- Ice cube machines
- Mobile refrigeration systems
- Heat pump systems
- Air conditioning units

Features

- Compact and light weight.
- Fully hermetic construction in stainless steel.
- Laser welded bimetal connections.
- High vibration resistance
- Excellent leak integrity
- Bimetal connections for fast soldering.
- No need of wet cloth / heat sink by soldering.
- Servo operated mini piston, sturdy and compact solenoid valve.
- Universal application for – liquid, suction, and hot gas applications.
- Minimum power consumption.
- Simple and fast mounting of coil.
- Encapsulated coils provide long life time even under extreme conditions.
- High MOPD capacity – up to 36 bar (522 psi)
- Build in filter in the inlet.

Approvals

- UL Recognized Component (Canadian and US)
- PED (97/23/EC A3.P3)
- Low Voltage Directive (LVD) 2006/95/EC



Technical data

Refrigerants

R744, R22/R407C, R404A/R507, R410A, R134a and R407A.

For other refrigerants, please contact Danfoss.

Max. working pressure (PS/MWP)

90 bar (1305 psi)

Media temperature

-40 – 105 °C (-40 – 221 °F)

Ambient temperature

-40 – 50 °C (-40 – 122 °F)

MOPD operating range

EVUL 1 – 8: 0.02 - 36 bar (0.29 - 522 psi)

MOPD is measured with highest media and ambient temperature and 15% below nominal voltage.

MOPD (Max. Opening Pressure Differential) for media in gas form is approximately 0.97 bar greater.

K_v value is the water flow in m³/hour at a pressure drop across valve $\Delta p = 1$ bar, $\rho = 1000$ Kg/m³.

C_v value is the water flow in [gal/min] at a pressure drop across valve $\Delta p = 1$ psi, $\rho = 10$ lbs/gal

Humidity

0 – 100% R.H. (0-97% R.H. non-condensation condition if IP level is below IPX5).

Liquid - Rated capacity [Kw]

SI units

| Type | R22/R407C | R134a | R404A/R507 | R407A | R410A | K_v value [m ³ /hour] |
|--------|-----------|-------|------------|-------|-------|------------------------------------|
| EVUL 1 | 2.01 | 1.65 | 1.38 | 1.85 | 2.02 | 0.10 |
| EVUL 2 | 4.02 | 3.31 | 2.76 | 3.70 | 4.04 | 0.20 |
| EVUL 3 | 6.03 | 4.96 | 4.14 | 5.55 | 6.06 | 0.30 |
| EVUL 4 | 10.05 | 8.27 | 6.91 | 9.25 | 10.10 | 0.50 |
| EVUL 5 | 13.06 | 10.75 | 8.98 | 12.02 | 13.13 | 0.65 |
| EVUL 6 | 15.07 | 12.40 | 10.36 | 13.87 | 15.15 | 0.75 |
| EVUL 8 | 18.09 | 14.88 | 12.43 | 16.65 | 18.18 | 0.90 |

Suction vapor - Rated capacity [Kw]

SI units

| Type | R22/R407C | R134a | R404A/R507 | R407A | R410A | K_v value [m ³ /hour] |
|--------|-----------|-------|------------|-------|-------|------------------------------------|
| EVUL 1 | 0.16 | 0.13 | 0.14 | 0.16 | 0.21 | 0.10 |
| EVUL 2 | 0.32 | 0.26 | 0.29 | 0.31 | 0.41 | 0.20 |
| EVUL 3 | 0.48 | 0.38 | 0.43 | 0.47 | 0.62 | 0.30 |
| EVUL 4 | 0.79 | 0.64 | 0.71 | 0.78 | 1.04 | 0.50 |
| EVUL 5 | 1.03 | 0.83 | 0.93 | 1.01 | 1.35 | 0.65 |
| EVUL 6 | 1.19 | 0.96 | 1.07 | 1.17 | 1.56 | 0.75 |
| EVUL 8 | 1.43 | 1.15 | 1.29 | 1.40 | 1.87 | 0.90 |

Hot gas - Rated capacity [Kw]

SI units

| Type | R22/R407C | R134a | R404A/R507 | R407A | R410A | K_v value [m ³ /hour] |
|--------|-----------|-------|------------|-------|-------|------------------------------------|
| EVUL 1 | 0.42 | 0.32 | 0.34 | 0.41 | 0.49 | 0.10 |
| EVUL 2 | 0.85 | 0.64 | 0.67 | 0.82 | 0.98 | 0.20 |
| EVUL 3 | 1.27 | 0.96 | 1.01 | 1.22 | 1.46 | 0.30 |
| EVUL 4 | 2.11 | 1.60 | 1.69 | 2.04 | 2.44 | 0.50 |
| EVUL 5 | 2.75 | 2.08 | 2.19 | 2.65 | 3.17 | 0.65 |
| EVUL 6 | 3.17 | 2.40 | 2.53 | 3.06 | 3.66 | 0.75 |
| EVUL 8 | 3.80 | 2.88 | 3.03 | 3.67 | 4.39 | 0.90 |

Rated liquid and suction capacity are based on evaporating temperature $t_e = -10$ °C, liquid temperature ahead of the valve $t_l = 25$ °C, pressure drop in valve $\Delta p = 0.15$ bar.

Rated hot gas capacity is based on condensing temperature $t_c = 40$ °C, pressure drop across valve $\Delta p = 0.8$ bar, hot gas temperature $t_h = 65$ °C and subcooling of refrigerant $\Delta t_{sub} = 4$ K.

Technical data
(continued)

Liquid - Rated capacity¹⁾ [TR]
US units

| Type | R22/R407C | R134a | R404A/R507 | R407A | R410A | Cv-value [gal/min] |
|--------|-----------|-------|------------|-------|-------|--------------------|
| EVUL 1 | 0.58 | 0.47 | 0.39 | 0.53 | 0.57 | 0.12 |
| EVUL 2 | 1.15 | 0.93 | 0.79 | 1.06 | 1.15 | 0.23 |
| EVUL 3 | 1.73 | 1.40 | 1.18 | 1.59 | 1.72 | 0.35 |
| EVUL 4 | 2.88 | 2.33 | 1.97 | 2.65 | 2.87 | 0.58 |
| EVUL 5 | 3.74 | 3.02 | 2.57 | 3.44 | 3.73 | 0.75 |
| EVUL 6 | 4.32 | 3.49 | 2.96 | 3.97 | 4.31 | 0.87 |
| EVUL 8 | 5.18 | 4.19 | 3.55 | 4.77 | 5.17 | 1.04 |

¹⁾ Rated liquid and suction capacity are based on evaporating temperature $t_e = 40\text{ °F}$, liquid temperature ahead of the valve $t_l = 100\text{ °F}$, pressure drop Δp across valve – with liquid:
 $\Delta p = 2\text{ psi}$ for R134a
 $\Delta p = 3\text{ psi}$ for R22, R404A and R507 – with suction vapor:
 $\Delta p = 1\text{ psi}$

Suction vapor - Rated capacity¹⁾ [TR]
US units

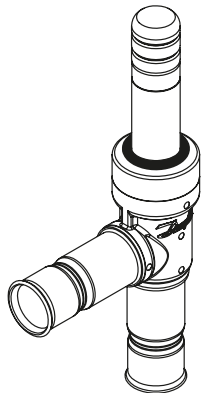
| Type | R22/R407C | R134a | R404A/R507 | R407A | R410A | Cv-value [gal/min] |
|--------|-----------|-------|------------|-------|-------|--------------------|
| EVUL 1 | 0.05 | 0.04 | 0.04 | 0.05 | 0.06 | 0.12 |
| EVUL 2 | 0.10 | 0.08 | 0.09 | 0.09 | 0.12 | 0.23 |
| EVUL 3 | 0.14 | 0.12 | 0.13 | 0.14 | 0.19 | 0.35 |
| EVUL 4 | 0.24 | 0.20 | 0.22 | 0.24 | 0.31 | 0.58 |
| EVUL 5 | 0.31 | 0.25 | 0.28 | 0.31 | 0.40 | 0.75 |
| EVUL 6 | 0.36 | 0.29 | 0.32 | 0.35 | 0.47 | 0.87 |
| EVUL 8 | 0.43 | 0.35 | 0.39 | 0.42 | 0.56 | 1.04 |

Hot gas - Rated capacity¹⁾ [TR]
US units

| Type | R22/R407C | R134a | R404A/R507 | R407A | R410A | Cv-value [gal/min] |
|--------|-----------|-------|------------|-------|-------|--------------------|
| EVUL 1 | 0.10 | 0.07 | 0.08 | 0.09 | 0.11 | 0.12 |
| EVUL 2 | 0.19 | 0.15 | 0.15 | 0.18 | 0.22 | 0.23 |
| EVUL 3 | 0.29 | 0.22 | 0.23 | 0.28 | 0.33 | 0.35 |
| EVUL 4 | 0.48 | 0.37 | 0.38 | 0.46 | 0.54 | 0.58 |
| EVUL 5 | 0.62 | 0.48 | 0.49 | 0.60 | 0.70 | 0.75 |
| EVUL 6 | 0.72 | 0.56 | 0.57 | 0.69 | 0.81 | 0.87 |
| EVUL 8 | 0.86 | 0.67 | 0.68 | 0.83 | 0.98 | 1.04 |

Rated hot gas capacity is based on:
 Condensing temperature:
 $t_c = 100\text{ °F}$
 Hot gas temperature:
 $t_h = 140\text{ °F}$
 Pressure drop across valve:
 $\Delta p = 2\text{ psi}$

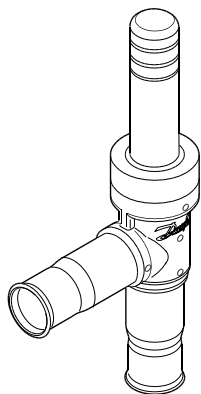
Ordering valve



Normally closed (NC)

| Valve type | [in.] | | [mm] | |
|------------|-------------|----------|-------------|----------|
| | Connections | Code no. | Connections | Code no. |
| EVUL 1 | 1/4 | 032F8200 | 6 | 032F8227 |
| EVUL 2 | 1/4 | 032F8201 | 6 | 032F8228 |
| EVUL 3 | 1/4 | 032F8202 | 6 | 032F8229 |
| | 3/8 | 032F8203 | 10 | 032F8230 |
| EVUL 4 | 1/4 | 032F8204 | 6 | 032F8231 |
| | 3/8 | 032F8205 | 10 | 032F8232 |
| | 1/2 | 032F8206 | 12 | 032F8233 |
| EVUL 5 | 3/8 | 032F8207 | 10 | 032F8234 |
| | 1/2 | 032F8208 | 12 | 032F8235 |
| EVUL 6 | 3/8 | 032F8209 | 10 | 032F8236 |
| | 1/2 | 032F8210 | 12 | 032F8237 |
| EVUL 8 | 1/2 | 032F8211 | 12 | 032F8238 |

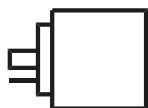
Normally closed (NC) - only works with UL/UR approved coils



| Valve type | [in.] | |
|------------|-------------|----------|
| | Connections | Code no. |
| EVUL 1 | 1/4 | 032F8245 |
| EVUL 2 | 1/4 | 032F8246 |
| EVUL 3 | 1/4 | 032F8247 |
| | 3/8 | 032F8248 |
| EVUL 4 | 1/4 | 032F8249 |
| | 3/8 | 032F8250 |
| | 1/2 | 032F8251 |
| EVUL 5 | 3/8 | 032F8252 |
| | 1/2 | 032F8253 |
| EVUL 6 | 3/8 | 032F8254 |
| | 1/2 | 032F8255 |
| EVUL 8 | 1/2 | 032F8256 |

Ordering coils

DIN spade connection



Alternating current AC

| Type | Voltag | Frequency | Power consumption | Code no. | |
|------|--------|-----------|--|--|--|
| | [V] | [Hz] | | Industrial pack with DIN plug ¹⁾ IP65 | Single pack with DIN plug ¹⁾ IP65 |
| EVUL | 24 | 50 / 60 | Holding: 6 W 12 VA Inrush: 26 VA | — | 042N7608 |
| | 230 | 50 / 60 | | — | 042N7601 |
| | 240 | 50 / 60 | | — | 042N7602 |

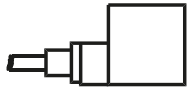
¹⁾ The three pins on the coil can be fitted with spade tabs, 6.3 mm wide (to DIN 46247). The two current carrying pins can also be fitted with spade tabs, 4.8 mm wide. Max. lead cross section: 1.5 mm².

If DIN plug is used (DIN 43650) the leads must be connected in the socket. The socket is fitted with a Pg 11 screwed entry for 6 – 12 mm.

Data sheet | Solenoid valves, Type EVUL

Ordering coils (continued)

Cable connection



Alternating current AC

| Type | Voltage | Frequency | Power consumption | Code no. | |
|------|---------|-----------|--|-------------------------------------|---------------------------------|
| | [V] | [Hz] | | Industrial pack with 1 m cable IP67 | Single pack with 1 m cable IP67 |
| EVUL | 115 | 50 / 60 | Holding: 6 W 12 VA Inrush: 26 VA | — | 042N7662 |
| | 230 | 50 / 60 | | 042N8651 | 042N7651 |
| | 240 | 50 / 60 | | 042N8652 | — |

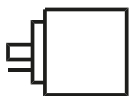
Cable connection



Direct current DC

| Type | Voltage | Power consumption | Code no. | |
|------|---------|-------------------|-------------------------------------|---------------------------------|
| | [V] | | Industrial pack with 1 m cable IP67 | Single pack with 1 m cable IP67 |
| EVUL | 12 | 14 W | 042N8696 | 042N7696 |
| | 24 | | 042N8697 | 042N7697 |

DIN spade connection

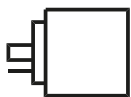


Direct current DC

| Type | Voltage | Power consumption | Code no. | |
|------|---------|-------------------|-------------------------------------|---------------------------------|
| | [V] | | Industrial pack with DIN spade IP00 | Single pack with DIN spade IP00 |
| EVUL | 12 | 14 W | 042N8686 | — |
| | 24 | | 042N8687 | 042N7687 |

* DC coils with 0.25 in. US spade can be supplied on request.

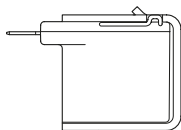
0.25 in. US spade connection



Alternating current AC

| Type | Voltage | Frequency | Code no. | | Power consumption |
|------|-----------|-----------|--|------------------------------------|--|
| | [V] | [Hz] | Industrial pack with US DIN spade IP00 | Single pack with US DIN spade IP00 | |
| EVUL | 208 – 240 | 50 / 60 | 042N8201 | — | Holding: 7 W 14 VA Inrush: 28 VA |
| | 24 | 50 / 60 | 042N8203 | — | |

0.25 in. US spade connections



Alternating current AC

| Valve Type | Voltage | Frequency | Code no. | | Power consumption |
|------------|-----------|-----------|---|--------------------------------|---------------------------------------|
| | [V] | [Hz] | Industrial pack 40-off with US spade IP00 | Single pack with US spade IP00 | |
| EVUL | 208 – 240 | 50 / 60 | 042N8230 | 042N4230 | Holding: 8 W / 16 VA Inrush: 32 VA |
| | 110 – 120 | 50 / 60 | 042N8233 | 042N4233 | |
| | 24 | 50 / 60 | 042N8236 | — | |

Accessories

| Part | Description | Code no. |
|------|--|----------|
| | DIN plug | 042N0156 |
| | O-ring for sealing the coil. Industrial pack (50 pcs.) NB: Valve body supplied with O-ring | 032F6115 |

SI Units

**Capacity
Liquid capacity Ql [kW]**

| Type | Kv | Liquid capacity Ql [kW] at pressure drop across valve Δp [bar] | | | | |
|------|----|--|-----|-----|-----|-----|
| | | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 |

R22/R407C

| | | | | | | |
|--------|------|------|------|------|------|------|
| EVUL 1 | 0.10 | 1.6 | 2.2 | 2.7 | 3.1 | 3.5 |
| EVUL 2 | 0.20 | 3.1 | 4.4 | 5.4 | 6.3 | 7.0 |
| EVUL 3 | 0.30 | 4.7 | 6.7 | 8.1 | 9.4 | 10.5 |
| EVUL 4 | 0.50 | 7.8 | 11.1 | 13.6 | 15.7 | 17.5 |
| EVUL 5 | 0.65 | 10.2 | 14.4 | 17.6 | 20.4 | 22.8 |
| EVUL 6 | 0.75 | 11.8 | 16.6 | 20.4 | 23.5 | 26.3 |
| EVUL 8 | 0.90 | 14.1 | 20.0 | 24.4 | 28.2 | 31.5 |

R134a

| | | | | | | |
|--------|------|-------|-------|-------|-------|-------|
| EVUL 1 | 0.10 | 1.52 | 2.15 | 2.63 | 3.04 | 3.40 |
| EVUL 2 | 0.20 | 3.04 | 4.30 | 5.27 | 6.08 | 6.80 |
| EVUL 3 | 0.30 | 4.56 | 6.45 | 7.90 | 9.12 | 10.20 |
| EVUL 4 | 0.50 | 7.60 | 10.75 | 13.17 | 15.20 | 17.00 |
| EVUL 5 | 0.65 | 9.88 | 13.98 | 17.12 | 19.76 | 22.10 |
| EVUL 6 | 0.75 | 11.40 | 16.13 | 19.75 | 22.81 | 25.50 |
| EVUL 8 | 0.90 | 13.68 | 19.35 | 23.70 | 27.37 | 30.60 |

R404A/R507

| | | | | | | |
|--------|------|------|------|------|------|------|
| EVUL 1 | 0.10 | 1.1 | 1.6 | 1.9 | 2.2 | 2.5 |
| EVUL 2 | 0.20 | 2.2 | 3.1 | 3.9 | 4.5 | 5.0 |
| EVUL 3 | 0.30 | 3.3 | 4.7 | 5.8 | 6.7 | 7.5 |
| EVUL 4 | 0.50 | 5.6 | 7.9 | 9.6 | 11.1 | 12.4 |
| EVUL 5 | 0.65 | 7.2 | 10.2 | 12.5 | 14.5 | 16.2 |
| EVUL 6 | 0.75 | 8.3 | 11.8 | 14.5 | 16.7 | 18.7 |
| EVUL 8 | 0.90 | 10.0 | 14.2 | 17.3 | 20.0 | 22.4 |

R410A

| | | | | | | |
|--------|------|------|------|------|------|------|
| EVUL 1 | 0.10 | 1.6 | 2.3 | 2.8 | 3.2 | 3.6 |
| EVUL 2 | 0.20 | 3.2 | 4.6 | 5.6 | 6.4 | 7.2 |
| EVUL 3 | 0.30 | 4.8 | 6.8 | 8.4 | 9.7 | 10.8 |
| EVUL 4 | 0.50 | 8.1 | 11.4 | 14.0 | 16.1 | 18.0 |
| EVUL 5 | 0.65 | 10.5 | 14.8 | 18.1 | 20.9 | 23.4 |
| EVUL 6 | 0.75 | 12.1 | 17.1 | 20.9 | 24.2 | 27.0 |
| EVUL 8 | 0.90 | 14.5 | 20.5 | 25.1 | 29.0 | 32.4 |

Capacities are based on:
Liquid temperature:
 $t_l = 25\text{ °C}$ ahead of valve,
Evaporating temperature:
 $t_e = -10\text{ °C}$,
Superheat: 0 K.

Correction factors

When sizing valves, the plant capacity must be multiplied by a correction factor depending on liquid temperature t_l ahead of valve/evaporator. When the corrected capacity is known, the selection can be made from the table.

Correction factors for liquid temperature t_l

| t_l [°C] | -10 | 0 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|------------|------|------|------|------|------|------|------|------|------|------|------|
| R22/R407C | 0.76 | 0.82 | 0.88 | 0.92 | 0.96 | 1.00 | 1.05 | 1.10 | 1.16 | 1.22 | 1.30 |
| R134a | 0.73 | 0.79 | 0.86 | 0.90 | 0.95 | 1.00 | 1.06 | 1.12 | 1.19 | 1.27 | 1.37 |
| R404A/507 | 0.65 | 0.72 | 0.81 | 0.86 | 0.93 | 1.00 | 1.09 | 1.20 | 1.33 | 1.51 | 1.74 |
| R410A | 0.73 | 0.79 | 0.86 | 0.90 | 0.95 | 1.00 | 1.06 | 1.14 | 1.23 | 1.33 | 1.47 |

SI Units

Capacity
Suction vapour
capacity Q_e [kW]

| Type | Kv | Pressure drop Δp [bar] | Suction vapour capacity Q_I [kW] at Evaporating temperature t_e [°C] | | | | | |
|------|----|--------------------------------|--|-----|-----|-----|---|----|
| | | | -40 | -30 | -20 | -10 | 0 | 10 |

R22/R407C

| | | | | | | | | |
|--------|------|------|-------|-------|-------|-------|-------|-------|
| EVUL 1 | 0.10 | 0.1 | 0.077 | 0.104 | 0.134 | 0.170 | 0.210 | 0.255 |
| | | 0.15 | 0.090 | 0.124 | 0.162 | 0.206 | 0.255 | 0.311 |
| | | 0.2 | 0.100 | 0.139 | 0.184 | 0.235 | 0.293 | 0.357 |
| EVUL 2 | 0.20 | 0.1 | 0.154 | 0.207 | 0.269 | 0.339 | 0.419 | 0.510 |
| | | 0.15 | 0.181 | 0.248 | 0.324 | 0.411 | 0.510 | 0.622 |
| | | 0.2 | 0.199 | 0.279 | 0.368 | 0.470 | 0.585 | 0.715 |
| EVUL 3 | 0.30 | 0.1 | 0.231 | 0.311 | 0.403 | 0.509 | 0.629 | 0.765 |
| | | 0.15 | 0.271 | 0.372 | 0.486 | 0.617 | 0.765 | 0.933 |
| | | 0.2 | 0.299 | 0.418 | 0.553 | 0.705 | 0.878 | 1.072 |
| EVUL 4 | 0.50 | 0.1 | 0.386 | 0.518 | 0.672 | 0.848 | 1.048 | 1.275 |
| | | 0.15 | 0.452 | 0.619 | 0.810 | 1.028 | 1.275 | 1.555 |
| | | 0.2 | 0.499 | 0.697 | 0.921 | 1.175 | 1.463 | 1.787 |
| EVUL 5 | 0.65 | 0.1 | 0.501 | 0.674 | 0.873 | 1.102 | 1.363 | 1.658 |
| | | 0.15 | 0.588 | 0.805 | 1.053 | 1.336 | 1.658 | 2.021 |
| | | 0.2 | 0.648 | 0.906 | 1.197 | 1.528 | 1.901 | 2.323 |
| EVUL 6 | 0.75 | 0.1 | 0.579 | 0.778 | 1.008 | 1.272 | 1.573 | 1.913 |
| | | 0.15 | 0.679 | 0.929 | 1.215 | 1.542 | 1.913 | 2.332 |
| | | 0.2 | 0.748 | 1.045 | 1.381 | 1.763 | 2.194 | 2.680 |
| EVUL 8 | 0.90 | 0.1 | 0.694 | 0.933 | 1.209 | 1.526 | 1.887 | 2.296 |
| | | 0.15 | 0.814 | 1.115 | 1.458 | 1.850 | 2.296 | 2.798 |
| | | 0.2 | 0.897 | 1.254 | 1.658 | 2.115 | 2.633 | 3.216 |

Capacities are based on dry, saturated vapour ahead of valve. During operation with superheated vapour ahead of valve, the capacities are reduced by 4% for each 10 K superheat.

When sizing valves, the plant capacity must be multiplied by a correction factor depending on liquid temperature t_l ahead of valve evaporator. When the corrected capacity is known, the selection can be made from the table.

Correction factors

Capacities are based on liquid temperature $t_l = 25$ °C ahead of evaporator. The table values refer to the evaporator capacity and are given as a function of evaporating temperature t_e and pressure drop Δp in valve.

Correction factors for liquid temperature t_l

| t_l [°C] | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|------------|------|------|------|------|------|------|------|------|------|
| R22/R407C | 0.90 | 0.93 | 0.96 | 1.00 | 1.04 | 1.08 | 1.13 | 1.18 | 1.24 |

SI Units

Capacity
Suction vapour
capacity Q_e [kW]
(continued)

| Type | Kv | Pressure drop Δp [bar] | Suction vapour capacity Q_l [kW] at Evaporating temperature t_e [°C] | | | | | |
|------|----|--------------------------------|--|-----|-----|-----|---|----|
| | | | -40 | -30 | -20 | -10 | 0 | 10 |

R134a

| | | | | | | | | |
|--------|------|------|-------|-------|-------|-------|-------|-------|
| EVUL 1 | 0.10 | 0.1 | 0.056 | 0.078 | 0.104 | 0.134 | 0.169 | 0.208 |
| | | 0.15 | 0.062 | 0.091 | 0.124 | 0.162 | 0.204 | 0.253 |
| | | 0.2 | 0.065 | 0.100 | 0.139 | 0.183 | 0.233 | 0.290 |
| EVUL 2 | 0.20 | 0.1 | 0.111 | 0.156 | 0.208 | 0.268 | 0.338 | 0.417 |
| | | 0.15 | 0.125 | 0.182 | 0.248 | 0.323 | 0.409 | 0.507 |
| | | 0.2 | 0.130 | 0.201 | 0.278 | 0.366 | 0.467 | 0.580 |
| EVUL 3 | 0.30 | 0.1 | 0.167 | 0.234 | 0.312 | 0.402 | 0.506 | 0.625 |
| | | 0.15 | 0.187 | 0.274 | 0.372 | 0.485 | 0.613 | 0.760 |
| | | 0.2 | 0.196 | 0.301 | 0.417 | 0.550 | 0.700 | 0.871 |
| EVUL 4 | 0.50 | 0.1 | 0.278 | 0.390 | 0.520 | 0.671 | 0.844 | 1.042 |
| | | 0.15 | 0.312 | 0.456 | 0.620 | 0.808 | 1.022 | 1.267 |
| | | 0.2 | 0.326 | 0.501 | 0.696 | 0.916 | 1.167 | 1.451 |
| EVUL 5 | 0.65 | 0.1 | 0.361 | 0.507 | 0.676 | 0.872 | 1.097 | 1.355 |
| | | 0.15 | 0.405 | 0.593 | 0.806 | 1.050 | 1.329 | 1.646 |
| | | 0.2 | 0.424 | 0.652 | 0.905 | 1.191 | 1.517 | 1.886 |
| EVUL 6 | 0.75 | 0.1 | 0.416 | 0.585 | 0.780 | 1.006 | 1.266 | 1.563 |
| | | 0.15 | 0.468 | 0.684 | 0.930 | 1.211 | 1.533 | 1.900 |
| | | 0.2 | 0.489 | 0.752 | 1.044 | 1.374 | 1.750 | 2.176 |
| EVUL 8 | 0.90 | 0.1 | 0.500 | 0.702 | 0.936 | 1.207 | 1.519 | 1.876 |
| | | 0.15 | 0.561 | 0.821 | 1.116 | 1.454 | 1.840 | 2.280 |
| | | 0.2 | 0.587 | 0.902 | 1.252 | 1.649 | 2.100 | 2.612 |

Capacities are based on dry, saturated vapour ahead of valve. During operation with superheated vapour ahead of valve, the capacities are reduced by 4% for each 10 K superheat.

When sizing valves, the plant capacity must be multiplied by a correction factor depending on liquid temperature t_l ahead of valve evaporator. When the corrected capacity is known, the selection can be made from the table.

Correction factors

Capacities are based on liquid temperature $t_l = 25$ °C ahead of evaporator. The table values refer to the evaporator capacity and are given as a function of evaporating temperature t_e and pressure drop Δp in valve.

Correction factors for liquid temperature t_l

| t_l [°C] | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|--------------|------|------|------|------|------|------|------|------|------|
| R134a | 0.88 | 0.92 | 0.96 | 1.00 | 1.05 | 1.10 | 1.16 | 1.23 | 1.31 |

SI Units

Capacity
Suction vapour
capacity Q_e [kW]
(continued)

| Type | Kv | Pressure drop Δp [bar] | Suction vapour capacity Q_l [kW] at Evaporating temperature t_e [°C] | | | | | |
|------|----|--------------------------------|--|-----|-----|-----|---|----|
| | | | -40 | -30 | -20 | -10 | 0 | 10 |

R404A/R507

| | | | | | | | | |
|--------|------|------|-------|-------|-------|-------|-------|-------|
| EVUL 1 | 0.10 | 0.1 | 0.075 | 0.099 | 0.127 | 0.159 | 0.196 | 0.239 |
| | | 0.15 | 0.089 | 0.119 | 0.154 | 0.194 | 0.239 | 0.291 |
| | | 0.2 | 0.100 | 0.135 | 0.176 | 0.222 | 0.275 | 0.335 |
| EVUL 2 | 0.20 | 0.1 | 0.150 | 0.198 | 0.254 | 0.319 | 0.393 | 0.477 |
| | | 0.15 | 0.179 | 0.239 | 0.308 | 0.388 | 0.479 | 0.583 |
| | | 0.2 | 0.201 | 0.271 | 0.352 | 0.444 | 0.550 | 0.670 |
| EVUL 3 | 0.30 | 0.1 | 0.225 | 0.297 | 0.381 | 0.478 | 0.589 | 0.716 |
| | | 0.15 | 0.268 | 0.358 | 0.462 | 0.581 | 0.718 | 0.874 |
| | | 0.2 | 0.301 | 0.406 | 0.527 | 0.666 | 0.825 | 1.005 |
| EVUL 4 | 0.50 | 0.1 | 0.375 | 0.495 | 0.635 | 0.797 | 0.982 | 1.194 |
| | | 0.15 | 0.447 | 0.596 | 0.769 | 0.969 | 1.197 | 1.457 |
| | | 0.2 | 0.502 | 0.677 | 0.879 | 1.110 | 1.375 | 1.676 |
| EVUL 5 | 0.65 | 0.1 | 0.488 | 0.644 | 0.826 | 1.036 | 1.277 | 1.552 |
| | | 0.15 | 0.582 | 0.775 | 1.000 | 1.260 | 1.556 | 1.893 |
| | | 0.2 | 0.653 | 0.880 | 1.142 | 1.444 | 1.788 | 2.178 |
| EVUL 6 | 0.75 | 0.1 | 0.563 | 0.743 | 0.953 | 1.195 | 1.474 | 1.790 |
| | | 0.15 | 0.671 | 0.895 | 1.154 | 1.453 | 1.796 | 2.185 |
| | | 0.2 | 0.754 | 1.016 | 1.318 | 1.666 | 2.063 | 2.514 |
| EVUL 8 | 0.90 | 0.1 | 0.675 | 0.891 | 1.143 | 1.434 | 1.768 | 2.148 |
| | | 0.15 | 0.805 | 1.074 | 1.385 | 1.744 | 2.155 | 2.622 |
| | | 0.2 | 0.904 | 1.219 | 1.582 | 1.999 | 2.475 | 3.016 |

Capacities are based on dry, saturated vapour ahead of valve. During operation with superheated vapour ahead of valve, the capacities are reduced by 4% for each 10 K superheat.

When sizing valves, the plant capacity must be multiplied by a correction factor depending on liquid temperature t_l ahead of valve evaporator. When the corrected capacity is known, the selection can be made from the table.

Correction factors

Capacities are based on liquid temperature $t_l = 25$ °C ahead of evaporator. The table values refer to the evaporator capacity and are given as a function of evaporating temperature t_e and pressure drop Δp in valve.

Correction factors for liquid temperature t_l

| t_l [°C] | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|-------------------|------|------|------|------|------|------|------|------|------|
| R404A/R507 | 0.84 | 0.89 | 0.94 | 1.00 | 1.07 | 1.16 | 1.26 | 1.40 | 1.57 |

SI Units

Capacity
Suction vapour
capacity Q_e [kW]
(continued)

| Type | Kv | Pressure drop Δp [bar] | Suction vapour capacity Q_l [kW] at Evaporating temperature t_e [°C] | | | | | |
|------|----|--------------------------------|--|-----|-----|-----|---|----|
| | | | -40 | -30 | -20 | -10 | 0 | 10 |

R410A

| | | | | | | | | |
|--------|------|------|-------|-------|-------|-------|-------|-------|
| EVUL 1 | 0.10 | 0.1 | 0.117 | 0.150 | 0.187 | 0.229 | 0.276 | 0.329 |
| | | 0.15 | 0.141 | 0.182 | 0.228 | 0.279 | 0.337 | 0.402 |
| | | 0.2 | 0.160 | 0.207 | 0.261 | 0.321 | 0.388 | 0.463 |
| EVUL 2 | 0.20 | 0.1 | 0.235 | 0.300 | 0.375 | 0.459 | 0.553 | 0.657 |
| | | 0.15 | 0.282 | 0.363 | 0.455 | 0.559 | 0.674 | 0.803 |
| | | 0.2 | 0.320 | 0.415 | 0.522 | 0.642 | 0.776 | 0.925 |
| EVUL 3 | 0.30 | 0.1 | 0.352 | 0.450 | 0.562 | 0.688 | 0.829 | 0.986 |
| | | 0.15 | 0.423 | 0.545 | 0.683 | 0.838 | 1.012 | 1.205 |
| | | 0.2 | 0.480 | 0.622 | 0.783 | 0.963 | 1.164 | 1.388 |
| EVUL 4 | 0.50 | 0.1 | 0.587 | 0.750 | 0.936 | 1.146 | 1.382 | 1.644 |
| | | 0.15 | 0.706 | 0.909 | 1.138 | 1.397 | 1.686 | 2.008 |
| | | 0.2 | 0.799 | 1.037 | 1.305 | 1.605 | 1.940 | 2.313 |
| EVUL 5 | 0.65 | 0.1 | 0.763 | 0.976 | 1.217 | 1.490 | 1.796 | 2.137 |
| | | 0.15 | 0.917 | 1.181 | 1.480 | 1.816 | 2.192 | 2.610 |
| | | 0.2 | 1.039 | 1.348 | 1.696 | 2.086 | 2.522 | 3.007 |
| EVUL 6 | 0.75 | 0.1 | 0.880 | 1.126 | 1.405 | 1.720 | 2.072 | 2.465 |
| | | 0.15 | 1.059 | 1.363 | 1.708 | 2.096 | 2.529 | 3.012 |
| | | 0.2 | 1.199 | 1.555 | 1.957 | 2.407 | 2.910 | 3.469 |
| EVUL 8 | 0.90 | 0.1 | 1.056 | 1.351 | 1.686 | 2.064 | 2.487 | 2.958 |
| | | 0.15 | 1.270 | 1.635 | 2.049 | 2.515 | 3.035 | 3.614 |
| | | 0.2 | 1.439 | 1.866 | 2.348 | 2.889 | 3.492 | 4.163 |

Capacities are based on dry, saturated vapour ahead of valve. During operation with superheated vapour ahead of valve, the capacities are reduced by 4% for each 10 K superheat.

When sizing valves, the plant capacity must be multiplied by a correction factor depending on liquid temperature t_l ahead of valve evaporator. When the corrected capacity is known, the selection can be made from the table.

Correction factors

Capacities are based on liquid temperature $t_l = 25$ °C ahead of evaporator. The table values refer to the evaporator capacity and are given as a function of evaporating temperature t_e and pressure drop Δp in valve.

Correction factors for liquid temperature t_l

| t_l [°C] | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|------------|------|------|------|------|------|------|------|------|------|
| R410A | 0.89 | 0.92 | 0.96 | 1.00 | 1.05 | 1.11 | 1.18 | 1.26 | 1.37 |

Capacity
Hot gas capacity Q_h [kW]

| Type | Kv | Pressure drop across valve Δp [bar] | Hot gas capacity Q_h [kW] | | | | |
|------|----|---|---|----|----|----|----|
| | | | Evaporating temp. $t_e = -10^\circ\text{C}$. Hot gas temp. $t_h = t_c + 25\text{ K}$. Subcooling $\Delta t_{sub} = 4\text{ K}$ | | | | |
| | | | ¹⁾ Condensing temp. t_c [°C] | | | | |
| | | | 20 | 30 | 40 | 50 | 60 |

R22/R407C

| | | | | | | | |
|--------|------|-----|------|-------|-------|-------|-------|
| EVUL 1 | 0.10 | 0.1 | 0.29 | 0.31 | 0.33 | 0.34 | 0.34 |
| | | 0.2 | 0.41 | 0.44 | 0.46 | 0.48 | 0.48 |
| | | 0.4 | 0.57 | 0.61 | 0.65 | 0.67 | 0.68 |
| | | 0.8 | 0.79 | 0.85 | 0.90 | 0.94 | 0.95 |
| | | 1.6 | 1.05 | 1.15 | 1.23 | 1.29 | 1.32 |
| EVUL 2 | 0.20 | 0.1 | 0.58 | 0.62 | 0.65 | 0.68 | 0.69 |
| | | 0.2 | 0.82 | 0.88 | 0.92 | 0.95 | 0.97 |
| | | 0.4 | 1.14 | 1.23 | 1.29 | 1.34 | 1.36 |
| | | 0.8 | 1.57 | 1.70 | 1.80 | 1.87 | 1.91 |
| | | 1.6 | 2.10 | 2.30 | 2.46 | 2.58 | 2.65 |
| EVUL 3 | 0.30 | 0.1 | 0.88 | 0.93 | 0.98 | 1.01 | 1.03 |
| | | 0.2 | 1.23 | 1.31 | 1.38 | 1.43 | 1.45 |
| | | 0.4 | 1.72 | 1.84 | 1.94 | 2.01 | 2.04 |
| | | 0.8 | 2.36 | 2.55 | 2.70 | 2.81 | 2.86 |
| | | 1.6 | 3.14 | 3.45 | 3.70 | 3.88 | 3.97 |
| EVUL 4 | 0.50 | 0.1 | 1.46 | 1.56 | 1.63 | 1.69 | 1.71 |
| | | 0.2 | 2.05 | 2.19 | 2.30 | 2.38 | 2.42 |
| | | 0.4 | 2.86 | 3.07 | 3.23 | 3.35 | 3.40 |
| | | 0.8 | 3.94 | 4.25 | 4.50 | 4.68 | 4.77 |
| | | 1.6 | 5.24 | 5.75 | 6.16 | 6.46 | 6.62 |
| EVUL 5 | 0.65 | 0.1 | 1.90 | 2.02 | 2.12 | 2.19 | 2.23 |
| | | 0.2 | 2.67 | 2.85 | 2.99 | 3.09 | 3.14 |
| | | 0.4 | 3.72 | 3.99 | 4.20 | 4.35 | 4.43 |
| | | 0.8 | 5.12 | 5.52 | 5.85 | 6.08 | 6.20 |
| | | 1.6 | 6.81 | 7.48 | 8.01 | 8.40 | 8.61 |
| EVUL 6 | 0.75 | 0.1 | 2.19 | 2.33 | 2.45 | 2.53 | 2.57 |
| | | 0.2 | 3.08 | 3.28 | 3.45 | 3.57 | 3.63 |
| | | 0.4 | 4.29 | 4.60 | 4.85 | 5.02 | 5.11 |
| | | 0.8 | 5.90 | 6.37 | 6.75 | 7.02 | 7.16 |
| | | 1.6 | 7.86 | 8.63 | 9.24 | 9.69 | 9.94 |
| EVUL 8 | 0.90 | 0.1 | 2.63 | 2.80 | 2.94 | 3.04 | 3.08 |
| | | 0.2 | 3.69 | 3.94 | 4.14 | 4.29 | 4.35 |
| | | 0.4 | 5.15 | 5.52 | 5.82 | 6.03 | 6.13 |
| | | 0.8 | 7.08 | 7.65 | 8.10 | 8.42 | 8.59 |
| | | 1.6 | 9.43 | 10.35 | 11.09 | 11.63 | 11.92 |

Evaporating temp. $t_e = -10^\circ\text{C}$
Hot gas temp. $t_h = t_c + 25\text{ K}$
Subcooling $\Delta t_{sub} = 4\text{ K}$

An increase in hot gas temperature t_h of 10 K, based on $t_h = t_c + 25^\circ\text{C}$, reduces valve capacity approx. 2% and vice versa.

A change in evaporating temperature t_e changes valve capacity; see correction factor table.

¹⁾ Bubble point

Correction factors

When sizing valves, the table value must be multiplied by a correction factor depending on evaporating temperature t_e .

Correction factors for evaporating temperature t_e

| t_e [°C] | -40 | -30 | -20 | -10 | 0 | 10 |
|------------|------|------|------|------|------|------|
| R22/R407C | 0.92 | 0.95 | 0.98 | 1.00 | 1.02 | 1.04 |

Capacity
Hot gas capacity Q_h [kW]
(continued)

| Type | K_v | Pressure drop across valve Δp [bar] | Hot gas capacity Q_h [kW] | | | | |
|------|-------|---|--|----|----|----|----|
| | | | Evaporating temp. $t_e = -10^\circ\text{C}$. Hot gas temp. $t_h = t_c + 25\text{ K}$. Subcooling $\Delta t_{\text{sub}} = 4\text{ K}$ | | | | |
| | | | ¹⁾ Condensing temp. t_c [$^\circ\text{C}$] | | | | |
| | | | 20 | 30 | 40 | 50 | 60 |

R134a

| | | | | | | | |
|--------|------|-----|------|------|------|------|------|
| EVUL 1 | 0.10 | 0.1 | 0.23 | 0.25 | 0.26 | 0.26 | 0.26 |
| | | 0.2 | 0.32 | 0.34 | 0.36 | 0.37 | 0.37 |
| | | 0.4 | 0.45 | 0.48 | 0.50 | 0.52 | 0.51 |
| | | 0.8 | 0.60 | 0.65 | 0.69 | 0.71 | 0.72 |
| | | 1.6 | 0.76 | 0.85 | 0.93 | 0.97 | 0.98 |
| EVUL 2 | 0.20 | 0.1 | 0.46 | 0.49 | 0.51 | 0.52 | 0.52 |
| | | 0.2 | 0.65 | 0.69 | 0.72 | 0.74 | 0.73 |
| | | 0.4 | 0.89 | 0.96 | 1.01 | 1.03 | 1.03 |
| | | 0.8 | 1.20 | 1.31 | 1.38 | 1.43 | 1.43 |
| | | 1.6 | 1.51 | 1.71 | 1.85 | 1.94 | 1.96 |
| EVUL 3 | 0.30 | 0.1 | 0.69 | 0.74 | 0.77 | 0.78 | 0.78 |
| | | 0.2 | 0.97 | 1.03 | 1.08 | 1.10 | 1.10 |
| | | 0.4 | 1.34 | 1.44 | 1.51 | 1.55 | 1.54 |
| | | 0.8 | 1.80 | 1.96 | 2.08 | 2.14 | 2.15 |
| | | 1.6 | 2.27 | 2.56 | 2.78 | 2.91 | 2.95 |
| EVUL 4 | 0.50 | 0.1 | 1.16 | 1.23 | 1.28 | 1.31 | 1.30 |
| | | 0.2 | 1.62 | 1.72 | 1.80 | 1.84 | 1.83 |
| | | 0.4 | 2.23 | 2.40 | 2.51 | 2.58 | 2.57 |
| | | 0.8 | 3.00 | 3.27 | 3.46 | 3.57 | 3.58 |
| | | 1.6 | 3.78 | 4.27 | 4.63 | 4.85 | 4.91 |
| EVUL 5 | 0.65 | 0.1 | 1.50 | 1.60 | 1.67 | 1.70 | 1.69 |
| | | 0.2 | 2.10 | 2.24 | 2.34 | 2.39 | 2.38 |
| | | 0.4 | 2.90 | 3.12 | 3.27 | 3.35 | 3.34 |
| | | 0.8 | 3.90 | 4.25 | 4.50 | 4.64 | 4.66 |
| | | 1.6 | 4.91 | 5.55 | 6.01 | 6.30 | 6.38 |
| EVUL 6 | 0.75 | 0.1 | 1.74 | 1.84 | 1.92 | 1.96 | 1.95 |
| | | 0.2 | 2.43 | 2.59 | 2.70 | 2.76 | 2.75 |
| | | 0.4 | 3.35 | 3.59 | 3.77 | 3.86 | 3.86 |
| | | 0.8 | 4.50 | 4.90 | 5.19 | 5.36 | 5.37 |
| | | 1.6 | 5.67 | 6.40 | 6.94 | 7.27 | 7.37 |
| EVUL 8 | 0.90 | 0.1 | 2.08 | 2.21 | 2.31 | 2.35 | 2.34 |
| | | 0.2 | 2.91 | 3.10 | 3.24 | 3.31 | 3.30 |
| | | 0.4 | 4.02 | 4.31 | 4.52 | 4.64 | 4.63 |
| | | 0.8 | 5.40 | 5.88 | 6.23 | 6.43 | 6.45 |
| | | 1.6 | 6.80 | 7.69 | 8.33 | 8.72 | 8.84 |

Evaporating temp. $t_e = -10^\circ\text{C}$
 Hot gas temp. $t_h = t_c + 25\text{ K}$
 Subcooling $\Delta t_{\text{sub}} = 4\text{ K}$

An increase in hot gas temperature t_h of 10 K, based on $t_h = t_c + 25^\circ\text{C}$, reduces valve capacity approx. 2% and vice versa.

A change in evaporating temperature t_e changes valve capacity; see correction factor table.

¹⁾ Bubble point

Correction factors

When sizing valves, the table value must be multiplied by a correction factor depending on evaporating temperature t_e .

Correction factors for evaporating temperature t_e

| t_e [$^\circ\text{C}$] | -40 | -30 | -20 | -10 | 0 | 10 |
|----------------------------|------|------|------|------|------|------|
| R134a | 0.88 | 0.92 | 0.96 | 1.00 | 1.04 | 1.08 |

Capacity
Hot gas capacity Q_h [kW]
(continued)

| Type | K _v | Pressure drop across valve Δp [bar] | Hot gas capacity Q _h [kW] | | | | |
|------|----------------|-------------------------------------|---|----|----|----|----|
| | | | Evaporating temp. t _e = -10 °C. Hot gas temp. t _h = t _c + 25 K. Subcooling Δt _{sub} = 4 K | | | | |
| | | | 1) Condensing temp. t _c [°C] | | | | |
| | | | 20 | 30 | 40 | 50 | 60 |

R404A/R507

| | | | | | | | |
|--------|------|-----|------|------|------|------|------|
| EVUL 1 | 0.10 | 0.1 | 0.26 | 0.27 | 0.27 | 0.26 | 0.23 |
| | | 0.2 | 0.37 | 0.38 | 0.38 | 0.36 | 0.32 |
| | | 0.4 | 0.52 | 0.53 | 0.53 | 0.51 | 0.46 |
| | | 0.8 | 0.72 | 0.74 | 0.74 | 0.71 | 0.64 |
| | | 1.6 | 0.96 | 1.01 | 1.02 | 0.98 | 0.89 |
| EVUL 2 | 0.20 | 0.1 | 0.53 | 0.54 | 0.53 | 0.51 | 0.46 |
| | | 0.2 | 0.74 | 0.76 | 0.75 | 0.72 | 0.65 |
| | | 0.4 | 1.04 | 1.06 | 1.06 | 1.02 | 0.91 |
| | | 0.8 | 1.43 | 1.48 | 1.48 | 1.42 | 1.28 |
| | | 1.6 | 1.93 | 2.01 | 2.03 | 1.97 | 1.79 |
| EVUL 3 | 0.30 | 0.1 | 0.79 | 0.81 | 0.80 | 0.77 | 0.69 |
| | | 0.2 | 1.11 | 1.14 | 1.13 | 1.08 | 0.97 |
| | | 0.4 | 1.56 | 1.59 | 1.59 | 1.52 | 1.37 |
| | | 0.8 | 2.15 | 2.22 | 2.22 | 2.13 | 1.93 |
| | | 1.6 | 2.89 | 3.02 | 3.05 | 2.95 | 2.68 |
| EVUL 4 | 0.50 | 0.1 | 1.32 | 1.35 | 1.34 | 1.28 | 1.15 |
| | | 0.2 | 1.85 | 1.90 | 1.88 | 1.80 | 1.62 |
| | | 0.4 | 2.59 | 2.66 | 2.65 | 2.54 | 2.29 |
| | | 0.8 | 3.58 | 3.69 | 3.69 | 3.55 | 3.21 |
| | | 1.6 | 4.81 | 5.03 | 5.08 | 4.92 | 4.47 |
| EVUL 5 | 0.65 | 0.1 | 1.71 | 1.75 | 1.74 | 1.66 | 1.49 |
| | | 0.2 | 2.41 | 2.46 | 2.45 | 2.34 | 2.11 |
| | | 0.4 | 3.37 | 3.45 | 3.44 | 3.30 | 2.97 |
| | | 0.8 | 4.66 | 4.80 | 4.80 | 4.62 | 4.17 |
| | | 1.6 | 6.26 | 6.54 | 6.61 | 6.40 | 5.81 |
| EVUL 6 | 0.75 | 0.1 | 1.98 | 2.02 | 2.00 | 1.92 | 1.72 |
| | | 0.2 | 2.78 | 2.84 | 2.83 | 2.70 | 2.43 |
| | | 0.4 | 3.89 | 3.99 | 3.97 | 3.81 | 3.43 |
| | | 0.8 | 5.37 | 5.54 | 5.54 | 5.33 | 4.81 |
| | | 1.6 | 7.22 | 7.55 | 7.62 | 7.38 | 6.70 |
| EVUL 8 | 0.90 | 0.1 | 2.37 | 2.42 | 2.41 | 2.30 | 2.07 |
| | | 0.2 | 3.34 | 3.41 | 3.39 | 3.25 | 2.92 |
| | | 0.4 | 4.67 | 4.78 | 4.76 | 4.57 | 4.12 |
| | | 0.8 | 6.45 | 6.65 | 6.65 | 6.40 | 5.78 |
| | | 1.6 | 8.67 | 9.06 | 9.15 | 8.86 | 8.04 |

Evaporating temp. t_e = -10 °C
 Hot gas temp. t_h = t_c + 25 K
 Subcooling Δt_{sub} = 4 K

An increase in hot gas temperature t_h of 10 K, based on t_h = t_c + 25 °C, reduces valve capacity approx. 2% and vice versa.

A change in evaporating temperature t_e changes valve capacity; see correction factor table.

1) Bubble point

Correction factors

When sizing valves, the table value must be multiplied by a correction factor depending on evaporating temperature t_e.

Correction factors for evaporating temperature t_e

| t _e [°C] | -40 | -30 | -20 | -10 | 0 | 10 |
|---------------------|------|------|------|------|------|------|
| R404A/R507 | 0.85 | 0.90 | 0.95 | 1.00 | 1.05 | 1.09 |

Capacity
Hot gas capacity Q_h [kW]
(continued)

| Type | K_v | Pressure drop across valve Δp [bar] | Hot gas capacity Q_h [kW] | | | | |
|------|-------|---|---|----|----|----|----|
| | | | Evaporating temp. $t_e = -10$ °C. Hot gas temp. $t_h = t_c + 25$ K. Subcooling $\Delta t_{sub} = 4$ K | | | | |
| | | | 1) Condensing temp. t_c [°C] | | | | |
| | | | 20 | 30 | 40 | 50 | 60 |

R404A/R507

| | | | | | | | |
|--------|------|-----|------|------|------|------|------|
| EVUL 1 | 0.10 | 0.1 | 0.26 | 0.27 | 0.27 | 0.26 | 0.23 |
| | | 0.2 | 0.37 | 0.38 | 0.38 | 0.36 | 0.32 |
| | | 0.4 | 0.52 | 0.53 | 0.53 | 0.51 | 0.46 |
| | | 0.8 | 0.72 | 0.74 | 0.74 | 0.71 | 0.64 |
| | | 1.6 | 0.96 | 1.01 | 1.02 | 0.98 | 0.89 |
| EVUL 2 | 0.20 | 0.1 | 0.53 | 0.54 | 0.53 | 0.51 | 0.46 |
| | | 0.2 | 0.74 | 0.76 | 0.75 | 0.72 | 0.65 |
| | | 0.4 | 1.04 | 1.06 | 1.06 | 1.02 | 0.91 |
| | | 0.8 | 1.43 | 1.48 | 1.48 | 1.42 | 1.28 |
| | | 1.6 | 1.93 | 2.01 | 2.03 | 1.97 | 1.79 |
| EVUL 3 | 0.30 | 0.1 | 0.79 | 0.81 | 0.80 | 0.77 | 0.69 |
| | | 0.2 | 1.11 | 1.14 | 1.13 | 1.08 | 0.97 |
| | | 0.4 | 1.56 | 1.59 | 1.59 | 1.52 | 1.37 |
| | | 0.8 | 2.15 | 2.22 | 2.22 | 2.13 | 1.93 |
| | | 1.6 | 2.89 | 3.02 | 3.05 | 2.95 | 2.68 |
| EVUL 4 | 0.50 | 0.1 | 1.32 | 1.35 | 1.34 | 1.28 | 1.15 |
| | | 0.2 | 1.85 | 1.90 | 1.88 | 1.80 | 1.62 |
| | | 0.4 | 2.59 | 2.66 | 2.65 | 2.54 | 2.29 |
| | | 0.8 | 3.58 | 3.69 | 3.69 | 3.55 | 3.21 |
| | | 1.6 | 4.81 | 5.03 | 5.08 | 4.92 | 4.47 |
| EVUL 5 | 0.65 | 0.1 | 1.71 | 1.75 | 1.74 | 1.66 | 1.49 |
| | | 0.2 | 2.41 | 2.46 | 2.45 | 2.34 | 2.11 |
| | | 0.4 | 3.37 | 3.45 | 3.44 | 3.30 | 2.97 |
| | | 0.8 | 4.66 | 4.80 | 4.80 | 4.62 | 4.17 |
| | | 1.6 | 6.26 | 6.54 | 6.61 | 6.40 | 5.81 |
| EVUL 6 | 0.75 | 0.1 | 1.98 | 2.02 | 2.00 | 1.92 | 1.72 |
| | | 0.2 | 2.78 | 2.84 | 2.83 | 2.70 | 2.43 |
| | | 0.4 | 3.89 | 3.99 | 3.97 | 3.81 | 3.43 |
| | | 0.8 | 5.37 | 5.54 | 5.54 | 5.33 | 4.81 |
| | | 1.6 | 7.22 | 7.55 | 7.62 | 7.38 | 6.70 |
| EVUL 8 | 0.90 | 0.1 | 2.37 | 2.42 | 2.41 | 2.30 | 2.07 |
| | | 0.2 | 3.34 | 3.41 | 3.39 | 3.25 | 2.92 |
| | | 0.4 | 4.67 | 4.78 | 4.76 | 4.57 | 4.12 |
| | | 0.8 | 6.45 | 6.65 | 6.65 | 6.40 | 5.78 |
| | | 1.6 | 8.67 | 9.06 | 9.15 | 8.86 | 8.04 |

Evaporating temp. $t_e = -10$ °C
 Hot gas temp. $t_h = t_c + 25$ K
 Subcooling $\Delta t_{sub} = 4$ K

An increase in hot gas temperature t_h of 10 K, based on $t_h = t_c + 25$ °C, reduces valve capacity approx. 2% and vice versa.

A change in evaporating temperature t_e changes valve capacity; see correction factor table.

1) Bubble point

Correction factors

When sizing valves, the table value must be multiplied by a correction factor depending on evaporating temperature t_e .

Correction factors for evaporating temperature t_e

| t_e [°C] | -40 | -30 | -20 | -10 | 0 | 10 |
|-------------------|------|------|------|------|------|------|
| R404A/R507 | 0.85 | 0.90 | 0.95 | 1.00 | 1.05 | 1.09 |

Capacity
Hot gas capacity Q_h [kW]
(continued)

| Type | K _v | Pressure drop across valve Δp [bar] | Hot gas capacity Q _h [kW] | | | | |
|------|----------------|-------------------------------------|---|----|----|----|----|
| | | | Evaporating temp. t _e = -10 °C. Hot gas temp. t _h = t _c + 25 K. Subcooling Δt _{sub} = 4 K | | | | |
| | | | 1) Condensing temp. t _c [°C] | | | | |
| | | | 20 | 30 | 40 | 50 | 60 |

R410A

| | | | | | | | |
|--------|------|-----|-------|-------|-------|-------|-------|
| EVUL 1 | 0.10 | 0.1 | 0.37 | 0.39 | 0.40 | 0.40 | 0.39 |
| | | 0.2 | 0.52 | 0.54 | 0.56 | 0.56 | 0.54 |
| | | 0.4 | 0.73 | 0.76 | 0.79 | 0.79 | 0.77 |
| | | 0.8 | 1.01 | 1.07 | 1.11 | 1.12 | 1.08 |
| | | 1.6 | 1.38 | 1.47 | 1.54 | 1.56 | 1.51 |
| EVUL 2 | 0.20 | 0.1 | 0.73 | 0.77 | 0.79 | 0.80 | 0.77 |
| | | 0.2 | 1.03 | 1.09 | 1.12 | 1.13 | 1.09 |
| | | 0.4 | 1.45 | 1.53 | 1.58 | 1.59 | 1.54 |
| | | 0.8 | 2.02 | 2.14 | 2.21 | 2.23 | 2.16 |
| | | 1.6 | 2.76 | 2.95 | 3.07 | 3.11 | 3.02 |
| EVUL 3 | 0.30 | 0.1 | 1.10 | 1.16 | 1.19 | 1.20 | 1.16 |
| | | 0.2 | 1.55 | 1.63 | 1.68 | 1.69 | 1.63 |
| | | 0.4 | 2.18 | 2.29 | 2.37 | 2.38 | 2.30 |
| | | 0.8 | 3.03 | 3.20 | 3.32 | 3.35 | 3.24 |
| | | 1.6 | 4.14 | 4.42 | 4.61 | 4.67 | 4.54 |
| EVUL 4 | 0.50 | 0.1 | 1.84 | 1.93 | 1.99 | 1.99 | 1.93 |
| | | 0.2 | 2.59 | 2.72 | 2.80 | 2.82 | 2.72 |
| | | 0.4 | 3.63 | 3.82 | 3.94 | 3.97 | 3.84 |
| | | 0.8 | 5.05 | 5.34 | 5.53 | 5.58 | 5.40 |
| | | 1.6 | 6.90 | 7.37 | 7.68 | 7.78 | 7.56 |
| EVUL 5 | 0.65 | 0.1 | 2.39 | 2.51 | 2.58 | 2.59 | 2.50 |
| | | 0.2 | 3.36 | 3.53 | 3.64 | 3.66 | 3.54 |
| | | 0.4 | 4.72 | 4.97 | 5.13 | 5.16 | 4.99 |
| | | 0.8 | 6.56 | 6.94 | 7.19 | 7.25 | 7.02 |
| | | 1.6 | 8.97 | 9.58 | 9.98 | 10.11 | 9.83 |
| EVUL 6 | 0.75 | 0.1 | 2.75 | 2.89 | 2.98 | 2.99 | 2.89 |
| | | 0.2 | 3.88 | 4.08 | 4.20 | 4.22 | 4.08 |
| | | 0.4 | 5.44 | 5.73 | 5.92 | 5.95 | 5.76 |
| | | 0.8 | 7.57 | 8.01 | 8.29 | 8.36 | 8.10 |
| | | 1.6 | 10.35 | 11.05 | 11.51 | 11.67 | 11.34 |
| EVUL 8 | 0.90 | 0.1 | 3.31 | 3.47 | 3.57 | 3.59 | 3.47 |
| | | 0.2 | 4.66 | 4.89 | 5.04 | 5.07 | 4.90 |
| | | 0.4 | 6.53 | 6.88 | 7.10 | 7.14 | 6.91 |
| | | 0.8 | 9.09 | 9.61 | 9.95 | 10.04 | 9.72 |
| | | 1.6 | 12.42 | 13.26 | 13.82 | 14.00 | 13.61 |

Evaporating temp. t_e = -10 °C
 Hot gas temp. t_h = t_c + 25 K
 Subcooling Δt_{sub} = 4 K

An increase in hot gas temperature t_h of 10 K, based on t_h = t_c + 25 °C, reduces valve capacity approx. 2% and vice versa.

A change in evaporating temperature t_e changes valve capacity; see correction factor table.

¹⁾ Bubble point

Correction factors

When sizing valves, the table value must be multiplied by a correction factor depending on evaporating temperature t_e.

Correction factors for evaporating temperature t_e

| t _i [°C] | -40 | -30 | -20 | -10 | 0 | 10 |
|---------------------|------|------|------|------|------|------|
| R410A | 0.92 | 0.95 | 0.98 | 1.00 | 1.02 | 1.03 |

US Units

Capacity
Liquid capacity Ql [kW]

| Type | Cv | Liquid capacity Q ^e [TR] at pressure drop across valve Δp [psi] | | | | | | |
|------|----|--|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

R22/R407C

| | | | | | | | | |
|--------|------|-----|-----|-----|-----|-----|-----|-----|
| EVUL 1 | 0.12 | 0.3 | 0.5 | 0.6 | 0.7 | 0.7 | 0.8 | 0.9 |
| EVUL 2 | 0.23 | 0.7 | 0.9 | 1.2 | 1.3 | 1.5 | 1.6 | 1.8 |
| EVUL 3 | 0.35 | 1.0 | 1.4 | 1.7 | 2.0 | 2.2 | 2.4 | 2.6 |
| EVUL 4 | 0.58 | 1.7 | 2.4 | 2.9 | 3.3 | 3.7 | 4.1 | 4.4 |
| EVUL 5 | 0.75 | 2.2 | 3.1 | 3.7 | 4.3 | 4.8 | 5.3 | 5.7 |
| EVUL 6 | 0.87 | 2.5 | 3.5 | 4.3 | 5.0 | 5.6 | 6.1 | 6.6 |
| EVUL 8 | 1.04 | 3.0 | 4.2 | 5.2 | 6.0 | 6.7 | 7.3 | 7.9 |

R134a

| | | | | | | | | |
|--------|------|------|------|------|------|------|------|------|
| EVUL 1 | 0.12 | 0.33 | 0.47 | 0.57 | 0.66 | 0.74 | 0.81 | 0.87 |
| EVUL 2 | 0.23 | 0.66 | 0.93 | 1.14 | 1.32 | 1.47 | 1.61 | 1.74 |
| EVUL 3 | 0.35 | 0.99 | 1.40 | 1.71 | 1.97 | 2.21 | 2.42 | 2.61 |
| EVUL 4 | 0.58 | 1.64 | 2.33 | 2.85 | 3.29 | 3.68 | 4.03 | 4.35 |
| EVUL 5 | 0.75 | 2.14 | 3.02 | 3.70 | 4.27 | 4.78 | 5.24 | 5.66 |
| EVUL 6 | 0.87 | 2.47 | 3.49 | 4.27 | 4.93 | 5.51 | 6.04 | 6.53 |
| EVUL 8 | 1.04 | 2.96 | 4.19 | 5.13 | 5.92 | 6.62 | 7.25 | 7.83 |

R404A/R507

| | | | | | | | | |
|--------|------|-----|-----|-----|-----|-----|-----|-----|
| EVUL 1 | 0.12 | 0.2 | 0.3 | 0.4 | 0.5 | 0.5 | 0.6 | 0.6 |
| EVUL 2 | 0.23 | 0.5 | 0.6 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 |
| EVUL 3 | 0.35 | 0.7 | 1.0 | 1.2 | 1.4 | 1.5 | 1.7 | 1.8 |
| EVUL 4 | 0.58 | 1.1 | 1.6 | 2.0 | 2.3 | 2.5 | 2.8 | 3.0 |
| EVUL 5 | 0.75 | 1.5 | 2.1 | 2.6 | 3.0 | 3.3 | 3.6 | 3.9 |
| EVUL 6 | 0.87 | 1.7 | 2.4 | 3.0 | 3.4 | 3.8 | 4.2 | 4.5 |
| EVUL 8 | 1.04 | 2.1 | 2.9 | 3.6 | 4.1 | 4.6 | 5.0 | 5.4 |

R410A

| | | | | | | | | |
|--------|------|-----|-----|-----|-----|-----|-----|-----|
| EVUL 1 | 0.12 | 0.3 | 0.5 | 0.6 | 0.7 | 0.7 | 0.8 | 0.9 |
| EVUL 2 | 0.23 | 0.7 | 0.9 | 1.1 | 1.3 | 1.5 | 1.6 | 1.8 |
| EVUL 3 | 0.35 | 1.0 | 1.4 | 1.7 | 2.0 | 2.2 | 2.4 | 2.6 |
| EVUL 4 | 0.58 | 1.7 | 2.3 | 2.9 | 3.3 | 3.7 | 4.1 | 4.4 |
| EVUL 5 | 0.75 | 2.2 | 3.0 | 3.7 | 4.3 | 4.8 | 5.3 | 5.7 |
| EVUL 6 | 0.87 | 2.5 | 3.5 | 4.3 | 5.0 | 5.6 | 6.1 | 6.6 |
| EVUL 8 | 1.04 | 3.0 | 4.2 | 5.2 | 6.0 | 6.7 | 7.3 | 7.9 |

Capacities are based on:
Liquid temperature:
t_l = 100 °F ahead of valve,
Evaporating temperature:
t_e = 40 °F
Superheat temperature:
(t_e+10 °F) = 50 °F

Correction factors
When liquid temperature t_l ahead
of the expansion valve is other than 100 °F,
adjust the table capacities by multiplying
them by the appropriate correction factor
found in the following table.

Correction factors for liquid temperature t_l

| t _l [°F] | 80 | 90 | 100 | 110 | 120 |
|---------------------|------|------|------|------|------|
| Factor | 1.10 | 1.05 | 1.00 | 0.95 | 0.90 |

US Units

Capacity
Suction vapour capacity
 Q^e [TR]

| Type | Cv | Pressure drop Δp [psi] | Suction vapour capacity Q^e [TR] at evaporating temperature t_e [°F] | | | | | | |
|------|----|--------------------------------|--|-----|---|----|----|----|----|
| | | | -40 | -20 | 0 | 10 | 20 | 30 | 40 |

R22/R407C

| | | | | | | | | | | |
|--------|------|---|-------|-------|-------|-------|-------|-------|-------|-------|
| EVUL 1 | 0.12 | 1 | 0.016 | 0.022 | 0.030 | 0.034 | 0.038 | 0.043 | 0.048 | 0.054 |
| | | 2 | 0.022 | 0.031 | 0.041 | 0.047 | 0.053 | 0.060 | 0.067 | 0.075 |
| | | 3 | 0.025 | 0.036 | 0.049 | 0.057 | 0.065 | 0.073 | 0.082 | 0.092 |
| EVUL 2 | 0.23 | 1 | 0.032 | 0.045 | 0.059 | 0.067 | 0.076 | 0.086 | 0.096 | 0.107 |
| | | 2 | 0.043 | 0.061 | 0.082 | 0.094 | 0.107 | 0.120 | 0.135 | 0.151 |
| | | 3 | 0.050 | 0.072 | 0.099 | 0.113 | 0.129 | 0.146 | 0.164 | 0.183 |
| EVUL 3 | 0.35 | 1 | 0.049 | 0.067 | 0.089 | 0.101 | 0.115 | 0.129 | 0.144 | 0.161 |
| | | 2 | 0.065 | 0.092 | 0.123 | 0.141 | 0.160 | 0.180 | 0.202 | 0.226 |
| | | 3 | 0.075 | 0.109 | 0.148 | 0.170 | 0.194 | 0.219 | 0.246 | 0.275 |
| EVUL 4 | 0.58 | 1 | 0.081 | 0.112 | 0.148 | 0.169 | 0.191 | 0.215 | 0.240 | 0.268 |
| | | 2 | 0.108 | 0.153 | 0.206 | 0.235 | 0.267 | 0.301 | 0.337 | 0.376 |
| | | 3 | 0.124 | 0.181 | 0.247 | 0.283 | 0.323 | 0.365 | 0.410 | 0.458 |
| EVUL 5 | 0.75 | 1 | 0.105 | 0.145 | 0.193 | 0.219 | 0.248 | 0.279 | 0.313 | 0.348 |
| | | 2 | 0.141 | 0.199 | 0.267 | 0.305 | 0.347 | 0.391 | 0.438 | 0.489 |
| | | 3 | 0.161 | 0.236 | 0.321 | 0.368 | 0.419 | 0.474 | 0.533 | 0.595 |
| EVUL 6 | 0.87 | 1 | 0.122 | 0.168 | 0.222 | 0.253 | 0.286 | 0.322 | 0.361 | 0.402 |
| | | 2 | 0.162 | 0.230 | 0.308 | 0.352 | 0.400 | 0.451 | 0.506 | 0.565 |
| | | 3 | 0.186 | 0.272 | 0.370 | 0.425 | 0.484 | 0.547 | 0.615 | 0.687 |
| EVUL 8 | 1.04 | 1 | 0.146 | 0.201 | 0.267 | 0.304 | 0.344 | 0.387 | 0.433 | 0.482 |
| | | 2 | 0.195 | 0.275 | 0.370 | 0.423 | 0.480 | 0.541 | 0.607 | 0.678 |
| | | 3 | 0.224 | 0.326 | 0.444 | 0.510 | 0.581 | 0.657 | 0.738 | 0.824 |

The table values refer to evaporator capacity and are given as a function of evaporating temperature t_e and pressure drop Δp across the valve.

Capacities are based on liquid temperature $t_l = 100$ °F ahead of the expansion valve and superheat $t_s = 7$ °F. For each additional 10 °F of superheat, the table capacities must be reduced by 2%.

Correction factors for liquid temperature t_l
When liquid temperature t_l ahead of the expansion valve is other than 100 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for liquid temperature t_l

| t_l [°F] | 80 | 90 | 100 | 110 | 120 |
|------------|------|------|------|------|------|
| Factor | 1.10 | 1.05 | 1.00 | 0.95 | 0.90 |

US Units

Capacity
Suction vapour capacity
Q^e [TR]
(continued)

| Type | Cv | Pressure drop Δp [psi] | Suction vapour capacity Q ^e [TR] at evaporating temperature t _e [°F] | | | | | | | |
|------|----|------------------------|--|-----|---|----|----|----|----|----|
| | | | -40 | -20 | 0 | 10 | 20 | 30 | 40 | 50 |

R134a

| | | | | | | | | | | |
|--------|------|---|-------|-------|-------|-------|-------|-------|-------|-------|
| EVUL 1 | 0.12 | 1 | 0.012 | 0.017 | 0.023 | 0.027 | 0.031 | 0.035 | 0.039 | 0.044 |
| | | 2 | 0.015 | 0.023 | 0.032 | 0.037 | 0.042 | 0.048 | 0.055 | 0.062 |
| | | 3 | 0.016 | 0.026 | 0.038 | 0.044 | 0.051 | 0.058 | 0.066 | 0.075 |
| EVUL 2 | 0.23 | 1 | 0.024 | 0.034 | 0.046 | 0.053 | 0.061 | 0.069 | 0.078 | 0.088 |
| | | 2 | 0.030 | 0.045 | 0.063 | 0.074 | 0.085 | 0.096 | 0.109 | 0.123 |
| | | 3 | 0.032 | 0.052 | 0.075 | 0.088 | 0.101 | 0.116 | 0.132 | 0.149 |
| EVUL 3 | 0.35 | 1 | 0.036 | 0.051 | 0.070 | 0.080 | 0.092 | 0.104 | 0.117 | 0.132 |
| | | 2 | 0.045 | 0.068 | 0.095 | 0.110 | 0.127 | 0.145 | 0.164 | 0.185 |
| | | 3 | 0.048 | 0.078 | 0.113 | 0.132 | 0.152 | 0.174 | 0.198 | 0.224 |
| EVUL 4 | 0.58 | 1 | 0.059 | 0.085 | 0.116 | 0.134 | 0.153 | 0.173 | 0.196 | 0.220 |
| | | 2 | 0.075 | 0.114 | 0.159 | 0.184 | 0.211 | 0.241 | 0.273 | 0.308 |
| | | 3 | 0.080 | 0.131 | 0.188 | 0.219 | 0.254 | 0.290 | 0.330 | 0.373 |
| EVUL 5 | 0.75 | 1 | 0.077 | 0.111 | 0.151 | 0.174 | 0.198 | 0.225 | 0.254 | 0.286 |
| | | 2 | 0.098 | 0.148 | 0.206 | 0.239 | 0.275 | 0.313 | 0.355 | 0.400 |
| | | 3 | 0.104 | 0.170 | 0.244 | 0.285 | 0.330 | 0.378 | 0.429 | 0.484 |
| EVUL 6 | 0.87 | 1 | 0.089 | 0.128 | 0.174 | 0.200 | 0.229 | 0.260 | 0.294 | 0.330 |
| | | 2 | 0.113 | 0.170 | 0.238 | 0.276 | 0.317 | 0.362 | 0.410 | 0.461 |
| | | 3 | 0.120 | 0.196 | 0.281 | 0.329 | 0.380 | 0.436 | 0.495 | 0.559 |
| EVUL 8 | 1.04 | 1 | 0.107 | 0.153 | 0.209 | 0.240 | 0.275 | 0.312 | 0.352 | 0.396 |
| | | 2 | 0.135 | 0.205 | 0.286 | 0.331 | 0.381 | 0.434 | 0.492 | 0.554 |
| | | 3 | 0.144 | 0.235 | 0.338 | 0.395 | 0.456 | 0.523 | 0.594 | 0.671 |

The table values refer to evaporator capacity and are given as a function of evaporating temperature t_e and pressure drop Δp across the valve.

Capacities are based on liquid temperature t_l = 100 °F ahead of the expansion valve and superheat t_s = 7 °F. For each additional 10 °F of superheat, the table capacities must be reduced by 2%.

Correction factors for liquid temperature t_l

When liquid temperature t_l ahead of the expansion valve is other than 100 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for liquid temperature t_l

| t _l [°F] | 80 | 90 | 100 | 110 | 120 |
|---------------------|------|------|------|------|------|
| Factor | 1.10 | 1.05 | 1.00 | 0.95 | 0.90 |

US Units

Capacity
Suction vapour capacity
Q^e [TR]
(continued)

| Type | Cv | Pressure drop Δp [psi] | Suction vapour capacity Q ^e [TR] at evaporating temperature t _e [°F] | | | | | | | |
|------|----|------------------------|--|-----|---|----|----|----|----|----|
| | | | -40 | -20 | 0 | 10 | 20 | 30 | 40 | 50 |

R404A/R507

| | | | | | | | | | | |
|--------|------|---|-------|-------|-------|-------|-------|-------|-------|-------|
| EVUL 1 | 0.12 | 1 | 0.015 | 0.020 | 0.026 | 0.030 | 0.034 | 0.038 | 0.043 | 0.048 |
| | | 2 | 0.020 | 0.028 | 0.037 | 0.042 | 0.048 | 0.054 | 0.060 | 0.068 |
| | | 3 | 0.023 | 0.033 | 0.045 | 0.051 | 0.058 | 0.065 | 0.074 | 0.082 |
| EVUL 2 | 0.23 | 1 | 0.029 | 0.040 | 0.053 | 0.060 | 0.068 | 0.077 | 0.086 | 0.096 |
| | | 2 | 0.040 | 0.055 | 0.074 | 0.084 | 0.096 | 0.108 | 0.121 | 0.135 |
| | | 3 | 0.047 | 0.066 | 0.089 | 0.102 | 0.116 | 0.131 | 0.147 | 0.165 |
| EVUL 3 | 0.35 | 1 | 0.044 | 0.060 | 0.079 | 0.090 | 0.102 | 0.115 | 0.129 | 0.144 |
| | | 2 | 0.060 | 0.083 | 0.111 | 0.126 | 0.143 | 0.162 | 0.181 | 0.203 |
| | | 3 | 0.070 | 0.099 | 0.134 | 0.153 | 0.174 | 0.196 | 0.221 | 0.247 |
| EVUL 4 | 0.58 | 1 | 0.073 | 0.100 | 0.132 | 0.151 | 0.170 | 0.192 | 0.215 | 0.240 |
| | | 2 | 0.100 | 0.138 | 0.184 | 0.211 | 0.239 | 0.269 | 0.302 | 0.338 |
| | | 3 | 0.117 | 0.166 | 0.223 | 0.255 | 0.290 | 0.327 | 0.368 | 0.411 |
| EVUL 5 | 0.75 | 1 | 0.095 | 0.130 | 0.172 | 0.196 | 0.222 | 0.249 | 0.280 | 0.312 |
| | | 2 | 0.130 | 0.180 | 0.240 | 0.274 | 0.310 | 0.350 | 0.393 | 0.439 |
| | | 3 | 0.153 | 0.215 | 0.290 | 0.332 | 0.377 | 0.426 | 0.478 | 0.535 |
| EVUL 6 | 0.87 | 1 | 0.110 | 0.150 | 0.198 | 0.226 | 0.256 | 0.288 | 0.323 | 0.360 |
| | | 2 | 0.149 | 0.207 | 0.277 | 0.316 | 0.358 | 0.404 | 0.453 | 0.506 |
| | | 3 | 0.176 | 0.248 | 0.334 | 0.383 | 0.435 | 0.491 | 0.552 | 0.617 |
| EVUL 8 | 1.04 | 1 | 0.132 | 0.180 | 0.238 | 0.271 | 0.307 | 0.345 | 0.387 | 0.432 |
| | | 2 | 0.179 | 0.249 | 0.332 | 0.379 | 0.430 | 0.485 | 0.544 | 0.608 |
| | | 3 | 0.211 | 0.298 | 0.401 | 0.459 | 0.522 | 0.589 | 0.662 | 0.741 |

The table values refer to evaporator capacity and are given as a function of evaporating temperature t_e and pressure drop Δp across the valve.

Capacities are based on liquid temperature t_l = 100 °F ahead of the expansion valve and superheat t_s = 7 °F. For each additional 10 °F of superheat, the table capacities must be reduced by 2%.

Correction factors for liquid temperature t_l

When liquid temperature t_l ahead of the expansion valve is other than 100 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for liquid temperature t_l

| t _l [°F] | 80 | 90 | 100 | 110 | 120 |
|---------------------|------|------|------|------|------|
| Factor | 1.10 | 1.05 | 1.00 | 0.95 | 0.90 |

US Units

Capacity
Suction vapour capacity
Q^e [TR]
(continued)

| Type | Cv | Pressure drop Δp [psi] | Suction vapour capacity Q ^e [TR] at evaporating temperature t _e [°F] | | | | | | |
|------|----|------------------------|--|-----|---|----|----|----|----|
| | | | -40 | -20 | 0 | 10 | 20 | 30 | 40 |

R410A

| | | | | | | | | | | |
|--------|------|---|-------|-------|-------|-------|-------|-------|-------|-------|
| EVUL 1 | 0.12 | 1 | 0.024 | 0.032 | 0.041 | 0.046 | 0.051 | 0.056 | 0.062 | 0.068 |
| | | 2 | 0.033 | 0.044 | 0.057 | 0.064 | 0.071 | 0.079 | 0.087 | 0.096 |
| | | 3 | 0.040 | 0.054 | 0.069 | 0.078 | 0.087 | 0.096 | 0.107 | 0.118 |
| EVUL 2 | 0.23 | 1 | 0.049 | 0.064 | 0.081 | 0.091 | 0.101 | 0.112 | 0.124 | 0.137 |
| | | 2 | 0.067 | 0.089 | 0.114 | 0.128 | 0.143 | 0.158 | 0.175 | 0.193 |
| | | 3 | 0.080 | 0.107 | 0.138 | 0.155 | 0.173 | 0.193 | 0.213 | 0.235 |
| EVUL 3 | 0.35 | 1 | 0.073 | 0.096 | 0.122 | 0.137 | 0.152 | 0.169 | 0.186 | 0.205 |
| | | 2 | 0.100 | 0.133 | 0.171 | 0.192 | 0.214 | 0.237 | 0.262 | 0.289 |
| | | 3 | 0.120 | 0.161 | 0.207 | 0.233 | 0.260 | 0.289 | 0.320 | 0.353 |
| EVUL 4 | 0.58 | 1 | 0.121 | 0.159 | 0.203 | 0.228 | 0.254 | 0.281 | 0.311 | 0.342 |
| | | 2 | 0.167 | 0.222 | 0.285 | 0.319 | 0.356 | 0.396 | 0.437 | 0.482 |
| | | 3 | 0.200 | 0.268 | 0.345 | 0.388 | 0.434 | 0.482 | 0.534 | 0.588 |
| EVUL 5 | 0.75 | 1 | 0.158 | 0.207 | 0.264 | 0.296 | 0.330 | 0.366 | 0.404 | 0.444 |
| | | 2 | 0.218 | 0.288 | 0.370 | 0.415 | 0.463 | 0.514 | 0.569 | 0.626 |
| | | 3 | 0.260 | 0.348 | 0.449 | 0.505 | 0.564 | 0.627 | 0.694 | 0.764 |
| EVUL 6 | 0.87 | 1 | 0.182 | 0.239 | 0.305 | 0.341 | 0.380 | 0.422 | 0.466 | 0.513 |
| | | 2 | 0.251 | 0.333 | 0.427 | 0.479 | 0.535 | 0.594 | 0.656 | 0.723 |
| | | 3 | 0.299 | 0.401 | 0.518 | 0.582 | 0.651 | 0.723 | 0.800 | 0.882 |
| EVUL 8 | 1.04 | 1 | 0.218 | 0.287 | 0.366 | 0.410 | 0.456 | 0.506 | 0.559 | 0.615 |
| | | 2 | 0.301 | 0.399 | 0.512 | 0.575 | 0.641 | 0.712 | 0.787 | 0.867 |
| | | 3 | 0.359 | 0.482 | 0.622 | 0.699 | 0.781 | 0.868 | 0.960 | 1.058 |

The table values refer to evaporator capacity and are given as a function of evaporating temperature t_e and pressure drop Δp across the valve.

Capacities are based on liquid temperature t_l = 100 °F ahead of the expansion valve and superheat t_s = 7 °F. For each additional 10 °F of superheat, the table capacities must be reduced by 2%.

Correction factors for liquid temperature t_l

When liquid temperature t_l ahead of the expansion valve is other than 100 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for liquid temperature t_l

| t _l [°F] | 80 | 90 | 100 | 110 | 120 |
|---------------------|------|------|------|------|------|
| Factor | 1.10 | 1.05 | 1.00 | 0.95 | 0.90 |

Capacity
Hot gas capacity Q_h [TR]

| Type | Cv | Pressure drop across valve Δp [bar] | Hot gas capacity Q_h [TR] at condensing temp. t_c [°F] | | | | |
|------------------|------|---|--|-------|-------|-------|-------|
| | | | 70 | 90 | 100 | 120 | 140 |
| R22/R407C | | | | | | | |
| EVUL 1 | 0.12 | 2 | 0.097 | 0.100 | 0.101 | 0.101 | 0.098 |
| | | 5 | 0.151 | 0.157 | 0.159 | 0.159 | 0.154 |
| | | 10 | 0.209 | 0.219 | 0.221 | 0.222 | 0.216 |
| | | 15 | 0.250 | 0.263 | 0.267 | 0.269 | 0.262 |
| | | 20 | 0.282 | 0.299 | 0.304 | 0.308 | 0.300 |
| | | 25 | 0.307 | 0.328 | 0.335 | 0.340 | 0.333 |
| EVUL 2 | 0.23 | 2 | 0.193 | 0.201 | 0.202 | 0.202 | 0.195 |
| | | 5 | 0.302 | 0.314 | 0.318 | 0.318 | 0.308 |
| | | 10 | 0.418 | 0.437 | 0.443 | 0.445 | 0.431 |
| | | 15 | 0.500 | 0.527 | 0.535 | 0.539 | 0.524 |
| | | 20 | 0.564 | 0.598 | 0.608 | 0.615 | 0.600 |
| | | 25 | 0.615 | 0.657 | 0.670 | 0.680 | 0.665 |
| EVUL 3 | 0.35 | 2 | 0.290 | 0.301 | 0.304 | 0.303 | 0.293 |
| | | 5 | 0.453 | 0.471 | 0.476 | 0.477 | 0.461 |
| | | 10 | 0.626 | 0.656 | 0.664 | 0.667 | 0.647 |
| | | 15 | 0.750 | 0.790 | 0.802 | 0.808 | 0.786 |
| | | 20 | 0.845 | 0.897 | 0.912 | 0.923 | 0.900 |
| | | 25 | 0.922 | 0.985 | 1.005 | 1.020 | 0.998 |
| EVUL 4 | 0.58 | 2 | 0.483 | 0.501 | 0.506 | 0.506 | 0.489 |
| | | 5 | 0.755 | 0.785 | 0.794 | 0.794 | 0.769 |
| | | 10 | 1.044 | 1.093 | 1.107 | 1.111 | 1.078 |
| | | 15 | 1.250 | 1.316 | 1.337 | 1.347 | 1.310 |
| | | 20 | 1.409 | 1.494 | 1.521 | 1.538 | 1.500 |
| | | 25 | 1.537 | 1.642 | 1.675 | 1.700 | 1.663 |
| EVUL 5 | 0.75 | 2 | 0.628 | 0.652 | 0.658 | 0.657 | 0.635 |
| | | 5 | 0.981 | 1.021 | 1.032 | 1.033 | 0.999 |
| | | 10 | 1.357 | 1.421 | 1.439 | 1.445 | 1.402 |
| | | 15 | 1.624 | 1.711 | 1.737 | 1.751 | 1.703 |
| | | 20 | 1.832 | 1.943 | 1.977 | 1.999 | 1.950 |
| | | 25 | 1.998 | 2.134 | 2.177 | 2.210 | 2.161 |
| EVUL 6 | 0.87 | 2 | 0.725 | 0.752 | 0.759 | 0.758 | 0.733 |
| | | 5 | 1.132 | 1.178 | 1.191 | 1.191 | 1.153 |
| | | 10 | 1.566 | 1.639 | 1.660 | 1.667 | 1.618 |
| | | 15 | 1.874 | 1.975 | 2.005 | 2.020 | 1.965 |
| | | 20 | 2.113 | 2.241 | 2.281 | 2.307 | 2.250 |
| | | 25 | 2.305 | 2.462 | 2.512 | 2.550 | 2.494 |
| EVUL 8 | 1.04 | 2 | 0.870 | 0.903 | 0.911 | 0.910 | 0.880 |
| | | 5 | 1.358 | 1.414 | 1.429 | 1.430 | 1.384 |
| | | 10 | 1.879 | 1.967 | 1.993 | 2.001 | 1.941 |
| | | 15 | 2.249 | 2.370 | 2.406 | 2.424 | 2.358 |
| | | 20 | 2.536 | 2.690 | 2.737 | 2.768 | 2.700 |
| | | 25 | 2.766 | 2.955 | 3.015 | 3.061 | 2.993 |

Evaporating temp. $t_e = 40$ °F
Hot gas temp. $t_h = t_c + 40$ °F
Subcooling $\Delta t_u = 10$ °F

The table values refer to evaporator capacity and are given as a function of evaporating temperature t_e and pressure drop Δp across the valve.

Capacities are based on a hot gas temperature superheated 40 °F above condensing temperature ($t_h = t_c + 40$ °F). For each additional 10 °F of superheat above 40 °F, the table capacities must be reduced by 1%.

Correction factors for liquid temperature t_l
When the valve is used in a hot gas defrost circuit, evaporator temperature affects the capacity. When the evaporator temperature differs from 40 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for t_h and t_e

| t_l [°F] | -40 | -20 | 0 | 20 | 40 | 50 |
|------------|------|------|------|------|----|------|
| Factor | 1.18 | 1.14 | 1.09 | 1.04 | 1 | 0.97 |

Capacity
Hot gas capacity Q_h [TR]
(continued)

US Units

| Type | Cv | Pressure drop across valve Δp [bar] | Hot gas capacity Q _h [TR] at condensing temp. t _c [°F] | | | | |
|--------------|------|-------------------------------------|--|-------|-------|-------|-------|
| | | | 70 | 90 | 100 | 120 | 140 |
| R134a | | | | | | | |
| EVUL 1 | 0.12 | 2 | 0.073 | 0.077 | 0.079 | 0.080 | 0.079 |
| | | 5 | 0.113 | 0.120 | 0.122 | 0.125 | 0.123 |
| | | 10 | 0.153 | 0.165 | 0.169 | 0.173 | 0.172 |
| | | 15 | 0.179 | 0.195 | 0.201 | 0.208 | 0.208 |
| | | 20 | 0.196 | 0.218 | 0.226 | 0.236 | 0.236 |
| | | 25 | 0.208 | 0.235 | 0.245 | 0.258 | 0.260 |
| EVUL 2 | 0.23 | 2 | 0.146 | 0.155 | 0.157 | 0.160 | 0.158 |
| | | 5 | 0.226 | 0.240 | 0.245 | 0.250 | 0.247 |
| | | 10 | 0.306 | 0.329 | 0.338 | 0.347 | 0.344 |
| | | 15 | 0.358 | 0.391 | 0.403 | 0.416 | 0.416 |
| | | 20 | 0.393 | 0.436 | 0.452 | 0.471 | 0.473 |
| | | 25 | 0.416 | 0.471 | 0.491 | 0.516 | 0.521 |
| EVUL 3 | 0.35 | 2 | 0.220 | 0.232 | 0.236 | 0.240 | 0.236 |
| | | 5 | 0.339 | 0.360 | 0.367 | 0.375 | 0.370 |
| | | 10 | 0.459 | 0.494 | 0.506 | 0.520 | 0.516 |
| | | 15 | 0.537 | 0.586 | 0.604 | 0.624 | 0.623 |
| | | 20 | 0.589 | 0.655 | 0.678 | 0.707 | 0.709 |
| | | 25 | 0.624 | 0.706 | 0.736 | 0.774 | 0.781 |
| EVUL 4 | 0.58 | 2 | 0.366 | 0.386 | 0.393 | 0.399 | 0.394 |
| | | 5 | 0.565 | 0.600 | 0.612 | 0.624 | 0.617 |
| | | 10 | 0.765 | 0.823 | 0.844 | 0.866 | 0.861 |
| | | 15 | 0.894 | 0.977 | 1.006 | 1.041 | 1.039 |
| | | 20 | 0.982 | 1.091 | 1.130 | 1.178 | 1.182 |
| | | 25 | 1.040 | 1.177 | 1.227 | 1.290 | 1.302 |
| EVUL 5 | 0.75 | 2 | 0.476 | 0.502 | 0.511 | 0.519 | 0.512 |
| | | 5 | 0.734 | 0.780 | 0.796 | 0.812 | 0.803 |
| | | 10 | 0.994 | 1.071 | 1.097 | 1.126 | 1.119 |
| | | 15 | 1.162 | 1.270 | 1.308 | 1.353 | 1.351 |
| | | 20 | 1.277 | 1.418 | 1.469 | 1.531 | 1.537 |
| | | 25 | 1.352 | 1.530 | 1.595 | 1.677 | 1.692 |
| EVUL 6 | 0.87 | 2 | 0.549 | 0.579 | 0.590 | 0.599 | 0.591 |
| | | 5 | 0.847 | 0.900 | 0.919 | 0.937 | 0.926 |
| | | 10 | 1.147 | 1.235 | 1.266 | 1.300 | 1.291 |
| | | 15 | 1.341 | 1.465 | 1.510 | 1.561 | 1.559 |
| | | 20 | 1.473 | 1.636 | 1.695 | 1.767 | 1.773 |
| | | 25 | 1.560 | 1.766 | 1.841 | 1.935 | 1.952 |
| EVUL 8 | 1.04 | 2 | 0.659 | 0.695 | 0.708 | 0.719 | 0.709 |
| | | 5 | 1.017 | 1.080 | 1.102 | 1.124 | 1.111 |
| | | 10 | 1.377 | 1.482 | 1.519 | 1.560 | 1.549 |
| | | 15 | 1.610 | 1.758 | 1.812 | 1.873 | 1.870 |
| | | 20 | 1.768 | 1.964 | 2.034 | 2.120 | 2.128 |
| | | 25 | 1.872 | 2.119 | 2.209 | 2.322 | 2.343 |

Evaporating temp. t_e = 40 °F
 Hot gas temp. t_h = t_c + 40 °F
 Subcooling Δt_u = 10 °F

The table values refer to evaporator capacity and are given as a function of evaporating temperature t_e and pressure drop Δp across the valve.

Capacities are based on a hot gas temperature superheated 40 °F above condensing temperature (t_h = t_c + 40 °F). For each additional 10 °F of superheat above 40 °F, the table capacities must be reduced by 1%.

Correction factors for liquid temperature t_l
 When the valve is used in a hot gas defrost circuit, evaporator temperature affects the capacity. When the evaporator temperature differs from 40 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.
Correction factors for t_h and t_e

| t _l [°F] | -40 | -20 | 0 | 20 | 40 | 50 |
|---------------------|------|------|------|------|----|------|
| Factor | 1.18 | 1.14 | 1.09 | 1.04 | 1 | 0.97 |

US Units

Capacity
Hot gas capacity Q_h [TR]
(continued)

| Type | Cv | Pressure drop across valve Δp [bar] | Hot gas capacity Q _h [TR] at condensing temp. t _c [°F] | | | | |
|--------------|------|-------------------------------------|--|-------|-------|-------|-------|
| | | | 70 | 90 | 100 | 120 | 140 |
| R404A | | | | | | | |
| EVUL 1 | 0.12 | 2 | 0.082 | 0.083 | 0.082 | 0.078 | 0.069 |
| | | 5 | 0.128 | 0.129 | 0.128 | 0.122 | 0.109 |
| | | 10 | 0.178 | 0.180 | 0.179 | 0.171 | 0.153 |
| | | 15 | 0.213 | 0.217 | 0.216 | 0.207 | 0.186 |
| | | 20 | 0.241 | 0.247 | 0.246 | 0.237 | 0.213 |
| | | 25 | 0.263 | 0.271 | 0.271 | 0.262 | 0.236 |
| EVUL 2 | 0.23 | 2 | 0.164 | 0.165 | 0.164 | 0.155 | 0.139 |
| | | 5 | 0.257 | 0.259 | 0.257 | 0.244 | 0.218 |
| | | 10 | 0.356 | 0.360 | 0.358 | 0.342 | 0.306 |
| | | 15 | 0.426 | 0.434 | 0.432 | 0.414 | 0.372 |
| | | 20 | 0.481 | 0.493 | 0.492 | 0.473 | 0.426 |
| | | 25 | 0.525 | 0.542 | 0.542 | 0.523 | 0.472 |
| EVUL 3 | 0.35 | 2 | 0.247 | 0.248 | 0.245 | 0.233 | 0.208 |
| | | 5 | 0.385 | 0.388 | 0.385 | 0.366 | 0.327 |
| | | 10 | 0.533 | 0.541 | 0.537 | 0.512 | 0.459 |
| | | 15 | 0.639 | 0.652 | 0.648 | 0.621 | 0.558 |
| | | 20 | 0.722 | 0.740 | 0.738 | 0.710 | 0.639 |
| | | 25 | 0.788 | 0.814 | 0.814 | 0.785 | 0.708 |
| EVUL 4 | 0.58 | 2 | 0.411 | 0.413 | 0.409 | 0.388 | 0.347 |
| | | 5 | 0.642 | 0.647 | 0.641 | 0.610 | 0.546 |
| | | 10 | 0.889 | 0.901 | 0.895 | 0.854 | 0.765 |
| | | 15 | 1.065 | 1.086 | 1.081 | 1.035 | 0.930 |
| | | 20 | 1.203 | 1.233 | 1.231 | 1.183 | 1.065 |
| | | 25 | 1.313 | 1.356 | 1.356 | 1.308 | 1.181 |
| EVUL 5 | 0.75 | 2 | 0.535 | 0.537 | 0.532 | 0.505 | 0.451 |
| | | 5 | 0.835 | 0.841 | 0.834 | 0.793 | 0.709 |
| | | 10 | 1.156 | 1.171 | 1.163 | 1.110 | 0.995 |
| | | 15 | 1.385 | 1.412 | 1.405 | 1.346 | 1.209 |
| | | 20 | 1.563 | 1.603 | 1.600 | 1.537 | 1.384 |
| | | 25 | 1.707 | 1.763 | 1.763 | 1.700 | 1.535 |
| EVUL 6 | 0.87 | 2 | 0.617 | 0.620 | 0.613 | 0.582 | 0.520 |
| | | 5 | 0.963 | 0.971 | 0.962 | 0.915 | 0.818 |
| | | 10 | 1.334 | 1.351 | 1.342 | 1.281 | 1.148 |
| | | 15 | 1.598 | 1.629 | 1.621 | 1.553 | 1.395 |
| | | 20 | 1.804 | 1.850 | 1.846 | 1.774 | 1.597 |
| | | 25 | 1.970 | 2.034 | 2.034 | 1.962 | 1.771 |
| EVUL 8 | 1.04 | 2 | 0.740 | 0.743 | 0.736 | 0.699 | 0.624 |
| | | 5 | 1.156 | 1.165 | 1.154 | 1.098 | 0.982 |
| | | 10 | 1.600 | 1.622 | 1.611 | 1.537 | 1.378 |
| | | 15 | 1.918 | 1.955 | 1.945 | 1.863 | 1.674 |
| | | 20 | 2.165 | 2.220 | 2.215 | 2.129 | 1.917 |
| | | 25 | 2.364 | 2.441 | 2.441 | 2.354 | 2.125 |

Evaporating temp. t_e = 40 °F
 Hot gas temp. t_h = t_c + 40 °F
 Subcooling Δt_u = 10 °F

The table values refer to evaporator capacity and are given as a function of evaporating temperature t_e and pressure drop Δp across the valve.

Capacities are based on a hot gas temperature superheated 40 °F above condensing temperature (t_h = t_c + 40 °F). For each additional 10 °F of superheat above 40 °F, the table capacities must be reduced by 1%.

Correction factors for liquid temperature t_l
 When the valve is used in a hot gas defrost circuit, evaporator temperature affects the capacity. When the evaporator temperature differs from 40 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for t_h and t_e

| t _l [°F] | -40 | -20 | 0 | 20 | 40 | 50 |
|---------------------|------|------|------|------|----|------|
| Factor | 1.18 | 1.14 | 1.09 | 1.04 | 1 | 0.97 |

Capacity
Hot gas capacity Q_h [TR]
(continued)

| Type | Cv | Pressure drop across valve Δp [bar] | Hot gas capacity Q_h [TR] at condensing temp. t_c [°F] | | | | |
|--------------|------|---|--|-------|-------|-------|-------|
| | | | 70 | 90 | 100 | 120 | 140 |
| R410A | | | | | | | |
| EVUL 1 | 0.12 | 2 | 0.111 | 0.114 | 0.115 | 0.114 | 0.108 |
| | | 5 | 0.174 | 0.180 | 0.181 | 0.179 | 0.170 |
| | | 10 | 0.242 | 0.251 | 0.253 | 0.251 | 0.239 |
| | | 15 | 0.292 | 0.304 | 0.307 | 0.306 | 0.290 |
| | | 20 | 0.332 | 0.347 | 0.351 | 0.350 | 0.333 |
| | | 25 | 0.365 | 0.384 | 0.389 | 0.389 | 0.371 |
| EVUL 2 | 0.23 | 2 | 0.222 | 0.229 | 0.230 | 0.228 | 0.215 |
| | | 5 | 0.348 | 0.359 | 0.362 | 0.358 | 0.339 |
| | | 10 | 0.484 | 0.503 | 0.507 | 0.503 | 0.477 |
| | | 15 | 0.584 | 0.609 | 0.615 | 0.611 | 0.581 |
| | | 20 | 0.664 | 0.695 | 0.703 | 0.701 | 0.667 |
| | | 25 | 0.730 | 0.768 | 0.778 | 0.778 | 0.741 |
| EVUL 3 | 0.35 | 2 | 0.333 | 0.343 | 0.345 | 0.341 | 0.323 |
| | | 5 | 0.521 | 0.539 | 0.543 | 0.537 | 0.509 |
| | | 10 | 0.726 | 0.754 | 0.760 | 0.754 | 0.716 |
| | | 15 | 0.876 | 0.913 | 0.922 | 0.917 | 0.871 |
| | | 20 | 0.996 | 1.042 | 1.054 | 1.051 | 1.000 |
| | | 25 | 1.095 | 1.152 | 1.167 | 1.166 | 1.112 |
| EVUL 4 | 0.58 | 2 | 0.555 | 0.572 | 0.575 | 0.569 | 0.538 |
| | | 5 | 0.869 | 0.899 | 0.905 | 0.896 | 0.848 |
| | | 10 | 1.211 | 1.257 | 1.267 | 1.257 | 1.193 |
| | | 15 | 1.460 | 1.522 | 1.537 | 1.528 | 1.452 |
| | | 20 | 1.659 | 1.737 | 1.757 | 1.752 | 1.667 |
| | | 25 | 1.825 | 1.919 | 1.945 | 1.944 | 1.853 |
| EVUL 5 | 0.75 | 2 | 0.721 | 0.744 | 0.748 | 0.740 | 0.700 |
| | | 5 | 1.130 | 1.168 | 1.176 | 1.164 | 1.102 |
| | | 10 | 1.574 | 1.634 | 1.647 | 1.634 | 1.550 |
| | | 15 | 1.898 | 1.978 | 1.998 | 1.987 | 1.888 |
| | | 20 | 2.157 | 2.258 | 2.284 | 2.277 | 2.168 |
| | | 25 | 2.373 | 2.495 | 2.528 | 2.527 | 2.409 |
| EVUL 6 | 0.87 | 2 | 0.832 | 0.858 | 0.863 | 0.853 | 0.807 |
| | | 5 | 1.304 | 1.348 | 1.357 | 1.343 | 1.272 |
| | | 10 | 1.816 | 1.885 | 1.901 | 1.886 | 1.789 |
| | | 15 | 2.190 | 2.283 | 2.305 | 2.293 | 2.178 |
| | | 20 | 2.489 | 2.606 | 2.636 | 2.628 | 2.501 |
| | | 25 | 2.738 | 2.879 | 2.917 | 2.916 | 2.780 |
| EVUL 8 | 1.04 | 2 | 0.998 | 1.030 | 1.036 | 1.024 | 0.969 |
| | | 5 | 1.564 | 1.617 | 1.628 | 1.612 | 1.526 |
| | | 10 | 2.179 | 2.262 | 2.281 | 2.263 | 2.147 |
| | | 15 | 2.628 | 2.739 | 2.766 | 2.751 | 2.614 |
| | | 20 | 2.987 | 3.127 | 3.163 | 3.153 | 3.001 |
| | | 25 | 3.285 | 3.455 | 3.501 | 3.499 | 3.336 |

Evaporating temp. $t_e = 40$ °F
 Hot gas temp. $t_h = t_c + 40$ °F
 Subcooling $\Delta t_u = 10$ °F

The table values refer to evaporator capacity and are given as a function of evaporating temperature t_e and pressure drop Δp across the valve.

Capacities are based on a hot gas temperature superheated 40 °F above condensing temperature ($t_h = t_c + 40$ °F). For each additional 10 °F of superheat above 40 °F, the table capacities must be reduced by 1%.

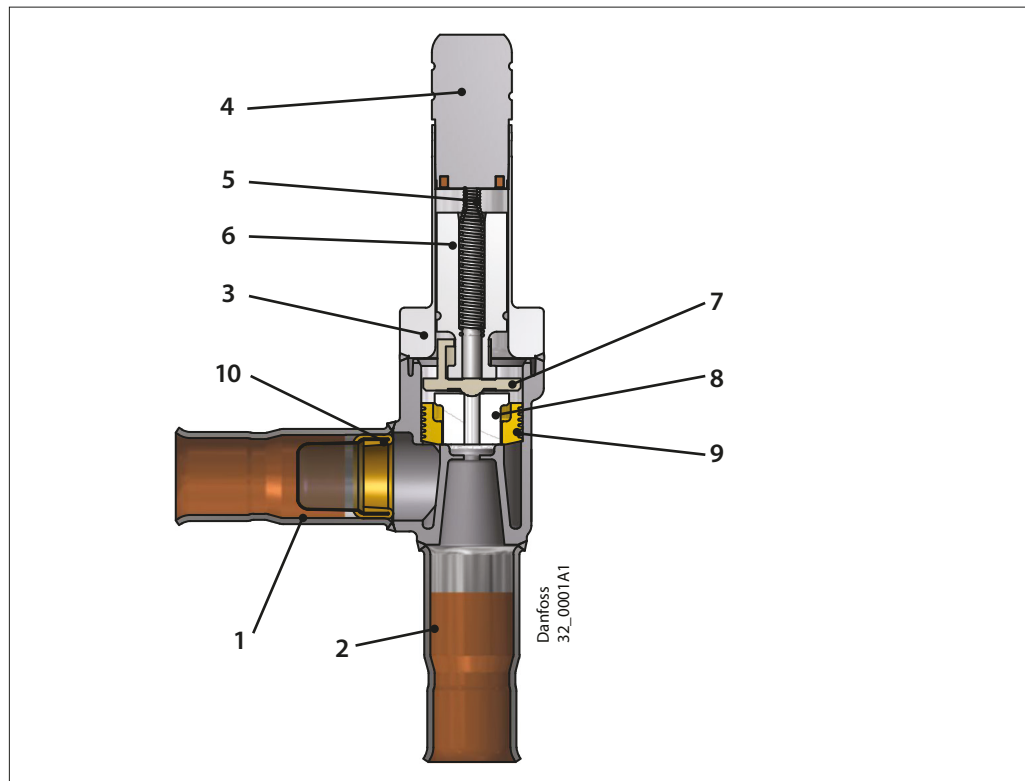
Correction factors for liquid temperature t_l
 When the valve is used in a hot gas defrost circuit, evaporator temperature affects the capacity. When the evaporator temperature differs from 40 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for t_h and t_e

| t_l [°F] | -40 | -20 | 0 | 20 | 40 | 50 |
|------------|------|------|------|------|----|------|
| Factor | 1.18 | 1.14 | 1.09 | 1.04 | 1 | 0.97 |

Design / Function

- 1. Laser welded connection
- 2. Laser welded connection
- 3. Flange
- 4. Armature tube
- 5. Return spring
- 6. Armature
- 7. Pilot plate (servo)
- 8. Seat plate (servo)
- 9. Piston (servo)
- 10. Inlet filter



Servo operated

EVUL 1 – 8 are servo operated piston solenoid valves. The servo piston principle results in a fast operating and compact valve that is able to open against a high differential pressure. The valve closes rather soft, because the pilot system does not fully close before the main orifice has closed. This minimizes liquid hammer.

When the coil is currentless, the main orifice, seat plate (12) and pilot orifice (on the pilot plate (11)) are closed. The pilot orifice and main orifice are held closed by the armature spring force and the differential pressure between inlet and outlet sides.

When current is applied to the coil, the armature (9) is drawn up into the magnetic field and thus lifts the pilot plate (11) and opens for the pilot orifice so that the de-energising of the servo chamber (A) starts and the pressure is relieved to the level of the outlet side. As the inlet pressure that acts on the bottom of the piston (13) now is higher than the pressure in the servo chamber (A), the piston is moved upwards and lifts both the pilot plate (11) and the seat plate (12). When

the seat plate is lifted, the main orifice opens for full flow. Therefore a minimum differential pressure of 0.02 bar is necessary to open the valve and keep it open.

When the current to the coil is switched off, the spring (8) forces the armature (9) down towards the pilot plate (11). The pressure in the servo chamber (A) increases and the piston will no longer be able to hold the seat plate (12) in lifted position, by which the main orifice closes. The armature (9) continues its downwards movement until the pilot orifice on the pilot plate (11) is fully closed.

⚠ Note:

Danfoss recommends that a suitable filter or filter drier (max. size of 40 – 50 µm) is installed ahead of each solenoid valve to keep scale, solder material and other foreign dirt and particles out of the valve.

⚠ Note:

By using the valve for oil return application - please contact Danfoss.

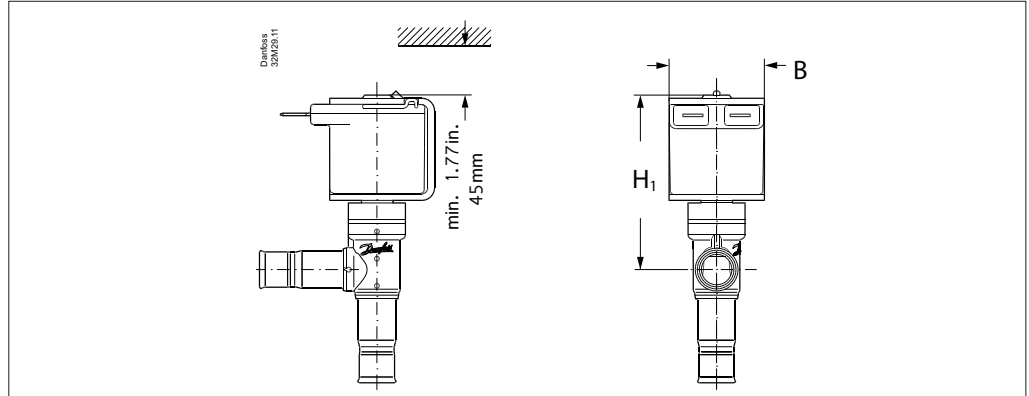
Material specifications

| No. | Description | Material |
|-----|------------------|-----------------------|
| 1 | Bi-metallic tube | Stainless steel / Cu |
| 2 | Bi-metallic tube | Stainless steel / Cu |
| 4 | Armature tube | Stainless steel |
| 5 | Spring | Spring wire stainless |
| 6 | Armature | Stainless steel |

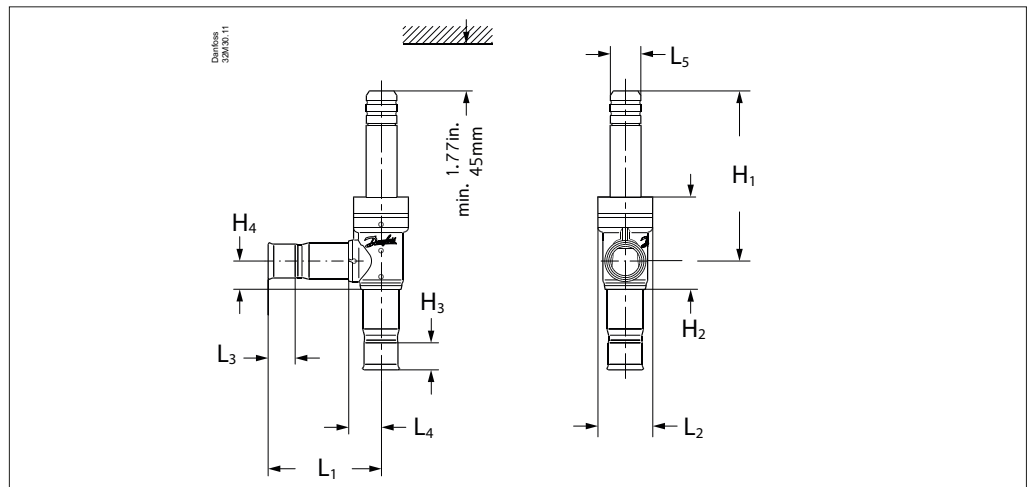
| No. | Description | Material |
|-----|--------------|-----------------------|
| 7 | Pilot plate | Thermoplast |
| 8 | Seat plate | Teflon |
| 9 | Piston | Brass |
| 10 | Inlet filter | Stainless steel/brass |

**Dimensions [in.]
and weights [lbs]**

EVUL 1 – 6 and EVUL 8 mounted with coil with 0.25 in. US spade



EVUL 1 – 6 and EVUL 8



Net weight of coil:
approx. 0.10 Kg (0.22 lbs)
Net weight of valve:
approx. 0.05 Kg (0.11 lbs)

Note:
The drawings are only representative.

| Type | Connection Solder | | H ₁ | H ₂ | H ₃ | H ₄ | L ₁ | L ₂ | L ₃ | L ₄ | L ₅ | B | Net weight with coil |
|--------|-------------------|------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----|----------------------|
| | [in.] | [mm] | | | | | | | | | | | |
| EVUL 1 | 1/4 | 6 | 55 | 30 | 7 | 8.5 | 37 | 18 | 7 | 9.9 | 10 | 30 | 0.18 |
| EVUL 2 | 1/4 | 6 | 55 | 30 | 7 | 8.5 | 37 | 18 | 7 | 9.9 | 10 | 30 | 0.18 |
| EVUL 3 | 1/4 | 6 | 55 | 30 | 7 | 8.5 | 37 | 18 | 7 | 9.9 | 10 | 30 | 0.18 |
| | 3/8 | 10 | 55 | 30 | 9 | 8.5 | 37 | 18 | 9 | 9.9 | 10 | 30 | 0.18 |
| EVUL 4 | 1/4 | 6 | 55 | 30 | 7 | 8.5 | 37 | 18 | 7 | 9.9 | 10 | 30 | 0.18 |
| | 3/8 | 10 | 55 | 30 | 9 | 8.5 | 37 | 18 | 9 | 9.9 | 10 | 30 | 0.18 |
| | 1/2 | - | 55 | 30 | 10 | 8.5 | 35 | 18 | 10 | 9.9 | 10 | 30 | 0.18 |
| | - | 12 | 55 | 30 | 10 | 8.5 | 36 | 18 | 10 | 9.9 | 10 | 30 | 0.18 |
| EVUL 5 | 3/8 | 10 | 55 | 30 | 9 | 8.5 | 37 | 18 | 9 | 9.9 | 10 | 30 | 0.18 |
| | 1/2 | - | 55 | 30 | 10 | 8.5 | 35 | 18 | 10 | 9.9 | 10 | 30 | 0.18 |
| | - | 12 | 55 | 30 | 10 | 8.5 | 36 | 18 | 10 | 9.9 | 10 | 30 | 0.18 |
| EVUL 6 | 3/8 | 10 | 55 | 30 | 9 | 8.5 | 37 | 18 | 9 | 9.9 | 10 | 30 | 0.18 |
| | 1/2 | - | 55 | 30 | 10 | 8.5 | 35 | 18 | 10 | 9.9 | 10 | 30 | 0.18 |
| | - | 12 | 55 | 30 | 10 | 8.5 | 36 | 18 | 10 | 9.9 | 10 | 30 | 0.18 |
| EVUL 8 | 1/2 | - | 55 | 30 | 10 | 8.5 | 35 | 18 | 10 | 9.9 | 10 | 30 | 0.18 |
| | - | 12 | 55 | 30 | 10 | 8.5 | 36 | 18 | 10 | 9.9 | 10 | 30 | 0.18 |

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