

## Data sheet

# Solenoid valves

## EVRA and EVRAT



EVRA is a direct or servo operated solenoid valve for liquid, suction and hot gas lines with ammonia or fluorinated refrigerants.

EVRA valves are supplied complete or as separate components, i.e. valve body, coil and flanges can be ordered separately.

EVRAT is an assisted lift, servo operated solenoid valve for liquid, suction and hot gas lines with ammonia and fluorinated refrigerants.

EVRAT is specially designed to open - and stay open - at a pressure drop of 0 bar. The EVRAT solenoid valve is thus suitable for use in all plant where the required opening differential pressure is 0 bar.

EVRAT is available as components, i.e. valve body, flanges and coil must be ordered separately.

EVRAT 10, 15 and 20 all have spindle for manual operation.

## Technical data

- Refrigerants:  
Applicable to HCFC, HFC and R717 (Ammonia).
- Temperature of medium  
-40°C – +105°C.  
Max. 130°C during defrosting.
- Ambient temperature and enclosure for coil See "Coils for solenoid valves", AI237186440089
- Classification: DNV, CRN, BV, EAC etc.  
To get an updated list of certification on the products please contact your local Danfoss Sales Company.

| Type                   | Opening differential pressure<br>with standard coil ( $\Delta p$ bar) |                                    |           |           | Temperature<br>of medium<br><br>°C | Max.<br>working<br>pressure<br>PB<br>bar | k <sub>y</sub> -value<br><sup>1)</sup><br><br>m³/h |
|------------------------|-----------------------------------------------------------------------|------------------------------------|-----------|-----------|------------------------------------|------------------------------------------|----------------------------------------------------|
|                        | Min.                                                                  | Max. (= MOPD) liquid <sup>2)</sup> |           |           |                                    |                                          |                                                    |
|                        |                                                                       | 10 W a.c.                          | 12 W a.c. | 20 W d.c. |                                    |                                          |                                                    |
| EVRA 3                 | 0.00                                                                  | 21                                 | 25        | 14        | -40 → 105                          | 42                                       | 0.23                                               |
| EVRA 10                | 0.05                                                                  | 21                                 | 25        | 18        | -40 → 105                          | 42                                       | 1.5                                                |
| EVRAT 10               | 0.00                                                                  | 14                                 | 21        | 16        | -40 → 105                          | 42                                       | 1.5                                                |
| EVRA 15                | 0.05                                                                  | 21                                 | 25        | 18        | -40 → 105                          | 42                                       | 2.7                                                |
| EVRAT 15               | 0.00                                                                  | 14                                 | 21        | 16        | -40 → 105                          | 42                                       | 2.7                                                |
| EVRA 20 with a.c. coil | 0.05                                                                  | 21                                 | 25        | 13        | -40 → 105                          | 42                                       | 4.5                                                |
| EVRA 20 with d.c. coil | 0.05                                                                  | 19                                 | 21        | 16        | -40 → 105                          | 42                                       | 4.5                                                |
| EVRAT 20               | 0.00                                                                  | 14                                 | 21        | 13        | -40 → 105                          | 42                                       | 4.5                                                |
| EVRA 25                | 0.20                                                                  | 21                                 | 25        | 14        | -40 → 105                          | 42                                       | 10.0                                               |
| EVRA 32                | 0.20                                                                  | 21                                 | 25        | 14        | -40 → 105                          | 42                                       | 16.0                                               |
| EVRA 40                | 0.20                                                                  | 21                                 | 25        | 14        | -40 → 105                          | 42                                       | 25.0                                               |

<sup>1)</sup> The  $k_v$  value is the water flow in m<sup>3</sup>/h at a pressure drop across valve of 1 bar,  $\rho = 1000 \text{ kg/m}^3$ .

<sup>2)</sup> MOPD for media in gas form is approx. 1 bar greater.

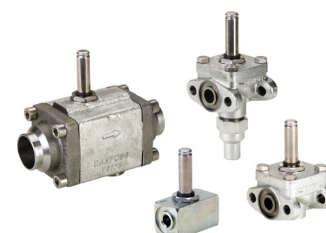
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## Data sheet | Solenoid valves type EVRA and EVRAT



### Ordering valve with coil

| Type    | Manual Stem | Inlet connection type | Orifice size [mm] | Max OPD 10W AC [bar] | Max OPD 20W DC [bar] | Coil type | Coil connection    | Supply voltage [V] AC | Frequency [Hz] | Power consumption [W] | Singlepack/ Multipack (12 pcs.) | Code number |
|---------|-------------|-----------------------|-------------------|----------------------|----------------------|-----------|--------------------|-----------------------|----------------|-----------------------|---------------------------------|-------------|
| EVRA 3  | No          | Flange*               | 3                 | 21                   | 14                   | BF230AS   | Cable (1 m/3.3 ft) | 220 - 230             | 50             | 10                    | Multipack                       | 032F310231  |
| EVRA 3  | No          | Flange*               | 3                 | 21                   | 14                   | BE230AS   | Connection Box     | 220 - 230             | 50             | 10                    | Multipack                       | 032F310331  |
| EVRA 3  | No          | Flange*               | 3                 | 21                   | 14                   | BE230CS   | Connection Box     | 220 - 230             | 50/60          | 10                    | Multipack                       | 032F310332  |
| EVRA 10 | No          | Flange*               | 10                | 21                   | 18                   | BE230AS   | Connection Box     | 220 - 230             | 50             | 10                    | Multipack                       | 032F620831  |
| EVRA 10 | Yes         | Flange*               | 10                | 21                   | 18                   | BF230AS   | Cable (1 m/3.3 ft) | 220 - 230             | 50             | 10                    | Singlepack                      | 032F621231  |
| EVRA 10 | Yes         | Flange*               | 10                | 21                   | 18                   | BE230AS   | Connection Box     | 220 - 230             | 50             | 10                    | Singlepack                      | 032F621331  |
| EVRA 10 | Yes         | Flange*               | 10                | 21                   | 18                   | BE230CS   | Connection Box     | 220 - 230             | 50/60          | 10                    | Singlepack                      | 032F621332  |
| EVRA 15 | No          | Flange*               | 15                | 21                   | 18                   | BF230AS   | Cable (1 m/3.3 ft) | 220 - 230             | 50             | 10                    | Singlepack                      | 032F621731  |
| EVRA 15 | No          | Flange*               | 15                | 21                   | 18                   | BF230CS   | Cable (1 m/3.3 ft) | 220 - 230             | 50/60          | 10                    | Singlepack                      | 032F621732  |
| EVRA 15 | No          | Flange*               | 15                | 21                   | 18                   | BE230AS   | Connection Box     | 220 - 230             | 50             | 10                    | Singlepack                      | 032F621831  |
| EVRA 15 | No          | Flange*               | 15                | 21                   | 18                   | BE230CS   | Connection Box     | 220 - 230             | 50/60          | 10                    | Singlepack                      | 032F621832  |
| EVRA 20 | No          | Flange*               | 20                | 21                   | 13                   | BF230AS   | Cable (1 m/3.3 ft) | 220 - 230             | 50             | 10                    | Singlepack                      | 032F622231  |
| EVRA 20 | No          | Flange*               | 20                | 21                   | 13                   | BE230AS   | Connection Box     | 220 - 230             | 50             | 10                    | Singlepack                      | 032F622331  |
| EVRA 20 | No          | Flange*               | 20                | 21                   | 13                   | BE230CS   | Connection Box     | 220 - 230             | 50/60          | 10                    | Singlepack                      | 032F622332  |
| EVRA 25 | Yes         | Flange*               | 25                | 21                   | 14                   | BE230CS   | Connection Box     | 220 - 230             | 50/60          | 10                    | Singlepack                      | 032F803432  |



### Ordering valve without coil

| Type     | Manual Stem | Inlet connection type | Inlet size [in] | Orifice size [mm] | Max OPD 10W AC [bar] | Max OPD 12W AC [bar] | Max OPD 20W DC [bar] | Required coil type** | Singlepack/ Multipack (12 pcs.) | Code number |
|----------|-------------|-----------------------|-----------------|-------------------|----------------------|----------------------|----------------------|----------------------|---------------------------------|-------------|
| EVRA 3   | No          | Flange*               |                 | 3                 | 21                   | 25                   | 14                   | AC / DC              | Multipack                       | 032F3050    |
| EVRA 10  | Yes         | Flange*               |                 | 10                | 21                   | 25                   | 18                   | AC / DC              | Singlepack                      | 032F6210    |
| EVRA 10  | No          | Flange*               |                 | 10                | 21                   | 25                   | 18                   | AC / DC              | Singlepack                      | 032F6211    |
| EVRAT 10 | Yes         | Flange*               |                 | 10                | 14                   | 21                   | 16                   | AC / DC              | Singlepack                      | 032F6214    |
| EVRA 15  | Yes         | Flange*               |                 | 15                | 21                   | 25                   | 18                   | AC / DC              | Singlepack                      | 032F6215    |
| EVRAT 15 | Yes         | Flange*               |                 | 15                | 14                   | 21                   | 16                   | AC / DC              | Singlepack                      | 032F6216    |
| EVRAT 20 | Yes         | Flange*               |                 | 20                | 14                   | 21                   | 13                   | AC / DC              | Singlepack                      | 032F6219    |
| EVRA 20  | Yes         | Flange*               |                 | 20                | 21                   | 25                   | 13                   | AC                   | Singlepack                      | 032F6220    |
| EVRA 20  | Yes         | Flange*               |                 | 20                | 19                   | 21                   | 16                   | AC / DC              | Singlepack                      | 032F6221    |
| EVRA 25  | Yes         | Flange*               |                 | 25                | 21                   | 25                   | 14                   | AC / DC              | Singlepack                      | 032F6225    |
| EVRA 25  | No          | Flange*               |                 | 25                | 21                   | 25                   | 14                   | AC / DC              | Singlepack                      | 032F6226    |
| EVRA 32  | Yes         | Butt weld DIN         | 1¼              | 22.2              | 21                   | 25                   | 14                   | AC / DC              | Singlepack                      | 042H1126    |
| EVRA 32  | No          | Butt weld DIN         | 1¼              | 22.2              | 21                   | 25                   | 14                   | AC / DC              | Singlepack                      | 042H1127    |
| EVRA 40  | Yes         | Butt weld DIN         | 1½              | 25.4              | 21                   | 25                   | 14                   | AC / DC              | Singlepack                      | 042H1128    |
| EVRA 40  | No          | Butt weld DIN         | 1½              | 25.4              | 21                   | 25                   | 14                   | AC / DC              | Singlepack                      | 042H1129    |
| EVRA 32  | Yes         | Butt weld DIN         | 1½              | 22.2              | 21                   | 25                   | 14                   | AC / DC              | Singlepack                      | 042H1131    |
| EVRA 40  | Yes         | Butt weld DIN         | 2               | 25.4              | 21                   | 25                   | 14                   | AC / DC              | Singlepack                      | 042H1132    |
| EVRA 32  | Yes         | Butt weld ANSI 36.10  | 1¼              | 22.2              | 21                   | 25                   | 14                   | AC / DC              | Singlepack                      | 042H1140    |
| EVRA 32  | Yes         | Butt weld ANSI 36.10  | 1½              | 22.2              | 21                   | 25                   | 14                   | AC / DC              | Singlepack                      | 042H1141    |
| EVRA 40  | Yes         | Butt weld ANSI 36.10  | 1½              | 25.4              | 21                   | 25                   | 14                   | AC / DC              | Singlepack                      | 042H1142    |
| EVRA 40  | Yes         | Butt weld ANSI 36.10  | 2               | 25.4              | 21                   | 25                   | 14                   | AC / DC              | Singlepack                      | 042H1143    |

\* Includes flange gaskets and bolts. For ordering flanges; please download the data sheet AI249786497379 from [www.danfoss.com](http://www.danfoss.com)

\*\* For ordering coils; please download the data sheet AI237186440089 from [www.danfoss.com](http://www.danfoss.com)

**Rated capacity**

| Type      | Rated capacity <sup>1)</sup> [kW] |       |       |       |                |      |       |       |         |       |       |       |
|-----------|-----------------------------------|-------|-------|-------|----------------|------|-------|-------|---------|-------|-------|-------|
|           | Liquid                            |       |       |       | Suction vapour |      |       |       | Hot gas |       |       |       |
|           | R717                              | R22   | R134a | R404A | R717           | R22  | R134a | R404A | R717    | R22   | R134a | R404A |
| EVRA 3    | 21.8                              | 4.6   | 4.3   | 3.2   |                |      |       | 6.5   | 2.1     | 1.7   | 1.7   |       |
| EVRA/T 10 | 142.0                             | 30.2  | 27.8  | 21.1  | 9.0            | 3.4  | 2.5   | 3.1   | 42.6    | 13.9  | 11.0  | 11.3  |
| EVRA/T 15 | 256.0                             | 54.4  | 50.1  | 38.0  | 16.1           | 6.2  | 4.4   | 5.5   | 76.7    | 24.9  | 19.8  | 20.3  |
| EVRA/T 20 | 426.0                             | 90.6  | 83.5  | 63.3  | 26.9           | 10.3 | 7.3   | 9.2   | 128.0   | 41.5  | 32.9  | 33.9  |
| EVRA 25   | 947.0                             | 201.0 | 186.0 | 141.0 | 59.7           | 22.8 | 16.3  | 20.4  | 284.0   | 92.3  | 73.2  | 75.3  |
| EVRA 32   | 1515.0                            | 322.0 | 297.0 | 225.0 | 95.5           | 36.5 | 26.1  | 32.6  | 454.0   | 148.0 | 117.0 | 120.0 |
| EVRA 40   | 2368.0                            | 503.0 | 464.0 | 351.0 | 149.0          | 57.0 | 40.8  | 51.0  | 710.0   | 231.0 | 183.0 | 188.0 |

<sup>1)</sup> Rated liquid and suction vapour capacity is based on evaporating temperature  $t_e = -10^\circ\text{C}$ , liquid temperature ahead of valve  $t_l = +25^\circ\text{C}$ , and pressure drop across valve  $\Delta p = 0.15$  bar.

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

**Capacity**

Liquid capacity  $Q_l$  kW

| Type | Liquid capacity $Q_e$ kW at pressure drop across valve $\Delta p$ bar |     |     |     |     |
|------|-----------------------------------------------------------------------|-----|-----|-----|-----|
|      | 0.1                                                                   | 0.2 | 0.3 | 0.4 | 0.5 |

## R 717 (NH<sub>3</sub>)

|           |        |        |        |        |        |
|-----------|--------|--------|--------|--------|--------|
| EVRA 3    | 17.8   | 25.1   | 30.8   | 35.6   | 39.8   |
| EVRA/T 10 | 116.0  | 164.0  | 201.0  | 232.0  | 259.0  |
| EVRA/T 15 | 209.0  | 295.0  | 362.0  | 418.0  | 467.0  |
| EVRA/T 20 | 348.0  | 492.0  | 603.0  | 696.0  | 778.0  |
| EVRA 25   | 773.0  | 1093.0 | 1340.0 | 1547.0 | 1729.0 |
| EVRA 32   | 1237.0 | 1749.0 | 2144.0 | 2475.0 | 2766.0 |
| EVRA 40   | 1933.0 | 2734.0 | 3349.0 | 3867.0 | 4322.0 |

## R 22

|           |       |       |       |       |       |
|-----------|-------|-------|-------|-------|-------|
| EVRA 3    | 3.8   | 5.3   | 6.6   | 7.6   | 8.5   |
| EVRA/T 10 | 24.7  | 34.9  | 42.7  | 49.3  | 55.1  |
| EVRA/T 15 | 44.4  | 62.8  | 76.9  | 88.8  | 99.2  |
| EVRA/T 20 | 73.9  | 105.0 | 128.0 | 148.0 | 165.0 |
| EVRA 25   | 165.0 | 232.0 | 285.0 | 329.0 | 368.0 |
| EVRA 32   | 263.0 | 372.0 | 455.0 | 526.0 | 588.0 |
| EVRA 40   | 411.0 | 581.0 | 712.0 | 822.0 | 919.0 |

## R 134a

|           |       |       |       |       |       |
|-----------|-------|-------|-------|-------|-------|
| EVRA 3    | 3.5   | 4.9   | 6.0   | 7.0   | 7.8   |
| EVRA/T 10 | 22.7  | 32.2  | 39.4  | 45.5  | 50.8  |
| EVRA/T 15 | 40.9  | 57.9  | 70.9  | 81.8  | 91.5  |
| EVRA/T 20 | 68.2  | 96.5  | 118.0 | 136.0 | 153.0 |
| EVRA 25   | 152.0 | 214.0 | 263.0 | 303.0 | 339.0 |
| EVRA 32   | 243.0 | 343.0 | 420.0 | 485.0 | 542.0 |
| EVRA 40   | 379.0 | 536.0 | 656.0 | 758.0 | 847.0 |

## R 404A

|           |       |       |       |       |       |
|-----------|-------|-------|-------|-------|-------|
| EVRA 3    | 2.6   | 3.7   | 4.6   | 5.3   | 5.9   |
| EVRA/T 10 | 17.2  | 24.3  | 29.8  | 34.4  | 38.5  |
| EVRA/T 15 | 31.0  | 43.8  | 53.7  | 62.0  | 69.3  |
| EVRA/T 20 | 51.7  | 73.0  | 89.5  | 103.0 | 116.0 |
| EVRA 25   | 115.0 | 162.0 | 199.0 | 230.0 | 257.0 |
| EVRA 32   | 184.0 | 260.0 | 318.0 | 367.0 | 411.0 |
| EVRA 40   | 287.0 | 406.0 | 497.0 | 574.0 | 642.0 |

Capacities are based on liquid temperature  $t_l = +25^\circ\text{C}$  ahead of valve, evaporating temperature  $t_e = -10^\circ\text{C}$ , and 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.

| $t_l$ °C                 | -10  | 0    | +10  | +20  | +25 | +30  | +40  | +50  |
|--------------------------|------|------|------|------|-----|------|------|------|
| R 717 (NH <sub>3</sub> ) | 0.84 | 0.88 | 0.92 | 0.97 | 1.0 | 1.03 | 1.09 | 1.16 |
| R 22, R 134a             | 0.76 | 0.81 | 0.88 | 0.96 | 1.0 | 1.05 | 1.16 | 1.31 |
| R 404A                   | 0.70 | 0.76 | 0.84 | 0.94 | 1.0 | 1.07 | 1.24 | 1.47 |

## Data sheet | Solenoid valves type EVRA and EVRAT

### Capacity (continued)

Suction vapour capacity  $Q_e$  kW

| Type | Pressure drop across valve<br>$\Delta p$ bar | Suction vapour capacity $Q_e$ kW at evaporating temperature $t_e$ °C |     |     |     |   |     |
|------|----------------------------------------------|----------------------------------------------------------------------|-----|-----|-----|---|-----|
|      |                                              | -40                                                                  | -30 | -20 | -10 | 0 | +10 |

### R 717 (NH<sub>3</sub>)

|           |      |      |       |       |       |       |       |
|-----------|------|------|-------|-------|-------|-------|-------|
| EVRA/T 10 | 0.1  | 3.4  | 4.5   | 5.9   | 7.3   | 8.9   | 10.6  |
|           | 0.15 | 4.0  | 5.4   | 7.0   | 9.0   | 10.9  | 13.0  |
|           | 0.2  | 4.5  | 6.1   | 7.9   | 10.0  | 12.6  | 15.0  |
| EVRA/T 15 | 0.1  | 6.1  | 8.1   | 10.7  | 13.2  | 16.0  | 19.1  |
|           | 0.15 | 7.2  | 9.7   | 12.5  | 16.1  | 19.6  | 23.4  |
|           | 0.2  | 8.0  | 11.0  | 14.2  | 18.0  | 22.6  | 27.0  |
| EVRA/T 20 | 0.1  | 10.2 | 13.5  | 17.8  | 21.9  | 26.6  | 31.9  |
|           | 0.15 | 12.1 | 16.1  | 20.9  | 26.9  | 32.6  | 39.0  |
|           | 0.2  | 13.4 | 18.3  | 23.7  | 29.9  | 37.7  | 45.1  |
| EVRA 25   | 0.1  | 22.6 | 30.0  | 39.5  | 48.7  | 59.2  | 70.8  |
|           | 0.15 | 26.7 | 35.9  | 46.3  | 59.7  | 72.5  | 86.7  |
|           | 0.2  | 29.8 | 40.5  | 52.7  | 66.4  | 83.7  | 100.0 |
| EVRA 32   | 0.1  | 36.2 | 47.8  | 63.2  | 77.9  | 94.7  | 113.0 |
|           | 0.15 | 42.7 | 57.4  | 74.1  | 95.5  | 116.0 | 139.0 |
|           | 0.2  | 47.7 | 64.8  | 84.3  | 106.0 | 134.0 | 160.0 |
| EVRA 40   | 0.1  | 56.5 | 74.8  | 98.8  | 122.0 | 148.0 | 177.0 |
|           | 0.15 | 66.8 | 89.8  | 116.0 | 149.0 | 181.0 | 217.0 |
|           | 0.2  | 74.5 | 101.0 | 132.0 | 166.0 | 209.0 | 251.0 |

### R 22

|           |      |      |      |      |      |      |      |
|-----------|------|------|------|------|------|------|------|
| EVRA/T 10 | 0.1  | 1.4  | 1.8  | 2.3  | 2.8  | 3.4  | 4.0  |
|           | 0.15 | 1.6  | 2.1  | 2.7  | 3.4  | 4.1  | 4.9  |
|           | 0.2  | 1.8  | 2.4  | 3.1  | 3.8  | 4.8  | 5.6  |
| EVRA/T 15 | 0.1  | 2.5  | 3.2  | 4.1  | 5.0  | 6.1  | 7.2  |
|           | 0.15 | 2.9  | 3.8  | 4.8  | 6.2  | 7.4  | 8.8  |
|           | 0.2  | 3.3  | 4.3  | 5.5  | 6.8  | 8.6  | 10.2 |
| EVRA/T 20 | 0.1  | 4.1  | 5.3  | 6.8  | 8.4  | 10.1 | 12.0 |
|           | 0.15 | 4.9  | 6.4  | 8.1  | 10.3 | 12.3 | 14.7 |
|           | 0.2  | 5.5  | 7.2  | 9.2  | 11.4 | 14.3 | 16.9 |
| EVRA 25   | 0.1  | 9.1  | 11.8 | 15.2 | 18.6 | 22.4 | 26.6 |
|           | 0.15 | 10.9 | 14.2 | 17.9 | 22.8 | 27.4 | 32.6 |
|           | 0.2  | 12.2 | 16.1 | 20.4 | 25.3 | 31.7 | 37.6 |
| EVRA 32   | 0.1  | 14.6 | 18.9 | 24.3 | 29.8 | 35.8 | 42.6 |
|           | 0.15 | 17.4 | 22.7 | 28.8 | 36.5 | 43.8 | 52.2 |
|           | 0.2  | 19.6 | 25.7 | 32.6 | 40.5 | 50.7 | 60.2 |
| EVRA 40   | 0.1  | 22.8 | 29.5 | 38.1 | 46.5 | 56.0 | 66.5 |
|           | 0.15 | 27.2 | 35.4 | 45.0 | 57.0 | 68.6 | 81.5 |
|           | 0.2  | 30.5 | 40.2 | 51.0 | 63.3 | 79.2 | 94.0 |

Capacities are based on liquid temperature  $t_l = +25^\circ\text{C}$  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  $\Delta p$  across valve.  
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.

#### Correction factors

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

| $t_l$ °C                 | -10  | 0    | +10  | +20  | +25 | +30  | +40  | +50  |
|--------------------------|------|------|------|------|-----|------|------|------|
| R 717 (NH <sub>3</sub> ) | 0.84 | 0.88 | 0.92 | 0.97 | 1.0 | 1.03 | 1.09 | 1.16 |
| R 22                     | 0.76 | 0.81 | 0.88 | 0.96 | 1.0 | 1.05 | 1.16 | 1.31 |

## Data sheet | Solenoid valves type EVRA and EVRAT

### Capacity (continued)

#### Suction vapour capacity $Q_e$ kW

| Type | Pressure drop across valve<br>$\Delta p$ bar | Suction vapour capacity $Q_e$ kW at evaporating temperature $t_e$ °C |     |     |     |   |     |
|------|----------------------------------------------|----------------------------------------------------------------------|-----|-----|-----|---|-----|
|      |                                              | -40                                                                  | -30 | -20 | -10 | 0 | +10 |

### R 134a

|           |      |      |      |      |      |      |      |
|-----------|------|------|------|------|------|------|------|
| EVRA/T 10 | 0.1  | 0.87 | 1.2  | 1.6  | 2.1  | 2.6  | 3.2  |
|           | 0.15 | 0.99 | 1.4  | 1.9  | 2.4  | 3.2  | 3.9  |
|           | 0.2  | 1.1  | 1.6  | 2.1  | 2.8  | 3.5  | 4.5  |
| EVRA/T 15 | 0.1  | 1.6  | 2.1  | 2.8  | 3.8  | 4.7  | 5.7  |
|           | 0.15 | 1.8  | 2.5  | 3.4  | 4.4  | 5.7  | 7.0  |
|           | 0.2  | 2.0  | 2.8  | 3.8  | 5.0  | 6.3  | 8.1  |
| EVRA/T 20 | 0.1  | 2.6  | 3.6  | 4.7  | 6.3  | 7.8  | 9.5  |
|           | 0.15 | 3.0  | 4.2  | 5.6  | 7.3  | 9.5  | 11.7 |
|           | 0.2  | 3.3  | 4.7  | 6.4  | 8.3  | 10.5 | 13.5 |
| EVRA 25   | 0.1  | 5.8  | 7.9  | 10.5 | 13.9 | 17.2 | 21.1 |
|           | 0.15 | 6.6  | 9.3  | 12.5 | 16.3 | 21.1 | 25.9 |
|           | 0.2  | 7.3  | 10.4 | 14.1 | 18.5 | 23.4 | 29.9 |
| EVRA 32   | 0.1  | 9.3  | 12.6 | 16.8 | 22.2 | 27.7 | 33.8 |
|           | 0.15 | 10.6 | 14.9 | 20.0 | 26.1 | 33.8 | 41.4 |
|           | 0.2  | 11.7 | 16.6 | 22.6 | 29.6 | 37.4 | 47.8 |
| EVRA 40   | 0.1  | 14.5 | 19.8 | 26.3 | 34.8 | 43.3 | 52.8 |
|           | 0.15 | 16.5 | 23.3 | 31.3 | 40.8 | 52.8 | 64.8 |
|           | 0.2  | 18.3 | 26.0 | 35.3 | 46.3 | 58.5 | 74.8 |

### R 404A

|           |      |      |      |      |      |      |      |
|-----------|------|------|------|------|------|------|------|
| EVRA/T 10 | 0.1  | 1.2  | 1.5  | 2.0  | 2.5  | 3.1  | 3.7  |
|           | 0.15 | 1.4  | 1.8  | 2.4  | 3.1  | 3.8  | 4.6  |
|           | 0.2  | 1.6  | 2.1  | 2.7  | 3.4  | 4.3  | 5.3  |
| EVRA/T 15 | 0.1  | 2.1  | 2.7  | 3.6  | 4.5  | 5.5  | 6.6  |
|           | 0.15 | 2.5  | 3.3  | 4.3  | 5.5  | 6.8  | 8.2  |
|           | 0.2  | 2.8  | 3.7  | 4.9  | 6.1  | 7.8  | 9.5  |
| EVRA/T 20 | 0.1  | 3.5  | 4.6  | 6.0  | 7.5  | 9.2  | 11.1 |
|           | 0.15 | 4.1  | 5.5  | 7.1  | 9.2  | 11.3 | 13.6 |
|           | 0.2  | 4.6  | 6.2  | 8.1  | 10.2 | 13.0 | 15.8 |
| EVRA 25   | 0.1  | 7.7  | 10.1 | 13.3 | 16.6 | 20.4 | 24.6 |
|           | 0.15 | 9.1  | 12.1 | 15.8 | 20.4 | 25.0 | 30.3 |
|           | 0.2  | 10.3 | 13.8 | 18.0 | 22.7 | 28.8 | 35.0 |
| EVRA 32   | 0.1  | 12.3 | 16.2 | 21.3 | 26.6 | 32.6 | 39.4 |
|           | 0.15 | 14.6 | 19.4 | 25.3 | 32.6 | 40.0 | 48.5 |
|           | 0.2  | 16.5 | 22.0 | 28.8 | 36.3 | 46.1 | 56.0 |
| EVRA 40   | 0.1  | 19.3 | 25.3 | 33.3 | 41.5 | 51.0 | 61.5 |
|           | 0.15 | 22.9 | 30.3 | 39.5 | 51.0 | 62.5 | 75.6 |
|           | 0.2  | 25.8 | 34.5 | 45.0 | 56.8 | 72.1 | 87.5 |

Capacities are based on liquid temperature  $t_l = +25^\circ\text{C}$  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  $\Delta p$  across valve.  
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.

#### Correction factors

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

| $t_v$ °C | -10  | 0    | +10  | +20  | +25 | +30  | +40  | +50  |
|----------|------|------|------|------|-----|------|------|------|
| R 134a   | 0.76 | 0.81 | 0.88 | 0.96 | 1.0 | 1.05 | 1.16 | 1.31 |
| R 404A   | 0.70 | 0.76 | 0.84 | 0.94 | 1.0 | 1.07 | 1.24 | 1.47 |

**Capacity**  
(continued)

**R 717 (NH<sub>3</sub>)**
*Hot gas capacity  $Q_h$  kW*

| Type      | Pressure drop across valve<br>$\Delta p$ bar | Hot gas capacity $Q_e$ kW                                                                                                                   |       |       |        |        |
|-----------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|--------|--------|
|           |                                              | Evaporating temp. $t_e = -10^\circ\text{C}$ . Hot gas temp. $t_h = t_c + 25^\circ\text{C}$ . Subcooling $\Delta t_{\text{sub}} = 4\text{K}$ |       |       |        |        |
|           |                                              | Condensing temperature $t_c$ $^\circ\text{C}$                                                                                               |       |       |        |        |
|           |                                              | +20                                                                                                                                         | +30   | +40   | +50    | +60    |
| EVRA 3    | 0.1                                          | 1.8                                                                                                                                         | 2.1   | 2.3   | 2.5    | 2.6    |
|           | 0.2                                          | 2.6                                                                                                                                         | 2.9   | 3.2   | 3.5    | 3.7    |
|           | 0.4                                          | 3.8                                                                                                                                         | 4.2   | 4.6   | 4.9    | 5.3    |
|           | 0.8                                          | 5.1                                                                                                                                         | 6.0   | 6.5   | 7.1    | 7.6    |
|           | 1.6                                          | 7.4                                                                                                                                         | 8.3   | 9.1   | 9.9    | 10.9   |
| EVRA/T 10 | 0.1                                          | 12.0                                                                                                                                        | 13.4  | 14.7  | 16.0   | 17.2   |
|           | 0.2                                          | 17.1                                                                                                                                        | 19.0  | 20.9  | 22.7   | 24.4   |
|           | 0.4                                          | 24.5                                                                                                                                        | 27.1  | 29.7  | 32.2   | 34.7   |
|           | 0.8                                          | 34.0                                                                                                                                        | 39.0  | 42.6  | 46.1   | 49.5   |
|           | 1.6                                          | 48.5                                                                                                                                        | 53.8  | 59.1  | 64.3   | 71.3   |
| EVRA/T 15 | 0.1                                          | 21.7                                                                                                                                        | 24.1  | 26.4  | 28.8   | 31.0   |
|           | 0.2                                          | 30.8                                                                                                                                        | 34.2  | 37.5  | 40.8   | 44.0   |
|           | 0.4                                          | 44.1                                                                                                                                        | 48.8  | 53.5  | 58.0   | 62.4   |
|           | 0.8                                          | 61.2                                                                                                                                        | 70.3  | 76.7  | 83.0   | 89.1   |
|           | 1.6                                          | 87.4                                                                                                                                        | 96.9  | 106.0 | 116.0  | 128.0  |
| EVRA/T 20 | 0.1                                          | 36.1                                                                                                                                        | 40.1  | 44.0  | 48.0   | 51.7   |
|           | 0.2                                          | 51.4                                                                                                                                        | 57.0  | 62.6  | 68.0   | 73.2   |
|           | 0.4                                          | 73.5                                                                                                                                        | 81.3  | 89.1  | 96.7   | 104.0  |
|           | 0.8                                          | 102.0                                                                                                                                       | 117.0 | 128.0 | 138.0  | 148.0  |
|           | 1.6                                          | 146.0                                                                                                                                       | 161.0 | 177.0 | 193.0  | 214.0  |
| EVRA 25   | 0.1                                          | 80.2                                                                                                                                        | 89.1  | 98.0  | 107.0  | 115.0  |
|           | 0.2                                          | 114.0                                                                                                                                       | 127.0 | 139.0 | 151.0  | 163.0  |
|           | 0.4                                          | 163.0                                                                                                                                       | 181.0 | 198.0 | 215.0  | 231.0  |
|           | 0.8                                          | 227.0                                                                                                                                       | 260.0 | 284.0 | 307.0  | 330.0  |
|           | 1.6                                          | 324.0                                                                                                                                       | 358.0 | 394.0 | 429.0  | 475.0  |
| EVRA 32   | 0.1                                          | 128.0                                                                                                                                       | 143.0 | 157.0 | 171.0  | 184.0  |
|           | 0.2                                          | 183.0                                                                                                                                       | 203.0 | 223.0 | 242.0  | 260.0  |
|           | 0.4                                          | 261.0                                                                                                                                       | 289.0 | 317.0 | 344.0  | 370.0  |
|           | 0.8                                          | 362.0                                                                                                                                       | 416.0 | 455.0 | 492.0  | 528.0  |
|           | 1.6                                          | 518.0                                                                                                                                       | 574.0 | 631.0 | 688.0  | 761.0  |
| EVRA 40   | 0.1                                          | 201.0                                                                                                                                       | 223.0 | 244.0 | 267.0  | 287.0  |
|           | 0.2                                          | 286.0                                                                                                                                       | 317.0 | 348.0 | 378.0  | 407.0  |
|           | 0.4                                          | 408.0                                                                                                                                       | 452.0 | 495.0 | 537.0  | 578.0  |
|           | 0.8                                          | 566.0                                                                                                                                       | 650.0 | 710.0 | 769.0  | 825.0  |
|           | 1.6                                          | 809.0                                                                                                                                       | 897.0 | 986.0 | 1074.0 | 1188.0 |

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 below.

**Correction factor**

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

| $t_o$ $^\circ\text{C}$   | -40  | -30  | -20  | -10 | 0    | +10  |
|--------------------------|------|------|------|-----|------|------|
| R 717 (NH <sub>3</sub> ) | 0.89 | 0.91 | 0.96 | 1.0 | 1.06 | 1.10 |

**Capacity**  
(continued)

*Hot gas capacity  $Q_h$  kW*
**R 22**

| Type      | Pressure drop across valve<br>$\Delta p$ bar | Hot gas capacity $Q_e$ kW                                                                                                                   |       |       |       |       |
|-----------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|-------|-------|
|           |                                              | Evaporating temp. $t_e = -10^\circ\text{C}$ . Hot gas temp. $t_h = t_c + 25^\circ\text{C}$ . Subcooling $\Delta t_{\text{sub}} = 4\text{K}$ |       |       |       |       |
|           |                                              | Condensing temperature $t_c$ $^\circ\text{C}$                                                                                               |       |       |       |       |
|           |                                              | +20                                                                                                                                         | +30   | +40   | +50   | +60   |
| EVRA 3    | 0.1                                          | 0.68                                                                                                                                        | 0.72  | 0.76  | 0.78  | 0.79  |
|           | 0.2                                          | 0.97                                                                                                                                        | 1.0   | 1.1   | 1.1   | 1.1   |
|           | 0.4                                          | 1.4                                                                                                                                         | 1.5   | 1.5   | 1.6   | 1.6   |
|           | 0.8                                          | 1.9                                                                                                                                         | 2.0   | 2.1   | 2.3   | 2.3   |
|           | 1.6                                          | 2.7                                                                                                                                         | 2.9   | 3.0   | 3.1   | 3.2   |
| EVRA/T 10 | 0.1                                          | 4.4                                                                                                                                         | 4.7   | 4.9   | 5.1   | 5.2   |
|           | 0.2                                          | 6.3                                                                                                                                         | 6.7   | 7.0   | 7.2   | 7.3   |
|           | 0.4                                          | 9.0                                                                                                                                         | 9.6   | 10.0  | 10.3  | 10.4  |
|           | 0.8                                          | 12.4                                                                                                                                        | 13.2  | 13.9  | 14.7  | 14.9  |
|           | 1.6                                          | 17.5                                                                                                                                        | 18.6  | 19.6  | 20.2  | 20.5  |
| EVRA/T 15 | 0.1                                          | 8.0                                                                                                                                         | 8.5   | 8.9   | 9.2   | 9.3   |
|           | 0.2                                          | 11.4                                                                                                                                        | 12.1  | 12.6  | 13.0  | 13.2  |
|           | 0.4                                          | 16.3                                                                                                                                        | 17.2  | 18.0  | 18.5  | 18.7  |
|           | 0.8                                          | 22.3                                                                                                                                        | 23.1  | 24.9  | 26.5  | 26.8  |
|           | 1.6                                          | 31.5                                                                                                                                        | 33.5  | 35.2  | 36.4  | 36.9  |
| EVRA/T 20 | 0.1                                          | 13.3                                                                                                                                        | 14.1  | 14.8  | 15.3  | 15.5  |
|           | 0.2                                          | 19.0                                                                                                                                        | 20.1  | 21.0  | 21.7  | 22.0  |
|           | 0.4                                          | 27.1                                                                                                                                        | 28.7  | 30.0  | 30.9  | 31.2  |
|           | 0.8                                          | 37.1                                                                                                                                        | 38.4  | 41.5  | 44.2  | 44.6  |
|           | 1.6                                          | 52.5                                                                                                                                        | 55.9  | 58.6  | 60.6  | 61.5  |
| EVRA 25   | 0.1                                          | 29.6                                                                                                                                        | 31.4  | 32.9  | 34.0  | 34.4  |
|           | 0.2                                          | 42.1                                                                                                                                        | 44.6  | 46.7  | 48.2  | 48.8  |
|           | 0.4                                          | 60.2                                                                                                                                        | 63.8  | 66.6  | 68.6  | 69.4  |
|           | 0.8                                          | 82.5                                                                                                                                        | 87.9  | 92.3  | 98.2  | 99.2  |
|           | 1.6                                          | 117.0                                                                                                                                       | 124.0 | 130.0 | 135.0 | 137.0 |
| EVRA 32   | 0.1                                          | 47.4                                                                                                                                        | 50.2  | 52.6  | 54.4  | 55.0  |
|           | 0.2                                          | 67.4                                                                                                                                        | 71.4  | 74.7  | 77.1  | 78.1  |
|           | 0.4                                          | 96.3                                                                                                                                        | 102.0 | 107.0 | 110.0 | 111.0 |
|           | 0.8                                          | 132.0                                                                                                                                       | 140.0 | 148.0 | 157.0 | 159.0 |
|           | 1.6                                          | 187.0                                                                                                                                       | 199.0 | 209.0 | 216.0 | 219.0 |
| EVRA 40   | 0.1                                          | 74.0                                                                                                                                        | 78.5  | 82.3  | 85.0  | 86.0  |
|           | 0.2                                          | 105.0                                                                                                                                       | 112.0 | 117.0 | 121.0 | 122.0 |
|           | 0.4                                          | 151.0                                                                                                                                       | 159.0 | 167.0 | 172.0 | 174.0 |
|           | 0.8                                          | 206.0                                                                                                                                       | 222.0 | 231.0 | 246.0 | 248.0 |
|           | 1.6                                          | 291.0                                                                                                                                       | 310.0 | 326.0 | 337.0 | 342.0 |

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 below.

**Correction factor**

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

| $t_e$ $^\circ\text{C}$ | -40  | -30  | -20  | -10 | 0    | +10  |
|------------------------|------|------|------|-----|------|------|
| R 22                   | 0.90 | 0.94 | 0.97 | 1.0 | 1.03 | 1.05 |

**Capacity**  
(continued)

**R 134a**
*Hot gas capacity  $Q_h$  kW*

| Type      | Pressure drop across valve<br>$\Delta p$ bar | Hot gas capacity $Q_e$ kW                                                                                                                   |       |       |       |       |
|-----------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|-------|-------|
|           |                                              | Evaporating temp. $t_e = -10^\circ\text{C}$ . Hot gas temp. $t_h = t_c + 25^\circ\text{C}$ . Subcooling $\Delta t_{\text{sub}} = 4\text{K}$ |       |       |       |       |
|           |                                              | Condensing temperature $t_c$ $^\circ\text{C}$                                                                                               |       |       |       |       |
|           |                                              | +20                                                                                                                                         | +30   | +40   | +50   | +60   |
| EVRA 3    | 0.1                                          | 0.54                                                                                                                                        | 0.57  | 0.6   | 0.61  | 0.6   |
|           | 0.2                                          | 0.77                                                                                                                                        | 0.82  | 0.85  | 0.86  | 0.85  |
|           | 0.4                                          | 1.1                                                                                                                                         | 1.2   | 1.2   | 1.2   | 1.2   |
|           | 0.8                                          | 1.5                                                                                                                                         | 1.6   | 1.7   | 1.8   | 1.8   |
|           | 1.6                                          | 2.2                                                                                                                                         | 2.3   | 2.4   | 2.5   | 2.4   |
| EVRA/T 10 | 0.1                                          | 3.5                                                                                                                                         | 3.7   | 3.9   | 4.0   | 3.9   |
|           | 0.2                                          | 5.0                                                                                                                                         | 5.3   | 5.5   | 5.6   | 5.6   |
|           | 0.4                                          | 7.0                                                                                                                                         | 7.7   | 7.9   | 8.0   | 7.9   |
|           | 0.8                                          | 9.9                                                                                                                                         | 10.5  | 11.0  | 11.6  | 11.4  |
|           | 1.6                                          | 14.3                                                                                                                                        | 15.1  | 15.7  | 16.0  | 15.9  |
| EVRA/T 15 | 0.1                                          | 6.4                                                                                                                                         | 6.7   | 7.0   | 7.1   | 7.1   |
|           | 0.2                                          | 9.1                                                                                                                                         | 9.6   | 10.0  | 10.1  | 10.0  |
|           | 0.4                                          | 12.6                                                                                                                                        | 13.8  | 14.2  | 14.4  | 14.3  |
|           | 0.8                                          | 17.9                                                                                                                                        | 19.0  | 19.8  | 20.8  | 20.5  |
|           | 1.6                                          | 25.7                                                                                                                                        | 27.2  | 28.2  | 28.8  | 28.6  |
| EVRA/T 20 | 0.1                                          | 10.6                                                                                                                                        | 11.2  | 11.7  | 11.8  | 11.8  |
|           | 0.2                                          | 15.1                                                                                                                                        | 16.0  | 16.6  | 16.8  | 16.7  |
|           | 0.4                                          | 21.0                                                                                                                                        | 22.9  | 23.7  | 24.0  | 23.8  |
|           | 0.8                                          | 29.8                                                                                                                                        | 31.6  | 33.0  | 34.7  | 34.2  |
|           | 1.6                                          | 42.8                                                                                                                                        | 45.3  | 47.1  | 47.9  | 47.6  |
| EVRA 25   | 0.1                                          | 23.6                                                                                                                                        | 24.9  | 25.9  | 26.4  | 26.2  |
|           | 0.2                                          | 33.6                                                                                                                                        | 35.5  | 36.8  | 37.4  | 37.1  |
|           | 0.4                                          | 46.6                                                                                                                                        | 51.0  | 52.7  | 53.4  | 52.9  |
|           | 0.8                                          | 66.2                                                                                                                                        | 70.2  | 73.2  | 77.0  | 76.0  |
|           | 1.6                                          | 95.2                                                                                                                                        | 101.0 | 105.0 | 107.0 | 106.0 |
| EVRA 32   | 0.1                                          | 37.6                                                                                                                                        | 39.8  | 41.4  | 42.1  | 41.8  |
|           | 0.2                                          | 53.8                                                                                                                                        | 56.8  | 58.9  | 59.8  | 59.4  |
|           | 0.4                                          | 74.7                                                                                                                                        | 81.6  | 84.3  | 85.4  | 84.6  |
|           | 0.8                                          | 106.0                                                                                                                                       | 112.0 | 117.0 | 123.0 | 122.0 |
|           | 1.6                                          | 152.0                                                                                                                                       | 161.0 | 167.0 | 170.0 | 169.0 |
| EVRA 40   | 0.1                                          | 58.8                                                                                                                                        | 62.3  | 64.7  | 65.8  | 65.3  |
|           | 0.2                                          | 84.1                                                                                                                                        | 88.8  | 92.1  | 93.5  | 92.8  |
|           | 0.4                                          | 117.0                                                                                                                                       | 127.0 | 132.0 | 134.0 | 132.0 |
|           | 0.8                                          | 166.0                                                                                                                                       | 176.0 | 183.0 | 192.0 | 190.0 |
|           | 1.6                                          | 238.0                                                                                                                                       | 252.0 | 262.0 | 266.0 | 265.0 |

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 below.

**Correction factor**

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

| $t_e$ $^\circ\text{C}$ | -40  | -30  | -20  | -10 | 0    | +10  |
|------------------------|------|------|------|-----|------|------|
| R 134a                 | 0.88 | 0.92 | 0.98 | 1.0 | 1.04 | 1.08 |

**Capacity**  
(continued)

*Hot gas capacity  $Q_h$  kW*
**R 404A**

| Type      | Pressure drop across valve<br>$\Delta p$ bar | Hot gas capacity $Q_e$ kW                                                                                                                   |       |       |       |       |
|-----------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|-------|-------|
|           |                                              | Evaporating temp. $t_e = -10^\circ\text{C}$ . Hot gas temp. $t_h = t_c + 25^\circ\text{C}$ . Subcooling $\Delta t_{\text{sub}} = 4\text{K}$ |       |       |       |       |
|           |                                              | Condensing temperature $t_c$ $^\circ\text{C}$                                                                                               |       |       |       |       |
|           |                                              | +20                                                                                                                                         | +30   | +40   | +50   | +60   |
| EVRA 3    | 0.1                                          | 0.62                                                                                                                                        | 0.63  | 0.62  | 0.59  | 0.54  |
|           | 0.2                                          | 0.87                                                                                                                                        | 0.89  | 0.88  | 0.83  | 0.76  |
|           | 0.4                                          | 1.2                                                                                                                                         | 1.3   | 1.3   | 1.2   | 1.1   |
|           | 0.8                                          | 1.7                                                                                                                                         | 1.7   | 1.7   | 1.7   | 1.5   |
|           | 1.6                                          | 2.4                                                                                                                                         | 2.5   | 2.4   | 2.3   | 2.1   |
| EVRA/T 10 | 0.1                                          | 4.0                                                                                                                                         | 4.1   | 4.0   | 3.8   | 3.5   |
|           | 0.2                                          | 5.7                                                                                                                                         | 5.8   | 5.7   | 5.5   | 5.0   |
|           | 0.4                                          | 8.1                                                                                                                                         | 8.2   | 8.2   | 7.8   | 7.0   |
|           | 0.8                                          | 11.1                                                                                                                                        | 11.4  | 11.3  | 11.1  | 10.1  |
|           | 1.6                                          | 15.7                                                                                                                                        | 16.0  | 15.8  | 15.2  | 13.9  |
| EVRA/T 15 | 0.1                                          | 7.3                                                                                                                                         | 7.4   | 7.3   | 6.9   | 6.3   |
|           | 0.2                                          | 10.2                                                                                                                                        | 10.4  | 10.3  | 9.8   | 8.9   |
|           | 0.4                                          | 14.6                                                                                                                                        | 14.8  | 14.7  | 14.0  | 12.7  |
|           | 0.8                                          | 20.1                                                                                                                                        | 20.4  | 20.3  | 20.0  | 18.1  |
|           | 1.6                                          | 28.3                                                                                                                                        | 28.8  | 28.4  | 27.4  | 25.0  |
| EVRA/T 20 | 0.1                                          | 12.1                                                                                                                                        | 12.3  | 12.1  | 11.5  | 10.5  |
|           | 0.2                                          | 17.1                                                                                                                                        | 17.3  | 17.2  | 16.3  | 14.9  |
|           | 0.4                                          | 24.4                                                                                                                                        | 24.7  | 24.5  | 23.3  | 21.1  |
|           | 0.8                                          | 33.4                                                                                                                                        | 34.0  | 33.9  | 33.3  | 30.2  |
|           | 1.6                                          | 47.1                                                                                                                                        | 48.0  | 47.4  | 45.6  | 41.6  |
| EVRA 25   | 0.1                                          | 26.8                                                                                                                                        | 27.4  | 26.9  | 25.6  | 23.3  |
|           | 0.2                                          | 37.9                                                                                                                                        | 38.4  | 38.2  | 36.3  | 33.0  |
|           | 0.4                                          | 54.2                                                                                                                                        | 54.9  | 54.5  | 51.7  | 47.0  |
|           | 0.8                                          | 74.2                                                                                                                                        | 75.6  | 75.3  | 74.0  | 67.2  |
|           | 1.6                                          | 105.0                                                                                                                                       | 107.0 | 105.0 | 101.0 | 92.5  |
| EVRA 32   | 0.1                                          | 43.0                                                                                                                                        | 43.8  | 43.0  | 40.9  | 37.3  |
|           | 0.2                                          | 60.6                                                                                                                                        | 61.4  | 61.1  | 58.1  | 52.8  |
|           | 0.4                                          | 86.7                                                                                                                                        | 87.8  | 87.2  | 82.7  | 75.2  |
|           | 0.8                                          | 119.0                                                                                                                                       | 121.0 | 120.0 | 118.0 | 107.0 |
|           | 1.6                                          | 167.0                                                                                                                                       | 171.0 | 168.0 | 162.0 | 148.0 |
| EVRA 40   | 0.1                                          | 67.0                                                                                                                                        | 68.5  | 67.3  | 64.0  | 58.3  |
|           | 0.2                                          | 94.8                                                                                                                                        | 96.0  | 95.5  | 90.8  | 82.5  |
|           | 0.4                                          | 136.0                                                                                                                                       | 137.0 | 136.0 | 129.0 | 117.0 |
|           | 0.8                                          | 186.0                                                                                                                                       | 189.0 | 188.0 | 185.0 | 168.0 |
|           | 1.6                                          | 262.0                                                                                                                                       | 266.0 | 263.0 | 253.0 | 231.0 |

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 below.

**Correction factor**

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

| $t_e$ $^\circ\text{C}$ | -40  | -30  | -20  | -10 | 0    | +10  |
|------------------------|------|------|------|-----|------|------|
| R 404A                 | 0.86 | 0.88 | 0.93 | 1.0 | 1.03 | 1.07 |

# Data sheet | Solenoid valves type EVRA and EVRAT

## Capacity (continued)

Hot gas capacity  $G_h$  kg/s

| Type | Hot gas temperature<br>$t_h$ °C | Condensing temperature<br>$t_k$ °C | Hot gas capacity $G_h$ kg/s at pressure drop across valve $\Delta p$ bar |   |   |   |   |   |   |   |   |
|------|---------------------------------|------------------------------------|--------------------------------------------------------------------------|---|---|---|---|---|---|---|---|
|      |                                 |                                    | 0.5                                                                      | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

## R 717 (NH<sub>3</sub>)

| EVRA 3    | +90 | +25 | 0.003 | 0.005 | 0.006 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 |
|-----------|-----|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|           |     | +35 | 0.004 | 0.005 | 0.007 | 0.009 | 0.009 | 0.01  | 0.01  | 0.01  | 0.01  |
|           |     | +45 | 0.005 | 0.006 | 0.009 | 0.01  | 0.011 | 0.012 | 0.013 | 0.013 | 0.013 |
| EVRA/T 10 |     | +25 | 0.022 | 0.03  | 0.04  | 0.045 | 0.048 | 0.048 | 0.048 | 0.048 | 0.048 |
|           |     | +35 | 0.026 | 0.036 | 0.048 | 0.056 | 0.061 | 0.064 | 0.065 | 0.065 | 0.065 |
|           |     | +45 | 0.030 | 0.041 | 0.056 | 0.066 | 0.074 | 0.079 | 0.083 | 0.085 | 0.086 |
| EVRA/T 15 |     | +25 | 0.040 | 0.054 | 0.072 | 0.081 | 0.086 | 0.087 | 0.087 | 0.087 | 0.087 |
|           |     | +35 | 0.046 | 0.064 | 0.086 | 0.1   | 0.109 | 0.115 | 0.117 | 0.117 | 0.117 |
|           |     | +45 | 0.053 | 0.074 | 0.101 | 0.12  | 0.133 | 0.142 | 0.149 | 0.153 | 0.155 |
| EVRA/T 20 |     | +25 | 0.066 | 0.09  | 0.12  | 0.12  | 0.144 | 0.145 | 0.145 | 0.145 | 0.145 |
|           |     | +35 | 0.077 | 0.107 | 0.144 | 0.167 | 0.182 | 0.191 | 0.195 | 0.195 | 0.195 |
|           |     | +45 | 0.089 | 0.124 | 0.169 | 0.199 | 0.211 | 0.237 | 0.248 | 0.255 | 0.258 |
| EVRA 25   |     | +25 | 0.143 | 0.197 | 0.26  | 0.296 | 0.313 | 0.316 | 0.316 | 0.316 | 0.316 |
|           |     | +35 | 0.168 | 0.232 | 0.313 | 0.364 | 0.397 | 0.417 | 0.425 | 0.425 | 0.425 |
|           |     | +45 | 0.194 | 0.269 | 0.368 | 0.434 | 0.482 | 0.516 | 1.54  | 0.555 | 0.561 |
| EVRA 32   |     | +25 | 0.233 | 0.322 | 0.424 | 0.483 | 0.511 | 0.516 |       |       |       |
|           |     | +35 | 0.274 | 0.379 | 0.511 | 0.594 | 0.648 | 0.681 | 0.694 |       |       |
|           |     | +45 | 0.316 | 0.439 | 0.601 | 0.709 | 0.787 | 0.842 | 0.882 | 0.906 | 0.916 |
| EVRA 40   |     | +25 | 0.362 | 0.503 | 0.663 | 0.755 | 0.798 | 0.806 |       |       |       |
|           |     | +35 | 0.429 | 0.592 | 0.798 | 0.929 | 1.013 | 1.064 | 1.084 |       |       |
|           |     | +45 | 0.495 | 0.686 | 0.939 | 1.107 | 1.23  | 1.316 | 1.378 | 1.416 | 1.431 |

## R 22

| EVRA 3    | +90 | +25 | 0.008 | 0.011 | 0.014 | 0.016 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 |
|-----------|-----|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|           |     | +35 | 0.009 | 0.012 | 0.017 | 0.019 | 0.021 | 0.022 | 0.022 | 0.022 | 0.022 |
|           |     | +45 | 0.010 | 0.014 | 0.019 | 0.022 | 0.025 | 0.026 | 0.027 | 0.028 | 0.028 |
| EVRA/T 10 |     | +25 | 0.051 | 0.069 | 0.092 | 0.104 | 0.109 | 0.111 | 0.111 | 0.111 | 0.111 |
|           |     | +35 | 0.058 | 0.08  | 0.108 | 0.125 | 0.136 | 0.142 | 0.144 | 0.144 | 0.144 |
|           |     | +45 | 0.066 | 0.092 | 0.125 | 0.146 | 0.162 | 0.172 | 0.179 | 0.183 | 0.183 |
| EVRA/T 15 |     | +25 | 0.091 | 0.125 | 0.165 | 0.187 | 0.197 | 0.199 | 0.199 | 0.199 | 0.199 |
|           |     | +35 | 0.105 | 0.144 | 0.194 | 0.225 | 0.244 | 0.256 | 0.258 | 0.258 | 0.258 |
|           |     | +45 | 0.119 | 0.165 | 0.224 | 0.263 | 0.291 | 0.31  | 0.322 | 0.329 | 0.330 |
| EVRA/T 20 |     | +25 | 0.152 | 0.208 | 0.275 | 0.311 | 0.328 | 0.332 | 0.332 | 0.332 | 0.332 |
|           |     | +35 | 0.174 | 0.241 | 0.323 | 0.375 | 0.407 | 0.425 | 0.431 | 0.431 | 0.431 |
|           |     | +45 | 0.193 | 0.275 | 0.374 | 0.439 | 0.485 | 0.516 | 0.537 | 0.548 | 0.55  |
| EVRA 25   |     | +25 | 0.331 | 0.453 | 0.599 | 0.677 | 0.715 | 0.722 | 0.722 | 0.722 | 0.722 |
|           |     | +35 | 0.38  | 0.524 | 0.704 | 0.816 | 0.886 | 0.925 | 0.938 | 0.938 | 0.938 |
|           |     | +45 | 0.431 | 0.598 | 0.814 | 0.956 | 1.056 | 1.125 | 1.169 | 1.192 | 1.197 |
| EVRA 32   |     | +25 | 0.539 | 0.739 | 0.976 | 1.106 | 1.168 | 1.179 |       |       |       |
|           |     | +35 | 0.619 | 0.856 | 1.15  | 1.331 | 1.446 | 1.509 | 1.531 |       |       |
|           |     | +45 | 0.704 | 0.978 | 1.329 | 1.562 | 1.723 | 1.837 | 1.909 | 1.947 | 1.955 |
| EVRA 40   |     | +25 | 0.843 | 1.155 | 1.525 | 1.728 | 1.825 | 1.843 |       |       |       |
|           |     | +35 | 0.968 | 1.338 | 1.798 | 2.08  | 2.26  | 2.358 | 2.393 |       |       |
|           |     | +45 | 1.1   | 1.528 | 2.078 | 2.44  | 2.693 | 2.87  | 2.383 | 3.043 | 3.055 |

An increase in hot gas temperature  $t_h$  of 10 K reduces valve capacity approx. 2% and vice versa.

# Data sheet | Solenoid valves type EVRA and EVRAT

## Capacity (continued)

Hot gas capacity  $G_h$  kg/s

| Type | Varmgas-temperatur<br>$t_h$ °C | Kondense-ringstemp.<br>$t_k$ °C | Varmgaskapacitet $G_h$ kg/s ved trykfaldet i ventilen $\Delta p$ bar |   |   |   |   |   |   |   |   |
|------|--------------------------------|---------------------------------|----------------------------------------------------------------------|---|---|---|---|---|---|---|---|
|      |                                |                                 | 0.5                                                                  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

## R 134a

| EVRA 3    | +60 | +25 | 0.007 | 0.009 | 0.011 | 0.012 | 0.012 |       |       |       |       |
|-----------|-----|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|           |     | +35 | 0.009 | 0.011 | 0.014 | 0.016 | 0.016 | 0.016 | 0.016 |       |       |
|           |     | +45 | 0.01  | 0.012 | 0.018 | 0.02  | 0.021 | 0.021 | 0.021 | 0.021 | 0.021 |
| EVRA/T 10 |     | +25 | 0.048 | 0.06  | 0.074 | 0.077 | 0.077 |       |       |       |       |
|           |     | +35 | 0.055 | 0.071 | 0.092 | 0.103 | 0.104 | 0.104 |       |       |       |
|           |     | +45 | 0.06  | 0.084 | 0.111 | 0.127 | 0.134 | 0.135 | 0.135 | 0.135 | 0.135 |
| EVRA/T 15 |     | +25 | 0.081 | 0.108 | 0.134 | 0.14  | 0.14  |       |       |       |       |
|           |     | +35 | 0.094 | 0.129 | 0.166 | 0.192 | 0.187 | 0.187 | 0.187 |       |       |
|           |     | +45 | 0.108 | 0.151 | 0.2   | 0.228 | 0.241 | 0.244 | 0.244 | 0.244 | 0.244 |
| EVRA/T 20 |     | +25 | 0.134 | 0.18  | 0.223 | 0.233 | 0.233 |       |       |       |       |
|           |     | +35 | 0.157 | 0.215 | 0.276 | 0.307 | 0.312 | 0.312 | 0.312 |       |       |
|           |     | +45 | 0.181 | 0.252 | 0.333 | 0.381 | 0.403 | 0.407 | 0.407 | 0.407 | 0.407 |
| EVRA 25   |     | +25 | 0.292 | 0.391 | 0.486 | 0.506 | 0.506 |       |       |       |       |
|           |     | +35 | 0.341 | 0.467 | 0.602 | 0.668 | 0.679 | 0.679 | 0.679 |       |       |
|           |     | +45 | 0.393 | 0.549 | 0.725 | 0.83  | 0.876 | 0.885 | 0.885 | 0.885 | 0.885 |
| EVRA 32   |     | +25 | 0.478 | 0.638 | 0.793 | 1.826 | 0.826 |       |       |       |       |
|           |     | +35 | 0.556 | 0.763 | 0.994 | 1.091 | 1.108 | 1.108 | 1.108 |       |       |
|           |     | +45 | 0.641 | 0.897 | 1.197 | 1.354 | 1.432 | 1.446 | 1.446 | 1.446 | 1.446 |
| EVRA 40   |     | +25 | 0.747 | 0.998 | 1.24  | 1.291 | 1.291 |       |       |       |       |
|           |     | +35 | 0.87  | 1.192 | 1.553 | 1.704 | 1.731 | 1.731 | 1.731 |       |       |
|           |     | +45 | 1.002 | 1.402 | 1.87  | 2.117 | 2.237 | 2.259 | 2.259 | 2.259 |       |

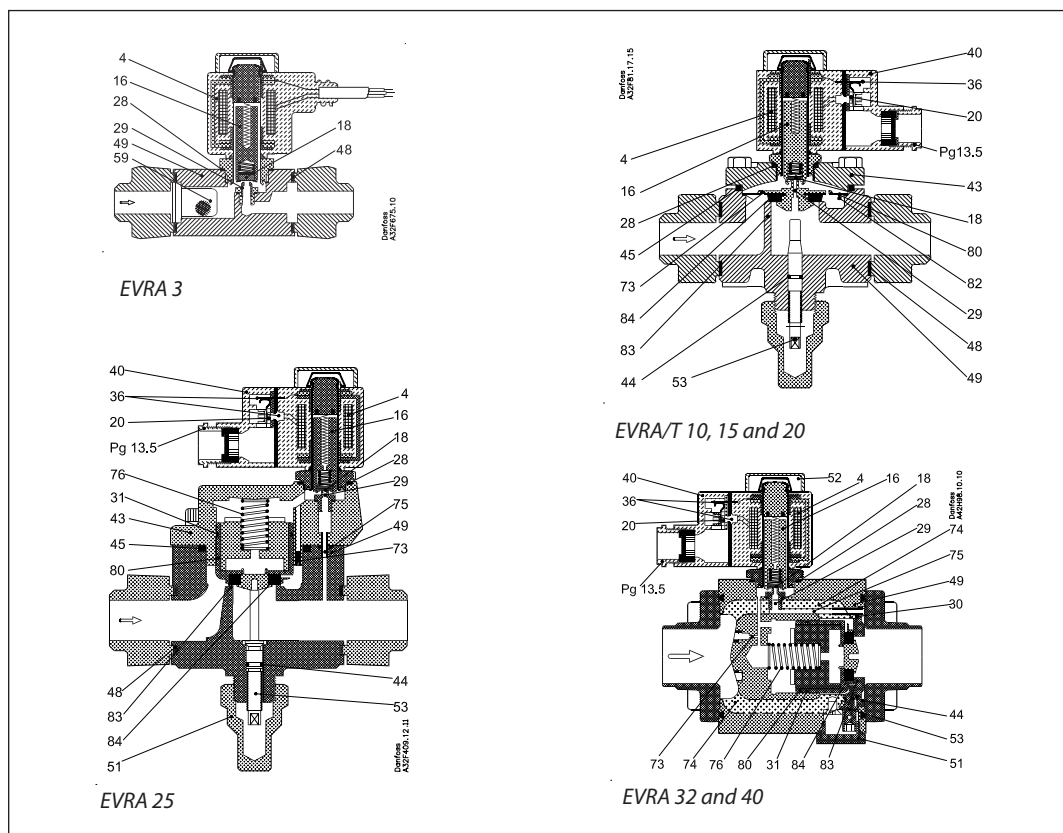
## R 404A

| EVRA 3    | +60 | +25 | 0.01  | 0.013 | 0.018 | 0.021 | 0.022 | 0.023 | 0.023 | 0.023 | 0.023 |
|-----------|-----|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|           |     | +35 | 0.011 | 0.015 | 0.02  | 0.024 | 0.027 | 0.028 | 0.029 | 0.029 | 0.03  |
|           |     | +45 | 0.012 | 0.017 | 0.023 | 0.028 | 0.032 | 0.034 | 0.035 | 0.036 | 0.037 |
| EVRA/T 10 |     | +25 | 0.063 | 0.087 | 0.116 | 0.134 | 0.145 | 0.148 | 0.149 | 0.149 | 0.149 |
|           |     | +35 | 0.072 | 0.1   | 0.134 | 0.158 | 0.174 | 0.184 | 0.19  | 0.19  | 0.192 |
|           |     | +45 | 0.081 | 0.112 | 0.153 | 0.182 | 0.203 | 0.228 | 0.228 | 0.237 | 0.239 |
| EVRA/T 15 |     | +25 | 0.113 | 0.157 | 0.21  | 0.242 | 0.26  | 0.267 | 0.269 | 0.269 | 0.269 |
|           |     | +35 | 0.129 | 0.18  | 0.242 | 0.285 | 0.313 | 0.332 | 0.341 | 0.342 | 0.346 |
|           |     | +45 | 0.146 | 0.202 | 0.275 | 0.327 | 0.365 | 0.393 | 0.411 | 0.424 | 0.431 |
| EVRA/T 20 |     | +25 | 0.189 | 0.262 | 0.35  | 0.403 | 0.433 | 0.445 | 0.449 | 0.449 | 0.449 |
|           |     | +35 | 0.215 | 0.3   | 0.404 | 0.474 | 0.521 | 0.552 | 0.569 | 0.57  | 0.576 |
|           |     | +45 | 0.243 | 0.337 | 0.459 | 0.545 | 0.609 | 0.656 | 0.684 | 0.707 | 0.719 |
| EVRA 25   |     | +25 | 0.411 | 0.57  | 0.763 | 0.878 | 0.942 | 0.969 | 0.978 | 0.978 | 0.978 |
|           |     | +35 | 0.468 | 0.653 | 0.881 | 1.032 | 1.136 | 1.203 | 1.239 | 1.241 | 1.253 |
|           |     | +45 | 0.529 | 0.734 | 1.0   | 1.188 | 1.326 | 1.43  | 1.49  | 1.539 | 1.566 |
| EVRA 32   |     | +25 | 0.672 | 0.931 | 1.245 | 1.432 | 1.539 | 1.581 | 1.581 | 1.581 | 1.581 |
|           |     | +35 | 0.765 | 1.069 | 1.436 | 1.686 | 1.854 | 1.964 | 2.022 | 2.025 | 2.025 |
|           |     | +45 | 0.862 | 1.198 | 1.632 | 1.939 | 1.836 | 2.34  | 2.433 | 2.513 | 2.557 |
| EVRA 40   |     | +25 | 1.05  | 1.454 | 1.946 | 2.238 | 2.406 | 2.471 | 2.471 | 2.471 | 2.471 |
|           |     | +35 | 1.195 | 1.657 | 2.245 | 2.635 | 2.897 | 3.068 | 3.161 | 3.166 | 3.166 |
|           |     | +45 | 1.348 | 1.873 | 2.55  | 3.03  | 3.384 | 3.65  | 3.801 | 3.926 | 3.995 |

An increase in hot gas temperature  $t_h$  of 10 K reduces valve capacity approx. 2% and vice versa.

## Design Function

- 4. Coil
- 16. Armature
- 18. Valve plate / Pilot valve plate
- 20. Earth terminal
- 24. Connection for flexible steel hose
- 28. Gasket
- 29. Pilot orifice
- 30. O-ring
- 31. Piston ring
- 36. DIN plug
- 40. Terminal box
- 43. Valve cover
- 44. O-ring
- 45. Valve cover gasket
- 48. Flange gasket
- 49. Valve body
- 51. Cover / Threaded plug
- 53. Manual operation spindle
- 59. Strainer
- 73. Equalization hole
- 74. Main channel
- 75. Pilot channel
- 76. Compression spring
- 80. Diaphragm/Servo piston
- 82. Support washer
- 83. Valve seat
- 84. Main valve plate



EVRA solenoid valves are designed on two different principles:

1. Direct operation
2. Servo operation

### 1. Direct operation

EVRA 3 is direct operated. The valve opens direct for full flow when the armature (16) moves up into the magnetic field of the coil. This means that the valve operates with a min. differential pressure of 0 bar. The teflon valve plate (18) is fitted direct on the armature (16).

Inlet pressure acts from above on the armature and the valve plate. Thus, inlet pressure, spring force and the weight of the armature act to close the valve when the coil is currentless.

### 2. Servo operation

EVRA/T 10 → 20 are servo operated with a "floating" diaphragm (80). The pilot orifice (29) of stainless steel is placed in the centre of the diaphragm. The teflon pilot valve plate (18) is fitted direct to the armature (16). When the coil is currentless, the main orifice and pilot orifice are closed. The pilot orifice and main orifice are held closed by the weight of the armature, the armature spring force and the differential pressure between inlet and outlet sides.

When current is applied to the coil the armature is drawn up into the magnetic field and opens the pilot orifice. This relieves the pressure above the diaphragm, i.e. the space above the diaphragm becomes connected to the outlet side of the valve.

The differential pressure between inlet and outlet sides then presses the diaphragm away from the main orifice and opens it for full flow. Therefore a certain minimum

differential pressure is necessary to open the EVRA valve and keep it open. For differential pressure 0 bar use EVRAT valves.

For EVRA 10 → 20 valves this differential pressure is 0.05 bar.

When current is switched off, the pilot orifice closes. Via the equalization holes (73) in the diaphragm, the pressure above the diaphragm then rises to the same value as the inlet pressure and the diaphragm closes the main orifice.

EVRA 25, 32 and 40 are servo operated piston valves. The valves are closed with currentless coil.

The servo piston (80) with main valve plate (84) closes against the valve seat (83) by means of the differential pressure between inlet and outlet side of the valve, the force of the compression spring (76) and possibly the piston weight.

When current to the coil is switched on, the pilot orifice (29) opens. This relieves the pressure on the piston spring side of the valve. The differential pressure will then open the valve.

The minimum differential pressure needed for full opening of the valves is 0.2 bar.



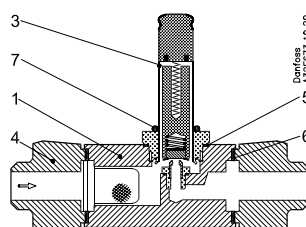
The manual opener of EVRA/EVRAT 10, 15, 20 and 25 is intended to be activated only during initial pressure testing of the refrigeration system.

After pressure testing or service-related manual forced opening of the manual opener the spindle **must** be turned fully back to back-seated position to avoid any packing gland leakage.

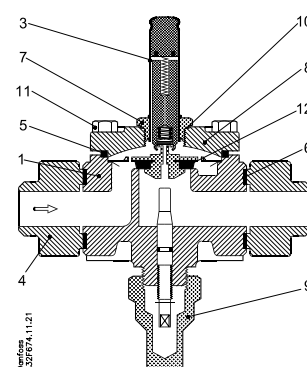
Furthermore it is essential that the sealing cap is properly reinstalled. This will eliminate any risk of leakage from the manual opener.

# Material specification

EVRA 3

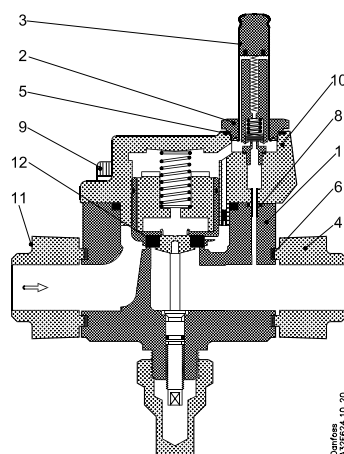


EVRA/T  
10/15/20

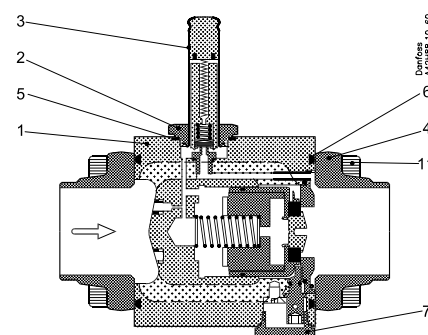


| No. | Description        | Solenoid valves   | Material           | Analysis      | Mat.no. | W.no. | ISO  | EN      |
|-----|--------------------|-------------------|--------------------|---------------|---------|-------|------|---------|
| 1   | Valve body         | EVRA 3            | Free-cutting steel | 11MnPb30      |         |       |      | 10277-3 |
| 1   | Valve body         | EVRA/T 10/15/20   | Cast-iron          | GJS-400-18-LT |         |       |      | 1563    |
| 3   | Armature tube      | EVRA 3/10/15/20   | Stainless steel    | X2CrNi19-11   |         |       |      | 10088   |
| 4   | Flange             | EVRA/T 3/10/15/20 | Steel              | S235JRG2      |         |       |      | 10025   |
| 5   | Gasket             | EVRA 3            | Aluminium          | Al 99.5       |         |       |      | 10210   |
| 5   | Gasket             | EVRA/T 10/15/20   | Rubber             | Cr            |         |       |      |         |
| 6   | Gasket             | EVRA/T 3/10/15/20 | asbestos-free      |               |         |       |      |         |
| 7   | Armature tube nut  | EVRA/T 3/10/15/20 | Stainless steel    | X8CrNiS18-9   |         |       |      | 10088   |
| 8   | Cover              | EVRA/T 10/15/20   | Cast-iron          | GJS-400-18-LT |         |       |      | 1563    |
| 9   | Cover/ thread plug | EVRA/T 10/15/20   | Free-cutting steel | 115MnPb30     |         |       |      | 10277-3 |
| 10  | Gasket             | EVRA/T 10/15/20   | Aluminium          | Al 99.5       |         |       |      | 10210   |
| 11  | Bolts              | EVRA/T 10/15/20   | Stainless steel    | A2-70         |         |       | 3506 |         |
| 12  | Valve seat         | EVRA/T 10/15/20   | Teflon (PTFE)      |               |         |       |      |         |

EVRA 25

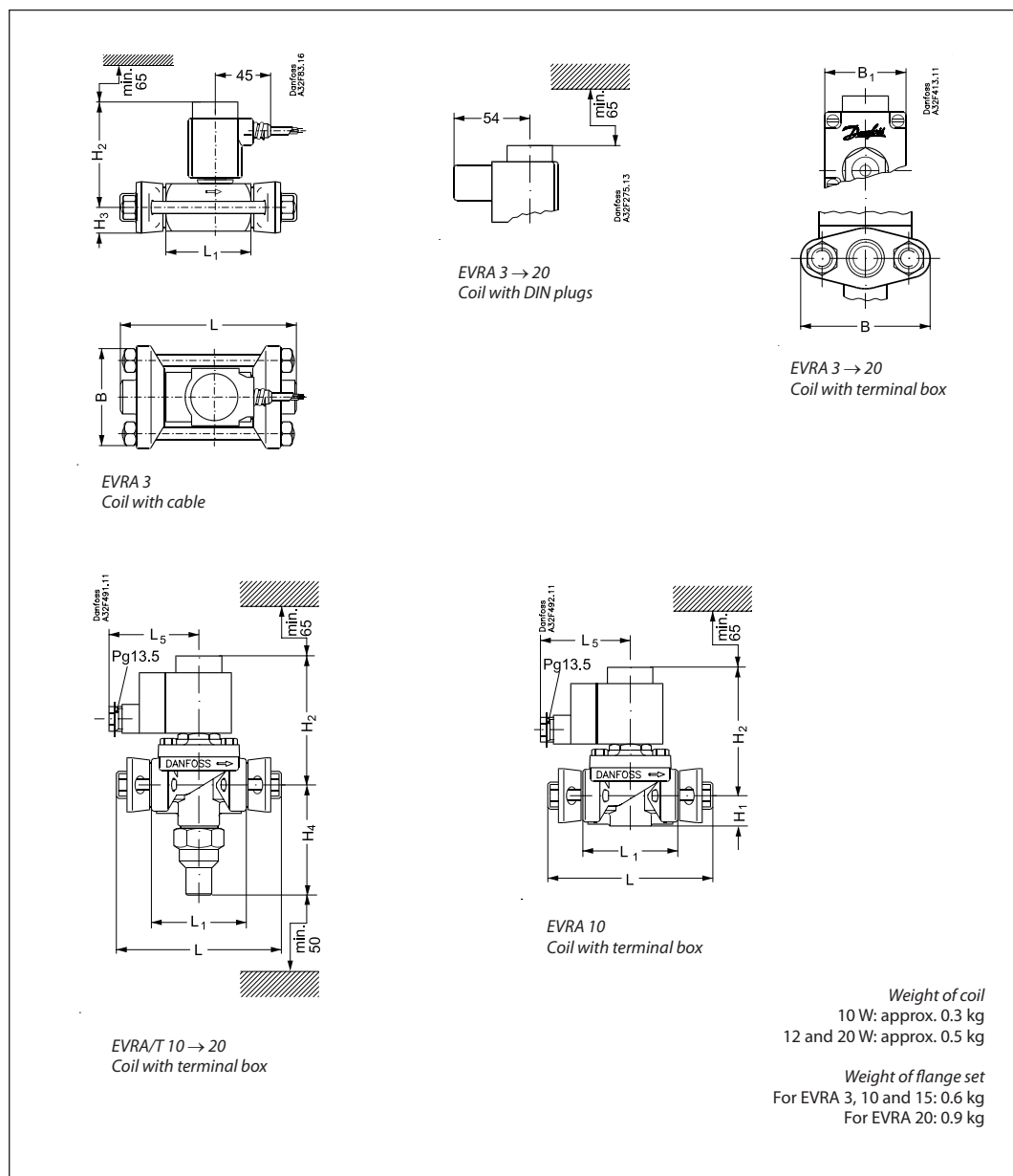


EVRA 32/40



| No. | Description       | Solenoid valves | Material            | Analysis      | Mat.no. | W.no. | ISO  | EN      |
|-----|-------------------|-----------------|---------------------|---------------|---------|-------|------|---------|
| 1   | Valve body        | EVRA 25/32/40   | Cast-iron           | GJS-400-18-LT |         |       |      | 1563    |
| 2   | Armature tube nut | EVRA 25/32/40   | Stainless steel     | X8CrNiS 18-9  |         |       |      | 10088   |
| 3   | Armature tube     | EVRA 25/32/40   | Stainless steel     | X2CrNi19-11   |         |       |      | 10088   |
| 4   | Flange            | EVRA 25         | Steel               | S235JRG2      |         |       |      | 10025   |
| 4   | Flange            | EVRA 32/40      | Steel               | P285QH        |         |       |      | 10222-4 |
| 5   | Gasket            | EVRA 25/32/40   | Stainless steel/NBR | X10CrNi18-8   |         |       |      | 1.4310  |
| 6   | Gasket            | EVRA 25         | asbestos-free       |               |         |       |      |         |
| 6   | Gasket            | EVRA 32/40      | Rubber              | Cr            |         |       |      |         |
| 7   | Cover/thread plug | EVRA 25         | Free-cutting steel  | 115MnPb30     |         |       |      | 10277-3 |
| 7   | Cover/thread plug | EVRA 32/40      | Stainless steel     | X5CrNi17-10   |         |       |      | 10088   |
| 8   | Gasket            | EVRA 25         | Rubber              | CR            |         |       |      |         |
| 9   | Bolts             | EVRA 25         | Stainless steel     | A2-70         |         |       | 3506 |         |
| 10  | Cover             | EVRA 25         | Cast-iron           | GJS-400-18-LT |         |       |      | 1563    |
| 11  | Bolts             | EVRA 25/32/40   | Stainless steel     | A2-70         |         |       | 3506 |         |
| 12  | Valve seat        | EVRA 25         | Teflon (PTFE)       |               |         |       |      |         |

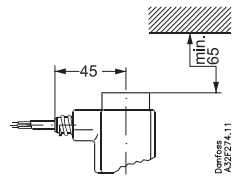
## Dimensions and weight



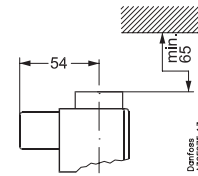
| Type      | $H_1$ | $H_2$ | $H_3$ | $H_4$ | $L$ | $L_1$ | $L_5$ max. |              | $B$ | $B_1$ max. | Weight <sup>1)</sup> |
|-----------|-------|-------|-------|-------|-----|-------|------------|--------------|-----|------------|----------------------|
|           |       |       |       |       |     |       | 10 W       | 12 W<br>20 W |     |            |                      |
|           |       |       |       |       |     |       | mm         | mm           |     |            |                      |
| EVRA 3    |       | 84    | 19    |       | 124 | 65    | 75         | 85           | 80  | 68         | 1.2                  |
| EVRA/T 10 | 22    | 100   |       | 81    | 130 | 68    |            |              | 80  | 68         | 1.7                  |
| EVRA/T 15 |       | 100   |       | 81    | 130 | 68    |            |              | 80  | 68         | 1.8                  |
| EVRA/T 20 |       | 110   |       | 77    | 155 | 85    |            |              | 96  | 68         | 2.7                  |

<sup>1)</sup> With coil, without flanges

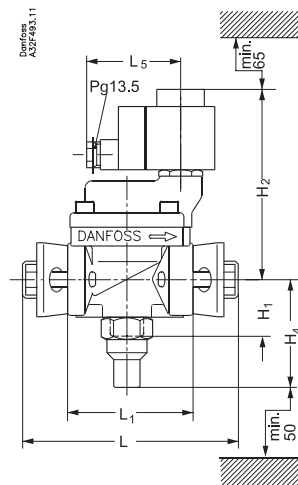
**Dimensions and weight**  
(continued)



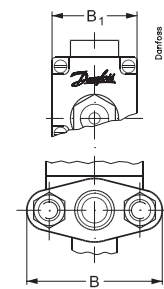
*EVRA 25, 32 and 40*  
*Coil with cable*



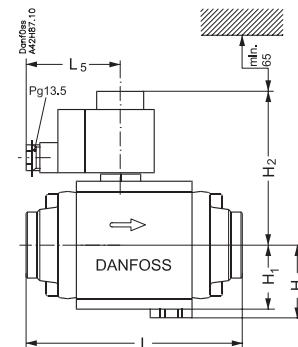
*EVRA 25, 32 and 40*  
*Coil with DIN plugs*



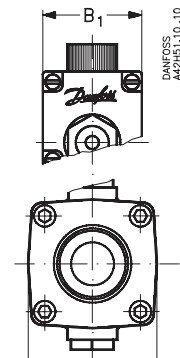
*EVRA 25*  
*Coil with terminal box*



*EVRA 25*  
*Coil with terminal box*



*EVRA 32 and 40*  
*Coil with terminal box*



*EVRA 32 and 40*  
*Coil with terminal box*

*Weight of coil*  
10 W: approx. 0.3 kg  
12 and 20 W: approx. 0.5 kg

*Weight of flange set*  
For EVRA 25: 0.9 kg

| Type    | H <sub>1</sub> | H <sub>2</sub> | H <sub>3</sub> | H <sub>4</sub> | L   | L <sub>1</sub> | L <sub>3</sub> max. |              | B  | B <sub>1</sub> max. | Weight <sup>1)</sup> |
|---------|----------------|----------------|----------------|----------------|-----|----------------|---------------------|--------------|----|---------------------|----------------------|
|         |                |                |                |                |     |                | 10 W                | 12 W<br>20 W |    |                     |                      |
|         |                |                |                |                |     |                | mm                  | mm           |    |                     |                      |
| EVRA 25 | 46             | 141            |                | 78             | 162 | 92             | 75                  | 85           | 95 | 68                  | 3.0                  |
| EVRA 32 | 47             | 115            |                | 53             | 175 |                |                     |              | 80 | 68                  | 4.0                  |
| EVRA 40 | 47             | 115            |                | 53             | 175 |                |                     |              | 80 | 68                  | 4.0                  |

<sup>1)</sup> With coil, without flanges