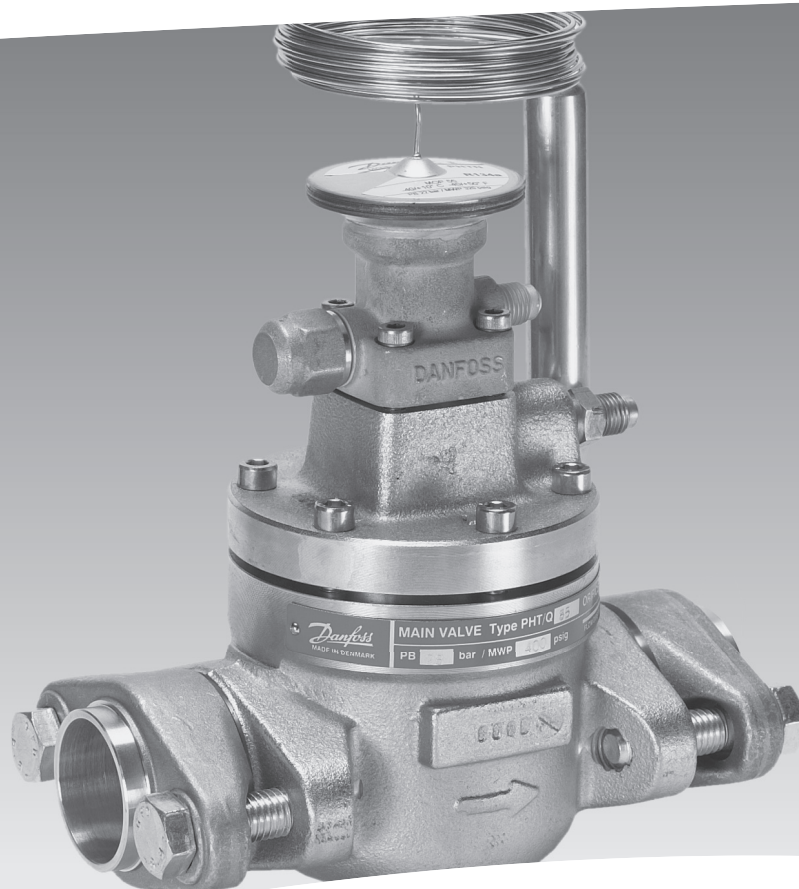




## Thermostatic expansion valves, type PHT

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## Introduction



PHT thermostatic expansion valves regulate the injection of refrigerant liquid into evaporators. Injection is controlled by the refrigerant superheat. Therefore the valves are especially suitable for

liquid injection in "dry" evaporators where the superheat at the evaporator outlet is proportional to the evaporator load.

## Features

- **Range:**  
-40 to +50°C  
Equally applicable to freezing, refrigeration and air conditioning plant.
- **Interchangeable orifice assembly**
  - easier stocking
  - easy capacity matching
  - better service.
- **Very tight main orifice**  
Also used as solenoid valve (not PHT 300) - see the section "Design - Function"
- **Rated capacities from 105 to 1890 kW**  
(30 to 540 TR) for R22
- **Can be supplied with MOP**  
(Max. Operating Pressure)  
Protects the compressor motor against excessive evaporating pressure.
- **Patented double contact bulb**  
Fast and easy to install.  
Good temperature transfer from pipe to bulb.

## Technical data

**Refrigerants**  
R22, R470C, R134a, R404A / R507

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

**Min. temperature**  
-50°C

**Max. test pressure**  
PHT 85 and 125:  
PT = 42 bar  
PHT 300:  
PT = 28 bar

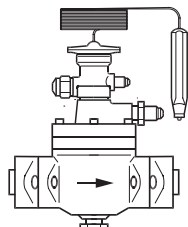
**Permissible working pressure**  
PHT 85 and 125:  
PS / MWP = 28 bar

PHT 300:  
PS / MWP = 20 bar

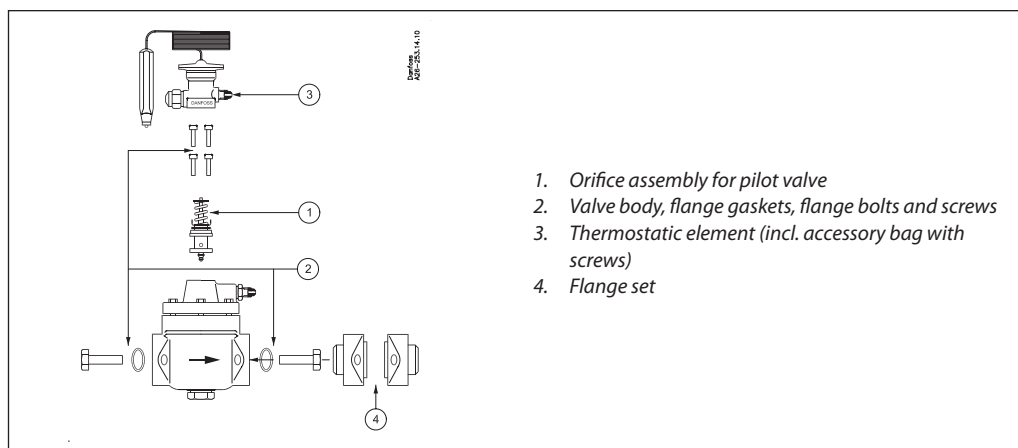
**Superheat**  
Static superheat SS can be adjusted with setting spindle (Ⓔ).  
The standard superheat setting SS is 4 K.

## Ordering

### Components



PHT 85  
Solder or weld flanges



1. Orifice assembly for pilot valve
2. Valve body, flange gaskets, flange bolts and screws
3. Thermostatic element (incl. accessory bag with screws)
4. Flange set

#### 1. Pilot orifice assembly

| Type | Code no.        |
|------|-----------------|
| PHT  | <b>067B2090</b> |

#### 2. Valve body, flange gaskets, flange bolts and screws

| Type    | Orifice no. | Rated capacity <sup>2)</sup><br>R22 |      | Rated capacity <sup>1)</sup><br>R134a |      |                          |      | Code no. |
|---------|-------------|-------------------------------------|------|---------------------------------------|------|--------------------------|------|----------|
|         |             | Range N:<br>-40 to +10°C            |      | Range N:<br>-40 to +10°C              |      | Range A:<br>+10 to +50°C |      |          |
|         |             | TR                                  | kW   | TR                                    | kW   | TR                       | kW   |          |
|         |             |                                     |      |                                       |      |                          |      |          |
| PHT 85  | 1           | 30                                  | 105  | 16                                    | 55   | 20                       | 69   | 026H1160 |
| PHT 85  | 2           | 50                                  | 175  | 26                                    | 92   | 33                       | 114  | 026H1161 |
| PHT 85  | 3           | 80                                  | 280  | 39                                    | 138  | 52                       | 182  | 026H1162 |
| PHT 85  | 4           | 130                                 | 455  | 59                                    | 208  | 72                       | 273  | 026H1163 |
| PHT 125 | 1           | 225                                 | 790  | 125                                   | 438  | 156                      | 545  | 026H1164 |
| PHT 300 | 1           | 325                                 | 1140 | 178                                   | 622  | 221                      | 773  | 026H0165 |
| PHT 300 | 2           | 540                                 | 1890 | 309                                   | 1083 | 351                      | 1227 | 026H0166 |

<sup>1)</sup> A PHT 85 with orifice no. 5 and a capacity of +5 → +10% compared to orifice no. 4 can be ordered. The code no. is 026H1187.

<sup>2)</sup> The rated capacity for range N is based on evaporating temperature  $t_e = +5^\circ\text{C}$ , condensing temperature  $t_c = +32^\circ\text{C}$ , and refrigerant liquid temperature ahead of valve  $t_l = +28^\circ\text{C}$ .  
The rated capacity for range A is based on evaporating temperature  $t_e = +5^\circ\text{C}$ , condensing temperature  $t_c = +42^\circ\text{C}$ , and refrigerant liquid temperature ahead of valve  $t_l = +38^\circ\text{C}$ .

See following pages for extended capacity tables.

#### 3. Thermostatic element (incl. accessory bag)

| Range        | Refrigerant        | Code no.           |                    |
|--------------|--------------------|--------------------|--------------------|
|              |                    | 3 m capillary tube | 5 m capillary tube |
| -40 to +10°C | R22                | <b>067B3303</b>    | <b>067B3304</b>    |
|              | R22, MOP 100 psig  | <b>067B3300</b>    | <b>067B3306</b>    |
|              | R407C              | <b>067B3314</b>    | <b>067B3341</b>    |
|              | R407C, MOP 95 psig | <b>067B3311</b>    |                    |
|              | R134a              | <b>067B3310</b>    | <b>067B3315</b>    |
|              | R134a, MOP 55 psig | <b>067B3316</b>    | <b>067B3317</b>    |
|              | R404A / R507       |                    | <b>067B3319</b>    |
| +10 to +50°C | R134a              |                    | <b>067B3318</b>    |

#### 4. Flange set

| Valve flange | Flange type | Weld flanges |                 | Solder flanges |                 |    |                 |
|--------------|-------------|--------------|-----------------|----------------|-----------------|----|-----------------|
|              |             | in.          | Code no.        | in.            | Code no.        | mm | Code no.        |
| PHT 85       | 2           | 1            | <b>027N1025</b> |                |                 |    |                 |
| PHT 85       | 2           |              |                 | 1 1/8          | <b>027L1029</b> | 28 | <b>027L1028</b> |
| PHT 85       | 2           |              |                 | 1 3/8          | <b>027L1035</b> | 35 | <b>027L1035</b> |
| PHT 125      | 3 A         | 1 1/4        | <b>027N1032</b> |                |                 |    |                 |
| PHT 300      | 4 A         | 1 1/2        | <b>027N1040</b> |                |                 |    |                 |
| PHT 300      | 4 A         | 2            | <b>027N1050</b> |                |                 |    |                 |



## Design Function

### General

PHT valves have an interchangeable orifice assembly.

PHT valves are built up of three interchangeable main components:

- I. Thermostatic element, pos. 1
- II. Orifice assembly, pos. 2
- III. Valve body with connections, pos. 3  
Including Insert, pos. 7

For the same valve type and refrigerant, the associated orifice assembly is suitable for all versions of valve body and in all evaporating temperature ranges.

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

A teflon valve plate (pos. 10) in the main valve (not PHT 300) ensures a tight main orifice.

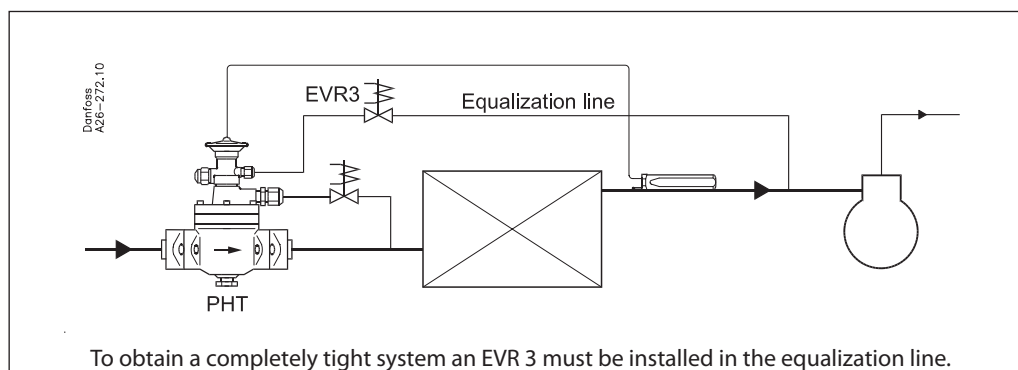
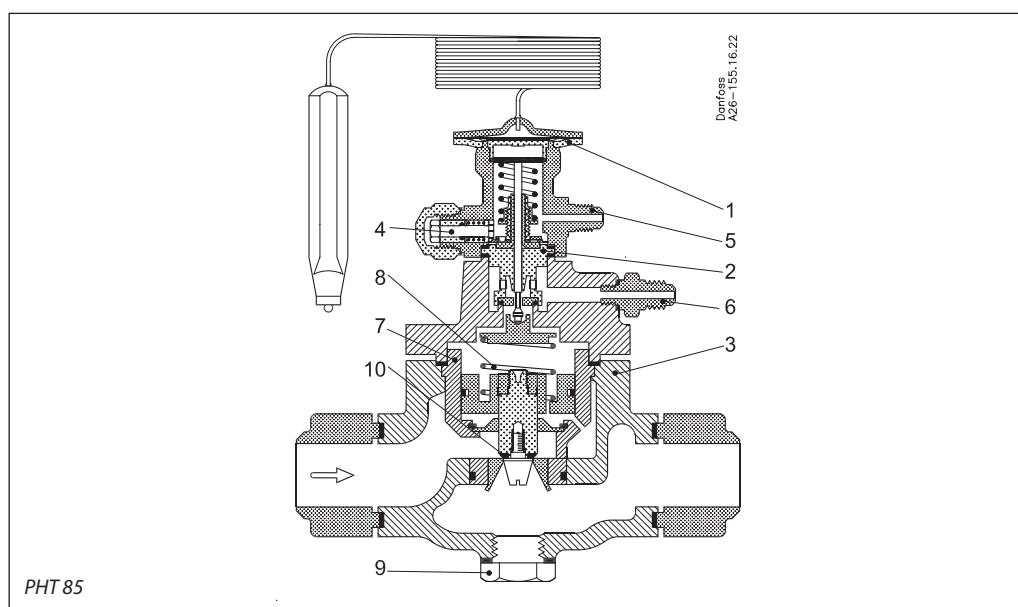
All valves with external pressure equalization (pos. 5).

The double contact bulb gives fast and precise reaction to temperature changes in the evaporator. It also makes fitting the bulb quick and easy.

The valves are able to withstand the effects that normally occur with hot gas defrosting.

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

1. Thermostatic element (diaphragm)
2. Interchangeable orifice assembly
3. Valve body
4. Superheat setting spindle (see instructions)
5. Ext. pressure equalizing connection with 1/4 in./6 mm flare nut
6. Pilot connection
7. Insert in main valve
8. Main spring
9. Bottom plug
10. Teflon valve plate

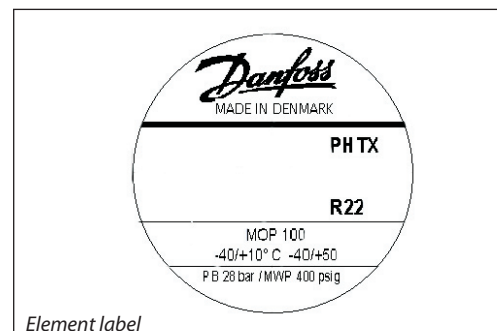


## Identification

The thermostatic element is fitted with a label (on top of the diaphragm). The code refers to the refrigerant for which the valve is designed:

- |   |   |             |
|---|---|-------------|
| X | = | R22         |
| Z | = | R407C       |
| N | = | R134a       |
| S | = | R404A/ R507 |

The label gives valve type, evaporating temperature range, MOP point, refrigerant, and max. test pressure, PB/MWP.



**Capacity**
**R22**

Capacity in kW for range N: -40°C to +10°C

| Valve type                    | Orifice no. | Pressure drop across valve $\Delta p$ bar |      |      |      |      |      |      |      | Pressure drop across valve $\Delta p$ bar |      |      |      |      |      |      |      |
|-------------------------------|-------------|-------------------------------------------|------|------|------|------|------|------|------|-------------------------------------------|------|------|------|------|------|------|------|
|                               |             | 2                                         | 4    | 6    | 8    | 10   | 12   | 14   | 16   | 2                                         | 4    | 6    | 8    | 10   | 12   | 14   | 16   |
| Evaporating temperature +10°C |             |                                           |      |      |      |      |      |      |      | Evaporating temperature 0°C               |      |      |      |      |      |      |      |
| PHTX 85                       | 1           | 67.3                                      | 95   | 112  | 124  | 133  | 139  | 142  | 144  | 56.7                                      | 76.6 | 93.4 | 103  | 111  | 115  | 119  | 121  |
| PHTX 85                       | 2           | 109                                       | 151  | 178  | 196  | 209  | 217  | 222  | 224  | 94.4                                      | 131  | 153  | 169  | 180  | 188  | 194  | 196  |
| PHTX 85                       | 3           | 174                                       | 244  | 287  | 316  | 336  | 349  | 356  | 360  | 147                                       | 206  | 241  | 265  | 283  | 295  | 303  | 306  |
| PHTX 85                       | 4           | 299                                       | 422  | 493  | 542  | 572  | 594  | 606  | 611  | 230                                       | 331  | 391  | 432  | 460  | 480  | 495  | 500  |
| PHTX 125                      | 1           | 518                                       | 605  | 695  | 803  | 876  | 927  | 957  | 982  | 454                                       | 573  | 698  | 763  | 813  | 840  | 863  | 870  |
| PHTX 300                      | 1           | 786                                       | 1048 | 1211 | 1317 | 1387 | 1432 | 1455 | 1476 | 671                                       | 887  | 1022 | 1110 | 1182 | 1216 | 1250 | 1271 |
| PHTX 300                      | 2           | 1290                                      | 1688 | 1935 | 2096 | 2202 | 2269 | 2302 | 2327 | 1133                                      | 1471 | 1685 | 1827 | 1941 | 1997 | 2048 | 2077 |
| Evaporating temperature -10°C |             |                                           |      |      |      |      |      |      |      | Evaporating temperature -20°C             |      |      |      |      |      |      |      |
| PHTX 85                       | 1           | 46                                        | 64   | 74.9 | 82.9 | 88.4 | 92.9 | 94.5 | 97.4 |                                           | 49.6 | 57.8 | 63.3 | 68.2 | 71.5 | 73.1 | 75.3 |
| PHTX 85                       | 2           | 78.4                                      | 108  | 126  | 139  | 148  | 156  | 159  | 163  |                                           | 85.6 | 99.5 | 109  | 117  | 123  | 125  | 129  |
| PHTX 85                       | 3           | 119                                       | 166  | 195  | 215  | 228  | 239  | 245  | 248  |                                           | 129  | 151  | 166  | 178  | 186  | 192  | 195  |
| PHTX 85                       | 4           | 153                                       | 231  | 276  | 310  | 334  | 350  | 361  | 368  |                                           | 139  | 165  | 187  | 205  | 215  | 230  | 234  |
| PHTX 125                      | 1           | 381                                       | 505  | 582  | 637  | 677  | 707  | 727  | 730  |                                           | 403  | 465  | 511  | 541  | 567  | 585  | 591  |
| PHTX 300                      | 1           | 552                                       | 723  | 827  | 898  | 957  | 1002 | 1034 | 1040 |                                           | 570  | 648  | 711  | 751  | 789  | 821  | 818  |
| PHTX 300                      | 2           | 953                                       | 1228 | 1401 | 1522 | 1620 | 1695 | 1747 | 1757 |                                           | 990  | 1124 | 1233 | 1304 | 1370 | 1425 | 1422 |
| Evaporating temperature -30°C |             |                                           |      |      |      |      |      |      |      | Evaporating temperature -40°C             |      |      |      |      |      |      |      |
| PHTX 85                       | 1           |                                           | 36.6 | 42.8 | 46.8 | 49.8 | 52.2 | 54.3 | 55.9 |                                           |      | 30.6 | 33.6 | 36.1 | 38   | 39.4 | 40.2 |
| PHTX 85                       | 2           |                                           | 64.1 | 74.7 | 81.7 | 86.9 | 91.1 | 94.6 | 97.4 |                                           |      | 54   | 59.2 | 63.7 | 66.9 | 69.4 | 70.4 |
| PHTX 85                       | 3           |                                           | 95.3 | 112  | 124  | 132  | 138  | 144  | 147  |                                           |      | 79.9 | 88.5 | 94.7 | 99.7 | 104  | 107  |
| PHTX 85                       | 4           |                                           | 100  | 120  | 134  | 145  | 153  | 158  | 161  |                                           |      | 84.7 | 95.5 | 103  | 111  | 115  | 119  |
| PHTX 125                      | 1           |                                           | 310  | 358  | 390  | 413  | 434  | 449  | 461  |                                           |      | 266  | 289  | 309  | 321  | 339  | 340  |
| PHTX 300                      | 1           |                                           | 429  | 487  | 536  | 570  | 598  | 621  | 627  |                                           |      | 364  | 399  | 430  | 454  | 467  | 474  |
| PHTX 300                      | 2           |                                           | 759  | 862  | 949  | 1011 | 1062 | 1104 | 1115 |                                           |      | 655  | 719  | 775  | 820  | 844  | 857  |

**Correction**  
for subcooling  $\Delta t_{sub}$

The evaporator capacities used must be corrected if subcooling deviates from 4 K. The corrected capacity can be obtained by

dividing the required evaporator capacity by the correction factor below. Selections can then be made from the tables above.

**Note:**  
Insufficient subcooling can produce flash gas.

| $\Delta t_{sub}$  | 4 K  | 10 K | 15 K | 20 K | 25 K | 30 K | 35 K | 40 K | 45 K | 50 K |
|-------------------|------|------|------|------|------|------|------|------|------|------|
| Correction factor | 1.00 | 1.06 | 1.11 | 1.15 | 1.2  | 1.25 | 1.3  | 1.35 | 1.39 | 1.44 |

**Example**

Refrigerant = R22  
Evaporator capacity  $Q_e = 110$  kW  
Subcooling = 10 K

Correction factor from table = 1.06  
Corrected capacity =  $110 : 1.06 \cong 104$  kW

## Capacity

R407C

Capacity in kW for range N: -40°C to +10°C

| Valve type                    | Orifice no. | Pressure drop across valve $\Delta p$ bar |      |      |      |      |      |      |      | Pressure drop across valve $\Delta p$ bar |      |      |      |      |      |      |      |
|-------------------------------|-------------|-------------------------------------------|------|------|------|------|------|------|------|-------------------------------------------|------|------|------|------|------|------|------|
|                               |             | 2                                         | 4    | 6    | 8    | 10   | 12   | 14   | 16   | 2                                         | 4    | 6    | 8    | 10   | 12   | 14   | 16   |
| Evaporating temperature +10°C |             |                                           |      |      |      |      |      |      |      | Evaporating temperature 0°C               |      |      |      |      |      |      |      |
| PHTZ 85                       | 1           | 70                                        | 97.9 | 114  | 125  | 133  | 136  | 138  | 138  | 59                                        | 78.9 | 95.3 | 104  | 111  | 113  | 115  | 116  |
| PHTZ 85                       | 2           | 113                                       | 155  | 182  | 198  | 209  | 213  | 213  | 215  | 98                                        | 135  | 156  | 171  | 180  | 184  | 188  | 188  |
| PHTZ 85                       | 3           | 181                                       | 251  | 293  | 319  | 336  | 342  | 345  | 346  | 153                                       | 212  | 246  | 268  | 283  | 289  | 294  | 294  |
| PHTZ 85                       | 4           | 311                                       | 435  | 503  | 547  | 572  | 582  | 588  | 587  | 239                                       | 341  | 399  | 436  | 460  | 470  | 480  | 480  |
| PHTZ 125                      | 1           | 539                                       | 623  | 709  | 811  | 876  | 908  | 928  | 943  | 472                                       | 590  | 712  | 771  | 813  | 823  | 837  | 835  |
| PHTZ 300                      | 1           | 817                                       | 1079 | 1235 | 1330 | 1387 | 1403 | 1411 | 1417 | 698                                       | 914  | 1042 | 1121 | 1182 | 1192 | 1212 | 1220 |
| PHTZ 300                      | 2           | 1342                                      | 1739 | 1974 | 2117 | 2202 | 2227 | 2233 | 2234 | 1178                                      | 1515 | 1719 | 1845 | 1941 | 1957 | 1987 | 1994 |
| Evaporating temperature -10°C |             |                                           |      |      |      |      |      |      |      | Evaporating temperature -20°C             |      |      |      |      |      |      |      |
| PHTZ 85                       | 1           | 47.8                                      | 65.3 | 75.6 | 82.9 | 88.4 | 91   | 91.7 | 92.5 |                                           | 50.6 | 58.4 | 63.3 | 67.5 | 69.4 | 70.2 | 70.8 |
| PHTZ 85                       | 2           | 81.5                                      | 110  | 127  | 139  | 148  | 153  | 154  | 155  |                                           | 87.3 | 100  | 109  | 116  | 119  | 120  | 121  |
| PHTZ 85                       | 3           | 124                                       | 169  | 197  | 215  | 228  | 234  | 238  | 236  |                                           | 132  | 152  | 166  | 176  | 180  | 184  | 183  |
| PHTZ 85                       | 4           | 159                                       | 236  | 279  | 310  | 334  | 343  | 350  | 350  |                                           | 142  | 167  | 187  | 203  | 209  | 221  | 220  |
| PHTZ 125                      | 1           | 396                                       | 515  | 588  | 637  | 677  | 693  | 705  | 693  |                                           | 411  | 470  | 511  | 536  | 550  | 562  | 555  |
| PHTZ 300                      | 1           | 574                                       | 737  | 835  | 898  | 957  | 982  | 1003 | 988  |                                           | 581  | 654  | 711  | 743  | 765  | 788  | 769  |
| PHTZ 300                      | 2           | 991                                       | 1253 | 1415 | 1522 | 1620 | 1661 | 1695 | 1669 |                                           | 1010 | 1135 | 1233 | 1291 | 1329 | 1368 | 1337 |
| Evaporating temperature -30°C |             |                                           |      |      |      |      |      |      |      | Evaporating temperature -40°C             |      |      |      |      |      |      |      |
| PHTZ 85                       | 1           |                                           | 37.3 | 43.2 | 46.3 | 48.8 | 50.1 | 51.6 | 52   |                                           |      | 30.6 | 32.9 | 34.7 | 36.1 | 36.6 | 37   |
| PHTZ 85                       | 2           |                                           | 65.4 | 75.4 | 80.9 | 85.2 | 87.5 | 89.9 | 90.6 |                                           |      | 54   | 58   | 61.2 | 63.6 | 64.5 | 64.8 |
| PHTZ 85                       | 3           |                                           | 97.2 | 113  | 123  | 129  | 132  | 137  | 137  |                                           |      | 79.9 | 86.7 | 90.9 | 94.7 | 96.7 | 98.4 |
| PHTZ 85                       | 4           |                                           | 102  | 121  | 133  | 142  | 147  | 150  | 150  |                                           |      | 84.7 | 93.6 | 98.9 | 105  | 107  | 109  |
| PHTZ 125                      | 1           |                                           | 316  | 362  | 386  | 405  | 417  | 427  | 429  |                                           |      | 266  | 283  | 297  | 305  | 315  | 313  |
| PHTZ 300                      | 1           |                                           | 438  | 492  | 531  | 559  | 574  | 590  | 583  |                                           |      | 364  | 391  | 413  | 431  | 434  | 436  |
| PHTZ 300                      | 2           |                                           | 774  | 871  | 939  | 991  | 1019 | 1049 | 1037 |                                           |      | 655  | 705  | 744  | 779  | 785  | 788  |

Correction  
for subcooling  $\Delta t_{sub}$

The evaporator capacities used must be corrected if subcooling deviates from 4 K. The corrected capacity can be obtained by

dividing the required evaporator capacity by the correction factor below. Selections can then be made from the tables above.

Note:  
Insufficient subcooling can produce flash gas.

| $\Delta t_{sub}$  | 4 K  | 10 K | 15 K | 20 K | 25 K | 30 K | 35 K | 40 K | 45 K | 50 K |
|-------------------|------|------|------|------|------|------|------|------|------|------|
| Correction factor | 1.00 | 1.08 | 1.14 | 1.21 | 1.27 | 1.33 | 1.39 | 1.45 | 1.51 | 1.57 |

## Capacity

## R134a

Capacity in kW for range N: -40°C to +10°C

| Valve type                    | Orifice no. | Pressure drop across valve $\Delta p$ bar |      |      |      |      | Pressure drop across valve $\Delta p$ bar |     |      |      |      |
|-------------------------------|-------------|-------------------------------------------|------|------|------|------|-------------------------------------------|-----|------|------|------|
|                               |             | 2                                         | 4    | 6    | 8    | 10   | 2                                         | 4   | 6    | 8    | 10   |
| Evaporating temperature +10°C |             |                                           |      |      |      |      | Evaporating temperature 0°C               |     |      |      |      |
| PHTN 85                       | 1           | 45                                        | 62   | 71   | 76   | 79   | 36                                        | 49  | 56   | 60   | 62   |
| PHTN 85                       | 2           | 77                                        | 104  | 118  | 127  | 131  | 62                                        | 84  | 96   | 103  | 106  |
| PHTN 85                       | 3           | 118                                       | 161  | 183  | 196  | 201  | 93                                        | 128 | 146  | 157  | 161  |
| PHTN 85                       | 4           | 169                                       | 239  | 273  | 293  | 305  | 102                                       | 152 | 179  | 197  | 206  |
| PHTN 125                      | 1           | 372                                       | 486  | 545  | 576  | 591  | 304                                       | 399 | 448  | 477  | 488  |
| PHTN 300                      | 1           | 537                                       | 697  | 775  | 824  | 842  | 433                                       | 560 | 625  | 668  | 686  |
| PHTN 300                      | 2           | 927                                       | 1184 | 1303 | 1380 | 1407 | 762                                       | 974 | 1081 | 1149 | 1176 |
| Evaporating temperature –10°C |             |                                           |      |      |      |      | Evaporating temperature –20°C             |     |      |      |      |
| PHTN 85                       | 1           | 27                                        | 36   | 41   | 44   | 46   |                                           | 25  | 29   | 31   | 32   |
| PHTN 85                       | 2           | 47                                        | 64   | 73   | 77   | 80   |                                           | 44  | 50   | 54   | 56   |
| PHTN 85                       | 3           | 69                                        | 95   | 109  | 117  | 120  |                                           | 64  | 75   | 81   | 83   |
| PHTN 85                       | 4           | 73                                        | 103  | 119  | 128  | 132  |                                           | 69  | 82   | 89   | 92   |
| PHTN 125                      | 1           | 232                                       | 306  | 345  | 367  | 375  |                                           | 216 | 246  | 264  | 268  |
| PHTN 300                      | 1           | 330                                       | 422  | 478  | 508  | 526  |                                           | 294 | 339  | 363  | 376  |
| PHTN 300                      | 2           | 591                                       | 748  | 846  | 895  | 925  |                                           | 531 | 612  | 655  | 678  |
| Evaporating temperature –30°C |             |                                           |      |      |      |      | Evaporating temperature –40°C             |     |      |      |      |
| PHTN 85                       | 1           |                                           | 15   | 18   | 19   | 21   |                                           | 9   | 10   | 12   | 12   |
| PHTN 85                       | 2           |                                           | 27   | 32   | 34   | 36   |                                           | 16  | 18   | 21   | 21   |
| PHTN 85                       | 3           |                                           | 40   | 47   | 51   | 53   |                                           | 23  | 27   | 30   | 31   |
| PHTN 85                       | 4           |                                           | 42   | 51   | 56   | 60   |                                           | 24  | 30   | 33   | 35   |
| PHTN 125                      | 1           |                                           | 141  | 161  | 171  | 180  |                                           | 87  | 99   | 108  | 112  |
| PHTN 300                      | 1           |                                           | 197  | 227  | 246  | 253  |                                           | 126 | 147  | 158  | 164  |
| PHTN 300                      | 2           |                                           | 362  | 416  | 450  | 465  |                                           | 234 | 273  | 292  | 304  |

Capacity in kW for range A: +10°C to +50°C

| Evaporating temperature +50°C |   |      |      |      |      |      | Evaporating temperature +40°C |      |      |      |      |
|-------------------------------|---|------|------|------|------|------|-------------------------------|------|------|------|------|
| PHTN 85                       | 1 | 70   | 92   | 105  | 115  | 121  | 70                            | 96   | 111  | 121  | 127  |
| PHTN 85                       | 2 | 105  | 138  | 159  | 172  | 183  | 107                           | 145  | 166  | 181  | 190  |
| PHTN 85                       | 3 | 179  | 233  | 267  | 289  | 305  | 178                           | 243  | 276  | 302  | 316  |
| PHTN 85                       | 4 | 324  | 417  | 472  | 508  | 535  | 316                           | 426  | 483  | 524  | 551  |
| PHTN 125                      | 1 | 439  | 569  | 647  | 699  | 738  | 471                           | 601  | 674  | 728  | 762  |
| PHTN 300                      | 1 | 723  | 790  | 936  | 1065 | 1160 | 778                           | 989  | 1108 | 1196 | 1251 |
| PHTN 300                      | 2 | 1153 | 1477 | 1670 | 1799 | 1891 | 1234                          | 1548 | 1724 | 1857 | 1943 |
| Evaporating temperature +30°C |   |      |      |      |      |      | Evaporating temperature +20°C |      |      |      |      |
| PHTN 85                       | 1 | 64   | 87   | 100  | 108  | 114  | 56                            | 77   | 88   | 94   | 98   |
| PHTN 85                       | 2 | 102  | 137  | 156  | 168  | 178  | 93                            | 125  | 142  | 152  | 158  |
| PHTN 85                       | 3 | 165  | 223  | 253  | 271  | 286  | 146                           | 198  | 225  | 239  | 249  |
| PHTN 85                       | 4 | 286  | 387  | 435  | 462  | 489  | 240                           | 272  | 330  | 372  | 394  |
| PHTN 125                      | 1 | 485  | 628  | 698  | 738  | 772  | 445                           | 578  | 643  | 677  | 699  |
| PHTN 300                      | 1 | 737  | 950  | 1058 | 1121 | 1176 | 658                           | 853  | 944  | 993  | 1029 |
| PHTN 300                      | 2 | 1201 | 1515 | 1672 | 1765 | 1852 | 1102                          | 1400 | 1535 | 1608 | 1661 |
| Evaporating temperature +10°C |   |      |      |      |      |      | Evaporating temperature 0°C   |      |      |      |      |
| PHTN 85                       | 1 | 47   | 65   | 74   | 80   | 82   | 38                            | 53   | 60   | 65   | 67   |
| PHTN 85                       | 2 | 80   | 109  | 124  | 132  | 137  | 66                            | 90   | 103  | 110  | 113  |
| PHTN 85                       | 3 | 123  | 169  | 192  | 205  | 211  | 100                           | 137  | 158  | 169  | 173  |
| PHTN 85                       | 4 | 182  | 258  | 292  | 315  | 325  | 117                           | 178  | 206  | 225  | 234  |
| PHTN 125                      | 1 | 387  | 507  | 564  | 597  | 609  | 324                           | 423  | 475  | 506  | 515  |
| PHTN 300                      | 1 | 563  | 730  | 810  | 859  | 876  | 464                           | 599  | 669  | 713  | 731  |
| PHTN 300                      | 2 | 963  | 1229 | 1353 | 1427 | 1453 | 808                           | 1033 | 1147 | 1216 | 1243 |
| Evaporating temperature -10°C |   |      |      |      |      |      |                               |      |      |      |      |
| PHTN 85                       | 1 | 30   | 42   | 48   | 51   | 52   |                               |      |      |      |      |
| PHTN 85                       | 2 | 52   | 72   | 82   | 88   | 90   |                               |      |      |      |      |
| PHTN 85                       | 3 | 77   | 107  | 124  | 132  | 136  |                               |      |      |      |      |
| PHTN 85                       | 4 | 83   | 118  | 136  | 146  | 150  |                               |      |      |      |      |
| PHTN 125                      | 1 | 262  | 340  | 385  | 406  | 418  |                               |      |      |      |      |
| PHTN 300                      | 1 | 372  | 475  | 533  | 568  | 583  |                               |      |      |      |      |
| PHTN 300                      | 2 | 657  | 832  | 934  | 991  | 1016 |                               |      |      |      |      |

Correction  
for subcooling  $\Delta t_{sub}$

Note:  
Insufficient subcooling can produce  
flash gas.

The evaporator capacities used must be corrected  
if subcooling deviates from 4 K. The corrected  
capacity can be obtained by dividing

the required evaporator capacity by the  
correction factor below. Selections can then be  
made from the tables above.

| $\Delta t_{sub}$  | 4 K  | 10 K | 15 K | 20 K | 25 K | 30 K | 35 K | 40 K | 45 K | 50 K |
|-------------------|------|------|------|------|------|------|------|------|------|------|
| Correction factor | 1.00 | 1.08 | 1.13 | 1.19 | 1.25 | 1.31 | 1.37 | 1.42 | 1.48 | 1.54 |

# Capacity

# R404A / R507

Capacity in kW for range N: -40°C to +10°C

| Valve type                    | Orifice no. | Pressure drop across valve $\Delta p$ bar |      |      |      |      |      |      |      | Pressure drop across valve $\Delta p$ bar |      |      |      |      |      |      |      |
|-------------------------------|-------------|-------------------------------------------|------|------|------|------|------|------|------|-------------------------------------------|------|------|------|------|------|------|------|
|                               |             | 2                                         | 4    | 6    | 8    | 10   | 12   | 14   | 16   | 2                                         | 4    | 6    | 8    | 10   | 12   | 14   | 16   |
| Evaporating temperature +10°C |             |                                           |      |      |      |      |      |      |      | Evaporating temperature 0°C               |      |      |      |      |      |      |      |
| PHTS 85                       | 1           | 60.9                                      | 84.7 | 98.1 | 107  | 112  | 115  | 113  | 110  | 52.9                                      | 73.1 | 84.3 | 91   | 94.9 | 97.3 | 97.2 | 93.8 |
| PHTS 85                       | 2           | 96.1                                      | 131  | 150  | 162  | 170  | 173  | 170  | 166  | 86.4                                      | 118  | 135  | 145  | 150  | 155  | 153  | 148  |
| PHTS 85                       | 3           | 156                                       | 215  | 245  | 266  | 278  | 283  | 278  | 271  | 136                                       | 188  | 214  | 229  | 240  | 245  | 243  | 234  |
| PHTS 85                       | 4           | 274                                       | 374  | 425  | 458  | 477  | 486  | 475  | 463  | 227                                       | 313  | 356  | 384  | 401  | 412  | 406  | 394  |
| PHTS 125                      | 1           | 446                                       | 564  | 629  | 671  | 697  | 706  | 690  | 670  | 415                                       | 539  | 601  | 639  | 664  | 679  | 667  | 646  |
| PHTS 300                      | 1           | 709                                       | 913  | 1027 | 1099 | 1142 | 1159 | 1131 | 1098 | 625                                       | 803  | 895  | 951  | 990  | 1015 | 995  | 645  |
| PHTS 300                      | 2           | 1133                                      | 1430 | 1595 | 1702 | 1766 | 1788 | 1743 | 1691 | 1032                                      | 1299 | 1434 | 1522 | 1582 | 1619 | 1588 | 1531 |
| Evaporating temperature -10°C |             |                                           |      |      |      |      |      |      |      | Evaporating temperature -20°C             |      |      |      |      |      |      |      |
| PHTS 85                       | 1           | 44.3                                      | 61.4 | 70.2 | 75   | 78   | 79.2 | 79.2 | 76.9 |                                           | 48.6 | 55.3 | 59.3 | 61.2 | 62.9 | 62   | 61.1 |
| PHTS 85                       | 2           | 74.6                                      | 102  | 116  | 123  | 129  | 130  | 130  | 126  | 82.8                                      | 93.8 | 100  | 103  | 106  | 105  | 103  |      |
| PHTS 85                       | 3           | 114                                       | 157  | 179  | 191  | 199  | 202  | 200  | 194  | 125                                       | 143  | 153  | 158  | 162  | 160  | 156  |      |
| PHTS 85                       | 4           | 169                                       | 243  | 277  | 298  | 314  | 319  | 318  | 310  | 160                                       | 188  | 204  | 216  | 224  | 225  | 222  |      |
| PHTS 125                      | 1           | 362                                       | 471  | 525  | 556  | 573  | 580  | 571  | 554  | 388                                       | 433  | 458  | 470  | 480  | 473  | 464  |      |
| PHTS 300                      | 1           | 531                                       | 685  | 760  | 796  | 832  | 842  | 834  | 809  | 553                                       | 612  | 645  | 670  | 684  | 670  | 656  |      |
| PHTS 300                      | 2           | 903                                       | 1141 | 1256 | 1315 | 1370 | 1387 | 1374 | 1333 | 945                                       | 1040 | 1095 | 1135 | 1159 | 1136 | 1113 |      |
| Evaporating temperature -30°C |             |                                           |      |      |      |      |      |      |      | Evaporating temperature -40°C             |      |      |      |      |      |      |      |
| PHTS 85                       | 1           |                                           |      | 41.9 | 45.1 | 46.3 | 47.4 | 46.5 | 45   |                                           |      | 30.7 | 32.5 | 33.6 | 33.7 | 34   | 32.4 |
| PHTS 85                       | 2           |                                           |      | 72.5 | 77.8 | 78.9 | 81.5 | 80.1 | 77.5 |                                           |      | 53.7 | 56.9 | 58.8 | 58.8 | 59.4 | 56.7 |
| PHTS 85                       | 3           |                                           |      | 109  | 117  | 121  | 122  | 121  | 118  |                                           |      | 80   | 85   | 88.3 | 89.7 | 88.2 | 86.2 |
| PHTS 85                       | 4           |                                           |      | 118  | 127  | 132  | 136  | 133  | 131  |                                           |      | 85.1 | 91.9 | 96.4 | 98.2 | 97.6 | 94.6 |
| PHTS 125                      | 1           |                                           |      | 342  | 361  | 371  | 376  | 369  | 360  |                                           |      | 259  | 271  | 278  | 281  | 278  | 271  |
| PHTS 300                      | 1           |                                           |      | 472  | 503  | 516  | 524  | 513  | 507  |                                           |      | 355  | 374  | 385  | 395  | 384  | 382  |
| PHTS 300                      | 2           |                                           |      | 824  | 875  | 898  | 911  | 892  | 883  |                                           |      | 631  | 664  | 685  | 701  | 683  | 677  |

Correction  
for subcooling  $\Delta t_{sub}$

The evaporator capacities used must be corrected if subcooling deviates from 4 K.  
The corrected capacity can be obtained by

dividing the required evaporator capacity by the correction factor below. Selections can then be made from the tables above.

Note:  
Insufficient subcooling can produce flash gas.

| $\Delta t_{sub}$  | 4 K  | 10 K | 15 K | 20 K | 25 K | 30 K | 35 K | 40 K | 45 K | 50 K |
|-------------------|------|------|------|------|------|------|------|------|------|------|
| Correction factor | 1.00 | 1.1  | 1.2  | 1.29 | 1.37 | 1.46 | 1.54 | 1.63 | 1.7  | 1.78 |

Dimensions and weights

