

# Valves, Controls and System Protectors General Purpose Catalog





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## Quick Select Guide

| Application                        | Nominal Capacity |          | Valve Family | Adjustable Superheat | Internal Check Valve | Style    |                           |                   | Connections |     | Configuration |          | Port         |          |
|------------------------------------|------------------|----------|--------------|----------------------|----------------------|----------|---------------------------|-------------------|-------------|-----|---------------|----------|--------------|----------|
|                                    | R-22             | R-410A   |              |                      |                      | Hermetic | Replaceable Power Element | Field Serviceable | SAE         | ODF | Angle         | Straight | Conventional | Balanced |
| Air Conditioning and Refrigeration | 1/4 to 5         | 1 ¼ to 5 | AA           | X                    |                      | X        |                           |                   |             | X   |               | X        | X            |          |
|                                    | 1/4 to 5         | 1 ¼ to 5 | AN           |                      |                      | X        |                           |                   |             | X   | X             | X        | X            |          |
|                                    | 1/4 to 5         | 1 ¼ to 5 | AAC          | X                    | X                    | X        |                           |                   |             | X   |               | X        | X            |          |
|                                    | 1/4 to 5         | 1 ¼ to 5 | ANC          |                      | X                    | X        |                           |                   |             | X   | X             | X        | X            |          |
|                                    | 1/4 to 5         |          | AFA          | X                    |                      | X        |                           |                   | X           |     | X             |          | X            |          |
|                                    | 1/2 to 6         | ½ to 7 ½ | BA           | X                    |                      | X        |                           |                   |             | X   |               | X        |              | X        |
|                                    | 1/2 to 6         | ½ to 7 ½ | BN           |                      |                      | X        |                           |                   |             | X   | X             | X        |              | X        |
|                                    |                  | ½ to 15  | NXT          | X                    | X                    | X        |                           |                   | X           | X   | X             | X        |              | X        |
|                                    | 1/4 to 5 1/2     |          | HFK          | X                    |                      |          | X                         | X                 | X           | X   | X             | X        |              | X        |
|                                    | 1/4 to 5 1/2     |          | HF           | X                    |                      |          | X                         |                   | X           | X   | X             | X        |              | X        |
|                                    | 8 to 20          |          | HF EXT       | X                    |                      |          | X                         |                   |             | X   | X             | X        |              | X        |
|                                    | 1/3 to 5         |          | TI           | X                    |                      |          |                           | X                 | X           |     | X             |          | X            |          |
|                                    | 8 to 20          | 12 to 20 | TF           | X                    |                      |          | X                         |                   |             | X   |               | X        |              | X        |
|                                    | 1/2 to 12        |          | TL           |                      |                      |          |                           | X                 | X           | X   | X             | X        | X            |          |
|                                    | 1/2 to 12        |          | TCL          | X                    |                      |          |                           | X                 | X           | X   | X             | X        | X            |          |
|                                    | 11 and 14        |          | TJL          | X                    |                      |          |                           | X                 |             | X   | X             | X        | X            |          |
|                                    | 14 and 18        |          | TJR          | X                    |                      |          |                           | X                 |             | X   | X             | X        |              | X        |
|                                    | 22 to 45         |          | TER          | X                    |                      |          |                           | X                 |             | X   | X             | X        |              | X        |
|                                    | 55               |          | TIR          | X                    |                      |          |                           | X                 |             | X   | X             | X        |              | X        |
|                                    | 70 and 85        |          | THR          | X                    |                      |          |                           | X                 |             | X   | X             | X        |              | X        |
|                                    | 100              |          | TMR          | X                    |                      |          |                           | X                 |             | X   | X             | X        |              | X        |
|                                    | 10 to 40         |          | TRAE+        | X                    |                      |          | X                         |                   |             | X   |               | X        |              | X        |
|                                    | 50 to 70         |          | TRAE         | X                    |                      | X        |                           |                   |             | X   |               | X        |              | X        |
| Constant Pressure                  | 1/2 to 5         |          | ACP          |                      |                      | X        |                           |                   |             | X   |               | X        | X            |          |
| Ultra-Low Temp                     | 3/4 to 8         |          | ZZ           | X                    |                      |          |                           | X                 | X           | X   | X             | X        | X            |          |
| De-Superheating                    |                  |          | LA           | X                    |                      | X        |                           |                   |             | X   |               | X        | X            |          |
|                                    |                  |          | LCL          | X                    |                      |          |                           | X                 | X           | X   | X             | X        | X            |          |

## Charge Code Selector

| Applications                                                                                                                                                                         | Operating Ranges |     |     |     |                               |   |     |     |     |     |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----|-----|-----|-------------------------------|---|-----|-----|-----|-----|-----|
| R-134a<br>Domestic Refrigerators and Freezers, Ice Makers, Dehumidifiers, Transport Refrigeration, Medium Temperature Supermarket Equipment, Medium Temperature Commercial Equipment |                  |     |     |     | MC                            |   |     |     |     |     |     |
|                                                                                                                                                                                      |                  |     |     |     | MZ                            |   |     |     |     |     |     |
|                                                                                                                                                                                      |                  |     |     |     | MW35 (MOP)                    |   |     |     |     |     |     |
|                                                                                                                                                                                      |                  |     |     |     | MW55                          |   |     |     |     |     |     |
| R-22<br>Residential Air Conditioners & Heat Pumps, Commercial and Industrial Chillers, Medium Temperature Supermarket Equipment, Commercial Air Handlers                             |                  |     |     |     | HCA/HAA AIR COND. & HEAT PUMP |   |     |     |     |     |     |
|                                                                                                                                                                                      |                  |     |     |     | HW/HW100                      |   |     |     |     |     |     |
|                                                                                                                                                                                      |                  |     |     |     | HC                            |   |     |     |     |     |     |
|                                                                                                                                                                                      |                  |     |     |     | HW65 (MOP)                    |   |     |     |     |     |     |
|                                                                                                                                                                                      |                  |     |     |     | HZ                            |   |     |     |     |     |     |
| R-404A/R-507<br>Low Temperature Cases, Ice Makers, Commercial Air Handlers, Conditioners, Soft Ice Cream Machines, Environmental Chambers                                            |                  |     |     |     | SC                            |   |     |     |     |     |     |
|                                                                                                                                                                                      |                  |     |     |     | SZ                            |   |     |     |     |     |     |
|                                                                                                                                                                                      |                  |     |     |     | SW45 (MOP)                    |   |     |     |     |     |     |
| R-410A                                                                                                                                                                               |                  |     |     |     | ZW195                         |   |     |     |     |     |     |
|                                                                                                                                                                                      | -50              | -40 | -30 | -20 | -10                           | 0 | +10 | +20 | +30 | +40 | +50 |

The A series is used for heat pump, air conditioning, food services and commercial applications.

### Features

- Stainless steel power element eliminates corrosion and prevents valve failure
- Hermetic, leak-free construction
- Compact size allows installation in limited spaces
- Mass spectrometer tested to ensure less than 0.10 oz/year external leakage rate

### Options

- ZW195 charge available for R-410A systems
- Adjustable or non-adjustable superheat
- SAE or ODF connections standard – Chatleff or Aeroquip are available
- External or internal equalizer
- Internal check valve allows reverse flow for heat pump applications, eliminating the need for external piping and external check valve
- Bleed type pressure equalization to accommodate PSC type compressors
- Pressure limiting charges (MOP) available



### Specifications

Maximum working pressure: 700 psig

UR/CUR file number: SA 5312

### Nomenclature example: AACB2 HC 30 IN 3/8 x 1/2 ODF ANG

| A                               | A                                                                | C                                                                     | E                                                  | B                                                        | 2                                                                            | H                                                                                                                                 | C                                                                                                                   | 30 IN                                           | 3/8 x 1/2                                                                               | ODF                                                                                            | ANG                                                         |
|---------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Valve Series<br>Hermetic Design | Superheat Adjustment<br>A = Adjustable<br><br>N = Non-Adjustable | Internal Check Valve<br>(optional)<br>Reverse Flow Bypass Application | Equalizer<br>E=External<br><br>(Omit for Internal) | Bleed Hole<br>(optional)<br><br>(Omit for no bleed hole) | Capacity<br>Nominal Rating in Tons<br><br>(See nominal capacity table below) | Refrigerant Code<br>+F = R-12<br>+H = R-22<br>+M = R-134a<br>+N = R-407C<br>*P = R-507<br>*R = R-502<br>*S = R-404A<br>Z = R-410A | Charge Code<br><br>C = medium temp<br>CA = heat pump<br>W(MOP) = press. limiting<br>Z = low temp<br>AA = wide range | Capillary Tube Length<br><br>30 IN & 5 FT (std) | Inlet x Outlet Connection Sizes<br><br>1/4 x 3/8<br>3/8 x 1/2<br>1/2 x 5/8<br>5/8 x 7/8 | Connection Type<br><br>SAE=flare<br>ODF = solder<br>Chatleff (optional)<br>Aeroquip (optional) | Configuration<br><br>S/T = straight-thru<br>ANG = 90° angle |

+ = R-134a are interchangeable refrigerant charges

\* = R-507 and R-404A are interchangeable refrigerant charges

\* = R-22 and R-407C are interchangeable refrigerant charges

### AA/AN Series – Nominal\* Capacity Table in Tons (kW)

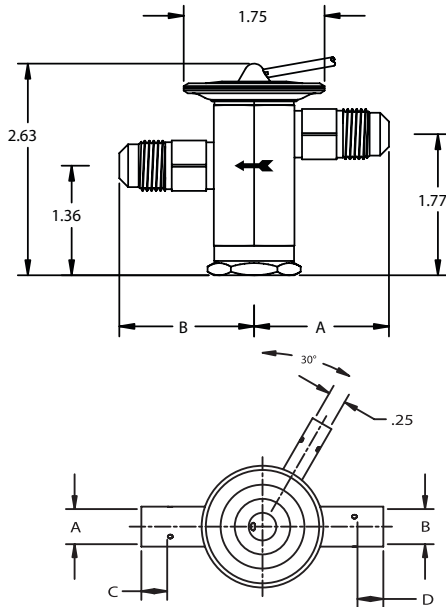
| R-134a    | R-22      | R-410A    | R-507/R-404A | R-407C    |
|-----------|-----------|-----------|--------------|-----------|
| 1/8 (0.4) | 1/5 (0.7) | –         | 1/8 (0.4)    | 1/5       |
| 1/4 (0.9) | 1/4 (0.9) | 1/4 (0.9) | 1/4 (0.9)    | 1/4 (0.9) |
| 1/2 (1.8) | 1/2 (1.8) | 1/2 (1.8) | 1/2 (1.8)    | 1/2 (1.8) |
| 3/4 (2.7) | 1 (3.5)   | 1 (3.5)   | 3/4          | 1 (3.5)   |
| 1 (3.5)   | 1½ (5.3)  | 1½ (5.3)  | 1 (3.5)      | 1¼ (4.4)  |
| 1½ (5.3)  | 2 (7.0)   | 2 (7.0)   | 1¼ (4.4)     | 2 (7.0)   |
| 2 (7.0)   | 2½ (8.8)  | 3 (11.0)  | 2 (7.0)      | 2½ (8.8)  |
| 2½ (9.0)  | 3 (11.0)  | 4 (14.0)  | 2½ (8.8)     | 3¼ (11.5) |
| 3 (11.0)  | 4 (14.0)  | 5 (17.0)  | 3 (11.0)     | 4 (14.0)  |
| 4 (14.0)  | 5 (17.0)  | –         | 3½ (12.0)    | 5¼ (19.0) |

All capacities shown are at 100°F condensing, 40°F evaporator temperature.

\*See Extended Capacity Tables for ratings at a wide range of conditions per ARI standard 750.

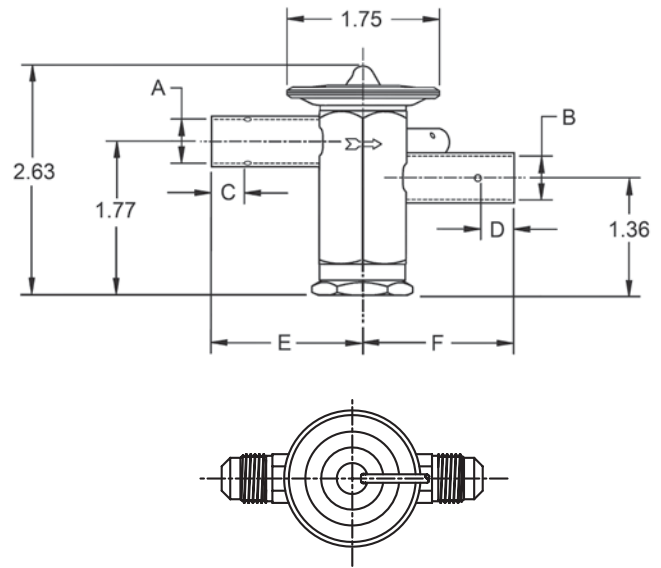
### ANCE SAE Dimensional Data

| Connection Size |         | A    | B    |
|-----------------|---------|------|------|
| Inlet           | Outlet  |      |      |
| 3/8 SAE         | 3/8 SAE | 1.67 | 1.67 |
| 1/2 SAE         | 1/2 SAE | 1.75 | 1.75 |



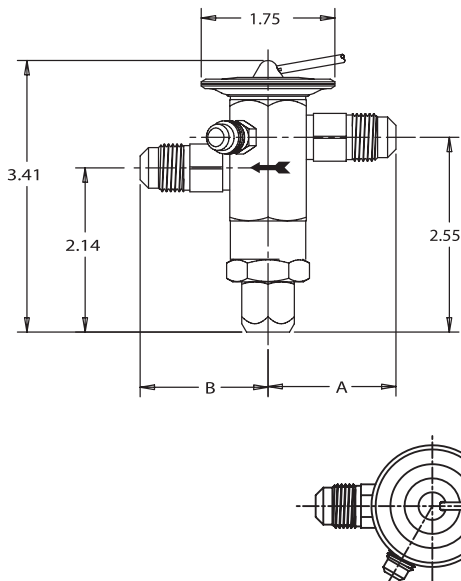
### ANCE ODF Dimensional Data

| Connection Size |         | A± .002 | B± .002 | C MIN | D MIN | E    | F    |
|-----------------|---------|---------|---------|-------|-------|------|------|
| Inlet           | Outlet  |         |         |       |       |      |      |
| 1/4 ODF         | 3/8 ODF | 0.25    | 0.38    | 0.32  | 0.32  | 1.70 | 1.73 |
| 3/8 ODF         | 3/8 ODF | 0.38    | 0.38    | 0.32  | 0.32  | 1.70 | 1.73 |
| 3/8 ODF         | 1/2 ODF | 0.38    | 0.50    | 0.32  | 0.38  | 1.73 | 1.73 |
| 1/2 ODF         | 1/2 ODF | 0.50    | 0.50    | 0.38  | 0.38  | 1.73 | 1.73 |
| 1/2 ODF         | 5/8 ODF | 0.63    | 0.61    | 0.38  | 0.50  | 1.75 | 1.75 |



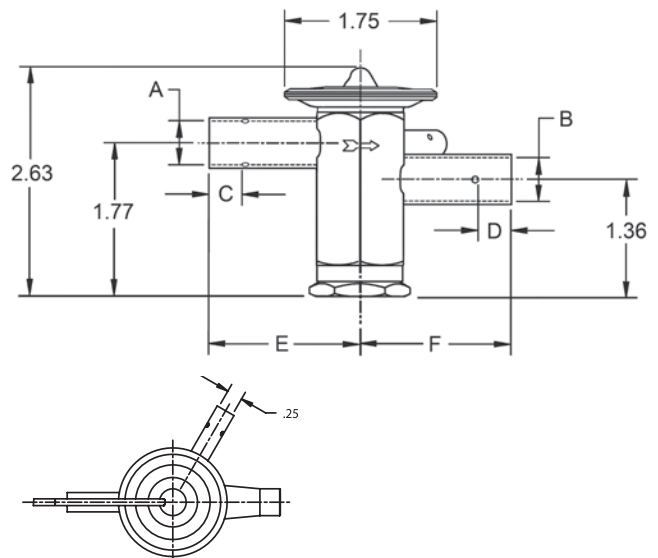
### AACE SAE Dimensional Data

| Connection Size |         | A    | B    |
|-----------------|---------|------|------|
| Inlet           | Outlet  |      |      |
| 3/8 SAE         | 3/8 SAE | 1.67 | 1.67 |
| 1/2 SAE         | 1/2 SAE | 1.75 | 1.75 |



### AACE ODF Dimensional Data

| Connection Size |         | A± .002 | B± .002 | C MIN | D MIN | E    | F    |
|-----------------|---------|---------|---------|-------|-------|------|------|
| Inlet           | Outlet  |         |         |       |       |      |      |
| 1/4 ODF         | 3/8 ODF | 0.25    | 0.38    | 0.32  | 0.32  | 1.70 | 1.73 |
| 3/8 ODF         | 3/8 ODF | 0.38    | 0.38    | 0.32  | 0.32  | 1.70 | 1.73 |
| 3/8 ODF         | 1/2 ODF | 0.38    | 0.50    | 0.32  | 0.38  | 1.73 | 1.73 |
| 1/2 ODF         | 1/2 ODF | 0.50    | 0.50    | 0.38  | 0.38  | 1.73 | 1.73 |
| 1/2 ODF         | 5/8 ODF | 0.63    | 0.61    | 0.38  | 0.50  | 1.75 | 1.75 |



## Ordering Information

### Without Internal Check Valve

| Refrigerant    | Series | Tons* | Charge | Connections       | Cap Tube | PCN    |
|----------------|--------|-------|--------|-------------------|----------|--------|
| R-410A         | AAE    | 1-1/2 | ZW195  | 3/8 X 1/2 ODF S/T | 30 IN    | 066515 |
|                |        | 3     | ZW195  | 3/8 X 3/8 ODF S/T | 30 IN    | 064595 |
|                |        |       | ZW195  | 3/8 X 1/2 ODF S/T | 30 IN    | 065579 |
|                |        |       | ZW195  | CHATLEFF          | 30 IN    | 015776 |
|                |        | 5     | ZW195  | 1/2 X 5/8 ODF S/T | 30 IN    | 065580 |
|                |        |       | ZW195  | CHATLEFF          | 30 IN    | 015794 |
| R-134a         | AA     | 1/8   | MC     | 1/4 X 3/8 ODF S/T | 30 IN    | 066030 |
|                |        |       | MC     | 1/4 X 1/2 ODF S/T | 30 IN    | 065821 |
|                |        | 1/4   | MC     | 1/4 X 3/8 ODF S/T | 30 IN    | 062051 |
|                |        |       | MC     | 1/4 X 1/2 ODF S/T | 5 FT     | 065623 |
|                |        | 1     | MC     | 3/8 X 1/2 ODF S/T | 30 IN    | 065776 |
|                |        |       | MC     | 1/4 X 3/8 SAE S/T | 30 IN    | 058985 |
|                |        | 1/2   | MC     | 1/4 X 1/2 ODF S/T | 5 FT     | 065624 |
|                |        |       | MZ     | 1/4 X 3/8 SAE S/T | 30 IN    | 058986 |
|                | AAE    | 1/2   | MC     | 1/4 X 1/2 ODF S/T | 5 FT     | 065630 |
|                |        | 1     | MC     | 3/8 X 1/2 ODF S/T | 5 FT     | 065631 |
| R-22<br>R-407C | AA     | 1/4   | HC     | 1/4 X 3/8 ODF S/T | 5 FT     | 056315 |
|                |        |       | HC     | 1/4 X 1/2 ODF S/T | 5 FT     | 055932 |
|                |        | 1/2   | HC     | 1/4 X 1/2 ODF S/T | 5 FT     | 065626 |
|                |        |       | HC     | 3/8 X 3/8 ODF S/T | 30 IN    | 056547 |
|                |        | 1/2   | HC     | 3/8 X 1/2 SAE S/T | 5 FT     | 057828 |
|                |        |       | HC     | 1/4 X 1/2 ODF S/T | 5 FT     | 065632 |
|                |        |       | HC     | 3/8 X 1/2 ODF S/T | 5 FT     | 065633 |
|                |        |       | HC     | 3/8 X 1/2 SAE ST  | 5 FT     | 057987 |
|                | AAE    | 1     | HC     | 1/4 X 3/8 ODF ST  | 30 IN    | 059582 |
|                |        |       | HC     | 1/4 X 1/2 ODF S/T | 5 FT     | 065634 |
|                |        | 1-1/2 | HC     | 3/8 X 1/2 ODF S/T | 5 FT     | 065635 |
|                |        |       | HC     | 3/8 X 1/2 ODF S/T | 5 FT     | 064424 |
|                |        | 2     | HC     | 3/8 X 1/2 ODF S/T | 5 FT     | 064425 |
|                |        |       | HCA    | 3/8 X 1/2 ODF S/T | 30 IN    | 049632 |
|                |        | 2-1/2 | HAA    | 3/8 X 1/2 ODF S/T | 30 IN    | 063648 |
|                |        |       | HAA    | CHATLEFF          | 30 IN    | 013938 |
|                |        | 3     | HCA    | 3/8 X 1/2 ODF S/T | 30 IN    | 049633 |
|                |        |       | HC     | 3/8 X 1/2 ODF S/T | 5 FT     | 062376 |
|                |        |       | HC     | 3/8 X 1/2 SAE S/T | 5 FT     | 056686 |
|                |        |       | HCA    | 3/8 X 1/2 ODF S/T | 30 IN    | 049634 |
|                |        | 4     | HCA    | 1/2 X 5/8 ODF S/T | 30 IN    | 060643 |
|                |        |       | HC     | 1/2 X 5/8 ODF S/T | 5 FT     | 061960 |
|                |        |       | HCA    | 3/8 X 1/2 ODF S/T | 30 IN    | 049638 |
|                |        |       | HCA    | 1/2 X 1/2 ODF S/T | 30 IN    | 061247 |
|                |        | 5     | HAA    | 3/8 X 1/2 ODF S/T | 30 IN    | 063649 |
|                |        |       | HAA    | CHATLEFF          | 30 IN    | 013939 |
|                |        |       | HC     | 1/2 X 5/8 ODF S/T | 5 FT     | 059565 |
|                |        |       | HC     | 5/8 X 7/8 ODF S/T | 30 IN    | 061805 |
|                |        |       | HCA    | 3/8 X 1/2 ODF S/T | 30 IN    | 054024 |
|                |        |       | HCA    | 1/2 X 5/8 ODF S/T | 30 IN    | 059683 |
|                | AAEB   | 2     | HW100  | 3/8 X 5/8 ODF S/T | 5 FT     | 062088 |
|                |        | 3     | HCA    | 3/8 X 1/2 ODF S/T | 30 IN    | 059616 |
|                |        | 4     | HCA    | 3/8 X 1/2 ODF S/T | 30 IN    | 059603 |
|                |        | 5     | HCA    | 1/2 X 1/2 ODF S/T | 30 IN    | 059605 |

### Without Internal Check Valve (cont.)

| Refrigerant     | Series | Tons* | Charge | Connections          | Cap Tube | PCN    |
|-----------------|--------|-------|--------|----------------------|----------|--------|
| R-404A<br>R-507 | AA     | 1/8   | SC     | 1/4 X 3/8 ODF S/T 6A | 30 IN    | 065921 |
|                 |        | 1/4   | SC     | 1/4 X 1/2 ODF S/T    | 30 IN    | 063503 |
|                 |        |       | SW45   | 1/4 X 3/8 ODF S/T    | 5 FT     | 065676 |
|                 |        |       | SZ     | 1/4 X 3/8 ODF S/T    | 5 FT     | 065675 |
|                 |        | 1/2   | SC     | 1/4 X 1/2 ODF S/T    | 30 IN    | 063504 |
|                 |        |       | SW45   | 1/4 X 1/2 ODF S/T    | 5 FT     | 065685 |
|                 |        |       | SZ     | 1/4 X 1/2 ODF S/T    | 5 FT     | 065682 |
|                 |        | 3/4   | SZ     | 3/8 X 1/2 ODF S/T    | 30 IN    | 063925 |
|                 |        |       | SC     | 3/8 X 1/2 ODF S/T    | 30 IN    | 066200 |
|                 |        |       | SW45   | 3/8 X 1/2 ODF S/T    | 30 IN    | 065686 |
|                 |        | 1     | SZ     | 3/8 X 1/2 ODF S/T    | 30 IN    | 065149 |
|                 |        |       | SC     | 3/8 X 1/2 ODF S/T    | 30 IN    | 066201 |
|                 | AAE    | 1/4   | SC     | 1/4 X 1/2 ODF S/T    | 30 IN    | 066422 |
|                 |        |       | SZ     | 1/4 X 1/2 ODF S/T    | 30 IN    | 066435 |
|                 |        | 1/2   | SC     | 1/4 X 1/2 ODF S/T    | 30 IN    | 066423 |
|                 |        |       | SC     | 3/8 X 1/2 ODF S/T    | 5 FT     | 066085 |
|                 |        |       | SW45   | 1/4 X 1/2 ODF S/T    | 5 FT     | 065636 |
|                 |        |       | SW45   | 3/8 X 1/2 ODF S/T    | 5 FT     | 065688 |
|                 |        |       | SZ     | 1/4 X 1/2 ODF S/T    | 30 IN    | 066436 |
|                 |        |       | SZ     | 3/8 X 1/2 ODF S/T    | 5 FT     | 065687 |
|                 |        | 3/4   | SC     | 3/8 X 1/2 ODF S/T    | 5 FT     | 066086 |
|                 |        |       | SZ     | 1/4 X 1/2 ODF S/T    | 30 IN    | 066437 |
|                 |        | 1     | SC     | 3/8 X 1/2 ODF S/T    | 5 FT     | 066087 |
|                 |        |       | SW45   | 3/8 X 1/2 ODF S/T    | 5 FT     | 065637 |
|                 |        | 1-1/4 | SZ     | 3/8 X 1/2 ODF S/T    | 5 FT     | 065183 |
|                 |        |       | SC     | 3/8 X 1/2 ODF S/T    | 5 FT     | 066081 |
|                 |        |       | SW45   | 3/8 X 1/2 ODF S/T    | 5 FT     | 066079 |
|                 |        | 1-1/2 | SZ     | 3/8 X 1/2 ODF S/T    | 5 FT     | 066080 |
|                 |        |       | SC     | 3/8 X 1/2 ODF S/T    | 5 FT     | 066448 |
|                 |        |       | SW45   | 3/8 X 1/2 ODF S/T    | 5 FT     | 065698 |
|                 |        | 2     | SZ     | 3/8 X 1/2 ODF S/T    | 5 FT     | 065697 |
|                 |        |       | SC     | 3/8 X 1/2 ODF S/T    | 30 IN    | 065330 |
|                 |        |       | SW45   | 3/8 X 1/2 ODF S/T    | 5 FT     | 065690 |
|                 |        | 2-1/4 | SZ     | 3/8 X 1/2 ODF S/T    | 5 FT     | 065689 |
|                 |        |       | SC     | 3/8 X 1/2 ODF S/T    | 5 FT     | 066082 |
|                 |        |       | SW45   | 3/8 X 1/2 ODF S/T    | 5 FT     | 066083 |
|                 |        | 2-1/2 | SC     | 3/8 X 1/2 ODF S/T    | 5 FT     | 066084 |
|                 |        |       | SW45   | 1/2 X 5/8 ODF S/T    | 5 FT     | 065148 |
|                 |        |       | SZ     | 1/2 X 5/8 ODF S/T    | 5 FT     | 065691 |
|                 |        | 3     | SW45   | 3/8 X 1/2 ODF S/T    | 5 FT     | 065693 |
|                 |        |       | SZ     | 3/8 X 1/2 ODF S/T    | 5 FT     | 065692 |

Chatleff Gasket Kit – KG 10045 (PCN: 066031)

\* For interchangeable refrigerant charges R-134a/R-12, R-404A/R-507/R-502, and R-22/R-407C, the tons of capacity shown in the table are for the first (primary) refrigerant listed. Consult the Nominal Capacity Table for determining the tons of capacity for the secondary refrigerants listed.

**Example:** A 1/4 ton R-12 valve is required. What R-134a ton valve should be selected?

**Solution:** From the Nominal Capacity Table, a 1/2 ton R-134a valve is equivalent to a 1/4 ton R-12 valve.

### With Internal Check Valve

| Refrigerant    | Series | Tons* | Charge | Connections       | Cap Tube | PCN    |
|----------------|--------|-------|--------|-------------------|----------|--------|
| R-410A         | AACE   | 1-1/2 | ZW195  | 3/8 X 1/2 ODF S/T | 5 FT     | 065871 |
|                |        |       | ZW195  | CHATLEFF          | 30 IN    | 016432 |
|                |        | 2     | ZW195  | 3/8 X 1/2 ODF S/T | 5 FT     | 065872 |
|                |        |       | ZW195  | CHATLEFF          | 30 IN    | 016615 |
|                |        | 3     | ZW195  | 3/8 X 1/2 ODF S/T | 5 FT     | 065873 |
|                |        |       | ZW195  | CHATLEFF          | 30 IN    | 015795 |
|                |        | 4     | ZW195  | 3/8 X 1/2 ODF S/T | 5 FT     | 065874 |
|                |        |       | ZW195  | CHATLEFF          | 30 IN    | 016433 |
|                |        | 5     | ZW195  | 1/2 X 5/8 ODF S/T | 5 FT     | 065875 |
|                |        |       | ZW195  | CHATLEFF          | 30 IN    | 015796 |
|                | AACEB  | 1-1/2 | ZW195  | 3/8 X 1/2 ODF S/T | 30 IN    | 065946 |
|                |        | 2     | ZW195  | 3/8 X 1/2 ODF S/T | 30 IN    | 065942 |
|                |        | 3     | ZW195  | 3/8 X 1/2 ODF S/T | 30 IN    | 065943 |
|                |        | 4     | ZW195  | 3/8 X 1/2 ODF S/T | 30 IN    | 065944 |
|                |        | 5     | ZW195  | 3/8 X 1/2 ODF S/T | 30 IN    | 065945 |
| R-22<br>R-407C | AACE   | 1     | HCA    | 3/8 X 1/2 ODF S/T | 30 IN    | 063795 |
|                |        | 1-1/2 | HCA    | 3/8 X 1/2 ODF S/T | 5 FT     | 058923 |
|                |        | 2     | HCA    | 3/8 X 1/2 ODF S/T | 30 IN    | 063676 |
|                |        |       | HAA    | 3/8 X 1/2 ODF S/T | 30 IN    | 064102 |
|                |        | 2-1/2 | HAA    | CHATLEFF          | 30 IN    | 014091 |
|                |        |       | HCA    | 3/8 X 1/2 ODF S/T | 5 FT     | 065868 |
|                |        | 3     | HCA    | 1/2 X 5/8 ODF S/T | 5 FT     | 065797 |
|                |        |       | HCA    | 3/8 X 1/2 ODF S/T | 5 FT     | 065869 |
|                |        | 4     | HAA    | 3/8 X 1/2 ODF S/T | 30 IN    | 064103 |
|                |        |       | HAA    | CHATLEFF          | 30 IN    | 014092 |
|                |        | 5     | HAA    | 1/2 X 5/8 ODF S/T | 5 FT     | 065863 |
|                |        |       | HCA    | 3/8 X 1/2 ODF S/T | 30 IN    | 065842 |
|                | AACEB  | 1-1/2 | HCA    | 3/8 X 1/2 ODF S/T | 30 IN    | 065959 |
|                |        | 2     | HCA    | 3/8 X 1/2 ODF S/T | 30 IN    | 065941 |
|                |        | 3     | HCA    | 3/8 X 1/2 ODF S/T | 30 IN    | 065941 |
|                |        | 4     | HCA    | 3/8 X 5/8 ODF S/T | 30 IN    | 065844 |

The BA/BN series is a balanced ported valve. Typical applications include: refrigerated cases, coolers, freezers, ice machines and air conditioning systems. BA/BN valves operate over widely varying operating conditions.

### Features

- Stainless steel power element eliminates corrosion and prevents valve failure
- Hermetic, leak-free construction
- Compact size allows installation in limited spaces
- Bi-Flow capability allows one valve to control the superheat in both cooling and heating modes for heat pump applications
- Balanced port construction compensates for changes in operating pressures due to varying ambients, gas defrost, heat reclaim, or widely varying evaporator loads

### Specifications

- Maximum working pressure: 700 psig



### Options

- ZW195 charge available for R-410A systems
- External or internal equalizer
- Bleed type pressure equalization available to accommodate PSC type compressors
- SAE or ODF connections standard – Chatleff or Aeroquip are available
- Adjustable or non-adjustable superheat

### Nomenclature example: BAEB 1/2 HCA 5 FT 3/8 x 1/2 ODF S/T

| B                                      | A                                        | E                                     | B                        | 1/2                                | H                                                                                                               | CA                                                                            | 5 FT                  | 3/8 x 1/2                                        | ODF                           | S/T                                        |
|----------------------------------------|------------------------------------------|---------------------------------------|--------------------------|------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------|--------------------------------------------------|-------------------------------|--------------------------------------------|
| Valve Series                           | Superheat Adjustment                     | Equalizer                             | Bleed Hole (optional)    | Capacity Nominal Rating in Tons    | Refrigerant Code                                                                                                | Charge Code                                                                   | Capillary Tube Length | Inlet x Outlet Connection Sizes                  | Connection Type               | Configuration                              |
| Hermetic<br>Balanced<br>Port<br>Design | A = Adjustable<br><br>N = Non-Adjustable | E=External<br><br>(Omit for Internal) | (Omit for no bleed hole) | (See nominal capacity table below) | +F = R-12<br>• H = R-22<br>+M = R-134a<br>• N = R-407C<br>*P = R-507<br>*R = R-502<br>*S = R-404A<br>Z = R-410A | C = medium temp<br>CA = heat pump<br>W(MOP) = press. limiting<br>Z = low temp | 30 IN &<br>5 FT (std) | 1/4 x 3/8<br>3/8 x 1/2<br>1/2 x 5/8<br>5/8 x 7/8 | SAE=flare<br><br>ODF = solder | S/T = straight-thru<br><br>ANG = 90° angle |

+ = R-134a are interchangeable refrigerant charges

\* = R-507 and R-404A are interchangeable refrigerant charges

• = R-22 and R-407C are interchangeable refrigerant charges

### BA/BN Series – Nominal\* Capacity Table in Tons (kW)

| R-134a    | R-22/R-407C | R-410A    | R-404A/R-507 |
|-----------|-------------|-----------|--------------|
| 1/2 (1.8) | 1/2 (1.8)   | 1/2 (1.8) | 1/4 (0.9)    |
| 3/4       | 1 (3.5)     | 1 (3.5)   | 1/2 (1.8)    |
| 1 (3.5)   | 1½ (5.3)    | 1½ (5.3)  | 1 (3.5)      |
| 1½ (5.3)  | 2 (7.0)     | 2 (7.0)   | 1½ (4.4)     |
| 2 (7.0)   | 2½ (9.0)    | 3 (11.0)  | 1¾ (5.3)     |
| 2¼ (8.0)  | 3 (11.0)    | 3½ (12.0) | 2 (7.0)      |
| 3 (11.0)  | 4 (14.0)    | 4½ (16.0) | 2½ (9.0)     |
| 3½ (12.0) | 5 (17.0)    | 6 (21.0)  | 3 (11.0)     |
| 3¾ (12.0) | 6 (21.0)    | 7½ (26.0) | 4 (14.0)     |

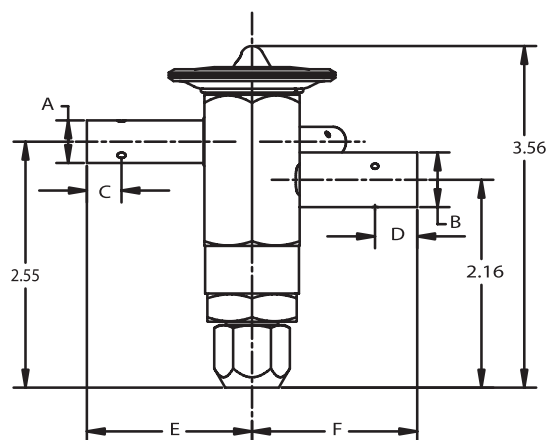
All capacities shown are at 100°F condensing, 40°F evaporator temperature.

\*See Extended Capacity Tables for ratings at a wide range of conditions per ARI standard 750

### BA/BN Dimensional Data (in)

| BAE             |         |      |      |       |       |      |      |
|-----------------|---------|------|------|-------|-------|------|------|
| Connection Size |         | A    | B    | C MIN | D MIN | E    | F    |
| Inlet           | Outlet  |      |      |       |       |      |      |
| 1/4 ODF         | 3/8 ODF | 0.25 | 0.38 | 0.31  | 0.32  | 1.70 | 1.73 |
| 3/8 ODF         | 3/8 ODF | 0.38 | 0.38 | 0.32  | 0.32  | 1.73 | 1.73 |
| 3/8 ODF         | 1/2 ODF | 0.38 | 0.50 | 0.32  | 0.41  | 1.73 | 1.73 |
| 1/2 ODF         | 1/2 ODF | 0.50 | 0.50 | 0.41  | 0.41  | 1.73 | 1.73 |
| 1/2 ODF         | 5/8 ODF | 0.50 | 0.63 | 0.41  | 0.50  | 1.73 | 1.75 |
| 5/8 ODF         | 5/8 ODF | 0.63 | 0.61 | 0.50  | 0.50  | 1.75 | 1.75 |
| 5/8 ODF         | 7/8 ODF | 0.63 | 0.88 | 0.50  | 0.62  | 1.75 | 1.73 |

### BA(E) Dimensional Diagram

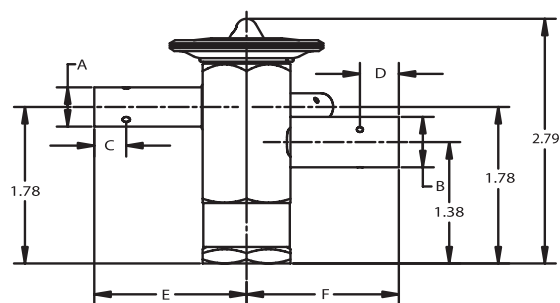


ODF CONNECTIONS  
STRAIGHT-THRU CONFIGURATION ONLY

### BN(E) Dimensional Data (in)

| Connection Size |         | A    | B    | C MIN | D MIN | E    | F    |
|-----------------|---------|------|------|-------|-------|------|------|
| Inlet           | Outlet  |      |      |       |       |      |      |
| 1/4 ODF         | 3/8 ODF | 0.25 | 0.38 | 0.31  | 0.32  | 1.70 | 1.73 |
| 3/8 ODF         | 3/8 ODF | 0.38 | 0.38 | 0.32  | 0.32  | 1.73 | 1.73 |
| 3/8 ODF         | 1/2 ODF | 0.38 | 0.50 | 0.32  | 0.41  | 1.73 | 1.73 |
| 1/2 ODF         | 1/2 ODF | 0.50 | 0.50 | 0.41  | 0.41  | 1.73 | 1.73 |
| 1/2 ODF         | 5/8 ODF | 0.50 | 0.63 | 0.41  | 0.50  | 1.73 | 1.75 |
| 5/8 ODF         | 5/8 ODF | 0.63 | 0.61 | 0.50  | 0.50  | 1.75 | 1.75 |
| 5/8 ODF         | 7/8 ODF | 0.63 | 0.88 | 0.50  | 0.62  | 1.75 | 1.73 |

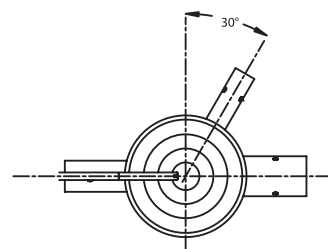
### BN(E) Dimensional Diagram



ODF CONNECTIONS  
STRAIGHT-THRU CONFIGURATION ONLY

### Remote Bulb Tubing Length 30" or 5' Standard

| BA(E) & BN(E) Remote Bulb Dimensions |        |          |
|--------------------------------------|--------|----------|
| Refrigerant Charge                   | Length | Diameter |
| HCA, HAA                             | 2.31   | 0.75     |
| MC, MZ, MW (MOP), RW (MOP)           | 2.09   | 0.50     |
| RC, SC, SZ, SW (MOP),                |        |          |
| PC, PZ, PW (MOP)                     |        |          |



TOP VIEW SHOWING  
EXTERNAL EQUALIZER LOCATION

### Ordering Information

| Refrigerant | Series | Tons* | Charge | Connections       | Cap Tube | PCN    |
|-------------|--------|-------|--------|-------------------|----------|--------|
| R-410A      | BAE    | 1-1/2 | ZW195  | 3/8 X 1/2 ODF S/T | 5 FT     | 065876 |
|             |        | 2     | ZW195  | 3/8 X 1/2 ODF S/T | 5 FT     | 065877 |
|             |        | 3     | ZW195  | 3/8 X 1/2 ODF S/T | 5 FT     | 065878 |
|             |        | 4-1/2 | ZW195  | 3/8 X 1/2 ODF S/T | 5 FT     | 065880 |
|             |        | 6     | ZW195  | 1/2 X 3/8 ODF S/T | 5 FT     | 065586 |
|             |        | 7-1/2 | ZW195  | 5/8 X 7/8 ODF S/T | 5 FT     | 066088 |
|             | BAEB   | 1-1/2 | ZW195  | 3/8 X 1/2 ODF S/T | 5 FT     | 065336 |
|             |        | 2     | ZW195  | 3/8 X 1/2 ODF S/T | 5 FT     | 065337 |
|             |        | 3     | ZW195  | 3/8 X 1/2 ODF S/T | 5 FT     | 065338 |
|             |        | 4-1/2 | ZW195  | 3/8 X 1/2 ODF S/T | 5 FT     | 065339 |
|             |        | 6     | ZW195  | 3/8 X 1/2 ODF S/T | 5 FT     | 065340 |
|             |        |       | ZW195  | 1/2 X 3/8 ODF S/T | 5 FT     | 065978 |
| R-134a      | BAE    | 3/4   | MC     | 3/8 X 1/2 ODF S/T | 30 IN    | 062754 |
|             |        | 1     | MC     | 3/8 X 1/2 ODF S/T | 30 IN    | 061967 |
|             |        | 1-1/2 | MC     | 3/8 X 1/2 ODF S/T | 30 IN    | 063129 |
|             |        | 2     | MC     | 3/8 X 1/2 ODF S/T | 30 IN    | 062830 |
|             |        | 3     | MC     | 3/8 X 1/2 ODF S/T | 30 IN    | 063201 |

|                |      |       |       |                   |       |        |
|----------------|------|-------|-------|-------------------|-------|--------|
| R-22<br>R-407C | BAE  | 1     | HCA   | 3/8 X 1/2 ODF S/T | 30 IN | 063200 |
|                |      | 1-1/2 | HCA   | 3/8 X 1/2 ODF S/T | 30 IN | 061954 |
|                |      |       | HW100 | 3/8 X 1/2 ODF S/T | 30 IN | 062831 |
|                |      | 2     | HCA   | 3/8 X 1/2 ODF S/T | 30 IN | 061955 |
|                |      |       | HCA   | 1/2 X 1/2 ODF S/T | 5 FT  | 063018 |
|                |      | 2-1/2 | HCA   | 3/8 X 1/2 ODF S/T | 30 IN | 061956 |
|                |      |       | HCA   | 1/2 X 5/8 ODF S/T | 30 IN | 061962 |
|                |      |       | HW100 | 3/8 X 1/2 ODF S/T | 30 IN | 062616 |
|                |      | 3     | HCA   | 3/8 X 1/2 ODF S/T | 30 IN | 061957 |
|                |      |       | HCA   | 1/2 X 5/8 ODF S/T | 5 FT  | 063019 |
|                |      |       | HW100 | 3/8 X 1/2 ODF S/T | 30 IN | 062372 |
|                |      | 4     | HCA   | 3/8 X 1/2 ODF S/T | 30 IN | 061958 |
|                |      |       | HCA   | 1/2 X 5/8 ODF S/T | 30 IN | 061963 |
|                |      |       | HCA   | 5/8 X 5/8 ODF S/T | 5 FT  | 063020 |
|                |      |       | HW100 | 3/8 X 1/2 ODF S/T | 30 IN | 062373 |
|                |      | 5     | HCA   | 3/8 X 1/2 ODF S/T | 5 FT  | 062839 |
|                |      |       | HCA   | 1/2 X 1/2 ODF S/T | 5 FT  | 062852 |
|                |      |       | HCA   | 1/2 X 5/8 ODF S/T | 5 FT  | 061964 |
|                |      |       | HCA   | 5/8 X 5/8 ODF S/T | 5 FT  | 062838 |
|                |      |       | HW100 | 3/8 X 1/2 ODF S/T | 30 IN | 062374 |
|                |      | 6     | HCA   | 1/2 X 1/2 ODF S/T | 5 FT  | 062853 |
|                |      |       | HCA   | 1/2 X 5/8 ODF S/T | 5 FT  | 062736 |
|                | BNE  | 3     | HCA   | 3/8 X 1/2 ODF S/T | 5 FT  | 064166 |
|                |      |       | HCA   | 1/2 X 1/2 ODF S/T | 5 FT  | 062289 |
|                |      | 4     | HCA   | 3/8 X 3/8 ODF S/T | 30 IN | 063132 |
|                |      |       | HCA   | 3/8 X 1/2 ODF S/T | 30 IN | 061971 |
|                |      | 5     | HCA   | 1/2 X 1/2 ODF S/T | 5 FT  | 062290 |
|                |      |       | HCA   | 1/2 X 5/8 ODF S/T | 5 FT  | 065226 |
|                | BAEB | 1-1/2 | HCA   | 3/8 X 1/2 ODF S/T | 30 IN | 062789 |
|                |      |       | HCA   | 1/2 X 1/2 ODF S/T | 30 IN | 063006 |
|                |      | 2     | HCA   | 3/8 X 1/2 ODF S/T | 30 IN | 062790 |
|                |      | 3     | HCA   | 3/8 X 1/2 ODF S/T | 30 IN | 061968 |
|                |      |       | HCA   | 1/2 X 1/2 ODF S/T | 30 IN | 063015 |
|                |      |       | HCA   | 1/2 X 5/8 ODF S/T | 5 FT  | 063348 |
|                |      | 4     | HCA   | 3/8 X 1/2 ODF S/T | 30 IN | 063939 |
|                |      |       | HCA   | 1/2 X 1/2 ODF S/T | 5 FT  | 063010 |
|                |      | 5     | HCA   | 3/8 X 1/2 ODF S/T | 5 FT  | 061980 |
|                |      |       | HCA   | 1/2 X 1/2 ODF S/T | 30 IN | 063128 |
|                |      | 6     | HCA   | 1/2 X 1/2 ODF S/T | 30 IN | 063940 |
|                |      |       | HCA   | 1/2 X 5/8 ODF S/T | 5 FT  | 064805 |
|                |      |       | HCA   | 5/8 X 5/8 ODF S/T | 5 FT  | 065977 |

\* For interchangeable refrigerant charges R-134a/R-12, R-404A/R-507/R-502, and R-22/R-407C, the tons of capacity shown in the table are for the first (primary) refrigerant listed. Consult the Nominal Capacity Table for determining the tons of capacity for the secondary refrigerants listed.

**Example:** A 1/4 ton R-12 valve is required. What R-134a ton valve should be selected? **Solution:** From the Nominal Capacity Table, a 1/2 ton R-134a valve is equivalent to a 1/4 ton R-12 valve.

The Emerson NXT Series is a balanced ported valve designed for high efficiency R-410A air conditioning and heat pump applications. NXT Series valves operate over a wide range of conditions and applications, while offering excellent performance, superior reliability, and unparalleled valve life.

### Features

- Precision superheat control optimized for R-410 A systems
- Enhanced power element design offers extended valve life
- Stainless steel power element eliminates corrosion and prevents valve failure
- Laser etched identification markings for permanent legibility
- Hermetic, leak-free construction of all joints
- Compact size allows installation in limited spaces
- Bi-Flow capability allows one valve to control the superheat in both cooling and heating modes for close-coupled or packaged heat pump applications
- Balanced port construction compensates for changes in operating pressures due to varying ambients, gas defrost, heat reclaim, or widely varying evaporator loads
- External equalizer is standard
- Screens on ODF inlet connections

### Specifications

- Maximum working pressure (MWP): 700 psig
- R-410A operating range: -20°F to +50°F
- UR/CUR file number: SA 5312



Non-Adjustable

Adjustable

### Options

- High flow internal check valve (1-7 tons) allows reverse flow for heat pump applications, eliminating the need for external check valve and improving overall system efficiency
- Adjustable or non-adjustable superheat
- Bleed type pressure equalization available to accommodate PSC type compressors
- ODF connections are standard - Chatleff connections are available
- External equalizer (1/4" ODF) is a standard offering. Other configurations are available
- External equalizer 1/8" tube with 45° end cut is a standard offering - other terminations are available

### Nomenclature example: NAE 3 ZAA ODF B15%

| N          | A                                                                                                                                                                                                                    | E                                          | 3                            | ZAA                                     | ODF                                                      | B15%                              |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|------------------------------|-----------------------------------------|----------------------------------------------------------|-----------------------------------|
| NXT Series | <b>Body Type</b><br>A = Adjustable, With Check, Straight-Through<br>B = Adjustable, No Check, Straight-Through<br>C = Non-Adjustable, With Check, Straight-Through<br>D = Non-Adjustable, No Check, Straight-Through | <b>Equalizer</b><br>E = External Equalizer | <b>Capacity</b><br>(In Tons) | <b>Refrigerant Code</b><br>ZAA = R-410A | <b>Connection Type</b><br>ODF = Solder<br>CHA = Chatleff | <b>Bleed %</b><br>(Omit for None) |

### Ordering Information

#### Adjustable, Straight-Through Body Style, Individually Packaged

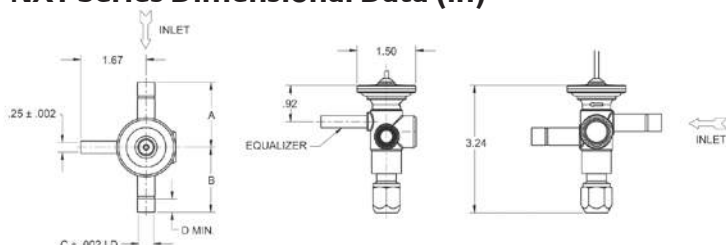
| Refrigerant | Capacity (Tons) | Check Valve | Bleed | Inlet X Outlet      | Bulb Cap Tube Length | External Equalizer           | PCN    |
|-------------|-----------------|-------------|-------|---------------------|----------------------|------------------------------|--------|
| R-410A      | 1/2             |             | -     | 3/8 ODF X 3/8 ODF   | 30"                  | 30" With Angle Cut           | 095064 |
|             |                 |             | 15%   | 3/8 ODF X 3/8 ODF   | 30"                  | 30" With Angle Cut           | 095065 |
|             |                 |             | -     | 3/8 ODF X 1/2 ODF   | 30"                  | 1/4" ODF                     | 095066 |
|             | 1               | ✓           | -     | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095000 |
|             |                 | ✓           | 15%   | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095001 |
|             |                 | ✓           | -     | Chatleff X Chatleff | 5 ft                 | 5 ft With 1/4" SAE Flare Nut | 095002 |
|             |                 | ✓           | -     | 3/8 ODF X 1/2 ODF   | 5 ft                 | 5 ft With Angle Cut          | 095003 |
|             |                 |             | -     | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095004 |
|             |                 |             | 15%   | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095005 |
|             | 1-1/2           | ✓           | -     | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095006 |
|             |                 | ✓           | 15%   | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095007 |
|             |                 | ✓           | -     | Chatleff X Chatleff | 5 ft                 | 5 ft With 1/4" SAE Flare Nut | 095008 |
|             |                 | ✓           | -     | 3/8 ODF X 1/2 ODF   | 5 ft                 | 5 ft With Angle Cut          | 095009 |
|             |                 |             | -     | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095010 |
|             | 2               |             | 15%   | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095011 |
|             |                 | ✓           | -     | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095012 |
|             |                 | ✓           | 15%   | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095013 |
|             |                 | ✓           | -     | Chatleff X Chatleff | 5 ft                 | 5 ft With 1/4" SAE Flare Nut | 095014 |
|             |                 | ✓           | -     | 3/8 ODF X 1/2 ODF   | 5 ft                 | 5 ft With Angle Cut          | 095015 |
|             |                 |             | -     | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095016 |
|             | 3               |             | 15%   | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095017 |
|             |                 | ✓           | -     | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095018 |
|             |                 | ✓           | 15%   | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095019 |
|             |                 | ✓           | -     | Chatleff X Chatleff | 5 ft                 | 5 ft With 1/4" SAE Flare Nut | 095020 |
|             |                 | ✓           | -     | 3/8 ODF X 1/2 ODF   | 5 ft                 | 5 ft With Angle Cut          | 095021 |
|             |                 |             | -     | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095022 |
|             | 4               |             | 15%   | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095023 |
|             |                 | ✓           | -     | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095024 |
|             |                 | ✓           | 15%   | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095025 |
|             |                 | ✓           | -     | Chatleff X Chatleff | 5 ft                 | 5 ft With 1/4" SAE Flare Nut | 095026 |
|             |                 | ✓           | -     | 3/8 ODF X 1/2 ODF   | 5 ft                 | 5 ft With Angle Cut          | 095027 |
|             |                 |             | -     | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095028 |
|             | 5               |             | 15%   | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095029 |
|             |                 | ✓           | -     | 3/8 ODF X 1/2 ODF   | 5 ft                 | 1/4" ODF                     | 095030 |
|             |                 | ✓           | -     | 1/2 ODF X 5/8 ODF   | 5 ft                 | 1/4" ODF                     | 095031 |
|             |                 | ✓           | 15%   | 1/2 ODF X 5/8 ODF   | 5 ft                 | 1/4" ODF                     | 095032 |
|             |                 | ✓           | -     | Chatleff X Chatleff | 5 ft                 | 5 ft With 1/4" SAE Flare Nut | 095033 |
|             |                 | ✓           | -     | 1/2 ODF X 5/8 ODF   | 5 ft                 | 5 ft With Angle Cut          | 095034 |
|             | 6               |             | -     | 1/2 ODF X 5/8 ODF   | 5 ft                 | 1/4" ODF                     | 095035 |
|             |                 | ✓           | -     | 1/2 ODF X 5/8 ODF   | 5 ft                 | 1/4" ODF                     | 095036 |
|             |                 | ✓           | 15%   | 1/2 ODF X 5/8 ODF   | 5 ft                 | 1/4" ODF                     | 095037 |
|             |                 | ✓           | -     | Chatleff X Chatleff | 5 ft                 | 5 ft With 1/4" SAE Flare Nut | 095038 |
|             |                 | ✓           | -     | 1/2 ODF X 5/8 ODF   | 5 ft                 | 5 ft With Angle Cut          | 095039 |
|             |                 |             | -     | 1/2 ODF X 5/8 ODF   | 5 ft                 | 1/4" ODF                     | 095040 |
|             | 7               |             | 15%   | 1/2 ODF X 5/8 ODF   | 5 ft                 | 1/4" ODF                     | 095041 |
|             |                 | ✓           | -     | 5/8 ODF X 7/8 ODF   | 5 ft                 | 1/4" ODF                     | 095042 |
|             |                 | ✓           | 15%   | 5/8 ODF X 7/8 ODF   | 5 ft                 | 1/4" ODF                     | 095043 |
|             |                 | ✓           | -     | Chatleff X Chatleff | 5 ft                 | 5 ft With 1/4" SAE Flare Nut | 095044 |
|             |                 | ✓           | -     | 5/8 ODF X 7/8 ODF   | 5 ft                 | 5 ft With Angle Cut          | 095045 |
|             |                 |             | -     | 5/8 ODF X 7/8 ODF   | 5 ft                 | 1/4" ODF                     | 095046 |
|             |                 |             | 15%   | 5/8 ODF X 7/8 ODF   | 5 ft                 | 1/4" ODF                     | 095047 |

### Ordering Information

Adjustable, Straight-Through Body Style, Individually Packaged (continued)

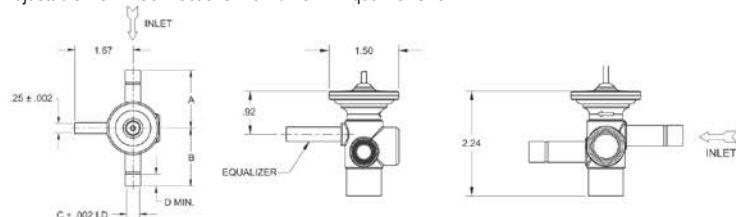
| Refrigerant | Capacity (Tons) | Check Valve | Bleed | Inlet X Outlet      | Bulb Cap Tube Length | External Equalizer | PCN    |
|-------------|-----------------|-------------|-------|---------------------|----------------------|--------------------|--------|
| R-410A      | 8               |             | -     | 5/8 ODF X 7/8 ODF   | 5 ft                 | 1/4" ODF           | 095048 |
|             |                 |             | 15%   | 5/8 ODF X 7/8 ODF   | 5 ft                 | 1/4" ODF           | 095049 |
|             | 10              |             | -     | 5/8 ODF X 7/8 ODF   | 5 ft                 | 1/4" ODF           | 095050 |
|             |                 |             | 15%   | 5/8 ODF X 7/8 ODF   | 5 ft                 | 1/4" ODF           | 095051 |
|             | 12              |             | -     | 1/2 ODF X 5/8 ODF   | 5 ft                 | 1/4" ODF           | 095060 |
|             |                 |             | -     | 5/8 ODF X 7/8 ODF   | 5 ft                 | 1/4" ODF           | 095052 |
|             |                 |             | 15%   | 5/8 ODF X 7/8 ODF   | 5 ft                 | 1/4" ODF           | 095053 |
|             |                 |             | -     | 5/8 ODF X 1-1/8 ODF | 5 ft                 | 1/4" ODF           | 095054 |
|             |                 |             | -     | 7/8 ODF X 1-1/8 ODF | 5 ft                 | 1/4" ODF           | 095055 |
|             |                 |             | -     | 5/8 ODF X 7/8 ODF   | 5 ft                 | 1/4" ODF           | 095056 |
|             | 15              |             | 15%   | 5/8 ODF X 7/8 ODF   | 5 ft                 | 1/4" ODF           | 095057 |
|             |                 |             | -     | 5/8 ODF X 1-1/8 ODF | 5 ft                 | 1/4" ODF           | 095058 |
|             |                 |             | -     | 7/8 ODF X 1-1/8 ODF | 5 ft                 | 1/4" ODF           | 095059 |
|             |                 |             | -     | 7/8 ODF X 1-1/8 ODF | 5 ft                 | 1/4" ODF           | 095059 |

### NXT Series Dimensional Data (in)



Adjustable - ODF Connections with 1/4 ODF Equalizer Shown

| Connections | Dimension |      |       |      |
|-------------|-----------|------|-------|------|
|             | A         | B    | C     | D    |
| 3/8 ODF     | 1.65      | 1.65 | 0.379 | 0.34 |
| 1/2 ODF     | 1.65      | 1.65 | 0.504 | 0.48 |
| 5/8 ODF     | 2.15      | 2.15 | 0.629 | 0.75 |
| 7/8 ODF     | 2.15      | 2.15 | 0.879 | 0.75 |
| 1-1/8 ODF   | 2.40      | 2.40 | 1.129 | 0.91 |
| Chatteff    | 1.80      | 1.36 | -     | -    |



Non-Adjustable - ODF Connections with 1/4 ODF Equalizer Shown

Emerson™ TXV Connect kits include our latest generation thermal expansion valves plus chatteff and aeroquip adapters that are easy to install into all residential air conditioning systems.

### Features

- ODF TXVs with chatteff and aeroquip adapters
- One valve to fit all systems
- TXV with internal check, bulb strap, and connection options all in one box
- R-410A and R-22 kits in multiple capacities
- Easy field replacement of fixed orifice for increased efficiency

### Specifications

- Maximum Working Pressure (MWP): 700 psig
- UL File number (valves): SA 5312

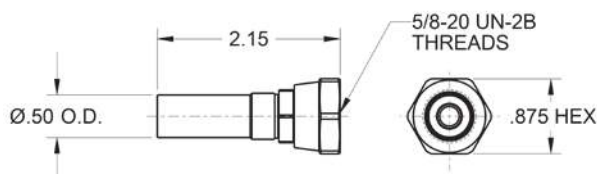


Individual adapter kits

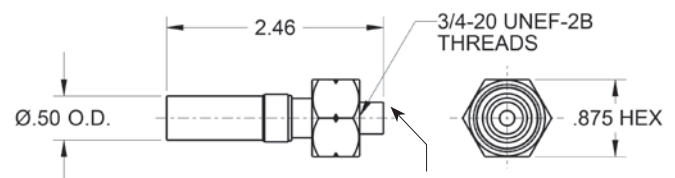
| PCN    | Description               |            | Capacity(tons)* | Refrigerant |
|--------|---------------------------|------------|-----------------|-------------|
| 066657 | TXV + CONNECT             | 2½T R-22   | 1-1/2 to 3      | R-22        |
| 066658 | TXV + CONNECT             | 5T R-22    | 3-1/2 to 5      |             |
| 066660 | TXV + CONNECT             | 1½T R-410A | 1-1/2           | R-410A      |
| 066661 | TXV + CONNECT             | 2T R-410A  | 2               |             |
| 066662 | TXV + CONNECT             | 3T R-410A  | 3               |             |
| 066663 | TXV + CONNECT             | 4T R-410A  | 4               |             |
| 066664 | TXV + CONNECT             | 5T R-410A  | 5               |             |
| 066653 | CHATLEFF ADAPTER ASSEMBLY |            | N/A             | N/A         |
| 066679 | CHATLEFF ADAPTER ASSEMBLY |            | (SHORT)         | N/A         |
| 066654 | AEROQUIP ADAPTER ASSEMBLY |            | N/A             | N/A         |

\* For extended capacity tables, use NXT series for R-410A applications and A-Series for R-22

### Dimension Data



Aeroquip  
Adapter Assembly



Chatleff  
Adapter Assembly  
(PCN 066679)  
does not have extension

The HF series is a balanced ported valve designed for refrigeration, air conditioning and heat pump applications.

### Features

- Stainless steel replaceable power element eliminates corrosion and prevents valve failure
- Two body sizes provide capacities from 1/4 to 20 tons

### Standard Body – HF & HFK

- The HF is offered several ways:
  - Pre-packaged HFK service kits* – Include a mix of bodies and power elements with a complete set of cages to serve the most applications with a minimum of parts
  - Individual components* – Bodies, cages, & power elements may be ordered separately
  - Finished valves* – Assembled valves ready for immediate installation
- Bi-Flow capability up to 5-1/2 tons R-22 allows one valve to control the superheat in both cooling and heating modes

### Extended Body – HF

- Capacity range from 8 to 20 tons (R-22)
- Finished valve only



**NOTE:** If the HF body is stamped HFK, then the cage is replaceable.

### Options

- ODF or SAE connections
- Straight-through or angle flow configurations
- Removable inlet strainer (ODF only)
- Internal or external equalizer

### Specifications

- Maximum working pressure: 450 psig
- UR/CUR file number: SA5312

**Nomenclature** example: HFESC 2 HC 5 FT 3/8 x 1/2 ODF S/T

| HF                                          | N                                                                        | E                                                     | S                                                            | C                                                                              | B                                                           | 2                                                                               | H                                                                                                                               | C                                                                                                                      | 5 FT                                       | 3/8 x 1/2                                                        | ODF                                                   | S/T                                                            |
|---------------------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------|
| <b>Valve Series</b><br>Balanced Port Design | <b>Superheat Adjustment</b><br>N = Non-Adjustable<br>Omit for Adjustable | <b>Equalizer</b><br>E=External<br>(Omit for Internal) | <b>Connection Type</b><br>S = Solder<br>(Omit for SAE Flare) | <b>Removable Inlet Strainer</b><br>(optional)<br>C = Inlet Strainer (ODF only) | <b>Bleed Hole</b><br>(optional)<br>(Omit for no bleed hole) | <b>Capacity</b><br>Nominal Rating in Tons<br>(See nominal capacity table below) | <b>Refrigerant Code</b><br>+F = R-12<br>• H = R-22<br>+M = R-134a<br>• N = R-407C<br>* P = R-507<br>* R = R-502<br>* S = R-404A | <b>Charge Code</b><br>C = medium temp<br>CA = heat pump<br>W(MOP) = press. limiting<br>Z = low temp<br>AA = wide range | <b>Capillary Tube Length</b><br>5 FT (std) | <b>Inlet x Outlet Connection Sizes</b><br>1/4 x 3/8<br>3/8 x 1/2 | <b>Connection Type</b><br>SAE = flare<br>ODF = solder | <b>Configuration</b><br>ANG = 90° angle<br>S/T = straight-thru |

+ = R-134a are interchangeable refrigerant charges

\* = R-507 and R-404A are interchangeable refrigerant charges

• = R-22 and R-407C are interchangeable refrigerant charges

### HF Series-Nominal\* Capacity Tables in Tons (kW)

#### Standard Body HF

| R-134a      | R-22/R-407C  | R404A/R-507  |
|-------------|--------------|--------------|
| 1/4 (0.9)   | 1/4 (0.9)    | 1/8 (0.4)    |
| 1/2 (1.8)   | 1/2 (1.8)    | 1/4 (0.9)    |
| 3/4 (2.7)   | 1 (3.5)      | 1/2 (1.8)    |
| 1 (3.5)     | 1 1/2 (5.3)  | 1 (3.5)      |
| 1 1/2 (5.3) | 2 (7.0)      | 1 1/4 (4.4)  |
| 1 3/4 (6.2) | 2 1/2 (8.8)  | 1 1/2 (5.3)  |
| 2 1/2 (8.8) | 3 (11.0)     | 2 (7.0)      |
| 4 (14.0)    | 5 1/2 (20.0) | 3 1/2 (12.0) |

#### Extended Body HF

| R-134a       | R-22/R-407C | R-404A/R-507 |
|--------------|-------------|--------------|
| 6(21.0)      | 8 (28.0)    | 5 (17.0)     |
| 7 1/2 (27.0) | 10 (35.0)   | 7 (27.0)     |
| 11 (39.0)    | 15 (53.0)   | 10 (35.0)    |
| 14 (50.0)    | 20 (70.0)   | 13 (46.0)    |

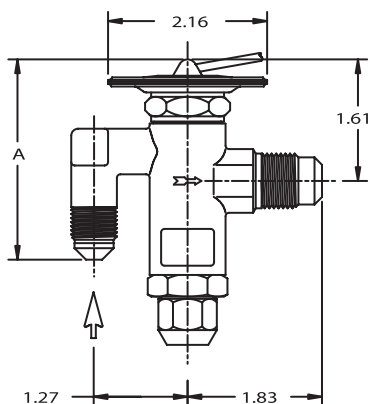
All capacities shown are at 100°F condensing, 40°F evaporator temperature.

\*See Extended Capacity Tables for ratings at a wide range of conditions per ARI standard 750.

### Dimensional Data

#### Standard Body HF

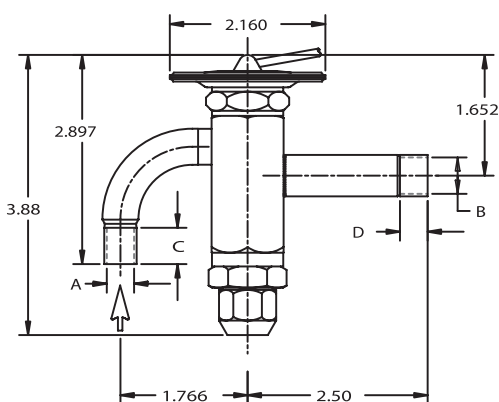
¼ thru 5½ tons R-22



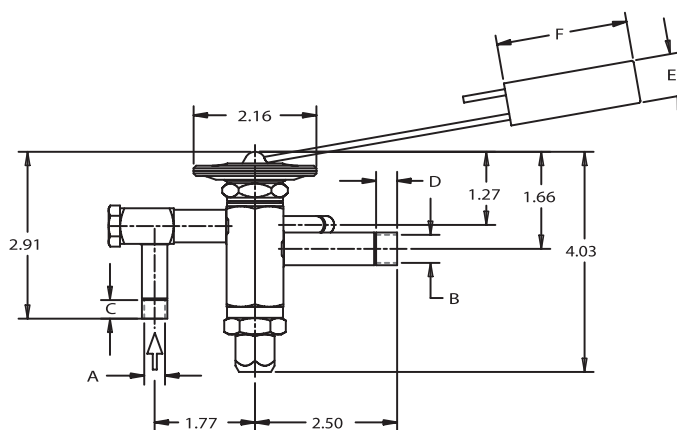
SAE

#### HF SAE

| Connection Size |         | A    | B    | C    |
|-----------------|---------|------|------|------|
| Inlet           | Outlet  |      |      |      |
| 1/4 SAE         | 1/2 SAE | 3.11 | 1.27 | 1.83 |
| 3/8 SAE         | 1/2 SAE | 2.72 |      |      |



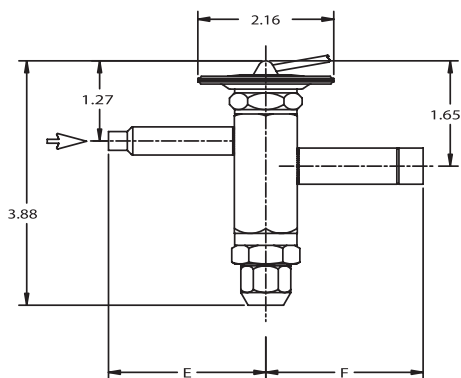
ODF



ODF  
w/optional strainer  
at inlet

#### Extended Body HF

8, 10, 15 & 20 ton R-22



ODF

#### HF ODF

| Connection Size |         | A± .002 | B± .002 | C MIN | D MIN | E    | F    |
|-----------------|---------|---------|---------|-------|-------|------|------|
| Inlet           | Outlet  |         |         |       |       |      |      |
| 1/4 ODF         | 3/8 ODF | 0.25    | 0.38    | 0.31  | 0.31  | 2.50 | 2.50 |
| 3/8 ODF         | 1/2 ODF | 0.25    | 0.50    | 0.31  | 0.37  |      |      |
| 3/8 ODF         | 1/2 ODF | 0.38    | 0.50    | 0.37  | 0.37  |      |      |

### Ordering Information

Use the following tables to order individual components.

#### HFK Body Selection Table

| PCN    | Description | Type   | Connections (Inlet x Outlet)        |
|--------|-------------|--------|-------------------------------------|
| 064881 | KT-20298-1  | HFK    | 1/4 x 1/2 SAE Ang Inlet             |
| 064882 | KT-20298-2  | HFK    | 3/8 x 1/2 SAE Ang Inlet             |
| 064883 | KT-20298-3  | HFKE   | 1/4 x 1/2 SAE Ang Inlet             |
| 064884 | KT-20298-4  | HFKE   | 3/8 x 1/2 SAE Ang Inlet             |
| 064885 | KT-20298-5  | HFKSC  | 3/8 x 1/2 ODF Ang Inlet w/ Strainer |
| 064886 | KT-20298-6  | HFKESC | 3/8 x 1/2 ODF Ang Inlet w/ Strainer |
| 064887 | KT-20298-7  | HFKS   | 3/8 x 1/2 ODF S/T                   |
| 064888 | KT-20298-8  | HFKS   | 3/8 x 5/8 ODF S/T                   |
| 064889 | KT-20298-9  | HFKS   | 1/2 x 5/8 ODF S/T                   |
| 064890 | KT-20298-10 | HFKS   | 1/2 x 7/8 ODF S/T                   |
| 064891 | KT-20298-11 | HFKES  | 3/8 x 1/2 ODF S/T                   |
| 064892 | KT-20298-12 | HFKES  | 3/8 x 5/8 ODF S/T                   |
| 064895 | KT-20298-13 | HFKES  | 1/2 x 5/8 ODF S/T                   |
| 064896 | KT-20298-14 | HFKES  | 1/2 x 7/8 ODF S/T                   |

#### HF & HFK Power Element Table

| PCN    | Description    | System Refrigerant(s) | Application   |
|--------|----------------|-----------------------|---------------|
| 053769 | X26300-FW15-1  | R-134a/R-12           | Low Temp MOP  |
| 054798 | X26300-FW35-1  | R-134a/R-12           | Low Temp MOP  |
| 063869 | X26300-FW55-1  | R-134a/R-12           | Low Temp MOP  |
| 053766 | X26300-FZ-1    | R-134a/R-12           | Low Temp      |
| 053763 | X26300-FC-1    | R-134a/R-12           | Medium Temp   |
| 058074 | X26300-MC-1    | R-134a                | Medium Temp   |
| 053767 | X26300-HZ-1    | R-22/R-407C           | Low Temp      |
| 057834 | X26300-HCA-1   | R-22/R-407C           | Heat Pump     |
| 057764 | X26300-HW100-1 | R-22/R-407C           | AC MOP        |
| 053764 | X26300-HC-1    | R-22/R-407C           | A/C Med. Temp |
| 058085 | X26300-SW45-1  | R-404/ R-507/ R-502   | Low Temp MOP  |
| 058082 | X26300-SZ-1    | R-404/ R-507/ R-502   | Low Temp      |
| 058083 | X26300-SC-1    | R-404/ R-507/ R-502   | Medium Temp   |

#### HFK Cage Nominal\* Capacity Table

| PCN    | Description <sup>1</sup> | Cage Code | R-22  | R-134a | R-404 | R-507 | R-407C |
|--------|--------------------------|-----------|-------|--------|-------|-------|--------|
| 064868 | KT-20299-0               | 0         | 1/4   | 1/4    | 1/8   | 1/8   | 1/4    |
| 064869 | KT-20299-1               | 1         | 1/2   | 1/2    | 1/4   | 1/4   | 1/2    |
| 064870 | KT-20299-2               | 2         | 1     | 3/4    | 1/2   | 1/2   | 1      |
| 064871 | KT-20299-3               | 3         | 1 1/2 | 1      | 1     | 1     | 1 1/2  |
| 064872 | KT-20299-4               | 4         | 2     | 1 1/2  | 1 1/4 | 1 1/4 | 2      |
| 064873 | KT-20299-5               | 5         | 2 1/2 | 1 3/4  | 1 1/2 | 1 1/2 | 2 1/2  |
| 064874 | KT-20299-6               | 6         | 3     | 2 1/2  | 2     | 2     | 3      |
| 064875 | KT-20299-7               | 7         | 5 1/2 | 4      | 3 1/2 | 3 1/2 | 5 1/2  |

<sup>1</sup> Cage Kit includes Cage, Insertion Tool and ID Clips.

\*All capacities shown are at 100°F condensing, 40°F evaporator temperature.

See Extended Capacity Tables for ratings at a wide range of conditions per ARI standard 750.

#### Cage Kit (PCN 064879)

| Item                         | Qty |
|------------------------------|-----|
| Size 0 Cage (1/4 ton R-22)   | 2   |
| Size 1 Cage (1/2 ton R-22)   | 2   |
| Size 2 Cage (1 ton R-22)     | 2   |
| Size 3 Cage (1 1/2 ton R-22) | 2   |
| Size 4 Cage (2 ton R-22)     | 2   |
| Size 5 Cage (2 1/2 ton R-22) | 2   |
| Size 6 Cage (3 ton R-22)     | 2   |
| Size 7 Cage (5 1/2 ton R-22) | 2   |
| Insertion Tool               | 1   |
| Oil Bottle                   | 1   |
| Cage ID Tags                 | 16  |

### Replacement Parts – SAE Inlet

| PCN    | Part Number | Description              |
|--------|-------------|--------------------------|
| 027385 | X-11176-1   | 3/8" Inlet Filter Screen |
| 058707 | 27676-1     | Seal Cap                 |
| 048638 | X-11176-7   | 1/4" Inlet Filter Screen |

### HFK Accessories

| PCN    | Description               |
|--------|---------------------------|
| 064897 | Cage Box (Empty)          |
| 064898 | Insertion Tool            |
| 064899 | Oil Bottle                |
| 065203 | Cage Gasket Kit (12 sets) |

### Replacement Parts- HFSC & HFESC Only

| PCN    | Kit Number | Description                                      |
|--------|------------|--------------------------------------------------|
| 057686 | KT-20264   | Includes seal cap, gasket o-ring, screen, spring |

### Ordering Information

#### HFK Pre-Packaged Kits

The HFK is a pre-packaged kit consisting of a mix of popular bodies and power elements with a complete selection of cages. These kits provide great flexibility allowing valves to be assembled as needed for each application. Three kits are provided as shown below, along with the cage kit which is included in each pre-packaged kit. In addition, custom kits can be assembled by stocking an empty kit case with desired components.



#### SAE/ODF Kit (PCN 065135)

| Item                        | Qty |
|-----------------------------|-----|
| HFK 3/8 x 1/2 SAE ANG       | 1   |
| HFKE 3/8 x 1/2 SAE ANG      | 1   |
| HFKS 3/8 x 1/2 ODF S/T      | 1   |
| HFKE 3/8 x 1/2 ODF S/T      | 1   |
| Cage Kit (PCN 064879)       | 1   |
| Insertion Tool (PCN 064898) | 1   |
| Service Box                 | 1   |
| FC Power Element            | 1   |
| FZ Power Element            | 1   |
| HC Power Element            | 1   |
| HZ Power Element            | 1   |
| SC Power Element            | 1   |
| SW45 Power Element          | 1   |

#### SAE Kit (PCN 064876)

| Item                  | Qty |
|-----------------------|-----|
| HFK 1/4 X 1/2 Body    | 1   |
| HFK 3/8 X 1/2 Body    | 1   |
| HFKE 3/8 X 1/2 Body   | 2   |
| FC Power Element      | 2   |
| HC Power Element      | 1   |
| HZ Power Element      | 1   |
| SZ Power Element      | 2   |
| Cage Kit (PCN 064879) | 1   |

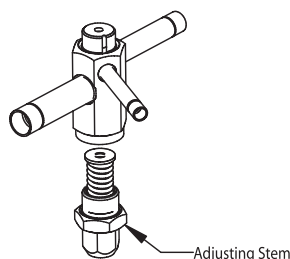
#### ODF Kit (PCN 064877)

| Item                  | Qty |
|-----------------------|-----|
| HFKSC 3/8 X 1/2 Body  | 1   |
| HFKE 3/8 X 1/2 Body   | 1   |
| HFKE 3/8 X 1/2 Body   | 2   |
| FC Power Element      | 2   |
| HC Power Element      | 1   |
| HZ Power Element      | 1   |
| SZ Power Element      | 2   |
| Cage Kit (PCN 064879) | 1   |

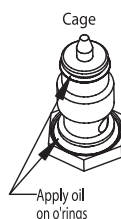
#### Cage Kit (PCN 064879)

| Item                         | Qty |
|------------------------------|-----|
| Size 0 Cage (1/4 ton R-22)   | 2   |
| Size 1 Cage (1/2 ton R-22)   | 2   |
| Size 2 Cage (1 ton R-22)     | 2   |
| Size 3 Cage (1 1/2 ton R-22) | 2   |
| Size 4 Cage (2 ton R-22)     | 2   |
| Size 5 Cage (2 1/2 ton R-22) | 2   |
| Size 6 Cage (3 ton R-22)     | 2   |
| Size 7 Cage (5 1/2 ton R-22) | 2   |
| Insertion Tool               | 1   |
| Oil Bottle                   | 1   |
| Cage ID Tags                 | 16  |

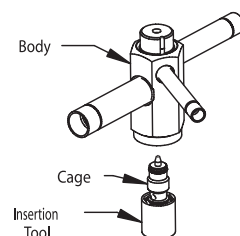
### HFK Assembly Procedure (see 6 assembly steps & diagrams below)



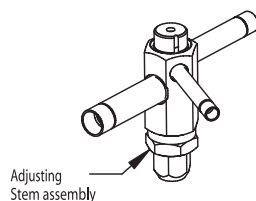
1. Remove adjusting stem assembly from body with 15/16" wrench.



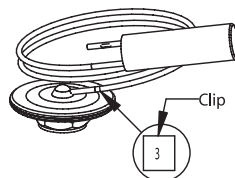
2. Lubricate both o-rings on cage.



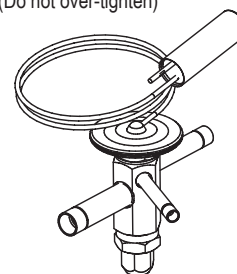
3. Insert cage into body with driver and insertion tool and hand tighten. (Do not over-tighten)



4. Replace adjustment stem assembly to body and hand tighten. Use the 15/16" wrench to tighten adjustment stem assembly 60° or one wrench flat. (300-360 inch lbs. - Do not over-tighten)



5. Attach cage identification clip on power element cap tube.



6. Screw power element to top of valve body and hand tighten. Use the 1" wrench to tighten power element 60° or one wrench flat. (300-360 inch lbs. - Do not over-tighten)

### Ordering Information

Use the following tables to order factory assembled valves.

#### HF Series – Internally Equalized

| Refrigerant     | Series    | Tons* | Charge | Connections       | Cap Tube | PCN    |
|-----------------|-----------|-------|--------|-------------------|----------|--------|
| R-134a          | HF<br>HFS | 1/4   | MC     | 3/8 X 1/2 ODF ANG | 5 FT     | 058545 |
|                 |           |       | MC     | 3/8 X 1/2 SAE ANG | 5 FT     | 057618 |
|                 |           | 1/2   | MC     | 3/8 X 1/2 ODF S/T | 5 FT     | 058100 |
|                 |           |       | MC     | 3/8 X 1/2 SAE ANG | 5 FT     | 057620 |
|                 |           | 1     | MC     | 3/8 X 1/2 ODF S/T | 5 FT     | 065641 |
| R-22<br>R-407C  | HF<br>HFS | 1/4   | HC     | 1/4 X 1/2 SAE ANG | 5 FT     | 058430 |
|                 |           |       | HC     | 3/8 X 1/2 ODF ANG | 5 FT     | 055493 |
|                 |           |       | HC     | 3/8 X 1/2 ODF S/T | 5 FT     | 055633 |
|                 |           |       | HC     | 3/8 X 1/2 SAE     | 5 FT     | 054921 |
|                 |           |       | HZ     | 1/4 X 1/2 SAE ANG | 5 FT     | 059653 |
|                 |           |       | HZ     | 3/8 X 1/2 ODF S/T | 5 FT     | 056169 |
|                 |           | 1/2   | HC     | 1/4 X 1/2 SAE ANG | 5 FT     | 009812 |
|                 |           |       | HC     | 3/8 X 1/2 ODF ANG | 5 FT     | 054723 |
|                 |           |       | HC     | 3/8 X 1/2 ODF S/T | 5 FT     | 054136 |
|                 |           |       | HC     | 3/8 X 1/2 SAE     | 5 FT     | 054135 |
|                 |           |       | HZ     | 3/8 X 1/2 SAE     | 5 FT     | 054364 |
|                 |           | 1     | HC     | 3/8 X 1/2 ODF ANG | 5 FT     | 055702 |
|                 |           |       | HC     | 3/8 X 1/2 ODF S/T | 5 FT     | 055928 |
|                 |           |       | HC     | 3/8 X 1/2 SAE     | 5 FT     | 054927 |
|                 |           |       | HZ     | 3/8 X 1/2 SAE     | 5 FT     | 054928 |
|                 |           | 1-1/2 | HC     | 3/8 X 1/2 ODF ANG | 5 FT     | 055969 |
|                 |           |       | HC     | 3/8 X 1/2 ODF S/T | 5 FT     | 056018 |
|                 |           |       | HC     | 3/8 X 1/2 SAE     | 5 FT     | 054933 |
|                 |           | 2     | HC     | 3/8 X 1/2 SAE     | 5 FT     | 054939 |
|                 |           |       | HZ     | 3/8 X 1/2 SAE ANG | 5 FT     | 054940 |
|                 |           | 2-1/2 | HC     | 3/8 X 1/2 SAE     | 5 FT     | 054947 |
|                 |           |       | HC     | 3/8 X 1/2 SAE     | 5 FT     | 053316 |
|                 |           | 3     | HC     | 3/8 X 1/2 SAE     | 5 FT     | 053915 |
|                 |           |       | HC     | 3/8 X 1/2 ODF S/T | 5 FT     | 053915 |
| R-404A<br>R-507 | HF<br>HFS | 1/4   | SC     | 1/4 X 1/2         | 30 IN    | 066516 |
|                 |           |       | SW45   | 1/4 X 1/2         | 30 IN    | 066517 |
|                 |           |       | SZ     | 1/4 X 1/2         | 30 IN    | 066518 |
|                 |           | 1/2   | SC     | 1/4 X 1/2         | 30 IN    | 066519 |
|                 |           |       | SW45   | 1/4 X 1/2         | 30 IN    | 066520 |
|                 |           |       | SZ     | 1/4 X 1/2         | 30 IN    | 066521 |
|                 |           | 1     | SC     | 3/8 X 1/2 ODF S/T | 5 FT     | 065643 |
|                 |           |       | SW45   | 3/8 X 1/2         | 5 FT     | 066522 |
|                 |           |       | SZ     | 3/8 X 1/2         | 5 FT     | 066523 |
|                 |           | 1-1/2 | SC     | 3/8 X 1/2         | 5 FT     | 066524 |
|                 |           |       | SW45   | 3/8 X 1/2         | 5 FT     | 066525 |
|                 |           |       | SZ     | 3/8 X 1/2         | 5 FT     | 066526 |
|                 |           | 2     | SC     | 3/8 X 1/2         | 5 FT     | 066527 |
|                 |           |       | SW45   | 3/8 X 1/2         | 5 FT     | 066528 |
|                 |           |       | SZ     | 3/8 X 1/2         | 5 FT     | 066529 |
|                 |           | 3-1/2 | SC     | 3/8 X 1/2         | 5 FT     | 066530 |
|                 |           |       | SW45   | 3/8 X 1/2         | 5 FT     | 066531 |
|                 |           |       | SZ     | 3/8 X 1/2         | 5 FT     | 066532 |

### Ordering Information (continued)

#### HF Series – Externally Equalized (continued)

| Refrigerant    | Series      | Tons* | Charge | Connections         | Cap Tube | PCN    |
|----------------|-------------|-------|--------|---------------------|----------|--------|
| R-134a         | HFE<br>HFES | 1/4   | MC     | 3/8 X 1/2 SAE ANG   | 30 IN    | 057860 |
|                |             | 1/2   | MC     | 3/8 X 1/2 ODF S/T   | 5 FT     | 065645 |
|                |             |       | MC     | 3/8 X 1/2 SAE ANG   | 5 FT     | 057616 |
|                |             | 3/4   | MC     | 3/8 X 1/2 ODF ANG   | 5 FT     | 057784 |
|                |             |       | MC     | 3/8 X 1/2 SAE ANG   | 30 IN    | 057861 |
|                |             |       | MC     | 3/8 X 1/2 ODF S/T   | 5 FT     | 059422 |
|                |             | 1     | MC     | 3/8 X 1/2 ODF ANG   | 5 FT     | 058546 |
|                |             |       | MC     | 3/8 X 1/2 ODF S/T   | 5 FT     | 065646 |
|                |             |       | MC     | 3/8 X 1/2 SAE ANG   | 5 FT     | 057617 |
|                |             | 1-1/2 | MC     | 3/8 X 1/2 SAE ANG   | 5 FT     | 057895 |
|                |             | 1-3/4 | MC     | 3/8 X 1/2 ODF S/T   | 5 FT     | 065647 |
|                |             |       | MC     | 3/8 X 1/2 SAE       | 5 FT     | 058152 |
|                |             |       | MC     | 3/8 X 1/2 SAE ANG   | 5 FT     | 057896 |
|                |             | 4     | MC     | 3/8 X 1/2 SAE ANG   | 5 FT     | 057897 |
|                |             | 6     | MC     | 5/8 X 7/8 ODF S/T   | 5 FT     | 057903 |
| R-22<br>R-407C | HFE<br>HFES | 1/4   | MC     | 5/8 X 7/8 ODF S/T   | 5 FT     | 057906 |
|                |             |       | MC     | 7/8 X 1 1/8 ODF S/T | 5 FT     | 058681 |
|                |             |       | MC     | 7/8 X 1 3/8 ODF S/T | 5 FT     | 064000 |
|                |             | 1/2   | HC     | 3/8 X 1/2 ODF S/T   | 5 FT     | 055927 |
|                |             |       | HC     | 3/8 X 1/2 SAE       | 5 FT     | 054924 |
|                |             |       | HZ     | 3/8 X 1/2 SAE       | 5 FT     | 054925 |
|                |             |       | HC     | 1/4 X 1/2 SAE ANG   | 5 FT     | 059079 |
|                |             |       | HC     | 3/8 X 1/2 ODF ANG   | 5 FT     | 054838 |
|                |             |       | HC     | 3/8 X 1/2 ODF S/T   | 5 FT     | 055827 |
|                |             |       | HC     | 3/8 X 1/2 SAE       | 5 FT     | 054361 |
|                |             |       | HZ     | 3/8 X 1/2 ODF S/T   | 5 FT     | 055889 |
|                |             |       | HZ     | 3/8 X 1/2 SAE       | 5 FT     | 054365 |
|                |             | 1     | HC     | 3/8 X 1/2 ODF ANG   | 5 FT     | 055494 |
|                |             |       | HC     | 3/8 X 1/2 ODF S/T   | 5 FT     | 055708 |
|                |             |       | HC     | 3/8 X 1/2 SAE       | 5 FT     | 054930 |
|                |             |       | HW 35  | 3/8 X 1/2 SAE       | 5 FT     | 054932 |
|                |             |       | HZ     | 3/8 X 1/2 SAE       | 5 FT     | 054931 |
|                |             | 1-1/2 | HC     | 3/8 X 1/2 ODF ANG   | 5 FT     | 055495 |
|                |             |       | HC     | 3/8 X 1/2 ODF S/T   | 5 FT     | 055863 |
|                |             |       | HC     | 3/8 X 1/2 SAE       | 5 FT     | 054936 |
|                |             |       | HZ     | 3/8 X 1/2 ODF S/T   | 5 FT     | 055870 |
|                |             |       | HZ     | 3/8 X 1/2 SAE       | 5 FT     | 054937 |
|                |             | 2     | HC     | 3/8 X 1/2 ODF S/T   | 5 FT     | 055706 |
|                |             |       | HC     | 3/8 X 1/2 SAE       | 5 FT     | 054942 |
|                |             |       | HC     | 3/8 X 1/2 ODF ANG   | 5 FT     | 054946 |
|                |             |       | HZ     | 3/8 X 1/2 SAE       | 5 FT     | 054943 |
|                |             | 2-1/2 | HC     | 3/8 X 1/2 ODF ANG   | 5 FT     | 056042 |
|                |             |       | HC     | 3/8 X 1/2 ODF S/T   | 5 FT     | 055931 |
|                |             |       | HC     | 3/8 X 1/2 SAE       | 5 FT     | 054950 |
|                |             | 3     | HC     | 3/8 X 1/2 ODF ANG   | 5 FT     | 054756 |
|                |             |       | HC     | 3/8 X 1/2 ODF S/T   | 5 FT     | 053916 |
|                |             |       | HC     | 3/8 X 1/2 SAE       | 5 FT     | 053317 |
|                |             |       | HC     | 1/2 X 5/8 ODF ANG   | 5 FT     | 064761 |
|                |             |       | HCA    | 3/8 X 1/2 ODF S/T   | 5 FT     | 058648 |
|                |             |       | HCA    | 1/2 X 5/8 ODF S/T   | 5 FT     | 061730 |
|                |             |       | HZ     | 3/8 X 1/2 ODF S/T   | 5 FT     | 055924 |
|                |             |       | HZ     | 3/8 X 1/2 SAE       | 5 FT     | 053191 |

### Ordering Information (continued)

#### HF Series – Externally Equalized (continued)

| Refrigerant    | Series      | Tons* | Charge | Connections         | Cap Tube | PCN    |
|----------------|-------------|-------|--------|---------------------|----------|--------|
| R-22<br>R-407C | HFE<br>HFES | 5-1/2 | HC     | 3/8 X 1/2 ODF S/T   | 5 FT     | 054141 |
|                |             |       | HC     | 3/8 X 1/2 SAE       | 5 FT     | 054140 |
|                |             |       | HC     | 1/2 X 5/8 ODF ANG   | 5 FT     | 054778 |
|                |             |       | HC     | 1/2 X 7/8 ODF S/T   | 5 FT     | 055187 |
|                |             |       | HC     | 5/8 X 7/8 ODF S/T   | 5 FT     | 054779 |
|                |             |       | HCA    | 3/8 X 1/2 ODF S/T   | 5 FT     | 065649 |
|                |             |       | HCA    | 1/2 X 5/8 ODF ANG   | 5 FT     | 057378 |
|                |             |       | HZ     | 3/8 X 1/2 ODF S/T   | 5 FT     | 054780 |
|                |             |       | HZ     | 3/8 X 1/2 SAE       | 5 FT     | 054777 |
|                |             | 8     | HC     | 1/2 X 5/8 ODF S/T   | 5 FT     | 057312 |
|                |             |       | HC     | 5/8 X 1 1/8 ODF ST  | 5 FT     | 057313 |
|                |             |       | HCA    | 1/2 X 7/8 ODF S/T   | 5 FT     | 056818 |
|                |             |       | HCA    | 5/8 X 1 1/8 ODF ST  | 5 FT     | 056819 |
|                |             | 10    | HC     | 1/2 X 5/8 ODF S/T   | 5 FT     | 057315 |
|                |             |       | HC     | 5/8 X 7/8 ODF S/T   | 5 FT     | 057256 |
|                |             |       | HC     | 7/8 X 1 1/8 ODF S/T | 5 FT     | 057316 |
|                |             |       | HCA    | 5/8 X 7/8 ODF S/T   | 5 FT     | 056820 |
|                |             |       | HCA    | 5/8 X 1 1/8 ODF S/T | 5 FT     | 056821 |
|                |             | 12    | HC     | 5/8 X 1 1/8 ODF S/T | 5 FT     | 062737 |
|                |             | 15    | HC     | 5/8 X 7/8 ODF S/T   | 5 FT     | 057317 |
|                |             |       | HC     | 7/8 X 1 1/8 ODF S/T | 5 FT     | 057318 |
|                |             |       | HCA    | 5/8 X 1 1/8 ODF S/T | 5 FT     | 056824 |
|                |             |       | HCA    | 5/8 X 7/8 ODF S/T   | 5 FT     | 056823 |
|                |             |       | HCA    | 7/8 X 1 1/8 ODF S/T | 5 FT     | 056825 |
|                |             | 20    | HC     | 7/8 X 1 1/8 ODF S/T | 5 FT     | 062055 |
|                |             |       | HCA    | 7/8 X 1 1/8 ODF S/T | 5 FT     | 058490 |

### Ordering Information (continued)

#### HF Series – Externally Equalized (continued)

|                 |             |       |       |                   |      |        |
|-----------------|-------------|-------|-------|-------------------|------|--------|
| R-404A<br>R-507 | HFE<br>HFES | 1/4   | SC    | 1/4 X 1/2 ODF S/T | 30IN | 066533 |
|                 |             |       | SW 45 | 3/8 X 1/2 ODF S/T | 5 FT | 065734 |
|                 |             |       | SW 45 | 3/8 X 1/2 SAE ANG | 5 FT | 066623 |
|                 |             | 1/2   | SZ    | 3/8 X 1/2 ODF S/T | 5 FT | 065733 |
|                 |             |       | SC    | 3/8 X 1/2 ODF ANG | 5 FT | 058975 |
|                 |             |       | SW 45 | 3/8 X 1/2 ODF S/T | 5 FT | 065736 |
|                 |             |       | SW 45 | 3/8 X 1/2 SAE ANG | 5 FT | 066040 |
|                 |             |       | SZ    | 3/8 X 1/2 ODF ANG | 5 FT | 058995 |
|                 |             |       | SZ    | 3/8 X 1/2 ODF S/T | 5 FT | 065735 |
|                 |             | 1     | SC    | 3/8 X 1/2 ODF S/T | 5 FT | 065650 |
|                 |             |       | SC    | 3/8 X 1/2 ODF ANG | 5 FT | 058976 |
|                 |             |       | SW 45 | 3/8 X 1/2 ODF ANG | 5 FT | 059086 |
|                 |             |       | SW 45 | 3/8 X 1/2 SAE ANG | 5 FT | 066624 |
|                 |             |       | SW 45 | 3/8 X 1/2 ODF S/T | 5 FT | 065651 |
|                 |             |       | SZ    | 3/8 X 1/2 ODF S/T | 5 FT | 064289 |
|                 |             | 1-1/4 | SC    | 3/8 X 1/2 ODF ANG | 5 FT | 058977 |
|                 |             |       | SW 45 | 3/8 X 1/2 ODF S/T | 5 FT | 057976 |
|                 |             |       | SZ    | 3/8 X 1/2 ODF S/T | 5 FT | 065737 |
|                 |             | 1-1/2 | SC    | 3/8 X 1/2 ODF S/T | 5 FT | 057974 |
|                 |             |       | SW 45 | 3/8 X 1/2 ODF S/T | 5 FT | 065738 |
|                 |             |       | SW 45 | 3/8 X 1/2 SAE ANG | 5 FT | 066625 |
|                 |             |       | SZ    | 3/8 X 1/2 ODF S/T | 5 FT | 064290 |
|                 |             | 2     | SC    | 3/8 X 1/2 ODF S/T | 5 FT | 057958 |
|                 |             |       | SW 45 | 3/8 X 1/2 ODF S/T | 5 FT | 065740 |
|                 |             |       | SW 45 | 3/8 X 1/2 SAE ANG | 5 FT | 066627 |
|                 |             |       | SZ    | 3/8 X 1/2 ODF S/T | 5 FT | 065739 |
|                 |             | 3-1/2 | SC    | 3/8 X 1/2 ODF S/T | 5 FT | 065652 |
|                 |             |       | SC    | 5/8 X 7/8 ODF S/T | 5 FT | 062151 |
|                 |             |       | SW 45 | 1/2 X 5/8 ODF S/T | 5 FT | 066534 |
|                 |             |       | SZ    | 1/2 X 5/8 ODF S/T | 5 FT | 061694 |
|                 |             | 5     | SW 45 | 5/8 X 7/8 ODF S/T | 5 FT | 064170 |
|                 |             |       | SC    | 5/8 X 7/8 ODF S/T | 5 FT | 066536 |
|                 |             |       | SZ    | 5/8 X 7/8 ODF S/T | 5 FT | 058451 |
|                 |             | 7     | SC    | 5/8 X 7/8 ODF S/T | 5 FT | 066536 |
|                 |             |       | SW45  | 5/8 X 7/8 ODF S/T | 5 FT | 066537 |
|                 |             |       | SZ    | 5/8 X 7/8 ODF S/T | 5 FT | 064291 |
|                 |             | 10    | SC    | 5/8 X 7/8 ODF S/T | 5 FT | 066538 |
|                 |             |       | SW 45 | 5/8 X 7/8 ODF S/T | 5 FT | 064195 |
|                 |             |       | SZ    | 5/8 X 7/8 ODF S/T | 5 FT | 062828 |

\* For interchangeable refrigerant charges R-134a/R-12, R-404A/R-507/R-502, and R-22/R-407C, the tons of capacity shown in the table are for the first (primary) refrigerant listed. Consult the Nominal Capacity Table for determining the tons of capacity for the secondary refrigerants listed.

**Example:** A 1/4 ton R-12 valve is required. What R-134a ton valve should be selected?

**Solution:** From the Nominal Capacity Table, a 1/2 ton R-134a valve is equivalent to a 1/4 ton R-12 valve.

### Ordering Information (continued)

#### HFESC Series – Externally Equalized (continued)

| Refrigerant    | Series | Tons* | Charge | Connections       | Cap Tube | PCN    |
|----------------|--------|-------|--------|-------------------|----------|--------|
| R-12           | HFESC  | 1/2   | FC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057397 |
|                |        | 1     | FC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057398 |
|                |        | 1-1/2 | FC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057399 |
| R-134a<br>R-12 | HFESC  | 1/4   | MC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057572 |
|                |        | 1/2   | MC     | 3/8 X 1/2 ODF ANG | 5 FT     | 058069 |
|                |        | 1     | MC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057570 |
|                |        | 1-1/2 | MC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057568 |
|                |        | 2-1/2 | MC     | 3/8 X 1/2 ODF ANG | 5 FT     | 058421 |
|                |        |       |        |                   |          |        |
| R-22<br>R-407C | HFESC  | 1/4   | HC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057409 |
|                |        |       | HZ     | 3/8 X 1/2 ODF ANG | 5 FT     | 057428 |
|                |        | 1/2   | HC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057291 |
|                |        |       | HZ     | 3/8 X 1/2 ODF ANG | 5 FT     | 057429 |
|                |        | 1     | HC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057410 |
|                |        |       | HZ     | 3/8 X 1/2 ODF ANG | 5 FT     | 057430 |
|                |        | 1-1/2 | HC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057292 |
|                |        |       | HZ     | 3/8 X 1/2 ODF ANG | 5 FT     | 057321 |
|                |        | 2     | HZ     | 3/8 X 1/2 ODF ANG | 5 FT     | 057433 |
|                |        |       | HC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057294 |
|                |        | 2-1/2 | HC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057411 |
|                |        |       | HZ     | 3/8 X 1/2 ODF ANG | 5 FT     | 057434 |
|                |        | 3     | HC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057412 |
|                |        |       | HZ     | 3/8 X 1/2 ODF ANG | 5 FT     | 057748 |
|                |        | 5-1/2 | HC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057781 |
|                |        | 8     | HC     | 3/8 X 1/2 ODF ANG | 5 FT     | 058609 |

### Ordering Information (continued)

#### HFESC Series – Externally Equalized (continued)

|                 |       |       |       |                   |       |        |
|-----------------|-------|-------|-------|-------------------|-------|--------|
| R-404A<br>R-507 | HFESC | 1/4   | SC    | 1/4 X 1/2 ODF ANG | 30 IN | 066539 |
|                 |       |       | SW45  | 1/4 X 1/2 ODF ANG | 30 IN | 066540 |
|                 |       |       | SZ    | 1/4 X 1/2 ODF ANG | 30 IN | 066542 |
|                 |       | 1/2   | SC    | 1/4 X 1/2 ODF ANG | 30 IN | 066543 |
|                 |       |       | SW45  | 1/4 X 1/2 ODF ANG | 30 IN | 066544 |
|                 |       |       | SZ    | 1/4 X 1/2 ODF ANG | 30 IN | 066545 |
|                 |       | 1     | SC    | 3/8 X 1/2 ODF ANG | 5 FT  | 058135 |
|                 |       |       | SW45  | 3/8 X 1/2 ODF ANG | 5 FT  | 058157 |
|                 |       |       | SZ    | 3/8 X 1/2 ODF ANG | 5 FT  | 058118 |
|                 |       | 1-1/2 | SC    | 3/8 X 1/2 ODF ANG | 5 FT  | 058119 |
|                 |       |       | SW45  | 3/8 X 1/2 ODF ANG | 5 FT  | 058136 |
|                 |       |       | SZ    | 3/8 X 1/2 ODF ANG | 5 FT  | 058121 |
|                 |       | 2     | SC    | 3/8 X 1/2 ODF ANG | 5 FT  | 058122 |
|                 |       |       | SW45  | 3/8 X 1/2 ODF ANG | 5 FT  | 058212 |
|                 |       |       | SZ    | 3/8 X 1/2 ODF ANG | 5 FT  | 058214 |
|                 |       | 3-1/2 | SC    | 3/8 X 1/2 ODF ANG | 5 FT  | 058071 |
|                 |       |       | SW45  | 3/8 X 1/2 ODF ANG | 5 FT  | 066547 |
|                 |       |       | SZ    | 3/8 X 1/2 ODF ANG | 5 FT  | 066548 |
|                 |       | 5     | SC    | 3/8 X 1/2 ODF ANG | 5 FT  | 058220 |
|                 |       |       | SW45  | 3/8 X 1/2 ODF ANG | 5 FT  | 058221 |
|                 |       |       | SZ    | 3/8 X 1/2 ODF ANG | 5 FT  | 066549 |
|                 |       | 7     | SC    | 5/8 X 7/8 ODF ANG | 5 FT  | 065458 |
|                 |       |       | SW45  | 5/8 X 7/8 ODF ANG | 5 FT  | 066550 |
|                 |       |       | SZ    | 5/8 X 7/8 ODF ANG | 5 FT  | 064058 |
|                 |       | 10    | SC    | 5/8 X 7/8 ODF ANG | 5 FT  | 064219 |
|                 |       |       | SW45  | 5/8 X 7/8 ODF ANG | 5 FT  | 066551 |
|                 |       |       | SZ    | 5/8 X 7/8 ODF ANG | 5 FT  | 064059 |
|                 |       | 1/4   | RC    | 3/8 X 1/2 ODF ANG | 5 FT  | 057436 |
|                 |       |       | RZ    | 3/8 X 1/2 ODF ANG | 5 FT  | 057454 |
|                 |       | 1/2   | RC    | 3/8 X 1/2 ODF ANG | 5 FT  | 057437 |
|                 |       |       | RZ    | 3/8 X 1/2 ODF ANG | 5 FT  | 057455 |
|                 |       | 1     | RC    | 3/8 X 1/2 ODF ANG | 5 FT  | 057438 |
|                 |       |       | RW 45 | 3/8 X 1/2 ODF ANG | 5 FT  | 057446 |
|                 |       |       | RZ    | 3/8 X 1/2 ODF ANG | 5 FT  | 057456 |
|                 |       | 1-1/2 | RC    | 3/8 X 1/2 ODF ANG | 5 FT  | 057439 |
|                 |       |       | RW 45 | 3/8 X 1/2 ODF ANG | 5 FT  | 057448 |
|                 |       |       | RZ    | 3/8 X 1/2 ODF ANG | 5 FT  | 057322 |
|                 |       | 2     | RC    | 3/8 X 1/2 ODF ANG | 5 FT  | 057440 |
|                 |       |       | RZ    | 3/8 X 1/2 ODF ANG | 5 FT  | 057457 |
|                 |       | 2-1/2 | RC    | 3/8 X 1/2 ODF ANG | 5 FT  | 057441 |
|                 |       |       | RZ    | 3/8 X 1/2 ODF ANG | 5 FT  | 057458 |
|                 |       | 5     | RC    | 3/8 X 1/2 ODF ANG | 5 FT  | 058595 |
|                 |       |       | RZ    | 3/8 X 1/2 ODF ANG | 5 FT  | 059654 |

### HFSC Series – Internally Equalized

| Refrigerant     | Series | Tons* | Charge | Connections       | Cap Tube | PCN    |
|-----------------|--------|-------|--------|-------------------|----------|--------|
| R-134a          | HFSC   | 1/4   | MC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057573 |
|                 |        | 1/2   | MC     | 3/8 X 1/2 ODF ANG | 5 FT     | 058067 |
| R-22<br>R-407C  | HFSC   | 1/4   | HC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057467 |
|                 |        | 1/2   | HC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057293 |
|                 |        |       | HZ     | 3/8 X 1/2 ODF ANG | 5 FT     | 057482 |
|                 |        | 1     | HC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057468 |
|                 |        | 2     | HC     | 3/8 X 1/2 ODF ANG | 5 FT     | 057470 |
|                 |        |       |        |                   |          |        |
| R-404A<br>R-507 | HFSC   | 1/8   | SC     | 3/8 X 1/2 ODF ANG | 5 FT     | 058248 |
|                 |        |       | SW45   | 1/4 X 1/2 ODF ANG | 30 IN    | 066552 |
|                 |        |       | SZ     | 1/4 X 1/2 ODF ANG | 30 IN    | 066553 |
|                 |        | 1/4   | SC     | 3/8 X 1/2 ODF ANG | 5 FT     | 058249 |
|                 |        |       | SW45   | 1/4 X 1/2 ODF ANG | 30 IN    | 066554 |
|                 |        |       | SZ     | 1/4 X 1/2 ODF ANG | 30 IN    | 066555 |
|                 |        | 1/2   | SC     | 3/8 X 1/2 ODF ANG | 5 FT     | 058250 |
|                 |        |       | SW45   | 1/4 X 1/2 ODF ANG | 30 IN    | 066556 |
|                 |        |       | SZ     | 1/4 X 1/2 ODF ANG | 30 IN    | 066557 |
|                 |        | 1     | SC     | 3/8 X 1/2 ODF ANG | 5 FT     | 058251 |
|                 |        |       | SW45   | 3/8 X 1/2 ODF ANG | 5 FT     | 066558 |
|                 |        |       | SZ     | 3/2 X 1/2 ODF ANG | 5 FT     | 066559 |
|                 |        | 1-1/4 | SC     | 3/8 X 1/2 ODF ANG | 5 FT     | 058252 |
|                 |        |       | SW45   | 3/8 X 1/2 ODF ANG | 5 FT     | 066560 |
|                 |        |       | SZ     | 3/8 X 1/2 ODF ANG | 5 FT     | 066561 |

\* For interchangeable refrigerant charges R-134a/R-12, R-404A/R-507/R-502, and R-22/R-407C, the tons of capacity shown in the table are for the first (primary) refrigerant listed. Consult the Nominal Capacity Table for determining the tons of capacity for the secondary refrigerants listed.

**Example:** A 1/4 ton R-12 valve is required. What R-134a ton valve should be selected? **Solution:** From the Nominal Capacity Table, a 1/2 ton R-134a valve is equivalent to a 1/4 ton R-12 valve.

The TRAE Plus series is a large capacity valve designed for refrigeration, air conditioning, heat pump, and chiller applications.

### Features

- Stainless steel power element eliminates corrosion and prevents valve failure
- Suitable for Bi-Flow applications
- Replaceable power element and cage assembly for full serviceability
- Double balanced port design improves operation and stability over wide loads and evaporator temperature ranges
- Square body with straight-thru connections
- Solid copper connections
- External superheat adjustment
- Large diaphragm provides superior stability
- Permanent inlet strainer



### Options

- Cages (For available cage kits, see page 26.)

### Specifications

- Maximum working pressure: 450 psig
- Torque Power Assembly: 375 - 425 in. lb.
- UR/CUR file number: SA5312

### Nomenclature example: TRAE+ 30 HC 10 FT 7/8 x 1/8 ODF S/T

| TRA                         | E                  | +                             | 30                                        | H                                                                                                 | C                                                                             | 10 FT                        | 7/8 x 1/8                                 | ODF                    | S/T                        |
|-----------------------------|--------------------|-------------------------------|-------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|------------------------------|-------------------------------------------|------------------------|----------------------------|
| <b>Valve Series</b>         | <b>Equalizer</b>   | <b>Replaceable Components</b> | <b>Capacity</b><br>Nominal Rating in Tons | <b>Refrigerant Code</b>                                                                           | <b>Charge Code</b>                                                            | <b>Capillary Tube Length</b> | <b>Inlet x Outlet Connection Sizes</b>    | <b>Connection Type</b> | <b>Configuration</b>       |
| Double Balanced Port Design | E=External 1/4"SAE | Cage and Power Assembly       | (See nominal capacity table below)        | +F = R-12<br>• H = R-22<br>+M = R-134a<br>• N = R-407C<br>*P = R-507<br>*R = R-502<br>*S = R-404A | C = medium temp<br>CA = heat pump<br>W(MOP) = press. limiting<br>Z = low temp | 10 FT (std)                  | 5/8 x 7/8<br>7/8 x 1 1/8<br>1 1/8 x 1 3/8 | ODF = solder (Only)    | S/T = straight-thru (Only) |

+ = R-134a are interchangeable refrigerant charges

\* = R-507 and R-404A are interchangeable refrigerant charges

• = R-22 and R-407C are interchangeable refrigerant charges

### TRAE+ Series – Nominal\* Capacity Table in Tons (kW)

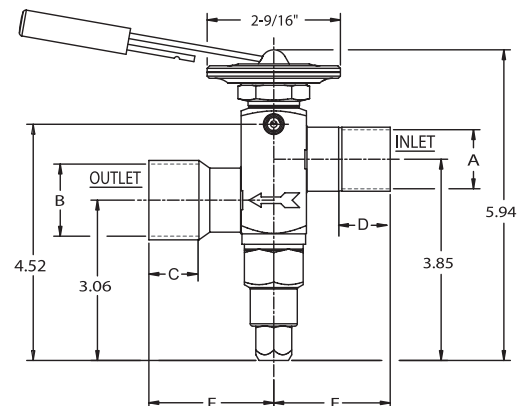
| R-134a   | R-22/R-407C | R-507/R-404A |
|----------|-------------|--------------|
| 9 (32)   | 10 (35)     | 8 (28)       |
| 13 (46)  | 15 (53)     | 12 (42)      |
| 14 (50)  | 20 (71)     | 14 (50)      |
| 22 (78)  | 30 (106)    | 20 (71)      |
| 30 (106) | 40 (142)    | 30 (106)     |

All capacities shown are at 100°F condensing, 40°F evaporator temperature.

\*See Extended Capacity Tables for ratings at a wide range of conditions per ARI standard 750.

### TRAE+ Dimensional Data (in)

| TRAE Valve Type  | Nominal Inlet (B) | Sizes (ODF) Outlet (E) | Inlet |      | Inlet |      |
|------------------|-------------------|------------------------|-------|------|-------|------|
|                  |                   |                        | A     | C    | D     | F    |
| TRAE+ 10-40 Tons | 5/8               | 7/8                    | 1.57  | 0.50 | 2.09  | 0.75 |
|                  | 5/8               | 1-1/8                  | 1.57  | 0.50 | 2.21  | 0.91 |
|                  | 7/8               | 7/8                    | 2.09  | 0.75 | 2.09  | 0.75 |
|                  | 7/8               | 1-3/8                  | 2.09  | 0.75 | 2.21  | 0.91 |
|                  | 7/8               | 1-3/8                  | 2.09  | 0.75 | 2.39  | 0.97 |
|                  | 1-1/8             | 1-1/8                  | 2.21  | 0.91 | 2.21  | 0.97 |
|                  | 1-1/8             | 1-3/8                  | 2.21  | 0.91 | 2.39  | 0.97 |



The TRAE series is a large capacity valve for chiller, heat pump, refrigeration, and air conditioning applications.

### Features

- Suitable for Bi-Flow applications
- External superheat adjustment
- Integral body with straight-thru connections
- Balanced port design improves valve operation and stability over wide loads and evaporator temperature range
- Solid copper connections
- Large diaphragm provides superior stability



### Specifications

- Maximum Working Pressure: 450 psig
- UR/CUR file number: SA5312

**Nomenclature** example: TRAE 50 HC 10 FT 7/8 x 1/8 ODF S/T

| TRA                                                        | E                                         | 50                                                                                           | H                                                                                                                                | C                                                                                                      | 10 FT                                           | 7/8 x 1/8                                                                    | ODF                                                      | S/T                                                       |
|------------------------------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------|
| <b>Valve Series</b><br>Hermetic<br>Balanced<br>Port Design | <b>Equalizer</b><br>E=External<br>1/4"SAE | <b>Capacity</b><br>Nominal Rating<br>in Tons<br><br>(See nominal<br>capacity table<br>below) | <b>Refrigerant<br/>Code</b><br>+F = R-12<br>• H = R-22<br>+M = R-134a<br>• N = R-407C<br>*P = R-507<br>*R = R-502<br>*S = R-404A | <b>Charge Code</b><br>C = medium temp<br>CA = heat pump<br>W(MOP) = press.<br>limiting<br>Z = low temp | <b>Capillary Tube<br/>Length</b><br>10 FT (std) | <b>Inlet x Outlet<br/>Connection<br/>Sizes</b><br><br>1/4 x 3/8<br>3/8 x 1/2 | <b>Connection<br/>Type</b><br><br>ODF = solder<br>(Only) | <b>Configuration</b><br><br>S/T = straight-thru<br>(Only) |

+ = R-134a are interchangeable refrigerant charges

\* = R-507 and R-404A are interchangeable refrigerant charges

• = R-22 and R-407C are interchangeable refrigerant charges

### TRAE Series – Nominal\* Capacity Table in Tons (kW)

| R-134a   | R-22/R-407C | R-507/R-404A |
|----------|-------------|--------------|
| 40 (142) | 50 (177)    | 35 (124)     |
| 45 (159) | 60 (212)    | 40 (142)     |
| 50 (177) | 70 (248)    | 50 (177)     |

All capacities shown are at 100°F condensing, 40°F evaporator temperature.

\*See Extended Capacity Tables for ratings at a wide range of conditions per ARI standard 750.

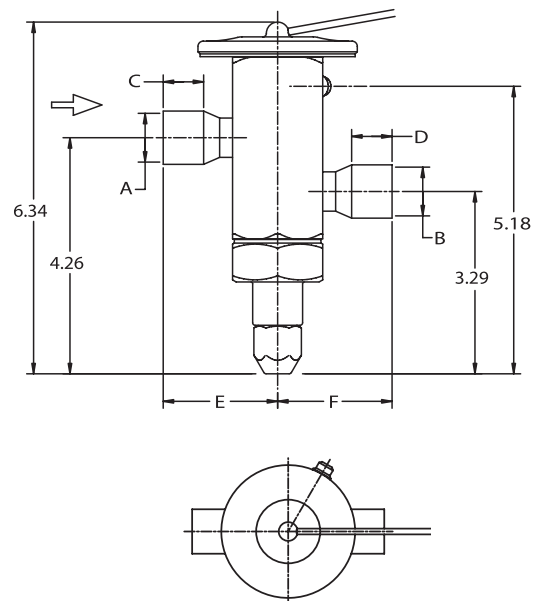
### Dimensional Data (in)

#### Remote Bulb Tubing Length 10' Standard

| Connection Size |           | A    | B    | C MIN | D MIN | E    | F    |
|-----------------|-----------|------|------|-------|-------|------|------|
| Inlet           | Outlet    |      |      |       |       |      |      |
| 7/8 ODF         | 7/8 ODF   | 0.88 | 0.88 | 0.75  | 0.75  | 2.09 | 2.09 |
| 7/8 ODF         | 1-1/8 ODF | 0.88 | 1.13 | 0.75  | 0.91  | 2.90 | 2.21 |
| 7/8 ODF         | 1-3/8 ODF | 0.88 | 1.38 | 0.75  | 0.97  | 2.90 | 2.39 |
| 1-1/8 ODF       | 1-1/8 ODF | 1.13 | 1.13 | 0.91  | 0.91  | 2.21 | 2.21 |
| 1-1/8 ODF       | 1-3/8 ODF | 1.13 | 1.38 | 0.91  | 0.97  | 2.21 | 2.39 |
| 1-3/8 ODF       | 1-3/8 ODF | 1.38 | 1.38 | 0.91  | 0.97  | 2.39 | 2.39 |

### Remote Bulb Table

| Remote Bulb<br>Tubing Length | Bulb Length |
|------------------------------|-------------|
| 5, 10, 15 ft.                | 4-7/8       |
| 20, 30 ft.                   |             |
| 40, 50 ft.                   | 6-3/16      |



### Ordering Information

| Refrigerant                        | Series | Tons* | Charge | Connections           | Cap Tube | PCN    |
|------------------------------------|--------|-------|--------|-----------------------|----------|--------|
| R-22<br>R-407C<br>R-404A<br>R-134A | TRAE+  | 10    | HC     | 5/8 X 7/8 ODF S/T     | 5 FT     | 062718 |
|                                    |        |       | HCA    | 5/8 X 7/8 ODF S/T     | 10 FT    | 063138 |
|                                    |        |       | HCA    | 7/8 X 1-1/8 ODF S/T   | 10 FT    | 063554 |
|                                    |        |       | HC     | 7/8 X 1-1/8 ODF S/T   | 15 FT    | 063100 |
|                                    |        | 15    | HC     | 7/8 X 1-1/8 ODF S/T   | 10 FT    | 062721 |
|                                    |        |       | HCA    | 5/8 X 7/8 ODF S/T     | 10 FT    | 063510 |
|                                    |        |       | HCA    | 7/8 X 1-1/8 ODF S/T   | 10 FT    | 062722 |
|                                    |        |       | HCA    | 7/8 X 1-3/8 ODF S/T   | 10 FT    | 063141 |
|                                    |        |       | HW100  | 5/8 X 7/8 ODF S/T     | 10 FT    | 063103 |
|                                    |        | 20    | HC     | 7/8 X 1-3/8 ODF S/T   | 10 FT    | 063650 |
|                                    |        |       | HCA    | 7/8 X 1-1/8 ODF S/T   | 10 FT    | 062725 |
|                                    |        |       | HCA    | 1 1/8 X 1-1/8 ODF S/T | 10 FT    | 064581 |
|                                    |        |       | HW90   | 7/8 X 1-1/8 ODF S/T   | 15 FT    | 064018 |
|                                    |        |       | HC     | 7/8 X 1-1/8 ODF S/T   | 10 FT    | 062724 |
|                                    |        |       | SC     | 7/8 X 1-1/8 ODF S/T   | 10 FT    | 063461 |
|                                    |        |       | SZ     | 5/8 X 7/8 ODF S/T     | 10 FT    | 064923 |
|                                    |        | 30    | HC     | 7/8 X 1-1/8 ODF S/T   | 10 FT    | 062727 |
|                                    |        |       | HC     | 1-1/8 X 1-3/8 ODF S/T | 10 FT    | 062728 |
|                                    |        |       | HCA    | 1-1/8 X 1-3/8 ODF S/T | 10 FT    | 062730 |
|                                    |        |       | HW100  | 7/8 X 1-3/8 ODF S/T   | 5 FT     | 063425 |
|                                    |        |       | MC     | 1-1/8 X 1-3/8 ODF S/T | 10 FT    | 064001 |
|                                    |        | 40    | HC     | 1-1/8 X 1-3/8 ODF S/T | 10 FT    | 062733 |
|                                    |        |       | HC     | 1-1/8 X 1-3/8 ODF S/T | 15 FT    | 063153 |
|                                    |        |       | HCA    | 1-1/8 X 1-3/8 ODF S/T | 10 FT    | 062734 |
|                                    | TRAE   | 35    | SC     | 1-1/8 X 1-3/8 ODF S/T | 10 FT    | 064217 |
|                                    |        | 40    | MC     | 1-1/8 X 1-3/8 ODF S/T | 15 FT    | 063941 |
|                                    |        | 50    | HC     | 1-1/8 X 1-3/8 ODF S/T | 10 FT    | 061700 |
|                                    |        | 60    | HC     | 1-1/8 X 1-3/8 ODF S/T | 10 FT    | 061865 |
|                                    |        | 70    | HC     | 1-1/8 X 1-3/8 ODF S/T | 10 FT    | 061866 |

(+) Replaceable Power Assembly

### Cage Replacement Kits for TRAE+ Series Valves

Cage kits are cross referenced by capacity and tonnage in the table below. Each cage kit consists of a replacement cage and cage removal wrench. In addition, the cage removal wrench (KT-20294) can be ordered as a separate item.

| PCN    | TRAE+ KIT                | Nominal Capacity - Tons |             |                     |
|--------|--------------------------|-------------------------|-------------|---------------------|
|        |                          | R-22                    | R-12/R-134a | R-507/R-404A/ R-502 |
| 063387 | KT-20289 CAGE KIT        | 10                      | 9           | 8                   |
| 063388 | KT-20290 CAGE KIT        | 15                      | 13          | 12                  |
| 063389 | KT-20291 CAGE KIT        | 20                      | 14          | 14                  |
| 063390 | KT-20292 CAGE KIT        | 30                      | 22          | 20                  |
| 063391 | KT-20293 CAGE KIT        | 40                      | 30          | 30                  |
| 063392 | KT-20294 CAGE WRENCH KIT | All tonnages            |             |                     |

### Replacement Parts

| Description    | Part Number     | PCN    |
|----------------|-----------------|--------|
| Power Assembly | X-28458 HCA-2   | 063414 |
|                | X-28458 MC      | 063593 |
|                | X-28458 SC      | 065439 |
|                | X-28458 HW100-2 | 063416 |
|                | X-28458 SW45-2  | 065298 |
|                | X-28458 SW45-2  | 065298 |
| Seal Nut       | 27676-1         | 058707 |

The T series Take-Apart valves, with adjustable superheat and replaceable, interchangeable components are ideal for original equipment and field replacements in air conditioning, heat pump, and refrigeration applications.

### Features

- Take-Apart construction for easy field service
- External superheat adjustment
- Bi-Flow capability
- Stainless steel power assembly up to 18 tons



### Options

- Interchangeable, replaceable cages
- Interchangeable body flanges
- Interchangeable power assemblies
- 1/4 to 100 tons capacity

### Specifications

- Maximum working pressure: 450 psig
- Torque Bolts: 300 in. lb.

### Nomenclature example: TCLEB 5 HC 5 FT 3/8 x 1/2 SAE ANG

| TCL                                      | E                                                      | B                                                                            | 5                                                                                                   | H                                                                                                                    | C                                                                                                | 5 FT                  | 3/8 x 1/2                                                                                                         | SAE                                            | ANG                                                       |
|------------------------------------------|--------------------------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------|-----------------------------------------------------------|
| Valve Series<br>Take-Apart<br>Adjustable | Equalizer<br><br>E=External<br><br>(Omit for Internal) | Bleed Hole<br>(optional)<br><br>B=Bleed Hole<br><br>(Omit for no bleed hole) | Capacity<br>Nominal Rating<br>in Tons<br><br>(See Cage<br>Assembly<br>Interchangeability<br>Tables) | Refrigerant Code<br>+F = R-12<br>• H = R-22<br>+M = R-134a<br>• N = R-407C<br>*P = R-507<br>*R = R-502<br>*S = R404A | Charge Code<br><br>C = medium temp<br>CA = heat pump<br>W(MOP) = press. limiting<br>Z = low temp | Capillary Tube Length | Inlet x Outlet<br>Connection Sizes<br><br>Various sizes are<br>available (valve is also<br>available less flange) | Connection Type<br><br>SAE=flare<br>ODF=solder | Configuration<br><br>ANG = 90° angle<br>S/T=straight-thru |

+ = R-134a are interchangeable refrigerant charges

\* = R-507 and R-404A are interchangeable refrigerant charges

• = R-22 and R-407C are interchangeable refrigerant charges

### Single Outlet “T” Series Body Flanges with Bleed Hole for Use with PSC Compressors

| Valve Type |             |              | Bleed Hole Diameter <sup>1</sup> for % Capacity Bypass |               |              |               |              |               |              |               |              |               |              |               |
|------------|-------------|--------------|--------------------------------------------------------|---------------|--------------|---------------|--------------|---------------|--------------|---------------|--------------|---------------|--------------|---------------|
| R-134a     | R-22/R-407C | R-507/R-404A | 10%                                                    |               | 15%          |               | 20%          |               | 25%          |               | 30%          |               | 40%          |               |
|            |             |              | Dia.<br>(In)                                           | Drill<br>Size | Dia.<br>(In) | Drill<br>Size | Dia.<br>(In) | Drill<br>Size | Dia.<br>(In) | Drill<br>Size | Dia.<br>(In) | Drill<br>Size | Dia.<br>(In) | Drill<br>Size |
| TCL1/4F    | TCL1/2H     | TCL1/2R      | –                                                      | –             | 0.02         | 1/64          | 0.02         | 77            | 0.02         | 76            | 0.02         | 74            | 0.03         | 72            |
| TCL1/2F    | TCL1H       | TCL1/2R      | 0.02                                                   | 77            | 0.02         | 75            | 0.02         | 73            | 0.03         | 71            | 0.03         | 69            | 0.04         | 65            |
| TCL1F      | TCL2H       | TCL1R        | 0.03                                                   | 71            | 0.03         | 1/32          | 0.04         | 64            | 0.04         | 60            | 0.05         | 56            | 0.05         | 55            |
| TCL2F      | TCL3H       | TCL2R        | 0.03                                                   | 70            | 0.04         | 65            | 0.04         | 60            | 0.04         | 57            | 0.05         | 3/4           | 0.06         | 54            |
| TCL3F      | TCL5H       | TCL3R        | 0.04                                                   | 65            | 0.04         | 57            | 0.05         | 55            | 0.06         | 54            | 0.06         | 1/16          | 0.07         | 50            |
| TCL4F      | TCL7-1/2H   | TCL4-1/2R    | 0.04                                                   | 57            | 0.05         | 55            | 0.06         | 53            | 0.07         | 51            | 0.08         | 48            | 0.09         | 44            |
| TCL6-1/2F  | TCL10H      | TCL7R        | 0.05                                                   | 55            | 0.06         | 53            | 0.07         | 50            | 0.08         | 47            | 0.09         | 44            | 0.10         | 39            |
| TCL7-1/2F  | TCL12H      | TCL8R        | 0.05                                                   | 55            | 0.06         | 53            | 0.07         | 50            | 0.08         | 47            | 0.09         | 44            | 0.10         | 39            |

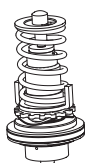
<sup>1</sup>Bleed hole sizes shown above are based on a percent of full effective port area of the valve. This does not necessarily indicate the percent of valve capacity that will be bypassed. The hole sizes shown above should be used for reference only. Normal industry practice is to equalize systems 3 to 5 minutes.

### Small Capacity ½ to 18 tons

(R-22 Nominal – Bi Flow)

#### Step 1: Select Cage from Capacity Table

Externally Adjustable  
Cage Assembly



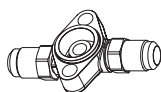
| Valve Type  |        |       |              |        | Cage Assembly <sup>1</sup> |        |
|-------------|--------|-------|--------------|--------|----------------------------|--------|
|             | R-134a | R-22  | R-404A R-507 | R-407C | Description                | PCN    |
| TCL<br>TCLE | 1/4    | 1/2   | 1/4          | 1/2    | X22440B1A                  | 037034 |
|             | 1/4    | 1/2   | 1/4          | 1/2    | X22440B1B                  | 037035 |
|             | 3/4    | 1     | 1/2          | 1      | X22440B2A                  | 037036 |
|             | 3/4    | 1     | 1/2          | 1      | X22440B2B                  | 037037 |
|             | 1-1/2  | 2     | 1            | 2      | X22440B3A                  | 037038 |
|             | 1-1/2  | 2     | 1            | 2      | X22440B3B                  | 037039 |
|             | 2-1/2  | 3     | 2            | 3      | X22440B4A                  | 037040 |
|             | 2-1/2  | 3     | 2            | 3      | X22440B4B                  | 037041 |
|             | 3-1/2  | 5     | 3            | 5      | X22440B5B                  | 037043 |
|             | 5-1/2  | 7-1/2 | 4-1/2        | 7-1/2  | X22440B6B                  | 037045 |
|             | 7-1/2  | 10    | 7            | 10     | X22440B7B                  | 037047 |
|             | 9      | 12    | 8            | 12     | X22440B8B                  | 037049 |
| TJLE        | 9      | 11    | 7            | 11     | XC724B4B                   | 093343 |
|             | 11     | 14    | 9            | 14     | XC724B5B                   | 038699 |
| TJR         | 11     | 14    | 9            | 14     | X11873B4B                  | 088837 |
|             | 13     | 18    | 12           | 18     | X11873B5B                  | 089058 |

<sup>1</sup> Gaskets included on cage.

Gasket strip X13455-1 (PCN: 027579) replaces all older T-Series Gasket kits.



Angle, ODF



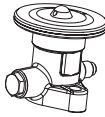
Straight-Thru, SAE

#### Step 2: Select Flange

| Valve Type       | Flow          | Size & Style Connections |                      | Body Flange Part |        |
|------------------|---------------|--------------------------|----------------------|------------------|--------|
|                  |               | Inlet                    | Outlet               | Number           | PCN    |
| TCL<br>TCLE      | Angle         | 3/8 SAE                  | 1/2 SAE              | C500-4           | 056932 |
|                  |               | 3/8 SAE                  | 5/8 SAE              | C500-5           | 057153 |
|                  |               | 1/2 SAE                  | 5/8 SAE              | C500-6           | 056294 |
|                  |               | 3/8 ODF                  | 1/2 ODF              | C501-4           | 065527 |
|                  |               | 3/8 ODF                  | 5/8 ODF              | C501-5           | 065748 |
|                  |               | 1/2 ODF                  | 5/8 ODF              | C501-7           | 065861 |
|                  |               | 5/8 ODF or 7/8 ODM       | 7/8 ODF or 1-1/8 ODM | A576             | 027764 |
|                  | Straight-Thru | 3/8 SAE                  | 1/2 SAE              | X6669-4          | 051176 |
|                  |               | 3/8 SAE                  | 5/8 SAE              | X6669-1          | 050563 |
|                  |               | 1/2 SAE                  | 1/2 SAE              | X6669-5          | 083378 |
|                  |               | 1/2 SAE                  | 5/8 SAE              | X6669-2          | 050842 |
|                  |               | 3/8 ODF                  | 1/2 ODF              | 9761-5           | 027769 |
|                  |               | 3/8 ODF                  | 5/8 ODF              | 9761-3           | 027771 |
|                  |               | 1/2 ODF                  | 1/2 ODF              | 9761-6           | 027766 |
|                  |               | 1/2 ODF                  | 5/8 ODF              | 9761-4           | 027268 |
|                  |               | 1/2 ODF                  | 7/8 ODF              | 9761-2           | 027770 |
|                  |               | 5/8 ODF                  | 5/8 ODF              | X6346-16         | 044733 |
|                  |               | 5/8 ODF                  | 7/8 ODF              | X6346-17         | 044846 |
|                  |               | 5/8 ODF                  | 1-1/8 ODF            | X6346-18         | 094038 |
|                  |               | 7/8 ODF                  | 1-1/8 ODF            | X6346-34         | 071757 |
| TJLE             | Angle         | 5/8 ODF or 7/8 ODM       | 7/8 ODF or 1-1/8 ODM | B504             | 044984 |
|                  | Straight-Thru | 5/8 ODF                  | 1-1/8 ODF            | X6347-2          | 094289 |
|                  |               | 7/8 ODF                  | 1-1/8 ODF            | X6347-6          | 057210 |
|                  |               | 7/8 ODF                  | 1-3/8 ODF            | X6347-7          | 057323 |
| TJR <sup>2</sup> | Angle         | 5/8 ODF or 1-1/8 ODM     | 7/8 ODF or 1-1/8 ODM | 10331            | 029411 |
|                  | Straight-Thru | 7/8 ODF or 1-1/8 ODM     | 7/8 ODF or 1-1/8 ODM | 10332            | 032988 |

<sup>2</sup> TJR is balanced ported. TJR flange includes extended length capscrews.

**Superheat Plug**  
X28124-1 (ODM)  
(PCN: 058336)



**Capscrews**



### Step 3: Select Power Assembly

**NOTE:** Nominal capacities shown here are based on 40°F evaporator temperature and 100°F vapor-free liquid refrigerant entering the valve. R-12 and R-134a rated at 60 PSID. All other refrigerants rated at 100 PSID.

| TCL-TCLE-TJLE-TJR Power Assemblies <sup>3</sup> |                |                 |                  |                        |                             |        |
|-------------------------------------------------|----------------|-----------------|------------------|------------------------|-----------------------------|--------|
| Refrigerant                                     | Equalizer Type | Cap Tube Length | Application      |                        | Power <sup>5</sup> Assembly | PCN    |
|                                                 |                |                 | Temp. Range      | MOP <sup>4</sup> (psi) |                             |        |
| R-22                                            | Internal       | 5 FT            | -20 to +50       | NONE                   | XB-1019HC1A                 | 062078 |
|                                                 | 1/4 SAE        | 5 FT            | -20 to +50       | NONE                   | XB-1019HC1B                 | 053416 |
|                                                 | 1/4 SAE        | 10 FT           | -20 to +50       | NONE                   | XB-1019HC2B                 | 054390 |
|                                                 | 1/4 SAE        | 5 FT            | -20 to +50       | NONE                   | XB-1019HCA1B                | 056039 |
|                                                 | 1/4 SAE        | 5 FT            | -50 to +5        | 35                     | XB-1019HW351B               | 089975 |
|                                                 | 1/4 SAE        | 5 FT            | -50 to +20       | 55                     | XB-1019HW551B               | 039152 |
|                                                 | 1/4 SAE        | 5 FT            | -50 to +30       | 65                     | XB-1019HW651B               | 089445 |
|                                                 | 1/4 SAE        | 5 FT            | -50 to +50       | 100                    | XB-1019HW1001B              | 062437 |
|                                                 | 1/4 SAE        | 20 FT           | -10 to +50       | NONE                   | XB-1019HW4B                 | 055703 |
|                                                 | 1/4 SAE        | 10 FT           | -50 to +50       | 100                    | XB-1019HW1002B              | 062658 |
|                                                 | 1/4 SAE        | 5 FT            | -50 to +10       | NONE                   | XB-1019HZ1B                 | 040568 |
|                                                 | 1/4 SAE        | 10 FT           | -50 to +10       | NONE                   | XB-1019HZ2B                 | 054105 |
| R-407C                                          | 1/4 SAE        | 5 FT            | -20 to +50       | NONE                   | XB-1019NC1B                 | 064837 |
|                                                 | 1/4 SAE        | 5 FT            | -20 to +50       | 100                    | XB-1019NW1001B              | 063069 |
| R-507                                           | 1/4 SAE        | 5 FT            | -20 to +50       | NONE                   | XB-1019PC1B                 | 061949 |
|                                                 | 1/4 SAE        | 5 FT            | -50 to 0         | 40                     | XB-1019PW401B               | 064200 |
|                                                 | 1/4 SAE        | 5 FT            | -50 to +10       | NONE                   | XB-1019PZ1B                 | 061951 |
| R-134a                                          | 1/4 SAE        | 5 FT            | -20 to +50       | NONE                   | XB-1019MC1B                 | 057878 |
|                                                 | 1/4 SAE        | 10 FT           | -20 to +50       | NONE                   | XB-1019MC2B                 | 059548 |
|                                                 | 1/4 SAE        | 5 FT            | -50 to +50       | 55                     | XB-1019MW551B               | 057370 |
|                                                 | 1/4 SAE        | 5 FT            | -50 to +10       | NONE                   | XB-1019MZ1B                 | 061946 |
| R-404A                                          | 1/4 SAE        | 5 FT            | -20 to +50       | NONE                   | XB-1019SC-1B                | 059189 |
|                                                 | 1/4 SAE        | 5 FT            | -50 to 0         | 40                     | XB-1019SW401B               | 059130 |
|                                                 | 1/4 SAE        | 5 FT            | -50 to +25       | 65                     | XB-1019SW651B               | 063541 |
|                                                 | 1/4 SAE        | 10 FT           | -50 to +10       | NONE                   | XB-1019SZ2B                 | 061948 |
| Misc.                                           | Internal       | 5 FT            | Liquid Injection | NONE                   | XB-1019A-1A                 | 037389 |
|                                                 | 1/4 SAE        | 5 FT            |                  | NONE                   | XB-1019A-1B                 | 034803 |
|                                                 | 1/4 SAE        | 5 FT            |                  | NONE                   | XB-1019B-1B                 | 032207 |
|                                                 | 1/4 SAE        | 5 FT            |                  | NONE                   | XB-1019C-1B                 | 035162 |
|                                                 | 1/4 SAE        | 5 FT            |                  | NONE                   | XB-1019CW-1B                | 084768 |

<sup>3</sup> Capscrews included with Power Assembly

<sup>4</sup> Maximum Operating Pressure Limit to prevent motor overload

<sup>5</sup> Power Assembly final character: A=Internally Equalized, B=Externally Equalized

### Large Capacity 22 to 100 tons (R22 Nominal – Balanced Ported and Bi Flow)

Externally Adjustable  
Double Ported  
Cage Assembly



#### Step 1: Select Cage from Capacity Table

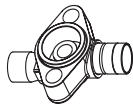
| Valve Type | Cage Assembly <sup>1</sup> |      |              |        | Description | PCN    |
|------------|----------------------------|------|--------------|--------|-------------|--------|
|            | R-134a                     | R-22 | R-404A R-507 | R-407C |             |        |
| TER        | 16                         | 22   | 14           | 22     | X9117B6B    | 077896 |
|            | 19                         | 26   | 16           | 26     | X9117B7B    | 078117 |
|            | 25                         | 35   | 21           | 35     | X9117B8B    | 071155 |
|            | 31                         | 45   | 27           | 45     | X9117B9B    | 029429 |
| TIR        | 45                         | 55   | 37           | 55     | X9166B10B   | 070738 |
| THR        | 45                         | 55   | 37           | 55     | X9144B10B   | 071238 |
|            | 55                         | 75   | 48           | 70     | X9144B11B   | 020846 |
|            | 68                         | 85   | 60           | 85     | X9144B13B   | 021067 |
| TMR        | 68                         | 100  | 60           | 100    | X9144B14B   | 065123 |

<sup>1</sup> Gaskets included on cage.

Gasket strip X13455-1 (PCN: 027579) replaces all older T-Series Gasket kits.



Angle, ODF



Straight-Thru, ODF

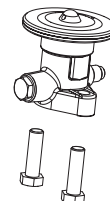
#### Step 2: Select Flange

| Valve Type       | Style         | Size & Style Connections |                      | Body Flange Part |        |
|------------------|---------------|--------------------------|----------------------|------------------|--------|
|                  |               | Inlet                    | Outlet               | Number           | PCN    |
| TER <sup>2</sup> | ANGLE         | 7/8 ODF or 1-1/8 ODM     | 7/8 ODF or 1-1/8 ODM | 9153             | 027919 |
|                  | STRAIGHT-THRU | 7/8 ODF or 1-1/8 ODM     | 7/8 ODF or 1-1/8 ODM | 9152             | 027918 |
| TIR              | ANGLE         | 7/8 ODF or 1-1/8 ODM     | 7/8 ODF or 1-1/8 ODM | 9151             | 027926 |
|                  | STRAIGHT-THRU | 7/8 ODF or 1-1/8 ODM     | 7/8 ODF or 1-1/8 ODM | 9150             | 028849 |
| THR              | ANGLE         | 1-1/8 ODM                | 1-1/8 ODM            | 9149             | 028030 |
|                  | STRAIGHT-THRU | 1-1/8 ODM                | 1-1/8 ODM            | 9148             | 028032 |
| TMR <sup>2</sup> | ANGLE         | 1-1/8 ODM                | 1-1/8 ODM            | 9149-1           | 065124 |
|                  | STRAIGHT-THRU | 1-1/8 ODM                | 1-1/8 ODM            | 9148-1           | 065125 |

<sup>2</sup> TER-TMR Flange includes extended length capscrews.

**NOTE:** Nominal capacities shown here are based on 40°F evaporator temperature and 100°F vapor-free liquid refrigerant entering the valve. R-12 and R-134a rated at 60 PSID. All other refrigerants rated at 100 PSID.

**Superheat Plug**  
X28124-1 (ODM)  
(PCN: 058336)



#### Step 3: Select Power Assembly

Capscrews

| TER-TIR-THR-TMR Power Assemblies <sup>3</sup> |                |                 |             |                        |                |        |
|-----------------------------------------------|----------------|-----------------|-------------|------------------------|----------------|--------|
| Refrigerant                                   | Equalizer Type | Cap Tube Length | Application |                        | Power Assembly | PCN    |
|                                               |                |                 | Temp. Range | MOP <sup>4</sup> (psi) |                |        |
| R-22                                          | 1/4 SAE        | 10 FT           | -20 to +50  | NONE                   | XC-726HC2B     | 056421 |
|                                               | 1/4 SAE        | 10 FT           | -50 to +50  | 35                     | XC-726HW352B   | 024511 |
|                                               | 1/4 SAE        | 10 FT           | -50 to +30  | 65                     | XC-726HW652B   | 025011 |
|                                               | 1/4 SAE        | 10FT            | -20 to +50  | NONE                   | XC-726HCA2B    | 059333 |
|                                               | 1/4 SAE        | 10 FT           | -50 to +50  | 100                    | XC-726HW1002B  | 036750 |
|                                               | 1/4 SAE        | 10 FT           | -50 to +10  | NONE                   | XC-726HZ2B     | 040569 |
| R-134A                                        | 1/4 SAE        | 10 FT           | -20 to +50  | NONE                   | XC-726MC2B     | 057235 |
|                                               | 1/4 SAE        | 10 FT           | -50 to +50  | 55                     | XC-726MW552B   | 057372 |
|                                               | 1/4 SAE        | 10 FT           | -50 to +10  | NONE                   | XC-726MZ2B     | 063075 |
| R-404A                                        | 1/4 SAE        | 10 FT           | -20 to +50  | NONE                   | XC-726SC2B     | 062303 |
|                                               | 1/4 SAE        | 10 FT           | -50 to +10  | 40                     | XC-726SW402B   | 063127 |
|                                               | 1/4 SAE        | 10 FT           | -50 to +25  | 65                     | XC-726SW652B   | 061692 |
|                                               | 1/4 SAE        | 10 FT           | -50 to +10  | NONE                   | XC-726SZ2B     | 063974 |

<sup>3</sup> Capscrews included with Power Assembly

<sup>4</sup> Maximum Operating Pressure Limit to prevent motor overload

#### Additional Parts

| Description               | PCN    |
|---------------------------|--------|
| Packing Nut Wrench        | 039862 |
| Gasket Strip              | 027579 |
| Superheat Adjustment Plug | 058336 |

## Ordering Information

Valves less flange – (VLF)

### TCLE, TJLE & TJRE

SAE External 5 FT. Cap Tube Length

| Valve Description |        |
|-------------------|--------|
| R-22              | PCN    |
| TCLE 1 HC         | 062884 |
| TCLE 2 HC         | 061724 |
| TCLE 3 HC         | 054395 |
| TCLE 5 HC         | 054399 |
| TCLE 7-1/2 HC     | 054401 |
| TCLE 7-1/2 HW100  | 054079 |
| TCLE 10 HC        | 054404 |
| TCLE 10 HW100     | 059076 |
| TCLE 12 HC        | 060854 |
| TJLE 11 HC        | 060855 |
| TJLE 14 HC        | 060856 |
| TJRE 14 HC        | 060857 |
| TJRE 18 HC        | 060858 |

### TER, TIR & THR

10 FT. Cap Tube Length

| Valve Description |        |
|-------------------|--------|
| R-22              | PCN    |
| TER 22 HC         | 061673 |
| TER 22 HW100      | 058582 |
| TER 26 HC         | 061674 |
| TER 35 HC         | 061675 |
| TER 35 HW100      | 058038 |
| TER 45 HC         | 061676 |
| TIR 55 HC         | 061677 |
| THR 75 HC         | 064961 |
| THR 100 HC        | 062036 |
| THR 100 HW100     | 052912 |

### Replacement Cap Screw Kits

| PCN    | Description | Contains Screw # | Pcs. Per Pkg. |
|--------|-------------|------------------|---------------|
| 054569 | KT-30021    | PS-286-5         | 10            |
| 054570 | KT-30022    | PS-168-5         | 10            |
| 054571 | KT-30023    | PS-259           | 10            |
| 054572 | KT-30024    | PS-370           | 10            |
| 054573 | KT-30025    | PS-514-5         | 10            |
| 054574 | KT-30026    | PS-517-5         | 10            |

### TCLE/TJLE/TJRE

Rapid Response Power Assemblies

| Description   | PCN    |
|---------------|--------|
| X-8019 FWS 1B | 031654 |
| X-8019 HWS 1B | 055652 |
| X-8019 HWS 2B | 055873 |
| X-8019 RWS 1A | 032131 |
| X-8019 RWS 2B | 042426 |

### Nomenclature Cross-Reference

| Refrigerant | New    | Old      |
|-------------|--------|----------|
| R-22        | TJLE11 | TJLE1400 |
|             | TJLE14 | TJLE1800 |

### TER/TIR/THR

Rapid Response Power Assemblies

| Description   | PCN    |
|---------------|--------|
| X-7726 FWS 2B | 035083 |
| X-7726 HWS 2B | 093565 |
| X-7726 RWS 2B | 036616 |

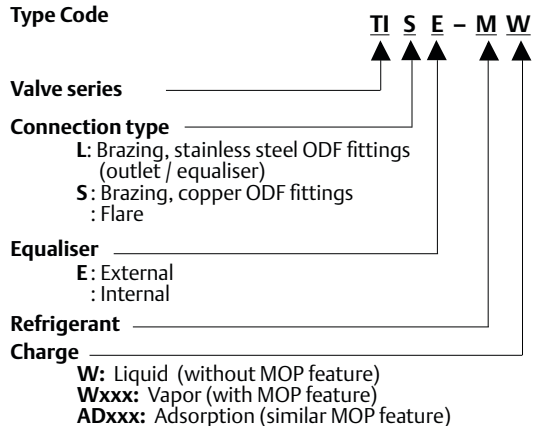
### Thermo™-Expansion Valves Series TI

#### New valve design, exchangeable orifices

#### Features

- Laser-welded diaphragm with large diameter for high reliability and maximum lifetime
- Constant superheat across wide application ranges Easy and precise superheat setting by modified threads
- TILE with stainless steel fittings allow brazing without wet rags
- With capacities between 0.4 kW and 14.2 kW (R404A) ideally suited for service work
- Internal or external equaliser
- Brazing and flare connections available
- Capillary tube length 1.5 m
- PS: 45 bar. TS: -45 ... +75°C
- No CE marking according art. 3.3 PED 97/23 EC

#### Type Code



TILE



TIE

#### Orifice Assembly with strainer for inlet connection

|          | Nominal Capacity* (kW) |         |         |         |         |         |         |         |
|----------|------------------------|---------|---------|---------|---------|---------|---------|---------|
| Type     | TIO-00X                | TIO-000 | TIO-001 | TIO-002 | TIO-003 | TIO-004 | TIO-005 | TIO-006 |
| Part No. | 800 532                | 800 533 | 800 534 | 800 535 | 800 536 | 800 537 | 800 538 | 800 539 |
| R134a    | 0.3                    | 0.8     | 1.9     | 3.1     | 5.0     | 8.3     | 10.1    | 11.7    |
| R22      | 0.5                    | 1.3     | 3.2     | 5.3     | 8.5     | 13.9    | 16.9    | 19.5    |
| R404A    | 0.4                    | 1.0     | 2.3     | 3.9     | 6.2     | 10.1    | 12.3    | 14.2    |
| R407C    | 0.5                    | 1.4     | 3.5     | 5.7     | 9.2     | 15.0    | 18.3    | 21.1    |
| R410A    | 0.6                    | 1.5     | 3.7     | 6.2     | 9.9     | 16.2    | 19.7    | 22.8    |
| R507     | 0.4                    | 1.0     | 2.3     | 3.9     | 6.2     | 10.1    | 12.3    | 14.2    |
| R407F    | 0.6                    | 1.5     | 3.6     | 5.9     | 9.5     | 15.5    | 18.9    | 21.8    |

#### Brazing Adapter for TILE and TIS(E)

| Type       | Part No. | Connection, ODF |      |
|------------|----------|-----------------|------|
|            |          | mm              | inch |
| TIA-M06    | 802 500  | 6.0             | -    |
| TIA-M10    | 802 501  | 10.0            | -    |
| TIA-014    | 802 502  | -               | 1/4" |
| TIA-038    | 802 503  | -               | 3/8" |
| Gasket Set | 803 780  | 100 pieces      |      |



\*Nominal capacity is based on the following conditions:

| Refrigerant                    | Evaporating temperature | Condensing temperature             | Sub-cooling |
|--------------------------------|-------------------------|------------------------------------|-------------|
| R407C, R407F                   | +4°C dew point          | +38°C bubble p.<br>+43°C dew point | 1K          |
| R22, R134a, R404A, R410A, R507 | +4°C                    | +38°C                              | 1K          |

Valve selection for other operating conditions see "Correction Tables for Thermo-Expansion Valves Series TI, TX3, TX6, T and L", quick selection tables on next pages or Copeland Select which can be downloaded from [www.emersonclimate.eu](http://www.emersonclimate.eu).

### TI Valve Bodies without cage and nut

| Refrigerant  | Outlet/ Equalizer Connection | Type               | Part No. | Type               | Part No. | MOP °C | Evaporating temperature range °C |
|--------------|------------------------------|--------------------|----------|--------------------|----------|--------|----------------------------------|
|              |                              | external Equalizer |          | internal Equalizer |          |        |                                  |
| R404A / R507 | Brazeing stainless steel     | TILE-SW (12mm)     | 802465   |                    |          | -      | -45 ... +20                      |
|              |                              | TILE-SW (½")       | 802466   |                    |          | -      | -45 ... +20                      |
|              | Brazeing copper              | TISE-SW (12mm)     | 802462   | TIS-SW (12mm)      | 802461   | -      | -45 ... +20                      |
|              |                              | TISE-SW (½")       | 802464   | TIS-SW (½")        | 802463   | -      | -45 ... +20                      |
|              |                              | TISE-SAD10 (½")    | 802479   | TIS-SAD10 (½")     | 802478   | +10    | -45 ... 0                        |
|              |                              | TISE-SW75 (12mm)   | 802471   |                    |          | 0      | -45 ... -3                       |
|              |                              | TISE-SW75 (½")     | 802472   |                    |          | 0      | -45 ... -3                       |
|              |                              | TISE-SAD-20 (12mm) | 802474   |                    |          | -20    | -45 ... -27                      |
|              |                              | TISE-SAD-20 (½")   | 802475   |                    |          | -20    | -45 ... -27                      |
|              | Flare                        | TIE-SW             | 802460   | TI-SW              | 802459   | -      | -45 ... +20                      |
|              |                              | TIE-SAD10          | 802477   | TI-SAD10           | 802476   | +10    | -45 ... 0                        |
|              |                              | TIE-SW75           | 802470   | TI-SW75            | 802469   | 0      | -45 ... -3                       |
|              |                              | TIE-SAD-20         | 802473   |                    |          | -20    | -45 ... -27                      |
| R134a        | Brazeing stainless steel     | TILE-MW (12mm)     | 802451   |                    |          | -      | -45 ... +20                      |
|              |                              | TILE-MW (½")       | 802452   |                    |          | -      | -45 ... +20                      |
|              | Brazeing copper              | TISE-MW (12 mm)    | 802448   | TIS-MW (12 mm)     | 802447   | -      | -45 ... +20                      |
|              |                              | TISE-MW (½")       | 802450   | TIS-MW (½")        | 802449   | -      | -45 ... +20                      |
|              |                              | TISE-MW55 (12mm)   | 802457   |                    |          | +14    | -45 ... +11                      |
|              |                              | TISE-MW55 (½")     | 802458   |                    |          | +14    | -45 ... +11                      |
|              | Flare                        | TIE-MW             | 802446   | TI-MW              | 802445   | -      | -45 ... +20                      |
|              |                              | TIE-MW55           | 802456   | TI-MW55            | 802455   | +14    | -45 ... +11                      |
| R407C        | Brazeing stainless steel     | TILE-NW (12mm)     | 802486   |                    |          | -      | -45 ... +20                      |
|              |                              | TILE-NW (½")       | 802485   |                    |          | -      | -45 ... +20                      |
|              | Brazeing copper              | TISE-NW (12mm)     | 802438   | TIS-NW (12mm)      | 802437   | -      | -45 ... +20                      |
|              |                              | TISE-NW (½")       | 802440   | TIS-NW (½")        | 802439   | -      | -45 ... +20                      |
|              | Flare                        | TIE-NW             | 802436   | TI-NW              | 802435   | -      | -45 ... +20                      |
|              |                              |                    |          |                    |          |        |                                  |
| R22          | Brazeing stainless steel     | TILE-HW (12mm)     | 802426   |                    |          | -      | -45 ... +20                      |
|              |                              | TILE-HW (½")       | 802427   |                    |          | -      | -45 ... +20                      |
|              | Brazeing copper              | TISE-HW (12mm)     | 802423   | TIS-HW (12mm)      | 802422   | -      | -45 ... +20                      |
|              |                              | TISE-HW (½")       | 802425   | TIS-HW (½")        | 802424   | -      | -45 ... +20                      |
|              |                              | TISE-HW100 (12mm)  | 802431   |                    |          | +15    | -45 ... +13                      |
|              |                              | TISE-HW100 (½")    | 802432   |                    |          | +15    | -45 ... +13                      |
|              | Flare                        | TIE-HW             | 802421   | TI-HW              | 802420   | -      | -45 ... +20                      |
|              |                              | TIE-HAD10          | 802430   |                    |          | +10    | -45 ... 0                        |
| R410A        | Brazeing stainless steel     | TILE-ZW (12mm)     | 802488   |                    |          | -      | -35 ... +20                      |
|              |                              | TILE-ZW (½")       | 802489   |                    |          | -      | -35 ... +20                      |
|              |                              | TILE-ZW175 (12mm)  | 802490   |                    |          | +16.4  | -35 ... +15                      |
|              |                              | TILE-ZW175(½")     | 802491   |                    |          | +16.4  | -35 ... +15                      |

Inlet: Flare ⅝"-18UNF for 6mm, 8mm., 10mm., ¼", ⅝" and ¾" tubes  
 Outlet: Flare ¾"-16UNF for 12mm and ½" tubes.  
 Solder metric: ODF for 12mm tubes. Solder inch: ODF for ½" tubes  
 Ext. Equalizer: Flare ⅝"-20UNF for 6mm and ¼" tubes.  
 Solder metric: ODF for 6mm tubes. Solder inch: ODF for ¼" tubes

Published capacity data at 1 K subcooling at the inlet of the expansion valve and 1.5 bar pressure drop in the refrigeration system. For proper valve selection especially in case of high pressure drops, we recommend the use of correction factors.

To facilitate valve dimensioning for other than the standard conditions, Emerson Climate Technologies offers Copeland Select ([www.emersonclimate.eu](http://www.emersonclimate.eu)).

| Condensing Temperature °C | R134a |       | Capacity (kW) Valve Type TI ... - M....<br>Evaporating Temperature (°C) |       |       |       |       |       |      |      |      |  |  |  | Cage Size |
|---------------------------|-------|-------|-------------------------------------------------------------------------|-------|-------|-------|-------|-------|------|------|------|--|--|--|-----------|
|                           | +30   | +20   | +10                                                                     | +5    | 0     | -5    | -10   | -15   | -20  | -25  | -30  |  |  |  |           |
| +50                       | 0.23  | 0.27  | 0.29                                                                    | 0.29  | 0.30  | 0.30  | 0.30  | 0.26  | 0.22 | 0.19 | 0.16 |  |  |  | TIO-00X   |
|                           | 0.60  | 0.71  | 0.76                                                                    | 0.78  | 0.79  | 0.79  | 0.79  | 0.68  | 0.59 | 0.50 | 0.43 |  |  |  | TIO-000   |
|                           | 1.42  | 1.68  | 1.81                                                                    | 1.85  | 1.87  | 1.88  | 1.87  | 1.63  | 1.39 | 1.20 | 1.01 |  |  |  | TIO-001   |
|                           | 2.32  | 2.74  | 2.96                                                                    | 3.02  | 3.05  | 3.07  | 3.06  | 2.65  | 2.27 | 1.95 | 1.66 |  |  |  | TIO-002   |
|                           | 3.74  | 4.42  | 4.77                                                                    | 7.87  | 4.92  | 4.94  | 4.93  | 4.28  | 3.66 | 3.15 | 2.67 |  |  |  | TIO-003   |
|                           | 6.21  | 7.34  | 7.93                                                                    | 8.08  | 8.17  | 8.21  | 8.19  | 7.10  | 6.08 | 5.23 | 4.43 |  |  |  | TIO-004   |
|                           | 7.56  | 8.93  | 9.64                                                                    | 9.84  | 9.95  | 9.99  | 9.97  | 8.64  | 7.40 | 6.36 | 5.39 |  |  |  | TIO-005   |
|                           | 8.76  | 10.34 | 11.17                                                                   | 11.40 | 11.52 | 11.57 | 11.55 | 10.01 | 8.57 | 7.37 | 6.25 |  |  |  | TIO-006   |
| +40                       | 0.12  | 0.21  | 0.25                                                                    | 0.26  | 0.27  | 0.28  | 0.28  | 0.25  | 0.21 | 0.18 | 0.16 |  |  |  | TIO-00X   |
|                           | 0.33  | 0.56  | 0.67                                                                    | 0.67  | 0.73  | 0.74  | 0.75  | 0.66  | 0.57 | 0.49 | 0.42 |  |  |  | TIO-000   |
|                           | 0.79  | 1.34  | 1.60                                                                    | 1.60  | 1.73  | 1.76  | 1.78  | 1.56  | 1.35 | 1.17 | 1.00 |  |  |  | TIO-001   |
|                           | 1.29  | 2.18  | 2.60                                                                    | 2.73  | 2.82  | 2.88  | 2.91  | 2.55  | 2.20 | 1.91 | 1.63 |  |  |  | TIO-002   |
|                           | 2.08  | 3.52  | 4.20                                                                    | 4.40  | 4.55  | 4.64  | 4.69  | 4.11  | 3.56 | 3.08 | 2.63 |  |  |  | TIO-003   |
|                           | 3.45  | 5.84  | 6.97                                                                    | 7.31  | 7.55  | 7.70  | 7.79  | 6.83  | 5.90 | 5.12 | 4.37 |  |  |  | TIO-004   |
|                           | 4.19  | 7.10  | 8.48                                                                    | 8.90  | 9.19  | 9.38  | 9.48  | 8.31  | 7.18 | 6.23 | 5.32 |  |  |  | TIO-005   |
|                           | 4.86  | 8.23  | 9.83                                                                    | 10.31 | 10.64 | 10.86 | 10.98 | 9.63  | 8.32 | 7.22 | 6.16 |  |  |  | TIO-006   |
| +35                       |       | 0.17  | 0.23                                                                    | 0.24  | 0.26  | 0.26  | 0.27  | 0.24  | 0.21 | 0.18 | 0.15 |  |  |  | TIO-00X   |
|                           |       | 0.44  | 0.60                                                                    | 0.65  | 0.68  | 0.70  | 0.72  | 0.63  | 0.55 | 0.48 | 0.41 |  |  |  | TIO-000   |
|                           |       | 1.06  | 1.43                                                                    | 1.54  | 1.61  | 1.67  | 1.70  | 1.50  | 1.31 | 1.14 | 0.98 |  |  |  | TIO-001   |
|                           |       | 1.72  | 2.33                                                                    | 2.50  | 2.63  | 2.72  | 2.78  | 2.45  | 2.13 | 1.86 | 1.59 |  |  |  | TIO-002   |
|                           |       | 2.78  | 3.75                                                                    | 4.04  | 4.24  | 4.39  | 4.48  | 3.95  | 3.44 | 3.00 | 2.57 |  |  |  | TIO-003   |
|                           |       | 4.62  | 6.23                                                                    | 6.71  | 7.05  | 7.28  | 7.43  | 6.56  | 5.71 | 4.97 | 4.27 |  |  |  | TIO-004   |
|                           |       | 5.62  | 7.58                                                                    | 8.16  | 8.57  | 8.86  | 9.05  | 7.99  | 6.95 | 6.05 | 5.19 |  |  |  | TIO-005   |
|                           |       | 6.51  | 8.79                                                                    | 9.45  | 9.93  | 10.26 | 10.48 | 9.25  | 8.05 | 7.01 | 6.01 |  |  |  | TIO-006   |
| +30                       |       | 0.09  | 0.19                                                                    | 0.21  | 0.23  | 0.24  | 0.25  | 0.23  | 0.20 | 0.17 | 0.15 |  |  |  | TIO-00X   |
|                           |       | 0.25  | 0.51                                                                    | 0.57  | 0.62  | 0.65  | 0.67  | 0.60  | 0.52 | 0.46 | 0.40 |  |  |  | TIO-000   |
|                           |       | 0.60  | 1.20                                                                    | 1.35  | 1.46  | 1.54  | 1.59  | 1.42  | 1.25 | 1.09 | 0.94 |  |  |  | TIO-001   |
|                           |       | 0.98  | 1.96                                                                    | 2.21  | 2.39  | 2.51  | 2.60  | 2.32  | 2.03 | 1.78 | 1.54 |  |  |  | TIO-002   |
|                           |       | 1.58  | 3.16                                                                    | 3.57  | 3.85  | 4.05  | 4.19  | 3.74  | 3.28 | 2.87 | 2.48 |  |  |  | TIO-003   |
|                           |       | 2.63  | 5.25                                                                    | 5.92  | 6.39  | 6.73  | 6.96  | 6.21  | 5.44 | 4.77 | 4.11 |  |  |  | TIO-004   |
|                           |       | 3.20  | 6.39                                                                    | 7.20  | 7.78  | 8.19  | 8.47  | 7.56  | 6.62 | 5.81 | 5.00 |  |  |  | TIO-005   |
|                           |       | 3.71  | 7.40                                                                    | 8.34  | 9.01  | 9.49  | 9.82  | 8.75  | 7.67 | 6.73 | 5.80 |  |  |  | TIO-006   |
| +25                       |       |       | 0.14                                                                    | 0.18  | 0.20  | 0.22  | 0.23  | 0.21  | 0.18 | 0.16 | 0.14 |  |  |  | TIO-00X   |
|                           |       |       | 0.37                                                                    | 0.47  | 0.54  | 0.58  | 0.61  | 0.56  | 0.49 | 0.43 | 0.38 |  |  |  | TIO-000   |
|                           |       |       | 0.89                                                                    | 1.12  | 1.27  | 1.38  | 1.46  | 1.32  | 1.17 | 1.03 | 0.90 |  |  |  | TIO-001   |
|                           |       |       | 1.45                                                                    | 1.82  | 2.08  | 2.25  | 2.38  | 2.15  | 1.91 | 1.68 | 1.46 |  |  |  | TIO-002   |
|                           |       |       | 2.33                                                                    | 2.94  | 3.35  | 3.64  | 3.84  | 3.47  | 3.07 | 2.72 | 2.36 |  |  |  | TIO-003   |
|                           |       |       | 3.87                                                                    | 4.88  | 5.56  | 6.03  | 6.37  | 5.76  | 5.10 | 4.51 | 3.91 |  |  |  | TIO-004   |
|                           |       |       | 4.71                                                                    | 5.94  | 6.76  | 7.34  | 7.75  | 7.01  | 6.21 | 5.49 | 4.76 |  |  |  | TIO-005   |
|                           |       |       | 5.45                                                                    | 6.88  | 7.84  | 8.51  | 8.98  | 8.12  | 7.19 | 6.36 | 5.52 |  |  |  | TIO-006   |
| +20                       |       |       | 0.02                                                                    | 0.12  | 0.16  | 0.19  | 0.20  | 0.19  | 0.17 | 0.15 | 0.13 |  |  |  | TIO-00X   |
|                           |       |       | 0.04                                                                    | 0.33  | 0.43  | 0.50  | 0.54  | 0.50  | 0.45 | 0.40 | 0.35 |  |  |  | TIO-000   |
|                           |       |       | 0.10                                                                    | 0.77  | 1.02  | 1.18  | 1.29  | 1.19  | 1.07 | 0.96 | 0.84 |  |  |  | TIO-001   |
|                           |       |       | 0.17                                                                    | 1.26  | 1.66  | 1.92  | 2.10  | 1.94  | 1.75 | 1.56 | 1.37 |  |  |  | TIO-002   |
|                           |       |       | 0.27                                                                    | 2.04  | 2.68  | 3.10  | 3.39  | 3.13  | 2.82 | 2.52 | 2.20 |  |  |  | TIO-003   |
|                           |       |       | 0.44                                                                    | 3.38  | 4.45  | 5.14  | 5.62  | 5.20  | 4.68 | 4.18 | 3.66 |  |  |  | TIO-004   |
|                           |       |       | 0.54                                                                    | 4.11  | 5.41  | 6.25  | 6.84  | 6.33  | 5.69 | 5.09 | 4.45 |  |  |  | TIO-005   |
|                           |       |       | 0.62                                                                    | 4.76  | 6.27  | 7.24  | 7.92  | 7.33  | 6.59 | 5.89 | 5.15 |  |  |  | TIO-006   |

| Condensing Temperature °C | R404A |       | Capacity (kW) Valve Type TI ... - S....<br>Evaporating Temperature (°C) |       |       |       |       |       |       |      |      |      |      |      | Cage Size |
|---------------------------|-------|-------|-------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|-----------|
|                           | +30   | +20   | +10                                                                     | +5    | 0     | -5    | -10   | -15   | -20   | -25  | -30  | -35  | -40  | -45  |           |
| +50                       | 0.27  | 0.32  | 0.34                                                                    | 0.35  | 0.35  | 0.35  | 0.34  | 0.30  | 0.25  | 0.22 | 0.18 | 0.15 | 0.13 | 0.10 | TIO-00X   |
|                           | 0.71  | 0.82  | 0.88                                                                    | 0.89  | 0.89  | 0.89  | 0.88  | 0.77  | 0.65  | 0.56 | 0.47 | 0.39 | 0.33 | 0.27 | TIO-000   |
|                           | 1.65  | 1.91  | 2.04                                                                    | 2.07  | 2.08  | 2.07  | 2.05  | 1.80  | 1.53  | 1.30 | 1.10 | 0.92 | 0.76 | 0.62 | TIO-001   |
|                           | 50.00 | 2.82  | 3.28                                                                    | 3.50  | 3.55  | 3.57  | 3.55  | 3.52  | 3.08  | 2.62 | 2.24 | 1.88 | 1.58 | 1.30 | TIO-002   |
|                           | 4.47  | 5.19  | 5.54                                                                    | 5.62  | 5.65  | 5.63  | 5.57  | 4.88  | 4.14  | 3.54 | 2.98 | 2.50 | 2.06 | 1.69 | TIO-003   |
|                           | 7.29  | 8.47  | 9.05                                                                    | 9.17  | 9.21  | 9.18  | 9.09  | 7.96  | 6.76  | 5.78 | 4.86 | 4.07 | 3.37 | 2.76 | TIO-004   |
|                           | 8.85  | 10.29 | 10.99                                                                   | 11.15 | 11.20 | 11.16 | 11.04 | 9.67  | 8.22  | 7.02 | 5.90 | 4.95 | 4.09 | 3.36 | TIO-005   |
|                           | 10.26 | 11.93 | 12.74                                                                   | 12.92 | 12.98 | 12.93 | 12.80 | 11.21 | 9.53  | 8.13 | 6.84 | 5.74 | 4.75 | 3.89 | TIO-006   |
| +40                       | 0.20  | 0.29  | 0.34                                                                    | 0.35  | 0.36  | 0.37  | 0.37  | 0.33  | 0.28  | 0.24 | 0.21 | 0.18 | 0.15 | 0.12 | TIO-00X   |
|                           | 0.51  | 0.75  | 0.87                                                                    | 0.91  | 0.93  | 0.95  | 0.95  | 0.84  | 0.73  | 0.63 | 0.54 | 0.46 | 0.38 | 0.32 | TIO-000   |
|                           | 1.19  | 1.75  | 2.04                                                                    | 2.12  | 2.18  | 2.21  | 2.22  | 1.97  | 1.70  | 1.47 | 1.25 | 1.06 | 0.89 | 0.74 | TIO-001   |
|                           | 2.03  | 3.00  | 3.49                                                                    | 3.64  | 3.73  | 3.78  | 3.80  | 3.38  | 2.91  | 2.52 | 2.14 | 1.82 | 1.53 | 1.27 | TIO-002   |
|                           | 3.22  | 4.76  | 5.53                                                                    | 5.76  | 5.91  | 5.99  | 6.02  | 5.35  | 4.61  | 3.99 | 3.39 | 2.88 | 2.42 | 2.01 | TIO-003   |
|                           | 5.25  | 7.76  | 9.02                                                                    | 9.40  | 9.64  | 9.78  | 9.83  | 8.73  | 7.52  | 6.50 | 5.54 | 4.70 | 3.94 | 3.28 | TIO-004   |
|                           | 6.38  | 9.43  | 10.96                                                                   | 11.42 | 11.71 | 11.88 | 11.94 | 10.61 | 9.14  | 7.90 | 6.73 | 5.71 | 4.79 | 3.98 | TIO-005   |
|                           | 7.40  | 10.93 | 12.71                                                                   | 13.23 | 13.58 | 13.77 | 13.84 | 12.30 | 10.59 | 9.16 | 7.80 | 6.62 | 5.55 | 4.62 | TIO-006   |
| +35                       |       | 0.25  | 0.32                                                                    | 0.34  | 0.36  | 0.37  | 0.37  | 0.33  | 0.29  | 0.25 | 0.21 | 0.18 | 0.15 | 0.13 | TIO-00X   |
|                           |       | 0.65  | 0.83                                                                    | 0.88  | 0.92  | 0.94  | 0.95  | 0.85  | 0.74  | 0.64 | 0.55 | 0.47 | 0.40 | 0.33 | TIO-000   |
|                           |       | 1.53  | 1.93                                                                    | 2.06  | 2.14  | 2.20  | 2.23  | 1.99  | 1.73  | 1.50 | 1.29 | 1.10 | 0.93 | 0.77 | TIO-001   |
|                           |       | 2.62  | 3.32                                                                    | 3.52  | 3.67  | 3.76  | 3.82  | 3.42  | 2.96  | 2.58 | 2.21 | 1.88 | 1.59 | 1.33 | TIO-002   |
|                           |       | 4.15  | 5.25                                                                    | 5.58  | 5.81  | 5.96  | 6.05  | 5.41  | 4.69  | 4.08 | 3.50 | 2.98 | 2.51 | 2.10 | TIO-003   |
|                           |       | 6.77  | 8.56                                                                    | 9.10  | 9.48  | 9.72  | 9.86  | 8.83  | 7.65  | 6.66 | 5.70 | 4.87 | 4.10 | 3.43 | TIO-004   |
|                           |       | 8.22  | 10.41                                                                   | 11.06 | 11.51 | 11.81 | 11.98 | 10.73 | 9.30  | 8.09 | 6.93 | 5.92 | 4.99 | 4.17 | TIO-005   |
|                           |       | 9.53  | 12.06                                                                   | 12.82 | 13.35 | 13.69 | 13.89 | 12.44 | 10.78 | 9.38 | 8.03 | 6.86 | 5.78 | 4.83 | TIO-006   |
| +30                       |       | 0.19  | 0.29                                                                    | 0.32  | 0.34  | 0.36  | 0.36  | 0.33  | 0.29  | 0.25 | 0.22 | 0.19 | 0.16 | 0.13 | TIO-00X   |
|                           |       | 0.49  | 0.75                                                                    | 0.83  | 0.88  | 0.91  | 0.94  | 0.85  | 0.74  | 0.65 | 0.56 | 0.48 | 0.41 | 0.34 | TIO-000   |
|                           |       | 1.15  | 1.75                                                                    | 1.93  | 2.05  | 2.13  | 2.19  | 1.98  | 1.73  | 1.51 | 1.30 | 1.12 | 0.95 | 0.79 | TIO-001   |
|                           |       | 1.97  | 3.01                                                                    | 3.30  | 3.51  | 3.66  | 3.75  | 3.39  | 2.96  | 2.59 | 2.23 | 1.92 | 1.62 | 1.36 | TIO-002   |
|                           |       | 3.13  | 4.76                                                                    | 5.23  | 5.56  | 5.79  | 5.94  | 5.36  | 4.69  | 4.10 | 3.53 | 3.03 | 2.57 | 2.16 | TIO-003   |
|                           |       | 5.10  | 7.77                                                                    | 8.53  | 9.07  | 9.44  | 9.69  | 8.75  | 7.65  | 6.70 | 5.77 | 4.95 | 4.19 | 3.52 | TIO-004   |
|                           |       | 6.20  | 9.44                                                                    | 10.36 | 11.02 | 11.48 | 11.77 | 10.63 | 9.29  | 8.14 | 7.01 | 6.01 | 5.09 | 4.27 | TIO-005   |
|                           |       | 7.18  | 10.94                                                                   | 12.01 | 12.77 | 13.30 | 13.65 | 12.33 | 10.77 | 9.43 | 8.12 | 6.97 | 5.90 | 4.95 | TIO-006   |
| +25                       |       |       | 0.25                                                                    | 0.29  | 0.32  | 0.34  | 0.35  | 0.32  | 0.28  | 0.25 | 0.22 | 0.19 | 0.16 | 0.13 | TIO-00X   |
|                           |       |       | 0.63                                                                    | 0.74  | 0.81  | 0.86  | 0.90  | 0.82  | 0.73  | 0.64 | 0.55 | 0.48 | 0.41 | 0.34 | TIO-000   |
|                           |       |       | 1.48                                                                    | 1.72  | 1.90  | 2.02  | 2.10  | 1.92  | 1.69  | 1.49 | 1.29 | 1.12 | 0.95 | 0.80 | TIO-001   |
|                           |       |       | 2.53                                                                    | 2.95  | 3.25  | 3.46  | 3.60  | 3.29  | 2.90  | 2.56 | 2.22 | 1.91 | 1.63 | 1.37 | TIO-002   |
|                           |       |       | 4.01                                                                    | 4.68  | 5.14  | 5.48  | 5.71  | 5.21  | 4.60  | 4.06 | 3.51 | 3.03 | 2.58 | 2.17 | TIO-003   |
|                           |       |       | 6.54                                                                    | 7.63  | 8.39  | 8.94  | 9.31  | 8.51  | 7.50  | 6.62 | 5.73 | 4.95 | 4.21 | 3.55 | TIO-004   |
|                           |       |       | 7.95                                                                    | 9.27  | 10.20 | 10.86 | 11.31 | 10.34 | 9.11  | 8.04 | 6.96 | 6.01 | 5.11 | 4.31 | TIO-005   |
|                           |       |       | 9.22                                                                    | 10.75 | 11.82 | 12.59 | 13.11 | 11.98 | 10.56 | 9.32 | 8.07 | 6.97 | 5.93 | 5.00 | TIO-006   |
| +20                       |       |       | 0.17                                                                    | 0.24  | 0.28  | 0.31  | 0.33  | 0.30  | 0.27  | 0.24 | 0.21 | 0.18 | 0.16 | 0.13 | TIO-00X   |
|                           |       |       | 0.44                                                                    | 0.61  | 0.72  | 0.79  | 0.84  | 0.78  | 0.70  | 0.62 | 0.54 | 0.47 | 0.40 | 0.34 | TIO-000   |
|                           |       |       | 1.04                                                                    | 1.42  | 1.67  | 1.85  | 1.97  | 1.83  | 1.63  | 1.45 | 1.27 | 1.10 | 0.94 | 0.80 | TIO-001   |
|                           |       |       | 1.78                                                                    | 2.44  | 2.87  | 3.16  | 3.37  | 3.13  | 2.79  | 2.49 | 2.17 | 1.88 | 1.61 | 1.36 | TIO-002   |
|                           |       |       | 2.82                                                                    | 3.86  | 4.54  | 5.01  | 5.34  | 4.96  | 4.42  | 3.94 | 3.44 | 2.98 | 2.55 | 2.16 | TIO-003   |
|                           |       |       | 4.59                                                                    | 6.30  | 7.41  | 8.17  | 8.71  | 8.09  | 7.21  | 6.42 | 5.61 | 4.87 | 4.16 | 3.53 | TIO-004   |
|                           |       |       | 5.58                                                                    | 7.66  | 9.00  | 9.93  | 10.58 | 9.83  | 8.76  | 7.80 | 6.81 | 5.91 | 5.06 | 4.28 | TIO-005   |
|                           |       |       | 6.47                                                                    | 8.88  | 10.43 | 11.51 | 12.27 | 11.39 | 10.16 | 9.05 | 7.90 | 6.86 | 5.86 | 4.97 | TIO-006   |

| Condensing Temperature °C |              | R407C |       | Capacity (kW) Valve Type TI ... - N....<br>Evaporating Temperature (°C) |       |       |       |       |       |       | Cage Size |
|---------------------------|--------------|-------|-------|-------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-----------|
| Dew Point                 | Bubble Point | +20   | +10   | +5                                                                      | 0     | -5    | -10   | -15   | -20   | -25   |           |
| +54                       | +50          | 0.49  | 0.52  | 0.52                                                                    | 0.53  | 0.53  | 0.53  | 0.46  | 0.38  | 0.32  | TIO-00X   |
|                           |              | 1.27  | 1.34  | 1.36                                                                    | 1.37  | 1.37  | 1.36  | 1.19  | 1.00  | 0.83  | TIO-000   |
|                           |              | 3.17  | 3.35  | 3.39                                                                    | 3.42  | 3.42  | 3.41  | 2.99  | 2.49  | 2.07  | TIO-001   |
|                           |              | 5.16  | 5.45  | 5.53                                                                    | 5.57  | 5.57  | 5.55  | 4.86  | 4.06  | 3.37  | TIO-002   |
|                           |              | 8.33  | 8.80  | 8.92                                                                    | 8.98  | 9.00  | 8.96  | 7.85  | 6.55  | 5.44  | TIO-003   |
|                           |              | 13.58 | 14.35 | 14.55                                                                   | 14.65 | 14.67 | 14.61 | 12.80 | 10.69 | 8.87  | TIO-004   |
|                           |              | 16.57 | 17.50 | 17.75                                                                   | 17.87 | 17.89 | 17.82 | 15.61 | 13.04 | 10.82 | TIO-005   |
|                           |              | 19.11 | 20.18 | 20.46                                                                   | 20.60 | 20.63 | 20.55 | 18.00 | 15.03 | 12.47 | TIO-006   |
| +45                       | +40          | 0.44  | 0.49  | 0.51                                                                    | 0.52  | 0.53  | 0.53  | 0.47  | 0.39  | 0.33  | TIO-00X   |
|                           |              | 1.14  | 1.28  | 1.32                                                                    | 1.34  | 1.36  | 1.37  | 1.21  | 1.02  | 0.85  | TIO-000   |
|                           |              | 2.86  | 3.19  | 3.29                                                                    | 3.36  | 3.40  | 3.42  | 3.02  | 2.54  | 2.13  | TIO-001   |
|                           |              | 4.66  | 5.19  | 5.36                                                                    | 5.47  | 5.54  | 5.58  | 4.93  | 4.14  | 3.46  | TIO-002   |
|                           |              | 7.52  | 8.38  | 8.65                                                                    | 8.83  | 8.95  | 9.00  | 7.95  | 6.69  | 5.59  | TIO-003   |
|                           |              | 12.25 | 13.66 | 14.10                                                                   | 14.40 | 14.58 | 14.67 | 12.96 | 10.91 | 9.11  | TIO-004   |
|                           |              | 14.95 | 16.67 | 17.20                                                                   | 17.57 | 17.79 | 17.90 | 15.82 | 13.31 | 11.12 | TIO-005   |
|                           |              | 17.24 | 19.22 | 19.83                                                                   | 20.25 | 20.52 | 20.64 | 18.24 | 15.34 | 12.82 | TIO-006   |
| +40                       | +35          | 0.40  | 0.47  | 0.49                                                                    | 0.50  | 0.51  | 0.52  | 0.46  | 0.39  | 0.33  | TIO-00X   |
|                           |              | 1.03  | 1.21  | 1.26                                                                    | 1.30  | 1.33  | 1.34  | 1.19  | 1.01  | 0.85  | TIO-000   |
|                           |              | 2.58  | 3.02  | 3.15                                                                    | 3.25  | 3.32  | 3.36  | 2.99  | 2.52  | 2.12  | TIO-001   |
|                           |              | 4.20  | 4.91  | 5.14                                                                    | 5.30  | 5.41  | 5.47  | 4.86  | 4.11  | 3.45  | TIO-002   |
|                           |              | 6.78  | 7.93  | 8.29                                                                    | 8.55  | 8.73  | 8.84  | 7.85  | 6.63  | 5.56  | TIO-003   |
|                           |              | 11.06 | 12.93 | 13.52                                                                   | 13.94 | 14.23 | 14.41 | 12.79 | 10.81 | 9.07  | TIO-004   |
|                           |              | 13.49 | 15.77 | 16.49                                                                   | 17.01 | 17.36 | 17.58 | 15.61 | 13.19 | 11.06 | TIO-005   |
|                           |              | 15.56 | 18.19 | 19.02                                                                   | 19.61 | 20.02 | 20.27 | 18.00 | 15.21 | 12.75 | TIO-006   |
| +35                       | +30          | 0.34  | 0.43  | 0.46                                                                    | 0.48  | 0.49  | 0.50  | 0.45  | 0.38  | 0.32  | TIO-00X   |
|                           |              | 0.88  | 1.11  | 1.18                                                                    | 1.24  | 1.28  | 1.30  | 1.16  | 0.99  | 0.83  | TIO-000   |
|                           |              | 2.19  | 2.78  | 2.96                                                                    | 3.09  | 3.19  | 3.25  | 2.91  | 2.47  | 2.08  | TIO-001   |
|                           |              | 3.57  | 4.53  | 4.82                                                                    | 5.04  | 5.20  | 5.30  | 4.74  | 4.02  | 3.39  | TIO-002   |
|                           |              | 5.76  | 7.30  | 7.78                                                                    | 8.13  | 8.39  | 8.56  | 7.64  | 6.49  | 5.47  | TIO-003   |
|                           |              | 9.39  | 11.91 | 12.69                                                                   | 13.26 | 13.67 | 13.95 | 12.46 | 10.58 | 8.92  | TIO-004   |
|                           |              | 11.46 | 14.53 | 15.48                                                                   | 16.18 | 16.68 | 17.02 | 15.21 | 12.91 | 10.88 | TIO-005   |
|                           |              | 13.22 | 16.75 | 17.85                                                                   | 18.66 | 19.23 | 19.62 | 17.53 | 14.89 | 12.54 | TIO-006   |
| +30                       | +25          |       | 0.38  | 0.42                                                                    | 0.44  | 0.46  | 0.48  | 0.43  | 0.37  | 0.31  | TIO-00X   |
|                           |              |       | 0.98  | 1.08                                                                    | 1.15  | 1.21  | 1.24  | 1.12  | 0.96  | 0.81  | TIO-000   |
|                           |              |       | 2.46  | 2.70                                                                    | 2.88  | 3.01  | 3.11  | 2.80  | 2.39  | 2.02  | TIO-001   |
|                           |              |       | 4.01  | 4.40                                                                    | 4.70  | 4.91  | 5.06  | 4.55  | 3.89  | 3.29  | TIO-002   |
|                           |              |       | 6.47  | 7.11                                                                    | 7.58  | 7.92  | 8.16  | 7.35  | 6.28  | 5.32  | TIO-003   |
|                           |              |       | 10.55 | 11.59                                                                   | 12.36 | 12.91 | 13.31 | 11.98 | 10.24 | 8.67  | TIO-004   |
|                           |              |       | 12.87 | 14.14                                                                   | 15.07 | 15.75 | 16.24 | 14.62 | 12.49 | 10.58 | TIO-005   |
|                           |              |       | 14.84 | 16.31                                                                   | 17.38 | 18.17 | 18.72 | 16.86 | 14.40 | 12.19 | TIO-006   |
| +26                       | +20          |       |       | 0.37                                                                    | 0.40  | 0.43  | 0.45  | 0.41  | 0.35  | 0.30  | TIO-00X   |
|                           |              |       |       | 0.95                                                                    | 1.04  | 1.11  | 1.16  | 1.06  | 0.91  | 0.78  | TIO-000   |
|                           |              |       |       | 2.37                                                                    | 2.61  | 2.78  | 2.91  | 2.65  | 2.28  | 1.94  | TIO-001   |
|                           |              |       |       | 3.86                                                                    | 4.25  | 4.54  | 4.74  | 4.31  | 3.71  | 3.16  | TIO-002   |
|                           |              |       |       | 6.23                                                                    | 6.86  | 7.32  | 7.65  | 6.96  | 6.00  | 5.11  | TIO-003   |
|                           |              |       |       | 10.16                                                                   | 11.19 | 11.93 | 12.47 | 11.35 | 9.77  | 8.33  | TIO-004   |
|                           |              |       |       | 12.40                                                                   | 13.65 | 14.56 | 15.22 | 13.85 | 11.92 | 10.16 | TIO-005   |
|                           |              |       |       | 14.30                                                                   | 15.74 | 16.79 | 17.55 | 15.97 | 13.75 | 11.71 | TIO-006   |

| Condensing Temperature °C | R507  |       | Capacity (kW) Valve Type TI ... - S....<br>Evaporating Temperature (°C) |       |       |       |       |       |       |      |      |      |      |      | Cage Size |
|---------------------------|-------|-------|-------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|-----------|
|                           | +30   | +20   | +10                                                                     | +5    | +0    | -5    | -10   | -15   | -20   | -25  | -30  | -35  | -40  | -45  |           |
| +50                       | 0.29  | 0.34  | 0.36                                                                    | 0.37  | 0.37  | 0.37  | 0.37  | 0.32  | 0.27  | 0.23 | 0.19 | 0.16 | 0.13 | 0.11 | TIO-00X   |
|                           | 0.73  | 0.85  | 0.91                                                                    | 0.92  | 0.93  | 0.93  | 0.92  | 0.80  | 0.68  | 0.58 | 0.49 | 0.40 | 0.33 | 0.26 | TIO-000   |
|                           | 1.68  | 1.95  | 2.09                                                                    | 2.12  | 2.13  | 2.13  | 2.11  | 1.83  | 1.57  | 1.33 | 1.12 | 0.92 | 0.76 | 0.61 | TIO-001   |
|                           | 2.85  | 3.31  | 3.54                                                                    | 3.59  | 3.62  | 3.61  | 3.58  | 3.10  | 2.66  | 2.26 | 1.89 | 1.57 | 1.28 | 1.03 | TIO-002   |
|                           | 4.54  | 5.26  | 5.63                                                                    | 5.71  | 5.75  | 5.74  | 5.69  | 4.93  | 4.23  | 3.59 | 3.01 | 2.49 | 2.04 | 1.64 | TIO-003   |
|                           | 7.39  | 8.57  | 9.17                                                                    | 9.31  | 9.36  | 9.35  | 9.28  | 8.04  | 6.88  | 5.85 | 4.90 | 4.06 | 3.32 | 2.67 | TIO-004   |
|                           | 9.00  | 10.44 | 11.16                                                                   | 11.33 | 11.40 | 11.39 | 11.30 | 9.79  | 8.38  | 7.12 | 5.97 | 4.94 | 4.04 | 3.26 | TIO-005   |
|                           | 10.39 | 12.05 | 12.89                                                                   | 13.08 | 13.16 | 13.15 | 13.04 | 11.31 | 9.68  | 8.22 | 6.89 | 5.70 | 4.66 | 3.76 | TIO-006   |
| +40                       | 0.21  | 0.31  | 0.36                                                                    | 0.37  | 0.38  | 0.39  | 0.39  | 0.34  | 0.30  | 0.26 | 0.22 | 0.18 | 0.15 | 0.12 | TIO-00X   |
|                           | 0.52  | 0.77  | 0.89                                                                    | 0.93  | 0.96  | 0.97  | 0.98  | 0.86  | 0.75  | 0.64 | 0.54 | 0.46 | 0.38 | 0.31 | TIO-000   |
|                           | 1.20  | 1.77  | 2.05                                                                    | 2.14  | 2.20  | 2.23  | 2.25  | 1.98  | 1.71  | 1.47 | 1.25 | 1.05 | 0.87 | 0.71 | TIO-001   |
|                           | 2.04  | 3.00  | 3.48                                                                    | 3.63  | 3.73  | 3.79  | 3.82  | 3.35  | 2.91  | 2.50 | 2.12 | 1.78 | 1.47 | 1.20 | TIO-002   |
|                           | 3.24  | 4.76  | 5.54                                                                    | 5.77  | 5.93  | 6.02  | 6.07  | 5.33  | 4.62  | 3.97 | 3.37 | 2.82 | 2.34 | 1.91 | TIO-003   |
|                           | 5.28  | 7.76  | 9.02                                                                    | 9.40  | 9.66  | 9.81  | 9.88  | 8.68  | 7.53  | 6.47 | 5.49 | 4.60 | 3.80 | 3.10 | TIO-004   |
|                           | 6.43  | 9.45  | 10.99                                                                   | 11.45 | 11.76 | 11.95 | 12.04 | 10.57 | 9.17  | 7.88 | 6.68 | 5.60 | 4.63 | 3.78 | TIO-005   |
|                           | 7.42  | 10.91 | 12.68                                                                   | 13.22 | 13.58 | 13.79 | 13.90 | 12.20 | 10.59 | 9.10 | 7.72 | 6.46 | 5.35 | 4.36 | TIO-006   |
| +35                       |       | 0.27  | 0.34                                                                    | 0.36  | 0.37  | 0.38  | 0.39  | 0.35  | 0.30  | 0.26 | 0.22 | 0.19 | 0.16 | 0.13 | TIO-00X   |
|                           |       | 0.67  | 0.84                                                                    | 0.90  | 0.94  | 0.96  | 0.98  | 0.86  | 0.75  | 0.65 | 0.56 | 0.47 | 0.39 | 0.32 | TIO-000   |
|                           |       | 1.53  | 1.94                                                                    | 2.06  | 2.15  | 2.21  | 2.25  | 1.99  | 1.74  | 1.50 | 1.28 | 1.08 | 0.90 | 0.73 | TIO-001   |
|                           |       | 2.60  | 3.29                                                                    | 3.50  | 3.65  | 6.75  | 3.81  | 3.37  | 2.94  | 2.55 | 2.17 | 1.83 | 1.52 | 1.25 | TIO-002   |
|                           |       | 4.14  | 5.23                                                                    | 5.56  | 5.80  | 5.96  | 6.06  | 5.36  | 4.68  | 4.05 | 3.45 | 2.90 | 2.41 | 1.98 | TIO-003   |
|                           |       | 6.74  | 8.52                                                                    | 9.06  | 9.45  | 9.71  | 9.87  | 8.73  | 7.62  | 6.59 | 5.62 | 4.73 | 3.93 | 3.23 | TIO-004   |
|                           |       | 8.21  | 10.38                                                                   | 11.04 | 11.50 | 11.82 | 12.02 | 10.63 | 9.28  | 8.03 | 6.84 | 5.76 | 4.79 | 3.93 | TIO-005   |
|                           |       | 9.47  | 11.98                                                                   | 12.74 | 13.28 | 13.65 | 13.87 | 12.27 | 10.72 | 9.27 | 7.90 | 6.65 | 5.53 | 4.54 | TIO-006   |
| +30                       |       | 0.20  | 0.31                                                                    | 0.34  | 0.36  | 0.37  | 0.38  | 0.34  | 0.30  | 0.26 | 0.22 | 0.19 | 0.16 | 0.13 | TIO-00X   |
|                           |       | 0.50  | 0.76                                                                    | 0.84  | 0.89  | 0.93  | 0.96  | 0.85  | 0.75  | 0.65 | 0.56 | 0.47 | 0.40 | 0.33 | TIO-000   |
|                           |       | 1.16  | 1.75                                                                    | 1.93  | 2.05  | 2.14  | 2.20  | 1.96  | 1.73  | 1.50 | 1.29 | 1.09 | 0.91 | 0.75 | TIO-001   |
|                           |       | 1.96  | 2.98                                                                    | 3.27  | 3.48  | 3.63  | 3.73  | 3.33  | 2.93  | 2.55 | 2.19 | 1.85 | 1.54 | 1.27 | TIO-002   |
|                           |       | 3.12  | 4.73                                                                    | 5.19  | 5.53  | 5.77  | 5.93  | 5.29  | 4.66  | 4.05 | 3.47 | 2.94 | 2.45 | 2.02 | TIO-003   |
|                           |       | 5.08  | 7.71                                                                    | 8.46  | 9.01  | 9.40  | 9.66  | 8.62  | 7.59  | 6.60 | 5.66 | 4.79 | 4.00 | 3.29 | TIO-004   |
|                           |       | 6.18  | 9.38                                                                    | 10.30 | 10.97 | 11.44 | 11.76 | 10.50 | 9.24  | 8.04 | 6.89 | 5.83 | 4.87 | 4.01 | TIO-005   |
|                           |       | 7.14  | 10.83                                                                   | 11.90 | 12.66 | 13.21 | 13.58 | 12.12 | 10.67 | 9.28 | 7.96 | 6.73 | 5.62 | 4.63 | TIO-006   |
| +25                       |       |       | 0.26                                                                    | 0.30  | 0.33  | 0.35  | 0.37  | 0.33  | 0.29  | 0.26 | 0.22 | 0.19 | 0.16 | 0.13 | TIO-00X   |
|                           |       |       | 0.64                                                                    | 0.75  | 0.82  | 0.88  | 0.92  | 0.83  | 0.73  | 0.64 | 0.56 | 0.47 | 0.40 | 0.33 | TIO-000   |
|                           |       |       | 1.48                                                                    | 1.72  | 1.90  | 2.02  | 2.11  | 1.90  | 1.69  | 1.48 | 1.28 | 1.09 | 0.91 | 0.75 | TIO-001   |
|                           |       |       | 2.50                                                                    | 2.92  | 3.21  | 3.43  | 3.58  | 3.23  | 2.87  | 2.51 | 2.17 | 1.84 | 1.55 | 1.28 | TIO-002   |
|                           |       |       | 3.98                                                                    | 4.64  | 5.11  | 5.45  | 5.68  | 5.13  | 4.56  | 3.99 | 3.45 | 2.93 | 2.46 | 2.03 | TIO-003   |
|                           |       |       | 6.48                                                                    | 7.56  | 8.32  | 8.87  | 9.26  | 8.36  | 7.42  | 6.51 | 5.61 | 4.77 | 4.01 | 3.32 | TIO-004   |
|                           |       |       | 7.89                                                                    | 9.20  | 10.13 | 10.80 | 11.28 | 10.18 | 9.04  | 7.92 | 6.84 | 5.82 | 4.88 | 4.04 | TIO-005   |
|                           |       |       | 9.11                                                                    | 10.63 | 11.70 | 12.47 | 13.02 | 11.76 | 10.44 | 9.15 | 7.89 | 6.71 | 5.63 | 4.66 | TIO-006   |
| +20                       |       |       | 0.18                                                                    | 0.25  | 0.29  | 0.32  | 0.34  | 0.31  | 0.28  | 0.25 | 0.22 | 0.19 | 0.16 | 0.13 | TIO-00X   |
|                           |       |       | 0.45                                                                    | 0.62  | 0.73  | 0.80  | 0.86  | 0.79  | 0.71  | 0.63 | 0.54 | 0.46 | 0.39 | 0.33 | TIO-000   |
|                           |       |       | 1.04                                                                    | 1.42  | 1.67  | 1.85  | 1.97  | 1.81  | 1.63  | 1.44 | 1.25 | 1.07 | 0.90 | 0.75 | TIO-001   |
|                           |       |       | 1.76                                                                    | 2.41  | 2.84  | 3.13  | 3.34  | 3.07  | 2.76  | 2.44 | 2.12 | 1.81 | 1.53 | 1.27 | TIO-002   |
|                           |       |       | 2.80                                                                    | 3.84  | 4.51  | 4.98  | 5.32  | 4.88  | 4.38  | 3.88 | 3.37 | 2.88 | 2.43 | 2.02 | TIO-003   |
|                           |       |       | 4.57                                                                    | 6.25  | 7.34  | 8.11  | 8.66  | 7.95  | 7.14  | 6.31 | 5.49 | 4.70 | 3.96 | 3.29 | TIO-004   |
|                           |       |       | 5.56                                                                    | 7.61  | 8.94  | 9.88  | 10.55 | 9.68  | 8.69  | 7.69 | 6.68 | 5.72 | 4.82 | 4.01 | TIO-005   |
|                           |       |       | 6.42                                                                    | 8.78  | 10.32 | 11.40 | 12.18 | 11.17 | 10.04 | 8.88 | 7.71 | 6.60 | 5.57 | 4.63 | TIO-006   |

| Condensing Temperature °C | R22   |       | Capacity (kW) Valve Type TI ... - H....<br>Evaporating Temperature (°C) |       |       |       |       |       |       |       |       |      |      |      | Cage Size |
|---------------------------|-------|-------|-------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|-----------|
|                           | + 30  | + 20  | + 10                                                                    | + 5   | 0     | -5    | -10   | -15   | -20   | -25   | -30   | -35  | -40  | -45  |           |
| +50                       | 0.38  | 0.45  | 0.50                                                                    | 0.51  | 0.52  | 0.53  | 0.53  | 0.46  | 0.41  | 0.35  | 0.30  | 0.26 | 0.22 | 0.19 | TIO-00X   |
|                           | 0.98  | 1.17  | 1.29                                                                    | 1.33  | 1.35  | 1.38  | 1.36  | 1.20  | 1.05  | 0.91  | 0.78  | 0.66 | 0.57 | 0.48 | TIO-000   |
|                           | 2.40  | 2.86  | 3.16                                                                    | 3.26  | 3.32  | 3.39  | 3.33  | 2.95  | 2.58  | 2.24  | 1.91  | 1.62 | 1.40 | 1.19 | TIO-001   |
|                           | 4.03  | 4.78  | 5.29                                                                    | 4.47  | 5.56  | 5.67  | 5.57  | 4.95  | 4.32  | 3.75  | 3.20  | 2.72 | 2.35 | 2.00 | TIO-002   |
|                           | 6.41  | 7.64  | 8.42                                                                    | 8.70  | 8.85  | 9.03  | 8.87  | 7.88  | 6.87  | 5.97  | 5.10  | 4.34 | 3.45 | 3.18 | TIO-003   |
|                           | 10.50 | 12.51 | 13.79                                                                   | 14.26 | 14.50 | 14.80 | 14.53 | 12.90 | 11.26 | 9.79  | 8.35  | 7.10 | 6.14 | 5.21 | TIO-004   |
|                           | 12.80 | 15.24 | 16.81                                                                   | 17.37 | 17.67 | 18.03 | 17.70 | 15.72 | 13.72 | 11.93 | 10.18 | 8.66 | 7.49 | 6.35 | TIO-005   |
|                           | 14.76 | 17.58 | 19.38                                                                   | 20.04 | 20.38 | 20.79 | 20.42 | 18.14 | 15.82 | 13.76 | 11.74 | 9.98 | 8.64 | 7.32 | TIO-006   |
| +40                       | 0.24  | 0.37  | 0.44                                                                    | 0.46  | 0.48  | 0.50  | 0.49  | 0.44  | 0.39  | 0.34  | 0.29  | 0.25 | 0.22 | 0.18 | TIO-00X   |
|                           | 0.61  | 0.95  | 1.14                                                                    | 1.20  | 1.25  | 1.29  | 1.27  | 1.15  | 1.01  | 0.88  | 0.75  | 0.64 | 0.56 | 0.47 | TIO-000   |
|                           | 1.51  | 2.33  | 2.78                                                                    | 2.94  | 3.07  | 3.17  | 3.12  | 2.82  | 2.47  | 2.16  | 1.85  | 1.58 | 1.38 | 1.17 | TIO-001   |
|                           | 2.52  | 3.90  | 4.66                                                                    | 4.92  | 5.13  | 5.30  | 5.23  | 4.73  | 4.14  | 3.62  | 3.10  | 2.65 | 2.31 | 1.96 | TIO-002   |
|                           | 4.02  | 6.21  | 7.42                                                                    | 7.84  | 8.18  | 8.44  | 8.33  | 7.53  | 6.59  | 5.76  | 4.94  | 4.23 | 3.68 | 3.12 | TIO-003   |
|                           | 6.59  | 10.17 | 12.16                                                                   | 12.85 | 13.39 | 13.83 | 13.65 | 12.33 | 10.79 | 9.44  | 8.10  | 6.92 | 6.03 | 5.12 | TIO-004   |
|                           | 8.03  | 12.40 | 14.82                                                                   | 15.65 | 16.32 | 16.85 | 16.63 | 15.03 | 13.15 | 11.50 | 9.87  | 8.44 | 7.35 | 6.23 | TIO-005   |
|                           | 9.26  | 14.30 | 17.09                                                                   | 18.05 | 18.82 | 19.43 | 19.18 | 17.33 | 15.17 | 13.26 | 11.38 | 9.73 | 8.48 | 7.19 | TIO-006   |
| +35                       |       | 0.30  | 0.40                                                                    | 0.43  | 0.45  | 0.47  | 0.48  | 0.43  | 0.38  | 0.33  | 0.29  | 0.24 | 0.21 | 0.18 | TIO-00X   |
|                           |       | 0.79  | 1.03                                                                    | 1.11  | 1.17  | 1.22  | 1.23  | 1.11  | 0.98  | 0.85  | 0.74  | 0.63 | 0.55 | 0.47 | TIO-000   |
|                           |       | 1.93  | 2.53                                                                    | 2.72  | 2.88  | 3.00  | 3.01  | 2.71  | 2.40  | 2.09  | 1.81  | 1.55 | 1.35 | 1.15 | TIO-001   |
|                           |       | 3.24  | 4.23                                                                    | 4.56  | 4.82  | 5.02  | 5.03  | 4.54  | 4.02  | 3.50  | 3.03  | 2.60 | 2.27 | 1.93 | TIO-002   |
|                           |       | 5.16  | 6.74                                                                    | 7.27  | 7.68  | 8.00  | 8.01  | 7.23  | 6.40  | 5.57  | 4.83  | 4.14 | 3.61 | 3.07 | TIO-003   |
|                           |       | 8.45  | 11.04                                                                   | 11.90 | 12.58 | 13.11 | 13.13 | 11.85 | 10.49 | 9.13  | 7.92  | 6.78 | 5.92 | 5.03 | TIO-004   |
|                           |       | 10.30 | 13.46                                                                   | 14.50 | 15.32 | 15.97 | 16.00 | 14.44 | 12.78 | 11.12 | 9.65  | 8.27 | 7.21 | 6.13 | TIO-005   |
|                           |       | 11.87 | 15.52                                                                   | 16.73 | 17.67 | 18.42 | 18.45 | 16.65 | 14.74 | 12.83 | 11.13 | 9.53 | 8.32 | 7.07 | TIO-006   |
| +30                       |       | 0.21  | 0.34                                                                    | 0.38  | 0.41  | 0.44  | 0.44  | 0.41  | 0.36  | 0.31  | 0.27  | 0.24 | 0.21 | 0.18 | TIO-00X   |
|                           |       | 0.55  | 0.89                                                                    | 0.99  | 1.07  | 1.13  | 1.15  | 1.05  | 0.93  | 0.81  | 0.70  | 0.61 | 0.53 | 0.46 | TIO-000   |
|                           |       | 1.35  | 2.19                                                                    | 2.44  | 2.63  | 2.78  | 2.81  | 2.57  | 2.29  | 1.99  | 1.72  | 1.50 | 1.31 | 1.12 | TIO-001   |
|                           |       | 2.26  | 3.67                                                                    | 4.09  | 4.41  | 4.66  | 4.71  | 4.30  | 3.83  | 3.33  | 2.88  | 2.52 | 2.20 | 1.88 | TIO-002   |
|                           |       | 3.59  | 5.84                                                                    | 6.51  | 7.02  | 7.42  | 7.50  | 6.84  | 6.10  | 5.30  | 4.59  | 4.01 | 3.51 | 2.99 | TIO-003   |
|                           |       | 5.89  | 9.56                                                                    | 10.66 | 11.50 | 12.16 | 12.28 | 11.21 | 10.00 | 8.68  | 7.51  | 6.57 | 5.75 | 4.90 | TIO-004   |
|                           |       | 7.18  | 11.65                                                                   | 12.99 | 14.02 | 14.81 | 14.97 | 13.66 | 12.18 | 10.58 | 9.16  | 8.01 | 7.01 | 5.98 | TIO-005   |
|                           |       | 8.28  | 13.44                                                                   | 14.98 | 16.16 | 17.08 | 17.26 | 15.76 | 14.05 | 12.20 | 10.56 | 9.24 | 8.08 | 6.89 | TIO-006   |
| +25                       |       |       | 0.28                                                                    | 0.33  | 0.38  | 0.40  | 0.41  | 0.38  | 0.34  | 0.30  | 0.26  | 0.23 | 0.20 | 0.17 | TIO-00X   |
|                           |       |       | 0.71                                                                    | 0.85  | 0.97  | 1.04  | 1.07  | 0.98  | 0.88  | 0.78  | 0.68  | 0.59 | 0.51 | 0.44 | TIO-000   |
|                           |       |       | 1.76                                                                    | 2.10  | 2.37  | 2.56  | 2.62  | 2.40  | 2.16  | 1.91  | 1.67  | 1.44 | 1.26 | 1.08 | TIO-001   |
|                           |       |       | 2.94                                                                    | 3.51  | 3.97  | 4.29  | 4.39  | 4.03  | 3.62  | 3.21  | 2.79  | 2.42 | 2.12 | 1.81 | TIO-002   |
|                           |       |       | 4.68                                                                    | 5.59  | 6.33  | 6.84  | 7.00  | 6.41  | 5.77  | 5.11  | 4.45  | 3.85 | 3.37 | 2.88 | TIO-003   |
|                           |       |       | 7.67                                                                    | 9.16  | 10.36 | 11.20 | 11.46 | 10.50 | 9.46  | 8.37  | 7.29  | 6.31 | 5.52 | 4.72 | TIO-004   |
|                           |       |       | 9.35                                                                    | 11.16 | 12.63 | 13.64 | 13.96 | 12.80 | 11.52 | 10.19 | 8.89  | 7.69 | 6.73 | 5.75 | TIO-005   |
|                           |       |       | 10.79                                                                   | 12.88 | 14.57 | 15.74 | 16.11 | 14.76 | 13.29 | 11.76 | 10.25 | 8.87 | 7.76 | 6.64 | TIO-006   |
| +20                       |       |       | 0.18                                                                    | 0.26  | 0.31  | 0.35  | 0.38  | 0.35  | 0.32  | 0.28  | 0.25  | 0.22 | 0.19 | 0.16 | TIO-00X   |
|                           |       |       | 0.45                                                                    | 0.67  | 0.81  | 0.91  | 0.97  | 0.91  | 0.83  | 0.73  | 0.64  | 0.56 | 0.49 | 0.42 | TIO-000   |
|                           |       |       | 1.12                                                                    | 1.65  | 2.00  | 2.24  | 2.38  | 2.22  | 2.03  | 1.79  | 1.58  | 1.37 | 1.21 | 1.04 | TIO-001   |
|                           |       |       | 1.87                                                                    | 2.77  | 3.34  | 3.76  | 3.98  | 3.72  | 3.39  | 3.00  | 2.65  | 2.30 | 2.02 | 1.74 | TIO-002   |
|                           |       |       | 2.98                                                                    | 4.41  | 5.33  | 5.99  | 6.34  | 5.92  | 5.40  | 4.78  | 4.22  | 3.66 | 3.22 | 2.77 | TIO-003   |
|                           |       |       | 4.88                                                                    | 7.22  | 8.72  | 9.80  | 10.38 | 9.70  | 8.85  | 7.84  | 6.91  | 6.00 | 5.28 | 4.54 | TIO-004   |
|                           |       |       | 5.95                                                                    | 8.80  | 10.63 | 11.95 | 12.65 | 11.83 | 10.79 | 9.55  | 8.42  | 7.31 | 6.44 | 5.53 | TIO-005   |
|                           |       |       | 6.86                                                                    | 10.15 | 12.26 | 13.78 | 14.59 | 13.64 | 12.44 | 11.02 | 9.72  | 8.43 | 7.42 | 6.38 | TIO-006   |

The TFE R-22 series is designed for large tonnage heat pump, air conditioning, and commercial refrigeration applications.

### Features

- Stainless steel power element eliminates corrosion and prevents valve failure
- Replaceable power element
- External superheat adjustment
- ODF connections
- Balanced port construction compensates for changes in operating pressures due to varying ambients, or widely varying evaporator loads
- Bi-Directional control capacity
- External equalizer



### Specifications

- Maximum working pressure: 450 psig

### TFE Nominal \* Capacity Table in Tons

| R-134a | R-22/R-407C | R-502, R-404a/R-507 |
|--------|-------------|---------------------|
| 6      | 8           | 5                   |
| 8      | 10          | 7                   |
| 10     | 12          | 9                   |
| 15     | 20          | 14                  |

\*See Extended Capacity Tables for ratings at a wide range of conditions per ARI standard 750

### Nomenclature example: TFES 10 HCA 5/8 x 7/8 ODF S/T

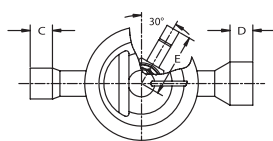
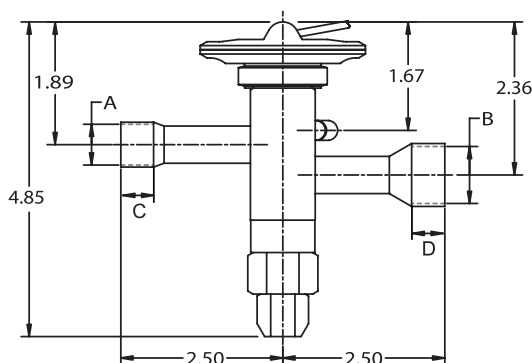
| TF                                                                 | E                                   | S                                    | 10                                                                                | H                                                                                                       | CA                                               | 5/8 x 7/8                                                                          | ODF                              | S/T                                      |
|--------------------------------------------------------------------|-------------------------------------|--------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------|------------------------------------------|
| Valve Series<br>Balanced Port,<br>Replaceable<br>Power<br>Assembly | Equalizer<br>E=External<br>1/4" ODF | Connection Type<br>S = solder (Only) | Capacity<br>Nominal Rating<br>in Tons<br>(See nominal<br>capacity table<br>below) | Refrigerant Code<br>• H = R-22<br>M = R-134a<br>• N = R-407C<br>*P = R-507<br>*R = R-502<br>*S = R-404A | Charge Code<br>C = medium temp<br>CA = heat pump | Inlet x Outlet<br>Connection Sizes<br>(See ordering<br>information table<br>below) | Connection<br>Type<br>ODF=solder | Configuration<br>S/T = Straight-<br>thru |

\* = R-507, R-502 and R-404A are interchangeable refrigerant charges, • = R-22 and R-407C are interchangeable refrigerant charges

### Ordering Information

| Valve Series | Capacity Tons* (R-22 Nominal) | Connections                 | PCN HCA Charge (R-22 Heat Pump) |
|--------------|-------------------------------|-----------------------------|---------------------------------|
| TFES         | 8                             | 5/8 X 7/8 ODF S/T 6A ODF EE | 061608                          |
|              | 10                            | 5/8 X 7/8 ODF S/T 6A ODF EE | 061610                          |
|              | 12                            | 5/8 X 7/8 ODF S/T 6A        | 061609                          |
|              | 20                            | 5/8 X 7/8 ODF S/T 6A        | 064493                          |

### Dimensional Data (in)



### Inlet/Outlet Fittings Dimensional Data (in)

| Connections |           | Inlet |      | Outlet |        | Equalizer |      |
|-------------|-----------|-------|------|--------|--------|-----------|------|
| Inlet       | Outlet    | A     | B    | C MIN  | D MIN. | 1/4 ODF   | SAE  |
| 1/4 ODF     | 3/8 ODF   | 0.25  | 0.38 | 0.31   | 0.31   | 1.70      | 1.65 |
|             | 1/2 ODF   | 0.25  | 0.50 |        | 0.37   |           |      |
|             | 5/8 ODF   | 0.25  | 0.63 |        | 0.50   |           |      |
| 3/8 ODF     | 3/8 ODF   | 0.38  | 0.38 | 0.31   | 0.31   |           |      |
|             | 1/2 ODF   | 0.38  | 0.50 |        | 0.37   |           |      |
|             | 5/8 ODF   | 0.38  | 0.63 |        | 0.50   |           |      |
|             | 7/8 ODF   | 0.38  | 0.88 |        | 0.76   |           |      |
| 1/2 ODF     | 1/2 ODF   | 0.50  | 0.50 | 0.37   | 0.37   |           |      |
|             | 5/8 ODF   | 0.50  | 0.63 |        | 0.50   |           |      |
|             | 7/8 ODF   | 0.50  | 0.88 |        | 0.76   |           |      |
| 5/8 ODF     | 5/8 ODF   | 0.63  | 0.63 | 0.50   | 0.50   |           |      |
|             | 7/8 ODF   | 0.63  | 0.88 |        | 0.76   |           |      |
| 7/8 ODF     | 1-1/8 ODF | 0.63  | 1.13 | 0.50   | 0.91   |           |      |
|             | 7/8 ODF   | 0.88  | 0.88 |        | 0.76   |           |      |
| 7/8 ODF     | 1-1/8 ODF | 0.88  | 1.13 | 0.76   | 0.91   |           |      |
|             | 1-1/8 ODF | 0.88  | 1.13 |        | 0.91   |           |      |

### Remote Bulb

| Charge | Tubing Length (Ft) | F    | G    |
|--------|--------------------|------|------|
| C,A,Z  | 2, 2-1/2, 5        | 3.06 | 0.63 |
|        | 10                 | 3.56 |      |
|        | 15, 20, 30         | 4.81 |      |
|        | 40, 50             | 6.19 | 0.76 |
| CA, AA | 2-1/2, 5, 10       | 2.31 |      |

### Replacement Parts

|                | Description     | PCN    |
|----------------|-----------------|--------|
| Power Assembly | X-28458 HCA-2   | 063414 |
|                | X-28458 HW100-2 | 063416 |
|                | X-28458 SW45-2  | 065298 |
| Seal Nut       | 27676-1         | 058707 |

# TFE R-410A Series

## Thermal Expansion Valves

The TFE R-410A series is designed for large tonnage heat pump, air conditioning, and commercial refrigeration applications.

### Features

- Stainless steel power element eliminates corrosion and prevents valve failure
- Replaceable power element
- External superheat adjustment
- ODF connections
- Balanced port construction compensates for changes in operating pressures due to varying ambients, or widely varying evaporator loads
- Bi-Directional control capacity
- External equalizer
- ZAA charge for R-410A systems



### Specifications

- Maximum working pressure: 630 psig

### TFE Nominal \* Capacity Table in Tons

| Model  | Typical System Application |
|--------|----------------------------|
| TFE 12 | 10-13 Tons                 |
| TFE 16 | 14-17 Tons                 |
| TFE 20 | 18-20 Tons                 |

\*See Extended Capacity Tables for ratings at a wide range of conditions per ARI standard 750

### Nomenclature example: TFES 16 ZAA 5/8 x 7/8 ODF S/T

| TF                                                                 | E                                           | S                                 | 16                                    | Z                                  | AA                                 | 5/8 x 7/8                                                                          | ODF                                  | S/T                                          |
|--------------------------------------------------------------------|---------------------------------------------|-----------------------------------|---------------------------------------|------------------------------------|------------------------------------|------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------------|
| Valve Series<br>Balanced Port,<br>Replaceable<br>Power<br>Assembly | Equalizer<br><br>E=External<br><br>1/4" ODF | Connection Type<br><br>S = solder | Capacity<br>Nominal Rating<br>in Tons | Refrigerant Code<br><br>Z = R-410A | Charge Code<br><br>AA = wide range | Inlet x Outlet<br>Connection Sizes<br>(See ordering<br>information table<br>below) | Connection<br>Type<br><br>ODF=solder | Configuration<br><br>S/T = Straight-<br>thru |

### Ordering Information

| Refrigerant | Tons | Bleed | Inlet x Outlet      | Sensing Bulb<br>Capillary<br>Tube Length | PCN    |
|-------------|------|-------|---------------------|------------------------------------------|--------|
| R-410A      | 12   | -     | 5/8 ODF x 7/8 ODF   | 5 ft.                                    | 066146 |
|             |      | 15%   | 5/8 ODF x 7/8 ODF   | 5 ft.                                    | 066147 |
|             |      | -     | 7/8 ODF x 1-1/8 ODF | 10 ft.                                   | 066148 |
|             | 16   | -     | 5/8 ODF x 7/8 ODF   | 5 ft.                                    | 066149 |
|             |      | 15%   | 5/8 ODF x 7/8 ODF   | 5 ft.                                    | 066150 |
|             |      | -     | 7/8 ODF x 1-1/8 ODF | 10 ft.                                   | 066151 |
|             | 20   | -     | 5/8 ODF x 7/8 ODF   | 5 ft.                                    | 066152 |
|             |      | 15%   | 5/8 ODF x 7/8 ODF   | 5 ft.                                    | 066153 |
|             |      | -     | 7/8 ODF x 1-1/8 ODF | 10 ft.                                   | 066154 |

### Inlet/Outlet Fittings Dimensional Data (in)

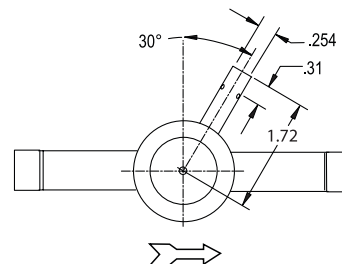
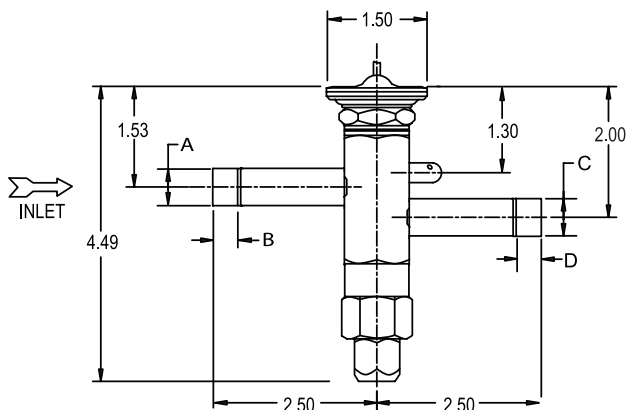
| Connections |           | Inlet |       | Outlet |        |
|-------------|-----------|-------|-------|--------|--------|
| Inlet       | Outlet    | A     | B MIN | C      | D MIN. |
| 1/2 ODF     | 1/2ODF    | 0.50  | 0.37  | 0.50   | 0.37   |
|             | 5/8 ODF   | 0.50  | 0.37  | 0.63   | 0.50   |
|             | 7/8ODF    | 0.50  | 0.37  | 0.88   | 0.76   |
| 5/8 ODF     | 5/8 ODF   | 0.63  | 0.50  | 0.63   | 0.50   |
|             | 7/8ODF    | 0.63  | 0.50  | 0.88   | 0.76   |
|             | 1-1/8 ODF | 0.63  | 0.50  | 1.13   | 0.91   |
| 7/8 ODF     | 7/8ODF    | 0.88  | 0.76  | 0.88   | 0.76   |
|             | 1-1/8 ODF | 0.88  | 0.76  | 1.13   | 0.91   |

### Replacement Parts

| Description                     | PCN     |
|---------------------------------|---------|
| R-410A Power Assembly (10 ft.)* | 066155* |
| Seal Nut                        | 058707  |

\*Approved for use only on TFE-Series R-410A valves (with ZAA charge)

### Dimensional Data (in)



The ZZ series is designed for ultra low temperature applications such as environmental test chambers and other applications where the desired evaporator temperature is below -40°F.

### Features

- Take-Apart construction for easy field service
- Improved internal construction extends valve life
- External equalizer standard
- Exclusive cage bellows eliminates friction at low temperatures
- External superheat adjustment



### Specifications

Maximum working pressure: 450 psig

### Options

- Interchangeable cages, power assemblies, and flanges for maximum flexibility

**Nomenclature** example: ZZC 6 B G125 10 FT 3/8 x 5/8 ODF ANG

| ZZC                                                 | 6                                         | B                                                              | G125                                                       | 10 FT                                       | 3/8 x 5/8                          | ODF                                              | ANG                                                         |
|-----------------------------------------------------|-------------------------------------------|----------------------------------------------------------------|------------------------------------------------------------|---------------------------------------------|------------------------------------|--------------------------------------------------|-------------------------------------------------------------|
| Valve Series<br>Ultra Low Temperature<br>Take-Apart | Capacity<br>(nominal @ -40°F)<br><br>Tons | Refrigerant Code<br><br>B = R-13/R-23<br>H = R-22<br>R = R-502 | Charge Code<br><br>Z = low temp<br>G(MOP) = press.limiting | Capillary<br>Tube Length<br><br>10 FT (std) | Inlet x Outlet<br>Connection Sizes | Connection Type<br><br>SAE = flare<br>ODF=solder | Configuration<br><br>ANG = 90° angle<br>S/T = straight-thru |

| R-13/R-23<br>Valve Type | R-22<br>Valve Type | Standard<br>Connections |
|-------------------------|--------------------|-------------------------|
| ZZC 1BG                 | ZZC 3/4HZ          | 3/8 ODF x 5/8 ODF       |
| ZZC 2-1/2BG             | ZZC 1-1/2HZ        |                         |
| ZZC 4BG                 | ZZC 2-1/2HZ        |                         |
| ZZC 6BG                 | ZZC 4HZ            | 1/2 ODF x 5/8 ODF       |
| ZZC 9BG                 | ZZC 6HZ            |                         |
| ZZC 13BG                | ZZC 8HZ            |                         |
| ZZ ER 20BG              | --                 | 7/8 ODF x 1-1/8 ODM     |

**NOTE:** Nominal capacities shown here are based upon the following conditions:

| Refrigerant | Evaporator<br>Temperature | Liquid Temperature<br>at Valve Inlet | Pressure Drop<br>Across Valve |
|-------------|---------------------------|--------------------------------------|-------------------------------|
| R-23        | -40°F                     | 0°F                                  | 150 psig                      |
| R-22        | -40°F                     | 20°F                                 | 150 psig                      |

### Ordering Information

#### Cage Assemblies & Gaskets

| Valve                              | Description | PCN    |
|------------------------------------|-------------|--------|
| ZZC1BG, ZYC3/4RHW, ZYC3/4RW        | X10110-B1B  | 021288 |
| ZZC2-1/2BG, ZYC1-1/2HW, ZYC1-1/2RW | X10110-B2B  | 020871 |
| ZZC4BG, ZYC2-1/2HW, ZYC2-1/2RW     | X10110-B3B  | 096091 |
| ZZC6BG, ZYC4HW, ZYC3-1/2RW         | X10110-B4B  | 096312 |
| ZZC9BG, ZYC6HW, ZYC5RW             | X10110-B5B  | 096425 |
| ZZC13BG, ZYC8HW, ZYC8RW            | X10110-B6B  | 096646 |
| ZZER6BG, ZZER4HW, ZYC3-1/2RW       | X10059-B4B  | 045362 |
| ZZER9BG, ZZER6HW, ZZER5RW          | X10059-B5B  | 033697 |
| ZZER20BG, ZZER12HW, ZZER11RW       | X10059-B6B  | 030071 |
| ZZER21BG, ZZER13HW, ZZER13RW       | X10059-B7B  | 025100 |
| ZZER29BG, ZZER18HW, ZZER18RW       | X10059-B8B  | 025101 |
| ZZIR48BG, ZZIR30HW, ZZIR29RW       | X10060-B10B | 025090 |
| ZZJR16BG, ZZJR10HW, ZZJR9RW        | X10111-B5B  | 089306 |

#### Power Assemblies

| PCN    | Description                    |
|--------|--------------------------------|
| 094594 | XC-726 BG 30-2B 10FT. SAE EE   |
| 039130 | XC-726 BG 125-2B 10 FT. SAE EE |
| 024511 | XC-726 HW 35-2B 10 FT. SAE EE  |
| 025011 | XC-726 HW 65-2B 10 FT. SAE EE  |
| 023357 | XC-726 HW 85-3B 15 FT. SAE EE  |
| 036750 | XC-726 HW 100-2B 10FT. SAE EE  |
| 040569 | XC-726 HZ-2B 10FT. SAE EE      |

Replacement Power Assembly consists of: power assembly, and bulb clamps

#### Replacement Gasket Set

| PCN    | Description |
|--------|-------------|
| 027579 | X-13455-1   |

Gasket Set includes necessary body flange gasket & seat gasket

#### Flanges

| PCN    | Description | Connections         |
|--------|-------------|---------------------|
| 027770 | 9761-2      | 1/2 X 7/8 ODF S/T   |
| 027771 | 9761-3      | 3/8 X 5/8 ODF S/T   |
| 027268 | 9761-4      | 1/2 X 5/8 ODF S/T   |
| 027769 | 9761-5      | 3/8 X 1/2 ODF S/T   |
| 027766 | 9761-6      | 1/2 X 1/2 ODF S/T   |
| 027764 | A-576       | 5/8 X 7/8 ODF ANG   |
| 056932 | C-500-4     | 3/8 X 1/2 SAE ANG   |
| 057153 | C-500-5     | 3/8 X 5/8 SAE ANG   |
| 056294 | C-500-6     | 1/2 X 5/8 SAE ANG   |
| 065527 | C-501-4     | 3/8 X 1/2 ODF ANG   |
| 065748 | C-501-5     | 3/8 X 5/8 ODF ANG   |
| 065861 | C-501-7     | 1/2 X 5/8 ODF ANG   |
| 044733 | X-6346-16   | 5/8 X 5/8 ODF S/T   |
| 044846 | X-6346-17   | 5/8 X 7/8 ODF S/T   |
| 094038 | X-6346-18   | 5/8 X 1-1/8 ODF S/T |
| 071757 | X-6346-34   | 7/8 X 1-1/8 ODF S/T |
| 050563 | X-6669-1    | 3/8 X 5/8 SAE S/T   |
| 050842 | X-6669-2    | 1/2 X 5/8 SAE S/T   |
| 051176 | X-6669-4    | 3/8 X 1/2 SAE S/T   |
| 083378 | X-6669-5    | 1/2 X 1/2 SAE S/T   |

The LCL Take-Apart series is a desuperheating (Liquid Injection) valve used in conjunction with hot gas bypass to prevent excessive suction line superheat. LCL valves can be used for interstage cooling in compound systems.

### Features

- Stainless steel power element eliminates corrosion and prevents valve failure
- Take-Apart construction for easy field service

### Options

- Interchangeable, replaceable cages for versatility
- External superheat adjustment
- Interchangeable body flanges
- Interchangeable power assemblies



### Specifications

- Maximum working pressure: 450 psig

### Nomenclature example: LCLE 2 B 5 FT 3/8 x 1/2 ODF S/T

| LCL                                                               | E                                              | 2                                                                                                              | B                | 5 FT                                | 3/8 x 1/2                                               | ODF                                          | S/T                                                     |
|-------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------|-------------------------------------|---------------------------------------------------------|----------------------------------------------|---------------------------------------------------------|
| Valve Series<br>De-Superheating<br>Liquid Injection<br>Take-Apart | Equalizer<br>E=External<br>(Omit for Internal) | Capacity<br>Nominal NOTE: This<br>is not system capacity<br>(Contact Application<br>Engineering<br>for sizing) | Refrigerant Code | Capillary Tube Length<br>5 FT (std) | Inlet x Outlet Connection<br>Sizes<br>(see table below) | Connection Type<br>SAE = flare<br>ODF=solder | Configuration<br>ANG = 90° angle<br>S/T = straight-thru |

### Ordering Information

| Description | Equalizer Type      | PCN By Charge           |        |        | Connections              |
|-------------|---------------------|-------------------------|--------|--------|--------------------------|
|             |                     | Select From Table Below |        |        |                          |
|             |                     | A                       | B      | C      |                          |
| LCL 1       | Internal            | 022018                  | 022017 | --     | Same as<br>TCL &<br>TCLE |
| LCL 2       |                     | 022005                  | 021996 | 045527 |                          |
| LCL 3       |                     | 055093                  | 021987 | --     |                          |
| LCL 6       |                     | 047759                  | --     | --     |                          |
| LCLE 1      | 1/4"SAE<br>External | 055096                  | --     | --     |                          |
| LCLE 2      |                     | 022003                  | 021997 | --     |                          |
| LCLE 3      |                     | 021991                  | 021985 | --     |                          |
| LCLE 4      |                     | --                      | 061054 | 055097 |                          |

NOTE: Add charge suffix symbol "A", "B", or "C" based on the following table.

Example: LCLE4-A

### Replacement Valve Guide

| If have:   | Replace with: |
|------------|---------------|
| LA(E)S 1/2 | LCL 1         |
| LA(E)S 1   | LCL 2         |
| LA(E)S 2   | LCL 3         |
| LA(E)S 3   | LCL 4         |
| LA(E)S 5   | LCL 6         |
| LCL 5      | LCLE 6        |
| LCLE 5     | LCLE 6        |
| LCL 8      | LCL 9         |
| LCLE 8     | LCLE 9        |

Note: Valve sizes LCL5, LCL8, LCLE5 and LCLE8 are OBSOLETE.

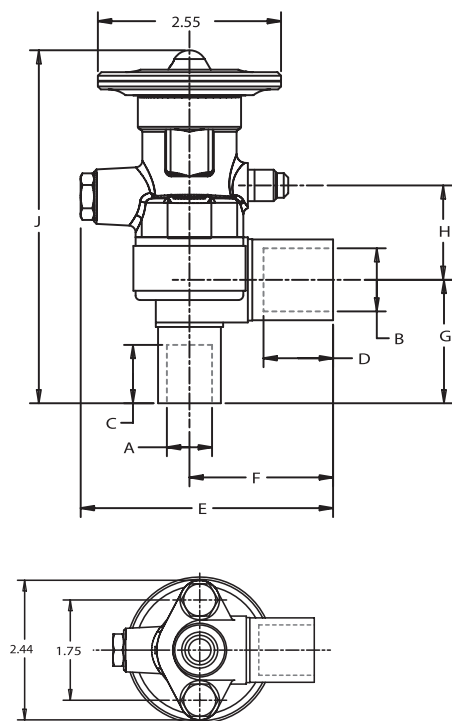
### LCL (LA) Charge Codes

| Saturated Suction | Refrigerant          |        |                      |        |                      |        |
|-------------------|----------------------|--------|----------------------|--------|----------------------|--------|
|                   | R-134A               |        | R-22                 |        | R-404A/R-507         |        |
|                   | Required Suction Gas |        | Required Suction Gas |        | Required Suction Gas |        |
| TEMP.             | 45°F                 | 65°F   | 45°F                 | 65°F   | 45°F                 | 65°F   |
| 40°F              | --                   | B (GL) | --                   | A (CL) | --                   | --     |
| 30°F              | B (GL)               | B (GL) | --                   | A (CL) | --                   | A (CL) |
| 20°F              | B (GL)               | C (UL) | A (CL)               | B (GL) | --                   | A (CL) |
| 10°F              | B (GL)               | C (UL) | B (GL)               | B (GL) | A (CL)               | B (GL) |
| 0°F               | C (UL)               | C (UL) | B (GL)               | B (GL) | A (CL)               | B (GL) |
| -10°F             | C (UL)               | C (UL) | B (GL)               | C (UL) | B (GL)               | B (GL) |
| -20°F             | C (UL)               | C (UL) | B (GL)               | C (UL) | B (GL)               | C (UL) |
| -30°F             | C (UL)               | C (UL) | C (UL)               | C (UL) | B (GL)               | C (UL) |
| -40°F             | C (UL)               | C (UL) | C (UL)               | C (UL) | B (GL)               | C (UL) |

( ) Denotes LA Series valve charge code.

### Dimensional Data

#### Angle



### LCL(E) Dimensional Data (in)

#### LCL Angle

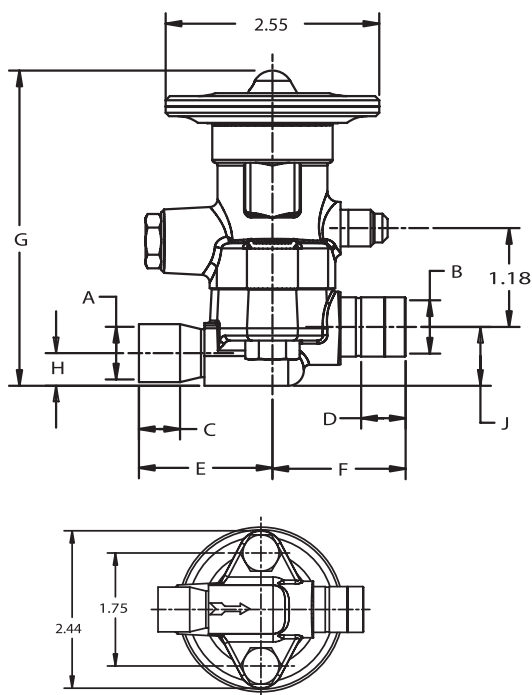
| Connection Size |         | A    | B    | C MIN. | D MIN. | E    | F    | G    | H    | J    |
|-----------------|---------|------|------|--------|--------|------|------|------|------|------|
| Inlet           | Outlet  |      |      |        |        |      |      |      |      |      |
| 3/8 SAE         | 1/2 SAE |      |      |        |        | 3.06 | 1.50 | 1.13 | 1.20 | 4.14 |
| 3/8 SAE         | 5/8 SAE |      |      |        |        | 3.19 | 1.63 | 1.13 | 1.20 | 4.14 |
| 1/2 SAE         | 5/8 SAE |      |      |        |        | 3.19 | 1.63 | 1.38 | 1.20 | 4.39 |
| 1/4 ODF         | 3/8 ODF | 0.25 | 0.38 | 0.31   | 0.31   | 2.91 | 1.34 | 0.94 | 1.20 | 3.95 |
| 3/8 ODF         | 1/2 ODF | 0.38 | 0.50 | 0.31   | 0.38   | 3.03 | 1.47 | 1.06 | 1.20 | 4.11 |
| 3/8 ODF         | 5/8 ODF | 0.38 | 0.63 | 0.31   | 0.50   | 3.16 | 1.59 | 1.06 | 1.20 | 4.11 |
| 1/2 ODF         | 5/8 ODF | 0.50 | 0.63 | 0.38   | 0.50   | 3.16 | 1.59 | 1.90 | 1.20 | 4.20 |
| 5/8 ODF         | 7/8 ODF | 0.63 | 0.88 | 0.50   | 0.75   | 3.56 | 2.00 | 1.69 | 1.20 | 4.83 |

#### LCL Straight Thru

|         |           |      |      |      |      |      |      |      |      |      |
|---------|-----------|------|------|------|------|------|------|------|------|------|
| 3/8 SAE | 1/2 SAE   |      |      |      |      | 1.78 | 1.98 | 3.70 | 0.38 | 0.69 |
| 3/8 SAE | 5/8 SAE   |      |      |      |      | 1.78 | 2.16 | 3.70 | 0.38 | 0.69 |
| 1/2 SAE | 1/2 SAE   |      |      |      |      | 1.97 | 1.56 | 3.70 | 0.38 | 0.69 |
| 3/8 ODF | 1/2 ODF   | 0.38 | 0.50 | 0.31 | 0.38 | 1.41 | 1.58 | 3.69 | 0.38 | 0.69 |
| 3/8 ODF | 5/8 ODF   | 0.38 | 0.63 | 0.31 | 0.50 | 1.41 | 1.63 | 3.69 | 0.36 | 0.67 |
| 1/2 ODF | 1/2 ODF   | 0.50 | 0.50 | 0.38 | 0.38 | 1.41 | 1.56 | 3.70 | 0.38 | 0.69 |
| 1/2 ODF | 5/8 ODF   | 0.50 | 0.63 | 0.38 | 0.50 | 1.59 | 1.63 | 3.69 | 0.36 | 0.67 |
| 5/8 ODF | 5/8 ODF   | 0.63 | 0.63 | 0.50 | 0.50 | 1.59 | 1.63 | 3.70 | 0.38 | 0.69 |
| 5/8 ODF | 7/8 ODF   | 0.63 | 0.88 | 0.50 | 0.75 | 1.59 | 1.94 | 3.70 | 0.38 | 0.69 |
| 5/8 ODF | 1-1/8 ODF | 0.88 | 1.13 | 0.50 | 0.91 | 1.59 | 2.38 | 3.70 | 0.38 | 0.69 |
| 7/8 ODF | 1-1/8 ODF | 0.88 | 1.13 | 0.75 | 0.91 | 1.94 | 2.38 | 3.81 | 0.38 | 0.69 |

Allow 2-1/8" above valve for removal of power assembly.

#### Straight-Thru



#### Remote Bulb Dimensions

| Capillary<br>Tubing Length<br>(Ft) | Standard Remote Bulb |         |
|------------------------------------|----------------------|---------|
|                                    | Diameter             | Length  |
| 5                                  | 5/8                  | 3-1/16  |
| 10                                 |                      | 3-9/16  |
| 15 or 20                           |                      | 4-13/16 |

The ACP is designed for small cooling units where the heat load is reasonably constant. The ACP is ideal for room air conditioners, domestic refrigerators, drink dispensers, food dispensers, ice cream cabinets, bottle coolers, home freezers, ice cube makers, ice cream freezers, and milk coolers.

### Features

- Friction-free floating design
- Can be used as a small capacity hot gas bypass valve
- Fully adjustable from 0-80 psig (factory setting 40 psig)
- Wrench flats on inlets and outlets

### Options

- Internal or external equalizer
- SAE or ODF connections



### Specifications

- Maximum working pressure: 500 psig
- Maximum working temperature: 300°F
- UL/CUL file number: SA5312

### Nomenclature example: ACPE 6 SAE EE 1/4 x 3/8 ODF ANG

| ACP          | E                        | 6                                          | SAE EE                     | 1/4 x 3/8                       | ODF             | ANG                                |
|--------------|--------------------------|--------------------------------------------|----------------------------|---------------------------------|-----------------|------------------------------------|
| Valve Series | Equalizer                | Port Size<br>(diameter)<br>see table below | External<br>Equalizer Type | Inlet x Outlet Connection Sizes | Connection Type | Body Style                         |
|              | E=External<br>(optional) |                                            |                            |                                 | ODF or SAE      | ANG = Angle<br>S/T = Straight-thru |

### Ordering Information

| PCN    | Description                    | PCN    | Description                     |
|--------|--------------------------------|--------|---------------------------------|
| 046838 | ACP 1 IE 1/4 x 3/8-1/2 SAE ANG | 049204 | ACP 5 IE 3/8 x 3/8-1/2 SAE ANG  |
| 047652 | ACP 6 IE 1/4 x 3/8 ODF ANG     | 047653 | ACP 6 IE 1/4 x 3/8 SAE ANG      |
| 047680 | ACP 1 IE 1/4 x 3/8 ODF ANG     | 057233 | ACP 1 IE 1/4 x 3/8 ODF S/T      |
| 056240 | ACP 1 IE 1/4 X 3/8 SAE ANG     | 065922 | ACP 6 IE 3/8 x 3/8 ODF ANG      |
| 046839 | ACP 2 IE 1/4 X 3/8 SAE ANG     | 047654 | ACP 7 IE 3/8 x 1/2 ODF ANG      |
| 047651 | ACP 2 IE 1/4 x 3/8 ODF ANG     | 047285 | ACP 7 IE 3/8 x 3/8-1/2 SAE ANG  |
| 047283 | ACP 3 IE 1/4 X 3/8 ODF ANG     | 047655 | ACP 8 IE 3/8 x 1/2 ODF ANG      |
| 046840 | ACP 3 IE 1/4 x 3/8 SAE ANG     | 047657 | ACP 9 IE 3/8 X 1/2 ODF ANG      |
| 047105 | ACP 4 IE 1/4 x 3/8 ODF ANG     | 057209 | ACP 9 IE 3/8 X 3/8 ODF ANG      |
| 047101 | ACP 4 IE 1/4 X 3/8 SAE ANG     | 057771 | ACP 9 IE 1/2 x 5/8 ODF ANG      |
| 047284 | ACP 5 IE 1/4 x 3/8 ODF ANG     | 052773 | ACP 9 IE 1/4 X 3/8 ODF ANG      |
| 047332 | ACP 5 IE 1/4 X 3/8 SAE ANG     | 047658 | ACP 9 IE 3/8 x 3/8-1/2 SAE ANG  |
| 053374 | ACP 5 IE 3/8 x 3/8 ODF ANG     | 057327 | ACP 9 IE 3/8 x 3/8 SAE S/T      |
|        |                                | 047280 | ACPE 1 SAE EE 1/4 x 3/8 SAE S/T |
|        |                                | 053231 | ACPE 1 SAE EE 1/4 x 3/8 ODF ANG |
|        |                                | 047790 | ACPE 7 SAE EE 3/8 x 1/2 ODF ANG |
|        |                                | 048657 | ACPE 9 SAE EE 3/8 x 1/2 ODF S/T |
|        |                                | 058674 | ACPE 9 SAE EE 1/2 x 5/8 ODF S/T |
|        |                                | 057017 | ACPE 9 ODF EE 3/8 x 1/2 ODF ANG |

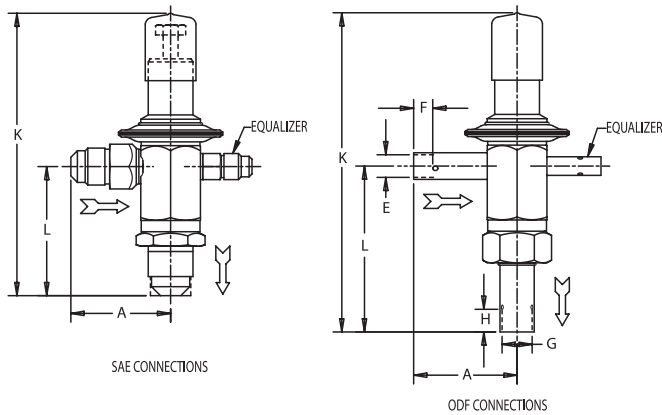
### ACP(E)- Nominal\* Capacity Table in Tons

| Valve   | Port Diameter<br>(in) | R-12/R-134a                      | R-407C/R-22 | R-502/<br>R-404A/R-507 |
|---------|-----------------------|----------------------------------|-------------|------------------------|
|         |                       | Pressure Drop Across Valve – PSI |             |                        |
|         |                       | 60                               | 100         | 100                    |
| ACP(E)1 | 0.05                  | 0.31                             | 0.44        | 0.29                   |
| ACP(E)2 | 0.06                  | 0.41                             | 0.57        | 0.38                   |
| ACP(E)3 | 0.10                  | 0.65                             | 0.91        | 0.61                   |
| ACP(E)4 | 0.11                  | 0.90                             | 1.30        | 0.87                   |
| ACP(E)5 | 0.13                  | 1.40                             | 1.96        | 1.31                   |
| ACP(E)6 | 0.14                  | 1.90                             | 2.67        | 1.78                   |
| ACP(E)7 | 0.17                  | 2.30                             | 3.28        | 2.19                   |
| ACP(E)8 | 0.20                  | 2.70                             | 3.75        | 2.50                   |
| ACP(E)9 | 0.23                  | 3.80                             | 5.32        | 3.55                   |

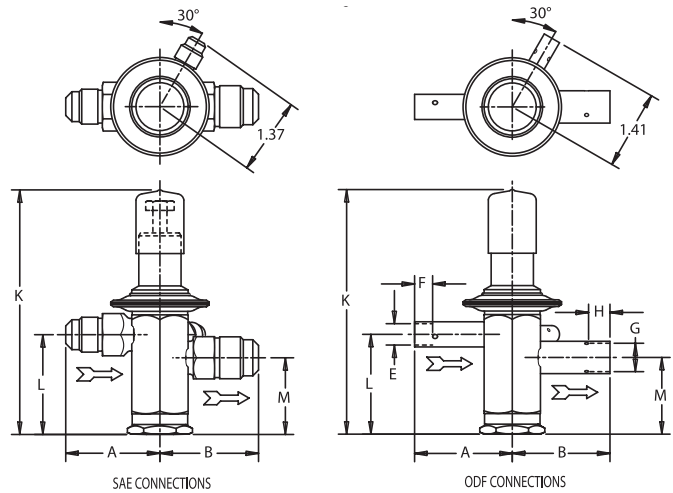
\*All capacities shown are at 100°F Condensing, 40°F Evaporator Temperature, with a solid column of liquid at the valve inlet.

### ACP Dimensional Data

ACP Angle



ACP Straight-Thru



### Dimensional Data (in)

| ACP(E)<br>Valve Type | Inlet | Outlet    | A    | B | E<br>DIA. | F<br>MIN. | G<br>DIA. | H<br>MIN. | K    | L    |
|----------------------|-------|-----------|------|---|-----------|-----------|-----------|-----------|------|------|
| Angle<br>SAE         | 1/4   | 3/8 - 1/2 | 1.50 | — | —         | —         | —         | —         | 4.50 | 2.13 |
|                      | 3/8   |           | 1.64 |   |           |           |           |           |      |      |
|                      | 1/2   |           | 1.72 |   |           |           |           |           |      |      |
|                      | 1/4   | 5/8       | 1.50 |   |           |           |           |           | 4.61 | 2.23 |
|                      | 3/8   |           | 1.64 |   |           |           |           |           |      |      |
|                      | 1/2   |           | 1.72 |   |           |           |           |           |      |      |
| Angle<br>ODF         | 1/4   | 3/8       | 1.25 | — | 0.25      | 0.32      | 0.37      | 0.32      | 4.55 | 2.17 |
|                      | 3/8   |           | 1.19 |   | 0.37      | 0.32      |           | 0.38      |      |      |
|                      | 1/2   | 5/8       |      |   | 0.50      | 0.38      | 0.62      | 0.50      | 4.73 | 2.36 |
|                      | 5/8   |           | 1.38 |   | 0.62      | 0.50      |           |           |      |      |
|                      | 1/4   |           | 1.25 |   | 0.25      | 0.32      |           |           |      |      |
|                      | 3/8   |           | 1.19 |   | 0.37      | 0.32      |           |           |      |      |
|                      | 1/4   |           | 1/2  |   | 1.25      | 0.25      | 0.32      | 0.50      | 0.38 | 4.55 |
|                      | 1/2   | 7/8       | 1.19 |   | 0.50      | 0.38      | 0.87      | 0.75      | 5.11 | 2.73 |

| ACP(E)<br>Valve Type | Inlet | Outlet | A    | E<br>B | F<br>DIA. | G<br>MIN. | H<br>DIA. | MIN. | K    | L    | M    |
|----------------------|-------|--------|------|--------|-----------|-----------|-----------|------|------|------|------|
| Straight-Thru<br>SAE | 1/4   | 3/8    | 1.50 | 1.64   |           | —         | —         | —    | 4.25 | 1.88 | 1.48 |
|                      | 3/8   |        | 1.64 |        |           |           |           |      |      |      |      |
|                      | 1/2   |        | 1.72 |        |           |           |           |      |      |      |      |
|                      | 1/4   | 5/8    | 1.50 | 1.98   |           |           |           |      |      |      |      |
|                      | 3/8   |        | 1.64 |        |           |           |           |      |      |      |      |
|                      | 1/2   |        | 1.72 |        |           |           |           |      |      |      |      |
| Straight-Thru<br>ODF | 1/4   | 3/8    | 1.25 | 1.19   | 0.25      | 0.32      | 0.37      | 0.32 |      |      |      |
|                      | 3/8   |        | 1.19 |        | 0.37      | 0.32      |           | 0.50 |      |      |      |
|                      | 1/2   | 5/8    |      | 1.38   | 0.50      | 0.38      | 0.62      | 0.50 |      |      |      |
|                      | 5/8   |        | 1.38 |        | 0.62      | 0.50      |           |      |      |      |      |
|                      | 1/4   |        | 1.25 | 1.19   | 0.25      | 0.32      | 0.50      | 0.38 |      |      |      |
|                      | 3/8   |        | 1.19 |        | 0.37      | 0.32      |           |      |      |      |      |
|                      | 1/4   | 1/2    | 1.25 | 1.19   | 0.25      | 0.32      | 0.50      | 0.38 |      |      |      |
|                      | 1/2   | 7/8    | 1.19 | 1.75   | 0.50      | 0.38      | 0.87      | 0.75 |      |      |      |
|                      | 3/8   |        |      |        | 0.37      | 0.32      | 0.87      | 0.75 |      |      |      |

### Liquid Injection Valves Series 935

#### Exchangeable Power Assemblies and Orifices

#### Applications

- Series 935 valves are applied as temperature controls.
- Applications include:
  - Desuperheating of discharge gas on compressors. In this case bulbs are mounted on the high pressure outlet of the compressor
  - Control of compressor oil temperatures
- Series 935 valves shall not be used to control superheat

#### Features

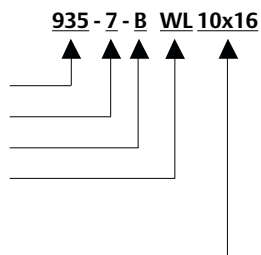
- Modular design for economical logistics and easy assembly and servicing
- Very good stability because of the large forces generated by the large diaphragm diameter
- High-quality materials and processes for high reliability and long lifetime
- Combinations of different charges with various orifice springs cover a very large application range
- PS: 46 / 31 bar with XB / XC power assembly
- TS: -45 ... +65°C
- No CE marking according art. 3.3 PED 97/23 EC
- Non-standard connection sizes see last page of this chapter



935

#### Type Code

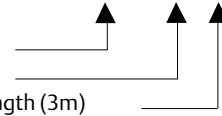
Valve Series  
Temperature Code  
Capacity Code  
Flange Style  
WL=Angle Style  
DL=Straight through  
Connection Size



#### Type Code

Power Assembly  
Charge Code  
Capillary Tube Length (3m)

**XB1019 YL - 2A**



| Series               |   | Nominal Capacity Q <sub>n</sub><br>kW |      |                |       |       | Orifice         | Standard Flange, Angle<br>Solder/ODF |                                 | Power As-<br>sembly      |
|----------------------|---|---------------------------------------|------|----------------|-------|-------|-----------------|--------------------------------------|---------------------------------|--------------------------|
|                      |   | R134a                                 | R22  | R404A/<br>R507 | R407C | R407F |                 | mm                                   | inch                            |                          |
| 935- *<br><br>↑      | A | 4.0                                   | 5.2  | 3.8            | 5.6   | 5.8   | X10-*01         | C 501 - 5 mm<br>10 x 16              | C 501 - 5<br>⅜ x ⅜              | XB1019 - * - 2A<br><br>↑ |
|                      | B | 7.8                                   | 10.1 | 7.4            | 10.9  | 11.3  | X10-*02         |                                      |                                 |                          |
|                      | C | 11.1                                  | 14.2 | 10.3           | 15.4  | 15.9  | X10-*03         |                                      |                                 |                          |
|                      | D | 16.3                                  | 21.1 | 15.6           | 22.8  | 23.6  | X10-*04         | C 501 - 7 mm<br>12 x 16              | C 501 - 7<br>½ x ⅝              |                          |
|                      | E | 22.5                                  | 28.9 | 21.0           | 31.2  | 32.3  | X10-*05         |                                      |                                 |                          |
|                      | G | 32.0                                  | 41.2 | 29.9           | 44.5  | 46.1  | X10-*06         | A 576 mm<br>16 x 22<br>(22 x 28 ODM) | A 576<br>⅝ x ⅝<br>(⅞ x 1-⅞ ODM) |                          |
|                      | X | 46.6                                  | 60.0 | 43.5           | 64.9  | 67.1  | X10-*07         |                                      |                                 |                          |
| * = Temperature Code |   | Temperature Range °C                  |      |                |       |       | * = Spring Code |                                      |                                 | * = Charge Code          |
| 3                    |   | -1 / +17                              |      |                |       |       | B               |                                      |                                 | UL                       |
| 6                    |   | +14 / +38                             |      |                |       |       | C               |                                      |                                 | KL                       |
| 7                    |   | + 36/ +50                             |      |                |       |       | A               |                                      |                                 | YL                       |
| 105                  |   | +44 / +70                             |      |                |       |       | C               |                                      |                                 | YL                       |
| 106                  |   | +66 / +94                             |      |                |       |       | C               |                                      |                                 | JL                       |
| 100                  |   | +94 / +121                            |      |                |       |       | C               |                                      |                                 | LL                       |

Nominal capacity (Q<sub>n</sub>) is based on the following conditions:

| Refrigerant           | Evaporating temperature | Condensing temperature                | Subcooling |
|-----------------------|-------------------------|---------------------------------------|------------|
| R407C                 | +4°C dew point          | +38°C bubble point<br>+43°C dew point | 1K         |
| R134a,<br>R404A, R507 | +4°C                    | +38°C                                 | 1K         |

### Spare Parts

| Description                                                                                                 | Type                       | Part No.                         |
|-------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------------|
| Gasket Set for 935 Series Valves                                                                            | X 13455 -1                 | <b>027 579</b>                   |
| Service Tool for 935 Series                                                                                 | X 99999                    | <b>800 005</b>                   |
| Steel screws for following flange types:<br>C501, 9761, 6346, A576<br>9148, 9149, 9152, 9153, 10331, 10332  | Screw ST 32<br>Screw ST 48 | <b>803 573</b><br><b>803 574</b> |
| Bronze screws for following flange types:<br>C501, 9761, 6346, A576<br>9148, 9149, 9152, 9153, 10331, 10332 | Screw BZ 32<br>Screw BZ 48 | <b>803 575</b><br><b>803 576</b> |

### Correction Tables for Series 935

Valve selection for operating conditions other than nominal conditions:

$$Q_n = Q_o \times K_t \times K_p$$

$Q_n$ : Nominal valve capacity

$Q_o$ : Required cooling or desuperheating capacity

$K_t$ : Correction factor for evaporating and liquid temperature

$K_p$ : Correction factor for pressure drop at valve

| Liquid Temperature entering Valve °C | R134a |      |      |      | Correction Factor $k_t$ Evaporating Temperature (°C) |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------------------|-------|------|------|------|------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
|                                      | +30   | +25  | +20  | +15  | +10                                                  | +5   | 0    | -5   | -10  | -15  | -20  | -25  | -30  |      |      |      |
| +60                                  | 1.22  | 1.25 | 1.27 | 1.30 | 1.33                                                 | 1.36 | 1.40 | 1.44 | 1.48 | 1.51 | 1.56 | 1.61 | 1.67 |      |      |      |
| +55                                  | 1.14  | 1.16 | 1.18 | 1.21 | 1.23                                                 | 1.26 | 1.29 | 1.33 | 1.36 | 1.39 | 1.43 | 1.47 | 1.52 |      |      |      |
| +50                                  | 1.07  | 1.08 | 1.10 | 1.13 | 1.15                                                 | 1.17 | 1.20 | 1.23 | 1.26 | 1.28 | 1.32 | 1.36 | 1.39 |      |      |      |
| +45                                  | 1.00  | 1.02 | 1.04 | 1.06 | 1.08                                                 | 1.10 | 1.12 | 1.15 | 1.17 | 1.19 | 1.22 | 1.26 | 1.29 |      |      |      |
| +40                                  | 0.93  | 0.96 | 0.98 | 0.99 | 1.01                                                 | 1.03 | 1.05 | 1.08 | 1.10 | 1.12 | 1.14 | 1.17 | 1.20 |      |      |      |
| +35                                  | 0.90  | 0.91 | 0.92 | 0.94 | 0.96                                                 | 0.97 | 0.99 | 1.01 | 1.03 | 1.05 | 1.07 | 1.10 | 1.12 |      |      |      |
| +30                                  | 0.85  | 0.86 | 0.88 | 0.89 | 0.91                                                 | 0.92 | 0.94 | 0.96 | 0.98 | 0.99 | 1.01 | 1.03 | 1.06 |      |      |      |
| +25                                  |       | 0.82 | 0.83 | 0.85 | 0.86                                                 | 0.87 | 0.89 | 0.91 | 0.92 | 0.94 | 0.95 | 0.97 | 1.00 |      |      |      |
| +20                                  |       |      | 0.80 | 0.81 | 0.82                                                 | 0.83 | 0.85 | 0.89 | 0.88 | 0.89 | 0.91 | 0.92 | 0.94 |      |      |      |
| +15                                  |       |      |      | 0.77 | 0.78                                                 | 0.79 | 0.81 | 0.82 | 0.84 | 0.84 | 0.86 | 0.88 | 0.89 |      |      |      |
| +10                                  |       |      |      |      | 0.75                                                 | 0.76 | 0.77 | 0.78 | 0.80 | 0.81 | 0.82 | 0.84 | 0.85 |      |      |      |
| +5                                   |       |      |      |      |                                                      | 0.73 | 0.74 | 0.75 | 0.76 | 0.77 | 0.78 | 0.80 | 0.81 |      |      |      |
| 0                                    |       |      |      |      |                                                      |      | 0.71 | 0.72 | 0.73 | 0.74 | 0.75 | 0.76 | 0.78 |      |      |      |
| -5                                   |       |      |      |      |                                                      |      |      | 0.69 | 0.70 | 0.71 | 0.72 | 0.73 | 0.74 |      |      |      |
| -10                                  |       |      |      |      |                                                      |      |      |      | 0.68 | 0.68 | 0.69 | 0.70 | 0.71 |      |      |      |
| Correction Factor $k_{\Delta p}$     |       |      |      |      |                                                      |      |      |      |      |      |      |      |      |      |      |      |
| $\Delta p$ (bar)                     | 0.5   | 1.0  | 1.5  | 2.0  | 2.5                                                  | 3.0  | 3.5  | 4.0  | 4.5  | 5.0  | 5.5  | 6.0  | 6.5  | 7.0  | 7.5  | 8.0  |
| $K_{\Delta p}$                       | 3.50  | 2.48 | 2.02 | 1.75 | 1.57                                                 | 1.43 | 1.32 | 1.24 | 1.17 | 1.11 | 1.06 | 1.01 | 0.97 | 0.94 | 0.90 | 0.88 |
| $\Delta p$ (bar)                     | 8.5   | 9.0  | 9.5  | 10.0 | 10.5                                                 | 11.0 | 11.5 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.0 | 18.0 | 19.0 | 20.0 |
| $K_{\Delta p}$                       | 0.85  | 0.83 | 0.80 | 0.78 | 0.76                                                 | 0.75 | 0.73 | 0.72 | 0.69 | 0.66 | 0.64 | 0.62 | 0.60 | 0.58 | 0.57 | 0.55 |

| Liquid Temperature entering Valve °C | R404A |      |      |      | Correction Factor kt<br>Evaporating Temperature (°C) |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------------------|-------|------|------|------|------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
|                                      | +30   | +25  | +20  | +15  | +10                                                  | +5   | 0    | -5   | -10  | -15  | -20  | -25  | -30  | -35  | -40  | -45  |
| +60                                  | 1.56  | 1.59 | 1.64 | 1.69 | 1.74                                                 | 1.81 | 1.88 | 1.96 | 2.06 | 2.16 | 2.28 | 2.42 | 2.57 | 2.75 | 2.95 | 3.19 |
| +55                                  | 1.32  | 1.35 | 1.38 | 1.42 | 1.46                                                 | 1.50 | 1.55 | 1.61 | 1.68 | 1.75 | 1.83 | 1.92 | 2.01 | 2.13 | 2.25 | 2.39 |
| +50                                  | 1.16  | 1.18 | 1.20 | 1.23 | 1.26                                                 | 1.30 | 1.34 | 1.38 | 1.43 | 1.48 | 1.54 | 1.61 | 1.68 | 1.75 | 1.84 | 1.94 |
| +45                                  | 1.04  | 1.05 | 1.07 | 1.10 | 1.12                                                 | 1.15 | 1.18 | 1.22 | 1.26 | 1.30 | 1.34 | 1.39 | 1.45 | 1.51 | 1.57 | 1.64 |
| +40                                  | 0.94  | 0.96 | 0.97 | 0.99 | 1.02                                                 | 1.04 | 1.07 | 1.09 | 1.13 | 1.16 | 1.20 | 1.24 | 1.28 | 1.33 | 1.38 | 1.43 |
| +35                                  | 0.87  | 0.88 | 0.90 | 0.91 | 0.93                                                 | 0.95 | 0.97 | 1.00 | 1.02 | 1.05 | 1.08 | 1.11 | 1.15 | 1.19 | 1.23 | 1.27 |
| +30                                  | 0.81  | 0.82 | 0.83 | 0.84 | 0.86                                                 | 0.88 | 0.90 | 0.92 | 0.94 | 0.96 | 0.99 | 1.02 | 1.05 | 1.08 | 1.11 | 1.15 |
| +25                                  |       | 0.76 | 0.77 | 0.79 | 0.80                                                 | 0.82 | 0.83 | 0.85 | 0.87 | 0.89 | 0.92 | 0.94 | 0.97 | 0.99 | 1.02 | 1.05 |
| +20                                  |       |      | 0.73 | 0.74 | 0.75                                                 | 0.77 | 0.78 | 0.80 | 0.81 | 0.83 | 0.85 | 0.87 | 0.90 | 0.92 | 0.95 | 0.97 |
| +15                                  |       |      |      | 0.70 | 0.71                                                 | 0.72 | 0.73 | 0.75 | 0.76 | 0.78 | 0.80 | 0.82 | 0.84 | 0.86 | 0.88 | 0.90 |
| +10                                  |       |      |      |      | 0.67                                                 | 0.68 | 0.69 | 0.71 | 0.72 | 0.74 | 0.75 | 0.77 | 0.79 | 0.81 | 0.83 | 0.85 |
| +5                                   |       |      |      |      |                                                      | 0.65 | 0.66 | 0.67 | 0.68 | 0.70 | 0.71 | 0.73 | 0.74 | 0.76 | 0.78 | 0.80 |
| 0                                    |       |      |      |      |                                                      |      | 0.63 | 0.64 | 0.65 | 0.66 | 0.68 | 0.69 | 0.71 | 0.72 | 0.74 | 0.75 |
| -5                                   |       |      |      |      |                                                      |      |      | 0.61 | 0.62 | 0.63 | 0.65 | 0.66 | 0.67 | 0.69 | 0.70 | 0.72 |
| -10                                  |       |      |      |      |                                                      |      |      |      | 0.60 | 0.61 | 0.62 | 0.63 | 0.64 | 0.65 | 0.67 | 0.68 |
| Correction Factor kΔp                |       |      |      |      |                                                      |      |      |      |      |      |      |      |      |      |      |      |
| Δp (bar)                             | 0.5   | 1.0  | 1.5  | 2.0  | 2.5                                                  | 3.0  | 3.5  | 4.0  | 4.5  | 5.0  | 5.5  | 6.0  | 6.5  | 7.0  | 8.0  | 9.0  |
| KΔp                                  | 4.55  | 3.21 | 2.62 | 2.27 | 2.03                                                 | 1.86 | 1.72 | 1.61 | 1.52 | 1.44 | 1.37 | 1.31 | 1.26 | 1.21 | 1.14 | 1.07 |
| Δp (bar)                             | 10.0  | 11.0 | 12.0 | 13.0 | 14.0                                                 | 15.0 | 16.0 | 17.0 | 18.0 | 19.0 | 20.0 | 21.0 | 22.0 | 23.0 | 24.0 | 25.0 |
| KΔp                                  | 1.02  | 0.97 | 0.93 | 0.89 | 0.86                                                 | 0.83 | 0.80 | 0.78 | 0.76 | 0.74 | 0.72 | 0.70 | 0.69 | 0.67 | 0.66 | 0.64 |

| Liquid Temperature entering Valve °C | R407C |      |      |      | Correction Factor kt<br>Evaporating Temperature (°C) |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------------------|-------|------|------|------|------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
|                                      | +30   | +25  | +20  | +15  | +10                                                  | +5   | 0    | -5   | -10  | -15  | -20  | -25  |      |      |      |      |
| +55                                  | 1.20  | 1.21 | 1.23 | 1.26 | 1.28                                                 | 1.31 | 1.34 | 1.37 | 1.40 | 1.44 | 1.48 | 1.52 |      |      |      |      |
| +50                                  | 1.10  | 1.11 | 1.13 | 1.15 | 1.17                                                 | 1.19 | 1.22 | 1.24 | 1.27 | 1.30 | 1.33 | 1.37 |      |      |      |      |
| +45                                  | 1.02  | 1.03 | 1.05 | 1.06 | 1.08                                                 | 1.10 | 1.12 | 1.14 | 1.17 | 1.19 | 1.22 | 1.25 |      |      |      |      |
| +40                                  | 0.95  | 0.96 | 0.98 | 0.99 | 1.01                                                 | 1.02 | 1.04 | 1.06 | 1.08 | 1.11 | 1.13 | 1.16 |      |      |      |      |
| +35                                  | 0.89  | 0.90 | 0.92 | 0.93 | 0.94                                                 | 0.96 | 0.98 | 0.99 | 1.01 | 1.03 | 1.05 | 1.07 |      |      |      |      |
| +30                                  | 0.85  | 0.85 | 0.87 | 0.88 | 0.89                                                 | 0.90 | 0.92 | 0.93 | 0.95 | 0.97 | 0.99 | 1.01 |      |      |      |      |
| +25                                  |       | 0.81 | 0.82 | 0.83 | 0.84                                                 | 0.85 | 0.87 | 0.88 | 0.90 | 0.91 | 0.93 | 0.95 |      |      |      |      |
| +20                                  |       |      | 0.78 | 0.79 | 0.80                                                 | 0.81 | 0.82 | 0.84 | 0.85 | 0.86 | 0.88 | 0.90 |      |      |      |      |
| +15                                  |       |      |      | 0.75 | 0.76                                                 | 0.77 | 0.78 | 0.80 | 0.81 | 0.82 | 0.84 | 0.85 |      |      |      |      |
| +10                                  |       |      |      |      | 0.73                                                 | 0.74 | 0.75 | 0.76 | 0.77 | 0.78 | 0.80 | 0.81 |      |      |      |      |
| +5                                   |       |      |      |      |                                                      | 0.71 | 0.72 | 0.73 | 0.74 | 0.75 | 0.76 | 0.77 |      |      |      |      |
| 0                                    |       |      |      |      |                                                      |      | 0.69 | 0.70 | 0.71 | 0.72 | 0.73 | 0.74 |      |      |      |      |
| -5                                   |       |      |      |      |                                                      |      |      | 0.67 | 0.68 | 0.69 | 0.70 | 0.71 |      |      |      |      |
| -10                                  |       |      |      |      |                                                      |      |      |      | 0.65 | 0.66 | 0.67 | 0.68 |      |      |      |      |
| Correction Factor kΔp                |       |      |      |      |                                                      |      |      |      |      |      |      |      |      |      |      |      |
| Δp (bar)                             | 0.5   | 1.0  | 1.5  | 2.0  | 2.5                                                  | 3.0  | 3.5  | 4.0  | 4.5  | 5.0  | 5.5  | 6.0  | 6.5  | 7.0  | 8.0  | 9.0  |
| KΔp                                  | 4.78  | 3.33 | 2.72 | 2.36 | 2.11                                                 | 1.92 | 1.78 | 1.67 | 1.57 | 1.49 | 1.42 | 1.36 | 1.31 | 1.26 | 1.18 | 1.11 |
| Δp (bar)                             | 10.0  | 11.0 | 12.0 | 13.0 | 14.0                                                 | 15.0 | 16.0 | 17.0 | 18.0 | 19.0 | 20.0 | 21.0 | 22.0 | 23.0 | 24.0 | 25.0 |
| KΔp                                  | 1.05  | 1.01 | 0.96 | 0.92 | 0.89                                                 | 0.86 | 0.83 | 0.81 | 0.79 | 0.76 | 0.75 | 0.73 | 0.71 | 0.70 | 0.68 | 0.67 |

Note: See beginning of this chapter for determining of conditions for systems with R407C.

| Liquid Temperature entering Valve °C | R507 |      |      |      | Correction Factor kt<br>Evaporating Temperature (°C) |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------------------|------|------|------|------|------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
|                                      | +30  | +25  | +20  | +15  | +10                                                  | +5   | 0    | -5   | -10  | -15  | -20  | -25  | -30  | -35  | -40  | -45  |
| +60                                  | 1.54 | 1.57 | 1.61 | 1.65 | 1.71                                                 | 1.76 | 1.83 | 1.90 | 1.98 | 2.08 | 2.18 | 2.30 | 2.43 | 2.58 | 2.75 | 2.95 |
| +55                                  | 1.30 | 1.33 | 1.36 | 1.39 | 1.43                                                 | 1.47 | 1.52 | 1.57 | 1.62 | 1.69 | 1.76 | 1.83 | 1.92 | 2.02 | 2.12 | 2.25 |
| +50                                  | 1.15 | 1.17 | 1.19 | 1.22 | 1.24                                                 | 1.28 | 1.31 | 1.35 | 1.40 | 1.44 | 1.49 | 1.55 | 1.61 | 1.68 | 1.76 | 1.84 |
| +45                                  | 1.03 | 1.05 | 1.07 | 1.09 | 1.11                                                 | 1.14 | 1.17 | 1.20 | 1.23 | 1.27 | 1.31 | 1.36 | 1.40 | 1.46 | 1.52 | 1.58 |
| +40                                  | 0.94 | 0.96 | 0.97 | 0.99 | 1.01                                                 | 1.03 | 1.06 | 1.08 | 1.11 | 1.14 | 1.17 | 1.21 | 1.25 | 1.29 | 1.34 | 1.39 |
| +35                                  | 0.87 | 0.88 | 0.90 | 0.91 | 0.93                                                 | 0.95 | 0.97 | 0.99 | 1.01 | 1.04 | 1.07 | 1.10 | 1.13 | 1.16 | 1.20 | 1.24 |
| +30                                  | 0.81 | 0.82 | 0.83 | 0.85 | 0.86                                                 | 0.88 | 0.89 | 0.91 | 0.93 | 0.96 | 0.98 | 1.01 | 1.03 | 1.06 | 1.09 | 1.13 |
| +25                                  |      | 0.77 | 0.78 | 0.79 | 0.80                                                 | 0.82 | 0.83 | 0.85 | 0.87 | 0.89 | 0.91 | 0.93 | 0.95 | 0.98 | 1.01 | 1.03 |
| +20                                  |      |      | 0.73 | 0.74 | 0.75                                                 | 0.77 | 0.78 | 0.79 | 0.81 | 0.83 | 0.85 | 0.87 | 0.89 | 0.91 | 0.93 | 0.96 |
| +15                                  |      |      |      | 0.70 | 0.71                                                 | 0.72 | 0.73 | 0.75 | 0.76 | 0.78 | 0.79 | 0.81 | 0.83 | 0.85 | 0.87 | 0.89 |
| +10                                  |      |      |      |      | 0.67                                                 | 0.68 | 0.69 | 0.70 | 0.72 | 0.73 | 0.74 | 0.76 | 0.78 | 0.79 | 0.81 | 0.83 |
| +5                                   |      |      |      |      |                                                      | 0.64 | 0.65 | 0.67 | 0.68 | 0.69 | 0.70 | 0.72 | 0.73 | 0.75 | 0.76 | 0.78 |
| 0                                    |      |      |      |      |                                                      |      | 0.62 | 0.63 | 0.64 | 0.65 | 0.66 | 0.68 | 0.69 | 0.70 | 0.72 | 0.73 |
| -5                                   |      |      |      |      |                                                      |      |      | 0.60 | 0.61 | 0.62 | 0.63 | 0.64 | 0.65 | 0.66 | 0.68 | 0.69 |
| -10                                  |      |      |      |      |                                                      |      |      |      | 0.58 | 0.59 | 0.60 | 0.61 | 0.62 | 0.63 | 0.64 | 0.65 |
| Correction Factor kΔp                |      |      |      |      |                                                      |      |      |      |      |      |      |      |      |      |      |      |
| Δp (bar)                             | 0.5  | 1.0  | 1.5  | 2.0  | 2.5                                                  | 3.0  | 3.5  | 4.0  | 4.5  | 5.0  | 5.5  | 6.0  | 6.5  | 7.0  | 8.0  | 9.0  |
| KΔp                                  | 4.63 | 3.27 | 2.67 | 2.31 | 2.07                                                 | 1.89 | 1.75 | 1.64 | 1.54 | 1.46 | 1.40 | 1.34 | 1.28 | 1.24 | 1.16 | 1.09 |
| Δp (bar)                             | 10.0 | 11.0 | 12.0 | 13.0 | 14.0                                                 | 15.0 | 16.0 | 17.0 | 18.0 | 19.0 | 20.0 | 21.0 | 22.0 | 23.0 | 24.0 | 25.0 |
| KΔp                                  | 1.03 | 0.99 | 0.94 | 0.91 | 0.87                                                 | 0.85 | 0.82 | 0.79 | 0.77 | 0.75 | 0.73 | 0.71 | 0.70 | 0.68 | 0.67 | 0.65 |









## R-407C Conventional Valves (Tons)– A Series and T Series

| Valve Type        | Nominal Rating | Evaporator Temperature           |       |       |       |       |       |                                  |       |       |       |       |       |                                  |       |       |       |       |       |
|-------------------|----------------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|
|                   |                | 50°F                             |       |       |       |       |       | 40°F                             |       |       |       |       |       | 20°F                             |       |       |       |       |       |
|                   |                | Pressure Drop Across Valve (PSI) |       |       |       |       |       | Pressure Drop Across Valve (PSI) |       |       |       |       |       | Pressure Drop Across Valve (PSI) |       |       |       |       |       |
|                   |                | 60                               | 80    | 100   | 125   | 150   | 175   | 60                               | 80    | 100   | 125   | 150   | 175   | 60                               | 80    | 100   | 125   | 150   | 175   |
| AA/AN/AFA         | 1/5            | 0.14                             | 0.16  | 0.18  | 0.20  | 0.22  | 0.24  | 0.14                             | 0.16  | 0.18  | 0.20  | 0.22  | 0.24  | 0.14                             | 0.16  | 0.18  | 0.20  | 0.22  | 0.24  |
| AA/AN/AAC/ANC/AFA | 1/4            | 0.25                             | 0.29  | 0.32  | 0.36  | 0.40  | 0.43  | 0.24                             | 0.28  | 0.31  | 0.35  | 0.38  | 0.41  | 0.23                             | 0.27  | 0.30  | 0.33  | 0.36  | 0.39  |
| AA/AN/AAC/ANC/AFA | 1/2            | 0.44                             | 0.51  | 0.57  | 0.64  | 0.70  | 0.75  | 0.43                             | 0.50  | 0.56  | 0.62  | 0.68  | 0.73  | 0.41                             | 0.47  | 0.53  | 0.59  | 0.65  | 0.70  |
| AA/AN/AAC/ANC/AFA | 1              | 0.70                             | 0.81  | 0.90  | 1.01  | 1.11  | 1.20  | 0.69                             | 0.80  | 0.89  | 1.00  | 1.09  | 1.18  | 0.66                             | 0.76  | 0.85  | 0.95  | 1.04  | 1.13  |
| AA/AN/AAC/ANC/AFA | 1-1/4          | 1.00                             | 1.15  | 1.29  | 1.44  | 1.58  | 1.71  | 0.98                             | 1.13  | 1.27  | 1.41  | 1.55  | 1.67  | 0.95                             | 1.10  | 1.23  | 1.37  | 1.50  | 1.62  |
| AA/AN/AAC/ANC/AFA | 2              | 1.48                             | 1.71  | 1.91  | 2.14  | 2.34  | 2.53  | 1.45                             | 1.67  | 1.87  | 2.09  | 2.29  | 2.48  | 1.39                             | 1.61  | 1.79  | 2.01  | 2.20  | 2.37  |
| AA/AN/AAC/ANC/AFA | 2-1/2          | 2.07                             | 2.39  | 2.67  | 2.99  | 3.27  | 3.54  | 2.04                             | 2.36  | 2.63  | 2.94  | 3.23  | 3.48  | 1.95                             | 2.25  | 2.52  | 2.81  | 3.08  | 3.33  |
| AA/AN/AAC/ANC/AFA | 3-1/4          | 2.54                             | 2.93  | 3.28  | 3.67  | 4.02  | 4.34  | 2.49                             | 2.88  | 3.21  | 3.59  | 3.94  | 4.25  | 2.39                             | 2.76  | 3.09  | 3.45  | 3.78  | 4.08  |
| AA/AN/AAC/ANC/AFA | 4              | 3.02                             | 3.49  | 3.90  | 4.36  | 4.78  | 5.16  | 2.96                             | 3.42  | 3.82  | 4.27  | 4.68  | 5.06  | 2.84                             | 3.28  | 3.67  | 4.10  | 4.49  | 4.85  |
| AA/AN/AAC/ANC/AFA | 5-1/4          | 4.12                             | 4.76  | 5.32  | 5.95  | 6.51  | 7.04  | 4.05                             | 4.68  | 5.23  | 5.85  | 6.40  | 6.92  | 3.89                             | 4.49  | 5.02  | 5.61  | 6.15  | 6.64  |
| TCLE              | 1/2            | 0.38                             | 0.44  | 0.49  | 0.55  | 0.60  | 0.65  | 0.37                             | 0.43  | 0.48  | 0.53  | 0.59  | 0.63  | 0.36                             | 0.42  | 0.46  | 0.52  | 0.57  | 0.61  |
| TCLE              | 1              | 0.71                             | 0.82  | 0.92  | 1.02  | 1.12  | 1.21  | 0.70                             | 0.81  | 0.90  | 1.01  | 1.11  | 1.20  | 0.67                             | 0.77  | 0.86  | 0.97  | 1.06  | 1.14  |
| TCLE              | 2              | 1.43                             | 1.65  | 1.85  | 2.06  | 2.26  | 2.44  | 1.41                             | 1.63  | 1.82  | 2.04  | 2.23  | 2.41  | 1.35                             | 1.56  | 1.74  | 1.95  | 2.13  | 2.31  |
| TCLE              | 3              | 2.64                             | 3.05  | 3.41  | 3.81  | 4.17  | 4.51  | 2.59                             | 2.99  | 3.34  | 3.74  | 4.10  | 4.42  | 2.49                             | 2.88  | 3.21  | 3.59  | 3.94  | 4.25  |
| TCLE              | 5              | 3.85                             | 4.45  | 4.97  | 5.56  | 6.09  | 6.58  | 3.77                             | 4.35  | 4.87  | 5.44  | 5.96  | 6.44  | 3.62                             | 4.18  | 4.67  | 5.23  | 5.72  | 6.18  |
| TCLE              | 7-1/2          | 5.58                             | 6.44  | 7.20  | 8.05  | 8.82  | 9.53  | 5.48                             | 6.33  | 7.07  | 7.91  | 8.66  | 9.36  | 5.26                             | 6.07  | 6.79  | 7.59  | 8.32  | 8.98  |
| TCLE              | 10             | 7.69                             | 8.88  | 9.93  | 11.10 | 12.16 | 13.13 | 7.55                             | 8.72  | 9.75  | 10.90 | 11.94 | 12.89 | 7.25                             | 8.37  | 9.36  | 10.46 | 11.46 | 12.38 |
| TCLE              | 12             | 9.27                             | 10.70 | 11.97 | 13.38 | 14.66 | 15.83 | 9.10                             | 10.51 | 11.75 | 13.13 | 14.39 | 15.54 | 8.74                             | 10.09 | 11.28 | 12.62 | 13.82 | 14.93 |
| TJL               | 11             | 8.22                             | 9.49  | 10.61 | 11.86 | 13.00 | 14.04 | 8.07                             | 9.32  | 10.42 | 11.65 | 12.76 | 13.78 | 7.75                             | 8.95  | 10.01 | 11.19 | 12.25 | 13.24 |
| TJL               | 14             | 10.48                            | 12.10 | 13.53 | 15.13 | 16.57 | 17.90 | 10.29                            | 11.88 | 13.28 | 14.85 | 16.27 | 17.57 | 9.88                             | 11.41 | 12.76 | 14.26 | 15.62 | 16.87 |

Note: Standard capacity is rated at 100F liquid inlet and 40F evaporator temperature; with 100 Psi pressure drop across the TXV per ARI 750-2001.

| Valve Type        | Nominal Rating | Evaporator Temperature           |      |       |       |       |       |                                  |      |      |      |      |       |                                  |      |      |      |      |      |
|-------------------|----------------|----------------------------------|------|-------|-------|-------|-------|----------------------------------|------|------|------|------|-------|----------------------------------|------|------|------|------|------|
|                   |                | 0°F                              |      |       |       |       |       | -20°F                            |      |      |      |      |       | -40°F                            |      |      |      |      |      |
|                   |                | Pressure Drop Across Valve (PSI) |      |       |       |       |       | Pressure Drop Across Valve (PSI) |      |      |      |      |       | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|                   |                | 60                               | 80   | 100   | 125   | 150   | 175   | 80                               | 100  | 125  | 150  | 175  | 200   | 80                               | 100  | 125  | 150  | 175  | 200  |
| AA/AN/AFA         | 1/5            | 0.11                             | 0.13 | 0.14  | 0.16  | 0.17  | 0.19  | 0.09                             | 0.10 | 0.11 | 0.12 | 0.13 | 0.14  | 0.05                             | 0.06 | 0.06 | 0.07 | 0.07 | 0.08 |
| AA/AN/AAC/ANC/AFA | 1/4            | 0.20                             | 0.23 | 0.26  | 0.29  | 0.32  | 0.34  | 0.15                             | 0.17 | 0.19 | 0.21 | 0.22 | 0.24  | 0.09                             | 0.10 | 0.11 | 0.12 | 0.13 | 0.14 |
| AA/AN/AAC/ANC/AFA | 1/2            | 0.35                             | 0.40 | 0.45  | 0.51  | 0.55  | 0.60  | 0.26                             | 0.29 | 0.33 | 0.36 | 0.38 | 0.41  | 0.17                             | 0.19 | 0.21 | 0.23 | 0.25 | 0.27 |
| AA/AN/AAC/ANC/AFA | 1              | 0.56                             | 0.65 | 0.72  | 0.81  | 0.89  | 0.96  | 0.42                             | 0.47 | 0.53 | 0.58 | 0.62 | 0.66  | 0.27                             | 0.30 | 0.34 | 0.37 | 0.40 | 0.43 |
| AA/AN/AAC/ANC/AFA | 1-1/4          | 0.80                             | 0.92 | 1.03  | 1.15  | 1.26  | 1.37  | 0.61                             | 0.68 | 0.76 | 0.84 | 0.90 | 0.96  | 0.38                             | 0.42 | 0.48 | 0.52 | 0.56 | 0.60 |
| AA/AN/AAC/ANC/AFA | 2              | 1.18                             | 1.36 | 1.52  | 1.70  | 1.87  | 2.02  | 0.90                             | 1.01 | 1.13 | 1.23 | 1.33 | 1.42  | 0.56                             | 0.63 | 0.70 | 0.77 | 0.83 | 0.89 |
| AA/AN/AAC/ANC/AFA | 2-1/2          | 1.65                             | 1.91 | 2.13  | 2.38  | 2.61  | 2.82  | 1.26                             | 1.41 | 1.58 | 1.73 | 1.86 | 1.99  | 0.79                             | 0.88 | 0.99 | 1.08 | 1.17 | 1.25 |
| AA/AN/AAC/ANC/AFA | 3-1/4          | 2.02                             | 2.33 | 2.61  | 2.92  | 3.19  | 3.45  | 1.54                             | 1.72 | 1.93 | 2.11 | 2.28 | 2.43  | 0.97                             | 1.08 | 1.21 | 1.33 | 1.43 | 1.53 |
| AA/AN/AAC/ANC/AFA | 4              | 2.40                             | 2.77 | 3.10  | 3.46  | 3.79  | 4.10  | 1.83                             | 2.05 | 2.29 | 2.51 | 2.71 | 2.89  | 1.15                             | 1.29 | 1.44 | 1.57 | 1.70 | 1.82 |
| AA/AN/AAC/ANC/AFA | 5-1/4          | 3.28                             | 3.79 | 4.23  | 4.73  | 5.19  | 5.60  | 2.50                             | 2.80 | 3.13 | 3.42 | 3.70 | 3.95  | 1.57                             | 1.76 | 1.96 | 2.15 | 2.32 | 2.48 |
| TCLE              | 1/2            | 0.30                             | 0.35 | 0.39  | 0.43  | 0.47  | 0.51  | 0.23                             | 0.26 | 0.29 | 0.31 | 0.34 | 0.36  | 0.14                             | 0.16 | 0.18 | 0.19 | 0.21 | 0.22 |
| TCLE              | 1              | 0.56                             | 0.65 | 0.72  | 0.81  | 0.89  | 0.96  | 0.43                             | 0.48 | 0.54 | 0.59 | 0.64 | 0.68  | 0.27                             | 0.30 | 0.34 | 0.37 | 0.40 | 0.43 |
| TCLE              | 2              | 1.14                             | 1.32 | 1.47  | 1.65  | 1.80  | 1.95  | 0.87                             | 0.97 | 1.09 | 1.19 | 1.29 | 1.38  | 0.55                             | 0.61 | 0.69 | 0.75 | 0.81 | 0.87 |
| TCLE              | 3              | 2.10                             | 2.42 | 2.71  | 3.03  | 3.32  | 3.59  | 1.60                             | 1.79 | 2.00 | 2.19 | 2.37 | 2.53  | 1.01                             | 1.13 | 1.26 | 1.38 | 1.49 | 1.60 |
| TCLE              | 5              | 3.06                             | 3.53 | 3.95  | 4.42  | 4.84  | 5.23  | 2.33                             | 2.61 | 2.91 | 3.19 | 3.45 | 3.68  | 1.47                             | 1.64 | 1.84 | 2.01 | 2.17 | 2.32 |
| TCLE              | 7-1/2          | 4.44                             | 5.13 | 5.73  | 6.41  | 7.02  | 7.58  | 3.38                             | 3.78 | 4.23 | 4.63 | 5.00 | 5.34  | 2.13                             | 2.38 | 2.66 | 2.92 | 3.15 | 3.37 |
| TCLE              | 10             | 6.12                             | 7.07 | 7.90  | 8.83  | 9.68  | 10.45 | 4.66                             | 5.21 | 5.83 | 6.38 | 6.89 | 7.37  | 2.93                             | 3.28 | 3.66 | 4.01 | 4.33 | 4.63 |
| TCLE              | 12             | 7.38                             | 8.52 | 9.53  | 10.65 | 11.67 | 12.60 | 5.62                             | 6.28 | 7.03 | 7.70 | 8.31 | 8.89  | 3.54                             | 3.96 | 4.43 | 4.85 | 5.24 | 5.60 |
| TJL               | 11             | 6.54                             | 7.55 | 8.44  | 9.44  | 10.34 | 11.17 | 4.98                             | 5.57 | 6.23 | 6.82 | 7.37 | 7.87  | 3.13                             | 3.50 | 3.91 | 4.29 | 4.63 | 4.95 |
| TJL               | 14             | 8.34                             | 9.63 | 10.77 | 12.04 | 13.19 | 14.24 | 6.35                             | 7.10 | 7.94 | 8.70 | 9.39 | 10.04 | 4.00                             | 4.47 | 5.00 | 5.48 | 5.92 | 6.32 |

## Refrigerant Liquid Temperature Valve Capacity Multiplier Correction Factors

|                                | Refrigerant Liquid Temperature °F |      |      |      |      |      |      |      |      |      |      |     |     |     |     |
|--------------------------------|-----------------------------------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|
|                                | 0                                 | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  | 110 | 120 | 130 | 140 |
| R-12 Correction Factor         | 1.60                              | 1.54 | 1.48 | 1.42 | 1.36 | 1.30 | 1.24 | 1.18 | 1.12 | 1.06 | 1.00 | .94 | .88 | .82 | .75 |
| R-134a Correction Factor       | 1.70                              | 1.63 | 1.56 | 1.49 | 1.42 | 1.36 | 1.29 | 1.21 | 1.14 | 1.07 | 1.00 | .93 | .85 | .78 | .71 |
| R-22 Correction Factor         | 1.56                              | 1.51 | 1.45 | 1.40 | 1.34 | 1.29 | 1.23 | 1.17 | 1.12 | 1.06 | 1.00 | .94 | .88 | .82 | .76 |
| R-404A/R-507 Correction Factor | 2.00                              | 1.90 | 1.80 | 1.70 | 1.60 | 1.50 | 1.40 | 1.30 | 1.20 | 1.10 | 1.00 | .90 | .80 | .70 | .50 |

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature of 0°F. However, they may be used for any evaporator temperature from -40°F to +40°F since the variation in the actual factors across this range is insignificant.

## R-410A Conventional Valves (Tons)– A Series

| Valve Type        | Nominal Rating | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|-------------------|----------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|                   |                | 50°F                             |      |      |      |      |      | 40°F                             |      |      |      |      |      | 20°F                             |      |      |      |      |      |
|                   |                | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|                   |                | 110                              | 140  | 160  | 210  | 245  | 285  | 110                              | 140  | 160  | 210  | 245  | 285  | 110                              | 140  | 160  | 210  | 245  | 285  |
| AA/AN/AAC/ANC/AFA | 1/4            | 0.34                             | 0.38 | 0.41 | 0.47 | 0.51 | 0.55 | 0.34                             | 0.38 | 0.41 | 0.47 | 0.51 | 0.55 | 0.33                             | 0.37 | 0.40 | 0.46 | 0.49 | 0.53 |
| AA/AN/AAC/ANC/AFA | 1/2            | 0.60                             | 0.68 | 0.72 | 0.83 | 0.90 | 0.97 | 0.59                             | 0.67 | 0.71 | 0.82 | 0.88 | 0.95 | 0.58                             | 0.65 | 0.70 | 0.80 | 0.87 | 0.93 |
| AA/AN/AAC/ANC/AFA | 1              | 0.96                             | 1.08 | 1.16 | 1.33 | 1.43 | 1.55 | 0.95                             | 1.07 | 1.15 | 1.31 | 1.42 | 1.53 | 0.93                             | 1.05 | 1.12 | 1.28 | 1.39 | 1.50 |
| AA/AN/AAC/ANC/AFA | 1-1/2          | 1.38                             | 1.56 | 1.66 | 1.91 | 2.06 | 2.22 | 1.36                             | 1.53 | 1.64 | 1.88 | 2.03 | 2.19 | 1.33                             | 1.50 | 1.60 | 1.84 | 1.98 | 2.14 |
| AA/AN/AAC/ANC/AFA | 2              | 2.03                             | 2.29 | 2.45 | 2.80 | 3.03 | 3.27 | 2.01                             | 2.27 | 2.42 | 2.78 | 3.00 | 3.24 | 1.96                             | 2.21 | 2.36 | 2.71 | 2.93 | 3.15 |
| AA/AN/AAC/ANC/AFA | 3              | 2.85                             | 3.22 | 3.44 | 3.94 | 4.25 | 4.59 | 2.82                             | 3.18 | 3.40 | 3.90 | 4.21 | 4.54 | 2.74                             | 3.09 | 3.30 | 3.79 | 4.09 | 4.41 |
| AA/AN/AAC/ANC/AFA | 4              | 3.49                             | 3.94 | 4.21 | 4.82 | 5.21 | 5.62 | 3.45                             | 3.89 | 4.16 | 4.77 | 5.15 | 5.55 | 3.36                             | 3.79 | 4.05 | 4.64 | 5.01 | 5.41 |
| AA/AN/AAC/ANC/AFA | 5              | 4.14                             | 4.67 | 4.99 | 5.72 | 6.18 | 6.66 | 4.10                             | 4.63 | 4.94 | 5.66 | 6.12 | 6.60 | 3.99                             | 4.50 | 4.81 | 5.51 | 5.95 | 6.42 |

Note: Standard capacity is rated at 100F liquid inlet and 40F evaporator temperature; with 160 Psi pressure drop across the TXV per ARI 750-2001.

| Valve Type        | Nominal Rating | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|-------------------|----------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|                   |                | 0°F                              |      |      |      |      |      | -20°F                            |      |      |      |      |      | -40°F                            |      |      |      |      |      |
|                   |                | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|                   |                | 140                              | 160  | 210  | 245  | 285  | 330  | 140                              | 160  | 210  | 245  | 285  | 330  | 140                              | 160  | 210  | 245  | 285  | 330  |
| AA/AN/AAC/ANC/AFA | 1/4            | 0.34                             | 0.36 | 0.42 | 0.45 | 0.49 | 0.52 | 0.24                             | 0.26 | 0.29 | 0.32 | 0.34 | 0.37 | 0.16                             | 0.17 | 0.20 | 0.21 | 0.23 | 0.25 |
| AA/AN/AAC/ANC/AFA | 1/2            | 0.60                             | 0.64 | 0.73 | 0.79 | 0.86 | 0.92 | 0.41                             | 0.44 | 0.50 | 0.54 | 0.58 | 0.63 | 0.27                             | 0.29 | 0.33 | 0.36 | 0.39 | 0.41 |
| AA/AN/AAC/ANC/AFA | 1              | 0.95                             | 1.02 | 1.16 | 1.26 | 1.36 | 1.46 | 0.66                             | 0.71 | 0.81 | 0.87 | 0.94 | 1.01 | 0.44                             | 0.47 | 0.54 | 0.58 | 0.63 | 0.68 |
| AA/AN/AAC/ANC/AFA | 1-1/2          | 1.36                             | 1.45 | 1.67 | 1.80 | 1.94 | 2.09 | 0.95                             | 1.02 | 1.16 | 1.26 | 1.36 | 1.46 | 0.63                             | 0.67 | 0.77 | 0.83 | 0.90 | 0.97 |
| AA/AN/AAC/ANC/AFA | 2              | 2.01                             | 2.15 | 2.46 | 2.66 | 2.87 | 3.09 | 1.40                             | 1.50 | 1.71 | 1.85 | 2.00 | 2.15 | 0.93                             | 0.99 | 1.14 | 1.23 | 1.33 | 1.43 |
| AA/AN/AAC/ANC/AFA | 3              | 2.82                             | 3.01 | 3.45 | 3.73 | 4.02 | 4.33 | 1.96                             | 2.10 | 2.40 | 2.59 | 2.80 | 3.01 | 1.30                             | 1.39 | 1.59 | 1.72 | 1.85 | 2.00 |
| AA/AN/AAC/ANC/AFA | 4              | 3.46                             | 3.70 | 4.24 | 4.58 | 4.94 | 5.31 | 2.40                             | 2.57 | 2.94 | 3.17 | 3.42 | 3.68 | 1.60                             | 1.71 | 1.96 | 2.12 | 2.28 | 2.46 |
| AA/AN/AAC/ANC/AFA | 5              | 4.10                             | 4.38 | 5.02 | 5.42 | 5.85 | 6.29 | 2.85                             | 3.05 | 3.49 | 3.77 | 4.07 | 4.38 | 1.89                             | 2.02 | 2.31 | 2.50 | 2.70 | 2.90 |

## Refrigerant Liquid Temperature Valve Capacity Multiplier Correction Factors

|                                | Refrigerant Liquid Temperature °F |      |      |      |      |      |      |      |      |      |      |     |     |     |     |
|--------------------------------|-----------------------------------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|
|                                | 0                                 | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  | 110 | 120 | 130 | 140 |
| R-12 Correction Factor         | 1.60                              | 1.54 | 1.48 | 1.42 | 1.36 | 1.30 | 1.24 | 1.18 | 1.12 | 1.06 | 1.00 | .94 | .88 | .82 | .75 |
| R-134a Correction Factor       | 1.70                              | 1.63 | 1.56 | 1.49 | 1.42 | 1.36 | 1.29 | 1.21 | 1.14 | 1.07 | 1.00 | .93 | .85 | .78 | .71 |
| R-22 Correction Factor         | 1.56                              | 1.51 | 1.45 | 1.40 | 1.34 | 1.29 | 1.23 | 1.17 | 1.12 | 1.06 | 1.00 | .94 | .88 | .82 | .76 |
| R-404A/R-507 Correction Factor | 2.00                              | 1.90 | 1.80 | 1.70 | 1.60 | 1.50 | 1.40 | 1.30 | 1.20 | 1.10 | 1.00 | .90 | .80 | .70 | .50 |

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature of 0°F. However, they may be used for any evaporator temperature from -40°F to +40°F since the variation in the actual factors across this range is insignificant.



## R-22 Balanced Ported Valves (Tons)– B, HF, TFE, TRAE and T Series (cont.)

| Valve Type | Nominal Rating | Evaporator Temperature           |       |       |       |        |        |                                  |       |       |       |       |       |                                  |       |       |       |       |       |
|------------|----------------|----------------------------------|-------|-------|-------|--------|--------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|
|            |                | 0°F                              |       |       |       |        |        | -20°F                            |       |       |       |       |       | -40°F                            |       |       |       |       |       |
|            |                | Pressure Drop Across Valve (PSI) |       |       |       |        |        | Pressure Drop Across Valve (PSI) |       |       |       |       |       | Pressure Drop Across Valve (PSI) |       |       |       |       |       |
|            |                | 60                               | 80    | 100   | 125   | 150    | 175    | 80                               | 100   | 125   | 150   | 175   | 200   | 80                               | 100   | 125   | 150   | 175   | 200   |
| BA/BN      | 1/2            | 0.34                             | 0.39  | 0.44  | 0.49  | 0.54   | 0.58   | 0.27                             | 0.30  | 0.34  | 0.37  | 0.40  | 0.43  | 0.18                             | 0.20  | 0.23  | 0.25  | 0.27  | 0.28  |
| BA/BN      | 1              | 0.65                             | 0.75  | 0.84  | 0.94  | 1.03   | 1.11   | 0.52                             | 0.58  | 0.65  | 0.71  | 0.77  | 0.82  | 0.34                             | 0.38  | 0.43  | 0.47  | 0.50  | 0.54  |
| BA/BN      | 1-1/2          | 1.02                             | 1.18  | 1.32  | 1.47  | 1.61   | 1.74   | 0.81                             | 0.91  | 1.01  | 1.11  | 1.20  | 1.28  | 0.53                             | 0.59  | 0.66  | 0.73  | 0.78  | 0.84  |
| BA/BN      | 2              | 1.36                             | 1.57  | 1.76  | 1.96  | 2.15   | 2.32   | 1.08                             | 1.21  | 1.35  | 1.48  | 1.60  | 1.71  | 0.71                             | 0.79  | 0.89  | 0.97  | 1.05  | 1.12  |
| BA/BN      | 2-1/2          | 1.72                             | 1.99  | 2.22  | 2.48  | 2.72   | 2.94   | 1.37                             | 1.53  | 1.71  | 1.88  | 2.03  | 2.17  | 0.90                             | 1.01  | 1.13  | 1.23  | 1.33  | 1.42  |
| BA/BN      | 3              | 2.08                             | 2.40  | 2.69  | 3.00  | 3.29   | 3.55   | 1.66                             | 1.86  | 2.08  | 2.27  | 2.46  | 2.62  | 1.09                             | 1.22  | 1.36  | 1.49  | 1.61  | 1.72  |
| BA/BN      | 4              | 2.69                             | 3.11  | 3.47  | 3.88  | 4.25   | 4.59   | 2.15                             | 2.40  | 2.69  | 2.94  | 3.18  | 3.40  | 1.41                             | 1.58  | 1.76  | 1.93  | 2.09  | 2.23  |
| BA/BN      | 5              | 3.40                             | 3.93  | 4.39  | 4.91  | 5.38   | 5.81   | 2.72                             | 3.04  | 3.40  | 3.72  | 4.02  | 4.30  | 1.79                             | 2.00  | 2.24  | 2.45  | 2.65  | 2.83  |
| BA/BN      | 6              | 4.23                             | 4.88  | 5.46  | 6.11  | 6.69   | 7.22   | 3.38                             | 3.78  | 4.23  | 4.63  | 5.00  | 5.34  | 2.23                             | 2.49  | 2.79  | 3.05  | 3.30  | 3.53  |
| HF         | 1/4            | 0.19                             | 0.22  | 0.25  | 0.27  | 0.30   | 0.32   | 0.15                             | 0.17  | 0.19  | 0.21  | 0.22  | 0.24  | 0.10                             | 0.11  | 0.13  | 0.14  | 0.15  | 0.16  |
| HF         | 1/2            | 0.36                             | 0.42  | 0.46  | 0.52  | 0.57   | 0.61   | 0.29                             | 0.32  | 0.36  | 0.40  | 0.43  | 0.46  | 0.19                             | 0.21  | 0.24  | 0.26  | 0.28  | 0.30  |
| HF         | 1              | 0.65                             | 0.75  | 0.84  | 0.94  | 1.03   | 1.11   | 0.52                             | 0.58  | 0.65  | 0.71  | 0.77  | 0.82  | 0.34                             | 0.38  | 0.43  | 0.47  | 0.50  | 0.54  |
| HF         | 1-1/2          | 1.00                             | 1.15  | 1.29  | 1.44  | 1.58   | 1.71   | 0.79                             | 0.88  | 0.99  | 1.08  | 1.17  | 1.25  | 0.52                             | 0.58  | 0.65  | 0.71  | 0.77  | 0.82  |
| HF         | 2              | 1.34                             | 1.55  | 1.73  | 1.93  | 2.12   | 2.29   | 1.07                             | 1.20  | 1.34  | 1.47  | 1.58  | 1.69  | 0.70                             | 0.78  | 0.88  | 0.96  | 1.04  | 1.11  |
| HF         | 2-1/2          | 1.72                             | 1.99  | 2.22  | 2.48  | 2.72   | 2.94   | 1.37                             | 1.53  | 1.71  | 1.88  | 2.03  | 2.17  | 0.90                             | 1.01  | 1.13  | 1.23  | 1.33  | 1.42  |
| HF         | 3              | 2.26                             | 2.61  | 2.92  | 3.26  | 3.57   | 3.86   | 1.81                             | 2.02  | 2.26  | 2.48  | 2.68  | 2.86  | 1.19                             | 1.33  | 1.49  | 1.63  | 1.76  | 1.88  |
| HF         | 5-1/2          | 4.03                             | 4.65  | 5.20  | 5.82  | 6.37   | 6.88   | 3.22                             | 3.60  | 4.03  | 4.41  | 4.76  | 5.09  | 2.12                             | 2.37  | 2.65  | 2.90  | 3.14  | 3.35  |
| HF         | 8              | 5.61                             | 6.48  | 7.24  | 8.10  | 8.87   | 9.58   | 4.48                             | 5.01  | 5.60  | 6.13  | 6.63  | 7.08  | 2.95                             | 3.30  | 3.69  | 4.04  | 4.36  | 4.66  |
| HF         | 10             | 7.10                             | 8.20  | 9.17  | 10.25 | 11.23  | 12.13  | 5.67                             | 6.34  | 7.09  | 7.76  | 8.39  | 8.97  | 3.73                             | 4.17  | 4.66  | 5.11  | 5.52  | 5.90  |
| HF         | 15             | 10.53                            | 12.16 | 13.59 | 15.20 | 16.65  | 17.98  | 8.40                             | 9.39  | 10.50 | 11.50 | 12.42 | 13.28 | 5.53                             | 6.18  | 6.91  | 7.57  | 8.18  | 8.74  |
| HF         | 20             | 13.86                            | 16.00 | 17.89 | 20.01 | 21.91  | 23.67  | 11.06                            | 12.37 | 13.83 | 15.14 | 16.36 | 17.49 | 7.28                             | 8.14  | 9.10  | 9.97  | 10.77 | 11.51 |
| TFE        | 8              | 5.50                             | 6.35  | 7.10  | 7.94  | 8.70   | 9.39   | 4.39                             | 4.91  | 5.49  | 6.01  | 6.49  | 6.94  | 2.89                             | 3.23  | 3.61  | 3.96  | 4.27  | 4.57  |
| TFE        | 10             | 7.54                             | 8.71  | 9.73  | 10.88 | 11.92  | 12.88  | 6.02                             | 6.73  | 7.53  | 8.24  | 8.90  | 9.52  | 3.96                             | 4.43  | 4.95  | 5.42  | 5.86  | 6.26  |
| TFE        | 12             | 9.35                             | 10.80 | 12.07 | 13.50 | 14.78  | 15.97  | 7.47                             | 8.35  | 9.34  | 10.23 | 11.05 | 11.81 | 4.92                             | 5.50  | 6.15  | 6.74  | 7.28  | 7.78  |
| TFE        | 20             | 14.28                            | 16.49 | 18.44 | 20.61 | 22.58  | 24.39  | 11.40                            | 12.75 | 14.25 | 15.61 | 16.86 | 18.02 | 7.51                             | 8.40  | 9.39  | 10.28 | 11.11 | 11.87 |
| TRAE+      | 10             | 8.10                             | 9.35  | 10.46 | 11.69 | 12.81  | 13.83  | 6.47                             | 7.23  | 8.09  | 8.86  | 9.57  | 10.23 | 4.26                             | 4.76  | 5.33  | 5.83  | 6.30  | 6.74  |
| TRAE+      | 15             | 11.80                            | 13.63 | 15.23 | 17.03 | 18.66  | 20.15  | 9.42                             | 10.53 | 11.78 | 12.90 | 13.93 | 14.89 | 6.21                             | 6.94  | 7.76  | 8.50  | 9.18  | 9.82  |
| TRAE+      | 20             | 13.18                            | 15.22 | 17.02 | 19.02 | 20.84  | 22.51  | 10.52                            | 11.76 | 13.15 | 14.41 | 15.56 | 16.63 | 6.93                             | 7.75  | 8.66  | 9.49  | 10.25 | 10.96 |
| TRAE+      | 30             | 19.97                            | 23.06 | 25.78 | 28.82 | 31.58  | 34.11  | 15.94                            | 17.82 | 19.93 | 21.83 | 23.58 | 25.20 | 10.50                            | 11.74 | 13.13 | 14.38 | 15.53 | 16.60 |
| TRAE+      | 40             | 27.45                            | 31.70 | 35.44 | 39.62 | 43.40  | 46.88  | 21.92                            | 24.51 | 27.40 | 30.02 | 32.42 | 34.66 | 14.43                            | 16.13 | 18.04 | 19.76 | 21.34 | 22.82 |
| TRAE       | 50             | 37.06                            | 42.79 | 47.84 | 53.49 | 58.60  | 63.29  | 29.59                            | 33.08 | 36.99 | 40.52 | 43.76 | 46.79 | 19.48                            | 21.78 | 24.35 | 26.67 | 28.81 | 30.80 |
| TRAE       | 60             | 40.42                            | 46.67 | 52.18 | 58.34 | 63.91  | 69.03  | 32.27                            | 36.08 | 40.34 | 44.19 | 47.73 | 51.02 | 21.25                            | 23.76 | 26.56 | 29.10 | 31.43 | 33.60 |
| TRAE       | 70             | 48.11                            | 55.55 | 62.11 | 69.44 | 76.07  | 82.16  | 38.41                            | 42.94 | 48.01 | 52.60 | 56.81 | 60.73 | 25.29                            | 28.28 | 31.61 | 34.63 | 37.40 | 39.99 |
| TJR        | 14             | 10.09                            | 11.65 | 13.03 | 14.56 | 15.95  | 17.23  | 8.05                             | 9.00  | 10.06 | 11.02 | 11.91 | 12.73 | 5.30                             | 5.93  | 6.63  | 7.26  | 7.84  | 8.38  |
| TJR        | 18             | 12.08                            | 13.95 | 15.60 | 17.44 | 19.10  | 20.63  | 9.64                             | 10.78 | 12.05 | 13.20 | 14.26 | 15.24 | 6.35                             | 7.10  | 7.94  | 8.70  | 9.39  | 10.04 |
| TER        | 22             | 15.10                            | 17.44 | 19.49 | 21.79 | 23.88  | 25.79  | 12.05                            | 13.47 | 15.06 | 16.50 | 17.82 | 19.05 | 7.94                             | 8.88  | 9.93  | 10.87 | 11.74 | 12.55 |
| TER        | 26             | 17.84                            | 20.60 | 23.03 | 25.75 | 28.21  | 30.47  | 14.25                            | 15.93 | 17.81 | 19.51 | 21.08 | 22.53 | 9.38                             | 10.49 | 11.73 | 12.84 | 13.87 | 14.83 |
| TER        | 35             | 24.02                            | 27.74 | 31.01 | 34.67 | 37.98  | 41.02  | 19.18                            | 21.44 | 23.98 | 26.26 | 28.37 | 30.33 | 12.63                            | 14.12 | 15.79 | 17.29 | 18.68 | 19.97 |
| TER        | 45             | 30.88                            | 35.66 | 39.87 | 44.57 | 48.83  | 52.74  | 24.66                            | 27.57 | 30.83 | 33.77 | 36.47 | 38.99 | 16.24                            | 18.16 | 20.30 | 22.24 | 24.02 | 25.68 |
| TIR        | 55             | 37.75                            | 43.59 | 48.74 | 54.49 | 59.69  | 64.47  | 30.13                            | 33.69 | 37.66 | 41.26 | 44.56 | 47.64 | 19.84                            | 22.18 | 24.80 | 27.17 | 29.34 | 31.37 |
| THR        | 75             | 48.04                            | 55.47 | 62.02 | 69.34 | 75.96  | 82.04  | 38.35                            | 42.88 | 47.94 | 52.51 | 56.72 | 60.64 | 25.26                            | 28.24 | 31.58 | 34.59 | 37.36 | 39.94 |
| THR        | 85             | 58.33                            | 67.35 | 75.30 | 84.19 | 92.23  | 99.62  | 46.57                            | 52.07 | 58.21 | 63.77 | 68.88 | 73.63 | 30.67                            | 34.29 | 38.34 | 42.00 | 45.36 | 48.49 |
| TMR        | 100            | 68.63                            | 79.25 | 88.60 | 99.06 | 108.51 | 117.21 | 54.79                            | 61.26 | 68.49 | 75.02 | 81.04 | 86.63 | 36.08                            | 40.34 | 45.10 | 49.40 | 53.36 | 57.05 |

## Refrigerant Liquid Temperature Valve Capacity Multiplier Correction Factors

|                                | Refrigerant Liquid Temperature °F |      |      |      |      |      |      |      |      |      |      |     |     |     |     |
|--------------------------------|-----------------------------------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|
|                                | 0                                 | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  | 110 | 120 | 130 | 140 |
| R-12 Correction Factor         | 1.60                              | 1.54 | 1.48 | 1.42 | 1.36 | 1.30 | 1.24 | 1.18 | 1.12 | 1.06 | 1.00 | .94 | .88 | .82 | .75 |
| R-134a Correction Factor       | 1.70                              | 1.63 | 1.56 | 1.49 | 1.42 | 1.36 | 1.29 | 1.21 | 1.14 | 1.07 | 1.00 | .93 | .85 | .78 | .71 |
| R-22 Correction Factor         | 1.56                              | 1.51 | 1.45 | 1.40 | 1.34 | 1.29 | 1.23 | 1.17 | 1.12 | 1.06 | 1.00 | .94 | .88 | .82 | .76 |
| R-404A/R-507 Correction Factor | 2.00                              | 1.90 | 1.80 | 1.70 | 1.60 | 1.50 | 1.40 | 1.30 | 1.20 | 1.10 | 1.00 | .90 | .80 | .70 | .50 |

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature of 0°F. However, they may be used for any evaporator temperature from -40°F to +40°F since the variation in the actual factors across this range is insignificant.



# R-134a Balanced Ported Valves (Tons)– B, HF, TFE, TRAE and T Series (cont.)

| Valve Type | Nominal Rating | Evaporator Temperature           |       |       |       |       |       |                                  |       |       |       |       |       |                                  |       |       |       |       |       |
|------------|----------------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|
|            |                | 0°F                              |       |       |       |       |       | -20°F                            |       |       |       |       |       | -40°F                            |       |       |       |       |       |
|            |                | Pressure Drop Across Valve (PSI) |       |       |       |       |       | Pressure Drop Across Valve (PSI) |       |       |       |       |       | Pressure Drop Across Valve (PSI) |       |       |       |       |       |
|            |                | 60                               | 80    | 100   | 125   | 150   | 175   | 80                               | 100   | 125   | 150   | 175   | 200   | 80                               | 100   | 125   | 150   | 175   | 200   |
| BA/BN      | 1/2            | 0.29                             | 0.33  | 0.37  | 0.42  | 0.46  | 0.50  | 0.22                             | 0.25  | 0.28  | 0.30  | 0.33  | 0.35  | 0.13                             | 0.15  | 0.16  | 0.18  | 0.19  | 0.21  |
| BA/BN      | 3/4            | 0.55                             | 0.64  | 0.71  | 0.79  | 0.87  | 0.94  | 0.41                             | 0.46  | 0.51  | 0.56  | 0.61  | 0.65  | 0.25                             | 0.28  | 0.31  | 0.34  | 0.37  | 0.40  |
| BA/BN      | 1              | 0.86                             | 0.99  | 1.11  | 1.24  | 1.36  | 1.47  | 0.64                             | 0.72  | 0.80  | 0.88  | 0.95  | 1.01  | 0.39                             | 0.44  | 0.49  | 0.53  | 0.58  | 0.62  |
| BA/BN      | 1-1/2          | 1.14                             | 1.32  | 1.47  | 1.65  | 1.80  | 1.95  | 0.85                             | 0.95  | 1.06  | 1.16  | 1.26  | 1.34  | 0.52                             | 0.58  | 0.65  | 0.71  | 0.77  | 0.82  |
| BA/BN      | 2              | 1.44                             | 1.66  | 1.86  | 2.08  | 2.28  | 2.46  | 1.08                             | 1.21  | 1.35  | 1.48  | 1.60  | 1.71  | 0.66                             | 0.74  | 0.83  | 0.90  | 0.98  | 1.04  |
| BA/BN      | 2-1/4          | 1.75                             | 2.02  | 2.26  | 2.53  | 2.77  | 2.99  | 1.31                             | 1.46  | 1.64  | 1.79  | 1.94  | 2.07  | 0.80                             | 0.89  | 1.00  | 1.10  | 1.18  | 1.26  |
| BA/BN      | 3              | 2.27                             | 2.62  | 2.93  | 3.28  | 3.59  | 3.88  | 1.69                             | 1.89  | 2.11  | 2.31  | 2.50  | 2.67  | 1.04                             | 1.16  | 1.30  | 1.42  | 1.54  | 1.64  |
| BA/BN      | 3-1/2          | 2.87                             | 3.31  | 3.71  | 4.14  | 4.54  | 4.90  | 2.14                             | 2.39  | 2.68  | 2.93  | 3.17  | 3.38  | 1.31                             | 1.46  | 1.64  | 1.79  | 1.94  | 2.07  |
| BA/BN      | 4-1/4          | 3.57                             | 4.12  | 4.61  | 5.15  | 5.64  | 6.10  | 2.66                             | 2.97  | 3.33  | 3.64  | 3.93  | 4.21  | 1.63                             | 1.82  | 2.04  | 2.23  | 2.41  | 2.58  |
| HF         | 1/4            | 0.16                             | 0.18  | 0.21  | 0.23  | 0.25  | 0.27  | 0.12                             | 0.13  | 0.15  | 0.16  | 0.18  | 0.19  | 0.07                             | 0.08  | 0.09  | 0.10  | 0.10  | 0.11  |
| HF         | 1/2            | 0.31                             | 0.36  | 0.40  | 0.45  | 0.49  | 0.53  | 0.23                             | 0.26  | 0.29  | 0.31  | 0.34  | 0.36  | 0.14                             | 0.16  | 0.18  | 0.19  | 0.21  | 0.22  |
| HF         | 3/4            | 0.55                             | 0.64  | 0.71  | 0.79  | 0.87  | 0.94  | 0.41                             | 0.46  | 0.51  | 0.56  | 0.61  | 0.65  | 0.25                             | 0.28  | 0.31  | 0.34  | 0.37  | 0.40  |
| HF         | 1              | 0.84                             | 0.97  | 1.08  | 1.21  | 1.33  | 1.43  | 0.63                             | 0.70  | 0.79  | 0.86  | 0.93  | 1.00  | 0.38                             | 0.42  | 0.48  | 0.52  | 0.56  | 0.60  |
| HF         | 1-1/2          | 1.13                             | 1.30  | 1.46  | 1.63  | 1.79  | 1.93  | 0.84                             | 0.94  | 1.05  | 1.15  | 1.24  | 1.33  | 0.52                             | 0.58  | 0.65  | 0.71  | 0.77  | 0.82  |
| HF         | 1-3/4          | 1.44                             | 1.66  | 1.86  | 2.08  | 2.28  | 2.46  | 1.08                             | 1.21  | 1.35  | 1.48  | 1.60  | 1.71  | 0.66                             | 0.74  | 0.83  | 0.90  | 0.98  | 1.04  |
| HF         | 2-1/2          | 1.91                             | 2.21  | 2.47  | 2.76  | 3.02  | 3.26  | 1.42                             | 1.59  | 1.78  | 1.94  | 2.10  | 2.25  | 0.87                             | 0.97  | 1.09  | 1.19  | 1.29  | 1.38  |
| HF         | 4              | 3.39                             | 3.91  | 4.38  | 4.89  | 5.36  | 5.79  | 2.53                             | 2.83  | 3.16  | 3.46  | 3.74  | 4.00  | 1.55                             | 1.73  | 1.94  | 2.12  | 2.29  | 2.45  |
| HF         | 6              | 4.72                             | 5.45  | 6.09  | 6.81  | 7.46  | 8.06  | 3.52                             | 3.94  | 4.40  | 4.82  | 5.21  | 5.57  | 2.16                             | 2.41  | 2.70  | 2.96  | 3.19  | 3.42  |
| HF         | 7-1/2          | 5.98                             | 6.91  | 7.72  | 8.63  | 9.46  | 10.21 | 4.46                             | 4.99  | 5.58  | 6.11  | 6.60  | 7.05  | 2.74                             | 3.06  | 3.43  | 3.75  | 4.05  | 4.33  |
| HF         | 11             | 8.87                             | 10.24 | 11.45 | 12.80 | 14.02 | 15.15 | 6.62                             | 7.40  | 8.28  | 9.06  | 9.79  | 10.47 | 4.06                             | 4.54  | 5.08  | 5.56  | 6.00  | 6.42  |
| HF         | 14             | 11.67                            | 13.48 | 15.07 | 16.84 | 18.45 | 19.93 | 8.71                             | 9.74  | 10.89 | 11.93 | 12.88 | 13.77 | 5.34                             | 5.97  | 6.68  | 7.31  | 7.90  | 8.44  |
| TFE        | 6              | 4.64                             | 5.36  | 5.99  | 6.70  | 7.34  | 7.92  | 3.46                             | 3.87  | 4.33  | 4.74  | 5.12  | 5.47  | 2.12                             | 2.37  | 2.65  | 2.90  | 3.14  | 3.35  |
| TFE        | 8              | 6.35                             | 7.33  | 8.20  | 9.17  | 10.04 | 10.84 | 4.74                             | 5.30  | 5.93  | 6.49  | 7.01  | 7.49  | 2.91                             | 3.25  | 3.64  | 3.98  | 4.30  | 4.60  |
| TFE        | 10             | 7.88                             | 9.10  | 10.17 | 11.37 | 12.46 | 13.46 | 5.88                             | 6.57  | 7.35  | 8.05  | 8.70  | 9.30  | 3.61                             | 4.04  | 4.51  | 4.94  | 5.34  | 5.71  |
| TFE        | 15             | 12.03                            | 13.89 | 15.53 | 17.36 | 19.02 | 20.55 | 8.97                             | 10.03 | 11.21 | 12.28 | 13.27 | 14.18 | 5.51                             | 6.16  | 6.89  | 7.54  | 8.15  | 8.71  |
| TRAE+      | 9              | 6.82                             | 7.88  | 8.80  | 9.84  | 10.78 | 11.65 | 5.09                             | 5.69  | 6.36  | 6.97  | 7.53  | 8.05  | 3.12                             | 3.49  | 3.90  | 4.27  | 4.61  | 4.93  |
| TRAE+      | 13             | 9.94                             | 11.48 | 12.83 | 14.35 | 15.72 | 16.98 | 7.42                             | 8.30  | 9.28  | 10.16 | 10.97 | 11.73 | 4.55                             | 5.09  | 5.69  | 6.23  | 6.73  | 7.19  |
| TRAE+      | 14             | 11.1                             | 12.82 | 14.33 | 16.02 | 17.55 | 18.96 | 8.28                             | 9.26  | 10.35 | 11.34 | 12.25 | 13.09 | 5.08                             | 5.68  | 6.35  | 6.96  | 7.51  | 8.03  |
| TRAE+      | 22             | 16.82                            | 19.42 | 21.71 | 24.28 | 26.59 | 28.73 | 12.55                            | 14.03 | 15.69 | 17.18 | 18.56 | 19.84 | 7.70                             | 8.61  | 9.63  | 10.54 | 11.39 | 12.17 |
| TRAE+      | 30             | 23.12                            | 26.70 | 29.85 | 33.37 | 36.56 | 39.48 | 17.25                            | 19.29 | 21.56 | 23.62 | 25.51 | 27.27 | 10.59                            | 11.84 | 13.24 | 14.50 | 15.66 | 16.74 |
| TRAE       | 40             | 31.21                            | 36.04 | 40.29 | 45.05 | 49.35 | 53.30 | 23.29                            | 26.04 | 29.11 | 31.89 | 34.45 | 36.82 | 14.29                            | 15.98 | 17.86 | 19.57 | 21.14 | 22.59 |
| TRAE       | 45             | 34.04                            | 39.31 | 43.95 | 49.13 | 53.82 | 58.13 | 25.40                            | 28.40 | 31.75 | 34.78 | 37.57 | 40.16 | 15.59                            | 17.43 | 19.49 | 21.35 | 23.06 | 24.65 |
| TRAE       | 50             | 40.52                            | 46.79 | 52.31 | 58.49 | 64.07 | 69.20 | 30.23                            | 33.80 | 37.79 | 41.39 | 44.71 | 47.80 | 18.55                            | 20.74 | 23.19 | 25.40 | 27.44 | 29.33 |
| TJR        | 11             | 8.50                             | 9.81  | 10.97 | 12.27 | 13.44 | 14.52 | 6.34                             | 7.09  | 7.93  | 8.68  | 9.38  | 10.02 | 3.89                             | 4.35  | 4.86  | 5.33  | 5.75  | 6.15  |
| TJR        | 13             | 10.17                            | 11.74 | 13.13 | 14.68 | 16.08 | 17.37 | 7.59                             | 8.49  | 9.49  | 10.39 | 11.23 | 12.00 | 4.66                             | 5.21  | 5.83  | 6.38  | 6.89  | 7.37  |
| TER        | 16             | 12.72                            | 14.69 | 16.42 | 18.36 | 20.11 | 21.72 | 9.49                             | 10.61 | 11.86 | 12.99 | 14.04 | 15.01 | 5.82                             | 6.51  | 7.28  | 7.97  | 8.61  | 9.20  |
| TER        | 19             | 15.03                            | 17.36 | 19.40 | 21.69 | 23.76 | 25.67 | 11.21                            | 12.53 | 14.01 | 15.35 | 16.58 | 17.72 | 6.88                             | 7.69  | 8.60  | 9.42  | 10.18 | 10.88 |
| TER        | 25             | 20.23                            | 23.36 | 26.12 | 29.20 | 31.99 | 34.55 | 15.09                            | 16.87 | 18.86 | 20.66 | 22.32 | 23.86 | 9.26                             | 10.35 | 11.58 | 12.68 | 13.70 | 14.64 |
| TER        | 31             | 26.01                            | 30.03 | 33.58 | 37.54 | 41.13 | 44.42 | 19.41                            | 21.70 | 24.26 | 26.58 | 28.71 | 30.69 | 11.91                            | 13.32 | 14.89 | 16.31 | 17.62 | 18.83 |
| TIR        | 45             | 31.79                            | 36.71 | 41.04 | 45.88 | 50.26 | 54.29 | 23.72                            | 26.52 | 29.65 | 32.48 | 35.08 | 37.50 | 14.56                            | 16.28 | 18.20 | 19.94 | 21.53 | 23.02 |
| THR        | 55             | 40.46                            | 46.72 | 52.23 | 58.40 | 63.97 | 69.10 | 30.19                            | 33.75 | 37.74 | 41.34 | 44.65 | 47.73 | 18.53                            | 20.72 | 23.16 | 25.37 | 27.41 | 29.30 |
| THR        | 68             | 49.13                            | 56.73 | 63.43 | 70.91 | 77.68 | 83.91 | 36.66                            | 40.99 | 45.83 | 50.20 | 54.22 | 57.96 | 22.50                            | 25.16 | 28.13 | 30.81 | 33.28 | 35.58 |
| TMR        | 68             | 57.80                            | 66.74 | 74.62 | 83.43 | 91.39 | 98.71 | 43.12                            | 48.21 | 53.90 | 59.04 | 63.78 | 68.18 | 26.47                            | 29.59 | 33.09 | 36.25 | 39.15 | 41.85 |

## Refrigerant Liquid Temperature Valve Capacity Multiplier Correction Factors

|                                | Refrigerant Liquid Temperature °F |      |      |      |      |      |      |      |      |      |      |     |     |     |     |
|--------------------------------|-----------------------------------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|
|                                | 0                                 | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  | 110 | 120 | 130 | 140 |
| R-12 Correction Factor         | 1.60                              | 1.54 | 1.48 | 1.42 | 1.36 | 1.30 | 1.24 | 1.18 | 1.12 | 1.06 | 1.00 | .94 | .88 | .82 | .75 |
| R-134a Correction Factor       | 1.70                              | 1.63 | 1.56 | 1.49 | 1.42 | 1.36 | 1.29 | 1.21 | 1.14 | 1.07 | 1.00 | .93 | .85 | .78 | .71 |
| R-22 Correction Factor         | 1.56                              | 1.51 | 1.45 | 1.40 | 1.34 | 1.29 | 1.23 | 1.17 | 1.12 | 1.06 | 1.00 | .94 | .88 | .82 | .76 |
| R-404A/R-507 Correction Factor | 2.00                              | 1.90 | 1.80 | 1.70 | 1.60 | 1.50 | 1.40 | 1.30 | 1.20 | 1.10 | 1.00 | .90 | .80 | .70 | .50 |

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature of 0°F. However, they may be used for any evaporator temperature from -40°F to +40°F since the variation in the actual factors across this range is insignificant.

## R-404A/R-507 Balanced Ported Valves (Tons)– B, HF, TFE, TRAE and T Series

| Valve Type | Nominal Rating | Evaporator Temperature           |       |       |       |       |       |                                  |       |       |       |       |       |                                  |       |       |       |       |       |
|------------|----------------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|
|            |                | 50°F                             |       |       |       |       |       | 40°F                             |       |       |       |       |       | 20°F                             |       |       |       |       |       |
|            |                | Pressure Drop Across Valve (PSI) |       |       |       |       |       | Pressure Drop Across Valve (PSI) |       |       |       |       |       | Pressure Drop Across Valve (PSI) |       |       |       |       |       |
|            |                | 60                               | 80    | 100   | 125   | 150   | 175   | 60                               | 80    | 100   | 125   | 150   | 175   | 60                               | 80    | 100   | 125   | 150   | 175   |
| BA/BN      | 1/4            | 0.29                             | 0.33  | 0.37  | 0.42  | 0.46  | 0.50  | 0.28                             | 0.32  | 0.36  | 0.40  | 0.44  | 0.48  | 0.27                             | 0.31  | 0.35  | 0.39  | 0.43  | 0.46  |
| BA/BN      | 1/2            | 0.55                             | 0.64  | 0.71  | 0.79  | 0.87  | 0.94  | 0.53                             | 0.61  | 0.68  | 0.76  | 0.84  | 0.91  | 0.51                             | 0.59  | 0.66  | 0.74  | 0.81  | 0.87  |
| BA/BN      | 1              | 0.85                             | 0.98  | 1.10  | 1.23  | 1.34  | 1.45  | 0.83                             | 0.96  | 1.07  | 1.20  | 1.31  | 1.42  | 0.79                             | 0.91  | 1.02  | 1.14  | 1.25  | 1.35  |
| BA/BN      | 1-1/4          | 1.14                             | 1.32  | 1.47  | 1.65  | 1.80  | 1.95  | 1.11                             | 1.28  | 1.43  | 1.60  | 1.76  | 1.90  | 1.06                             | 1.22  | 1.37  | 1.53  | 1.68  | 1.81  |
| BA/BN      | 1-1/2          | 1.44                             | 1.66  | 1.86  | 2.08  | 2.28  | 2.46  | 1.41                             | 1.63  | 1.82  | 2.04  | 2.23  | 2.41  | 1.34                             | 1.55  | 1.73  | 1.93  | 2.12  | 2.29  |
| BA/BN      | 2              | 1.74                             | 2.01  | 2.25  | 2.51  | 2.75  | 2.97  | 1.70                             | 1.96  | 2.19  | 2.45  | 2.69  | 2.90  | 1.62                             | 1.87  | 2.09  | 2.34  | 2.56  | 2.77  |
| BA/BN      | 2-1/2          | 2.26                             | 2.61  | 2.92  | 3.26  | 3.57  | 3.86  | 2.20                             | 2.54  | 2.84  | 3.18  | 3.48  | 3.76  | 2.09                             | 2.41  | 2.70  | 3.02  | 3.30  | 3.57  |
| BA/BN      | 3              | 2.85                             | 3.29  | 3.68  | 4.11  | 4.51  | 4.87  | 2.79                             | 3.22  | 3.60  | 4.03  | 4.41  | 4.76  | 2.65                             | 3.06  | 3.42  | 3.82  | 4.19  | 4.53  |
| BA/BN      | 4              | 3.55                             | 4.10  | 4.58  | 5.12  | 5.61  | 6.06  | 3.47                             | 4.01  | 4.48  | 5.01  | 5.49  | 5.93  | 3.29                             | 3.80  | 4.25  | 4.75  | 5.20  | 5.62  |
| HF         | 1/8            | 0.16                             | 0.18  | 0.21  | 0.23  | 0.25  | 0.27  | 0.16                             | 0.18  | 0.21  | 0.23  | 0.25  | 0.27  | 0.15                             | 0.17  | 0.19  | 0.22  | 0.24  | 0.26  |
| HF         | 1/4            | 0.31                             | 0.36  | 0.40  | 0.45  | 0.49  | 0.53  | 0.30                             | 0.35  | 0.39  | 0.43  | 0.47  | 0.51  | 0.28                             | 0.32  | 0.36  | 0.40  | 0.44  | 0.48  |
| HF         | 1/2            | 0.55                             | 0.64  | 0.71  | 0.79  | 0.87  | 0.94  | 0.53                             | 0.61  | 0.68  | 0.76  | 0.84  | 0.91  | 0.51                             | 0.59  | 0.66  | 0.74  | 0.81  | 0.87  |
| HF         | 1              | 0.83                             | 0.96  | 1.07  | 1.20  | 1.31  | 1.42  | 0.82                             | 0.95  | 1.06  | 1.18  | 1.30  | 1.40  | 0.77                             | 0.89  | 0.99  | 1.11  | 1.22  | 1.32  |
| HF         | 1-1/4          | 1.12                             | 1.29  | 1.45  | 1.62  | 1.77  | 1.91  | 1.10                             | 1.27  | 1.42  | 1.59  | 1.74  | 1.88  | 1.04                             | 1.20  | 1.34  | 1.50  | 1.64  | 1.78  |
| HF         | 1-1/2          | 1.44                             | 1.66  | 1.86  | 2.08  | 2.28  | 2.46  | 1.41                             | 1.63  | 1.82  | 2.04  | 2.23  | 2.41  | 1.34                             | 1.55  | 1.73  | 1.93  | 2.12  | 2.29  |
| HF         | 2              | 1.90                             | 2.19  | 2.45  | 2.74  | 3.00  | 3.24  | 1.86                             | 2.15  | 2.40  | 2.68  | 2.94  | 3.18  | 1.76                             | 2.03  | 2.27  | 2.54  | 2.78  | 3.01  |
| HF         | 3-1/2          | 3.38                             | 3.90  | 4.36  | 4.88  | 5.34  | 5.77  | 3.30                             | 3.81  | 4.26  | 4.76  | 5.22  | 5.64  | 3.13                             | 3.61  | 4.04  | 4.52  | 4.95  | 5.35  |
| HF         | 5              | 4.70                             | 5.43  | 6.07  | 6.78  | 7.43  | 8.03  | 4.59                             | 5.30  | 5.93  | 6.63  | 7.26  | 7.84  | 4.36                             | 5.03  | 5.63  | 6.29  | 6.89  | 7.45  |
| HF         | 7              | 5.95                             | 6.87  | 7.68  | 8.59  | 9.41  | 10.16 | 5.81                             | 6.71  | 7.50  | 8.39  | 9.19  | 9.92  | 5.52                             | 6.37  | 7.13  | 7.97  | 8.73  | 9.43  |
| HF         | 10             | 8.83                             | 10.20 | 11.40 | 12.75 | 13.96 | 15.08 | 8.62                             | 9.95  | 11.13 | 12.44 | 13.63 | 14.72 | 8.19                             | 9.46  | 10.57 | 11.82 | 12.95 | 13.99 |
| HF         | 13             | 11.62                            | 13.42 | 15.00 | 16.77 | 18.37 | 19.84 | 11.35                            | 13.11 | 14.65 | 16.38 | 17.95 | 19.38 | 10.78                            | 12.45 | 13.92 | 15.56 | 17.04 | 18.41 |
| TFE        | 5              | 4.62                             | 5.33  | 5.96  | 6.67  | 7.30  | 7.89  | 4.51                             | 5.21  | 5.82  | 6.51  | 7.13  | 7.70  | 4.28                             | 4.94  | 5.53  | 6.18  | 6.77  | 7.31  |
| TFE        | 7              | 6.32                             | 7.30  | 8.16  | 9.12  | 9.99  | 10.79 | 6.17                             | 7.12  | 7.97  | 8.91  | 9.76  | 10.54 | 5.86                             | 6.77  | 7.57  | 8.46  | 9.27  | 10.01 |
| TFE        | 9              | 7.84                             | 9.05  | 10.12 | 11.32 | 12.40 | 13.39 | 7.66                             | 8.85  | 9.89  | 11.06 | 12.11 | 13.08 | 7.28                             | 8.41  | 9.40  | 10.51 | 11.51 | 12.43 |
| TFE        | 14             | 11.98                            | 13.83 | 15.47 | 17.29 | 18.94 | 20.46 | 11.70                            | 13.51 | 15.10 | 16.89 | 18.50 | 19.98 | 11.11                            | 12.83 | 14.34 | 16.04 | 17.57 | 18.97 |
| TRAE+      | 8              | 6.79                             | 7.84  | 8.77  | 9.80  | 10.74 | 11.60 | 6.63                             | 7.66  | 8.56  | 9.57  | 10.48 | 11.32 | 6.30                             | 7.27  | 8.13  | 9.09  | 9.96  | 10.76 |
| TRAE+      | 12             | 9.90                             | 11.43 | 12.78 | 14.29 | 15.65 | 16.91 | 9.67                             | 11.17 | 12.48 | 13.96 | 15.29 | 16.51 | 9.19                             | 10.61 | 11.86 | 13.26 | 14.53 | 15.69 |
| TRAE+      | 14             | 11.05                            | 12.76 | 14.27 | 15.95 | 17.47 | 18.87 | 10.79                            | 12.46 | 13.93 | 15.57 | 17.06 | 18.43 | 10.25                            | 11.84 | 13.23 | 14.79 | 16.21 | 17.51 |
| TRAE+      | 20             | 16.75                            | 19.34 | 21.62 | 24.18 | 26.48 | 28.61 | 16.36                            | 18.89 | 21.12 | 23.61 | 25.87 | 27.94 | 15.54                            | 17.94 | 20.06 | 22.43 | 24.57 | 26.54 |
| TRAE+      | 30             | 23.02                            | 26.58 | 29.72 | 33.23 | 36.40 | 39.31 | 22.49                            | 25.97 | 29.03 | 32.46 | 35.56 | 38.41 | 21.36                            | 24.66 | 27.58 | 30.83 | 33.77 | 36.48 |
| TRAE       | 35             | 31.08                            | 35.89 | 40.12 | 44.86 | 49.14 | 53.08 | 30.36                            | 35.06 | 39.19 | 43.82 | 48.00 | 51.85 | 28.84                            | 33.30 | 37.23 | 41.63 | 45.60 | 49.25 |
| TRAE       | 40             | 33.90                            | 39.14 | 43.76 | 48.93 | 53.60 | 57.90 | 33.11                            | 38.23 | 42.74 | 47.79 | 52.35 | 56.55 | 31.45                            | 36.32 | 40.60 | 45.39 | 49.73 | 53.71 |
| TRAE       | 50             | 40.34                            | 46.58 | 52.08 | 58.23 | 63.78 | 68.89 | 39.41                            | 45.51 | 50.88 | 56.88 | 62.31 | 67.31 | 37.44                            | 43.23 | 48.33 | 54.04 | 59.20 | 63.94 |
| TJR        | 9              | 8.46                             | 9.77  | 10.92 | 12.21 | 13.38 | 14.45 | 8.26                             | 9.54  | 10.66 | 11.92 | 13.06 | 14.11 | 7.85                             | 9.06  | 10.13 | 11.33 | 12.41 | 13.41 |
| TJR        | 12             | 10.13                            | 11.70 | 13.08 | 14.62 | 16.02 | 17.30 | 9.89                             | 11.42 | 12.77 | 14.27 | 15.64 | 16.89 | 9.40                             | 10.85 | 12.14 | 13.57 | 14.86 | 16.05 |
| TER        | 14             | 12.66                            | 14.62 | 16.34 | 18.27 | 20.02 | 21.62 | 12.37                            | 14.28 | 15.97 | 17.85 | 19.56 | 21.13 | 11.75                            | 13.57 | 15.17 | 16.96 | 18.58 | 20.07 |
| TER        | 16             | 14.96                            | 17.27 | 19.31 | 21.59 | 23.65 | 25.55 | 14.62                            | 16.88 | 18.87 | 21.10 | 23.12 | 24.97 | 13.88                            | 16.03 | 17.92 | 20.03 | 21.95 | 23.70 |
| TER        | 21             | 20.14                            | 23.26 | 26.00 | 29.07 | 31.84 | 34.40 | 19.68                            | 22.72 | 25.41 | 28.41 | 31.12 | 33.61 | 18.69                            | 21.58 | 24.13 | 26.98 | 29.55 | 31.92 |
| TER        | 27             | 25.90                            | 29.91 | 33.44 | 37.38 | 40.95 | 44.23 | 25.30                            | 29.21 | 32.66 | 36.52 | 40.00 | 43.21 | 24.03                            | 27.75 | 31.02 | 34.68 | 37.99 | 41.04 |
| TIR        | 37             | 31.65                            | 36.55 | 40.86 | 45.68 | 50.04 | 54.05 | 30.92                            | 35.70 | 39.92 | 44.63 | 48.89 | 52.81 | 29.37                            | 33.91 | 37.92 | 42.39 | 46.44 | 50.16 |
| THR        | 48             | 40.29                            | 46.52 | 52.01 | 58.15 | 63.70 | 68.81 | 39.35                            | 45.44 | 50.80 | 56.80 | 62.22 | 67.20 | 37.38                            | 43.16 | 48.26 | 53.95 | 59.10 | 63.84 |
| THR        | 60             | 48.92                            | 56.49 | 63.16 | 70.61 | 77.35 | 83.55 | 47.78                            | 55.17 | 61.68 | 68.96 | 75.55 | 81.60 | 45.39                            | 52.41 | 58.60 | 65.51 | 71.77 | 77.52 |
| TMR        | 60             | 57.55                            | 66.45 | 74.30 | 83.07 | 90.99 | 98.29 | 56.22                            | 64.92 | 72.58 | 81.15 | 88.89 | 96.01 | 53.40                            | 61.66 | 68.94 | 77.08 | 84.43 | 91.20 |

Note: Standard capacity is rated at 100F liquid inlet and 40F evaporator temperature; with 100 Psi pressure drop across the TXV per ARI 750-2001.

## Refrigerant Liquid Temperature Valve Capacity Multiplier Correction Factors

|                                | Refrigerant Liquid Temperature °F |      |      |      |      |      |      |      |      |      |      |     |     |     |     |
|--------------------------------|-----------------------------------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|
|                                | 0                                 | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  | 110 | 120 | 130 | 140 |
| R-12 Correction Factor         | 1.60                              | 1.54 | 1.48 | 1.42 | 1.36 | 1.30 | 1.24 | 1.18 | 1.12 | 1.06 | 1.00 | .94 | .88 | .82 | .75 |
| R-134a Correction Factor       | 1.70                              | 1.63 | 1.56 | 1.49 | 1.42 | 1.36 | 1.29 | 1.21 | 1.14 | 1.07 | 1.00 | .93 | .85 | .78 | .71 |
| R-22 Correction Factor         | 1.56                              | 1.51 | 1.45 | 1.40 | 1.34 | 1.29 | 1.23 | 1.17 | 1.12 | 1.06 | 1.00 | .94 | .88 | .82 | .76 |
| R-404A/R-507 Correction Factor | 2.00                              | 1.90 | 1.80 | 1.70 | 1.60 | 1.50 | 1.40 | 1.30 | 1.20 | 1.10 | 1.00 | .90 | .80 | .70 | .50 |

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature of 0°F. However, they may be used for any evaporator temperature from -40°F to +40°F since the variation in the actual factors across this range is insignificant.







# R-410A Balanced Ported Valves (Tons) – B Series

| Valve Type | Nominal Rating | Evaporator Temperature           |     |     |     |      |      |      |     |                                  |     |     |      |      |      |     |     |                                  |     |      |      |      |  |  |  |
|------------|----------------|----------------------------------|-----|-----|-----|------|------|------|-----|----------------------------------|-----|-----|------|------|------|-----|-----|----------------------------------|-----|------|------|------|--|--|--|
|            |                | 50 °F                            |     |     |     |      |      |      |     | 40 °F                            |     |     |      |      |      |     |     | 20 °F                            |     |      |      |      |  |  |  |
|            |                | Pressure Drop Across Valve (PSI) |     |     |     |      |      |      |     | Pressure Drop Across Valve (PSI) |     |     |      |      |      |     |     | Pressure Drop Across Valve (PSI) |     |      |      |      |  |  |  |
|            |                | 75                               | 110 | 140 | 160 | 210  | 240  | 285  | 75  | 110                              | 140 | 160 | 210  | 240  | 285  | 75  | 110 | 140                              | 160 | 210  | 240  | 285  |  |  |  |
| BA/BN      | 1              | 0.8                              | 1.0 | 1.1 | 1.2 | 1.3  | 1.4  | 1.6  | 0.8 | 1.0                              | 1.1 | 1.2 | 1.3  | 1.4  | 1.5  | 0.8 | 0.9 | 1.1                              | 1.1 | 1.3  | 1.4  | 1.5  |  |  |  |
|            | 1-1/2          | 1.3                              | 1.6 | 1.8 | 1.9 | 2.2  | 1.4  | 1.6  | 1.3 | 1.6                              | 1.7 | 1.9 | 2.1  | 2.3  | 2.5  | 1.3 | 1.5 | 1.7                              | 1.8 | 2.1  | 2.2  | 2.4  |  |  |  |
|            | 2              | 1.8                              | 2.2 | 2.5 | 2.6 | 3.0  | 3.2  | 3.5  | 1.8 | 2.2                              | 2.4 | 2.6 | 3.0  | 3.2  | 3.5  | 1.7 | 2.1 | 2.4                              | 2.6 | 2.9  | 3.1  | 3.4  |  |  |  |
|            | 3              | 2.3                              | 2.8 | 3.1 | 3.3 | 3.8  | 4.1  | 4.5  | 2.3 | 2.8                              | 3.1 | 3.3 | 3.8  | 4.1  | 4.4  | 2.2 | 2.7 | 3.0                              | 3.2 | 3.7  | 4.0  | 4.3  |  |  |  |
|            | 3-1/2          | 3.0                              | 3.6 | 4.0 | 4.3 | 5.0  | 5.3  | 5.8  | 2.9 | 3.6                              | 4.0 | 4.3 | 4.9  | 5.3  | 5.7  | 2.9 | 3.5 | 3.9                              | 4.2 | 4.8  | 5.1  | 5.6  |  |  |  |
|            | 4-1/2          | 4.1                              | 5.0 | 5.6 | 6.0 | 6.9  | 7.4  | 8.0  | 4.1 | 5.0                              | 5.6 | 6.0 | 6.9  | 7.3  | 8.0  | 4.0 | 4.9 | 5.5                              | 5.9 | 6.7  | 7.2  | 7.8  |  |  |  |
|            | 6              | 5.1                              | 6.1 | 6.9 | 7.4 | 8.5  | 9.0  | 9.9  | 5.0 | 6.1                              | 6.8 | 7.3 | 8.4  | 9.0  | 9.8  | 4.9 | 5.9 | 6.7                              | 7.2 | 8.2  | 8.8  | 9.6  |  |  |  |
|            | 7-1/2          | 6.2                              | 7.5 | 8.5 | 9.1 | 10.4 | 11.1 | 12.1 | 6.2 | 7.5                              | 8.4 | 9.0 | 10.3 | 11.0 | 12.0 | 6.0 | 7.3 | 8.2                              | 8.8 | 10.1 | 10.8 | 11.8 |  |  |  |
| Valve Type | Nominal Rating | Evaporator Temperature           |     |     |     |      |      |      |     |                                  |     |     |      |      |      |     |     |                                  |     |      |      |      |  |  |  |
|            |                | 0 °F                             |     |     |     |      |      |      |     | -20 °F                           |     |     |      |      |      |     |     | -40 °F                           |     |      |      |      |  |  |  |
|            |                | Pressure Drop Across Valve (PSI) |     |     |     |      |      |      |     | Pressure Drop Across Valve (PSI) |     |     |      |      |      |     |     | Pressure Drop Across Valve (PSI) |     |      |      |      |  |  |  |
|            |                | 75                               | 110 | 140 | 160 | 210  | 240  | 285  | 75  | 110                              | 140 | 160 | 210  | 240  | 285  | 75  | 110 | 140                              | 160 | 210  | 240  | 285  |  |  |  |
| BA/BN      | 1              | 0.8                              | 0.9 | 1.0 | 1.1 | 1.3  | 1.4  | 1.5  | 0.7 | 0.9                              | 1.0 | 1.1 | 1.2  | 1.3  | 1.4  | 0.7 | 0.9 | 1.0                              | 1.0 | 1.2  | 1.3  | 1.4  |  |  |  |
|            | 1-1/2          | 1.2                              | 1.5 | 1.7 | 1.8 | 2.0  | 2.2  | 2.4  | 1.2 | 1.4                              | 1.6 | 1.7 | 2.0  | 2.1  | 2.3  | 1.1 | 1.4 | 1.6                              | 1.7 | 1.9  | 2.0  | 2.2  |  |  |  |
|            | 2              | 1.7                              | 2.1 | 2.3 | 2.5 | 2.8  | 3.0  | 3.3  | 1.6 | 2.0                              | 2.3 | 2.4 | 2.8  | 3.0  | 3.2  | 1.6 | 1.9 | 2.2                              | 2.3 | 2.7  | 2.8  | 3.1  |  |  |  |
|            | 3              | 2.2                              | 2.6 | 3.0 | 3.2 | 3.6  | 3.9  | 4.2  | 2.1 | 2.5                              | 2.9 | 3.1 | 3.5  | 3.8  | 4.1  | 2.0 | 2.5 | 2.8                              | 3.0 | 3.4  | 3.6  | 3.9  |  |  |  |
|            | 3-1/2          | 2.8                              | 3.4 | 3.8 | 4.1 | 4.7  | 5.0  | 5.5  | 2.7 | 3.3                              | 3.7 | 4.0 | 4.5  | 4.8  | 5.3  | 2.6 | 3.2 | 3.6                              | 3.8 | 4.4  | 4.7  | 5.1  |  |  |  |
|            | 4-1/2          | 3.9                              | 4.7 | 5.3 | 5.7 | 6.5  | 7.0  | 7.6  | 3.8 | 4.6                              | 5.2 | 5.5 | 6.3  | 6.8  | 7.4  | 3.6 | 4.4 | 5.0                              | 5.3 | 6.1  | 6.5  | 7.1  |  |  |  |
|            | 6              | 4.8                              | 5.8 | 6.5 | 7.0 | 8.0  | 8.5  | 9.3  | 4.6 | 5.6                              | 6.3 | 6.8 | 7.7  | 8.3  | 9.0  | 4.5 | 5.4 | 6.1                              | 6.5 | 7.5  | 8.0  | 8.7  |  |  |  |
|            | 7-1/2          | 5.9                              | 7.1 | 8.0 | 8.6 | 9.8  | 10.5 | 11.4 | 5.7 | 6.9                              | 7.8 | 8.3 | 9.5  | 10.2 | 11.1 | 5.5 | 6.6 | 7.5                              | 8.0 | 9.2  | 9.8  | 10.7 |  |  |  |

Note: Standard capacity is rated at 100 °F liquid inlet and 40 °F evap temperature; with 160 Psi pressure drop across TXV per ARI-750-2001. These ratings assume vapor free liquid entering the thermal expansion valve.



## R-410A Balance Ported Valves (Tons) - TFE Series

| Valve Type | Nominal Rating | Evaporator Temperature           |      |      |      |      |      |      |                                  |      |      |      |      |      |      |                                  |      |      |      |      |      |      |
|------------|----------------|----------------------------------|------|------|------|------|------|------|----------------------------------|------|------|------|------|------|------|----------------------------------|------|------|------|------|------|------|
|            |                | 50 °F                            |      |      |      |      |      |      | 40 °F                            |      |      |      |      |      |      | 20 °F                            |      |      |      |      |      |      |
|            |                | Pressure Drop Across Valve (PSI) |      |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |      |
|            |                | 75                               | 110  | 140  | 160  | 210  | 240  | 285  | 75                               | 110  | 140  | 160  | 210  | 240  | 285  | 75                               | 110  | 140  | 160  | 210  | 240  | 285  |
| TFES       | 12             | 8.1                              | 9.9  | 11.1 | 11.9 | 13.6 | 14.6 | 15.9 | 8.1                              | 9.8  | 11.0 | 11.8 | 13.5 | 14.5 | 15.7 | 7.9                              | 9.6  | 10.8 | 11.5 | 13.2 | 14.1 | 15.4 |
|            | 16             | 12.4                             | 15.0 | 16.9 | 18.1 | 20.7 | 22.1 | 24.1 | 12.3                             | 14.8 | 16.7 | 17.9 | 20.5 | 21.9 | 23.9 | 12.0                             | 14.5 | 16.4 | 17.5 | 20.1 | 21.5 | 23.4 |
|            | 20             | 13.3                             | 16.1 | 18.2 | 19.5 | 22.3 | 23.8 | 26.0 | 13.2                             | 16.0 | 18.1 | 19.3 | 22.1 | 23.6 | 25.8 | 12.9                             | 15.7 | 17.7 | 18.9 | 21.6 | 23.1 | 25.2 |
| Valve Type | Nominal Rating | Evaporator Temperature           |      |      |      |      |      |      |                                  |      |      |      |      |      |      |                                  |      |      |      |      |      |      |
|            |                | 0 °F                             |      |      |      |      |      |      | -20 °F                           |      |      |      |      |      |      | -40 °F                           |      |      |      |      |      |      |
|            |                | Pressure Drop Across Valve (PSI) |      |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |      |
|            |                | 75                               | 110  | 140  | 160  | 210  | 240  | 285  | 75                               | 110  | 140  | 160  | 210  | 240  | 285  | 75                               | 110  | 140  | 160  | 210  | 240  | 285  |
| TFES       | 12             | 7.7                              | 9.3  | 10.5 | 11.2 | 12.9 | 13.8 | 15.0 | 7.5                              | 9.0  | 10.2 | 10.9 | 12.5 | 13.3 | 14.5 | 7.2                              | 8.7  | 9.8  | 10.5 | 12.0 | 12.9 | 14.0 |
|            | 16             | 11.7                             | 14.1 | 16.0 | 17.1 | 19.5 | 20.9 | 22.8 | 11.3                             | 13.7 | 15.5 | 16.5 | 18.9 | 20.2 | 22.1 | 10.9                             | 13.2 | 14.9 | 15.9 | 18.3 | 19.5 | 21.3 |
|            | 20             | 12.6                             | 15.2 | 17.2 | 18.4 | 21.1 | 22.5 | 24.5 | 12.2                             | 14.8 | 16.7 | 17.8 | 20.4 | 21.8 | 23.8 | 11.8                             | 14.3 | 16.1 | 17.2 | 19.7 | 21.1 | 22.9 |

Note: Standard capacity is rated at 100 °F liquid inlet and 40 °F evap temperature; with 160 Psi pressure drop across TXV per ARI 750-2001. These ratings assume vapor free liquid entering the thermal expansion valve.

## Refrigerant Liquid Temperature Correction Factors

|                          | Refrigerant Liquid Temperature °F |      |      |      |      |      |      |      |      |      |
|--------------------------|-----------------------------------|------|------|------|------|------|------|------|------|------|
|                          | 50                                | 60   | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  |
| R-410A Correction Factor | 1.37                              | 1.30 | 1.23 | 1.15 | 1.08 | 1.00 | 0.92 | 0.84 | 0.75 | 0.65 |

These factors include corrections for liquid refrigerant density and net refrigeration effect and are based on an average evaporator temperature of 40 °F with maximum 7 °F change in superheat. However, they may be used for any evaporator temperature from -40 °F to +40 °F; since the variation in the actual factors across this range is insignificant.









## R-410A Conventional Valves (kWatts)– A Series

| Valve Type        | Nominal Rating | Evaporator Temperature           |       |       |       |       |       |                                  |       |       |       |       |       |                                  |       |       |       |       |       |
|-------------------|----------------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|
|                   |                | 10°C                             |       |       |       |       |       | 0°C                              |       |       |       |       |       | -10°C                            |       |       |       |       |       |
|                   |                | Pressure Drop Across Valve (kPa) |       |       |       |       |       | Pressure Drop Across Valve (kPa) |       |       |       |       |       | Pressure Drop Across Valve (kPa) |       |       |       |       |       |
|                   |                | 750                              | 1000  | 1100  | 1450  | 1700  | 2000  | 750                              | 1000  | 1100  | 1450  | 1700  | 2000  | 750                              | 1000  | 1100  | 1450  | 1700  | 2000  |
| AA/AN/AAC/ANC     | 1/4            | 1.20                             | 1.39  | 1.46  | 1.67  | 1.81  | 1.97  | 1.20                             | 1.39  | 1.46  | 1.67  | 1.81  | 1.97  | 1.17                             | 1.35  | 1.41  | 1.62  | 1.76  | 1.91  |
| AA/AN/AAC/ANC/AFA | 1/2            | 2.12                             | 2.45  | 2.57  | 2.95  | 3.20  | 3.47  | 2.09                             | 2.41  | 2.53  | 2.90  | 3.14  | 3.41  | 2.05                             | 2.37  | 2.49  | 2.85  | 3.09  | 3.35  |
| AA/AN/AAC/ANC/AFA | 1              | 3.40                             | 3.92  | 4.12  | 4.73  | 5.12  | 5.55  | 3.36                             | 3.88  | 4.07  | 4.68  | 5.06  | 5.49  | 3.29                             | 3.80  | 3.99  | 4.58  | 4.96  | 5.38  |
| AA/AN/AAC/ANC/AFA | 1-1/2          | 4.89                             | 5.64  | 5.92  | 6.79  | 7.35  | 7.98  | 4.81                             | 5.56  | 5.83  | 6.69  | 7.25  | 7.86  | 4.71                             | 5.44  | 5.70  | 6.55  | 7.09  | 7.69  |
| AA/AN/AAC/ANC/AFA | 2              | 7.19                             | 8.30  | 8.70  | 9.99  | 10.82 | 11.74 | 7.12                             | 8.22  | 8.62  | 9.89  | 10.71 | 11.62 | 6.94                             | 8.01  | 8.40  | 9.65  | 10.45 | 11.33 |
| AA/AN/AAC/ANC/AFA | 3              | 10.09                            | 11.65 | 12.22 | 14.03 | 15.19 | 16.48 | 9.98                             | 11.53 | 12.09 | 13.88 | 15.03 | 16.30 | 9.70                             | 11.20 | 11.75 | 13.49 | 14.60 | 15.84 |
| AA/AN/AAC/ANC/AFA | 4              | 12.35                            | 14.27 | 14.96 | 17.18 | 18.60 | 20.17 | 12.21                            | 14.10 | 14.79 | 16.98 | 18.39 | 19.94 | 11.89                            | 13.73 | 14.40 | 16.54 | 17.91 | 19.42 |
| AA/AN/AAC/ANC     | 5              | 14.66                            | 16.92 | 17.75 | 20.38 | 22.06 | 23.93 | 14.51                            | 16.76 | 17.58 | 20.18 | 21.85 | 23.70 | 14.12                            | 16.31 | 17.11 | 19.64 | 21.27 | 23.07 |

| Valve Type        | Nominal Rating | Evaporator Temperature           |       |       |       |       |       |                                  |       |       |       |       |       |                                  |      |      |      |      |       |
|-------------------|----------------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|------|------|------|------|-------|
|                   |                | -20°C                            |       |       |       |       |       | -30°C                            |       |       |       |       |       | -40°C                            |      |      |      |      |       |
|                   |                | Pressure Drop Across Valve (kPa) |       |       |       |       |       | Pressure Drop Across Valve (kPa) |       |       |       |       |       | Pressure Drop Across Valve (kPa) |      |      |      |      |       |
|                   |                | 1000                             | 1100  | 1450  | 1700  | 2000  | 2300  | 1000                             | 1100  | 1450  | 1700  | 2000  | 2300  | 1000                             | 1100 | 1450 | 1700 | 2000 | 2300  |
| AA/AN/AAC/ANC     | 1/4            | 1.20                             | 1.26  | 1.45  | 1.57  | 1.70  | 1.83  | 0.85                             | 0.89  | 1.02  | 1.11  | 1.20  | 1.29  | 0.57                             | 0.59 | 0.68 | 0.74 | 0.80 | 0.86  |
| AA/AN/AAC/ANC/AFA | 1/2            | 2.12                             | 2.23  | 2.56  | 2.77  | 3.00  | 3.22  | 1.45                             | 1.52  | 1.75  | 1.89  | 2.05  | 2.20  | 0.96                             | 1.00 | 1.15 | 1.25 | 1.35 | 1.45  |
| AA/AN/AAC/ANC/AFA | 1              | 3.36                             | 3.53  | 4.05  | 4.38  | 4.76  | 5.10  | 2.34                             | 2.45  | 2.81  | 3.05  | 3.30  | 3.54  | 1.56                             | 1.63 | 1.88 | 2.03 | 2.20 | 2.36  |
| AA/AN/AAC/ANC/AFA | 1-1/2          | 4.81                             | 5.05  | 5.80  | 6.28  | 6.81  | 7.30  | 3.36                             | 3.53  | 4.05  | 4.38  | 4.76  | 5.10  | 2.23                             | 2.34 | 2.69 | 2.91 | 3.15 | 3.38  |
| AA/AN/AAC/ANC/AFA | 2              | 7.12                             | 7.46  | 8.57  | 9.28  | 10.06 | 10.79 | 4.96                             | 5.20  | 5.97  | 6.46  | 7.01  | 7.52  | 3.29                             | 3.45 | 3.96 | 4.29 | 4.66 | 4.99  |
| AA/AN/AAC/ANC/AFA | 3              | 9.98                             | 10.47 | 12.02 | 13.02 | 14.12 | 15.14 | 6.94                             | 7.28  | 8.35  | 9.05  | 9.81  | 10.52 | 4.60                             | 4.83 | 5.54 | 6.00 | 6.51 | 6.98  |
| AA/AN/AAC/ANC/AFA | 4              | 12.25                            | 12.85 | 14.75 | 15.97 | 17.32 | 18.58 | 8.50                             | 8.91  | 10.23 | 11.08 | 12.02 | 12.88 | 5.66                             | 5.94 | 6.82 | 7.38 | 8.01 | 8.59  |
| AA/AN/AAC/ANC     | 5              | 14.51                            | 15.22 | 17.48 | 18.92 | 20.53 | 22.01 | 10.09                            | 10.58 | 12.15 | 13.15 | 14.27 | 15.30 | 6.69                             | 7.02 | 8.06 | 8.72 | 9.46 | 10.15 |

## Refrigerant Liquid Temperature Correction Factors

|                          | Refrigerant Liquid Temperature °F |      |      |      |      |      |      |      |      |      |      |     |     |     |     |
|--------------------------|-----------------------------------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|
|                          | 0                                 | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  | 110 | 120 | 130 | 140 |
| R-12 Correction Factor   | 1.60                              | 1.54 | 1.48 | 1.42 | 1.36 | 1.30 | 1.24 | 1.18 | 1.12 | 1.06 | 1.00 | .94 | .88 | .82 | .75 |
| R-134a Correction Factor | 1.70                              | 1.63 | 1.56 | 1.49 | 1.42 | 1.36 | 1.29 | 1.21 | 1.14 | 1.07 | 1.00 | .93 | .85 | .78 | .71 |
| R-22 Correction Factor   | 1.56                              | 1.51 | 1.45 | 1.40 | 1.34 | 1.29 | 1.23 | 1.17 | 1.12 | 1.06 | 1.00 | .94 | .88 | .82 | .76 |
| R-404A/R-507 Correction  | 2.00                              | 1.90 | 1.80 | 1.70 | 1.60 | 1.50 | 1.40 | 1.30 | 1.20 | 1.10 | 1.00 | .90 | .80 | .70 | .50 |

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature of 0°F. However, they may be used for any evaporator temperature from -40°F to +40°F since the variation in the actual factors across this range is insignificant.

















# R-410A Balanced Ported Valves (kWatts)– B Series

| Valve Type | Nominal Rating | Evaporator Temperature           |      |      |      |      |      |      |      |                                  |      |      |      |      |      |      |      |                                  |      |      |      |      |  |  |  |
|------------|----------------|----------------------------------|------|------|------|------|------|------|------|----------------------------------|------|------|------|------|------|------|------|----------------------------------|------|------|------|------|--|--|--|
|            |                | 10 °C                            |      |      |      |      |      |      |      | 4 °C                             |      |      |      |      |      |      |      | -7 °C                            |      |      |      |      |  |  |  |
|            |                | Pressure Drop Across Valve (kPa) |      |      |      |      |      |      |      | Pressure Drop Across Valve (kPa) |      |      |      |      |      |      |      | Pressure Drop Across Valve (kPa) |      |      |      |      |  |  |  |
|            |                | 500                              | 800  | 1000 | 1100 | 1400 | 1700 | 2000 | 500  | 800                              | 1000 | 1100 | 1400 | 1700 | 2000 | 500  | 800  | 1000                             | 1100 | 1400 | 1700 | 2000 |  |  |  |
| BA/BN      | 1              | 2.8                              | 3.4  | 3.8  | 4.1  | 4.7  | 5.0  | 5.5  | 2.8  | 3.4                              | 3.8  | 4.1  | 4.7  | 5.0  | 5.4  | 2.7  | 3.3  | 3.7                              | 4.0  | 4.6  | 4.9  | 5.3  |  |  |  |
|            | 1-1/2          | 4.5                              | 5.5  | 6.2  | 6.6  | 7.6  | 5.0  | 5.5  | 4.5  | 5.4                              | 6.1  | 6.6  | 7.5  | 8.0  | 8.8  | 4.4  | 5.3  | 6.0                              | 6.4  | 7.4  | 7.9  | 8.6  |  |  |  |
|            | 2              | 6.3                              | 7.7  | 8.6  | 9.2  | 10.6 | 11.3 | 12.3 | 6.3  | 7.6                              | 8.6  | 9.2  | 10.5 | 11.2 | 12.2 | 6.1  | 7.4  | 8.4                              | 9.0  | 10.3 | 11.0 | 12.0 |  |  |  |
|            | 3              | 8.0                              | 9.7  | 11.0 | 11.8 | 13.5 | 14.4 | 15.7 | 8.0  | 9.7                              | 10.9 | 11.7 | 13.4 | 14.3 | 15.6 | 7.8  | 9.5  | 10.7                             | 11.4 | 13.1 | 14.0 | 15.2 |  |  |  |
|            | 3-1/2          | 10.4                             | 12.6 | 14.2 | 15.2 | 17.4 | 18.6 | 20.3 | 10.3 | 12.5                             | 14.1 | 15.1 | 17.3 | 18.4 | 20.1 | 10.1 | 12.2 | 13.8                             | 14.7 | 16.9 | 18.0 | 19.7 |  |  |  |
|            | 4-1/2          | 14.5                             | 17.6 | 19.8 | 21.2 | 24.3 | 25.9 | 28.3 | 14.4 | 17.4                             | 19.6 | 21.0 | 24.0 | 25.7 | 28.0 | 14.1 | 17.0 | 19.2                             | 20.5 | 23.5 | 25.2 | 27.4 |  |  |  |
|            | 6              | 17.7                             | 21.5 | 24.2 | 25.9 | 29.7 | 31.7 | 34.6 | 17.6 | 21.3                             | 24.0 | 25.7 | 29.4 | 31.5 | 34.3 | 17.2 | 20.8 | 23.5                             | 25.1 | 28.8 | 30.8 | 33.6 |  |  |  |
|            | 7              | 21.8                             | 26.4 | 29.8 | 31.9 | 36.5 | 39.0 | 42.5 | 21.6 | 26.2                             | 29.5 | 31.6 | 36.2 | 38.7 | 42.2 | 21.2 | 25.6 | 28.9                             | 30.9 | 35.4 | 37.9 | 41.3 |  |  |  |
| Valve Type | Nominal Rating | Evaporator Temperature           |      |      |      |      |      |      |      |                                  |      |      |      |      |      |      |      |                                  |      |      |      |      |  |  |  |
|            |                | -18 °C                           |      |      |      |      |      |      |      | -29 °C                           |      |      |      |      |      |      |      | -40 °C                           |      |      |      |      |  |  |  |
|            |                | Pressure Drop Across Valve (kPa) |      |      |      |      |      |      |      | Pressure Drop Across Valve (kPa) |      |      |      |      |      |      |      | Pressure Drop Across Valve (kPa) |      |      |      |      |  |  |  |
|            |                | 500                              | 800  | 1000 | 1100 | 1400 | 1700 | 2000 | 500  | 800                              | 1000 | 1100 | 1400 | 1700 | 2000 | 500  | 800  | 1000                             | 1100 | 1400 | 1700 | 2000 |  |  |  |
| BA/BN      | 1              | 2.7                              | 3.2  | 3.6  | 3.9  | 4.4  | 4.8  | 5.2  | 2.6  | 3.1                              | 3.5  | 3.8  | 4.3  | 4.6  | 5.0  | 2.5  | 3.0  | 3.4                              | 3.6  | 4.2  | 4.4  | 4.8  |  |  |  |
|            | 1-1/2          | 4.3                              | 5.2  | 5.8  | 6.3  | 7.2  | 7.7  | 8.3  | 4.1  | 5.0                              | 5.7  | 6.1  | 6.9  | 7.4  | 8.1  | 4.0  | 4.8  | 5.5                              | 5.8  | 6.7  | 7.2  | 7.8  |  |  |  |
|            | 2              | 6.0                              | 7.2  | 8.2  | 8.7  | 10.0 | 10.7 | 11.6 | 5.8  | 7.0                              | 7.9  | 8.5  | 9.7  | 10.4 | 11.3 | 5.6  | 6.8  | 7.6                              | 8.2  | 9.3  | 10.0 | 10.9 |  |  |  |
|            | 3              | 7.6                              | 9.2  | 10.4 | 11.1 | 12.7 | 13.6 | 14.8 | 7.4  | 8.9                              | 10.1 | 10.8 | 12.3 | 13.2 | 14.4 | 7.1  | 8.6  | 9.7                              | 10.4 | 11.9 | 12.7 | 13.9 |  |  |  |
|            | 3-1/2          | 9.8                              | 11.9 | 13.4 | 14.3 | 16.4 | 17.6 | 19.1 | 9.5  | 11.5                             | 13.0 | 13.9 | 15.9 | 17.0 | 18.5 | 9.2  | 11.1 | 12.5                             | 13.4 | 15.4 | 16.4 | 17.9 |  |  |  |
|            | 4-1/2          | 13.7                             | 16.6 | 18.7 | 20.0 | 22.9 | 24.5 | 26.7 | 13.3 | 16.1                             | 18.1 | 19.4 | 22.2 | 23.7 | 25.9 | 12.8 | 15.5 | 17.5                             | 18.7 | 21.4 | 22.9 | 24.9 |  |  |  |
|            | 6              | 16.8                             | 20.3 | 22.9 | 24.5 | 28.0 | 30.0 | 32.7 | 16.2 | 19.7                             | 22.2 | 23.7 | 27.2 | 29.0 | 31.7 | 15.7 | 19.0 | 21.4                             | 22.9 | 26.2 | 28.0 | 30.5 |  |  |  |
|            | 7              | 20.6                             | 25.0 | 28.1 | 30.1 | 34.5 | 36.9 | 40.2 | 20.0 | 24.2                             | 27.3 | 29.2 | 33.4 | 35.7 | 38.9 | 19.3 | 23.3 | 26.3                             | 28.1 | 32.2 | 34.5 | 37.5 |  |  |  |

Note: 1. These ratings assume vapor free liquid entering the thermal expansion valve.

2. Standard capacity is rated at 38°C liquid inlet and 4.4°C evap temperature, with 11 bar pressure drop across TXV.



## R-410A Balanced Ported Valves (kWatts) - TFE Series

| Valve Type | Nominal Rating | Evaporator Temperature           |      |      |      |      |      |      |                                  |      |      |      |      |      |      |                                  |      |      |      |      |      |      |
|------------|----------------|----------------------------------|------|------|------|------|------|------|----------------------------------|------|------|------|------|------|------|----------------------------------|------|------|------|------|------|------|
|            |                | 10 °C                            |      |      |      |      |      |      | 4 °C                             |      |      |      |      |      |      | -7 °C                            |      |      |      |      |      |      |
|            |                | Pressure Drop Across Valve (kPa) |      |      |      |      |      |      | Pressure Drop Across Valve (kPa) |      |      |      |      |      |      | Pressure Drop Across Valve (kPa) |      |      |      |      |      |      |
|            |                | 500                              | 800  | 1000 | 1100 | 1400 | 1700 | 2000 | 500                              | 800  | 1000 | 1100 | 1400 | 1700 | 2000 | 500                              | 800  | 1000 | 1100 | 1400 | 1700 | 2000 |
| TFES       | 42             | 28.6                             | 34.6 | 39.1 | 41.8 | 47.9 | 51.2 | 55.8 | 28.4                             | 34.3 | 38.7 | 41.4 | 47.5 | 50.7 | 55.3 | 27.7                             | 33.6 | 37.9 | 40.5 | 46.4 | 49.6 | 54.1 |
|            | 56             | 43.4                             | 52.5 | 59.3 | 63.4 | 72.6 | 77.6 | 84.6 | 43.0                             | 52.1 | 58.8 | 62.8 | 72.0 | 76.9 | 83.9 | 42.1                             | 51.0 | 57.5 | 61.5 | 70.4 | 75.3 | 82.1 |
|            | 70             | 46.8                             | 56.6 | 63.9 | 68.3 | 78.3 | 83.7 | 91.2 | 46.4                             | 56.2 | 63.4 | 67.7 | 77.6 | 83.0 | 90.4 | 45.4                             | 55.0 | 62.0 | 66.3 | 75.9 | 81.2 | 88.5 |
| Valve Type | Nominal Rating | Evaporator Temperature           |      |      |      |      |      |      |                                  |      |      |      |      |      |      |                                  |      |      |      |      |      |      |
|            |                | -18 °C                           |      |      |      |      |      |      | -29 °C                           |      |      |      |      |      |      | -40 °C                           |      |      |      |      |      |      |
|            |                | Pressure Drop Across Valve (kPa) |      |      |      |      |      |      | Pressure Drop Across Valve (kPa) |      |      |      |      |      |      | Pressure Drop Across Valve (kPa) |      |      |      |      |      |      |
|            |                | 500                              | 800  | 1000 | 1100 | 1400 | 1700 | 2000 | 500                              | 800  | 1000 | 1100 | 1400 | 1700 | 2000 | 500                              | 800  | 1000 | 1100 | 1400 | 1700 | 2000 |
| TFES       | 42             | 27.0                             | 32.7 | 36.9 | 39.5 | 45.2 | 48.3 | 52.7 | 26.2                             | 31.7 | 35.8 | 38.2 | 43.8 | 46.8 | 51.0 | 25.3                             | 30.6 | 34.5 | 36.9 | 42.3 | 45.2 | 49.2 |
|            | 56             | 41.0                             | 49.6 | 56.0 | 59.9 | 68.6 | 73.3 | 79.9 | 39.7                             | 48.1 | 54.2 | 58.0 | 66.4 | 71.0 | 77.4 | 38.3                             | 46.4 | 52.3 | 56.0 | 64.1 | 68.5 | 74.7 |
|            | 70             | 44.2                             | 53.5 | 60.4 | 64.5 | 73.9 | 79.0 | 86.1 | 42.8                             | 51.8 | 58.5 | 62.5 | 71.6 | 76.6 | 83.5 | 41.3                             | 50.0 | 56.4 | 60.3 | 69.1 | 73.9 | 80.5 |

- Note:**
- These ratings assume vapor free liquid entering the thermal expansion valve.
  - Standard capacity is rated at 38 °C liquid inlet and 4.4 °C evap temperature; with 11 bar pressure drop across TXV per ARI 750-2001.

## Refrigerant Liquid Temperature Correction Factors

|                          | Refrigerant Liquid Temperature °C |      |      |      |      |      |      |      |      |      |
|--------------------------|-----------------------------------|------|------|------|------|------|------|------|------|------|
|                          | 10                                | 16   | 21   | 27   | 32   | 38   | 43   | 49   | 54   | 60   |
| R-410A Correction Factor | 1.37                              | 1.30 | 1.23 | 1.15 | 1.08 | 1.00 | 0.92 | 0.84 | 0.75 | 0.65 |

These factors include corrections for liquid refrigerant density and net refrigeration effect and are based on an average evaporator temperature of 4.4 °C with maximum -14 °C change in superheat. However, they may be used for any evaporator temperature.

### Electrical Control Valves Series EXM/EXL for OEM use, stepper motor driven

#### Features

- for OEM use, stepper motor driven
- Unipolar stepper motor
- Removable coils in two versions: 12VDC/24VDC
- Continuous modulation of mass flow, no stress (liquid hammering) in the refrigeration circuit
- Linear flow
- Resolution: 500 pulses (half steps) or 250 full steps
- Hermetic design
- Only Bulk packing in boxes of 10 identical pieces
- Reliability: 225 millions pulses at continuous 40 bar differential pressure
- The valve is not released for refrigeration applications such as cold rooms and refrigeration display cabinets.



EXM/EXL with Coil

#### Selection Chart

| Type    | Part No. | Description         | Nominal Capacity kW |       |       | Connection size/style |
|---------|----------|---------------------|---------------------|-------|-------|-----------------------|
|         |          |                     | R410A               | R407C | R134a |                       |
| EXM-B0A | 800 399M | Valve less coil     | 1.8                 | 1.6   | 1.2   | 1/4" ODM              |
| EXM-B0B | 800 400M | Valve less coil     | 5.5                 | 5.0   | 3.7   |                       |
| EXM-B0D | 800 401M | Valve less coil     | 11.6                | 10.5  | 7.7   |                       |
| EXM-B0E | 800 402M | Valve less coil     | 13.7                | 12.4  | 9.1   |                       |
| EXM-125 | 800 403M | Coil 12VDC, 5 wires | -                   | -     | -     |                       |
| EXM-24U | 800 415M | Coil 24VDC, 6 wires | -                   | -     | -     |                       |
| EXL-B1F | 800 405M | Valve less coil     | 17.0                | 15.4  | 11.3  | 1/4" ODF<br>8 mm ODM  |
| EXL-B1G | 800 406M | Valve less coil     | 23.0                | 20.7  | 15.2  |                       |
| EXL-125 | 800 407M | Coil 12VDC, 5 wires | -                   | -     | -     |                       |
| EXL-24U | 800 416M | Coil 24VDC, 6 wires | -                   | -     | -     |                       |

The nominal capacity is based on the following conditions:

| Refrigerant  | Evaporating temperature | Condensing temperature                  | Subcooling |
|--------------|-------------------------|-----------------------------------------|------------|
| R407C        | +4°C (dew point)        | +38°C bubble point /<br>+43°C dew point | 1K         |
| R134a, R410A | +4°C                    | +38°C                                   | 1K         |

#### Technical Data

|                            |                                                             |
|----------------------------|-------------------------------------------------------------|
| Max. allowable pressure PS | 45 bar                                                      |
| MOPD                       | 40 bar in normal flow direction                             |
| Temperature range TS       | -30 to +70°C (liquid refrigerant)<br>-30 to +60°C (ambient) |
| CE marking                 | Not required                                                |
| Weight                     | Valve EXM: 65 g, EXL: 76 g<br>Coil EXM: 124 g, EXL: 156 g   |
| Package and delivery       | Bulk pack with 10 pieces                                    |

|                        |                                                              |
|------------------------|--------------------------------------------------------------|
| Stepper motor type     | Uni-polar, constant voltage                                  |
| Full travel time       | 16.6 seconds at 30 pulse/sec.<br>5.5 seconds at 90 pulse/sec |
| Reference position     | Mechanical stop at fully close position                      |
| Total number of pulses | 500 half step (250 full step)                                |
| Insulation class       | EXM: A<br>EXL: E                                             |
| Cable length           | 1m                                                           |

### Electrical Control Valves Series EX2

Pulse width modulated with exchangeable orifices

Can be used with EC2 display case controllers

#### Features

- Pulse width modulated
- Shut-off function eliminates the necessity of a separate solenoid valve
- Dampened plunger reduces noise effects of water hammer
- One valve body can be combined with 6 orifices to make 7 capacity ranges up to 18.7 kW (R407C)
- Applicable to all common refrigerants (HCFC, HFC) and for subcritical CO<sub>2</sub> applications
- Long lifetime, high reliability
- PS: 40bar, TS: -40 to +65°C



EX2 with Orifice

#### Selection Chart

| Type    | Part No. | Function                       | Capacity Q <sub>n</sub> at 100% open Valve (kW) * |      |       |      |       |      |       |
|---------|----------|--------------------------------|---------------------------------------------------|------|-------|------|-------|------|-------|
|         |          |                                | R134a                                             | R22  | R404A | R507 | R407C | R744 | R407F |
| EX2-M00 | 801 091  | 10 mm inlet / 12 mm outlet ODF | 13.3                                              | 17.2 | 12.1  | 12.1 | 18.7  | 35.0 | 19.2  |
| EX2-I00 | 801 090  | 3/8" inlet / 1/2" outlet ODF   |                                                   |      |       |      |       |      |       |
| EXO-004 | 801 089  | Orifice 4                      | 8.5                                               | 10.9 | 7.7   | 7.7  | 11.8  | 22.2 | 12.2  |
| EXO-003 | 801 088  | Orifice 3                      | 5.6                                               | 7.2  | 5.1   | 5.1  | 7.8   | 14.6 | 8.0   |
| EXO-002 | 801 087  | Orifice 2                      | 3.3                                               | 4.3  | 3.0   | 3.0  | 4.7   | 8.7  | 4.8   |
| EXO-001 | 801 086  | Orifice 1                      | 2.5                                               | 3.2  | 2.3   | 2.3  | 3.5   | 6.5  | 3.6   |
| EXO-000 | 801 085  | Orifice 0                      | 1.2                                               | 1.6  | 1.1   | 1.1  | 1.7   | 3.3  | 1.8   |
| EXO-00X | 801 084  | Orifice X                      | 0.7                                               | 0.9  | 0.6   | 0.6  | 1.0   | 1.8  | 1.0   |
| ASC 24V | 801 062  | Coil 24 VAC 50-60Hz (8W)       |                                                   |      |       |      |       |      |       |

\* Orifice should be selected at max. 80% of Q<sub>n</sub> to allow covering the load fluctuation

| Description                     | Type    | PCN (single packing) | PCN (bulk packing) |
|---------------------------------|---------|----------------------|--------------------|
| Plug and cable assembly (1.5 m) | ASC-N15 | 804570               | 804570M            |
| Plug and cable assembly (3.0 m) | ASC-N30 | 804571               | 804571M            |
| Plug and cable assembly (6.0 m) | ASC-N60 | 804572               | -                  |
| Plug PG9                        | Plug    | 801012               | -                  |
| Plug PG11                       | Plug    | 801013               | -                  |

The nominal capacity (Q<sub>n</sub>) is based on the following conditions:

| Refrigerant             | Evaporating temperature | Condensing temperature               | Subcooling |
|-------------------------|-------------------------|--------------------------------------|------------|
| R407C, R407F            | +4°C (dew point)        | +38°C bubble point / +43°C dew point | 1K         |
| R22, R134a, R404A, R507 | +4°C                    | +38°C                                | 1K         |
| R744                    | -40°C                   | -10°C                                | 1K         |

For other operating conditions the selection tool "Copeland Select" can be downloaded from [www.emersonclimate.eu](http://www.emersonclimate.eu), or use correction factors with following formula:

$$Q_n = Q_o \times K_t \times K_{\Delta p}$$

- Q<sub>n</sub>: Nominal valve capacity  
 Q<sub>o</sub>: Required cooling capacity  
 K<sub>t</sub>: Correction factor for evaporating and liquid temperature  
 K<sub>Δp</sub>: Correction factor for pressure drop at valve

| Liquid Temperature entering Valve °C | R134a                      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------------------|----------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                                      | Correction Factor Kt       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                                      | Evaporating Temperature °C |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                                      | +15                        | +10  | +5   | 0    | -5   | -10  | -15  | -20  | -25  | -30  | -40  |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +55                                  | 1.21                       | 1.23 | 1.26 | 1.29 | 1.33 | 1.33 | 1.39 | 1.43 | 1.47 | 1.52 | 1.62 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +50                                  | 1.13                       | 1.15 | 1.17 | 1.20 | 1.23 | 1.26 | 1.28 | 1.32 | 1.36 | 1.39 | 1.48 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +45                                  | 1.06                       | 1.08 | 1.10 | 1.12 | 1.15 | 1.17 | 1.19 | 1.22 | 1.26 | 1.29 | 1.37 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +40                                  | 0.99                       | 1.01 | 1.03 | 1.05 | 1.08 | 1.10 | 1.12 | 1.14 | 1.17 | 1.20 | 1.27 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +35                                  | 0.94                       | 0.96 | 0.97 | 0.99 | 1.01 | 1.03 | 1.05 | 1.07 | 1.10 | 1.12 | 1.18 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +30                                  | 0.89                       | 0.91 | 0.92 | 0.94 | 0.96 | 0.98 | 0.99 | 1.01 | 1.03 | 1.06 | 1.11 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +25                                  | 0.85                       | 0.86 | 0.87 | 0.89 | 0.91 | 0.92 | 0.94 | 0.95 | 0.97 | 1.00 | 1.04 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +20                                  | 0.81                       | 0.82 | 0.83 | 0.85 | 0.89 | 0.88 | 0.89 | 0.91 | 0.92 | 0.94 | 0.98 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +15                                  | 0.77                       | 0.78 | 0.79 | 0.81 | 0.82 | 0.84 | 0.84 | 0.86 | 0.88 | 0.89 | 0.93 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +10                                  |                            | 0.75 | 0.76 | 0.77 | 0.78 | 0.80 | 0.81 | 0.82 | 0.84 | 0.85 | 0.89 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +5                                   |                            |      | 0.73 | 0.74 | 0.75 | 0.76 | 0.77 | 0.78 | 0.80 | 0.81 | 0.84 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 0                                    |                            |      |      | 0.71 | 0.72 | 0.73 | 0.74 | 0.75 | 0.76 | 0.78 | 0.81 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| -5                                   |                            |      |      |      | 0.69 | 0.70 | 0.71 | 0.72 | 0.73 | 0.74 | 0.77 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| -10                                  |                            |      |      |      |      | 0.68 | 0.68 | 0.69 | 0.70 | 0.71 | 0.74 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Correction Factor KΔp                |                            |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Δp                                   | 3.5                        | 4.0  | 4.5  | 5.0  | 5.5  | 6.0  | 6.5  | 7.0  | 7.5  | 8.0  | 8.5  | 9.0  | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.0 | 18.0 | 19.0 | 20.0 | 21.0 |
| KΔp                                  | 1.34                       | 1.25 | 1.18 | 1.12 | 1.07 | 1.02 | 0.98 | 0.95 | 0.91 | 0.88 | 0.86 | 0.83 | 0.79 | 0.75 | 0.72 | 0.69 | 0.67 | 0.65 | 0.63 | 0.61 | 0.59 | 0.57 | 0.56 | 0.55 |
| Liquid Temperature entering Valve °C | R404A                      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                                      | Correction Factor Kt       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                                      | Evaporating Temperature °C |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                                      | +15                        | +10  | +5   | 0    | -5   | -10  | -15  | -20  | -25  | -30  | -35  | -40  |      |      |      |      |      |      |      |      |      |      |      |      |
| +55                                  | 1.42                       | 1.46 | 1.50 | 1.55 | 1.61 | 1.68 | 1.75 | 1.83 | 1.92 | 2.01 | 2.13 | 2.25 |      |      |      |      |      |      |      |      |      |      |      |      |
| +50                                  | 1.23                       | 1.26 | 1.30 | 1.34 | 1.38 | 1.43 | 1.48 | 1.54 | 1.61 | 1.68 | 1.75 | 1.84 |      |      |      |      |      |      |      |      |      |      |      |      |
| +45                                  | 1.10                       | 1.12 | 1.15 | 1.18 | 1.22 | 1.26 | 1.30 | 1.34 | 1.39 | 1.45 | 1.51 | 1.57 |      |      |      |      |      |      |      |      |      |      |      |      |
| +40                                  | 0.99                       | 1.02 | 1.04 | 1.07 | 1.09 | 1.13 | 1.16 | 1.20 | 1.24 | 1.28 | 1.33 | 1.38 |      |      |      |      |      |      |      |      |      |      |      |      |
| +35                                  | 0.91                       | 0.93 | 0.95 | 0.97 | 1.00 | 1.02 | 1.05 | 1.08 | 1.11 | 1.15 | 1.19 | 1.23 |      |      |      |      |      |      |      |      |      |      |      |      |
| +30                                  | 0.84                       | 0.86 | 0.88 | 0.90 | 0.92 | 0.94 | 0.96 | 0.99 | 1.02 | 1.05 | 1.08 | 1.11 |      |      |      |      |      |      |      |      |      |      |      |      |
| +25                                  | 0.79                       | 0.80 | 0.82 | 0.83 | 0.85 | 0.87 | 0.89 | 0.92 | 0.94 | 0.97 | 0.99 | 1.02 |      |      |      |      |      |      |      |      |      |      |      |      |
| +20                                  | 0.74                       | 0.75 | 0.77 | 0.78 | 0.80 | 0.81 | 0.83 | 0.85 | 0.87 | 0.90 | 0.92 | 0.95 |      |      |      |      |      |      |      |      |      |      |      |      |
| +15                                  | 0.70                       | 0.71 | 0.72 | 0.73 | 0.75 | 0.76 | 0.78 | 0.80 | 0.82 | 0.84 | 0.86 | 0.88 |      |      |      |      |      |      |      |      |      |      |      |      |
| +10                                  |                            | 0.67 | 0.68 | 0.69 | 0.71 | 0.72 | 0.74 | 0.75 | 0.77 | 0.79 | 0.81 | 0.83 |      |      |      |      |      |      |      |      |      |      |      |      |
| +5                                   |                            |      | 0.65 | 0.66 | 0.67 | 0.68 | 0.70 | 0.71 | 0.73 | 0.74 | 0.76 | 0.78 |      |      |      |      |      |      |      |      |      |      |      |      |
| 0                                    |                            |      |      | 0.63 | 0.64 | 0.65 | 0.66 | 0.68 | 0.69 | 0.71 | 0.72 | 0.74 |      |      |      |      |      |      |      |      |      |      |      |      |
| -5                                   |                            |      |      |      | 0.61 | 0.62 | 0.63 | 0.65 | 0.66 | 0.67 | 0.69 | 0.70 |      |      |      |      |      |      |      |      |      |      |      |      |
| -10                                  |                            |      |      |      |      | 0.60 | 0.61 | 0.62 | 0.63 | 0.64 | 0.65 | 0.67 |      |      |      |      |      |      |      |      |      |      |      |      |
| Correction Factor KΔp                |                            |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Δp                                   | 3.5                        | 4.0  | 4.5  | 5.0  | 5.5  | 6.0  | 6.5  | 7.0  | 7.5  | 8.0  | 8.5  | 9.0  | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.0 | 18.0 | 19.0 | 20.0 | 21.0 |
| KΔp                                  | 1.74                       | 1.63 | 1.54 | 1.46 | 1.39 | 1.33 | 1.28 | 1.23 | 1.19 | 1.15 | 1.12 | 1.09 | 1.03 | 0.98 | 0.94 | 0.9  | 0.87 | 0.84 | 0.81 | 0.79 | 0.77 | 0.75 | 0.73 | 0.71 |
| Liquid Temperature entering Valve °C | R744                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                                      | Correction Factor Kt       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                                      | Evaporating Temperature °C |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                                      | +5                         | 0    | -5   | -10  | -15  | -20  | -25  | -30  | -35  | -40  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +5                                   | 1.12                       | 1.10 | 1.09 | 1.08 | 1.08 | 1.08 | 1.07 | 1.07 | 1.08 | 1.08 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 0                                    |                            | 1.02 | 1.01 | 1.01 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.01 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| -5                                   |                            |      | 0.95 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| -10                                  |                            |      |      | 0.89 | 0.89 | 0.88 | 0.88 | 0.88 | 0.89 | 0.89 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| -15                                  |                            |      |      |      | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| -20                                  |                            |      |      |      |      | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| -25                                  |                            |      |      |      |      |      | 0.76 | 0.76 | 0.76 | 0.76 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| -30                                  |                            |      |      |      |      |      |      | 0.73 | 0.73 | 0.73 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| -35                                  |                            |      |      |      |      |      |      |      | 0.70 | 0.70 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| -40                                  |                            |      |      |      |      |      |      |      |      | 0.67 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Correction Factor KΔp                |                            |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Δp                                   | 5.0                        | 6.0  | 7.0  | 8.0  | 9.0  | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.0 | 18.0 | 19.0 | 20.0 | 21.0 | 22.0 | 23.0 | 24.0 | 25.0 | 26.0 | 27.0 | 28.0 |
| KΔp                                  | 1.81                       | 1.65 | 1.53 | 1.43 | 1.35 | 1.28 | 1.22 | 1.17 | 1.12 | 1.08 | 1.05 | 1.01 | 0.98 | 0.95 | 0.93 | 0.91 | 0.88 | 0.86 | 0.84 | 0.83 | 0.81 | 0.79 | 0.78 | 0.77 |

| Liquid Temperature entering Valve °C | R22                        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------------------|----------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                                      | Correction Factor Kt       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                                      | Evaporating Temperature °C |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                                      | +15                        | +10  | +5   | 0    | -5   | -10  | -15  | -20  | -25  | -30  | -35  | -40  |      |      |      |      |      |      |      |      |      |      |      |      |
| +55                                  | 1.17                       | 1.19 | 1.20 | 1.22 | 1.24 | 1.25 | 1.27 | 1.29 | 1.32 | 1.34 | 1.37 | 1.39 |      |      |      |      |      |      |      |      |      |      |      |      |
| +50                                  | 1.11                       | 1.11 | 1.13 | 1.15 | 1.16 | 1.18 | 1.20 | 1.22 | 1.24 | 1.26 | 1.28 | 1.30 |      |      |      |      |      |      |      |      |      |      |      |      |
| +45                                  | 1.05                       | 1.05 | 1.07 | 1.08 | 1.10 | 1.12 | 1.13 | 1.15 | 1.17 | 1.18 | 1.20 | 1.23 |      |      |      |      |      |      |      |      |      |      |      |      |
| +40                                  | 1.00                       | 1.01 | 1.02 | 1.03 | 1.04 | 1.06 | 1.07 | 1.09 | 1.10 | 1.12 | 1.14 | 1.16 |      |      |      |      |      |      |      |      |      |      |      |      |
| +35                                  | 0.95                       | 0.96 | 0.97 | 0.98 | 0.99 | 1.01 | 1.02 | 1.03 | 1.05 | 1.06 | 1.08 | 1.10 |      |      |      |      |      |      |      |      |      |      |      |      |
| +30                                  | 0.91                       | 0.92 | 0.93 | 0.94 | 0.95 | 0.96 | 0.97 | 0.98 | 1.00 | 1.01 | 1.03 | 1.04 |      |      |      |      |      |      |      |      |      |      |      |      |
| +25                                  | 0.87                       | 0.88 | 0.89 | 0.89 | 0.91 | 0.92 | 0.93 | 0.94 | 0.95 | 0.96 | 0.98 | 0.99 |      |      |      |      |      |      |      |      |      |      |      |      |
| +20                                  | 0.83                       | 0.84 | 0.85 | 0.86 | 0.87 | 0.88 | 0.89 | 0.90 | 0.91 | 0.92 | 0.93 | 0.95 |      |      |      |      |      |      |      |      |      |      |      |      |
| +15                                  | 0.80                       | 0.81 | 0.81 | 0.82 | 0.83 | 0.84 | 0.85 | 0.86 | 0.87 | 0.88 | 0.89 | 0.91 |      |      |      |      |      |      |      |      |      |      |      |      |
| +10                                  |                            | 0.78 | 0.78 | 0.79 | 0.80 | 0.81 | 0.82 | 0.83 | 0.84 | 0.85 | 0.86 | 0.87 |      |      |      |      |      |      |      |      |      |      |      |      |
| +5                                   |                            |      | 0.75 | 0.76 | 0.77 | 0.78 | 0.79 | 0.79 | 0.80 | 0.81 | 0.82 | 0.83 |      |      |      |      |      |      |      |      |      |      |      |      |
| 0                                    |                            |      |      | 0.73 | 0.74 | 0.75 | 0.76 | 0.77 | 0.77 | 0.78 | 0.79 | 0.80 |      |      |      |      |      |      |      |      |      |      |      |      |
| -5                                   |                            |      |      |      | 0.72 | 0.72 | 0.73 | 0.74 | 0.75 | 0.75 | 0.76 | 0.77 |      |      |      |      |      |      |      |      |      |      |      |      |
| -10                                  |                            |      |      |      |      | 0.70 | 0.71 | 0.71 | 0.72 | 0.73 | 0.74 | 0.74 |      |      |      |      |      |      |      |      |      |      |      |      |
| Correction Factor KΔp                |                            |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Δp                                   | 3.5                        | 4.0  | 4.5  | 5.0  | 5.5  | 6.0  | 6.5  | 7.0  | 7.5  | 8.0  | 8.5  | 9.0  | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.0 | 18.0 | 19.0 | 20.0 | 21.0 |
| KΔp                                  | 1.59                       | 1.49 | 1.40 | 1.33 | 1.27 | 1.22 | 1.17 | 1.13 | 1.09 | 1.05 | 1.02 | 0.99 | 0.94 | 0.90 | 0.86 | 0.83 | 0.80 | 0.77 | 0.75 | 0.72 | 0.70 | 0.68 | 0.67 | 0.65 |
| Correction Factor Kt                 |                            |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Evaporating Temperature °C           |                            |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                                      | +15                        | +10  | +5   | 0    | -5   | -10  | -15  | -20  | -25  | -30  | -35  | -40  |      |      |      |      |      |      |      |      |      |      |      |      |
| +55                                  | 1.39                       | 1.43 | 1.47 | 1.52 | 1.57 | 1.62 | 1.69 | 1.76 | 1.83 | 1.92 | 2.02 | 2.12 |      |      |      |      |      |      |      |      |      |      |      |      |
| +50                                  | 1.22                       | 1.24 | 1.28 | 1.31 | 1.35 | 1.40 | 1.44 | 1.49 | 1.55 | 1.61 | 1.68 | 1.76 |      |      |      |      |      |      |      |      |      |      |      |      |
| +45                                  | 1.09                       | 1.11 | 1.14 | 1.17 | 1.20 | 1.23 | 1.27 | 1.31 | 1.36 | 1.40 | 1.46 | 1.52 |      |      |      |      |      |      |      |      |      |      |      |      |
| +40                                  | 0.99                       | 1.01 | 1.03 | 1.06 | 1.08 | 1.11 | 1.14 | 1.17 | 1.21 | 1.25 | 1.29 | 1.34 |      |      |      |      |      |      |      |      |      |      |      |      |
| +35                                  | 0.91                       | 0.93 | 0.95 | 0.97 | 0.99 | 1.01 | 1.04 | 1.07 | 1.10 | 1.13 | 1.16 | 1.20 |      |      |      |      |      |      |      |      |      |      |      |      |
| +30                                  | 0.85                       | 0.86 | 0.88 | 0.89 | 0.91 | 0.93 | 0.96 | 0.98 | 1.01 | 1.03 | 1.06 | 1.09 |      |      |      |      |      |      |      |      |      |      |      |      |
| +25                                  | 0.79                       | 0.80 | 0.82 | 0.83 | 0.85 | 0.87 | 0.89 | 0.91 | 0.93 | 0.95 | 0.98 | 1.01 |      |      |      |      |      |      |      |      |      |      |      |      |
| +20                                  | 0.74                       | 0.75 | 0.77 | 0.78 | 0.79 | 0.81 | 0.83 | 0.85 | 0.87 | 0.89 | 0.91 | 0.93 |      |      |      |      |      |      |      |      |      |      |      |      |
| +15                                  | 0.71                       | 0.71 | 0.72 | 0.73 | 0.75 | 0.76 | 0.78 | 0.79 | 0.81 | 0.83 | 0.85 | 0.87 |      |      |      |      |      |      |      |      |      |      |      |      |
| +10                                  |                            | 0.67 | 0.68 | 0.69 | 0.70 | 0.72 | 0.73 | 0.74 | 0.76 | 0.78 | 0.79 | 0.81 |      |      |      |      |      |      |      |      |      |      |      |      |
| +5                                   |                            |      | 0.64 | 0.65 | 0.67 | 0.68 | 0.69 | 0.70 | 0.72 | 0.73 | 0.75 | 0.76 |      |      |      |      |      |      |      |      |      |      |      |      |
| 0                                    |                            |      |      | 0.62 | 0.63 | 0.64 | 0.65 | 0.66 | 0.68 | 0.69 | 0.70 | 0.72 |      |      |      |      |      |      |      |      |      |      |      |      |
| -5                                   |                            |      |      |      | 0.60 | 0.61 | 0.62 | 0.63 | 0.64 | 0.65 | 0.66 | 0.68 |      |      |      |      |      |      |      |      |      |      |      |      |
| -10                                  |                            |      |      |      |      | 0.58 | 0.59 | 0.60 | 0.61 | 0.62 | 0.63 | 0.64 |      |      |      |      |      |      |      |      |      |      |      |      |
| Correction Factor KΔp                |                            |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Δp                                   | 3.5                        | 4.0  | 4.5  | 5.0  | 5.5  | 6.0  | 6.5  | 7.0  | 7.5  | 8.0  | 8.5  | 9.0  | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.0 | 18.0 | 19.0 | 20.0 | 21.0 |
| KΔp                                  | 1.75                       | 1.64 | 1.54 | 1.46 | 1.4  | 1.34 | 1.28 | 1.24 | 1.19 | 1.16 | 1.12 | 1.09 | 1.03 | 0.99 | 0.94 | 0.91 | 0.87 | 0.84 | 0.82 | 0.79 | 0.77 | 0.75 | 0.73 | 0.71 |
| Correction Factor Kt                 |                            |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Evaporating Temperature °C           |                            |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                                      | +15                        | +10  | +5   | 0    | -5   | -10  | -15  | -20  | -25  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +55                                  | 1.26                       | 1.28 | 1.31 | 1.34 | 1.37 | 1.40 | 1.44 | 1.48 | 1.52 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +50                                  | 1.15                       | 1.17 | 1.19 | 1.22 | 1.24 | 1.27 | 1.30 | 1.33 | 1.37 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +45                                  | 1.06                       | 1.08 | 1.10 | 1.12 | 1.14 | 1.17 | 1.19 | 1.22 | 1.25 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +40                                  | 0.99                       | 1.01 | 1.02 | 1.04 | 1.06 | 1.08 | 1.11 | 1.13 | 1.16 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +35                                  | 0.93                       | 0.94 | 0.96 | 0.98 | 0.99 | 1.01 | 1.03 | 1.05 | 1.07 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +30                                  | 0.88                       | 0.89 | 0.90 | 0.92 | 0.93 | 0.95 | 0.97 | 0.99 | 1.01 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +25                                  | 0.83                       | 0.84 | 0.85 | 0.87 | 0.88 | 0.90 | 0.91 | 0.93 | 0.95 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +20                                  | 0.79                       | 0.80 | 0.81 | 0.82 | 0.84 | 0.85 | 0.86 | 0.88 | 0.90 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +15                                  | 0.75                       | 0.76 | 0.77 | 0.78 | 0.80 | 0.81 | 0.82 | 0.84 | 0.85 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +10                                  |                            | 0.73 | 0.74 | 0.75 | 0.76 | 0.77 | 0.78 | 0.80 | 0.81 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| +5                                   |                            |      | 0.71 | 0.72 | 0.73 | 0.74 | 0.75 | 0.76 | 0.77 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 0                                    |                            |      |      | 0.69 | 0.70 | 0.71 | 0.72 | 0.73 | 0.74 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| -5                                   |                            |      |      |      | 0.67 | 0.68 | 0.69 | 0.70 | 0.71 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| -10                                  |                            |      |      |      |      | 0.65 | 0.66 | 0.67 | 0.68 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Correction Factor KΔp                |                            |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Δp                                   | 3.5                        | 4.0  | 4.5  | 5.0  | 5.5  | 6.0  | 6.5  | 7.0  | 7.5  | 8.0  | 8.5  | 9.0  | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.0 | 18.0 | 19.0 | 20.0 | 21.0 |
| KΔp                                  | 1.81                       | 1.69 | 1.59 | 1.51 | 1.44 | 1.38 | 1.33 | 1.28 | 1.23 | 1.19 | 1.16 | 1.13 | 1.07 | 1.02 | 0.98 | 0.94 | 0.9  | 0.87 | 0.84 | 0.82 | 0.8  | 0.78 | 0.76 | 0.74 |

The Emerson EX3 is an electronically controlled expansion device that provides precise control of refrigerant flow and system superheat. The EX3 employs a high resolution, linear stepper motor in conjunction with a built in solenoid to provide positive closure in the event of power interruption. This automatic “shut-off” capability, combined with a take-a-part construction and water resistant design, make the EX3 a robust solution for many applications including supermarket cases and walk-ins.

### Features

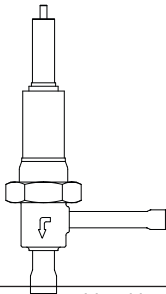
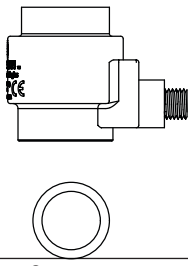
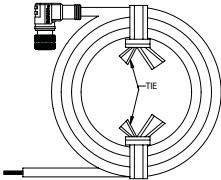
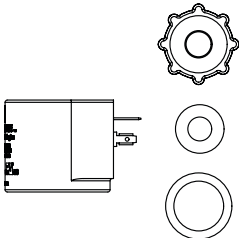
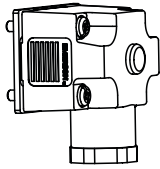
- Positive shut-off, no need for a battery
- IP67 Moisture Protection - Operates in humid, icy, and wet environments
- Superior control resolution for high efficiency (stepper motor driven)
- Very long life, High reliability
- Take-apart construction for easy field serviceability
  - Cleanable/removable strainer
  - Field exchangeable pin and orifice
- 1 valve assembly with 8 field serviceable pin/orifice combinations for flexible capacity

### Key Specifications

- MWP: 500psig
- MOPD: 360psig (Uni-flow)
- IP67 (with proper plugs)
- Working Temperature: -58~167°F (liquid)
- Seat leakage: 16 SCCM
- Integral solenoid coil with three voltage options: 230VAC/ 120VAC/ 24VAC
- Certification: UL/CE

### Ordering Information

The EX3 offers several different exchangeable components to maximize flexibility

| Step 1                                                                              | Step 2                                                                              | Step 3                                                                              | Step 4                                                                               | Step 5                                                                                |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Sizing<br>Valve Assembly                                                            | Order<br>Stator                                                                     | Select<br>Stator Plug<br>with Lead Wire                                             | Select<br>Solenoid Coil                                                              | Order<br>Coil Connector                                                               |
|  |  |  |  |  |
| Valve assembly with different pin and orifice sizes (capacity)                      | Stepper motor, with O-ring                                                          | M12 stator plug with lead wires                                                     | Solenoid coil with O-rings and screw cap                                             | Connector for reliable IP67 seal                                                      |
| Options:<br>EX3-2000 ~ EX3-5000<br>EX3-6000 ~ EX3-9000                              | Options:<br>EX3-S012                                                                | Options:<br>EX3-M300: 3 meters<br>EX3-M600: 6 meters                                | Options:<br>EX3-C230: 220-230VAC<br>EX3-C120: 110-120VAC<br>EX3-C024: 24VAC          | Options:<br>EX3-PL67                                                                  |



### Ordering Example

#### Step 1: Sizing the Valve

Nominal cooling capacity: Tons

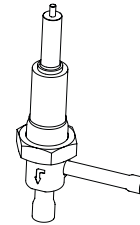
|        | EX3-2000 | EX3-3000 | EX3-4000 | EX3-5000 | EX3-6000 | EX3-7000 | EX3-8000 | EX3-9000 |
|--------|----------|----------|----------|----------|----------|----------|----------|----------|
| R-404A | 0.25     | 0.53     | 0.86     | 1.39     | 2.25     | 2.85     | 3.17     | 4.06     |
| R-134a | 0.29     | 0.60     | 0.97     | 1.57     | 2.54     | 3.22     | 3.59     | 4.59     |
| R-22   | 0.40     | 0.84     | 1.34     | 2.18     | 3.53     | 4.47     | 4.98     | 6.36     |
| R-407F | 0.38     | 0.79     | 1.27     | 2.06     | 3.34     | 4.23     | 4.71     | 6.02     |
| R-507  | 0.25     | 0.52     | 0.83     | 1.35     | 2.18     | 2.77     | 3.08     | 3.94     |

The nominal capacity is based upon the following standard conditions per ARI:

| Evaporating Temperature | Condensing Temperature |
|-------------------------|------------------------|
| 40°F(4.4°C)             | 100°F(38°C)            |

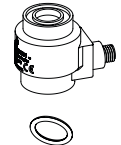
Select the appropriate valve

| PCN    | Model    | Description                            |
|--------|----------|----------------------------------------|
| 098252 | EX3-2000 | Valve assembly with Pin #2, Orifice #1 |
| 098253 | EX3-3000 | Valve assembly with Pin #3, Orifice #1 |
| 098254 | EX3-4000 | Valve assembly with Pin #4, Orifice #1 |
| 098255 | EX3-5000 | Valve assembly with Pin #5, Orifice #1 |
| 098256 | EX3-6000 | Valve assembly with Pin #6, Orifice #2 |
| 098257 | EX3-7000 | Valve assembly with Pin #7, Orifice #2 |
| 098258 | EX3-8000 | Valve assembly with Pin #8, Orifice #2 |
| 098259 | EX3-9000 | Valve assembly with Pin #9, Orifice #2 |



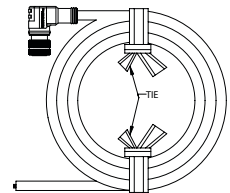
#### Step 2: Order Stepper Motor

| PCN    | Model    | Description                                      |
|--------|----------|--------------------------------------------------|
| 098263 | EX3-S012 | 1pc Stepper motor stator<br>1pc O-ring (Ø23.4mm) |



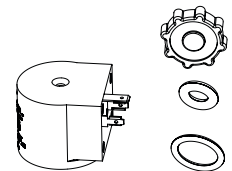
#### Step 3: Choose A Cable

| PCN    | Model    | Description                    |
|--------|----------|--------------------------------|
| 098250 | EX3-M300 | M12 plug to stator (3M Length) |
| 098251 | EX3-M600 | M12 plug to stator (6M Length) |



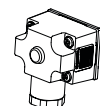
#### Step 4: Choose Solenoid Coil

| PCN    | Model    | Description                                                                                          |
|--------|----------|------------------------------------------------------------------------------------------------------|
| 098260 | EX3-C230 | Solenoid Coil, 220-230VAC 50/60Hz,<br>1pc Screw-cap,<br>1pc O-ring (Ø10.5mm)<br>1pc O-ring (Ø23.4mm) |
| 098261 | EX3-C120 | Solenoid Coil, 110-120VAC 50/60Hz,<br>1pc Screw-cap,<br>1pc O-ring (Ø10.5mm)<br>1pc O-ring (Ø23.4mm) |
| 098262 | EX3-C024 | Solenoid Coil, 24VAC 50/60Hz,<br>1pc Screw-cap,<br>1pc O-ring (Ø10.5mm)<br>1pc O-ring (Ø23.4mm)      |



#### Step 5: Choose plug to solenoid coil

| PCN    | Model    | Description                |
|--------|----------|----------------------------|
| 098276 | EX3-PL67 | Connector (Solenoid), IP67 |



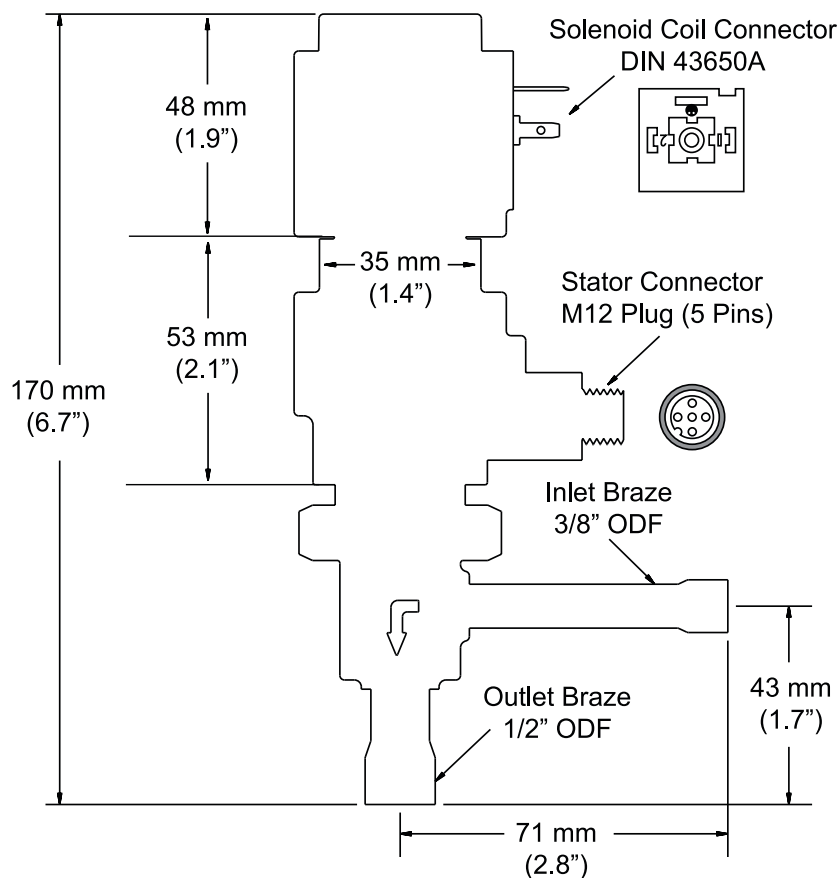
**Note:**

1. It is strongly recommended to use EX3-PL67 to for reliable IP67 class protection.
2. Please use UL2464 30AWG (minimum) 3C OD 7.0mm wiring for solenoid coil.

## Replacement Components

| Item             | Strainer Kit    |     | Pin Assembly Kit                                                                                                                     |      | Orifice Kit                            |     | Seal Assembly Kit |      | O-ring (Body)   |      |
|------------------|-----------------|-----|--------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------|-----|-------------------|------|-----------------|------|
| PCN(Description) | 098264          |     | 098265(Pin#2)<br>098266(Pin#3)<br>098267(Pin#4)<br>098268(Pin#5)<br>098269(Pin#6)<br>098270(Pin#7)<br>098271(Pin#8)<br>098272(Pin#9) |      | 098273(Orifice#1)<br>098274(Orifice#2) |     | 098277            |      | 098275          |      |
| Visual           |                 |     |                                                                                                                                      |      |                                        |     |                   |      |                 |      |
| Components       | O-ring: Ø26.7mm | 1pc | O-ring: Ø26.7mm                                                                                                                      | 1pc  | O-ring: Ø26.7mm                        | 1pc | O-ring: Ø10.5mm   | 1pc  | O-ring: Ø26.7mm | 5pcs |
|                  | Strainer        | 1pc | Pin                                                                                                                                  | 1pc  | Orifice                                | 1pc | Screw cap         | 1pc  | –               | –    |
|                  | Strainer Cover  | 1pc | Snap-ring                                                                                                                            | 2pcs | –                                      | –   | O-ring: Ø23.4mm   | 2pcs | –               | –    |

## Dimensional Data



# EX4-EX8 Electrical Control Valve

## EX Valves & Controls

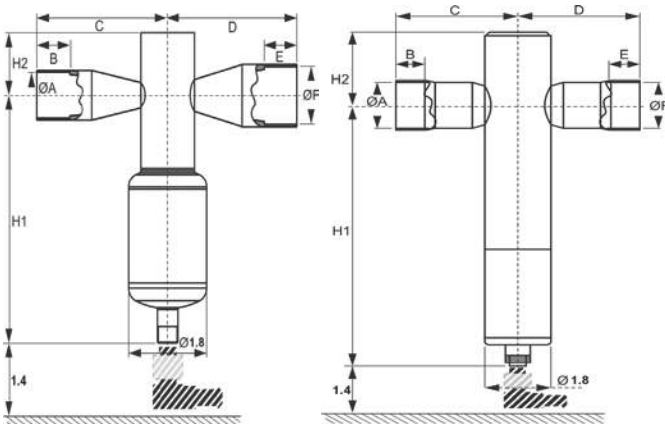
The EX4-EX8 are stepper motor driven valves that are optimized for the control of liquid or gaseous mass flow in refrigeration systems. Multifunction capability as expansion valve, hot gas bypass, suction gas throttling, head pressure, liquid line actuator and other applications systems.

### Features

- Fully hermetic design
- Fast full stroke time
- Applicable to all common refrigerants (HCFC, HFC), for subcritical CO<sub>2</sub> applications
- High resolution and excellent repeatability
- Bi-flow versions for heat pump applications
- Positive shut-off function to eliminate the use of an additional solenoid valve
- Linear flow capacity
- Wide capacity range (10 - 100%)
- Continuous modulation of mass flow, no stress (liquid hammering) in the refrigeration circuit
- Direct coupling of motor and valve for high reliability (no gear mechanism)
- Ceramic slide and port for accurate flow and minimal wear
- Balanced force design
- Corrosion resistant stainless steel body, and connections

| Valve Type | Inlet x Outlet (ODF) | B   | C   | D   | E   | H1  | H2  |
|------------|----------------------|-----|-----|-----|-----|-----|-----|
| EX4-I21    | 3/8" x 5/8"          | 0.3 | 1.8 | 2.2 | 0.4 | 4.4 | 1.0 |
| EX5-U21    | 5/8" x 7/8"          | 0.4 | 2.2 | 2.6 | 0.6 | 4.4 | 1.0 |
| EX6-I21    | 7/8" x 1-1/8"        | 0.6 | 2.6 | 3.0 | 0.7 | 4.4 | 1.0 |
| EX7-I21    | 1-1/8" x 1-3/8"      | 0.8 | 3.1 | 3.2 | 0.9 | 6.2 | 1.7 |
| EX8-I21    | 1-5/8" x 1-5/8"      | 0.8 | 3.1 | 3.1 | 0.8 | 7.9 | 2.2 |

### Dimensional Data (in)



### Specifications

- CE marking: EX4/EX5: not required  
EX6-EX8: required, Cat I, Module A
- MOPD: EX4-EX6: 580 psid  
EX7: 507 psid  
EX8: 435 psid
- MWP: EX4-EX7: 870 psig  
EX8: 650 psig
- Ambient temperature: -40°F to +130°F
- Humidity: 5 to 95% R.H.
- External leakage: ≤ 0.1 oz/yr (R-22)
- Stepper motor type: Bi-polar, phase current by chopper control (constant current)
- Electrical connection: 4 pin terminal via plug
- Driver supply voltage: Recommended: 24 VDC  
Range: 18-36 VDC
- Phase current (operating): EX4-EX6: 500 mA max  
EX7: 750 mA  
EX8: 800 mA
- Holding current: EX4-EX6: 100 mA  
EX7: 250 mA  
EX8: 500 mA
- Nominal input power per phase: EX4-EX6: 3.5W  
EX7-EX8: 5W
- Phase inductance: EX4-EX6: 30 mH ±25%  
EX7: 20 mH ±25%  
EX8: 22 mH ±25%
- Step mode: 2 phase full step
- Step angle: 1.8° per step ±8%
- Total number of steps: EX4-EX6: 750 full steps  
EX7: 1600 full steps  
EX8: 2600 full steps
- Stepping rate: 500 Hz
- Winding resistance per phase: EX4-EX6: 13 ohm ±10%  
EX7: 8 ohm ±10%  
EX8: 6 ohm ±10%
- Full travel time: EX4-EX6: 1.5 seconds  
EX7: 3.2 seconds  
EX8: 5.2 seconds

### EX4/EX5/EX6/EX7/EX8

Nominal capacities as expansion valves and liquid injection valves

### Nominal Capacities in Tons (10% - 100%)

| Valve Type | R-407C     | R-22         | R-134a       | R-404A       | R-410A       | R-23       | R-124    | R-744        |
|------------|------------|--------------|--------------|--------------|--------------|------------|----------|--------------|
| EX4        | .6 – 5     | .6 – 4.7     | .3 – 3.6     | .3 – 3.3     | .6 – 5.5     | .6 – 5.1   | .3 – 2.6 | .9 – 9.5     |
| EX5        | 1.4 – 15.1 | 1.4 – 14.2   | 1.1 – 11.1   | 1.1 – 10     | 1.7 – 16.5   | 1.4 – 15.4 | .9 – 8   | 2.8 – 29     |
| EX6        | 4.3 – 35.8 | 4.3 – 34.1   | 2.8 – 26.4   | 2.8 – 23.9   | 4.3 – 39.8   | 3.7 – 37   | 2 – 19.1 | 6.8 – 69.4   |
| EX7        | 10 – 98.7  | 10 – 93.8    | 7.1 – 72.5   | 7.1 – 65.4   | 11.4 – 109.5 | –          | –        | 19.9 – 190.5 |
| EX8        | 28.4 – 263 | 25.6 – 250.2 | 19.9 – 193.4 | 17.1 – 174.3 | 28.4 – 292   | –          | –        | 51.2 – 508.7 |

Note 1: EX Bi-flow versions are not released for use with R-124 and R-23 refrigerants.

Note 2: EX Bi-flow versions have identical capacity in both flow direction.

| Refrigerant                  | Evaporating Temperature | Condensing Temperature | Subcooling |
|------------------------------|-------------------------|------------------------|------------|
| R-22, R-134a, R-404A, R-410A | +40 °F                  | +100°F                 | 2°F        |
| R-407C                       | +40°F dew point         | +100°F bubble          | 2°F        |
| R-124                        | +68°F                   | +176°F                 | 2°F        |
| R-23                         | -76°F                   | -13°F                  | 2°F        |
| R-744                        | -40°F                   | 14°F                   | 2°F        |

The nominal capacity is based on the following conditions:

### Ordering Information

| Description                          | Type    | Inlet Connection (in) | Outlet Connection (in) | PCN    |
|--------------------------------------|---------|-----------------------|------------------------|--------|
| EX4 Electrical Control Valve         | EX4-I21 | 3/8                   | 5/8                    | 800615 |
| EX5 Electrical Control Valve         | EX5-U21 | 5/8                   | 7/8                    | 800618 |
| EX6 Electrical Control Valve         | EX6-I21 | 7/8                   | 1 1/8                  | 800620 |
| EX7 Electrical Control Valve         | EX7-I21 | 1 1/8                 | 1 3/8                  | 800624 |
| EX8 Electrical Control Valve         | EX8-I21 | 1 5/8                 | 1 5/8                  | 804631 |
| EX4 Bi-Flow Electrical Control Valve | EX4-U31 | 5/8                   | 5/8                    | 800617 |
| EX5 Bi-Flow Electrical Control Valve | EX5-U31 | 7/8                   | 7/8                    | 800619 |
| EX6 Bi-Flow Electrical Control Valve | EX6-I31 | 1 1/8                 | 1 1/8                  | 800622 |
| EX7 Bi-Flow Electrical Control Valve | EX7-U31 | 1 3/8                 | 1 3/8                  | 800626 |
| Valve Connector Cable                | EXV-M60 | N/A                   | N/A                    | 804665 |

# EXD-U00 Universal Driver Module

EX Valves & Controls

The EXD-U00 is a universal driver that enables the operation of Emerson stepper motor driven valves used in applications such as solenoid valves, electronic expansion valves, hot gas bypass or evaporator pressure regulator as capacity control, crankcase pressure regulator, heat reclaim regulator, and liquid level control.

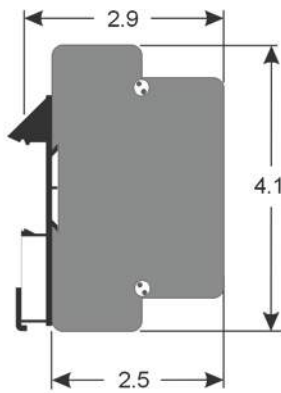
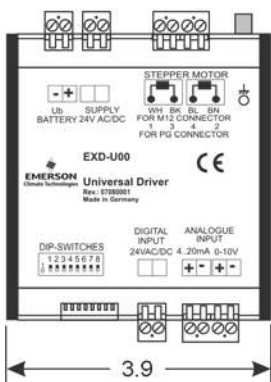
## Features

- Valve opening is proportional to 4-20mA or 0-10V analog input signal
- Plug and play, no parameter settings required
- Digital input can be used to force valve closing
- Dip-switches for selection of EX control valve type, analog input and start mode

## Ordering Information

| Description             | Type    | Reference # | PCN    |
|-------------------------|---------|-------------|--------|
| Universal Driver Module | EXD-U00 | 804557      | 097710 |
| Electrical Terminal Kit | K09-U00 | 804559      | 097711 |

## Dimensional Data (in)



## Specifications

- Supply voltage: 24V AC  $\pm 10\%$ , 50-60HZ, 24V DC  $\pm 10\%$
- Supply current: To be protected by a 0.8A external fuse
- Power consumption: 10VA in conjunction with EX valve
- Temperature: Storage:  $-5^{\circ}\text{F}$  to  $+150^{\circ}\text{F}$   
Operating:  $32^{\circ}\text{F}$  to  $+140^{\circ}\text{F}$
- Humidity:  $< 90\%$  R.H. non condensing
- Approvals: EMC EN 61326-1, EN50081, EN50082
- Marking: CE
- Input analogue signal: 4-20 mA  
Burden  $364\ \Omega$   
0-10V  
Impedance  $27\text{K}\Omega$
- Digital input: 24V AC  $\pm 10\%$ , 50-60Hz, 24V DC  $\pm 10\%$
- Connection to EX4-8: Via 4 wires cable, maximum 6m length  
AWG 20/22
- Connector: Screw terminals for wire size 12/20 AWG
- Mounting: DIN rail mounted
- Housing: Aluminum

## Display Case and Universal Controllers Series EC2

With Web Server functionality and TCP/IP Protocol or with LON Protocol (FTT-10)

### Features of EC2-3 models:

- Superheat control for Pulse Width Modulated Valves (e.g. EX2-Series) see Selection Table
- Self-adapting controller, no user setup necessary
- Limitation of evaporating temperature (MOP)



EC2 Controller

### Features of all models:

- Air temperature control
- Defrost timer for natural, electric or hot-gas defrost with fan control
- Integrated timer and alarm functions
- All parameters and functions are programmable:
  - via standard Web browser (EC2-xx2 models)
  - via LON communication (EC2-xx1 models)
  - with integral keypad
- Password protection to eliminate unauthorized use
- Multiple language support ([www.emersonclimate.eu](http://www.emersonclimate.eu))
- Standard 29 x 71 mm cutout dimensions
- 2 ½ digit display in °C or °F
- CE approved

### Communication TCP/IP Ethernet

- Web Server function provides monitoring and configuration through a standard web browser. Ethernet interface, as used in most office PCs
- Graphical visualisation via built-in Web pages
- Fixed or dynamic TCP/IP address with username and password
- Alarms via e-mail
- Up to 30 days datalog

### Options

- Standard screw terminal kit K02-000 available for all models.
- OEM crimp versions available upon request
- Ethernet cable ECX-N60 for EC2-xx2
- NTC temperature sensors
- Transformers for 230VAC mains

### Communication LON (see chapter "Electronic Controllers and Sensors")

- Echelon® LON FTT-10 interface based on the Lonworks® standard for monitoring and configuration through a supervisory system

### Example for Web page monitoring



### Selection Table

| Functional Overview                                                                                                                                               | TCP/IP  |                      |               | LON     |                      |               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------|---------------|---------|----------------------|---------------|
|                                                                                                                                                                   | Type    | Part No. single unit | Part No. Kit* | Type    | Part No. single unit | Part No. Kit* |
| <b>Display Case and Cold Room Controllers</b>                                                                                                                     |         |                      |               |         |                      |               |
| Temperature and Superheat Control of EX2 (Press. / Temp. input)<br>Version for use with a compressor pack system                                                  | EC2-352 | 807 772              | 808 009       | EC2-351 | 807 771              | 808 008       |
|                                                                                                                                                                   | EC2-372 | 807 688              | 808 011       | EC2-371 | 807 689              | 808 010       |
| * Kit contains terminal kit, pressure transmitter PT5-07M with cable assembly, transformer 25VA, 4 NTC sensors 6m fin, pipe and air version (EC2-35x only)        |         |                      |               |         |                      |               |
| Temperature and Superheat Control of EX2 (Temp. / Temp. input)<br>Version for use with a compressor pack system                                                   | EC2-312 | 807 682              | 808 005       | EC2-311 | 807 681              | 808 004       |
|                                                                                                                                                                   | EC2-392 | 807 692              | 808 007       | EC2-391 | 807 691              | 808 006       |
| * Kit contains terminal kit, transformer 25VA, 5 NTC sensors 6m fin, pipe and air version (EC2-31x only), see chapter "Accessories & Spare Parts".                |         |                      |               |         |                      |               |
| Thermostat control, for Thermo-Expansion valve<br>Version for use with a compressor pack system                                                                   | EC2-212 | 807 482              | 808 001       | EC2-211 | 807 481              | 808 000       |
|                                                                                                                                                                   | EC2-292 | 807 672              | 808 003       | EC2-291 | 807 671              | 808 002       |
| * Kit contains terminal kit, transformer 25VA, 3 NTC sensors 6m fin, pipe (EC2-29x only) and air version (EC2-21x only), see chapter "Accessories & Spare Parts". |         |                      |               |         |                      |               |
| <b>Universal Controllers</b><br>with 2 digital inputs, 3 temperature inputs, 4 relay outputs                                                                      | EC2-112 | 807 472              |               | EC2-111 | 807 471              |               |

### Accessories

|                                                                                 |                   | Type    | Part No.       |  <p>K02-000</p>  <p>ECN-XX</p>  <p>PT5    PT4-Mxx</p>  <p>ECT-323</p> |
|---------------------------------------------------------------------------------|-------------------|---------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Terminal kits, cables</b>                                                    |                   |         |                |                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Terminal kit for EC2-31x, -35x, -37x, -39x                                      |                   | K02-000 | <b>800 050</b> |                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Terminal kit for EC2-11x, -21x, -29x                                            |                   | K02-211 | <b>807 647</b> |                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Ethernet Cable RJ45/4-pin-conn.                                                 | 6m cable length   | ECX-N60 | <b>804 422</b> |                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Sensors</b>                                                                  |                   |         |                |                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Air-Sensors, single insulated (10 kΩ at 25°C)<br>for EC2-21x, -31x, -35x        | 1.5m cable length | ECN-S15 | <b>804 304</b> |                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                 | 3m cable length   | ECN-S30 | <b>804 305</b> |                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                 | 6m cable length   | ECN-S60 | <b>804 284</b> |                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Pipe and pocket sensors NTC (10 kΩ at 25°C)<br>Air sensors for EC2-29x, EC2-3xx | 3m cable length   | ECN-N30 | <b>804 496</b> |                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                 | 6m cable length   | ECN-N60 | <b>804 497</b> |                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                 | 12m cable length  | ECN-N99 | <b>804 499</b> |                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Defrost sensor (10 kΩ at 25°C)<br>(including fin clip)                          | 6m cable length   | ECN-F60 | <b>804 283</b> |                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Pressure transmitter                                                            | -0.8...7 bar      | PT5-07M | <b>802 350</b> |                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                 | 0 ... 18 bar      | PT5-18M | <b>802 351</b> |                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Cable plug assembly for PT5                                                     | 1.5m cable length | PT4-M15 | <b>804 803</b> |                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                 | 3m cable length   | PT4-M30 | <b>804 804</b> |                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                 | 6m cable length   | PT4-M60 | <b>804 805</b> |                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                 |                   |         |                |                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Transformer</b><br>230VAC Input, 24V output                                  | 25VA              | ECT-323 | <b>804 424</b> |                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                 | 20VA              | ECT-523 | <b>804 332</b> |                                                                                                                                                                                                                                                                                                                                                                                                                   |

### Technical Data

|                                       |                                                                                                                                                                      |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supply voltage                        | 24V AC ±10% 50/60 Hz<br>class II only                                                                                                                                |
| Power consumption                     | 20VA incl. EX2 valve (EC2-3xx)<br>4VA (EC2-11x, -21x, -29x)                                                                                                          |
| Inputs                                | up to 5 Temperature sensors:<br>Refrigerant inlet (saturated temp.)<br>Refrigerant outlet (suction temp.)<br>Air into / Air out of evaporator<br>Defrost termination |
| Output contact rating<br>cos φ = 0.5: | SPDT & SPST relays,<br>250V max / 8A resistive load EC2-3xx<br>6A resistive load EC2-2xx<br>2A inductive load all EC2<br>(defrost, compressor, fan)                  |
| (Voltage free contacts)               |                                                                                                                                                                      |
| Triac output to EX2                   | 24VAC, 1 A max.                                                                                                                                                      |
| Communication                         | LON: FTT10, TCP/IP: Ethernet                                                                                                                                         |

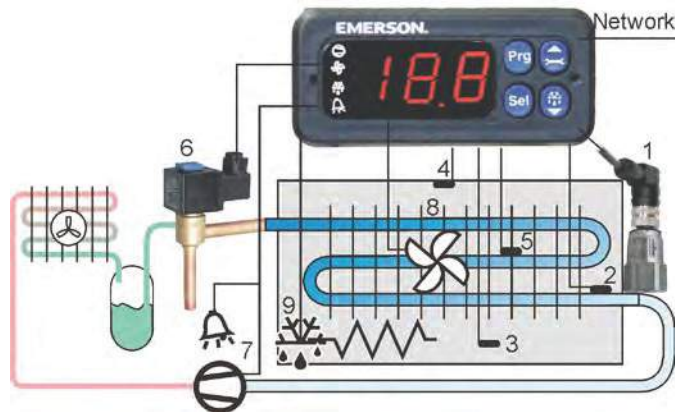
|                                     |                                                                                                        |
|-------------------------------------|--------------------------------------------------------------------------------------------------------|
| Temperature storage                 | -10 ... +70°C                                                                                          |
| operation                           | 0 ... +50°C (housing)                                                                                  |
| operation                           | -50 ... +50°C (NTC sensor)                                                                             |
| Display                             | 2 1/2 digits red LED<br>Automatic decimal point between<br>-19.9 & +19.9<br>Switchable between °C & °F |
| Indicator LEDs<br>Varies upon model | Compressor, defrost, fan, alarm,<br>service LED                                                        |
| Protection (EN 60529)               | IP 65 (front protection with gasket)                                                                   |
| Sensor type                         | NTC 10KΩ @ 25°C<br>Order codes see above                                                               |
| Weight                              | ~ 150g                                                                                                 |

### Typical Order Package for a display case

|                          |         |         |
|--------------------------|---------|---------|
| Case Controller          | EC2-312 | 807 682 |
| Terminal Kit             | K02-000 | 800 050 |
| Electrical Control Valve | EX2-M00 | 801 091 |
| Orifice size 3           | EXO-003 | 801 088 |
| Coil 24VAC / 10W         | ASC 24V | 801 062 |
| Cable Assembly for ASC   | ASC-N15 | 804 570 |
| 2 pipe sensors           | ECN-N60 | 804 497 |
| 2 air sensors            | ECN-S30 | 804 305 |
| Defrost sensor           | ECN-F60 | 804 283 |
| Transformer 25VA         | ECT-323 | 804 424 |
| Ethernet Cable 6m        | ECX-N60 | 804 422 |

## Block Diagrams

EC2-35x / -37x Case Controller (EX2, Press/Temp)



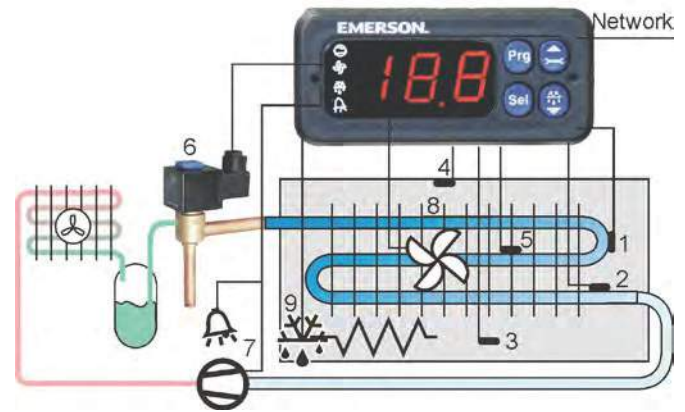
### Inputs

- 1 = Suction pressure
- 2 = Coil out temperature
- 3 = Air in temperature
- 4 = Air out temperature
- 5 = Defrost temperature

### Outputs

- 6 = EX2 Expansion valve
- 7 = Compressor (EC2-35x only) Spare relay (EC2-37x only)
- 8 = Fan
- 9 = Defrost heater

EC2-31x / -39x Case Controller (EX2, Temp/Temp)



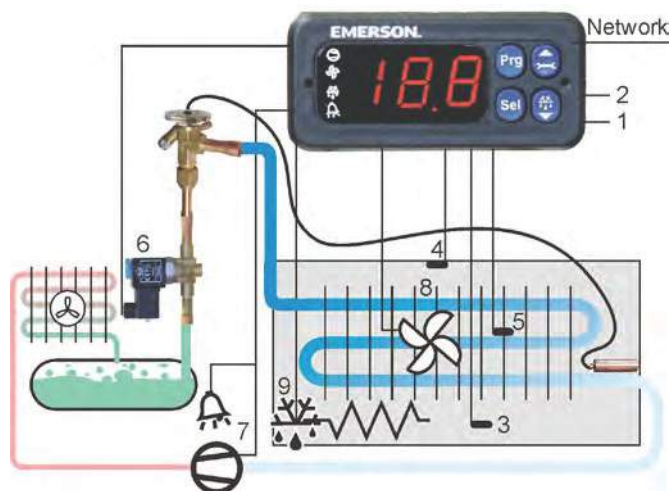
### Inputs

- 1 = Coil in temperature
- 2 = Coil out temperature
- 3 = Air in temperature
- 4 = Air out temperature
- 5 = Defrost temperature

### Outputs

- 6 = EX2 Expansion valve
- 7 = Compressor (EC2-31x only) Spare relay (EC2-39x only)
- 8 = Fan
- 9 = Defrost heater

EC2-21x / -29x Case Controller (TXV)



### Inputs

- 1 = Digital Input
- 2 = Digital Input
- 3 = Air in temperature
- 4 = Air out temperature
- 5 = Defrost temperature

### Outputs

- 6 = Solenoid valve
- 7 = Compressor (EC2-21x only) Spare relay (EC2-29x only)
- 8 = Fan
- 9 = Defrost heater

EC2-11x Universal I/O Controller



### Inputs

- 1 = Digital Input
- 2 = Digital Input
- 3 = Temperature input
- 4 = Temperature input
- 5 = Temperature input

### Outputs

- 6 = Digital output
- 7 = Digital output
- 8 = Digital output
- 9 = Digital output

### Selection Table

| Description | TCP/IP |                         |                  | LON  |                         |                  |
|-------------|--------|-------------------------|------------------|------|-------------------------|------------------|
|             | Type   | Part No.<br>single unit | Part No.<br>Kit* | Type | Part No.<br>single unit | Part No.<br>Kit* |

### Condenser Controllers

|                                                                 |         |                |                |         |                |                |
|-----------------------------------------------------------------|---------|----------------|----------------|---------|----------------|----------------|
| Condenser Controller for up to 4 fans                           | EC2-712 | <b>807 752</b> | <b>808 021</b> | EC2-711 | <b>807 751</b> |                |
| Condenser Controller with analogue output for fan speed control | EC2-742 | <b>807 762</b> | <b>808 023</b> | EC2-741 | <b>807 761</b> | <b>808 022</b> |

\* EC2-7xx Kits contain terminal kit, pressure transmitter PT5-30M with cable assembly, transformer 25VA (see chapter "Accessories & Spare Parts").

### Condensing Unit Controllers

|                                                                                                                            |         |                |                |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------|---------|----------------|----------------|--|--|--|
| Condensing Unit Controller for 2 compressors, 2 fans, with on/off control                                                  | EC2-512 | <b>807 732</b> | <b>808 015</b> |  |  |  |
| Condensing Unit Controller for 2 compressors or 1 Digital Scroll and 1 single stage compressor, variable fan speed control | EC2-552 | <b>807 738</b> | <b>808 019</b> |  |  |  |

\* EC2-5xx Kits contains terminal kit, pressure transmitters PT5-07M and PT5-30M with cable assemblies, transformer 25VA (see "Pressure Transmitters Series PT5").

### Accessories

| Description                            | Type    | Part No.       |
|----------------------------------------|---------|----------------|
| Terminal kits for EC2-51x, -71x series | K02-211 | <b>807 647</b> |
| Terminal kits for EC2-55x, -74x series | K02-540 | <b>800 080</b> |

|                                                                                                    |      |         |                |
|----------------------------------------------------------------------------------------------------|------|---------|----------------|
| NTC Sensor ECN<br>single insulated for ambient temperature sensing<br>-50 ... +50°C (10kΩ at 25°C) | 1.5m | ECN-S15 | <b>804 304</b> |
|                                                                                                    | 3m   | ECN-S30 | <b>804 305</b> |
|                                                                                                    | 6m   | ECN-S60 | <b>804 284</b> |

|                                                                                                                   |      |         |                |
|-------------------------------------------------------------------------------------------------------------------|------|---------|----------------|
| Pressure transmitter PT5 for suction and condensing pressure sensing (details "Pressure Transmitters Series PT5") |      |         |                |
| -0.8 ... 7 bar, 4 ... 20mA<br>0 ... 18 bar, 4 ... 20mA<br>0 ... 30 bar, 4 ... 20mA                                |      | PT5-07M | <b>802 350</b> |
|                                                                                                                   |      | PT5-18M | <b>802 351</b> |
|                                                                                                                   |      | PT5-30M | <b>802 352</b> |
| Cable assembly                                                                                                    | 1.5m | PT4-M15 | <b>804 803</b> |
|                                                                                                                   | 3.0m | PT4-M30 | <b>804 804</b> |
|                                                                                                                   | 6.0m | PT4-M60 | <b>804 805</b> |

|                                      |      |         |                |
|--------------------------------------|------|---------|----------------|
| Transformer 230VAC Input, 24V output | 25VA | ECT-323 | <b>804 424</b> |
|                                      | 20VA | ECT-523 | <b>804 332</b> |



K02-211



PT5

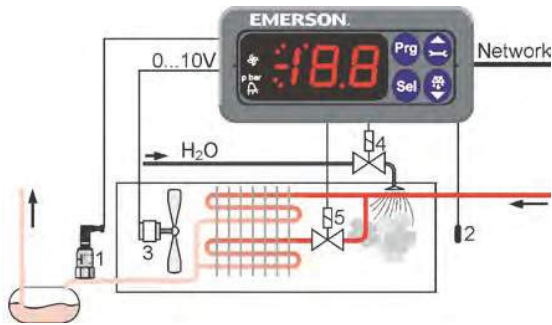
PT4-Mxx



ECT-323

### Block Diagrams

EC2-74x Condenser Controller with fan speed control



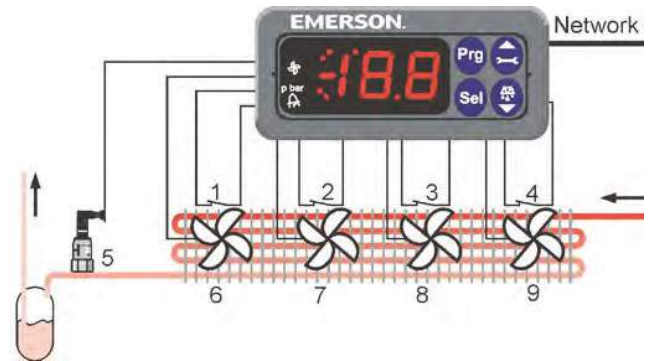
#### Inputs

- 1 = Condenser pressure
- 2 = Ambient temperature

#### Outputs

- 3 = Speed controlled fan with EC-motor
- 4 = Sprinkler
- 5 = Solenoid valve at 2 stage condenser coil
- 10 = Fan speed Power Module

EC2-71x Condenser Controller for up to 4 fans



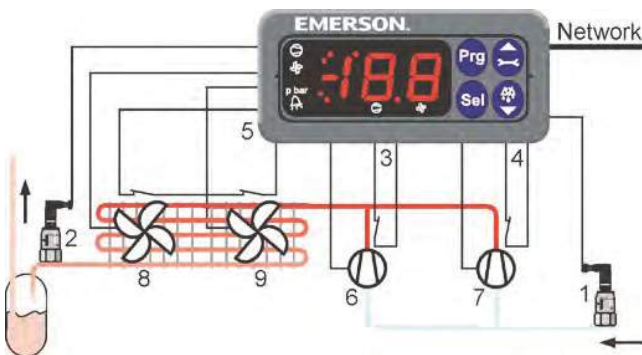
#### Inputs

- 1 = Safety switch fan 1
- 2 = Safety switch fan 2
- 3 = Safety switch fan 3
- 4 = Safety switch fan 4
- 5 = Condenser pressure

#### Outputs

- 6 = Fan 1
- 7 = Fan 2
- 8 = Fan 3
- 9 = Fan 4

EC2-512 Condensing Unit Controller for up to 2 compressors and 2 fans



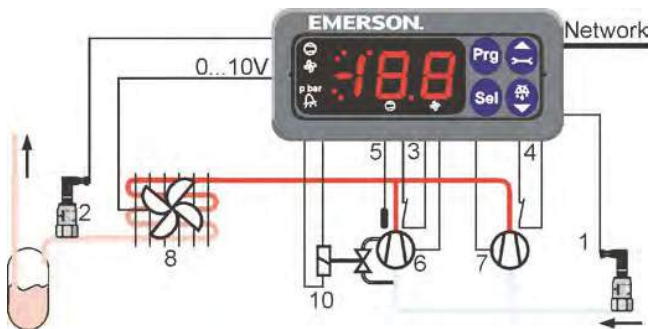
#### Inputs

- 1 = Suction pressure
- 2 = Condenser pressure
- 3 = Safety switch comp 1
- 4 = Safety switch comp 2
- 5 = Safety switches fans

#### Outputs

- 6 = Compressor 1
- 7 = Compressor 2
- 8 = Fan 1
- 9 = Fan 2

EC2-552 Condensing Unit Controller for 2 single stage compressors or 1 Digital Scroll™ and 1 single stage compressor



#### Inputs

- 1 = Suction pressure
- 2 = Condenser pressure
- 3 = Safety switch comp 1
- 4 = Safety switch comp 2
- 5 = Temperature input

#### Outputs

- 6 = Digital Scroll™ Compressor
- 7 = Single Stage Compressor
- 8 = Speed controlled fan with EC-motor
- 10 = PWM Digital Scroll Solenoid valve

The EC3 is a stand-alone universal superheat controller for stable superheat control with stepper motor driven electronic control valves and is used for air conditioning, refrigeration and industrial applications such as chillers, industrial process cooling rooftops, heat pumps, package units, close controls, cold room, food process and air driers. With the EC3-X32, parameters can be downloaded through ECD-002 or through TCP/IP compatible interface.

### Features

- Superheat control in conjunction with Emerson stepper motor driven electrical control valves EX4-EX8
- Limitation of evaporating pressure (MOP)
- Low and high superheat alarm
- Low pressure switch function/alarm
- Freeze protection function/alarm
- Pump down function
- Monitoring of sensors and sensor wiring and detection of sensor and wiring failures
- Intelligent alarm management to protect the compressor, i.e fail safe operation
- Integral rechargeable battery to close EX control valves in case of power loss.
- Support of TCP/IP Ethernet technology with WebServer functionality allows monitoring and configuration of controllers through a standard WebBrowser
- Electrical connection via plug-in type screw terminal
- Aluminum housing for DIN rail mounting

### Ordering Information

| Description                                              | Type                                                          | PCN    |
|----------------------------------------------------------|---------------------------------------------------------------|--------|
| Superheat Controller                                     | EC3-X32                                                       | 807782 |
| Terminal Kit                                             | K03-X32                                                       | 807644 |
| Temperature Sensor                                       | ECN-N60                                                       | 804497 |
| Electrical Control Valve                                 | EX4-EX8**                                                     | **     |
| Pressure Sensors (R-22/R-124/R-134a/R-404A/R-407C/R507C) | PT5-07M                                                       | 802350 |
| Pressure Sensor (R-410A)                                 | PT5-18M                                                       | 802851 |
| Pressure Sensor (R-744)                                  | PT5-30M                                                       | 802352 |
| Plug and Cable Assembly for Pressure Sensor              | PT4-M60                                                       | 804805 |
| Optional Display/Keypad                                  | ECD-002                                                       | 807657 |
| Cable Connection between EC3-X32 and ECD-002             | ECC-N30 or any standard Cat 5 patch cord with RJ45 connectors | 807861 |
| Replacement Battery                                      | EC3                                                           | 807790 |

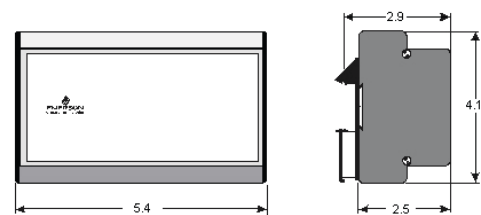
\*\*For further details refer to the EX4-EX8 product page.



### Specifications

- Supply voltage: 24VAC  $\pm$  10%, 50/60 Hz
- Digital input: 24VAC  $\pm$  10%, 50-60 Hz, 24VDC  $\pm$  10%
- Power consumption: 25 VA max. including connected EX valve and display/keypad
- Internal battery charging time: Approx. 2 hours if battery is fully empty
- Plug-in connector size: Removable screw version, wire size 12-20 AWG
- Ground connection: 1/4 in. spade earth connector
- Applied directive: EMC, LVD, RoHS (EN 61326, EN 50081, EN 61000-6-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN61000-4-5, EN 61000-4-6, EN 61000-4-11)
- Marking: CE
- Temperatures: Storage, -5°F, to +150°F  
Operating, 32°F, to +140°F
- Humidity: 0 – 80% R.H. non condensing

### Dimensional Data



The EC3 is a stand-alone universal superheat controller for stable superheat control with stepper motor driven electronic control valves and is used for air conditioning, refrigeration and industrial applications such as chillers, industrial process cooling rooftops, heat pumps, package units, close controls, cold room, food process and air driers. The EC3-X33 requires the use of the ECD-002 display key pad unit for setting up the controller.



### Features

- Superheat control in conjunction with Emerson stepper motor driven electrical control valves EX4-EX8
- Limitation of evaporating pressure (MOP)
- Low and high superheat alarm
- Monitoring of sensors and sensor wiring and detection of sensor and wiring failures
- Intelligent alarm management to protect the compressor, i.e fail safe operation
- Integral rechargeable battery to close EX control valves in case of power loss.
- Electrical connection via plug-in type screw terminal
- Aluminum housing for DIN rail mounting

### Ordering Information

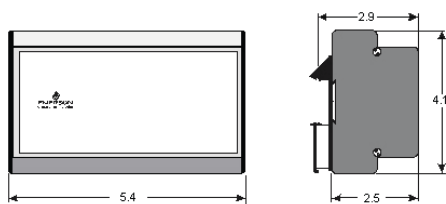
| Description                                              | Type                                                          | PCN    |
|----------------------------------------------------------|---------------------------------------------------------------|--------|
| Superheat Controller                                     | EC3-X33                                                       | 807783 |
| Terminal Kit                                             | K03-X33                                                       | 807645 |
| Temperature Sensor                                       | ECN-N60                                                       | 804497 |
| Electrical Control Valve                                 | EX4-EX8**                                                     | **     |
| Pressure Sensors (R-22/R-124/R-134a/R-404A/R-407C/R507C) | PT5-07M                                                       | 802350 |
| Pressure Sensor (R-410A)                                 | PT5-18M                                                       | 802851 |
| Pressure Sensor (R-744)                                  | PT5-30M                                                       | 802352 |
| Plug and Cable Assembly for Pressure Sensor              | PT4-M60                                                       | 804805 |
| Optional Display/Keypad                                  | ECD-002                                                       | 807657 |
| Cable Connection between EC3-X33 and ECD-002             | ECC-N30 or any standard Cat 5 patch cord with RJ45 connectors | 807861 |
| Replacement Battery                                      | EC3                                                           | 807790 |

\*\*For further details refer to the EX4-EX8 product page.

### Specifications

- Supply Voltage: 24VAC  $\pm$  10%, 50/60 Hz
- Digital Input: 24VAC  $\pm$  10%, 50-60 Hz, 24VDC  $\pm$  10%
- Power Consumption: 25 VA max. including connected EX valve and display/keyboard
- Internal battery charging time: Approx. 2 hours if battery is fully empty
- Plug-in connector size: Removable screw version wire size 12-20 AWG
- Ground connection: 1.4 in. spade earth connector
- Applied Directive: EMC, LVD, RoHS  
EN 61326, EN 50081, EN 61000-6-2, EN 61000-4-2, EN 61000-4-3, EN 610004-4, EN61000-4-5, EN 61000-4-6, EN 61000-4-11)
- Marking: CE
- Temperatures: Storage: -5°F to +150°F  
Operating: 32°F to +140°F
- Humidity: 0 – 80% R.H. non condensing

### Dimensional Data



For stable superheat control with EX4...EX6 electrical control valves and automatic synchronization of the PWM capacity control valve incorporated into the Copeland Scroll Digital™ compressor technology

### Features

- Limitation of evaporating pressure (MOP)
- Feed-through of 4 ... 20mA signal of evaporating pressure transmitter to operate third party controllers with a common pressure transmitter
- Intelligent alarm management, superheat alarm
- Monitoring of sensors and sensor wiring, detection of sensor and wiring failures
- Integral rechargeable battery to close Electrical Control Valve in case of power loss
- Electrical connection via plug-in type screw terminals
- Aluminum housing for DIN rail mounting
- Synchronization of the PWM solenoid valve used for variable capacity control of the Copeland Scroll Digital



### Additional features

#### EC3-X32 and EC3-D72 with TCP/IP

- WebServer functionality allows monitoring and configuration of controllers through a standard WebBrowser (e.g. Internet Explorer®)
- Internal data logging and alarm messaging by email
- Multiple language support (EmersonClimate.com)
- Freeze protection
- Low and high superheat alarm
- Low pressure switch function/Alarm

### Ordering Information

| Description                           | TCP/IP  |        |
|---------------------------------------|---------|--------|
|                                       | Type    | PCN    |
| Digital Superheat Controller (TCP/IP) | EC3-D72 | 807805 |
| Terminal Kit for EC3-D72/-D73         | K03-331 | 804497 |
| Replacement Battery for EC3           |         | 807790 |

## High Pressure Expansion Valves Series CX4, CX5, CX6, CX7

ALCO Controls CX4 / CX5 / CX6 / CX7 are stepper motor driven valves for precise control of refrigerant mass flow in air conditioning and refrigeration systems with CO<sub>2</sub>. The Control Valves can be used as high pressure gas valve for gas cooler control, expansion device, hot gas and cold gas bypass, liquid injection duty, evaporator pressure regulator, crankcase pressure regulator, head pressure regulator, or liquid level control.

### Features and Benefits

- Multifunction
- Fully hermetic design in two versions: ODF connections and
- Mainly for CO<sub>2</sub> systems
- Stepper motor driven
- Short opening and closing time
- Very fast full-stroke time
- High resolution and excellent repeatability
- Positive shut-off function to eliminate the use of an additional solenoid valve
- Linear flow capacity
- Extremely wide capacity range (10 ... 100%)
- Direct coupling of motor and valve for high reliability (no gearmechanism)
- Ceramic slide and port for accurate flow and minimal wear
- Balanced force design
- Corrosion resistant stainless steel body and connections
- Europe patent No. 0743476, USA patent No. 5735501, Japan patent No. 28225789



CX4/5/6/7 with ODF connections



CX4/5/6/7 with thread connections

### Selection Table

| Type     | Part No. | Kv<br>(m <sup>3</sup> /hr) | Capacity Range | Inlet Connection | Outlet Connection | Electric Connector |
|----------|----------|----------------------------|----------------|------------------|-------------------|--------------------|
| CX4-CO2  | 801 990  | 0.2                        | 10 ... 100%    | ⅜" ODF           | ⅝" (16 mm) ODF    | M12 plug           |
| CX5-CO2  | 801 991  | 0.6                        |                | ⅝" (16 mm) ODF   | ⅞" (22 mm)        |                    |
| CX6-CO2  | 801 992  | 1.5                        |                | ⅞" (22 mm) ODF   | 1-⅝" ODF          |                    |
| CX7-CO2  | 801 996  | 5.5                        |                | 1-⅝" ODF         | 1-⅝" ODF          |                    |
| CX4-CO2F | 802 000  | 0.2                        |                | ⅜" Thread        | ⅝" Thread         |                    |
| CX5-CO2F | 802 001  | 0.6                        |                | ⅝" Thread        | ⅞" Thread         |                    |
| CX6-CO2F | 802 002  | 1.5                        |                | ⅞" Thread        | ⅞" Thread         |                    |
| CX7-CO2F | 802 003  | 5.5                        |                | ⅞" Thread        | ⅞" Thread         |                    |

Note 1: The valves are delivered without cable/connector assembly (order separately).

Note 2: The valves with thread connections are delivered without counterpart steel tube fitting

### Cable and Connector Assemblies

| Type    | Part No. | Temperature Range | Length | Connector type to valve | Connector type to driver board or controller | Illustration |
|---------|----------|-------------------|--------|-------------------------|----------------------------------------------|--------------|
| EXV-M15 | 804 663  | -50 ... +80°C     | 1.5 m  | M12                     | Loose wires                                  |              |
| EXV-M30 | 804 664  |                   | 3.0 m  |                         |                                              |              |
| EXV-M60 | 804 665  |                   | 6.0 m  |                         |                                              |              |

### Accessory Kit

| Kit set | Part No. | Kit content                   | Useable for valve type | External tube (outside diameter) | Required quantity of kits for each valve (inlet and outlet) | Illustration |
|---------|----------|-------------------------------|------------------------|----------------------------------|-------------------------------------------------------------|--------------|
| CXK-058 | 802 010  | Two ferrule grips and one nut | CX4-CO2F               | ⅝"                               | 2                                                           |              |
|         |          |                               | CX5-CO2F               | ⅞"                               | 2                                                           |              |
| CXK-078 | 802 011  |                               | CX6-CO2F               | ⅞"                               | 2                                                           |              |
|         |          |                               | CX7-CO2F               | ⅞"                               | 2                                                           |              |

PT5 Pressure Transmitters convert a pressure into a linear electrical 4...20mA output signal suitable for controlling simple compressor and fan switching to the more sophisticated application of superheat modulation of Electronic Control Valves.

With competitive performance to price characteristics and an easy to install pre-fabricated M12 cable assembly, PT5 transmitters are the designers choice for all heat pump, refrigeration and air conditioning applications.

### Features

- Piezo-resistive sensor with output signal 4 to 20 mA and 2-wire connection for the precise operation of superheat, compressor or fan control systems
- Specially calibrated pressure ranges with  $\pm 1\%$  accuracy performance to fulfill demands of today's refrigeration and HVAC applications
- Fully hermetic
- PT5-xxM with  $\frac{7}{16}$ "-20UNF pressure connection and Schrader valve opener
- PT5-xxT with 6mm x 40mm stainless steel tube and integrated brazing neck for easy mounting in applications requiring a fully hermetic system solution
- PT5-150D with pressure connection  $\frac{1}{4}$ " NPT (M) suitable for subcritical and transcritical CO2 systems
- Vibration, shock and pulsation resistant
- Protection class IP65 / IP67 (type-specific)



PT5-xxM  
with PT4-Mxx Cable Assembly



PT5-150D



PT5-xxT

### Selection Table

| Type     | Part No.    |              | Pressure range for signal output (bar)* | Output signal | Medium Temp. Range at pressure connection (°C) | PS: Max. working pressure (bar)* | PT: Test pressure (bar)* | Burst pressure (bar)* | Pressure Connection                                    |
|----------|-------------|--------------|-----------------------------------------|---------------|------------------------------------------------|----------------------------------|--------------------------|-----------------------|--------------------------------------------------------|
|          | Single pack | Multi-pack** |                                         |               |                                                |                                  |                          |                       |                                                        |
| PT5-07M  | 802 350     | 802 350M     | -0.8 .. 7                               | 4 .. 20 mA    | -40 .. +100                                    | 27                               | 30                       | 150                   | $\frac{7}{16}$ " – 20 UNF (with Schrader valve opener) |
| PT5-18M  | 802 351     | 802 351M     | 0 .. 18                                 |               |                                                | 55                               | 63                       | 250                   |                                                        |
| PT5-30M  | 802 352     | 802 352M     | 0 .. 30                                 |               |                                                | 60                               | 100                      | 400                   |                                                        |
| PT5-50M  | 802 353     | 802 353M     | 0 .. 50                                 |               |                                                | 100                              | 150                      | 400                   |                                                        |
| PT5-07T  | 802 380     | 802 380M     | -0.8 .. 7                               |               | -40 .. +135                                    | 27                               | 30                       | 150                   | 6mm tube x 40mm long $\frac{1}{4}$ " NPT (M)           |
| PT5-18T  | 802 381     | 802 381M     | 0 .. 18                                 |               |                                                | 55                               | 63                       | 250                   |                                                        |
| PT5-30T  | 802 382     | 802 382M     | 0 .. 30                                 |               |                                                | 60                               | 100                      | 400                   |                                                        |
| PT5-50T  | 802 383     | 802 383M     | 0 .. 50                                 |               |                                                | 100                              | 150                      | 400                   |                                                        |
| PT5-150D | 802 379     | -            | 0 .. 150                                |               | -40 .. +100                                    | 220                              | 320                      | 1000                  |                                                        |

\*) Sealed gauge pressure

\*\*) PT5xxM: 20 pcs, PT5-xxT: 10 pcs

### Selection Plug/Cable Assemblies: assembly fits all models

| Type    | Part No.    |                    | Cable Length | Weight (g/piece) | Temperature Range                                                    |
|---------|-------------|--------------------|--------------|------------------|----------------------------------------------------------------------|
|         | Single pack | Multipack** 20 pcs |              |                  |                                                                      |
| PT4-M15 | 804 803     | 804 803M           | 1.5 m        | 50               | -50 ... +80°C static application<br>-25 ... +80°C mobile application |
| PT4-M30 | 804 804     | 804 804M           | 3.0 m        | 80               |                                                                      |
| PT4-M60 | 804 805     | 804 805M           | 6.0 m        | 140              |                                                                      |

### Technical Data Pressure Transmitter

|                                                                                                         |                                                                    |                                                                                                    |                                                                                                                                                              |
|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supply voltage<br>(polarity protected)                                                                  | Nominal: 24Vdc<br>Range: 7..30Vdc<br>PT5-150D: 7..26.4Vdc          | Sensor lifetime                                                                                    | 30 million load cycles with 1.3 times of nominal pressure                                                                                                    |
| Permissible noise & ripple<br>Influence of supply voltage                                               | < 1 Vp-p<br>< 0,02 %FS/V                                           | Electrical connection<br>PT4-Mxx Cable Assembly                                                    | M12 connection according to EN61076-2-101 Part 2<br>Prefabricated, various cable lengths                                                                     |
| Operating current                                                                                       | Maximum ≤ 24 mA<br>4 to 20 mA output                               | Medium compatibility                                                                               | CFC, CHFC, HFC, CO <sub>2</sub><br>Not released for use with caustic, flammable substances or ammonia!                                                       |
| Load resistance                                                                                         | $R_L \leq U_b - 7.0V$<br>0.02A                                     | Approvals/Marking                                                                                  | CE: 2004/108/EEC, EN 61326<br>Emission (Group 1; Class B) and immunity (industrial locations)<br>UL, cRUus (UL File Nr. E258370)<br>GOST for Russian markets |
| Response time                                                                                           | ≤ 5 ms                                                             | Protection class (EN 60529)                                                                        | PT5-07, -18: IP65 with plug<br>PT5-30, -50, -150: IP67 with plug                                                                                             |
| Weight<br>(without plug and cable ass.)                                                                 | PT5-xxM, -150D: ~ 80 g<br>PT5-xxT: ~ 60 g                          | Vibration at 10...2000Hz                                                                           | 20 g according to IEC 60068-2-6                                                                                                                              |
| Mounting position                                                                                       | Non position sensitive; details see operating instructions         | Materials<br>Housing, pressure connector and diaphragm with medium contact<br>Electrical connector | Stainless steel 316L, 1.4534 1.4301 (PT5-xxT)<br><br>Highly resistive, fiberglass-enforced plastic PBTGF30                                                   |
| Temperatures<br>Transport and storage<br>Operating ambient housing<br>Medium: PT5-xxM, -150D<br>PT5-xxT | -25 .. +80 °C<br>-40 .. +80 °C<br>-40 .. +100 °C<br>-40 .. +135 °C |                                                                                                    |                                                                                                                                                              |

\*) Total error includes non-linearity, hysteresis, repeatability as well as offset and span drift due to the temperature changes.  
Note: % FS is related to Percentage of Full sensor Scale.

### Accuracy Performance

| Type          | Total error *    | Temperature range                 |
|---------------|------------------|-----------------------------------|
| PT5-07 / 18   | ±1% FS           | -40 ... +20 °C                    |
| PT5-30 / -50/ | ±1% FS<br>±2% FS | +10 ... +50 °C<br>-10 ... +80 °C  |
| PT5-150D      | ±1% FS<br>±2% FS | +10 ... +50 °C<br>-10 ... +100 °C |

### Electrical connections

|         |  |                                                                                                                                                                                                                                           |
|---------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PT5-xxM |  | <p>The PT4-Mxx cable assembly can only be fitted onto the Pressure Transmitters one way.<br/>Locate the corresponding lug shown as (1) opposite.<br/>BN = brown, WH = white<br/>(5) = Electronic Controller e.g. EC2 &amp; EC3 Series</p> |
|---------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

The PT6 series of Pressure Transmitters convert a pressure into a linear electrical 4 ... 20mA output signal suitable for controlling simple compressor and fan switching to the more sophisticated application of superheat modulation of EX series Electrical Control Valves.

### Features

- Sensitive pressure cells with strong primary output signals for the precise operation of superheat, compressor or fan controls systems
- Ceramic cell with gasket
- Pressure connector 7/16"-20 UNF with Schrader valve opener
- Output signal 4 to 20 mA
- Standard pressure ranges compatible with former Emerson pressure transmitters - Sealed gauge pressure
- Calibrated at pressure and temperature ranges to fulfill demands of today's refrigeration and HVAC applications
- Reduced Full Scale Error characteristics over the complete temperature range
- Easy install M12 electrical connection with pre-assembled cable assemblies available in various lengths
- Protection class IP 65
- Vibration, shock and pulsation resistant
- CE-mark under EC EMC-Directive
- UL listed. File Nr. E258370
- **OEM product: available in multipacks with 20 pieces only**



PT6-xxM



PT4-Mxx Cable Assembly

### Selection Chart, Pressure Transmitters

| Type    | Part No.<br>Multipack<br>20 pcs | Pressure range for<br>signal output<br>(bar)* | Output<br>signal | Medium tempera-<br>ture range<br>(°C) | PS:<br>Max. working<br>pressure<br>(bar)* | PT:<br>Test<br>pressure<br>(bar)* | Burst<br>pressure<br>(bar)* | Pressure Connection                               |
|---------|---------------------------------|-----------------------------------------------|------------------|---------------------------------------|-------------------------------------------|-----------------------------------|-----------------------------|---------------------------------------------------|
| PT6-18M | <b>802 361M</b>                 | 0 ... 18                                      | 4 ... 20<br>mA   | -40 ... + 100                         | 36                                        | 40                                | 54                          | 7/16" - 20 UNF<br>(with Schrader valve<br>opener) |
| PT6-30M | <b>802 362M</b>                 | 0 ... 30                                      |                  |                                       | 60                                        | 100                               | 120                         |                                                   |
| PT6-50M | <b>802 363M</b>                 | 0 ... 50                                      |                  |                                       | 100                                       | 150                               | 200                         |                                                   |

\*) Sealed gauge pressure

### Selection Chart, Plug/Cable Assemblies: assembly fits all models

| Type    | Part No.                 |                 | Length | Weight<br>(grams/pcs) | Temperature Range                                                  |
|---------|--------------------------|-----------------|--------|-----------------------|--------------------------------------------------------------------|
|         | Individually<br>packaged | Multipack 20pcs |        |                       |                                                                    |
| PT4-M15 | <b>804 803</b>           | <b>804 803M</b> | 1.5 m  | 50                    | -50 to +80°C static application<br>-25 to +80°C mobile application |
| PT4-M30 | <b>804 804</b>           | <b>804 804M</b> | 3.0 m  | 80                    |                                                                    |
| PT4-M60 | <b>804 805</b>           | <b>804 805M</b> | 6.0 m  | 140                   |                                                                    |

### Technical Data

|                                                                                 |                                                     |                                                                                                            |                                                                                                                       |
|---------------------------------------------------------------------------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Supply voltage<br>Nominal<br>Range (polarity protected)                         | 24Vdc<br>7.. 30Vdc                                  | Sensor lifetime                                                                                            | ≥ 10.000.000 cycles<br>with 1.0 nominal pressure                                                                      |
| Permissible noise & ripple<br>Influence of supply voltage                       | < 1 Vp-p<br>< 0,02 %FS/V                            | Burst pressure                                                                                             | See selection chart                                                                                                   |
| Operating current                                                               | Maximum ≤ 24 mA<br>4 to 20 mA output                | Medium compatibility<br>not suitable for ammonia<br>and inflammable refrigerants!                          | HFC, HCFC, CFC                                                                                                        |
| Load resistance                                                                 | $R_L \leq U_b - 7.0V$<br>0.02A                      | Approvals<br>CE conformity<br>CE marking according<br>to EMC                                               | 97/32/EC<br>CE marked according to 2004/108/EEC,<br>EN 61326<br>(Certificate upon request)                            |
| Response time                                                                   | ≤ 5 ms                                              | Marking<br>(UL File Nr. E258370)                                                                           | CE and UL                                                                                                             |
| Weight<br>(without plug and cable<br>ass.)                                      | 80 g                                                | Vibration at 10...2000Hz                                                                                   | 20g according to IEC 68-2-6                                                                                           |
| Mounting position                                                               | Refer to operating instructions for<br>more details | Materials<br>Housing, pressure con-<br>nector and diaphragm<br>with medium contact<br>Electrical connector | Brass sealing CR70,<br>Ceramic sensor cell AL2O3 96%<br><br>Highly resistive, fibreglas-enforced plastic<br>(PBTGF30) |
| Temperatures<br>Operating ambient<br>housing<br>Medium<br>Transport and storage | -40 .. +80 °C<br>-40 .. +100 °C<br>-20 .. +80 °C    | Protection class (EN<br>60529)                                                                             | IP65 with plug                                                                                                        |
| Packaging and Delivery                                                          | Multipacks only (20 pieces)                         |                                                                                                            |                                                                                                                       |

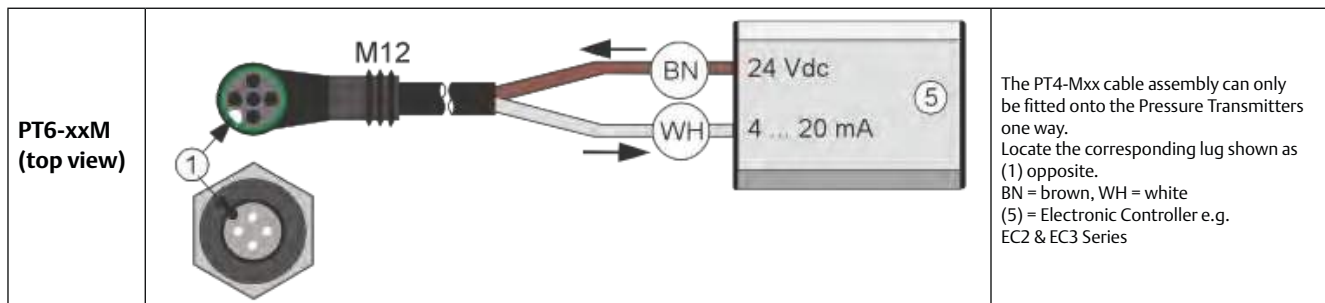
\*) Total error includes non-linearity, hysteresis, repeatability as well as offset and span drift due to the temperature changes.

Note: %FS is related to Percentage of Full sensor Scale.

### Accuracy Performance

| Type    | Total error *                                | Temperature range                                   |
|---------|----------------------------------------------|-----------------------------------------------------|
| PT6-18M | ≤ ±1.5% FS                                   | -20.... +20 °C                                      |
| PT6-30M | ≤ ±1.5% FS<br>≤ ±2% FS<br>Typically ≤ ±2% FS | 0 .... +40 °C<br>-20 .... +60 °C<br>-20 .... +80 °C |
| PT6-50M | ≤ ±1% FS<br>≤ ±2% FS<br>Typically ≤ ±2% FS   | 0 .... +40 °C<br>-20 .... +60 °C<br>-20 .... +80 °C |

### Electrical connections



Electronic Fan Speed Control Modules FSE generate a 0...10 V signal, which is used to control the speed of condenser fan motors in commercial refrigeration and air-conditioning systems. Ideal for use with high efficient EC-motors but can be also used with phase cut controllers for induction motors.

### Features

- Energy saving due to improved cooling efficiency
- Pressure for minimum speed adjustable
- Small proportional band and large hysteresis to minimize cycling at small pressure changes
- Reduced fan noise level during low ambient temp. conditions
- Improved overall performance of cooling system
- Easy installation with cables for power supply and motor connection factory wired
- IP 65 protection for outdoor mounting
- UL file nr.: E355325



FSE Control Modules

### Selection Chart Control Modules FSE

| Type    | Part No.       | Refrigerants               | Adjustment Range<br>PCut (bar) * | Cut-off Pressure<br>factory set (bar) | Test<br>Pressure | Pressure<br>Connection | Weight<br>(g) |
|---------|----------------|----------------------------|----------------------------------|---------------------------------------|------------------|------------------------|---------------|
| FSE-01S | <b>804 701</b> | R134a                      | 4 ... 12.5                       | 7.8                                   | 30 bar           | 1/16" -20 UNF female   | 125           |
| FSE-02S | <b>804 706</b> | R22, R407C,<br>R404A, R507 | 10 ... 21                        | 15.5                                  | 36 bar           | 1/16" -20 UNF female   | 125           |
| FSE-03S | <b>804 711</b> | R410A                      | 12 ... 28                        | 20.4                                  | 50 bar           | 1/16" -20 UNF female   | 150           |

### Cable Assemblies for connection of FSE Control Module to controller

| Type    | Part No.       | No of leads | Diameter<br>of leads | Temperature Range °C | Cable length<br>mtr. |
|---------|----------------|-------------|----------------------|----------------------|----------------------|
| PS3-N15 | <b>804 580</b> | 3           | 0.75 mm <sup>2</sup> | -25/+80              | 1.5                  |
| PS3-N30 | <b>804 581</b> |             |                      |                      | 3.0                  |
| PS3-N60 | <b>804 582</b> |             |                      |                      | 6.0                  |

### Technical Data FSE

|                                        |                                               |
|----------------------------------------|-----------------------------------------------|
| Supply Voltage                         | 10V; supplied by controller                   |
| Operating current<br>0...10 VDC output | max. 1 mA                                     |
| Medium compatibility                   | HFC, HCFC, POE-, synthetic and mineral oils   |
| Protection class<br>(IEC529/EN 60529)  | IP 65 with cable connector assemblies PS3-Nxx |

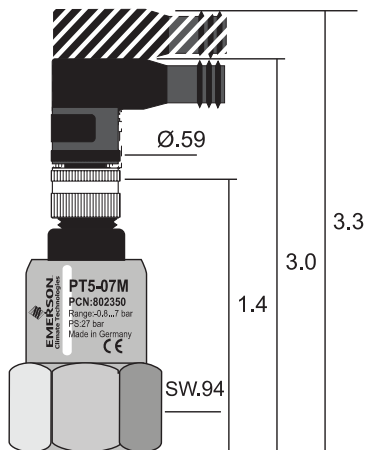
|                                                              |                                                    |
|--------------------------------------------------------------|----------------------------------------------------|
| Pressure connection<br>FSE-01S and FSE-02S<br>FSE-03S        | Brass<br>Stainless Steel                           |
| Max. operating pressure PS                                   | FSE-01S: 27bar<br>FSE-02S: 32bar<br>FSE-03S: 45bar |
| Temperature Range<br>Storage and transportation<br>Operation | -30° ... +70°C<br>-20° ... +65°C                   |
| Materials<br>Housing cover                                   | PA                                                 |

The Pressure Transmitters convert a pressure into a linear electric output signal. At the heart of the transmitter there is a piezo resistive chip enclosed in an oil capsule.

### Features

- Pressure sensitive piezo-based cell with strong primary output signal for precise operation
- Compact dimensions
- Vibration, shock and pulsation resistant
- Reduced full scale error over complete temperature range
- Sealed gauge absolute pressure reference for increased accuracy independent of atmospheric pressure variation
- Output signal is 4 to 20 mA
- Calibrated for specific temperature and pressure ranges to fulfill application demands in air conditioning and refrigeration systems
- Easy-to-install M12 electrical connection with pre-assembled cable assembly
- Pressure connector 7/16-20 UNF with Schrader valve

### Dimensional Data (in)



### Specifications

- Supply voltage: Nominal 24 VDC  
Range (polarity protected) 7 – 30 VDC
- Permissible noise & ripple:  $< 1 V_{p-p}$
- Influence of supply voltage:  $< 0.02 \% FS/V$
- Operating current: 4 to 20 mA output, Max.  $\leq 24$  mA
- Load resistance:  $RL \leq U_b - 8.0V \cdot 0.02A$
- Mounting position: Non-position sensitive
- Response time:  $< 5$  ms
- Temperatures: Ambient:  $-40^{\circ}F$  to  $+176^{\circ}F$   
Medium:  $-58^{\circ}F$  to  $+275^{\circ}F$   
Storage:  $-40^{\circ}F$  to  $+185^{\circ}F$
- Sensor Life:  $\geq 10,000,000$  cycles full stroke at  $77^{\circ}F$
- Burst Pressure: -07M = 2,176 psi  
-18M and -30M = 3,626 psi
- Electrical connection: PT4-M60
- Approvals: CE marking according to PED, not allowed (SEP)  
CE marking according to EMC, CE marked
- Medium compatibility: HFC, HCFC, CFC (not suitable for ammonia and flammable refrigerants!)
- Vibration at 10 – 2000 Hz: Max. 4 g
- Materials: Stainless steel housing, pressure connector and diaphragm in contact with sensed medium
- Pressure Range: PT5-07M: 12-102 psi  
PT5-18M: 0-261 psi  
PT5-30M: 0-435 psi

### Ordering Information

| Description           | Type    | Refrigerant                          | Pressure Range | PCN    |
|-----------------------|---------|--------------------------------------|----------------|--------|
| Pressure Transmitter  | PT5-07M | R22, R134A, R507, R404A, R407C, R124 | 22"Hg - 100psi | 802350 |
| Pressure Transmitter  | PT5-18M | R410                                 | 0-261psi       | 802351 |
| Pressure Transmitter  | PT5-30M | R744                                 | 0-435psi       | 802334 |
| Plug/Cable Assemblies | PT4-M60 |                                      |                | 804805 |

## R-22 Extended Capacities (Tons) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

| Valve Type | Nominal Rating | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|------------|----------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|            |                | 50°F                             |      |      |      |      |      | 40°F                             |      |      |      |      |      | 20°F                             |      |      |      |      |      |
|            |                | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|            |                | 60                               | 80   | 100  | 125  | 150  | 175  | 60                               | 80   | 100  | 125  | 150  | 175  | 60                               | 80   | 100  | 125  | 150  | 175  |
| EX2-00X    | 0.23           | 0.18                             | 0.21 | 0.23 | 0.26 | 0.28 | 0.31 | 0.18                             | 0.21 | 0.23 | 0.26 | 0.28 | 0.31 | 0.17                             | 0.20 | 0.22 | 0.25 | 0.27 | 0.29 |
| EX2-000    | 0.4            | 0.31                             | 0.36 | 0.40 | 0.45 | 0.49 | 0.53 | 0.31                             | 0.36 | 0.40 | 0.45 | 0.49 | 0.53 | 0.30                             | 0.35 | 0.39 | 0.43 | 0.47 | 0.51 |
| EX2-001    | 0.81           | 0.64                             | 0.74 | 0.83 | 0.92 | 1.01 | 1.09 | 0.63                             | 0.73 | 0.81 | 0.91 | 1.00 | 1.08 | 0.61                             | 0.70 | 0.79 | 0.88 | 0.96 | 1.04 |
| EX2-002    | 1.1            | 0.86                             | 0.99 | 1.11 | 1.24 | 1.36 | 1.47 | 0.85                             | 0.98 | 1.10 | 1.23 | 1.34 | 1.45 | 0.83                             | 0.96 | 1.07 | 1.20 | 1.31 | 1.42 |
| EX2-003    | 2.0            | 1.57                             | 1.81 | 2.08 | 2.27 | 2.48 | 2.68 | 1.55                             | 1.79 | 2.00 | 2.21 | 2.45 | 2.65 | 1.51                             | 1.74 | 1.95 | 2.18 | 2.39 | 2.58 |
| EX2-004    | 2.7            | 2.12                             | 2.45 | 2.74 | 3.06 | 3.35 | 3.62 | 2.10                             | 2.42 | 2.71 | 3.03 | 3.32 | 3.59 | 2.04                             | 2.36 | 2.63 | 2.94 | 3.23 | 3.48 |
| EX2-M00    | 4.3            | 3.38                             | 3.90 | 4.36 | 4.88 | 5.34 | 5.77 | 3.34                             | 3.86 | 4.31 | 4.82 | 5.28 | 5.70 | 3.25                             | 3.75 | 4.20 | 4.69 | 5.14 | 5.55 |

| Valve Type | Nominal Rating | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|------------|----------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|            |                | 0°F                              |      |      |      |      |      | -20°F                            |      |      |      |      |      | -40°F                            |      |      |      |      |      |
|            |                | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|            |                | 60                               | 80   | 100  | 125  | 150  | 175  | 80                               | 100  | 125  | 150  | 175  | 200  | 80                               | 100  | 125  | 150  | 175  | 200  |
| EX2-00X    | 0.23           | 0.17                             | 0.20 | 0.22 | 0.25 | 0.27 | 0.29 | 0.19                             | 0.21 | 0.24 | 0.26 | 0.28 | 0.30 | 0.18                             | 0.20 | 0.23 | 0.25 | 0.27 | 0.28 |
| EX2-000    | 0.4            | 0.29                             | 0.33 | 0.37 | 0.42 | 0.46 | 0.50 | 0.33                             | 0.37 | 0.41 | 0.45 | 0.49 | 0.52 | 0.32                             | 0.36 | 0.40 | 0.44 | 0.47 | 0.51 |
| EX2-001    | 0.81           | 0.60                             | 0.69 | 0.77 | 0.87 | 0.95 | 1.02 | 0.67                             | 0.75 | 0.84 | 0.92 | 0.99 | 1.06 | 0.64                             | 0.72 | 0.80 | 0.88 | 0.95 | 1.01 |
| EX2-002    | 1.1            | 0.81                             | 0.94 | 1.05 | 1.17 | 1.28 | 1.38 | 0.90                             | 1.01 | 1.13 | 1.23 | 1.33 | 1.42 | 0.87                             | 0.97 | 1.09 | 1.19 | 1.29 | 1.38 |
| EX2-003    | 2.0            | 1.47                             | 1.70 | 1.90 | 2.12 | 2.32 | 2.51 | 1.64                             | 1.83 | 2.05 | 2.25 | 2.43 | 2.59 | 1.59                             | 1.78 | 1.99 | 2.18 | 2.35 | 2.51 |
| EX2-004    | 2.7            | 1.99                             | 2.30 | 2.57 | 2.87 | 3.15 | 3.40 | 2.22                             | 2.48 | 2.78 | 3.04 | 3.28 | 3.51 | 2.14                             | 2.39 | 2.68 | 2.93 | 3.17 | 3.38 |
| EX2-M00    | 4.3            | 3.16                             | 3.65 | 4.08 | 4.56 | 5.00 | 5.40 | 3.54                             | 3.96 | 4.43 | 4.85 | 5.24 | 5.60 | 3.42                             | 3.82 | 4.28 | 4.68 | 5.06 | 5.41 |

# R-134a Extended Capacities (Tons) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

| Valve Type | Nominal Rating | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|------------|----------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|            |                | 50°F                             |      |      |      |      |      | 40°F                             |      |      |      |      |      | 20°F                             |      |      |      |      |      |
|            |                | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|            |                | 60                               | 80   | 100  | 125  | 150  | 175  | 60                               | 80   | 100  | 125  | 150  | 175  | 60                               | 80   | 100  | 125  | 150  | 175  |
| EX2-00X    | 0.23           | 0.17                             | 0.20 | 0.22 | 0.25 | 0.27 | 0.29 | 0.17                             | 0.20 | 0.22 | 0.25 | 0.27 | 0.29 | 0.16                             | 0.18 | 0.21 | 0.23 | 0.25 | 0.27 |
| EX2-000    | 0.4            | 0.30                             | 0.35 | 0.39 | 0.43 | 0.47 | 0.51 | 0.23                             | 0.33 | 0.37 | 0.42 | 0.46 | 0.50 | 0.28                             | 0.32 | 0.36 | 0.40 | 0.44 | 0.48 |
| EX2-001    | 0.81           | 0.61                             | 0.70 | 0.79 | 0.88 | 0.96 | 1.04 | 0.59                             | 0.68 | 0.79 | 0.85 | 0.93 | 1.01 | 0.57                             | 0.66 | 0.74 | 0.82 | 0.90 | 0.97 |
| EX2-002    | 1.1            | 0.82                             | 0.95 | 1.06 | 1.18 | 1.30 | 1.40 | 0.81                             | 0.94 | 1.05 | 1.17 | 1.28 | 1.38 | 0.77                             | 0.89 | 0.99 | 1.11 | 1.22 | 1.32 |
| EX2-003    | 2.0            | 1.56                             | 1.79 | 2.00 | 2.24 | 2.45 | 2.65 | 1.52                             | 1.75 | 1.96 | 2.19 | 2.40 | 2.60 | 1.47                             | 1.70 | 1.90 | 2.12 | 2.32 | 2.51 |
| EX2-004    | 2.7            | 2.02                             | 2.33 | 2.61 | 2.92 | 3.19 | 3.45 | 1.98                             | 2.29 | 2.56 | 2.86 | 3.13 | 3.38 | 1.90                             | 2.19 | 2.45 | 2.74 | 3.00 | 3.24 |
| EX2-M00    | 4.3            | 3.22                             | 3.72 | 4.16 | 4.65 | 5.09 | 5.50 | 3.16                             | 3.65 | 4.08 | 4.56 | 5.00 | 5.40 | 3.02                             | 3.49 | 3.90 | 4.36 | 4.78 | 5.16 |

| Valve Type | Nominal Rating | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|------------|----------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|            |                | 0°F                              |      |      |      |      |      | -20°F                            |      |      |      |      |      | -40°F                            |      |      |      |      |      |
|            |                | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|            |                | 60                               | 80   | 100  | 125  | 150  | 175  | 80                               | 100  | 125  | 150  | 175  | 200  | 80                               | 100  | 125  | 150  | 175  | 200  |
| EX2-00X    | 0.23           | 0.15                             | 0.17 | 0.19 | 0.22 | 0.24 | 0.26 | 0.17                             | 0.19 | 0.21 | 0.23 | 0.25 | 0.27 | 0.16                             | 0.18 | 0.20 | 0.22 | 0.24 | 0.25 |
| EX2-000    | 0.4            | 0.27                             | 0.31 | 0.35 | 0.39 | 0.43 | 0.46 | 0.29                             | 0.32 | 0.38 | 0.40 | 0.43 | 0.46 | 0.28                             | 0.31 | 0.35 | 0.38 | 0.41 | 0.44 |
| EX2-001    | 0.81           | 0.54                             | 0.62 | 0.70 | 0.78 | 0.85 | 0.92 | 0.59                             | 0.66 | 0.74 | 0.81 | 0.87 | 0.93 | 0.56                             | 0.63 | 0.70 | 0.77 | 0.83 | 0.89 |
| EX2-002    | 1.1            | 0.74                             | 0.85 | 0.96 | 1.07 | 1.17 | 1.26 | 0.81                             | 0.91 | 1.01 | 1.11 | 1.20 | 1.28 | 0.76                             | 0.85 | 0.95 | 1.04 | 1.12 | 1.20 |
| EX2-003    | 2.0            | 1.41                             | 1.63 | 1.82 | 2.04 | 2.23 | 2.41 | 1.56                             | 1.74 | 1.95 | 2.14 | 2.31 | 2.47 | 1.49                             | 1.67 | 1.86 | 2.04 | 2.20 | 2.36 |
| EX2-004    | 2.7            | 1.81                             | 2.09 | 2.34 | 2.61 | 2.86 | 3.09 | 1.98                             | 2.21 | 2.48 | 2.71 | 2.93 | 3.13 | 1.88                             | 2.10 | 2.35 | 2.57 | 2.78 | 2.97 |
| EX2-M00    | 4.3            | 2.88                             | 3.33 | 3.72 | 4.16 | 4.55 | 4.92 | 3.16                             | 3.53 | 3.95 | 4.33 | 4.67 | 5.00 | 2.99                             | 3.34 | 3.74 | 4.09 | 4.42 | 4.73 |

## R-404A/R-507 Extended Capacities (Tons) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

| Valve Type | Nominal Rating | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|------------|----------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|            |                | 50°F                             |      |      |      |      |      | 40°F                             |      |      |      |      |      | 20°F                             |      |      |      |      |      |
|            |                | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|            |                | 60                               | 80   | 100  | 125  | 150  | 175  | 60                               | 80   | 100  | 125  | 150  | 175  | 60                               | 80   | 100  | 125  | 150  | 175  |
| EX2-00X    | 0.23           | 0.13                             | 0.15 | 0.17 | 0.19 | 0.21 | 0.22 | 0.13                             | 0.15 | 0.17 | 0.19 | 0.21 | 0.22 | 0.12                             | 0.14 | 0.15 | 0.17 | 0.19 | 0.20 |
| EX2-000    | 0.4            | 0.23                             | 0.27 | 0.30 | 0.33 | 0.36 | 0.39 | 0.22                             | 0.25 | 0.28 | 0.32 | 0.35 | 0.38 | 0.21                             | 0.24 | 0.27 | 0.30 | 0.33 | 0.36 |
| EX2-001    | 0.81           | 0.47                             | 0.54 | 0.61 | 0.68 | 0.74 | 0.80 | 0.46                             | 0.53 | 0.59 | 0.66 | 0.73 | 0.79 | 0.43                             | 0.50 | 0.56 | 0.62 | 0.68 | 0.73 |
| EX2-002    | 1.1            | 0.63                             | 0.73 | 0.81 | 0.91 | 1.00 | 1.08 | 0.52                             | 0.72 | 0.80 | 0.89 | 0.98 | 1.06 | 0.59                             | 0.68 | 0.76 | 0.85 | 0.93 | 1.01 |
| EX2-003    | 2.0            | 1.15                             | 1.33 | 1.48 | 1.66 | 1.82 | 1.96 | 1.12                             | 1.29 | 1.45 | 1.62 | 1.77 | 1.91 | 1.07                             | 1.24 | 1.38 | 1.54 | 1.69 | 1.83 |
| EX2-004    | 2.7            | 1.55                             | 1.79 | 2.00 | 2.24 | 2.45 | 2.65 | 1.52                             | 1.76 | 1.96 | 2.19 | 2.40 | 2.60 | 1.44                             | 1.66 | 1.86 | 2.08 | 2.28 | 2.46 |
| EX2-M00    | 4.3            | 2.47                             | 2.85 | 3.19 | 3.57 | 3.91 | 4.22 | 2.42                             | 2.79 | 3.12 | 3.49 | 3.83 | 4.13 | 2.30                             | 2.66 | 2.97 | 3.32 | 3.64 | 3.93 |

| Valve Type | Nominal Rating | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|------------|----------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|            |                | 0°F                              |      |      |      |      |      | -20°F                            |      |      |      |      |      | -40°F                            |      |      |      |      |      |
|            |                | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|            |                | 60                               | 80   | 100  | 125  | 150  | 175  | 80                               | 100  | 125  | 150  | 175  | 200  | 80                               | 100  | 125  | 150  | 175  | 200  |
| EX2-00X    | 0.23           | 0.12                             | 0.14 | 0.15 | 0.17 | 0.19 | 0.20 | 0.13                             | 0.35 | 0.16 | 0.18 | 0.19 | 0.21 | 0.12                             | 0.13 | 0.15 | 0.16 | 0.18 | 0.19 |
| EX2-000    | 0.4            | 0.20                             | 0.23 | 0.26 | 0.29 | 0.32 | 0.34 | 0.22                             | 0.25 | 0.28 | 0.30 | 0.33 | 0.35 | 0.20                             | 0.22 | 0.25 | 0.27 | 0.30 | 0.32 |
| EX2-001    | 0.81           | 0.41                             | 0.47 | 0.53 | 0.59 | 0.65 | 0.70 | 0.44                             | 0.49 | 0.55 | 0.60 | 0.65 | 0.70 | 0.41                             | 0.46 | 0.51 | 0.56 | 0.61 | 0.65 |
| EX2-002    | 1.1            | 0.55                             | 0.64 | 0.71 | 0.79 | 0.67 | 0.94 | 0.60                             | 0.67 | 0.75 | 0.82 | 0.89 | 0.95 | 0.56                             | 0.63 | 0.70 | 0.77 | 0.83 | 0.89 |
| EX2-003    | 2.0            | 1.01                             | 1.17 | 1.30 | 1.46 | 1.60 | 1.72 | 1.09                             | 1.22 | 1.36 | 1.49 | 1.61 | 1.72 | 1.02                             | 1.14 | 1.28 | 1.40 | 1.51 | 1.61 |
| EX2-004    | 2.7            | 1.38                             | 1.57 | 1.76 | 1.96 | 2.15 | 2.32 | 1.48                             | 1.65 | 1.85 | 2.03 | 2.19 | 2.34 | 1.38                             | 1.54 | 1.73 | 1.89 | 2.04 | 2.18 |
| EX2-M00    | 4.3            | 2.17                             | 2.51 | 2.80 | 3.13 | 3.43 | 3.71 | 2.35                             | 2.63 | 2.94 | 3.22 | 3.48 | 3.72 | 2.19                             | 2.45 | 2.74 | 3.00 | 3.24 | 3.46 |

# R-407C Extended Capacities (Tons) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

| Valve Type | Nominal Rating | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|------------|----------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|            |                | 50°F                             |      |      |      |      |      | 40°F                             |      |      |      |      |      | 20°F                             |      |      |      |      |      |
|            |                | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|            |                | 60                               | 80   | 100  | 125  | 150  | 175  | 60                               | 80   | 100  | 125  | 150  | 175  | 60                               | 80   | 100  | 125  | 150  | 175  |
| EX2-00X    | 0.23           | 0.17                             | 0.20 | 0.22 | 0.25 | 0.27 | 0.29 | 0.17                             | 0.20 | 0.22 | 0.25 | 0.27 | 0.29 | 0.16                             | 0.18 | 0.21 | 0.23 | 0.25 | 0.27 |
| EX2-000    | 0.4            | 0.30                             | 0.35 | 0.39 | 0.43 | 0.47 | 0.51 | 0.30                             | 0.35 | 0.39 | 0.43 | 0.47 | 0.51 | 0.28                             | 0.32 | 0.36 | 0.40 | 0.44 | 0.48 |
| EX2-001    | 0.81           | 0.61                             | 0.70 | 0.79 | 0.88 | 0.96 | 1.04 | 0.50                             | 0.69 | 0.77 | 0.87 | 0.95 | 1.02 | 0.58                             | 0.67 | 0.75 | 0.84 | 0.92 | 0.99 |
| EX2-002    | 1.1            | 0.83                             | 0.96 | 1.07 | 1.20 | 1.31 | 1.42 | 0.81                             | 0.94 | 1.05 | 1.17 | 1.28 | 1.38 | 0.78                             | 0.90 | 1.01 | 1.13 | 1.23 | 1.33 |
| EX2-003    | 2.0            | 1.51                             | 1.74 | 1.95 | 2.18 | 2.39 | 2.58 | 1.48                             | 1.71 | 1.91 | 2.14 | 2.34 | 2.53 | 1.42                             | 1.64 | 1.83 | 2.05 | 2.25 | 2.43 |
| EX2-004    | 2.7            | 2.04                             | 2.36 | 2.63 | 2.94 | 3.23 | 3.48 | 2.00                             | 2.31 | 2.58 | 2.89 | 3.16 | 3.42 | 1.92                             | 2.22 | 2.48 | 2.77 | 3.14 | 3.28 |
| EX2-M00    | 4.3            | 3.24                             | 3.74 | 4.18 | 4.68 | 5.12 | 5.53 | 3.18                             | 3.67 | 4.11 | 4.59 | 5.03 | 5.43 | 3.06                             | 3.53 | 3.95 | 4.42 | 4.84 | 5.23 |

| Valve Type | Nominal Rating | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|------------|----------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|            |                | 0°F                              |      |      |      |      |      | -20°F                            |      |      |      |      |      | -40°F                            |      |      |      |      |      |
|            |                | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|            |                | 60                               | 80   | 100  | 125  | 150  | 175  | 80                               | 100  | 125  | 150  | 175  | 200  | 80                               | 100  | 125  | 150  | 175  | 200  |
| EX2-00X    | 0.23           | 0.16                             | 0.18 | 0.21 | 0.23 | 0.25 | 0.27 | 0.17                             | 0.19 | 0.21 | 0.23 | 0.25 | 0.27 | 0.16                             | 0.18 | 0.20 | 0.22 | 0.24 | 0.25 |
| EX2-000    | 0.4            | 0.27                             | 0.31 | 0.35 | 0.39 | 0.43 | 0.46 | 0.30                             | 0.34 | 0.38 | 0.41 | 0.44 | 0.47 | 0.28                             | 0.31 | 0.35 | 0.38 | 0.41 | 0.44 |
| EX2-001    | 0.81           | 0.55                             | 0.64 | 0.71 | 0.79 | 0.87 | 0.94 | 0.60                             | 0.67 | 0.75 | 0.82 | 0.89 | 0.95 | 0.57                             | 0.64 | 0.71 | 0.78 | 0.84 | 0.90 |
| EX2-002    | 1.1            | 0.75                             | 0.87 | 0.97 | 1.08 | 1.19 | 1.28 | 0.82                             | 0.92 | 1.03 | 1.12 | 1.21 | 1.30 | 0.78                             | 0.87 | 0.98 | 1.07 | 1.15 | 1.23 |
| EX2-003    | 2.0            | 1.36                             | 1.57 | 1.76 | 1.96 | 2.15 | 2.32 | 1.49                             | 1.67 | 1.86 | 2.04 | 2.20 | 2.36 | 1.42                             | 1.59 | 1.78 | 1.94 | 2.10 | 2.25 |
| EX2-004    | 2.7            | 1.83                             | 2.11 | 2.36 | 2.64 | 2.89 | 3.13 | 2.02                             | 2.26 | 2.53 | 2.77 | 2.99 | 3.19 | 1.91                             | 2.14 | 2.39 | 2.62 | 2.82 | 3.02 |
| EX2-M00    | 4.3            | 2.92                             | 3.37 | 3.77 | 4.21 | 4.82 | 4.99 | 3.21                             | 3.59 | 4.01 | 4.40 | 4.75 | 5.08 | 3.05                             | 3.41 | 3.81 | 4.18 | 4.51 | 4.82 |

# R-22 Extended Capacities (kWatts) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

| Valve Type | Nominal Rating | Evaporator Temperature           |       |       |       |       |       |                                  |       |       |       |       |       |                                  |       |       |       |       |       |
|------------|----------------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|
|            |                | 10°C                             |       |       |       |       |       | 0°C                              |       |       |       |       |       | -10°C                            |       |       |       |       |       |
|            |                | Pressure Drop Across Valve (kPa) |       |       |       |       |       | Pressure Drop Across Valve (kPa) |       |       |       |       |       | Pressure Drop Across Valve (kPa) |       |       |       |       |       |
|            |                | 400                              | 600   | 700   | 800   | 1000  | 1100  | 400                              | 600   | 700   | 800   | 1000  | 1100  | 400                              | 600   | 700   | 800   | 1000  | 1100  |
| EX2-00X    | 0.23           | 0.64                             | 0.78  | 0.84  | 0.90  | 1.01  | 1.06  | 0.64                             | 0.78  | 0.84  | 0.90  | 1.01  | 1.06  | 0.60                             | 0.74  | 0.80  | 0.85  | 0.95  | 1.00  |
| EX2-000    | 0.4            | 1.10                             | 1.34  | 1.45  | 1.55  | 1.74  | 1.82  | 1.10                             | 1.34  | 1.45  | 1.55  | 1.74  | 1.82  | 1.06                             | 1.30  | 1.40  | 1.50  | 1.68  | 1.76  |
| EX2-001    | 0.81           | 2.27                             | 2.77  | 3.00  | 3.20  | 3.58  | 3.76  | 2.23                             | 2.73  | 2.95  | 3.15  | 3.53  | 3.70  | 2.16                             | 2.64  | 2.86  | 3.05  | 3.41  | 3.58  |
| EX2-002    | 1.1            | 3.04                             | 3.73  | 4.03  | 4.31  | 4.81  | 5.05  | 3.01                             | 3.69  | 3.98  | 4.26  | 4.76  | 4.99  | 2.94                             | 3.60  | 3.89  | 4.16  | 4.65  | 4.87  |
| EX2-003    | 2.0            | 5.56                             | 6.81  | 7.35  | 7.86  | 8.79  | 9.22  | 5.49                             | 6.72  | 7.26  | 7.76  | 8.68  | 9.10  | 5.35                             | 6.55  | 7.07  | 7.56  | 8.45  | 8.86  |
| EX2-004    | 2.7            | 7.50                             | 9.19  | 9.93  | 10.81 | 11.87 | 12.45 | 7.43                             | 9.10  | 9.83  | 10.51 | 11.75 | 12.33 | 7.22                             | 8.84  | 9.55  | 10.21 | 11.42 | 11.38 |
| EX2-M00    | 4.3            | 11.97                            | 14.65 | 15.83 | 16.92 | 18.92 | 19.84 | 11.82                            | 14.48 | 15.64 | 16.72 | 18.69 | 19.61 | 11.51                            | 14.09 | 15.22 | 16.27 | 18.19 | 19.08 |

| Valve Type | Nominal Rating | Evaporator Temperature           |       |       |       |       |       |                                  |       |       |       |       |       |                                  |       |       |       |       |       |
|------------|----------------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|
|            |                | -20°C                            |       |       |       |       |       | -30°C                            |       |       |       |       |       | -40°C                            |       |       |       |       |       |
|            |                | Pressure Drop Across Valve (kPa) |       |       |       |       |       | Pressure Drop Across Valve (kPa) |       |       |       |       |       | Pressure Drop Across Valve (kPa) |       |       |       |       |       |
|            |                | 400                              | 600   | 700   | 800   | 1000  | 1100  | 600                              | 700   | 800   | 1000  | 1100  | 1200  | 600                              | 700   | 800   | 1000  | 1100  | 1200  |
| EX2-00X    | 0.23           | 0.60                             | 0.74  | 0.80  | 0.85  | 0.95  | 1.00  | 0.67                             | 0.73  | 0.78  | 0.91  | 0.91  | 0.95  | 0.64                             | 0.69  | 0.74  | 0.82  | 0.86  | 0.90  |
| EX2-000    | 0.4            | 1.03                             | 1.26  | 1.36  | 1.45  | 1.62  | 1.70  | 1.17                             | 1.26  | 1.35  | 1.58  | 1.58  | 1.65  | 1.13                             | 1.22  | 1.31  | 1.46  | 1.53  | 1.60  |
| EX2-001    | 0.81           | 2.12                             | 2.60  | 2.81  | 3.00  | 3.36  | 3.52  | 2.37                             | 2.56  | 2.74  | 3.21  | 3.21  | 3.35  | 2.27                             | 2.45  | 2.62  | 2.92  | 3.07  | 3.20  |
| EX2-002    | 1.1            | 2.87                             | 3.51  | 3.79  | 4.06  | 4.53  | 4.76  | 3.19                             | 3.44  | 3.68  | 4.31  | 4.31  | 4.51  | 3.08                             | 3.33  | 3.56  | 3.98  | 4.17  | 4.36  |
| EX2-003    | 2.0            | 5.20                             | 6.37  | 6.88  | 7.36  | 8.23  | 8.63  | 5.81                             | 6.27  | 6.70  | 7.86  | 7.86  | 8.21  | 5.63                             | 6.08  | 6.50  | 7.27  | 7.62  | 7.96  |
| EX2-004    | 2.7            | 7.04                             | 8.63  | 9.32  | 9.96  | 11.14 | 11.68 | 7.86                             | 8.49  | 9.07  | 10.64 | 10.64 | 11.11 | 7.58                             | 8.18  | 8.75  | 9.78  | 10.26 | 10.71 |
| EX2-M00    | 4.3            | 11.19                            | 13.70 | 14.80 | 15.82 | 17.69 | 18.55 | 12.58                            | 13.54 | 14.47 | 16.97 | 16.97 | 17.72 | 12.11                            | 13.08 | 13.98 | 15.63 | 16.39 | 17.12 |

# R-134a Extended Capacities (kWatts) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

| Valve Type | Nominal Rating | Evaporator Temperature           |       |       |       |       |       |                                  |       |       |       |       |       |                                  |       |       |       |       |       |
|------------|----------------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|
|            |                | 10°C                             |       |       |       |       |       | 0°C                              |       |       |       |       |       | -10°C                            |       |       |       |       |       |
|            |                | Pressure Drop Across Valve (kPa) |       |       |       |       |       | Pressure Drop Across Valve (kPa) |       |       |       |       |       | Pressure Drop Across Valve (kPa) |       |       |       |       |       |
|            |                | 400                              | 600   | 700   | 800   | 1000  | 1100  | 400                              | 600   | 700   | 800   | 1000  | 1100  | 400                              | 600   | 700   | 800   | 1000  | 1100  |
| EX2-00X    | 0.23           | 0.60                             | 0.74  | 0.80  | 0.85  | 0.95  | 1.00  | 0.60                             | 0.74  | 0.80  | 0.85  | 0.95  | 1.00  | 0.57                             | 0.69  | 0.75  | 0.80  | 0.90  | 0.94  |
| EX2-000    | 0.4            | 1.06                             | 1.30  | 1.40  | 1.50  | 1.68  | 1.76  | 1.03                             | 1.26  | 1.36  | 1.45  | 1.62  | 1.70  | 0.99                             | 1.21  | 1.31  | 1.40  | 1.57  | 1.64  |
| EX2-001    | 0.81           | 2.06                             | 2.64  | 2.86  | 3.05  | 3.41  | 3.58  | 2.09                             | 2.56  | 2.76  | 2.95  | 3.30  | 3.46  | 2.02                             | 2.47  | 2.67  | 2.85  | 3.19  | 3.35  |
| EX2-002    | 1.1            | 2.90                             | 3.56  | 3.84  | 4.11  | 4.59  | 4.81  | 2.87                             | 3.51  | 3.79  | 4.06  | 4.53  | 4.76  | 2.73                             | 3.34  | 3.61  | 3.85  | 4.31  | 4.52  |
| EX2-003    | 2.0            | 5.49                             | 6.72  | 7.26  | 7.76  | 8.68  | 9.10  | 5.38                             | 6.59  | 7.12  | 7.61  | 8.51  | 8.92  | 5.20                             | 6.37  | 6.88  | 7.36  | 8.23  | 8.63  |
| EX2-004    | 2.7            | 7.15                             | 8.76  | 9.46  | 10.11 | 11.31 | 11.86 | 7.01                             | 8.58  | 9.27  | 9.91  | 11.08 | 11.62 | 5.73                             | 8.24  | 8.90  | 9.51  | 10.63 | 11.15 |
| EX2-M00    | 4.3            | 11.40                            | 13.96 | 15.08 | 16.12 | 18.02 | 18.90 | 11.19                            | 13.70 | 14.80 | 15.82 | 17.69 | 18.55 | 10.69                            | 13.09 | 14.14 | 15.12 | 16.90 | 17.73 |

| Valve Type | Nominal Rating | Evaporator Temperature           |       |       |       |       |       |                                  |       |       |       |       |       |                                  |       |       |       |       |       |
|------------|----------------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|
|            |                | -20°C                            |       |       |       |       |       | -30°C                            |       |       |       |       |       | -40°C                            |       |       |       |       |       |
|            |                | Pressure Drop Across Valve (kPa) |       |       |       |       |       | Pressure Drop Across Valve (kPa) |       |       |       |       |       | Pressure Drop Across Valve (kPa) |       |       |       |       |       |
|            |                | 400                              | 600   | 700   | 800   | 1000  | 1100  | 600                              | 700   | 800   | 1000  | 1100  | 1200  | 600                              | 700   | 800   | 1000  | 1100  | 1200  |
| EX2-00X    | 0.23           | 0.53                             | 0.65  | 0.70  | 0.75  | 0.84  | 0.88  | 0.60                             | 0.65  | 0.69  | 0.78  | 0.81  | 0.85  | 0.57                             | 0.61  | 0.65  | 0.73  | 0.77  | 0.80  |
| EX2-000    | 0.4            | 0.96                             | 1.17  | 1.26  | 1.35  | 1.51  | 1.59  | 1.03                             | 1.11  | 1.19  | 1.33  | 1.39  | 1.45  | 0.99                             | 1.07  | 1.14  | 1.28  | 1.34  | 1.40  |
| EX2-001    | 0.81           | 1.91                             | 2.34  | 2.53  | 2.70  | 3.02  | 3.17  | 2.09                             | 2.26  | 2.41  | 2.70  | 2.83  | 2.95  | 1.98                             | 2.14  | 2.29  | 2.56  | 2.68  | 2.80  |
| EX2-002    | 1.1            | 2.62                             | 3.21  | 3.47  | 3.70  | 4.14  | 4.34  | 2.87                             | 3.10  | 3.31  | 3.70  | 3.88  | 4.06  | 2.69                             | 2.91  | 3.11  | 3.47  | 3.64  | 3.80  |
| EX2-003    | 2.0            | 4.39                             | 6.11  | 6.60  | 7.06  | 7.89  | 8.28  | 5.52                             | 5.96  | 6.38  | 7.13  | 7.48  | 7.81  | 5.27                             | 5.70  | 6.09  | 6.81  | 7.14  | 7.46  |
| EX2-004    | 2.7            | 6.41                             | 7.85  | 8.48  | 9.06  | 10.13 | 10.63 | 7.01                             | 7.57  | 8.09  | 9.05  | 9.49  | 9.91  | 6.66                             | 7.19  | 7.68  | 8.59  | 9.01  | 9.41  |
| EX2-M00    | 4.3            | 10.20                            | 12.49 | 13.49 | 14.42 | 16.12 | 16.91 | 11.19                            | 12.08 | 12.92 | 14.44 | 15.15 | 15.82 | 10.58                            | 11.43 | 12.22 | 13.66 | 14.33 | 14.97 |

**R-404A/507 Extended Capacities (kWatts) - EX2 Series**

Capacities are for EX2 @ 100% duty cycle

| Valve Type | Nominal Rating | Evaporator Temperature           |       |       |       |       |       |                                  |       |       |       |       |       |                                  |      |       |       |       |       |
|------------|----------------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|------|-------|-------|-------|-------|
|            |                | 10°C                             |       |       |       |       |       | 0°C                              |       |       |       |       |       | -10°C                            |      |       |       |       |       |
|            |                | Pressure Drop Across Valve (kPa) |       |       |       |       |       | Pressure Drop Across Valve (kPa) |       |       |       |       |       | Pressure Drop Across Valve (kPa) |      |       |       |       |       |
|            |                | 400                              | 600   | 700   | 800   | 1000  | 1100  | 400                              | 600   | 700   | 800   | 1000  | 1100  | 400                              | 600  | 700   | 800   | 1000  | 1100  |
| EX2-00X    | 0.23           | 0.46                             | 0.56  | 0.61  | 0.65  | 0.73  | 0.76  | 0.46                             | 0.56  | 0.61  | 0.65  | 0.73  | 0.76  | 0.42                             | 0.52 | 0.56  | 0.60  | 0.67  | 0.70  |
| EX2-000    | 0.4            | 0.81                             | 1.00  | 1.08  | 1.15  | 1.29  | 1.35  | 0.78                             | 0.95  | 1.03  | 1.10  | 1.23  | 1.29  | 0.74                             | 0.91 | 0.98  | 1.05  | 1.18  | 1.23  |
| EX2-001    | 0.81           | 1.66                             | 2.04  | 2.20  | 2.35  | 2.63  | 2.76  | 1.63                             | 1.99  | 2.15  | 2.30  | 2.57  | 2.70  | 1.52                             | 1.86 | 2.01  | 2.15  | 2.41  | 2.52  |
| EX2-002    | 1.1            | 2.23                             | 2.73  | 2.95  | 3.15  | 3.53  | 3.70  | 2.19                             | 2.69  | 2.90  | 3.10  | 3.47  | 3.64  | 2.09                             | 2.56 | 2.76  | 2.95  | 3.30  | 3.46  |
| EX2-003    | 2.0            | 4.07                             | 4.39  | 5.39  | 5.76  | 6.44  | 6.75  | 3.96                             | 4.86  | 5.24  | 5.61  | 6.27  | 6.57  | 3.79                             | 4.64 | 5.01  | 5.36  | 5.99  | 6.28  |
| EX2-004    | 2.7            | 5.49                             | 6.72  | 7.26  | 7.76  | 8.68  | 9.10  | 5.38                             | 6.59  | 7.12  | 7.61  | 8.51  | 8.92  | 5.10                             | 6.24 | 6.74  | 7.21  | 8.06  | 8.45  |
| EX2-M00    | 4.3            | 8.74                             | 10.71 | 11.57 | 12.37 | 13.83 | 14.50 | 8.57                             | 10.49 | 11.33 | 12.12 | 13.55 | 14.21 | 8.14                             | 9.97 | 10.77 | 11.51 | 12.87 | 13.50 |

| Valve Type | Nominal Rating | Evaporator Temperature           |      |       |       |       |       |                                  |      |      |       |       |       |                                  |      |      |       |       |       |
|------------|----------------|----------------------------------|------|-------|-------|-------|-------|----------------------------------|------|------|-------|-------|-------|----------------------------------|------|------|-------|-------|-------|
|            |                | -20°C                            |      |       |       |       |       | -30°C                            |      |      |       |       |       | -40°C                            |      |      |       |       |       |
|            |                | Pressure Drop Across Valve (kPa) |      |       |       |       |       | Pressure Drop Across Valve (kPa) |      |      |       |       |       | Pressure Drop Across Valve (kPa) |      |      |       |       |       |
|            |                | 400                              | 600  | 700   | 800   | 1000  | 1100  | 600                              | 700  | 800  | 1000  | 1100  | 1200  | 600                              | 700  | 800  | 1000  | 1100  | 1200  |
| EX2-00X    | 0.23           | 0.42                             | 0.52 | 0.56  | 0.60  | 0.67  | 0.70  | 0.46                             | 0.50 | 0.53 | 0.59  | 0.62  | 0.65  | 0.42                             | 0.46 | 0.49 | 0.55  | 0.58  | 0.60  |
| EX2-000    | 0.4            | 0.71                             | 0.87 | 0.94  | 1.00  | 1.12  | 1.17  | 0.78                             | 0.64 | 0.90 | 1.01  | 1.05  | 1.10  | 0.71                             | 0.71 | 0.82 | 0.91  | 0.96  | 1.00  |
| EX2-001    | 0.81           | 1.45                             | 1.78 | 1.92  | 2.05  | 2.29  | 2.41  | 1.56                             | 1.68 | 1.80 | 2.01  | 2.11  | 2.20  | 1.45                             | 1.45 | 1.68 | 1.87  | 1.97  | 2.05  |
| EX2-002    | 1.1            | 1.95                             | 2.38 | 2.58  | 2.75  | 3.08  | 3.23  | 2.12                             | 2.29 | 2.45 | 2.74  | 2.88  | 3.00  | 1.98                             | 1.98 | 2.29 | 2.56  | 2.68  | 2.80  |
| EX2-003    | 2.0            | 3.58                             | 4.38 | 4.73  | 5.06  | 5.65  | 5.93  | 3.86                             | 4.17 | 4.46 | 4.98  | 5.22  | 5.46  | 3.61                             | 3.61 | 4.17 | 4.66  | 4.89  | 6.11  |
| EX2-004    | 2.7            | 4.81                             | 5.90 | 6.37  | 6.81  | 7.61  | 7.98  | 5.24                             | 5.66 | 6.05 | 6.76  | 7.09  | 7.41  | 4.89                             | 4.89 | 5.64 | 6.31  | 6.61  | 6.91  |
| EX2-M00    | 4.3            | 7.68                             | 9.41 | 10.16 | 10.86 | 12.15 | 12.74 | 8.32                             | 8.99 | 9.61 | 10.74 | 11.26 | 11.76 | 7.75                             | 7.75 | 8.95 | 10.01 | 10.50 | 10.96 |

## R-407C Extended Capacities (kWatts) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

| Valve Type | Nominal Rating | Evaporator Temperature           |       |       |       |       |       |                                  |       |       |       |       |       |                                  |       |       |       |       |       |
|------------|----------------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|
|            |                | 10°C                             |       |       |       |       |       | 0°C                              |       |       |       |       |       | -10°C                            |       |       |       |       |       |
|            |                | Pressure Drop Across Valve (kPa) |       |       |       |       |       | Pressure Drop Across Valve (kPa) |       |       |       |       |       | Pressure Drop Across Valve (kPa) |       |       |       |       |       |
|            |                | 400                              | 600   | 700   | 800   | 1000  | 1100  | 400                              | 600   | 700   | 800   | 1000  | 1100  | 400                              | 600   | 700   | 800   | 1000  | 1100  |
| EX2-00X    | 0.23           | 0.60                             | 0.74  | 0.80  | 0.85  | 0.95  | 1.0   | 0.60                             | 0.74  | 0.80  | 0.85  | 0.95  | 1.00  | 0.57                             | 0.69  | 0.75  | 0.80  | 0.90  | 0.94  |
| EX2-000    | 0.4            | 1.06                             | 1.30  | 1.40  | 1.50  | 1.65  | 1.75  | 1.06                             | 1.30  | 1.40  | 1.68  | 1.68  | 1.76  | 0.99                             | 1.21  | 1.31  | 1.40  | 1.57  | 1.64  |
| EX2-001    | 0.81           | 2.16                             | 2.64  | 2.86  | 3.05  | 3.41  | 3.58  | 2.12                             | 2.60  | 2.81  | 3.36  | 3.36  | 3.52  | 2.05                             | 2.51  | 2.72  | 2.90  | 3.25  | 3.40  |
| EX2-002    | 1.1            | 2.94                             | 3.60  | 3.89  | 4.16  | 4.65  | 4.87  | 2.87                             | 3.51  | 3.79  | 4.53  | 4.53  | 4.76  | 2.76                             | 3.38  | 3.65  | 3.90  | 4.37  | 4.58  |
| EX2-003    | 2.0            | 5.35                             | 6.55  | 7.07  | 7.56  | 8.45  | 8.86  | 5.24                             | 6.42  | 6.93  | 8.28  | 8.28  | 8.69  | 5.03                             | 6.16  | 6.65  | 7.11  | 7.95  | 8.34  |
| EX2-004    | 2.7            | 7.22                             | 8.84  | 9.55  | 10.21 | 11.42 | 11.98 | 7.08                             | 8.67  | 9.37  | 11.19 | 11.19 | 11.74 | 6.80                             | 8.32  | 8.99  | 9.61  | 10.75 | 11.27 |
| EX2-M00    | 4.3            | 11.47                            | 14.05 | 15.17 | 16.22 | 18.14 | 19.02 | 11.26                            | 13.79 | 14.89 | 17.80 | 17.80 | 18.67 | 10.83                            | 13.27 | 14.33 | 15.32 | 17.13 | 17.96 |

| Valve Type | Nominal Rating | Evaporator Temperature           |       |       |       |       |       |                                  |       |       |       |       |       |                                  |       |       |       |       |       |
|------------|----------------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|
|            |                | -20°C                            |       |       |       |       |       | -30°C                            |       |       |       |       |       | -40°C                            |       |       |       |       |       |
|            |                | Pressure Drop Across Valve (kPa) |       |       |       |       |       | Pressure Drop Across Valve (kPa) |       |       |       |       |       | Pressure Drop Across Valve (kPa) |       |       |       |       |       |
|            |                | 400                              | 600   | 700   | 800   | 1000  | 1100  | 600                              | 700   | 800   | 1000  | 1100  | 1200  | 600                              | 700   | 800   | 1000  | 1100  | 1200  |
| EX2-00X    | 0.23           | 0.57                             | 0.69  | 0.75  | 0.80  | 0.90  | 0.94  | 0.60                             | 0.65  | 0.69  | 0.78  | 0.81  | 0.85  | 0.57                             | 0.61  | 0.65  | 0.73  | 0.77  | 0.80  |
| EX2-000    | 0.4            | 0.96                             | 1.17  | 1.26  | 1.35  | 1.51  | 1.59  | 1.06                             | 1.15  | 1.23  | 1.37  | 1.44  | 1.50  | 0.99                             | 1.07  | 1.14  | 1.28  | 1.34  | 1.40  |
| EX2-001    | 0.81           | 1.95                             | 2.38  | 2.58  | 2.75  | 3.08  | 3.23  | 2.12                             | 2.29  | 2.45  | 2.74  | 2.88  | 3.00  | 2.02                             | 2.18  | 2.33  | 2.60  | 2.73  | 2.85  |
| EX2-002    | 1.1            | 2.66                             | 3.25  | 3.51  | 3.75  | 4.20  | 4.40  | 2.90                             | 3.14  | 3.35  | 3.75  | 3.93  | 4.11  | 2.76                             | 2.98  | 3.19  | 3.56  | 3.74  | 3.90  |
| EX2-003    | 2.0            | 4.81                             | 5.90  | 6.37  | 6.81  | 7.61  | 7.98  | 5.27                             | 5.70  | 6.09  | 6.81  | 7.14  | 7.46  | 5.03                             | 5.43  | 5.80  | 6.49  | 6.81  | 7.11  |
| EX2-004    | 2.7            | 6.48                             | 7.93  | 8.57  | 9.16  | 10.24 | 10.74 | 7.15                             | 7.72  | 8.26  | 9.23  | 9.68  | 10.11 | 6.76                             | 7.30  | 7.81  | 8.73  | 9.15  | 9.56  |
| EX2-M00    | 4.3            | 10.34                            | 12.66 | 13.67 | 14.62 | 16.34 | 17.14 | 11.36                            | 12.27 | 13.12 | 14.67 | 15.39 | 16.07 | 10.80                            | 11.66 | 12.47 | 13.94 | 14.62 | 15.27 |

## R-22 Extended Capacities (Tons) - EX3 Series

| Valve Type | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|            | 50°F                             |      |      |      |      |      | 40°F                             |      |      |      |      |      | 20°F                             |      |      |      |      |      |
|            | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|            | 60                               | 80   | 100  | 125  | 150  | 175  | 60                               | 80   | 100  | 125  | 150  | 175  | 60                               | 80   | 100  | 125  | 150  | 175  |
| EX3-2000   | 0.32                             | 0.36 | 0.41 | 0.46 | 0.50 | 0.54 | 0.31                             | 0.36 | 0.40 | 0.45 | 0.49 | 0.53 | 0.30                             | 0.35 | 0.39 | 0.44 | 0.48 | 0.52 |
| EX3-3000   | 0.66                             | 0.76 | 0.85 | 0.95 | 1.04 | 1.13 | 0.65                             | 0.75 | 0.84 | 0.94 | 1.03 | 1.12 | 0.64                             | 0.73 | 0.82 | 0.92 | 1.01 | 1.09 |
| EX3-4000   | 1.06                             | 1.23 | 1.37 | 1.54 | 1.68 | 1.82 | 1.05                             | 1.21 | 1.36 | 1.52 | 1.66 | 1.80 | 1.02                             | 1.18 | 1.32 | 1.48 | 1.62 | 1.75 |
| EX3-5000   | 1.72                             | 1.99 | 2.23 | 2.49 | 2.73 | 2.95 | 1.70                             | 1.97 | 2.20 | 2.46 | 2.69 | 2.91 | 1.66                             | 1.92 | 2.14 | 2.40 | 2.62 | 2.84 |
| EX3-6000   | 2.79                             | 3.22 | 3.60 | 4.02 | 4.41 | 4.76 | 2.76                             | 3.18 | 3.56 | 3.98 | 4.36 | 4.71 | 2.68                             | 3.10 | 3.47 | 3.87 | 4.24 | 4.58 |
| EX3-7000   | 3.53                             | 4.08 | 4.56 | 5.10 | 5.59 | 6.04 | 3.49                             | 4.03 | 4.51 | 5.04 | 5.52 | 5.96 | 3.40                             | 3.93 | 4.39 | 4.91 | 5.38 | 5.81 |
| EX3-8000   | 3.94                             | 4.55 | 5.08 | 5.68 | 6.23 | 6.72 | 3.89                             | 4.49 | 5.02 | 5.62 | 6.15 | 6.64 | 3.79                             | 4.38 | 4.89 | 5.47 | 5.99 | 6.47 |
| EX3-9000   | 5.03                             | 5.81 | 6.49 | 7.26 | 7.95 | 8.59 | 4.97                             | 5.74 | 6.42 | 7.17 | 7.86 | 8.49 | 4.84                             | 5.59 | 6.25 | 6.99 | 7.65 | 8.27 |

| Valve Type | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|            | 0°F                              |      |      |      |      |      | -20°F                            |      |      |      |      |      | -40°F                            |      |      |      |      |      |
|            | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|            | 60                               | 80   | 100  | 125  | 150  | 175  | 80                               | 100  | 125  | 150  | 175  | 200  | 80                               | 100  | 125  | 150  | 175  | 200  |
| EX3-2000   | 0.29                             | 0.34 | 0.38 | 0.43 | 0.47 | 0.50 | 0.33                             | 0.37 | 0.41 | 0.45 | 0.49 | 0.52 | 0.32                             | 0.36 | 0.40 | 0.44 | 0.47 | 0.50 |
| EX3-3000   | 0.62                             | 0.71 | 0.80 | 0.89 | 0.98 | 1.05 | 0.69                             | 0.77 | 0.86 | 0.95 | 1.02 | 1.09 | 0.67                             | 0.75 | 0.83 | 0.91 | 0.99 | 1.05 |
| EX3-4000   | 0.99                             | 1.15 | 1.28 | 1.44 | 1.57 | 1.70 | 1.11                             | 1.24 | 1.39 | 1.52 | 1.64 | 1.76 | 1.07                             | 1.20 | 1.34 | 1.47 | 1.59 | 1.70 |
| EX3-5000   | 1.61                             | 1.86 | 2.08 | 2.33 | 2.55 | 2.75 | 1.80                             | 2.01 | 2.25 | 2.47 | 2.67 | 2.85 | 1.74                             | 1.95 | 2.17 | 2.38 | 2.57 | 2.75 |
| EX3-6000   | 2.61                             | 3.01 | 3.36 | 3.76 | 4.12 | 4.45 | 2.91                             | 3.26 | 3.64 | 3.99 | 4.31 | 4.61 | 2.81                             | 3.15 | 3.52 | 3.85 | 4.16 | 4.45 |
| EX3-7000   | 3.30                             | 3.81 | 4.27 | 4.77 | 5.22 | 5.64 | 3.69                             | 4.13 | 4.62 | 5.06 | 5.46 | 5.84 | 3.57                             | 3.99 | 4.46 | 4.88 | 5.27 | 5.64 |
| EX3-8000   | 3.68                             | 4.25 | 4.75 | 5.31 | 5.82 | 6.29 | 4.11                             | 4.60 | 5.14 | 5.63 | 6.09 | 6.51 | 3.97                             | 4.44 | 4.97 | 5.44 | 5.88 | 6.28 |
| EX3-9000   | 4.70                             | 5.43 | 6.07 | 6.78 | 7.43 | 8.03 | 5.26                             | 5.88 | 6.57 | 7.20 | 7.77 | 8.31 | 5.07                             | 5.67 | 6.34 | 6.95 | 7.50 | 8.02 |

| Refrigerant Liquid Correction Factor |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Liquid Line Temp, °F                 | 0    | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  |
| Capacity Multiplier (R-22)           | 1.54 | 1.49 | 1.43 | 1.38 | 1.33 | 1.27 | 1.22 | 1.17 | 1.11 | 1.06 | 1.00 | 0.94 | 0.89 | 0.83 | 0.77 |
| Capacity Multiplier (R-134a)         | 1.64 | 1.58 | 1.51 | 1.45 | 1.39 | 1.32 | 1.26 | 1.19 | 1.13 | 1.07 | 1.00 | 0.93 | 0.87 | 0.80 | 0.73 |
| Capacity Multiplier (R-404A)         | 1.92 | 1.83 | 1.74 | 1.65 | 1.56 | 1.47 | 1.38 | 1.29 | 1.19 | 1.10 | 1.00 | 0.90 | 0.80 | 0.69 | 0.58 |
| Capacity Multiplier (R-407F)         | 1.68 | 1.62 | 1.55 | 1.48 | 1.42 | 1.35 | 1.28 | 1.21 | 1.14 | 1.07 | 1.00 | 0.93 | 0.85 | 0.78 | 0.70 |
| Capacity Multiplier (R-507)          | 1.87 | 1.78 | 1.70 | 1.61 | 1.53 | 1.44 | 1.36 | 1.27 | 1.18 | 1.09 | 1.00 | 0.91 | 0.81 | 0.71 | 0.60 |

## R-134a Extended Capacities (Tons) - EX3 Series

| Valve Type | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|            | 50°F                             |      |      |      |      |      | 40°F                             |      |      |      |      |      | 20°F                             |      |      |      |      |      |
|            | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|            | 60                               | 80   | 100  | 125  | 150  | 175  | 60                               | 80   | 100  | 125  | 150  | 175  | 60                               | 80   | 100  | 125  | 150  | 175  |
| EX3-2000   | 0.30                             | 0.34 | 0.38 | 0.43 | 0.47 | 0.51 | 0.29                             | 0.34 | 0.38 | 0.42 | 0.46 | 0.50 | 0.28                             | 0.32 | 0.36 | 0.40 | 0.44 | 0.47 |
| EX3-3000   | 0.62                             | 0.72 | 0.80 | 0.90 | 0.98 | 1.06 | 0.61                             | 0.70 | 0.78 | 0.88 | 0.96 | 1.04 | 0.58                             | 0.67 | 0.75 | 0.84 | 0.92 | 0.99 |
| EX3-4000   | 1.00                             | 1.15 | 1.29 | 1.44 | 1.58 | 1.71 | 0.98                             | 1.13 | 1.26 | 1.41 | 1.55 | 1.67 | 0.93                             | 1.08 | 1.21 | 1.35 | 1.48 | 1.60 |
| EX3-5000   | 1.62                             | 1.87 | 2.09 | 2.34 | 2.56 | 2.77 | 1.59                             | 1.83 | 2.05 | 2.29 | 2.51 | 2.71 | 1.52                             | 1.75 | 1.96 | 2.19 | 2.40 | 2.59 |
| EX3-6000   | 2.62                             | 3.02 | 3.38 | 3.78 | 4.14 | 4.47 | 2.56                             | 2.96 | 3.31 | 3.70 | 4.06 | 4.38 | 2.45                             | 2.83 | 3.17 | 3.54 | 3.88 | 4.19 |
| EX3-7000   | 3.32                             | 3.83 | 4.29 | 4.79 | 5.25 | 5.67 | 3.25                             | 3.75 | 4.20 | 4.69 | 5.14 | 5.55 | 3.11                             | 3.59 | 4.01 | 4.49 | 4.92 | 5.31 |
| EX3-8000   | 3.70                             | 4.27 | 4.78 | 5.34 | 5.85 | 6.32 | 3.62                             | 4.18 | 4.68 | 5.23 | 5.73 | 6.19 | 3.46                             | 4.00 | 4.47 | 5.00 | 5.48 | 5.91 |
| EX3-9000   | 4.73                             | 5.46 | 6.10 | 6.82 | 7.47 | 8.07 | 4.63                             | 5.34 | 5.97 | 6.68 | 7.32 | 7.90 | 4.42                             | 5.11 | 5.71 | 6.39 | 7.00 | 7.56 |

| Valve Type | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|            | 0°F                              |      |      |      |      |      | -20°F                            |      |      |      |      |      | -40°F                            |      |      |      |      |      |
|            | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|            | 60                               | 80   | 100  | 125  | 150  | 175  | 80                               | 100  | 125  | 150  | 175  | 200  | 80                               | 100  | 125  | 150  | 175  | 200  |
| EX3-2000   | 0.26                             | 0.31 | 0.34 | 0.38 | 0.42 | 0.45 | 0.29                             | 0.32 | 0.36 | 0.40 | 0.43 | 0.46 | 0.27                             | 0.31 | 0.34 | 0.38 | 0.41 | 0.43 |
| EX3-3000   | 0.55                             | 0.64 | 0.71 | 0.80 | 0.87 | 0.94 | 0.61                             | 0.68 | 0.76 | 0.83 | 0.90 | 0.96 | 0.57                             | 0.64 | 0.72 | 0.78 | 0.85 | 0.91 |
| EX3-4000   | 0.89                             | 1.03 | 1.15 | 1.28 | 1.41 | 1.52 | 0.98                             | 1.09 | 1.22 | 1.34 | 1.44 | 1.54 | 0.92                             | 1.03 | 1.15 | 1.26 | 1.36 | 1.46 |
| EX3-5000   | 1.45                             | 1.67 | 1.87 | 2.09 | 2.29 | 2.47 | 1.58                             | 1.77 | 1.98 | 2.17 | 2.34 | 2.50 | 1.50                             | 1.67 | 1.87 | 2.05 | 2.21 | 2.37 |
| EX3-6000   | 2.34                             | 2.70 | 3.01 | 3.37 | 3.69 | 3.99 | 2.56                             | 2.86 | 3.20 | 3.50 | 3.78 | 4.05 | 2.42                             | 2.70 | 3.02 | 3.31 | 3.58 | 3.82 |
| EX3-7000   | 2.96                             | 3.42 | 3.82 | 4.27 | 4.68 | 5.06 | 3.24                             | 3.63 | 4.05 | 4.44 | 4.80 | 5.13 | 3.07                             | 3.43 | 3.83 | 4.20 | 4.53 | 4.85 |
| EX3-8000   | 3.30                             | 3.81 | 4.26 | 4.76 | 5.21 | 5.63 | 3.61                             | 4.04 | 4.52 | 4.95 | 5.34 | 5.71 | 3.42                             | 3.82 | 4.27 | 4.68 | 5.05 | 5.40 |
| EX3-9000   | 4.21                             | 4.87 | 5.44 | 6.08 | 6.66 | 7.20 | 4.62                             | 5.16 | 5.77 | 6.32 | 6.83 | 7.30 | 4.36                             | 4.88 | 5.45 | 5.97 | 6.45 | 6.90 |

| Refrigerant Liquid Correction Factor |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Liquid Line Temp, °F                 | 0    | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  |
| Capacity Multiplier (R-22)           | 1.54 | 1.49 | 1.43 | 1.38 | 1.33 | 1.27 | 1.22 | 1.17 | 1.11 | 1.06 | 1.00 | 0.94 | 0.89 | 0.83 | 0.77 |
| Capacity Multiplier (R-134a)         | 1.64 | 1.58 | 1.51 | 1.45 | 1.39 | 1.32 | 1.26 | 1.19 | 1.13 | 1.07 | 1.00 | 0.93 | 0.87 | 0.80 | 0.73 |
| Capacity Multiplier (R-404A)         | 1.92 | 1.83 | 1.74 | 1.65 | 1.56 | 1.47 | 1.38 | 1.29 | 1.19 | 1.10 | 1.00 | 0.90 | 0.80 | 0.69 | 0.58 |
| Capacity Multiplier (R-407F)         | 1.68 | 1.62 | 1.55 | 1.48 | 1.42 | 1.35 | 1.28 | 1.21 | 1.14 | 1.07 | 1.00 | 0.93 | 0.85 | 0.78 | 0.70 |
| Capacity Multiplier (R-507)          | 1.87 | 1.78 | 1.70 | 1.61 | 1.53 | 1.44 | 1.36 | 1.27 | 1.18 | 1.09 | 1.00 | 0.91 | 0.81 | 0.71 | 0.60 |

## R-404A Extended Capacities (Tons) - EX3 Series

| Valve Type | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|            | 50°F                             |      |      |      |      |      | 40°F                             |      |      |      |      |      | 20°F                             |      |      |      |      |      |
|            | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|            | 60                               | 80   | 100  | 125  | 150  | 175  | 60                               | 80   | 100  | 125  | 150  | 175  | 60                               | 80   | 100  | 125  | 150  | 175  |
| EX3-2000   | 0.20                             | 0.23 | 0.26 | 0.29 | 0.32 | 0.35 | 0.20                             | 0.23 | 0.26 | 0.29 | 0.31 | 0.34 | 0.19                             | 0.22 | 0.24 | 0.27 | 0.30 | 0.32 |
| EX3-3000   | 0.42                             | 0.49 | 0.55 | 0.61 | 0.67 | 0.72 | 0.41                             | 0.48 | 0.53 | 0.60 | 0.65 | 0.71 | 0.39                             | 0.45 | 0.51 | 0.57 | 0.62 | 0.67 |
| EX3-4000   | 0.68                             | 0.79 | 0.88 | 0.98 | 1.08 | 1.16 | 0.67                             | 0.77 | 0.86 | 0.96 | 1.05 | 1.14 | 0.63                             | 0.73 | 0.82 | 0.91 | 1.00 | 1.08 |
| EX3-5000   | 1.10                             | 1.28 | 1.43 | 1.59 | 1.75 | 1.89 | 1.08                             | 1.25 | 1.39 | 1.56 | 1.71 | 1.84 | 1.03                             | 1.18 | 1.32 | 1.48 | 1.62 | 1.75 |
| EX3-6000   | 1.79                             | 2.06 | 2.30 | 2.58 | 2.82 | 3.05 | 1.74                             | 2.01 | 2.25 | 2.52 | 2.76 | 2.98 | 1.66                             | 1.91 | 2.14 | 2.39 | 2.62 | 2.83 |
| EX3-7000   | 2.26                             | 2.61 | 2.92 | 3.27 | 3.58 | 3.87 | 2.21                             | 2.55 | 2.86 | 3.19 | 3.50 | 3.78 | 2.10                             | 2.43 | 2.71 | 3.03 | 3.32 | 3.59 |
| EX3-8000   | 2.52                             | 2.91 | 3.25 | 3.64 | 3.99 | 4.31 | 2.46                             | 2.85 | 3.18 | 3.56 | 3.90 | 4.21 | 2.34                             | 2.70 | 3.02 | 3.38 | 3.70 | 4.00 |
| EX3-9000   | 3.22                             | 3.72 | 4.16 | 4.65 | 5.09 | 5.50 | 3.15                             | 3.63 | 4.06 | 4.54 | 4.98 | 5.38 | 2.99                             | 3.45 | 3.86 | 4.32 | 4.73 | 5.11 |

| Valve Type | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|            | 0°F                              |      |      |      |      |      | -20°F                            |      |      |      |      |      | -40°F                            |      |      |      |      |      |
|            | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|            | 60                               | 80   | 100  | 125  | 150  | 175  | 80                               | 100  | 125  | 150  | 175  | 200  | 80                               | 100  | 125  | 150  | 175  | 200  |
| EX3-2000   | 0.18                             | 0.20 | 0.23 | 0.26 | 0.28 | 0.30 | 0.19                             | 0.21 | 0.24 | 0.26 | 0.28 | 0.30 | 0.18                             | 0.20 | 0.22 | 0.24 | 0.26 | 0.28 |
| EX3-3000   | 0.37                             | 0.43 | 0.48 | 0.54 | 0.59 | 0.63 | 0.40                             | 0.45 | 0.50 | 0.55 | 0.59 | 0.63 | 0.37                             | 0.42 | 0.47 | 0.51 | 0.55 | 0.59 |
| EX3-4000   | 0.60                             | 0.69 | 0.77 | 0.86 | 0.94 | 1.02 | 0.65                             | 0.72 | 0.81 | 0.88 | 0.95 | 1.02 | 0.60                             | 0.67 | 0.75 | 0.82 | 0.89 | 0.95 |
| EX3-5000   | 0.97                             | 1.12 | 1.25 | 1.40 | 1.53 | 1.65 | 1.05                             | 1.17 | 1.31 | 1.43 | 1.55 | 1.65 | 0.97                             | 1.09 | 1.22 | 1.33 | 1.44 | 1.54 |
| EX3-6000   | 1.56                             | 1.81 | 2.02 | 2.26 | 2.47 | 2.67 | 1.69                             | 1.89 | 2.11 | 2.32 | 2.50 | 2.67 | 1.57                             | 1.76 | 1.97 | 2.15 | 2.33 | 2.49 |
| EX3-7000   | 1.98                             | 2.29 | 2.56 | 2.86 | 3.13 | 3.39 | 2.14                             | 2.40 | 2.68 | 2.94 | 3.17 | 3.39 | 1.99                             | 2.23 | 2.49 | 2.73 | 2.95 | 3.15 |
| EX3-8000   | 2.21                             | 2.55 | 2.85 | 3.19 | 3.49 | 3.77 | 2.39                             | 2.67 | 2.99 | 3.27 | 3.53 | 3.78 | 2.22                             | 2.48 | 2.78 | 3.04 | 3.29 | 3.51 |
| EX3-9000   | 2.82                             | 3.26 | 3.64 | 4.07 | 4.46 | 4.82 | 3.05                             | 3.41 | 3.81 | 4.18 | 4.51 | 4.82 | 2.84                             | 3.17 | 3.55 | 3.89 | 4.20 | 4.49 |

| Refrigerant Liquid Correction Factor |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Liquid Line Temp, °F                 | 0    | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  |
| Capacity Multiplier (R-22)           | 1.54 | 1.49 | 1.43 | 1.38 | 1.33 | 1.27 | 1.22 | 1.17 | 1.11 | 1.06 | 1.00 | 0.94 | 0.89 | 0.83 | 0.77 |
| Capacity Multiplier (R-134a)         | 1.64 | 1.58 | 1.51 | 1.45 | 1.39 | 1.32 | 1.26 | 1.19 | 1.13 | 1.07 | 1.00 | 0.93 | 0.87 | 0.80 | 0.73 |
| Capacity Multiplier (R-404A)         | 1.92 | 1.83 | 1.74 | 1.65 | 1.56 | 1.47 | 1.38 | 1.29 | 1.19 | 1.10 | 1.00 | 0.90 | 0.80 | 0.69 | 0.58 |
| Capacity Multiplier (R-407F)         | 1.68 | 1.62 | 1.55 | 1.48 | 1.42 | 1.35 | 1.28 | 1.21 | 1.14 | 1.07 | 1.00 | 0.93 | 0.85 | 0.78 | 0.70 |
| Capacity Multiplier (R-507)          | 1.87 | 1.78 | 1.70 | 1.61 | 1.53 | 1.44 | 1.36 | 1.27 | 1.18 | 1.09 | 1.00 | 0.91 | 0.81 | 0.71 | 0.60 |

## R-407F Extended Capacities (Tons) - EX3 Series

| Valve Type | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|            | 50°F                             |      |      |      |      |      | 40°F                             |      |      |      |      |      | 20°F                             |      |      |      |      |      |
|            | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|            | 60                               | 80   | 100  | 125  | 150  | 175  | 60                               | 80   | 100  | 125  | 150  | 175  | 60                               | 80   | 100  | 125  | 150  | 175  |
| EX3-2000   | 0.30                             | 0.35 | 0.39 | 0.43 | 0.47 | 0.51 | 0.30                             | 0.34 | 0.38 | 0.43 | 0.47 | 0.50 | 0.29                             | 0.33 | 0.37 | 0.41 | 0.45 | 0.49 |
| EX3-3000   | 0.63                             | 0.72 | 0.81 | 0.90 | 0.99 | 1.07 | 0.62                             | 0.71 | 0.80 | 0.89 | 0.98 | 1.05 | 0.60                             | 0.69 | 0.77 | 0.86 | 0.95 | 1.02 |
| EX3-4000   | 1.01                             | 1.16 | 1.30 | 1.45 | 1.59 | 1.72 | 0.99                             | 1.15 | 1.28 | 1.43 | 1.57 | 1.70 | 0.96                             | 1.11 | 1.24 | 1.39 | 1.52 | 1.64 |
| EX3-5000   | 1.63                             | 1.89 | 2.11 | 2.36 | 2.58 | 2.79 | 1.61                             | 1.86 | 2.08 | 2.32 | 2.55 | 2.75 | 1.56                             | 1.80 | 2.01 | 2.25 | 2.47 | 2.66 |
| EX3-6000   | 2.64                             | 3.05 | 3.41 | 3.81 | 4.18 | 4.51 | 2.60                             | 3.01 | 3.36 | 3.76 | 4.12 | 4.45 | 2.52                             | 2.91 | 3.26 | 3.64 | 3.99 | 4.31 |
| EX3-7000   | 3.35                             | 3.87 | 4.32 | 4.84 | 5.30 | 5.72 | 3.30                             | 3.81 | 4.26 | 4.77 | 5.22 | 5.64 | 3.20                             | 3.69 | 4.13 | 4.62 | 5.06 | 5.46 |
| EX3-8000   | 3.73                             | 4.31 | 4.82 | 5.39 | 5.90 | 6.37 | 3.68                             | 4.25 | 4.75 | 5.31 | 5.82 | 6.28 | 3.56                             | 4.11 | 4.60 | 5.14 | 5.63 | 6.08 |
| EX3-9000   | 4.77                             | 5.50 | 6.15 | 6.88 | 7.54 | 8.14 | 4.70                             | 5.43 | 6.07 | 6.78 | 7.43 | 8.03 | 4.55                             | 5.25 | 5.87 | 6.57 | 7.19 | 7.77 |

| Valve Type | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|            | 0°F                              |      |      |      |      |      | -20°F                            |      |      |      |      |      | -40°F                            |      |      |      |      |      |
|            | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|            | 60                               | 80   | 100  | 125  | 150  | 175  | 80                               | 100  | 125  | 150  | 175  | 200  | 80                               | 100  | 125  | 150  | 175  | 200  |
| EX3-2000   | 0.28                             | 0.32 | 0.36 | 0.40 | 0.44 | 0.47 | 0.31                             | 0.34 | 0.38 | 0.42 | 0.45 | 0.48 | 0.29                             | 0.33 | 0.37 | 0.40 | 0.43 | 0.46 |
| EX3-3000   | 0.58                             | 0.67 | 0.74 | 0.83 | 0.91 | 0.98 | 0.64                             | 0.71 | 0.80 | 0.87 | 0.94 | 1.01 | 0.61                             | 0.68 | 0.76 | 0.84 | 0.90 | 0.97 |
| EX3-4000   | 0.93                             | 1.07 | 1.20 | 1.34 | 1.47 | 1.58 | 1.03                             | 1.15 | 1.28 | 1.41 | 1.52 | 1.62 | 0.98                             | 1.10 | 1.23 | 1.35 | 1.45 | 1.55 |
| EX3-5000   | 1.50                             | 1.74 | 1.94 | 2.17 | 2.38 | 2.57 | 1.67                             | 1.86 | 2.08 | 2.28 | 2.46 | 2.63 | 1.59                             | 1.78 | 1.99 | 2.18 | 2.36 | 2.52 |
| EX3-6000   | 2.43                             | 2.81 | 3.14 | 3.51 | 3.84 | 4.15 | 2.70                             | 3.01 | 3.37 | 3.69 | 3.99 | 4.26 | 2.58                             | 2.88 | 3.22 | 3.53 | 3.81 | 4.08 |
| EX3-7000   | 3.08                             | 3.56 | 3.98 | 4.45 | 4.87 | 5.26 | 3.42                             | 3.82 | 4.27 | 4.68 | 5.05 | 5.40 | 3.27                             | 3.65 | 4.08 | 4.47 | 4.83 | 5.17 |
| EX3-8000   | 3.43                             | 3.96 | 4.43 | 4.95 | 5.43 | 5.86 | 3.81                             | 4.25 | 4.76 | 5.21 | 5.63 | 6.02 | 3.64                             | 4.07 | 4.55 | 4.98 | 5.38 | 5.75 |
| EX3-9000   | 4.39                             | 5.06 | 5.66 | 6.33 | 6.93 | 7.49 | 4.86                             | 5.44 | 6.08 | 6.66 | 7.19 | 7.69 | 4.65                             | 5.20 | 5.81 | 6.37 | 6.88 | 7.35 |

| Refrigerant Liquid Correction Factor |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Liquid Line Temp, °F                 | 0    | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  |
| Capacity Multiplier (R-22)           | 1.54 | 1.49 | 1.43 | 1.38 | 1.33 | 1.27 | 1.22 | 1.17 | 1.11 | 1.06 | 1.00 | 0.94 | 0.89 | 0.83 | 0.77 |
| Capacity Multiplier (R-134a)         | 1.64 | 1.58 | 1.51 | 1.45 | 1.39 | 1.32 | 1.26 | 1.19 | 1.13 | 1.07 | 1.00 | 0.93 | 0.87 | 0.80 | 0.73 |
| Capacity Multiplier (R-404A)         | 1.92 | 1.83 | 1.74 | 1.65 | 1.56 | 1.47 | 1.38 | 1.29 | 1.19 | 1.10 | 1.00 | 0.90 | 0.80 | 0.69 | 0.58 |
| Capacity Multiplier (R-407F)         | 1.68 | 1.62 | 1.55 | 1.48 | 1.42 | 1.35 | 1.28 | 1.21 | 1.14 | 1.07 | 1.00 | 0.93 | 0.85 | 0.78 | 0.70 |
| Capacity Multiplier (R-507)          | 1.87 | 1.78 | 1.70 | 1.61 | 1.53 | 1.44 | 1.36 | 1.27 | 1.18 | 1.09 | 1.00 | 0.91 | 0.81 | 0.71 | 0.60 |

## R-507 Extended Capacities (Tons) - EX3 Series

| Valve Type | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|            | 50°F                             |      |      |      |      |      | 40°F                             |      |      |      |      |      | 20°F                             |      |      |      |      |      |
|            | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|            | 60                               | 80   | 100  | 125  | 150  | 175  | 60                               | 80   | 100  | 125  | 150  | 175  | 60                               | 80   | 100  | 125  | 150  | 175  |
| EX3-2000   | 0.20                             | 0.23 | 0.26 | 0.29 | 0.31 | 0.34 | 0.19                             | 0.22 | 0.25 | 0.28 | 0.31 | 0.33 | 0.18                             | 0.21 | 0.24 | 0.26 | 0.29 | 0.31 |
| EX3-3000   | 0.41                             | 0.48 | 0.53 | 0.60 | 0.65 | 0.71 | 0.40                             | 0.47 | 0.52 | 0.58 | 0.64 | 0.69 | 0.38                             | 0.44 | 0.50 | 0.55 | 0.61 | 0.66 |
| EX3-4000   | 0.67                             | 0.77 | 0.86 | 0.96 | 1.05 | 1.14 | 0.65                             | 0.75 | 0.84 | 0.94 | 1.03 | 1.11 | 0.62                             | 0.71 | 0.80 | 0.89 | 0.98 | 1.06 |
| EX3-5000   | 1.08                             | 1.25 | 1.39 | 1.56 | 1.71 | 1.84 | 1.06                             | 1.22 | 1.36 | 1.52 | 1.67 | 1.80 | 1.00                             | 1.16 | 1.29 | 1.45 | 1.58 | 1.71 |
| EX3-6000   | 1.75                             | 2.02 | 2.25 | 2.52 | 2.76 | 2.98 | 1.71                             | 1.97 | 2.20 | 2.46 | 2.70 | 2.91 | 1.62                             | 1.87 | 2.09 | 2.34 | 2.56 | 2.77 |
| EX3-7000   | 2.22                             | 2.56 | 2.86 | 3.20 | 3.50 | 3.78 | 2.16                             | 2.50 | 2.79 | 3.12 | 3.42 | 3.70 | 2.05                             | 2.37 | 2.65 | 2.96 | 3.25 | 3.51 |
| EX3-8000   | 2.47                             | 2.85 | 3.19 | 3.56 | 3.90 | 4.21 | 2.41                             | 2.78 | 3.11 | 3.48 | 3.81 | 4.12 | 2.29                             | 2.64 | 2.95 | 3.30 | 3.62 | 3.91 |
| EX3-9000   | 3.15                             | 3.64 | 4.07 | 4.55 | 4.98 | 5.38 | 3.08                             | 3.56 | 3.98 | 4.45 | 4.87 | 5.26 | 2.92                             | 3.38 | 3.77 | 4.22 | 4.62 | 4.99 |

| Valve Type | Evaporator Temperature           |      |      |      |      |      |                                  |      |      |      |      |      |                                  |      |      |      |      |      |
|------------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|
|            | 0°F                              |      |      |      |      |      | -20°F                            |      |      |      |      |      | -40°F                            |      |      |      |      |      |
|            | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      | Pressure Drop Across Valve (PSI) |      |      |      |      |      |
|            | 60                               | 80   | 100  | 125  | 150  | 175  | 80                               | 100  | 125  | 150  | 175  | 200  | 80                               | 100  | 125  | 150  | 175  | 200  |
| EX3-2000   | 0.17                             | 0.20 | 0.22 | 0.25 | 0.27 | 0.29 | 0.19                             | 0.21 | 0.23 | 0.26 | 0.28 | 0.29 | 0.17                             | 0.19 | 0.22 | 0.24 | 0.26 | 0.27 |
| EX3-3000   | 0.36                             | 0.42 | 0.47 | 0.52 | 0.57 | 0.62 | 0.39                             | 0.44 | 0.49 | 0.53 | 0.58 | 0.62 | 0.36                             | 0.40 | 0.45 | 0.50 | 0.54 | 0.57 |
| EX3-4000   | 0.58                             | 0.67 | 0.75 | 0.84 | 0.92 | 0.99 | 0.63                             | 0.70 | 0.79 | 0.86 | 0.93 | 0.99 | 0.58                             | 0.65 | 0.73 | 0.80 | 0.86 | 0.92 |
| EX3-5000   | 0.94                             | 1.09 | 1.22 | 1.36 | 1.49 | 1.61 | 1.02                             | 1.14 | 1.27 | 1.39 | 1.51 | 1.61 | 0.95                             | 1.06 | 1.18 | 1.29 | 1.40 | 1.49 |
| EX3-6000   | 1.53                             | 1.76 | 1.97 | 2.20 | 2.41 | 2.61 | 1.65                             | 1.84 | 2.06 | 2.26 | 2.44 | 2.60 | 1.53                             | 1.71 | 1.91 | 2.09 | 2.26 | 2.42 |
| EX3-7000   | 1.93                             | 2.23 | 2.50 | 2.79 | 3.06 | 3.30 | 2.09                             | 2.34 | 2.61 | 2.86 | 3.09 | 3.30 | 1.94                             | 2.17 | 2.42 | 2.66 | 2.87 | 3.07 |
| EX3-8000   | 2.16                             | 2.49 | 2.78 | 3.11 | 3.41 | 3.68 | 2.33                             | 2.60 | 2.91 | 3.19 | 3.44 | 3.68 | 2.16                             | 2.42 | 2.70 | 2.96 | 3.19 | 3.42 |
| EX3-9000   | 2.75                             | 3.18 | 3.55 | 3.97 | 4.35 | 4.70 | 2.97                             | 3.32 | 3.72 | 4.07 | 4.40 | 4.70 | 2.76                             | 3.09 | 3.45 | 3.78 | 4.08 | 4.36 |

| Refrigerant Liquid Correction Factor |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Liquid Line Temp, °F                 | 0    | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  |
| Capacity Multiplier (R-22)           | 1.54 | 1.49 | 1.43 | 1.38 | 1.33 | 1.27 | 1.22 | 1.17 | 1.11 | 1.06 | 1.00 | 0.94 | 0.89 | 0.83 | 0.77 |
| Capacity Multiplier (R-134a)         | 1.64 | 1.58 | 1.51 | 1.45 | 1.39 | 1.32 | 1.26 | 1.19 | 1.13 | 1.07 | 1.00 | 0.93 | 0.87 | 0.80 | 0.73 |
| Capacity Multiplier (R-404A)         | 1.92 | 1.83 | 1.74 | 1.65 | 1.56 | 1.47 | 1.38 | 1.29 | 1.19 | 1.10 | 1.00 | 0.90 | 0.80 | 0.69 | 0.58 |
| Capacity Multiplier (R-407F)         | 1.68 | 1.62 | 1.55 | 1.48 | 1.42 | 1.35 | 1.28 | 1.21 | 1.14 | 1.07 | 1.00 | 0.93 | 0.85 | 0.78 | 0.70 |
| Capacity Multiplier (R-507)          | 1.87 | 1.78 | 1.70 | 1.61 | 1.53 | 1.44 | 1.36 | 1.27 | 1.18 | 1.09 | 1.00 | 0.91 | 0.81 | 0.71 | 0.60 |

## R-404A Extended Capacities (kWatts) - EX3 Series

| Valve Type | Condensing Temperature (°C) | Evaporating Temperature (°C) |       |       |       |       |       |       |       |       |       |       |       |       |
|------------|-----------------------------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|            |                             | 15                           | 10    | 5     | 0     | -5    | -10   | -15   | -20   | -25   | -30   | -35   | -40   | -45   |
| EX3-2000   | 60                          | 0.87                         | 0.87  | 0.87  | 0.86  | 0.85  | 0.83  | 0.80  | 0.78  | 0.75  | 0.71  | 0.68  | 0.64  | 0.60  |
| EX3-3000   |                             | 1.82                         | 1.82  | 1.82  | 1.80  | 1.77  | 1.73  | 1.68  | 1.62  | 1.56  | 1.49  | 1.42  | 1.34  | 1.26  |
| EX3-4000   |                             | 2.92                         | 2.94  | 2.93  | 2.89  | 2.84  | 2.78  | 2.70  | 2.61  | 2.51  | 2.40  | 2.28  | 2.16  | 2.03  |
| EX3-5000   |                             | 4.74                         | 4.76  | 4.74  | 4.69  | 4.61  | 4.51  | 4.38  | 4.23  | 4.07  | 3.89  | 3.70  | 3.50  | 3.29  |
| EX3-6000   |                             | 7.66                         | 7.70  | 7.67  | 7.59  | 7.46  | 7.28  | 7.08  | 6.84  | 6.57  | 6.28  | 5.98  | 5.65  | 5.32  |
| EX3-7000   |                             | 9.71                         | 9.76  | 9.72  | 9.62  | 9.46  | 9.24  | 8.97  | 8.67  | 8.33  | 7.97  | 7.58  | 7.17  | 6.74  |
| EX3-8000   |                             | 10.81                        | 10.87 | 10.83 | 10.72 | 10.53 | 10.29 | 10.00 | 9.66  | 9.28  | 8.88  | 8.44  | 7.99  | 7.51  |
| EX3-9000   |                             | 13.81                        | 13.88 | 13.84 | 13.69 | 13.45 | 13.14 | 12.77 | 12.34 | 11.86 | 11.34 | 10.78 | 10.20 | 9.60  |
| EX3-2000   | 55                          | 0.93                         | 0.94  | 0.95  | 0.94  | 0.94  | 0.92  | 0.90  | 0.88  | 0.85  | 0.83  | 0.79  | 0.76  | 0.72  |
| EX3-3000   |                             | 1.94                         | 1.97  | 1.98  | 1.97  | 1.96  | 1.93  | 1.89  | 1.84  | 1.79  | 1.73  | 1.66  | 1.59  | 1.51  |
| EX3-4000   |                             | 3.11                         | 3.16  | 3.18  | 3.18  | 3.15  | 3.10  | 3.04  | 2.96  | 2.87  | 2.78  | 2.67  | 2.55  | 2.44  |
| EX3-5000   |                             | 5.05                         | 5.13  | 5.16  | 5.15  | 5.10  | 5.03  | 4.93  | 4.80  | 4.66  | 4.50  | 4.33  | 4.14  | 3.95  |
| EX3-6000   |                             | 8.17                         | 8.29  | 8.34  | 8.32  | 8.25  | 8.13  | 7.97  | 7.77  | 7.53  | 7.28  | 7.00  | 6.70  | 6.38  |
| EX3-7000   |                             | 10.35                        | 10.51 | 10.58 | 10.56 | 10.46 | 10.31 | 10.10 | 9.85  | 9.55  | 9.23  | 8.87  | 8.49  | 8.09  |
| EX3-8000   |                             | 11.53                        | 11.71 | 11.78 | 11.76 | 11.65 | 11.48 | 11.25 | 10.97 | 10.64 | 10.28 | 9.88  | 9.46  | 9.02  |
| EX3-9000   |                             | 14.73                        | 14.96 | 15.05 | 15.02 | 14.89 | 14.67 | 14.37 | 14.01 | 13.59 | 13.13 | 12.62 | 12.08 | 11.52 |
| EX3-2000   | 50                          | 1.00                         | 1.03  | 1.04  | 1.04  | 1.04  | 1.03  | 1.01  | 0.99  | 0.97  | 0.94  | 0.91  | 0.88  | 0.85  |
| EX3-3000   |                             | 2.10                         | 2.14  | 2.17  | 2.18  | 2.17  | 2.15  | 2.12  | 2.08  | 2.03  | 1.97  | 1.91  | 1.84  | 1.77  |
| EX3-4000   |                             | 3.37                         | 3.45  | 3.49  | 3.50  | 3.49  | 3.46  | 3.41  | 3.34  | 3.26  | 3.17  | 3.07  | 2.96  | 2.85  |
| EX3-5000   |                             | 5.47                         | 5.59  | 5.66  | 5.68  | 5.66  | 5.61  | 5.53  | 5.42  | 5.29  | 5.14  | 4.98  | 4.81  | 4.62  |
| EX3-6000   |                             | 8.84                         | 9.04  | 9.15  | 9.18  | 9.15  | 9.07  | 8.94  | 8.76  | 8.55  | 8.32  | 8.05  | 7.77  | 7.47  |
| EX3-7000   |                             | 11.21                        | 11.46 | 11.60 | 11.64 | 11.61 | 11.50 | 11.33 | 11.11 | 10.85 | 10.54 | 10.21 | 9.85  | 9.47  |
| EX3-8000   |                             | 12.49                        | 12.77 | 12.92 | 12.97 | 12.93 | 12.81 | 12.62 | 12.38 | 12.08 | 11.74 | 11.37 | 10.97 | 10.55 |
| EX3-9000   |                             | 15.95                        | 16.31 | 16.51 | 16.57 | 16.51 | 16.36 | 16.12 | 15.81 | 15.43 | 15.00 | 14.53 | 14.02 | 13.47 |
| EX3-2000   | 45                          | 0.94                         | 0.98  | 1.01  | 1.03  | 1.03  | 1.03  | 1.03  | 1.01  | 1.00  | 0.98  | 0.95  | 0.92  | 0.89  |
| EX3-3000   |                             | 1.97                         | 2.05  | 2.11  | 2.15  | 2.16  | 2.16  | 2.15  | 2.12  | 2.08  | 2.04  | 1.99  | 1.93  | 1.87  |
| EX3-4000   |                             | 3.17                         | 3.31  | 3.40  | 3.45  | 3.48  | 3.47  | 3.45  | 3.41  | 3.35  | 3.28  | 3.20  | 3.11  | 3.01  |
| EX3-5000   |                             | 5.14                         | 5.36  | 5.51  | 5.60  | 5.64  | 5.63  | 5.60  | 5.53  | 5.44  | 5.32  | 5.19  | 5.04  | 4.88  |
| EX3-6000   |                             | 8.31                         | 8.67  | 8.90  | 9.05  | 9.11  | 9.11  | 9.05  | 8.94  | 8.79  | 8.60  | 8.39  | 8.15  | 7.89  |
| EX3-7000   |                             | 10.54                        | 10.99 | 11.29 | 11.47 | 11.55 | 11.55 | 11.47 | 11.34 | 11.15 | 10.91 | 10.64 | 10.33 | 10.00 |
| EX3-8000   |                             | 11.74                        | 12.24 | 12.58 | 12.78 | 12.87 | 12.86 | 12.78 | 12.63 | 12.41 | 12.15 | 11.85 | 11.51 | 11.14 |
| EX3-9000   |                             | 15.00                        | 15.63 | 16.06 | 16.32 | 16.44 | 16.43 | 16.33 | 16.13 | 15.86 | 15.52 | 15.14 | 14.70 | 14.23 |
| EX3-2000   | 40                          | 0.90                         | 0.96  | 1.00  | 1.03  | 1.05  | 1.05  | 1.06  | 1.05  | 1.04  | 1.02  | 1.00  | 0.98  | 0.95  |
| EX3-3000   |                             | 1.89                         | 2.01  | 2.10  | 2.15  | 2.19  | 2.21  | 2.21  | 2.19  | 2.17  | 2.13  | 2.09  | 2.04  | 1.99  |
| EX3-4000   |                             | 3.04                         | 3.23  | 3.37  | 3.47  | 3.52  | 3.55  | 3.55  | 3.53  | 3.49  | 3.43  | 3.37  | 3.29  | 3.20  |
| EX3-5000   |                             | 4.93                         | 5.24  | 5.47  | 5.62  | 5.71  | 5.75  | 5.76  | 5.72  | 5.66  | 5.57  | 5.46  | 5.33  | 5.19  |
| EX3-6000   |                             | 7.97                         | 8.48  | 8.84  | 9.08  | 9.23  | 9.30  | 9.30  | 9.25  | 9.15  | 9.00  | 8.83  | 8.62  | 8.39  |
| EX3-7000   |                             | 10.11                        | 10.75 | 11.21 | 11.52 | 11.71 | 11.80 | 11.80 | 11.73 | 11.60 | 11.42 | 11.19 | 10.93 | 10.64 |
| EX3-8000   |                             | 11.26                        | 11.98 | 12.49 | 12.83 | 13.04 | 13.14 | 13.14 | 13.06 | 12.92 | 12.72 | 12.46 | 12.17 | 11.85 |
| EX3-9000   |                             | 14.38                        | 15.30 | 15.95 | 16.39 | 16.66 | 16.78 | 16.79 | 16.69 | 16.50 | 16.24 | 15.92 | 15.55 | 15.13 |
| EX3-2000   | 35                          | 0.83                         | 0.91  | 0.97  | 1.01  | 1.04  | 1.06  | 1.06  | 1.07  | 1.06  | 1.05  | 1.03  | 1.01  | 0.99  |
| EX3-3000   |                             | 1.74                         | 1.90  | 2.03  | 2.11  | 2.17  | 2.21  | 2.23  | 2.23  | 2.22  | 2.19  | 2.16  | 2.12  | 2.07  |
| EX3-4000   |                             | 2.79                         | 3.06  | 3.26  | 3.40  | 3.49  | 3.55  | 3.58  | 3.58  | 3.56  | 3.53  | 3.47  | 3.41  | 3.33  |
| EX3-5000   |                             | 4.53                         | 4.97  | 5.29  | 5.51  | 5.67  | 5.76  | 5.81  | 5.81  | 5.78  | 5.72  | 5.63  | 5.53  | 5.41  |
| EX3-6000   |                             | 7.32                         | 8.03  | 8.55  | 8.91  | 9.16  | 9.31  | 9.39  | 9.39  | 9.34  | 9.25  | 9.11  | 8.94  | 8.74  |
| EX3-7000   |                             | 9.28                         | 10.18 | 10.84 | 11.30 | 11.62 | 11.81 | 11.90 | 11.91 | 11.85 | 11.72 | 11.55 | 11.33 | 11.08 |
| EX3-8000   |                             | 10.34                        | 11.34 | 12.07 | 12.59 | 12.94 | 13.15 | 13.26 | 13.27 | 13.20 | 13.06 | 12.86 | 12.62 | 12.34 |
| EX3-9000   |                             | 13.21                        | 14.49 | 15.42 | 16.08 | 16.53 | 16.80 | 16.93 | 16.95 | 16.86 | 16.68 | 16.43 | 16.12 | 15.77 |

## R-404A Extended Capacities (kWatts) - EX3 Series

| Valve Type | Condensing Temperature (°C) | Evaporating Temperature (°C) |       |       |       |       |       |       |       |       |       |       |       |       |
|------------|-----------------------------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|            |                             | 15                           | 10    | 5     | 0     | -5    | -10   | -15   | -20   | -25   | -30   | -35   | -40   | -45   |
| EX3-2000   | 30                          | 0.71                         | 0.83  | 0.91  | 0.97  | 1.01  | 1.04  | 1.05  | 1.06  | 1.06  | 1.06  | 1.05  | 1.03  | 1.02  |
| EX3-3000   |                             | 1.49                         | 1.73  | 1.90  | 2.02  | 2.11  | 2.17  | 2.21  | 2.22  | 2.23  | 2.21  | 2.19  | 2.16  | 2.12  |
| EX3-4000   |                             | 2.39                         | 2.78  | 3.05  | 3.25  | 3.39  | 3.49  | 3.55  | 3.58  | 3.58  | 3.56  | 3.53  | 3.48  | 3.42  |
| EX3-5000   |                             | 3.88                         | 4.50  | 4.95  | 5.27  | 5.50  | 5.66  | 5.75  | 5.80  | 5.81  | 5.78  | 5.72  | 5.64  | 5.54  |
| EX3-6000   |                             | 6.27                         | 7.28  | 8.00  | 8.52  | 8.89  | 9.15  | 9.30  | 9.38  | 9.39  | 9.34  | 9.25  | 9.12  | 8.95  |
| EX3-7000   |                             | 7.95                         | 9.23  | 10.15 | 10.81 | 11.28 | 11.60 | 11.79 | 11.89 | 11.90 | 11.84 | 11.73 | 11.56 | 11.35 |
| EX3-8000   |                             | 8.86                         | 10.28 | 11.30 | 12.04 | 12.56 | 12.92 | 13.14 | 13.24 | 13.26 | 13.19 | 13.06 | 12.88 | 12.65 |
| EX3-9000   |                             | 11.31                        | 13.14 | 14.44 | 15.38 | 16.05 | 16.50 | 16.78 | 16.92 | 16.93 | 16.85 | 16.68 | 16.45 | 16.15 |
| EX3-2000   | 25                          | 0.52                         | 0.70  | 0.81  | 0.90  | 0.96  | 1.00  | 1.03  | 1.04  | 1.05  | 1.05  | 1.05  | 1.04  | 1.02  |
| EX3-3000   |                             | 1.09                         | 1.45  | 1.70  | 1.87  | 2.00  | 2.09  | 2.15  | 2.18  | 2.20  | 2.20  | 2.19  | 2.17  | 2.14  |
| EX3-4000   |                             | 1.75                         | 2.34  | 2.73  | 3.01  | 3.21  | 3.35  | 3.45  | 3.51  | 3.54  | 3.54  | 3.53  | 3.49  | 3.45  |
| EX3-5000   |                             | 2.83                         | 3.79  | 4.43  | 4.88  | 5.21  | 5.44  | 5.60  | 5.69  | 5.74  | 5.75  | 5.72  | 5.67  | 5.59  |
| EX3-6000   |                             | 4.58                         | 6.13  | 7.17  | 7.90  | 8.42  | 8.79  | 9.05  | 9.20  | 9.28  | 9.29  | 9.25  | 9.16  | 9.04  |
| EX3-7000   |                             | 5.81                         | 7.78  | 9.09  | 10.01 | 10.68 | 11.15 | 11.47 | 11.67 | 11.77 | 11.78 | 11.73 | 11.62 | 11.46 |
| EX3-8000   |                             | 6.47                         | 8.66  | 10.12 | 11.15 | 11.89 | 12.42 | 12.78 | 13.00 | 13.11 | 13.12 | 13.06 | 12.94 | 12.76 |
| EX3-9000   |                             | 8.26                         | 11.07 | 12.93 | 14.25 | 15.19 | 15.87 | 16.32 | 16.60 | 16.74 | 16.76 | 16.69 | 16.53 | 16.31 |
| EX3-2000   | 20                          |                              | 0.49  | 0.67  | 0.79  | 0.88  | 0.94  | 0.98  | 1.01  | 1.02  | 1.03  | 1.03  | 1.03  | 1.02  |
| EX3-3000   |                             |                              | 1.02  | 1.41  | 1.65  | 1.83  | 1.96  | 2.04  | 2.10  | 2.14  | 2.16  | 2.16  | 2.15  | 2.13  |
| EX3-4000   |                             |                              | 1.64  | 2.26  | 2.66  | 2.94  | 3.15  | 3.29  | 3.38  | 3.44  | 3.47  | 3.48  | 3.46  | 3.43  |
| EX3-5000   |                             |                              | 2.67  | 3.67  | 4.32  | 4.77  | 5.10  | 5.33  | 5.49  | 5.58  | 5.63  | 5.64  | 5.62  | 5.57  |
| EX3-6000   |                             |                              | 4.31  | 5.93  | 6.98  | 7.72  | 8.25  | 8.62  | 8.87  | 9.03  | 9.11  | 9.12  | 9.08  | 9.00  |
| EX3-7000   |                             |                              | 5.47  | 7.52  | 8.85  | 9.79  | 10.46 | 10.93 | 11.25 | 11.45 | 11.55 | 11.56 | 11.51 | 11.41 |
| EX3-8000   |                             |                              | 6.09  | 8.37  | 9.86  | 10.90 | 11.65 | 12.17 | 12.53 | 12.75 | 12.86 | 12.88 | 12.83 | 12.71 |
| EX3-9000   |                             |                              | 7.78  | 10.70 | 12.59 | 13.92 | 14.88 | 15.55 | 16.00 | 16.29 | 16.43 | 16.45 | 16.38 | 16.23 |
| EX3-2000   | 15                          |                              |       | 0.45  | 0.64  | 0.76  | 0.85  | 0.91  | 0.95  | 0.98  | 1.00  | 1.00  | 1.01  | 1.00  |
| EX3-3000   |                             |                              |       | 0.94  | 1.34  | 1.59  | 1.77  | 1.90  | 1.98  | 2.04  | 2.08  | 2.10  | 2.10  | 2.10  |
| EX3-4000   |                             |                              |       | 1.51  | 2.16  | 2.57  | 2.85  | 3.05  | 3.19  | 3.29  | 3.35  | 3.38  | 3.38  | 3.37  |
| EX3-5000   |                             |                              |       | 2.45  | 3.50  | 4.16  | 4.62  | 4.95  | 5.18  | 5.33  | 5.43  | 5.48  | 5.49  | 5.47  |
| EX3-6000   |                             |                              |       | 3.96  | 5.65  | 6.72  | 7.47  | 8.00  | 8.37  | 8.62  | 8.78  | 8.86  | 8.87  | 8.84  |
| EX3-7000   |                             |                              |       | 5.02  | 7.17  | 8.53  | 9.47  | 10.14 | 10.62 | 10.93 | 11.13 | 11.23 | 11.25 | 11.21 |
| EX3-8000   |                             |                              |       | 5.60  | 7.98  | 9.50  | 10.55 | 11.30 | 11.82 | 12.18 | 12.40 | 12.51 | 12.53 | 12.48 |
| EX3-9000   |                             |                              |       | 7.15  | 10.20 | 12.13 | 13.48 | 14.43 | 15.10 | 15.56 | 15.84 | 15.98 | 16.01 | 15.94 |
| EX3-2000   | 10                          |                              |       |       | 0.40  | 0.60  | 0.73  | 0.81  | 0.87  | 0.91  | 0.94  | 0.96  | 0.97  | 0.97  |
| EX3-3000   |                             |                              |       |       | 0.83  | 1.26  | 1.52  | 1.70  | 1.82  | 1.91  | 1.97  | 2.01  | 2.02  | 2.03  |
| EX3-4000   |                             |                              |       |       | 1.34  | 2.02  | 2.44  | 2.73  | 2.93  | 3.07  | 3.17  | 3.23  | 3.26  | 3.26  |
| EX3-5000   |                             |                              |       |       | 2.17  | 3.28  | 3.96  | 4.42  | 4.75  | 4.98  | 5.14  | 5.23  | 5.28  | 5.29  |
| EX3-6000   |                             |                              |       |       | 3.51  | 5.31  | 6.40  | 7.15  | 7.68  | 8.05  | 8.30  | 8.46  | 8.54  | 8.56  |
| EX3-7000   |                             |                              |       |       | 4.46  | 6.73  | 8.12  | 9.07  | 9.74  | 10.21 | 10.53 | 10.73 | 10.83 | 10.85 |
| EX3-8000   |                             |                              |       |       | 4.96  | 7.49  | 9.04  | 10.10 | 10.85 | 11.38 | 11.73 | 11.95 | 12.06 | 12.09 |
| EX3-9000   |                             |                              |       |       | 6.34  | 9.57  | 11.55 | 12.90 | 13.86 | 14.53 | 14.98 | 15.26 | 15.41 | 15.44 |

## R-134a Extended Capacities (kWatts) - EX3 Series

| Valve Type | Condensing Temperature (°C) | Evaporating Temperature (°C) |       |       |       |       |       |       |       |       |       |       |       |       |
|------------|-----------------------------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|            |                             | 15                           | 10    | 5     | 0     | -5    | -10   | -15   | -20   | -25   | -30   | -35   | -40   | -45   |
| EX3-2000   | 60                          | 1.23                         | 1.24  | 1.24  | 1.24  | 1.23  | 1.22  | 1.20  | 1.18  | 1.15  | 1.12  | 1.09  | 1.06  | 1.02  |
| EX3-3000   |                             | 2.56                         | 2.59  | 2.60  | 2.60  | 2.58  | 2.55  | 2.51  | 2.46  | 2.40  | 2.34  | 2.28  | 2.21  | 2.14  |
| EX3-4000   |                             | 4.12                         | 4.17  | 4.18  | 4.17  | 4.14  | 4.10  | 4.03  | 3.95  | 3.87  | 3.77  | 3.66  | 3.55  | 3.44  |
| EX3-5000   |                             | 6.69                         | 6.76  | 6.78  | 6.77  | 6.72  | 6.64  | 6.54  | 6.41  | 6.27  | 6.11  | 5.94  | 5.76  | 5.57  |
| EX3-6000   |                             | 10.81                        | 10.93 | 10.97 | 10.94 | 10.87 | 10.74 | 10.57 | 10.37 | 10.14 | 9.88  | 9.61  | 9.31  | 9.01  |
| EX3-7000   |                             | 13.71                        | 13.86 | 13.91 | 13.88 | 13.78 | 13.62 | 13.40 | 13.15 | 12.86 | 12.53 | 12.18 | 11.81 | 11.43 |
| EX3-8000   |                             | 15.27                        | 15.43 | 15.49 | 15.46 | 15.35 | 15.17 | 14.93 | 14.64 | 14.32 | 13.96 | 13.57 | 13.16 | 12.73 |
| EX3-9000   |                             | 19.50                        | 19.71 | 19.79 | 19.74 | 19.60 | 19.37 | 19.07 | 18.71 | 18.29 | 17.83 | 17.33 | 16.81 | 16.26 |
| EX3-2000   | 55                          | 1.20                         | 1.22  | 1.23  | 1.24  | 1.24  | 1.23  | 1.21  | 1.20  | 1.17  | 1.15  | 1.12  | 1.09  | 1.06  |
| EX3-3000   |                             | 2.50                         | 2.55  | 2.58  | 2.59  | 2.59  | 2.57  | 2.54  | 2.50  | 2.45  | 2.40  | 2.34  | 2.28  | 2.21  |
| EX3-4000   |                             | 4.03                         | 4.11  | 4.15  | 4.17  | 4.16  | 4.13  | 4.08  | 4.02  | 3.95  | 3.86  | 3.77  | 3.67  | 3.56  |
| EX3-5000   |                             | 6.53                         | 6.66  | 6.73  | 6.76  | 6.75  | 6.70  | 6.62  | 6.52  | 6.40  | 6.26  | 6.11  | 5.95  | 5.78  |
| EX3-6000   |                             | 10.56                        | 10.77 | 10.88 | 10.93 | 10.91 | 10.83 | 10.71 | 10.54 | 10.35 | 10.13 | 9.88  | 9.62  | 9.34  |
| EX3-7000   |                             | 13.39                        | 13.65 | 13.80 | 13.86 | 13.83 | 13.73 | 13.58 | 13.37 | 13.12 | 12.84 | 12.53 | 12.19 | 11.84 |
| EX3-8000   |                             | 14.91                        | 15.20 | 15.37 | 15.43 | 15.40 | 15.29 | 15.12 | 14.89 | 14.62 | 14.30 | 13.96 | 13.58 | 13.19 |
| EX3-9000   |                             | 19.04                        | 19.42 | 19.64 | 19.71 | 19.67 | 19.54 | 19.32 | 19.02 | 18.67 | 18.27 | 17.83 | 17.35 | 16.85 |
| EX3-2000   | 50                          | 1.15                         | 1.18  | 1.21  | 1.22  | 1.22  | 1.22  | 1.21  | 1.20  | 1.18  | 1.16  | 1.14  | 1.11  | 1.08  |
| EX3-3000   |                             | 2.40                         | 2.47  | 2.52  | 2.55  | 2.56  | 2.56  | 2.54  | 2.51  | 2.47  | 2.43  | 2.38  | 2.32  | 2.26  |
| EX3-4000   |                             | 3.86                         | 3.98  | 4.06  | 4.10  | 4.12  | 4.11  | 4.08  | 4.04  | 3.98  | 3.91  | 3.83  | 3.74  | 3.64  |
| EX3-5000   |                             | 6.25                         | 6.45  | 6.58  | 6.65  | 6.68  | 6.67  | 6.62  | 6.55  | 6.45  | 6.34  | 6.21  | 6.06  | 5.90  |
| EX3-6000   |                             | 10.11                        | 10.43 | 10.64 | 10.76 | 10.80 | 10.78 | 10.71 | 10.59 | 10.43 | 10.25 | 10.03 | 9.80  | 9.54  |
| EX3-7000   |                             | 12.82                        | 13.23 | 13.49 | 13.64 | 13.70 | 13.67 | 13.58 | 13.43 | 13.23 | 12.99 | 12.72 | 12.42 | 12.10 |
| EX3-8000   |                             | 14.28                        | 14.73 | 15.02 | 15.19 | 15.25 | 15.23 | 15.12 | 14.96 | 14.74 | 14.47 | 14.17 | 13.84 | 13.48 |
| EX3-9000   |                             | 18.24                        | 18.82 | 19.19 | 19.41 | 19.49 | 19.45 | 19.32 | 19.10 | 18.82 | 18.49 | 18.10 | 17.67 | 17.22 |
| EX3-2000   | 45                          | 1.07                         | 1.12  | 1.16  | 1.18  | 1.20  | 1.20  | 1.20  | 1.19  | 1.18  | 1.16  | 1.14  | 1.12  | 1.09  |
| EX3-3000   |                             | 2.24                         | 2.35  | 2.42  | 2.47  | 2.50  | 2.51  | 2.51  | 2.49  | 2.46  | 2.43  | 2.39  | 2.34  | 2.28  |
| EX3-4000   |                             | 3.61                         | 3.78  | 3.90  | 3.98  | 4.02  | 4.04  | 4.03  | 4.01  | 3.96  | 3.91  | 3.84  | 3.76  | 3.68  |
| EX3-5000   |                             | 5.85                         | 6.13  | 6.32  | 6.45  | 6.53  | 6.55  | 6.54  | 6.50  | 6.43  | 6.34  | 6.22  | 6.10  | 5.96  |
| EX3-6000   |                             | 9.46                         | 9.91  | 10.23 | 10.43 | 10.55 | 10.59 | 10.58 | 10.51 | 10.39 | 10.24 | 10.06 | 9.86  | 9.63  |
| EX3-7000   |                             | 11.99                        | 12.56 | 12.97 | 13.23 | 13.38 | 13.43 | 13.41 | 13.32 | 13.18 | 12.99 | 12.76 | 12.50 | 12.22 |
| EX3-8000   |                             | 13.36                        | 14.00 | 14.44 | 14.73 | 14.90 | 14.96 | 14.94 | 14.84 | 14.68 | 14.47 | 14.21 | 13.92 | 13.61 |
| EX3-9000   |                             | 17.06                        | 17.88 | 18.45 | 18.82 | 19.03 | 19.11 | 19.08 | 18.95 | 18.75 | 18.48 | 18.16 | 17.79 | 17.38 |
| EX3-2000   | 40                          | 0.97                         | 1.04  | 1.09  | 1.13  | 1.15  | 1.16  | 1.17  | 1.17  | 1.16  | 1.15  | 1.13  | 1.11  | 1.09  |
| EX3-3000   |                             | 2.03                         | 2.18  | 2.28  | 2.36  | 2.41  | 2.44  | 2.45  | 2.44  | 2.43  | 2.40  | 2.37  | 2.33  | 2.28  |
| EX3-4000   |                             | 3.26                         | 3.50  | 3.67  | 3.79  | 3.87  | 3.92  | 3.93  | 3.93  | 3.90  | 3.86  | 3.81  | 3.74  | 3.67  |
| EX3-5000   |                             | 5.29                         | 5.68  | 5.96  | 6.15  | 6.28  | 6.35  | 6.38  | 6.37  | 6.33  | 6.26  | 6.17  | 6.07  | 5.95  |
| EX3-6000   |                             | 8.56                         | 9.18  | 9.63  | 9.95  | 10.15 | 10.27 | 10.31 | 10.30 | 10.23 | 10.12 | 9.98  | 9.81  | 9.61  |
| EX3-7000   |                             | 10.85                        | 11.65 | 12.22 | 12.61 | 12.87 | 13.02 | 13.08 | 13.06 | 12.97 | 12.83 | 12.65 | 12.44 | 12.19 |
| EX3-8000   |                             | 12.09                        | 12.97 | 13.61 | 14.05 | 14.34 | 14.50 | 14.57 | 14.54 | 14.45 | 14.30 | 14.09 | 13.85 | 13.58 |
| EX3-9000   |                             | 15.44                        | 16.57 | 17.38 | 17.95 | 18.32 | 18.53 | 18.61 | 18.58 | 18.46 | 18.26 | 18.00 | 17.69 | 17.34 |
| EX3-2000   | 35                          | 0.83                         | 0.93  | 1.00  | 1.05  | 1.09  | 1.11  | 1.13  | 1.13  | 1.13  | 1.12  | 1.11  | 1.09  | 1.08  |
| EX3-3000   |                             | 1.74                         | 1.95  | 2.10  | 2.20  | 2.28  | 2.32  | 2.35  | 2.36  | 2.36  | 2.34  | 2.32  | 2.29  | 2.25  |
| EX3-4000   |                             | 2.80                         | 3.13  | 3.37  | 3.54  | 3.66  | 3.74  | 3.78  | 3.80  | 3.80  | 3.77  | 3.73  | 3.68  | 3.62  |
| EX3-5000   |                             | 4.54                         | 5.08  | 5.47  | 5.75  | 5.94  | 6.06  | 6.14  | 6.16  | 6.15  | 6.12  | 6.05  | 5.97  | 5.87  |
| EX3-6000   |                             | 7.35                         | 8.22  | 8.84  | 9.29  | 9.60  | 9.80  | 9.92  | 9.96  | 9.95  | 9.89  | 9.78  | 9.65  | 9.48  |
| EX3-7000   |                             | 9.31                         | 10.42 | 11.21 | 11.78 | 12.18 | 12.43 | 12.58 | 12.63 | 12.62 | 12.54 | 12.40 | 12.23 | 12.03 |
| EX3-8000   |                             | 10.37                        | 11.61 | 12.49 | 13.12 | 13.56 | 13.85 | 14.01 | 14.07 | 14.05 | 13.96 | 13.82 | 13.62 | 13.40 |
| EX3-9000   |                             | 13.25                        | 14.83 | 15.96 | 16.76 | 17.32 | 17.69 | 17.90 | 17.98 | 17.95 | 17.84 | 17.65 | 17.40 | 17.11 |

## R-134a Extended Capacities (kWatts) - EX3 Series

| Valve Type | Condensing Temperature (°C) | Evaporating Temperature (°C) |       |       |       |       |       |       |       |       |       |       |       |       |
|------------|-----------------------------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|            |                             | 15                           | 10    | 5     | 0     | -5    | -10   | -15   | -20   | -25   | -30   | -35   | -40   | -45   |
| EX3-2000   | 30                          | 0.64                         | 0.79  | 0.89  | 0.96  | 1.01  | 1.04  | 1.06  | 1.08  | 1.08  | 1.08  | 1.07  | 1.06  | 1.05  |
| EX3-3000   |                             | 1.34                         | 1.64  | 1.85  | 2.00  | 2.11  | 2.18  | 2.23  | 2.25  | 2.26  | 2.26  | 2.25  | 2.22  | 2.19  |
| EX3-4000   |                             | 2.15                         | 2.64  | 2.98  | 3.22  | 3.39  | 3.51  | 3.58  | 3.63  | 3.64  | 3.64  | 3.61  | 3.58  | 3.53  |
| EX3-5000   |                             | 3.49                         | 4.29  | 4.83  | 5.22  | 5.49  | 5.68  | 5.81  | 5.88  | 5.91  | 5.90  | 5.86  | 5.80  | 5.72  |
| EX3-6000   |                             | 5.64                         | 6.93  | 7.81  | 8.44  | 8.88  | 9.19  | 9.39  | 9.50  | 9.55  | 9.54  | 9.48  | 9.38  | 9.25  |
| EX3-7000   |                             | 7.16                         | 8.79  | 9.90  | 10.70 | 11.26 | 11.65 | 11.91 | 12.05 | 12.11 | 12.09 | 12.02 | 11.89 | 11.73 |
| EX3-8000   |                             | 7.97                         | 9.79  | 11.03 | 11.92 | 12.55 | 12.98 | 13.26 | 13.42 | 13.49 | 13.47 | 13.38 | 13.25 | 13.06 |
| EX3-9000   |                             | 10.18                        | 12.50 | 14.09 | 15.22 | 16.02 | 16.58 | 16.94 | 17.15 | 17.23 | 17.20 | 17.10 | 16.92 | 16.69 |
| EX3-2000   | 25                          | 0.30                         | 0.58  | 0.73  | 0.83  | 0.90  | 0.95  | 0.99  | 1.01  | 1.02  | 1.03  | 1.03  | 1.02  | 1.01  |
| EX3-3000   |                             | 0.64                         | 1.21  | 1.53  | 1.74  | 1.89  | 1.99  | 2.07  | 2.11  | 2.14  | 2.15  | 2.15  | 2.13  | 2.11  |
| EX3-4000   |                             | 1.03                         | 1.95  | 2.46  | 2.80  | 3.04  | 3.21  | 3.32  | 3.40  | 3.44  | 3.46  | 3.45  | 3.43  | 3.40  |
| EX3-5000   |                             | 1.66                         | 3.16  | 3.98  | 4.54  | 4.92  | 5.20  | 5.39  | 5.51  | 5.58  | 5.61  | 5.60  | 5.57  | 5.51  |
| EX3-6000   |                             | 2.69                         | 5.11  | 6.44  | 7.33  | 7.96  | 8.40  | 8.71  | 8.91  | 9.02  | 9.07  | 9.06  | 9.00  | 8.91  |
| EX3-7000   |                             | 3.41                         | 6.48  | 8.17  | 9.30  | 10.10 | 10.66 | 11.05 | 11.30 | 11.44 | 11.50 | 11.48 | 11.41 | 11.30 |
| EX3-8000   |                             | 3.80                         | 7.21  | 9.09  | 10.36 | 11.25 | 11.87 | 12.30 | 12.58 | 12.74 | 12.81 | 12.79 | 12.71 | 12.59 |
| EX3-9000   |                             | 4.85                         | 9.21  | 11.62 | 13.23 | 14.36 | 15.16 | 15.72 | 16.07 | 16.28 | 16.36 | 16.34 | 16.24 | 16.08 |
| EX3-2000   | 20                          |                              | 0.16  | 0.51  | 0.67  | 0.77  | 0.84  | 0.89  | 0.93  | 0.95  | 0.96  | 0.97  | 0.97  | 0.96  |
| EX3-3000   |                             |                              | 0.34  | 1.06  | 1.39  | 1.61  | 1.76  | 1.86  | 1.94  | 1.98  | 2.01  | 2.02  | 2.02  | 2.01  |
| EX3-4000   |                             |                              | 0.54  | 1.70  | 2.24  | 2.59  | 2.83  | 3.00  | 3.11  | 3.19  | 3.23  | 3.25  | 3.25  | 3.23  |
| EX3-5000   |                             |                              | 0.88  | 2.76  | 3.63  | 4.20  | 4.59  | 4.86  | 5.05  | 5.17  | 5.24  | 5.27  | 5.27  | 5.24  |
| EX3-6000   |                             |                              | 1.43  | 4.46  | 5.87  | 6.78  | 7.42  | 7.86  | 8.16  | 8.36  | 8.48  | 8.52  | 8.52  | 8.47  |
| EX3-7000   |                             |                              | 1.81  | 5.66  | 7.44  | 8.60  | 9.40  | 9.97  | 10.35 | 10.60 | 10.75 | 10.81 | 10.80 | 10.74 |
| EX3-8000   |                             |                              | 2.01  | 6.30  | 8.29  | 9.58  | 10.47 | 11.10 | 11.53 | 11.81 | 11.97 | 12.04 | 12.03 | 11.96 |
| EX3-9000   |                             |                              | 2.57  | 8.05  | 10.58 | 12.24 | 13.38 | 14.18 | 14.73 | 15.09 | 15.29 | 15.38 | 15.36 | 15.27 |
| EX3-2000   | 15                          |                              |       |       | 0.41  | 0.59  | 0.70  | 0.77  | 0.82  | 0.86  | 0.88  | 0.89  | 0.90  | 0.90  |
| EX3-3000   |                             |                              |       |       | 0.87  | 1.23  | 1.46  | 1.61  | 1.72  | 1.79  | 1.84  | 1.86  | 1.88  | 1.88  |
| EX3-4000   |                             |                              |       |       | 1.40  | 1.98  | 2.34  | 2.59  | 2.76  | 2.88  | 2.96  | 3.00  | 3.02  | 3.02  |
| EX3-5000   |                             |                              |       |       | 2.26  | 3.21  | 3.80  | 4.20  | 4.48  | 4.67  | 4.79  | 4.86  | 4.89  | 4.89  |
| EX3-6000   |                             |                              |       |       | 3.66  | 5.19  | 6.15  | 6.80  | 7.24  | 7.55  | 7.75  | 7.86  | 7.91  | 7.91  |
| EX3-7000   |                             |                              |       |       | 4.64  | 6.59  | 7.79  | 8.62  | 9.18  | 9.57  | 9.82  | 9.97  | 10.03 | 10.03 |
| EX3-8000   |                             |                              |       |       | 5.17  | 7.34  | 8.68  | 9.60  | 10.23 | 10.66 | 10.94 | 11.11 | 11.18 | 11.17 |
| EX3-9000   |                             |                              |       |       | 6.60  | 9.37  | 11.09 | 12.26 | 13.07 | 13.62 | 13.98 | 14.19 | 14.28 | 14.27 |
| EX3-2000   | 10                          |                              |       |       |       | 0.29  | 0.50  | 0.61  | 0.69  | 0.74  | 0.78  | 0.80  | 0.81  | 0.82  |
| EX3-3000   |                             |                              |       |       |       | 0.61  | 1.04  | 1.28  | 1.44  | 1.55  | 1.63  | 1.67  | 1.70  | 1.71  |
| EX3-4000   |                             |                              |       |       |       | 0.98  | 1.67  | 2.06  | 2.32  | 2.50  | 2.62  | 2.69  | 2.74  | 2.76  |
| EX3-5000   |                             |                              |       |       |       | 1.59  | 2.72  | 3.35  | 3.76  | 4.05  | 4.24  | 4.37  | 4.44  | 4.47  |
| EX3-6000   |                             |                              |       |       |       | 2.57  | 4.39  | 5.41  | 6.08  | 6.54  | 6.86  | 7.06  | 7.18  | 7.23  |
| EX3-7000   |                             |                              |       |       |       | 3.26  | 5.57  | 6.86  | 7.72  | 8.30  | 8.69  | 8.95  | 9.10  | 9.17  |
| EX3-8000   |                             |                              |       |       |       | 3.64  | 6.20  | 7.64  | 8.59  | 9.24  | 9.68  | 9.97  | 10.14 | 10.22 |
| EX3-9000   |                             |                              |       |       |       | 4.64  | 7.92  | 9.76  | 10.98 | 11.81 | 12.37 | 12.74 | 12.95 | 13.05 |

## R-22 Extended Capacities (kWatts) - EX3 Series

| Valve Type | Condensing Temperature (°C) | Evaporating Temperature (°C) |       |       |       |       |       |       |       |       |       |       |       |       |
|------------|-----------------------------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|            |                             | 15                           | 10    | 5     | 0     | -5    | -10   | -15   | -20   | -25   | -30   | -35   | -40   | -45   |
| EX3-2000   | 60                          | 1.61                         | 1.65  | 1.67  | 1.69  | 1.70  | 1.71  | 1.70  | 1.69  | 1.68  | 1.66  | 1.64  | 1.62  | 1.59  |
| EX3-3000   |                             | 3.36                         | 3.44  | 3.50  | 3.54  | 3.56  | 3.57  | 3.56  | 3.54  | 3.52  | 3.48  | 3.44  | 3.39  | 3.33  |
| EX3-4000   |                             | 5.41                         | 5.54  | 5.63  | 5.69  | 5.72  | 5.74  | 5.73  | 5.70  | 5.66  | 5.60  | 5.53  | 5.45  | 5.36  |
| EX3-5000   |                             | 8.78                         | 8.98  | 9.13  | 9.23  | 9.28  | 9.30  | 9.29  | 9.24  | 9.17  | 9.08  | 8.97  | 8.84  | 8.70  |
| EX3-6000   |                             | 14.19                        | 14.52 | 14.76 | 14.92 | 15.01 | 15.04 | 15.01 | 14.94 | 14.83 | 14.68 | 14.50 | 14.29 | 14.06 |
| EX3-7000   |                             | 17.99                        | 18.41 | 18.71 | 18.92 | 19.03 | 19.07 | 19.04 | 18.95 | 18.80 | 18.62 | 18.39 | 18.12 | 17.83 |
| EX3-8000   |                             | 20.04                        | 20.51 | 20.84 | 21.07 | 21.20 | 21.24 | 21.20 | 21.10 | 20.94 | 20.73 | 20.48 | 20.19 | 19.86 |
| EX3-9000   |                             | 25.60                        | 26.19 | 26.62 | 26.91 | 27.08 | 27.13 | 27.08 | 26.96 | 26.75 | 26.49 | 26.16 | 25.79 | 25.37 |
| EX3-2000   | 55                          | 1.57                         | 1.62  | 1.65  | 1.68  | 1.70  | 1.70  | 1.71  | 1.70  | 1.70  | 1.68  | 1.67  | 1.65  | 1.62  |
| EX3-3000   |                             | 3.28                         | 3.38  | 3.45  | 3.51  | 3.54  | 3.56  | 3.57  | 3.56  | 3.55  | 3.52  | 3.48  | 3.44  | 3.39  |
| EX3-4000   |                             | 5.27                         | 5.43  | 5.56  | 5.64  | 5.70  | 5.73  | 5.74  | 5.73  | 5.70  | 5.66  | 5.60  | 5.53  | 5.46  |
| EX3-5000   |                             | 8.55                         | 8.81  | 9.01  | 9.15  | 9.25  | 9.30  | 9.31  | 9.30  | 9.25  | 9.18  | 9.09  | 8.97  | 8.85  |
| EX3-6000   |                             | 13.82                        | 14.25 | 14.57 | 14.80 | 14.95 | 15.03 | 15.06 | 15.03 | 14.95 | 14.84 | 14.69 | 14.51 | 14.30 |
| EX3-7000   |                             | 17.52                        | 18.06 | 18.47 | 18.76 | 18.96 | 19.06 | 19.09 | 19.06 | 18.96 | 18.82 | 18.63 | 18.40 | 18.14 |
| EX3-8000   |                             | 19.51                        | 20.12 | 20.57 | 20.90 | 21.12 | 21.23 | 21.27 | 21.23 | 21.12 | 20.96 | 20.75 | 20.49 | 20.20 |
| EX3-9000   |                             | 24.93                        | 25.70 | 26.28 | 26.70 | 26.97 | 27.12 | 27.16 | 27.11 | 26.98 | 26.77 | 26.50 | 26.18 | 25.80 |
| EX3-2000   | 50                          | 1.50                         | 1.56  | 1.61  | 1.65  | 1.67  | 1.69  | 1.70  | 1.70  | 1.69  | 1.68  | 1.67  | 1.65  | 1.63  |
| EX3-3000   |                             | 3.14                         | 3.27  | 3.37  | 3.44  | 3.49  | 3.53  | 3.55  | 3.55  | 3.54  | 3.52  | 3.49  | 3.46  | 3.42  |
| EX3-4000   |                             | 5.05                         | 5.26  | 5.42  | 5.53  | 5.62  | 5.67  | 5.70  | 5.71  | 5.70  | 5.67  | 5.62  | 5.56  | 5.50  |
| EX3-5000   |                             | 8.19                         | 8.52  | 8.78  | 8.98  | 9.11  | 9.20  | 9.25  | 9.26  | 9.24  | 9.19  | 9.12  | 9.02  | 8.91  |
| EX3-6000   |                             | 13.23                        | 13.78 | 14.20 | 14.51 | 14.73 | 14.88 | 14.95 | 14.97 | 14.93 | 14.86 | 14.74 | 14.59 | 14.41 |
| EX3-7000   |                             | 16.78                        | 17.47 | 18.00 | 18.40 | 18.68 | 18.86 | 18.96 | 18.98 | 18.94 | 18.84 | 18.69 | 18.50 | 18.27 |
| EX3-8000   |                             | 18.69                        | 19.46 | 20.05 | 20.49 | 20.81 | 21.01 | 21.12 | 21.14 | 21.09 | 20.98 | 20.82 | 20.60 | 20.35 |
| EX3-9000   |                             | 23.88                        | 24.86 | 25.61 | 26.18 | 26.58 | 26.84 | 26.97 | 27.01 | 26.94 | 26.80 | 26.59 | 26.32 | 26.00 |
| EX3-2000   | 45                          | 1.41                         | 1.49  | 1.55  | 1.59  | 1.63  | 1.65  | 1.67  | 1.68  | 1.68  | 1.67  | 1.66  | 1.65  | 1.63  |
| EX3-3000   |                             | 2.95                         | 3.11  | 3.24  | 3.33  | 3.40  | 3.45  | 3.49  | 3.50  | 3.51  | 3.50  | 3.48  | 3.45  | 3.41  |
| EX3-4000   |                             | 4.74                         | 5.00  | 5.21  | 5.36  | 5.48  | 5.56  | 5.61  | 5.63  | 5.64  | 5.62  | 5.59  | 5.55  | 5.49  |
| EX3-5000   |                             | 7.69                         | 8.11  | 8.44  | 8.69  | 8.88  | 9.01  | 9.10  | 9.14  | 9.14  | 9.12  | 9.07  | 9.00  | 8.90  |
| EX3-6000   |                             | 12.43                        | 13.11 | 13.65 | 14.06 | 14.36 | 14.57 | 14.70 | 14.77 | 14.78 | 14.74 | 14.66 | 14.54 | 14.39 |
| EX3-7000   |                             | 15.76                        | 16.63 | 17.31 | 17.82 | 18.21 | 18.48 | 18.65 | 18.73 | 18.75 | 18.70 | 18.59 | 18.44 | 18.25 |
| EX3-8000   |                             | 17.55                        | 18.52 | 19.28 | 19.85 | 20.28 | 20.58 | 20.77 | 20.86 | 20.88 | 20.82 | 20.71 | 20.54 | 20.33 |
| EX3-9000   |                             | 22.42                        | 23.66 | 24.62 | 25.36 | 25.90 | 26.29 | 26.53 | 26.65 | 26.67 | 26.60 | 26.45 | 26.24 | 25.97 |
| EX3-2000   | 40                          | 1.29                         | 1.39  | 1.46  | 1.52  | 1.57  | 1.60  | 1.62  | 1.64  | 1.64  | 1.65  | 1.64  | 1.63  | 1.62  |
| EX3-3000   |                             | 2.69                         | 2.90  | 3.06  | 3.18  | 3.28  | 3.35  | 3.39  | 3.42  | 3.44  | 3.44  | 3.43  | 3.41  | 3.38  |
| EX3-4000   |                             | 4.33                         | 4.67  | 4.92  | 5.12  | 5.27  | 5.38  | 5.46  | 5.51  | 5.53  | 5.53  | 5.52  | 5.48  | 5.44  |
| EX3-5000   |                             | 7.03                         | 7.57  | 7.98  | 8.31  | 8.55  | 8.73  | 8.86  | 8.93  | 8.97  | 8.97  | 8.95  | 8.89  | 8.82  |
| EX3-6000   |                             | 11.36                        | 12.23 | 12.91 | 13.43 | 13.82 | 14.12 | 14.32 | 14.44 | 14.50 | 14.51 | 14.46 | 14.38 | 14.26 |
| EX3-7000   |                             | 14.41                        | 15.51 | 16.37 | 17.03 | 17.53 | 17.90 | 18.15 | 18.31 | 18.39 | 18.40 | 18.34 | 18.23 | 18.08 |
| EX3-8000   |                             | 16.05                        | 17.28 | 18.23 | 18.97 | 19.53 | 19.94 | 20.22 | 20.40 | 20.48 | 20.49 | 20.43 | 20.31 | 20.14 |
| EX3-9000   |                             | 20.50                        | 22.07 | 23.29 | 24.23 | 24.94 | 25.47 | 25.83 | 26.06 | 26.16 | 26.17 | 26.09 | 25.94 | 25.72 |
| EX3-2000   | 35                          | 1.13                         | 1.26  | 1.36  | 1.43  | 1.49  | 1.53  | 1.56  | 1.59  | 1.60  | 1.60  | 1.60  | 1.60  | 1.59  |
| EX3-3000   |                             | 2.37                         | 2.63  | 2.84  | 2.99  | 3.11  | 3.20  | 3.27  | 3.32  | 3.34  | 3.36  | 3.36  | 3.34  | 3.32  |
| EX3-4000   |                             | 3.81                         | 4.24  | 4.56  | 4.82  | 5.01  | 5.16  | 5.26  | 5.33  | 5.38  | 5.40  | 5.40  | 5.38  | 5.35  |
| EX3-5000   |                             | 6.18                         | 6.87  | 7.40  | 7.81  | 8.12  | 8.36  | 8.53  | 8.65  | 8.72  | 8.75  | 8.75  | 8.72  | 8.67  |
| EX3-6000   |                             | 9.99                         | 11.10 | 11.96 | 12.62 | 13.13 | 13.52 | 13.79 | 13.98 | 14.10 | 14.15 | 14.15 | 14.10 | 14.01 |
| EX3-7000   |                             | 12.66                        | 14.08 | 15.17 | 16.01 | 16.65 | 17.14 | 17.49 | 17.73 | 17.88 | 17.94 | 17.94 | 17.88 | 17.77 |
| EX3-8000   |                             | 14.10                        | 15.68 | 16.90 | 17.83 | 18.55 | 19.09 | 19.48 | 19.75 | 19.91 | 19.99 | 19.98 | 19.92 | 19.79 |
| EX3-9000   |                             | 18.01                        | 20.03 | 21.58 | 22.78 | 23.69 | 24.38 | 24.88 | 25.23 | 25.44 | 25.53 | 25.53 | 25.44 | 25.28 |

## R-22 Extended Capacities (kWatts) - EX3 Series

| Valve Type | Condensing Temperature (°C) | Evaporating Temperature (°C) |       |       |       |       |       |       |       |       |       |       |       |       |
|------------|-----------------------------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|            |                             | 15                           | 10    | 5     | 0     | -5    | -10   | -15   | -20   | -25   | -30   | -35   | -40   | -45   |
| EX3-2000   | 30                          | 0.93                         | 1.10  | 1.22  | 1.32  | 1.39  | 1.45  | 1.49  | 1.52  | 1.54  | 1.55  | 1.56  | 1.56  | 1.55  |
| EX3-3000   |                             | 1.93                         | 2.29  | 2.55  | 2.75  | 2.91  | 3.03  | 3.11  | 3.18  | 3.22  | 3.24  | 3.25  | 3.25  | 3.24  |
| EX3-4000   |                             | 3.11                         | 3.69  | 4.11  | 4.43  | 4.68  | 4.87  | 5.01  | 5.11  | 5.18  | 5.22  | 5.23  | 5.23  | 5.21  |
| EX3-5000   |                             | 5.05                         | 5.98  | 6.66  | 7.19  | 7.59  | 7.89  | 8.12  | 8.28  | 8.40  | 8.46  | 8.49  | 8.48  | 8.45  |
| EX3-6000   |                             | 8.16                         | 9.66  | 10.77 | 11.62 | 12.27 | 12.76 | 13.13 | 13.39 | 13.57 | 13.68 | 13.72 | 13.71 | 13.66 |
| EX3-7000   |                             | 10.34                        | 12.25 | 13.66 | 14.73 | 15.55 | 16.18 | 16.65 | 16.98 | 17.21 | 17.34 | 17.40 | 17.39 | 17.33 |
| EX3-8000   |                             | 11.52                        | 13.65 | 15.22 | 16.41 | 17.32 | 18.02 | 18.54 | 18.92 | 19.17 | 19.32 | 19.38 | 19.37 | 19.30 |
| EX3-9000   |                             | 14.72                        | 17.43 | 19.44 | 20.96 | 22.13 | 23.02 | 23.68 | 24.16 | 24.49 | 24.68 | 24.76 | 24.74 | 24.65 |
| EX3-2000   | 25                          | 0.62                         | 0.88  | 1.05  | 1.18  | 1.27  | 1.34  | 1.40  | 1.44  | 1.47  | 1.48  | 1.50  | 1.50  | 1.50  |
| EX3-3000   |                             | 1.30                         | 1.84  | 2.20  | 2.46  | 2.66  | 2.81  | 2.92  | 3.00  | 3.06  | 3.10  | 3.13  | 3.14  | 3.13  |
| EX3-4000   |                             | 2.09                         | 2.96  | 3.54  | 3.96  | 4.27  | 4.52  | 4.70  | 4.83  | 4.93  | 4.99  | 5.03  | 5.04  | 5.04  |
| EX3-5000   |                             | 3.40                         | 4.80  | 5.73  | 6.42  | 6.93  | 7.32  | 7.62  | 7.84  | 7.99  | 8.10  | 8.16  | 8.18  | 8.17  |
| EX3-6000   |                             | 5.49                         | 7.76  | 9.27  | 10.37 | 11.20 | 11.84 | 12.32 | 12.67 | 12.92 | 13.09 | 13.19 | 13.22 | 13.21 |
| EX3-7000   |                             | 6.96                         | 9.84  | 11.76 | 13.15 | 14.21 | 15.01 | 15.62 | 16.07 | 16.38 | 16.60 | 16.72 | 16.77 | 16.75 |
| EX3-8000   |                             | 7.75                         | 10.96 | 13.09 | 14.65 | 15.83 | 16.72 | 17.39 | 17.89 | 18.25 | 18.49 | 18.62 | 18.67 | 18.66 |
| EX3-9000   |                             | 9.90                         | 14.00 | 16.73 | 18.71 | 20.21 | 21.36 | 22.22 | 22.86 | 23.31 | 23.61 | 23.79 | 23.85 | 23.83 |
| EX3-2000   | 20                          |                              | 0.56  | 0.83  | 1.00  | 1.12  | 1.22  | 1.29  | 1.34  | 1.38  | 1.40  | 1.42  | 1.43  | 1.44  |
| EX3-3000   |                             |                              | 1.17  | 1.73  | 2.09  | 2.35  | 2.54  | 2.69  | 2.80  | 2.88  | 2.94  | 2.97  | 2.99  | 3.00  |
| EX3-4000   |                             |                              | 1.88  | 2.78  | 3.36  | 3.78  | 4.09  | 4.33  | 4.50  | 4.63  | 4.72  | 4.78  | 4.82  | 4.83  |
| EX3-5000   |                             |                              | 3.05  | 4.51  | 5.45  | 6.13  | 6.63  | 7.01  | 7.30  | 7.51  | 7.66  | 7.75  | 7.81  | 7.83  |
| EX3-6000   |                             |                              | 4.93  | 7.29  | 8.81  | 9.90  | 10.72 | 11.34 | 11.80 | 12.14 | 12.38 | 12.54 | 12.62 | 12.65 |
| EX3-7000   |                             |                              | 6.26  | 9.24  | 11.17 | 12.56 | 13.60 | 14.38 | 14.97 | 15.40 | 15.70 | 15.90 | 16.01 | 16.05 |
| EX3-8000   |                             |                              | 6.97  | 10.30 | 12.44 | 13.99 | 15.14 | 16.02 | 16.67 | 17.15 | 17.49 | 17.71 | 17.83 | 17.87 |
| EX3-9000   |                             |                              | 8.90  | 13.15 | 15.89 | 17.87 | 19.34 | 20.46 | 21.29 | 21.90 | 22.34 | 22.62 | 22.78 | 22.83 |
| EX3-2000   | 15                          |                              |       | 0.48  | 0.76  | 0.94  | 1.06  | 1.15  | 1.22  | 1.27  | 1.31  | 1.34  | 1.35  | 1.36  |
| EX3-3000   |                             |                              |       | 1.01  | 1.60  | 1.96  | 2.22  | 2.41  | 2.55  | 2.66  | 2.74  | 2.79  | 2.83  | 2.84  |
| EX3-4000   |                             |                              |       | 1.62  | 2.57  | 3.16  | 3.57  | 3.88  | 4.11  | 4.28  | 4.40  | 4.49  | 4.55  | 4.58  |
| EX3-5000   |                             |                              |       | 2.63  | 4.17  | 5.12  | 5.79  | 6.29  | 6.66  | 6.94  | 7.14  | 7.28  | 7.37  | 7.42  |
| EX3-6000   |                             |                              |       | 4.25  | 6.74  | 8.28  | 9.37  | 10.17 | 10.77 | 11.22 | 11.55 | 11.77 | 11.92 | 12.00 |
| EX3-7000   |                             |                              |       | 5.40  | 8.55  | 10.50 | 11.88 | 12.90 | 13.66 | 14.23 | 14.64 | 14.93 | 15.11 | 15.21 |
| EX3-8000   |                             |                              |       | 6.01  | 9.52  | 11.69 | 13.23 | 14.37 | 15.22 | 15.85 | 16.31 | 16.63 | 16.83 | 16.95 |
| EX3-9000   |                             |                              |       | 7.68  | 12.16 | 14.94 | 16.90 | 18.35 | 19.44 | 20.24 | 20.83 | 21.24 | 21.50 | 21.65 |
| EX3-2000   | 10                          |                              |       |       | 0.38  | 0.69  | 0.87  | 0.99  | 1.08  | 1.15  | 1.20  | 1.23  | 1.26  | 1.27  |
| EX3-3000   |                             |                              |       |       | 0.80  | 1.45  | 1.82  | 2.08  | 2.27  | 2.40  | 2.51  | 2.58  | 2.63  | 2.66  |
| EX3-4000   |                             |                              |       |       | 1.29  | 2.33  | 2.93  | 3.34  | 3.64  | 3.87  | 4.03  | 4.15  | 4.23  | 4.29  |
| EX3-5000   |                             |                              |       |       | 2.10  | 3.77  | 4.74  | 5.42  | 5.91  | 6.27  | 6.54  | 6.73  | 6.87  | 6.95  |
| EX3-6000   |                             |                              |       |       | 3.39  | 6.10  | 7.67  | 8.76  | 9.55  | 10.14 | 10.57 | 10.89 | 11.10 | 11.24 |
| EX3-7000   |                             |                              |       |       | 4.29  | 7.74  | 9.73  | 11.11 | 12.11 | 12.86 | 13.41 | 13.80 | 14.08 | 14.25 |
| EX3-8000   |                             |                              |       |       | 4.78  | 8.62  | 10.83 | 12.37 | 13.49 | 14.32 | 14.93 | 15.37 | 15.68 | 15.87 |
| EX3-9000   |                             |                              |       |       | 6.11  | 11.01 | 13.84 | 15.80 | 17.24 | 18.30 | 19.08 | 19.64 | 20.03 | 20.27 |

## R-407F Extended Capacities (kWatts) - EX3 Series

| Valve Type | Condensing Temperature |                   | Evaporating Temperature (°C) |       |       |       |       |       |       |       |       |       |       |       |       |
|------------|------------------------|-------------------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|            | Dew Point (°C)         | Bubble Point (°C) |                              |       |       |       |       |       |       |       |       |       |       |       |       |
|            |                        |                   | 15                           | 10    | 5     | 0     | -5    | -10   | -15   | -20   | -25   | -30   | -35   | -40   | -45   |
| EX3-2000   | 63.5                   | 60                | 1.65                         | 1.67  | 1.69  | 1.69  | 1.69  | 1.68  | 1.66  | 1.64  | 1.61  | 1.58  | 1.55  | 1.51  | 1.47  |
| EX3-3000   |                        |                   | 3.45                         | 3.50  | 3.53  | 3.53  | 3.52  | 3.50  | 3.47  | 3.42  | 3.37  | 3.30  | 3.23  | 3.15  | 3.07  |
| EX3-4000   |                        |                   | 5.55                         | 5.63  | 5.67  | 5.68  | 5.67  | 5.63  | 5.58  | 5.50  | 5.41  | 5.31  | 5.20  | 5.07  | 4.94  |
| EX3-5000   |                        |                   | 9.00                         | 9.13  | 9.19  | 9.21  | 9.19  | 9.13  | 9.04  | 8.92  | 8.78  | 8.61  | 8.43  | 8.23  | 8.01  |
| EX3-6000   |                        |                   | 14.56                        | 14.76 | 14.87 | 14.91 | 14.87 | 14.78 | 14.63 | 14.43 | 14.20 | 13.93 | 13.63 | 13.31 | 12.96 |
| EX3-7000   |                        |                   | 18.46                        | 18.71 | 18.86 | 18.90 | 18.85 | 18.73 | 18.54 | 18.30 | 18.00 | 17.66 | 17.28 | 16.87 | 16.43 |
| EX3-8000   |                        |                   | 20.56                        | 20.84 | 21.00 | 21.05 | 21.00 | 20.86 | 20.65 | 20.38 | 20.05 | 19.67 | 19.25 | 18.79 | 18.30 |
| EX3-9000   |                        |                   | 26.27                        | 26.63 | 26.83 | 26.89 | 26.83 | 26.65 | 26.39 | 26.04 | 25.61 | 25.13 | 24.59 | 24.00 | 23.38 |
| EX3-2000   | 58.5                   | 55                | 1.67                         | 1.70  | 1.72  | 1.74  | 1.74  | 1.74  | 1.72  | 1.71  | 1.68  | 1.66  | 1.63  | 1.59  | 1.56  |
| EX3-3000   |                        |                   | 3.49                         | 3.56  | 3.60  | 3.63  | 3.64  | 3.63  | 3.60  | 3.57  | 3.52  | 3.47  | 3.40  | 3.33  | 3.26  |
| EX3-4000   |                        |                   | 5.61                         | 5.72  | 5.80  | 5.84  | 5.85  | 5.83  | 5.79  | 5.74  | 5.66  | 5.57  | 5.47  | 5.36  | 5.24  |
| EX3-5000   |                        |                   | 9.10                         | 9.28  | 9.40  | 9.47  | 9.48  | 9.46  | 9.40  | 9.30  | 9.18  | 9.04  | 8.87  | 8.69  | 8.49  |
| EX3-6000   |                        |                   | 14.72                        | 15.01 | 15.21 | 15.31 | 15.34 | 15.30 | 15.20 | 15.05 | 14.86 | 14.62 | 14.35 | 14.06 | 13.74 |
| EX3-7000   |                        |                   | 18.66                        | 19.04 | 19.28 | 19.41 | 19.45 | 19.40 | 19.27 | 19.08 | 18.83 | 18.54 | 18.20 | 17.82 | 17.42 |
| EX3-8000   |                        |                   | 20.78                        | 21.20 | 21.47 | 21.62 | 21.66 | 21.60 | 21.47 | 21.25 | 20.98 | 20.65 | 20.27 | 19.85 | 19.40 |
| EX3-9000   |                        |                   | 26.55                        | 27.09 | 27.44 | 27.63 | 27.68 | 27.60 | 27.43 | 27.15 | 26.80 | 26.38 | 25.89 | 25.36 | 24.78 |
| EX3-2000   | 54                     | 50                | 1.65                         | 1.70  | 1.73  | 1.75  | 1.77  | 1.77  | 1.76  | 1.75  | 1.73  | 1.71  | 1.69  | 1.66  | 1.62  |
| EX3-3000   |                        |                   | 3.46                         | 3.56  | 3.62  | 3.67  | 3.69  | 3.70  | 3.69  | 3.66  | 3.63  | 3.58  | 3.52  | 3.46  | 3.39  |
| EX3-4000   |                        |                   | 5.56                         | 5.72  | 5.83  | 5.90  | 5.94  | 5.94  | 5.93  | 5.89  | 5.83  | 5.76  | 5.67  | 5.56  | 5.45  |
| EX3-5000   |                        |                   | 9.02                         | 9.27  | 9.45  | 9.57  | 9.63  | 9.64  | 9.61  | 9.55  | 9.45  | 9.33  | 9.19  | 9.02  | 8.84  |
| EX3-6000   |                        |                   | 14.59                        | 15.00 | 15.29 | 15.48 | 15.58 | 15.60 | 15.55 | 15.45 | 15.29 | 15.10 | 14.86 | 14.60 | 14.31 |
| EX3-7000   |                        |                   | 18.50                        | 19.02 | 19.39 | 19.62 | 19.75 | 19.77 | 19.72 | 19.58 | 19.39 | 19.14 | 18.84 | 18.51 | 18.14 |
| EX3-8000   |                        |                   | 20.61                        | 21.18 | 21.59 | 21.85 | 21.99 | 22.02 | 21.96 | 21.81 | 21.59 | 21.32 | 20.99 | 20.61 | 20.20 |
| EX3-9000   |                        |                   | 26.33                        | 27.06 | 27.59 | 27.92 | 28.10 | 28.14 | 28.05 | 27.87 | 27.59 | 27.24 | 26.81 | 26.34 | 25.81 |
| EX3-2000   | 49                     | 45                | 1.61                         | 1.67  | 1.72  | 1.75  | 1.77  | 1.78  | 1.78  | 1.77  | 1.76  | 1.74  | 1.72  | 1.70  | 1.67  |
| EX3-3000   |                        |                   | 3.37                         | 3.49  | 3.59  | 3.65  | 3.70  | 3.72  | 3.72  | 3.71  | 3.68  | 3.65  | 3.60  | 3.54  | 3.48  |
| EX3-4000   |                        |                   | 5.41                         | 5.62  | 5.77  | 5.88  | 5.94  | 5.98  | 5.98  | 5.96  | 5.92  | 5.86  | 5.79  | 5.70  | 5.60  |
| EX3-5000   |                        |                   | 8.78                         | 9.11  | 9.36  | 9.53  | 9.64  | 9.69  | 9.70  | 9.67  | 9.60  | 9.51  | 9.39  | 9.24  | 9.08  |
| EX3-6000   |                        |                   | 14.20                        | 14.74 | 15.14 | 15.41 | 15.59 | 15.68 | 15.70 | 15.64 | 15.54 | 15.38 | 15.18 | 14.95 | 14.69 |
| EX3-7000   |                        |                   | 18.00                        | 18.68 | 19.19 | 19.54 | 19.77 | 19.88 | 19.90 | 19.83 | 19.70 | 19.50 | 19.25 | 18.96 | 18.62 |
| EX3-8000   |                        |                   | 20.04                        | 20.81 | 21.37 | 21.76 | 22.01 | 22.14 | 22.16 | 22.09 | 21.94 | 21.72 | 21.44 | 21.11 | 20.74 |
| EX3-9000   |                        |                   | 25.61                        | 26.59 | 27.31 | 27.81 | 28.13 | 28.29 | 28.31 | 28.22 | 28.03 | 27.75 | 27.39 | 26.97 | 26.50 |
| EX3-2000   | 44                     | 40                | 1.53                         | 1.61  | 1.67  | 1.72  | 1.75  | 1.77  | 1.77  | 1.78  | 1.77  | 1.76  | 1.74  | 1.72  | 1.69  |
| EX3-3000   |                        |                   | 3.20                         | 3.37  | 3.50  | 3.59  | 3.65  | 3.69  | 3.71  | 3.71  | 3.70  | 3.67  | 3.63  | 3.59  | 3.53  |
| EX3-4000   |                        |                   | 5.15                         | 5.42  | 5.62  | 5.77  | 5.87  | 5.93  | 5.97  | 5.97  | 5.95  | 5.90  | 5.84  | 5.77  | 5.68  |
| EX3-5000   |                        |                   | 8.36                         | 8.79  | 9.12  | 9.36  | 9.52  | 9.62  | 9.67  | 9.68  | 9.64  | 9.58  | 9.48  | 9.36  | 9.21  |
| EX3-6000   |                        |                   | 13.52                        | 14.22 | 14.75 | 15.14 | 15.40 | 15.57 | 15.65 | 15.66 | 15.60 | 15.49 | 15.33 | 15.13 | 14.91 |
| EX3-7000   |                        |                   | 17.14                        | 18.03 | 18.70 | 19.19 | 19.53 | 19.74 | 19.84 | 19.85 | 19.78 | 19.64 | 19.44 | 19.19 | 18.90 |
| EX3-8000   |                        |                   | 19.09                        | 20.08 | 20.82 | 21.37 | 21.75 | 21.98 | 22.10 | 22.11 | 22.03 | 21.87 | 21.65 | 21.37 | 21.04 |
| EX3-9000   |                        |                   | 24.39                        | 25.65 | 26.61 | 27.30 | 27.79 | 28.09 | 28.23 | 28.24 | 28.14 | 27.94 | 27.66 | 27.30 | 26.89 |

|          |      |    |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------|------|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| EX3-2000 | 39.5 | 35 | 1.42  | 1.52  | 1.60  | 1.66  | 1.70  | 1.73  | 1.75  | 1.76  | 1.76  | 1.75  | 1.74  | 1.72  | 1.70  |
| EX3-3000 |      |    | 2.97  | 3.19  | 3.35  | 3.47  | 3.56  | 3.62  | 3.66  | 3.67  | 3.67  | 3.66  | 3.63  | 3.59  | 3.55  |
| EX3-4000 |      |    | 4.78  | 5.12  | 5.39  | 5.58  | 5.72  | 5.82  | 5.88  | 5.91  | 5.91  | 5.88  | 5.84  | 5.78  | 5.70  |
| EX3-5000 |      |    | 7.75  | 8.31  | 8.73  | 9.05  | 9.28  | 9.44  | 9.54  | 9.58  | 9.58  | 9.54  | 9.47  | 9.37  | 9.25  |
| EX3-6000 |      |    | 12.54 | 13.44 | 14.13 | 14.64 | 15.01 | 15.27 | 15.42 | 15.50 | 15.49 | 15.43 | 15.32 | 15.16 | 14.97 |
| EX3-7000 |      |    | 15.89 | 17.04 | 17.91 | 18.56 | 19.04 | 19.36 | 19.56 | 19.64 | 19.64 | 19.57 | 19.42 | 19.22 | 18.97 |
| EX3-8000 |      |    | 17.70 | 18.98 | 19.95 | 20.67 | 21.20 | 21.56 | 21.78 | 21.88 | 21.88 | 21.79 | 21.63 | 21.40 | 21.13 |
| EX3-9000 |      |    | 22.62 | 24.25 | 25.49 | 26.41 | 27.09 | 27.55 | 27.83 | 27.95 | 27.95 | 27.84 | 27.63 | 27.35 | 27.00 |

## R-407F Extended Capacities (kWatts) - EX3 Series

| Valve Type | Condensing Temperature |                   | Evaporating Temperature (°C) |       |       |       |       |       |       |       |       |       |       |       |       |
|------------|------------------------|-------------------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|            | Dew Point (°C)         | Bubble Point (°C) | 15                           | 10    | 5     | 0     | -5    | -10   | -15   | -20   | -25   | -30   | -35   | -40   | -45   |
| EX3-2000   | 34.5                   | 30                | 1.27                         | 1.40  | 1.50  | 1.58  | 1.64  | 1.68  | 1.70  | 1.72  | 1.73  | 1.73  | 1.72  | 1.70  | 1.69  |
| EX3-3000   |                        |                   | 2.65                         | 2.93  | 3.14  | 3.30  | 3.42  | 3.50  | 3.56  | 3.59  | 3.61  | 3.61  | 3.59  | 3.56  | 3.53  |
| EX3-4000   |                        |                   | 4.27                         | 4.72  | 5.05  | 5.31  | 5.50  | 5.63  | 5.73  | 5.78  | 5.80  | 5.80  | 5.78  | 5.73  | 5.67  |
| EX3-5000   |                        |                   | 6.92                         | 7.65  | 8.20  | 8.61  | 8.92  | 9.14  | 9.29  | 9.38  | 9.41  | 9.41  | 9.37  | 9.29  | 9.20  |
| EX3-6000   |                        |                   | 11.19                        | 12.37 | 13.26 | 13.93 | 14.43 | 14.78 | 15.02 | 15.17 | 15.23 | 15.22 | 15.15 | 15.04 | 14.88 |
| EX3-7000   |                        |                   | 14.19                        | 15.68 | 16.81 | 17.66 | 18.29 | 18.74 | 19.05 | 19.23 | 19.31 | 19.30 | 19.21 | 19.06 | 18.86 |
| EX3-8000   |                        |                   | 15.80                        | 17.47 | 18.72 | 19.67 | 20.37 | 20.87 | 21.21 | 21.41 | 21.50 | 21.49 | 21.39 | 21.23 | 21.01 |
| EX3-9000   |                        |                   | 20.19                        | 22.32 | 23.92 | 25.13 | 26.02 | 26.67 | 27.10 | 27.36 | 27.47 | 27.46 | 27.33 | 27.12 | 26.84 |
| EX3-2000   | 30                     | 25                | 1.06                         | 1.24  | 1.37  | 1.47  | 1.55  | 1.60  | 1.64  | 1.66  | 1.68  | 1.68  | 1.68  | 1.68  | 1.66  |
| EX3-3000   |                        |                   | 2.22                         | 2.59  | 2.87  | 3.08  | 3.23  | 3.34  | 3.42  | 3.48  | 3.51  | 3.52  | 3.52  | 3.50  | 3.47  |
| EX3-4000   |                        |                   | 3.57                         | 4.17  | 4.62  | 4.95  | 5.19  | 5.38  | 5.51  | 5.59  | 5.64  | 5.66  | 5.66  | 5.63  | 5.59  |
| EX3-5000   |                        |                   | 5.79                         | 6.77  | 7.49  | 8.02  | 8.43  | 8.72  | 8.93  | 9.07  | 9.15  | 9.19  | 9.18  | 9.13  | 9.06  |
| EX3-6000   |                        |                   | 9.36                         | 10.95 | 12.11 | 12.98 | 13.63 | 14.11 | 14.45 | 14.68 | 14.81 | 14.86 | 14.84 | 14.77 | 14.65 |
| EX3-7000   |                        |                   | 11.87                        | 13.88 | 15.35 | 16.45 | 17.28 | 17.89 | 18.32 | 18.61 | 18.77 | 18.84 | 18.82 | 18.73 | 18.58 |
| EX3-8000   |                        |                   | 13.22                        | 15.46 | 17.10 | 18.32 | 19.24 | 19.92 | 20.40 | 20.72 | 20.91 | 20.98 | 20.96 | 20.86 | 20.69 |
| EX3-9000   |                        |                   | 16.89                        | 19.75 | 21.84 | 23.41 | 24.59 | 25.45 | 26.07 | 26.47 | 26.71 | 26.81 | 26.78 | 26.65 | 26.44 |
| EX3-2000   | 25                     | 20                | 0.76                         | 1.02  | 1.20  | 1.33  | 1.43  | 1.50  | 1.55  | 1.59  | 1.61  | 1.63  | 1.63  | 1.63  | 1.62  |
| EX3-3000   |                        |                   | 1.59                         | 2.14  | 2.52  | 2.79  | 2.99  | 3.14  | 3.25  | 3.32  | 3.37  | 3.40  | 3.41  | 3.41  | 3.39  |
| EX3-4000   |                        |                   | 2.55                         | 3.45  | 4.05  | 4.48  | 4.80  | 5.05  | 5.22  | 5.34  | 5.42  | 5.47  | 5.49  | 5.48  | 5.45  |
| EX3-5000   |                        |                   | 4.14                         | 5.59  | 6.56  | 7.27  | 7.79  | 8.18  | 8.47  | 8.67  | 8.80  | 8.87  | 8.90  | 8.89  | 8.84  |
| EX3-6000   |                        |                   | 6.70                         | 9.04  | 10.61 | 11.76 | 12.61 | 13.24 | 13.70 | 14.02 | 14.23 | 14.35 | 14.39 | 14.37 | 14.30 |
| EX3-7000   |                        |                   | 8.49                         | 11.46 | 13.46 | 14.90 | 15.98 | 16.78 | 17.36 | 17.77 | 18.04 | 18.20 | 18.25 | 18.22 | 18.13 |
| EX3-8000   |                        |                   | 9.46                         | 12.76 | 14.99 | 16.60 | 17.80 | 18.69 | 19.34 | 19.80 | 20.10 | 20.26 | 20.32 | 20.29 | 20.19 |
| EX3-9000   |                        |                   | 12.08                        | 16.31 | 19.15 | 21.21 | 22.74 | 23.88 | 24.71 | 25.29 | 25.68 | 25.89 | 25.97 | 25.93 | 25.79 |
| EX3-2000   | 20                     | 15                |                              |       | 0.98  | 1.16  | 1.28  | 1.38  | 1.45  | 1.50  | 1.53  | 1.55  | 1.57  | 1.57  | 1.57  |
| EX3-3000   |                        |                   |                              |       | 2.04  | 2.42  | 2.68  | 2.88  | 3.02  | 3.13  | 3.20  | 3.25  | 3.27  | 3.28  | 3.27  |
| EX3-4000   |                        |                   |                              |       | 3.29  | 3.88  | 4.31  | 4.63  | 4.86  | 5.03  | 5.15  | 5.22  | 5.26  | 5.28  | 5.27  |
| EX3-5000   |                        |                   |                              |       | 5.33  | 6.30  | 6.99  | 7.51  | 7.88  | 8.16  | 8.35  | 8.47  | 8.54  | 8.56  | 8.54  |
| EX3-6000   |                        |                   |                              |       | 8.63  | 10.19 | 11.31 | 12.14 | 12.75 | 13.19 | 13.50 | 13.70 | 13.81 | 13.84 | 13.81 |
| EX3-7000   |                        |                   |                              |       | 10.94 | 12.92 | 14.34 | 15.39 | 16.17 | 16.73 | 17.12 | 17.37 | 17.50 | 17.55 | 17.51 |
| EX3-8000   |                        |                   |                              |       | 12.18 | 14.39 | 15.97 | 17.14 | 18.01 | 18.63 | 19.06 | 19.34 | 19.49 | 19.54 | 19.50 |
| EX3-9000   |                        |                   |                              |       | 15.56 | 18.38 | 20.41 | 21.90 | 23.00 | 23.80 | 24.35 | 24.71 | 24.91 | 24.97 | 24.92 |
| EX3-2000   | 15.5                   | 10                |                              |       |       | 0.92  | 1.10  | 1.22  | 1.31  | 1.38  | 1.43  | 1.46  | 1.48  | 1.49  | 1.50  |
| EX3-3000   |                        |                   |                              |       |       | 1.93  | 2.29  | 2.56  | 2.75  | 2.89  | 2.99  | 3.06  | 3.10  | 3.12  | 3.13  |
| EX3-4000   |                        |                   |                              |       |       | 3.10  | 3.69  | 4.11  | 4.42  | 4.64  | 4.80  | 4.92  | 4.99  | 5.02  | 5.03  |
| EX3-5000   |                        |                   |                              |       |       | 5.02  | 5.99  | 6.67  | 7.17  | 7.53  | 7.79  | 7.97  | 8.09  | 8.15  | 8.16  |
| EX3-6000   |                        |                   |                              |       |       | 8.12  | 9.68  | 10.79 | 11.59 | 12.18 | 12.61 | 12.90 | 13.08 | 13.18 | 13.20 |
| EX3-7000   |                        |                   |                              |       |       | 10.30 | 12.27 | 13.68 | 14.70 | 15.45 | 15.98 | 16.35 | 16.58 | 16.71 | 16.74 |
| EX3-8000   |                        |                   |                              |       |       | 11.47 | 13.67 | 15.23 | 16.37 | 17.20 | 17.80 | 18.21 | 18.47 | 18.61 | 18.64 |
| EX3-9000   |                        |                   |                              |       |       | 14.65 | 17.47 | 19.46 | 20.92 | 21.98 | 22.74 | 23.27 | 23.60 | 23.77 | 23.82 |

## R-507 Extended Capacities (kWatts) - EX3 Series

| Valve Type | Condensing Temperature (°C) | Evaporating Temperature (°C) |       |       |       |       |       |       |       |       |       |       |       |       |
|------------|-----------------------------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|            |                             | 15                           | 10    | 5     | 0     | -5    | -10   | -15   | -20   | -25   | -30   | -35   | -40   | -45   |
| EX3-2000   | 60                          | 0.83                         | 0.84  | 0.83  | 0.82  | 0.81  | 0.79  | 0.77  | 0.74  | 0.71  | 0.68  | 0.64  | 0.60  | 0.57  |
| EX3-3000   |                             | 1.74                         | 1.75  | 1.74  | 1.72  | 1.69  | 1.65  | 1.60  | 1.54  | 1.48  | 1.41  | 1.34  | 1.26  | 1.18  |
| EX3-4000   |                             | 2.81                         | 2.82  | 2.81  | 2.77  | 2.72  | 2.66  | 2.58  | 2.48  | 2.38  | 2.27  | 2.16  | 2.03  | 1.90  |
| EX3-5000   |                             | 4.55                         | 4.57  | 4.55  | 4.50  | 4.41  | 4.31  | 4.18  | 4.03  | 3.86  | 3.69  | 3.49  | 3.30  | 3.09  |
| EX3-6000   |                             | 7.36                         | 7.39  | 7.36  | 7.27  | 7.14  | 6.96  | 6.75  | 6.51  | 6.24  | 5.96  | 5.65  | 5.33  | 4.99  |
| EX3-7000   |                             | 9.33                         | 9.37  | 9.33  | 9.22  | 9.05  | 8.83  | 8.56  | 8.26  | 7.92  | 7.55  | 7.16  | 6.76  | 6.33  |
| EX3-8000   |                             | 10.39                        | 10.43 | 10.39 | 10.27 | 10.08 | 9.83  | 9.54  | 9.20  | 8.82  | 8.41  | 7.98  | 7.52  | 7.05  |
| EX3-9000   |                             | 13.27                        | 13.33 | 13.27 | 13.12 | 12.88 | 12.56 | 12.18 | 11.75 | 11.27 | 10.75 | 10.19 | 9.61  | 9.01  |
| EX3-2000   | 55                          | 0.90                         | 0.91  | 0.92  | 0.91  | 0.91  | 0.89  | 0.87  | 0.85  | 0.82  | 0.79  | 0.76  | 0.73  | 0.69  |
| EX3-3000   |                             | 1.88                         | 1.91  | 1.92  | 1.91  | 1.89  | 1.86  | 1.83  | 1.78  | 1.72  | 1.66  | 1.59  | 1.52  | 1.45  |
| EX3-4000   |                             | 3.02                         | 3.07  | 3.09  | 3.08  | 3.05  | 3.00  | 2.94  | 2.86  | 2.77  | 2.67  | 2.56  | 2.45  | 2.33  |
| EX3-5000   |                             | 4.90                         | 4.98  | 5.00  | 4.99  | 4.94  | 4.86  | 4.76  | 4.64  | 4.49  | 4.33  | 4.16  | 3.97  | 3.78  |
| EX3-6000   |                             | 7.93                         | 8.04  | 8.09  | 8.07  | 7.99  | 7.86  | 7.70  | 7.50  | 7.26  | 7.00  | 6.72  | 6.43  | 6.11  |
| EX3-7000   |                             | 10.05                        | 10.20 | 10.26 | 10.23 | 10.13 | 9.97  | 9.76  | 9.50  | 9.21  | 8.88  | 8.53  | 8.15  | 7.75  |
| EX3-8000   |                             | 11.19                        | 11.36 | 11.42 | 11.39 | 11.28 | 11.11 | 10.87 | 10.59 | 10.26 | 9.89  | 9.50  | 9.07  | 8.63  |
| EX3-9000   |                             | 14.30                        | 14.51 | 14.59 | 14.55 | 14.41 | 14.19 | 13.89 | 13.52 | 13.10 | 12.64 | 12.13 | 11.59 | 11.02 |
| EX3-2000   | 50                          | 0.93                         | 0.95  | 0.97  | 0.97  | 0.97  | 0.96  | 0.95  | 0.93  | 0.91  | 0.89  | 0.86  | 0.83  | 0.79  |
| EX3-3000   |                             | 1.94                         | 1.99  | 2.02  | 2.04  | 2.03  | 2.02  | 1.99  | 1.95  | 1.90  | 1.85  | 1.79  | 1.73  | 1.66  |
| EX3-4000   |                             | 3.12                         | 3.21  | 3.25  | 3.27  | 3.27  | 3.24  | 3.20  | 3.14  | 3.06  | 2.98  | 2.88  | 2.78  | 2.67  |
| EX3-5000   |                             | 5.06                         | 5.20  | 5.28  | 5.31  | 5.30  | 5.26  | 5.19  | 5.09  | 4.97  | 4.83  | 4.67  | 4.51  | 4.33  |
| EX3-6000   |                             | 8.18                         | 8.40  | 8.53  | 8.59  | 8.57  | 8.50  | 8.38  | 8.23  | 8.03  | 7.81  | 7.56  | 7.28  | 6.99  |
| EX3-7000   |                             | 10.38                        | 10.66 | 10.82 | 10.89 | 10.87 | 10.78 | 10.63 | 10.43 | 10.18 | 9.90  | 9.58  | 9.24  | 8.87  |
| EX3-8000   |                             | 11.56                        | 11.87 | 12.05 | 12.13 | 12.11 | 12.01 | 11.84 | 11.62 | 11.34 | 11.02 | 10.67 | 10.29 | 9.88  |
| EX3-9000   |                             | 14.76                        | 15.16 | 15.39 | 15.49 | 15.46 | 15.34 | 15.13 | 14.84 | 14.49 | 14.08 | 13.63 | 13.14 | 12.62 |
| EX3-2000   | 45                          | 0.93                         | 0.96  | 0.99  | 1.01  | 1.01  | 1.01  | 1.00  | 0.99  | 0.97  | 0.95  | 0.93  | 0.90  | 0.87  |
| EX3-3000   |                             | 1.93                         | 2.02  | 2.07  | 2.10  | 2.12  | 2.12  | 2.10  | 2.07  | 2.04  | 1.99  | 1.94  | 1.88  | 1.82  |
| EX3-4000   |                             | 3.11                         | 3.24  | 3.33  | 3.38  | 3.41  | 3.40  | 3.38  | 3.34  | 3.28  | 3.21  | 3.12  | 3.03  | 2.93  |
| EX3-5000   |                             | 5.05                         | 5.26  | 5.40  | 5.49  | 5.52  | 5.52  | 5.48  | 5.41  | 5.32  | 5.20  | 5.07  | 4.92  | 4.75  |
| EX3-6000   |                             | 8.16                         | 8.50  | 8.73  | 8.87  | 8.93  | 8.92  | 8.86  | 8.75  | 8.59  | 8.41  | 8.19  | 7.95  | 7.69  |
| EX3-7000   |                             | 10.34                        | 10.78 | 11.07 | 11.25 | 11.32 | 11.31 | 11.23 | 11.09 | 10.90 | 10.66 | 10.39 | 10.08 | 9.75  |
| EX3-8000   |                             | 11.52                        | 12.01 | 12.33 | 12.53 | 12.61 | 12.60 | 12.51 | 12.35 | 12.14 | 11.87 | 11.57 | 11.23 | 10.86 |
| EX3-9000   |                             | 14.72                        | 15.34 | 15.75 | 16.00 | 16.11 | 16.09 | 15.98 | 15.78 | 15.50 | 15.17 | 14.78 | 14.34 | 13.87 |
| EX3-2000   | 40                          | 0.89                         | 0.95  | 0.99  | 1.01  | 1.03  | 1.04  | 1.04  | 1.03  | 1.02  | 1.00  | 0.98  | 0.96  | 0.93  |
| EX3-3000   |                             | 1.86                         | 1.98  | 2.06  | 2.12  | 2.15  | 2.17  | 2.17  | 2.15  | 2.13  | 2.09  | 2.05  | 2.00  | 1.95  |
| EX3-4000   |                             | 2.99                         | 3.18  | 3.32  | 3.41  | 3.46  | 3.49  | 3.49  | 3.47  | 3.42  | 3.37  | 3.30  | 3.22  | 3.13  |
| EX3-5000   |                             | 4.86                         | 5.16  | 5.38  | 5.53  | 5.62  | 5.66  | 5.65  | 5.62  | 5.55  | 5.46  | 5.35  | 5.22  | 5.08  |
| EX3-6000   |                             | 7.85                         | 8.35  | 8.70  | 8.94  | 9.08  | 9.14  | 9.14  | 9.08  | 8.98  | 8.83  | 8.65  | 8.45  | 8.21  |
| EX3-7000   |                             | 9.95                         | 10.58 | 11.03 | 11.33 | 11.51 | 11.59 | 11.59 | 11.52 | 11.39 | 11.20 | 10.97 | 10.71 | 10.41 |
| EX3-8000   |                             | 11.09                        | 11.79 | 12.28 | 12.62 | 12.82 | 12.91 | 12.91 | 12.83 | 12.68 | 12.48 | 12.22 | 11.93 | 11.60 |
| EX3-9000   |                             | 14.16                        | 15.06 | 15.69 | 16.12 | 16.38 | 16.50 | 16.49 | 16.39 | 16.20 | 15.94 | 15.61 | 15.24 | 14.82 |
| EX3-2000   | 35                          | 0.82                         | 0.90  | 0.96  | 1.00  | 1.02  | 1.04  | 1.05  | 1.05  | 1.04  | 1.03  | 1.02  | 1.00  | 0.97  |
| EX3-3000   |                             | 1.71                         | 1.88  | 2.00  | 2.08  | 2.14  | 2.18  | 2.19  | 2.19  | 2.18  | 2.16  | 2.12  | 2.08  | 2.04  |
| EX3-4000   |                             | 2.76                         | 3.02  | 3.22  | 3.35  | 3.45  | 3.50  | 3.53  | 3.53  | 3.51  | 3.47  | 3.42  | 3.35  | 3.28  |
| EX3-5000   |                             | 4.47                         | 4.90  | 5.22  | 5.44  | 5.59  | 5.68  | 5.72  | 5.72  | 5.69  | 5.63  | 5.54  | 5.44  | 5.31  |
| EX3-6000   |                             | 7.23                         | 7.93  | 8.43  | 8.79  | 9.03  | 9.18  | 9.25  | 9.25  | 9.20  | 9.10  | 8.96  | 8.79  | 8.59  |
| EX3-7000   |                             | 9.17                         | 10.05 | 10.69 | 11.15 | 11.46 | 11.64 | 11.73 | 11.73 | 11.67 | 11.54 | 11.36 | 11.14 | 10.89 |
| EX3-8000   |                             | 10.21                        | 11.20 | 11.91 | 12.42 | 12.76 | 12.97 | 13.06 | 13.07 | 12.99 | 12.85 | 12.66 | 12.41 | 12.13 |
| EX3-9000   |                             | 13.05                        | 14.30 | 15.21 | 15.86 | 16.30 | 16.56 | 16.69 | 16.69 | 16.60 | 16.42 | 16.17 | 15.86 | 15.50 |

## R-507 Extended Capacities (kWatts) - EX3 Series

| Valve Type | Condensing Temperature (°C) | Evaporating Temperature (°C) |       |       |       |       |       |       |       |       |       |       |       |       |
|------------|-----------------------------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|            |                             | 15                           | 10    | 5     | 0     | -5    | -10   | -15   | -20   | -25   | -30   | -35   | -40   | -45   |
| EX3-2000   | 30                          | 0.70                         | 0.82  | 0.90  | 0.96  | 1.00  | 1.02  | 1.04  | 1.05  | 1.05  | 1.05  | 1.03  | 1.02  | 1.00  |
| EX3-3000   |                             | 1.47                         | 1.71  | 1.88  | 2.00  | 2.09  | 2.14  | 2.18  | 2.20  | 2.20  | 2.19  | 2.16  | 2.13  | 2.09  |
| EX3-4000   |                             | 2.37                         | 2.75  | 3.02  | 3.22  | 3.35  | 3.45  | 3.50  | 3.53  | 3.53  | 3.52  | 3.48  | 3.43  | 3.37  |
| EX3-5000   |                             | 3.85                         | 4.46  | 4.90  | 5.21  | 5.44  | 5.59  | 5.68  | 5.73  | 5.73  | 5.70  | 5.64  | 5.56  | 5.46  |
| EX3-6000   |                             | 6.22                         | 7.21  | 7.92  | 8.43  | 8.79  | 9.04  | 9.19  | 9.26  | 9.27  | 9.22  | 9.12  | 8.99  | 8.83  |
| EX3-7000   |                             | 7.88                         | 9.14  | 10.04 | 10.69 | 11.15 | 11.46 | 11.65 | 11.74 | 11.75 | 11.69 | 11.57 | 11.40 | 11.19 |
| EX3-8000   |                             | 8.78                         | 10.18 | 11.18 | 11.91 | 12.42 | 12.77 | 12.98 | 13.08 | 13.09 | 13.02 | 12.89 | 12.70 | 12.46 |
| EX3-9000   |                             | 11.22                        | 13.01 | 14.29 | 15.21 | 15.86 | 16.31 | 16.58 | 16.71 | 16.72 | 16.63 | 16.46 | 16.22 | 15.92 |
| EX3-2000   | 25                          | 0.52                         | 0.69  | 0.81  | 0.89  | 0.95  | 0.99  | 1.02  | 1.03  | 1.04  | 1.04  | 1.04  | 1.03  | 1.01  |
| EX3-3000   |                             | 1.08                         | 1.45  | 1.69  | 1.86  | 1.98  | 2.07  | 2.12  | 2.16  | 2.18  | 2.18  | 2.17  | 2.15  | 2.12  |
| EX3-4000   |                             | 1.74                         | 2.33  | 2.71  | 2.99  | 3.18  | 3.32  | 3.42  | 3.47  | 3.50  | 3.51  | 3.49  | 3.45  | 3.41  |
| EX3-5000   |                             | 2.83                         | 3.77  | 4.40  | 4.84  | 5.16  | 5.39  | 5.54  | 5.63  | 5.68  | 5.69  | 5.66  | 5.60  | 5.52  |
| EX3-6000   |                             | 4.57                         | 6.10  | 7.11  | 7.83  | 8.35  | 8.71  | 8.96  | 9.11  | 9.18  | 9.19  | 9.15  | 9.06  | 8.93  |
| EX3-7000   |                             | 5.80                         | 7.73  | 9.02  | 9.93  | 10.58 | 11.05 | 11.36 | 11.55 | 11.64 | 11.66 | 11.60 | 11.48 | 11.32 |
| EX3-8000   |                             | 6.46                         | 8.61  | 10.04 | 11.06 | 11.79 | 12.30 | 12.65 | 12.87 | 12.97 | 12.98 | 12.92 | 12.79 | 12.61 |
| EX3-9000   |                             | 8.25                         | 11.00 | 12.83 | 14.12 | 15.06 | 15.71 | 16.16 | 16.43 | 16.57 | 16.58 | 16.50 | 16.34 | 16.11 |
| EX3-2000   | 20                          |                              | 0.49  | 0.67  | 0.79  | 0.87  | 0.93  | 0.97  | 1.00  | 1.01  | 1.02  | 1.02  | 1.02  | 1.01  |
| EX3-3000   |                             |                              | 1.03  | 1.40  | 1.65  | 1.82  | 1.94  | 2.03  | 2.09  | 2.12  | 2.14  | 2.14  | 2.13  | 2.11  |
| EX3-4000   |                             |                              | 1.65  | 2.25  | 2.65  | 2.92  | 3.12  | 3.26  | 3.36  | 3.41  | 3.44  | 3.45  | 3.43  | 3.40  |
| EX3-5000   |                             |                              | 2.67  | 3.65  | 4.29  | 4.74  | 5.06  | 5.29  | 5.44  | 5.54  | 5.58  | 5.59  | 5.56  | 5.51  |
| EX3-6000   |                             |                              | 4.32  | 5.91  | 6.94  | 7.67  | 8.18  | 8.55  | 8.80  | 8.95  | 9.03  | 9.04  | 8.99  | 8.91  |
| EX3-7000   |                             |                              | 5.48  | 7.49  | 8.80  | 9.72  | 10.38 | 10.84 | 11.16 | 11.35 | 11.44 | 11.46 | 11.41 | 11.30 |
| EX3-8000   |                             |                              | 6.11  | 8.34  | 9.80  | 10.83 | 11.56 | 12.08 | 12.43 | 12.64 | 12.75 | 12.76 | 12.70 | 12.58 |
| EX3-9000   |                             |                              | 7.80  | 10.66 | 12.52 | 13.83 | 14.77 | 15.43 | 15.87 | 16.15 | 16.28 | 16.30 | 16.23 | 16.07 |
| EX3-2000   | 15                          |                              |       | 0.45  | 0.64  | 0.76  | 0.84  | 0.90  | 0.94  | 0.97  | 0.99  | 1.00  | 1.00  | 0.99  |
| EX3-3000   |                             |                              |       | 0.95  | 1.34  | 1.59  | 1.76  | 1.89  | 1.97  | 2.03  | 2.07  | 2.08  | 2.09  | 2.08  |
| EX3-4000   |                             |                              |       | 1.52  | 2.15  | 2.56  | 2.84  | 3.03  | 3.17  | 3.27  | 3.33  | 3.35  | 3.36  | 3.34  |
| EX3-5000   |                             |                              |       | 2.47  | 3.49  | 4.14  | 4.60  | 4.92  | 5.15  | 5.30  | 5.39  | 5.44  | 5.45  | 5.42  |
| EX3-6000   |                             |                              |       | 3.99  | 5.65  | 6.70  | 7.43  | 7.95  | 8.32  | 8.57  | 8.72  | 8.79  | 8.81  | 8.77  |
| EX3-7000   |                             |                              |       | 5.06  | 7.16  | 8.50  | 9.42  | 10.09 | 10.55 | 10.86 | 11.05 | 11.15 | 11.17 | 11.12 |
| EX3-8000   |                             |                              |       | 5.64  | 7.98  | 9.46  | 10.50 | 11.23 | 11.75 | 12.10 | 12.31 | 12.42 | 12.44 | 12.38 |
| EX3-9000   |                             |                              |       | 7.20  | 10.19 | 12.09 | 13.41 | 14.35 | 15.01 | 15.45 | 15.73 | 15.86 | 15.89 | 15.82 |
| EX3-2000   | 10                          |                              |       |       | 0.40  | 0.60  | 0.72  | 0.81  | 0.87  | 0.91  | 0.94  | 0.95  | 0.96  | 0.96  |
| EX3-3000   |                             |                              |       |       | 0.85  | 1.26  | 1.52  | 1.69  | 1.81  | 1.90  | 1.96  | 2.00  | 2.01  | 2.02  |
| EX3-4000   |                             |                              |       |       | 1.36  | 2.03  | 2.44  | 2.72  | 2.92  | 3.06  | 3.15  | 3.21  | 3.24  | 3.24  |
| EX3-5000   |                             |                              |       |       | 2.21  | 3.29  | 3.95  | 4.41  | 4.73  | 4.96  | 5.11  | 5.20  | 5.25  | 5.26  |
| EX3-6000   |                             |                              |       |       | 3.57  | 5.32  | 6.39  | 7.13  | 7.65  | 8.02  | 8.26  | 8.41  | 8.49  | 8.51  |
| EX3-7000   |                             |                              |       |       | 4.52  | 6.74  | 8.10  | 9.04  | 9.70  | 10.17 | 10.48 | 10.67 | 10.77 | 10.79 |
| EX3-8000   |                             |                              |       |       | 5.04  | 7.51  | 9.03  | 10.07 | 10.81 | 11.32 | 11.67 | 11.88 | 11.99 | 12.01 |
| EX3-9000   |                             |                              |       |       | 6.44  | 9.59  | 11.53 | 12.87 | 13.81 | 14.47 | 14.91 | 15.18 | 15.32 | 15.34 |

**R-410A Extended Capacities (Tons) - EX4-8 Series, as expansion and liquid injection valves**

The following tables provide the capacity of valves at different conditions considering 20 psi pressure drop through liquid line:

| Valve Type | Condensing Temperature (°F) | Evaporating Temperature (°F) |     |     |     |     |     |     |     |     |     |     |     |
|------------|-----------------------------|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|            |                             | 60                           | 50  | 40  | 30  | 20  | 10  | 0   | -10 | -20 | -30 | -40 | -50 |
| EX4        | 140                         | 5                            | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   |
| EX5        |                             | 15                           | 15  | 16  | 16  | 16  | 16  | 16  | 16  | 15  | 15  | 15  | 15  |
| EX6        |                             | 36                           | 37  | 38  | 38  | 38  | 38  | 38  | 38  | 37  | 37  | 36  | 35  |
| EX7        |                             | 99                           | 102 | 104 | 105 | 105 | 105 | 105 | 104 | 103 | 101 | 99  | 97  |
| EX8        |                             | 265                          | 271 | 277 | 279 | 281 | 281 | 280 | 277 | 274 | 269 | 264 | 258 |
| EX4        | 130                         | 5                            | 5   | 5   | 5   | 6   | 6   | 6   | 6   | 5   | 5   | 5   | 5   |
| EX5        |                             | 15                           | 16  | 16  | 16  | 17  | 17  | 17  | 17  | 16  | 16  | 16  | 16  |
| EX6        |                             | 37                           | 38  | 39  | 40  | 40  | 40  | 40  | 40  | 40  | 39  | 39  | 38  |
| EX7        |                             | 101                          | 105 | 107 | 109 | 110 | 110 | 111 | 110 | 109 | 108 | 106 | 104 |
| EX8        |                             | 269                          | 279 | 285 | 292 | 293 | 295 | 296 | 294 | 291 | 288 | 283 | 277 |
| EX4        | 120                         | 5                            | 5   | 6   | 6   | 6   | 6   | 6   | 6   | 6   | 6   | 6   | 6   |
| EX5        |                             | 15                           | 16  | 17  | 17  | 17  | 17  | 17  | 17  | 17  | 17  | 17  | 17  |
| EX6        |                             | 37                           | 39  | 40  | 41  | 42  | 42  | 42  | 42  | 42  | 42  | 41  | 40  |
| EX7        |                             | 101                          | 106 | 110 | 112 | 114 | 115 | 116 | 116 | 116 | 114 | 113 | 111 |
| EX8        |                             | 270                          | 283 | 293 | 299 | 305 | 308 | 309 | 310 | 309 | 305 | 301 | 297 |
| EX4        | 110                         | 5                            | 5   | 5   | 6   | 6   | 6   | 6   | 6   | 6   | 6   | 6   | 6   |
| EX5        |                             | 15                           | 15  | 16  | 17  | 17  | 17  | 18  | 18  | 18  | 17  | 17  | 17  |
| EX6        |                             | 35                           | 37  | 39  | 40  | 42  | 42  | 43  | 43  | 43  | 42  | 42  | 41  |
| EX7        |                             | 96                           | 102 | 107 | 111 | 114 | 115 | 117 | 118 | 117 | 116 | 115 | 113 |
| EX8        |                             | 257                          | 273 | 286 | 297 | 305 | 308 | 313 | 314 | 313 | 309 | 308 | 303 |
| EX4        | 100                         | 5                            | 5   | 5   | 6   | 6   | 6   | 6   | 6   | 6   | 6   | 6   | 6   |
| EX5        |                             | 14                           | 15  | 16  | 17  | 17  | 17  | 18  | 18  | 18  | 18  | 18  | 18  |
| EX6        |                             | 33                           | 36  | 38  | 40  | 41  | 42  | 43  | 43  | 43  | 43  | 43  | 42  |
| EX7        |                             | 90                           | 98  | 105 | 110 | 113 | 116 | 118 | 119 | 119 | 118 | 118 | 116 |
| EX8        |                             | 240                          | 261 | 281 | 294 | 301 | 308 | 315 | 316 | 316 | 315 | 316 | 311 |
| EX4        | 90                          | 4                            | 4   | 5   | 5   | 5   | 6   | 6   | 6   | 6   | 6   | 6   | 6   |
| EX5        |                             | 12                           | 13  | 15  | 16  | 16  | 17  | 17  | 18  | 18  | 18  | 18  | 18  |
| EX6        |                             | 28                           | 33  | 36  | 38  | 40  | 41  | 42  | 42  | 43  | 43  | 43  | 43  |
| EX7        |                             | 78                           | 89  | 98  | 104 | 109 | 112 | 116 | 116 | 118 | 118 | 118 | 117 |
| EX8        |                             | 207                          | 239 | 260 | 277 | 290 | 300 | 308 | 311 | 314 | 314 | 315 | 313 |
| EX4        | 80                          | 3                            | 4   | 4   | 5   | 5   | 5   | 6   | 6   | 6   | 6   | 6   | 6   |
| EX5        |                             | 9                            | 12  | 13  | 15  | 15  | 16  | 17  | 17  | 17  | 17  | 17  | 17  |
| EX6        |                             | 22                           | 28  | 32  | 35  | 37  | 39  | 40  | 41  | 42  | 42  | 42  | 42  |
| EX7        |                             | 61                           | 77  | 87  | 97  | 103 | 107 | 111 | 113 | 114 | 116 | 115 | 114 |
| EX8        |                             | 163                          | 204 | 233 | 257 | 274 | 286 | 297 | 300 | 305 | 309 | 308 | 305 |
| EX4        | 70                          | 2                            | 3   | 4   | 4   | 5   | 5   | 5   | 5   | 6   | 6   | 6   | 6   |
| EX5        |                             | 5                            | 9   | 11  | 13  | 14  | 15  | 16  | 16  | 17  | 17  | 17  | 17  |
| EX6        |                             | 11                           | 21  | 27  | 31  | 34  | 37  | 39  | 39  | 40  | 41  | 41  | 41  |
| EX7        |                             | 31                           | 59  | 75  | 86  | 94  | 101 | 106 | 108 | 111 | 112 | 114 | 113 |
| EX8        |                             | 84                           | 157 | 201 | 230 | 251 | 270 | 284 | 289 | 295 | 300 | 303 | 301 |
| EX4        | 60                          | -                            | 1   | 3   | 4   | 4   | 5   | 5   | 5   | 5   | 5   | 5   | 5   |
| EX5        |                             | -                            | 4   | 8   | 11  | 13  | 14  | 15  | 15  | 16  | 16  | 16  | 16  |
| EX6        |                             | -                            | 10  | 20  | 26  | 30  | 33  | 36  | 37  | 38  | 39  | 40  | 39  |
| EX7        |                             | -                            | 27  | 56  | 72  | 84  | 92  | 98  | 102 | 105 | 108 | 109 | 109 |
| EX8        |                             | -                            | 72  | 150 | 192 | 224 | 245 | 262 | 273 | 281 | 287 | 291 | 290 |

## EX Extended Capacity Tables

|     |    |   |   |    |     |     |     |     |     |     |     |     |     |
|-----|----|---|---|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| EX4 | 50 | - | - | 1  | 3   | 3   | 4   | 4   | 5   | 5   | 5   | 5   | 5   |
| EX5 |    | - | - | 3  | 8   | 10  | 12  | 14  | 14  | 15  | 15  | 16  | 16  |
| EX6 |    | - | - | 8  | 19  | 25  | 29  | 33  | 35  | 36  | 37  | 38  | 38  |
| EX7 |    | - | - | 21 | 53  | 69  | 80  | 90  | 95  | 99  | 102 | 104 | 104 |
| EX8 |    | - | - | 57 | 143 | 185 | 214 | 239 | 254 | 265 | 272 | 278 | 277 |

**R-407C Extended Capacities (Tons) - EX4-8 Series, as expansion and liquid injection valves**

The following tables provide the capacity of valves at different conditions considering 20 psi pressure drop through liquid line:

| Valve Type | Condensing Temperature<br>Bubble Point (°F) | Evaporating Temperature (°F) |     |     |     |     |     |     |     |
|------------|---------------------------------------------|------------------------------|-----|-----|-----|-----|-----|-----|-----|
|            |                                             | 60                           | 50  | 40  | 30  | 20  | 10  | 0   | -10 |
| EX4        | 140                                         | 5                            | 5   | 5   | 5   | 5   | 5   | 5   | 5   |
| EX5        |                                             | 14                           | 15  | 15  | 15  | 15  | 15  | 14  | 14  |
| EX6        |                                             | 34                           | 35  | 35  | 35  | 35  | 35  | 34  | 33  |
| EX7        |                                             | 95                           | 97  | 97  | 97  | 96  | 95  | 94  | 92  |
| EX8        |                                             | 253                          | 257 | 258 | 259 | 256 | 255 | 250 | 244 |
| EX4        | 130                                         | 5                            | 5   | 5   | 5   | 5   | 5   | 5   | 5   |
| EX5        |                                             | 15                           | 15  | 15  | 15  | 15  | 15  | 15  | 14  |
| EX6        |                                             | 35                           | 35  | 36  | 36  | 36  | 35  | 35  | 34  |
| EX7        |                                             | 95                           | 96  | 98  | 98  | 98  | 97  | 96  | 94  |
| EX8        |                                             | 253                          | 257 | 261 | 261 | 261 | 260 | 256 | 252 |
| EX4        | 120                                         | 5                            | 5   | 5   | 5   | 5   | 5   | 5   | 5   |
| EX5        |                                             | 14                           | 15  | 15  | 15  | 15  | 15  | 15  | 15  |
| EX6        |                                             | 34                           | 35  | 36  | 36  | 36  | 36  | 36  | 36  |
| EX7        |                                             | 93                           | 96  | 99  | 99  | 99  | 100 | 99  | 98  |
| EX8        |                                             | 249                          | 256 | 264 | 265 | 265 | 266 | 264 | 261 |
| EX4        | 110                                         | 4                            | 5   | 5   | 5   | 5   | 5   | 5   | 5   |
| EX5        |                                             | 14                           | 14  | 15  | 15  | 15  | 15  | 15  | 15  |
| EX6        |                                             | 33                           | 34  | 35  | 35  | 36  | 36  | 36  | 35  |
| EX7        |                                             | 90                           | 93  | 96  | 97  | 99  | 99  | 99  | 98  |
| EX8        |                                             | 239                          | 248 | 255 | 260 | 263 | 264 | 263 | 260 |
| EX4        | 100                                         | 4                            | 4   | 5   | 5   | 5   | 5   | 5   | 5   |
| EX5        |                                             | 13                           | 14  | 14  | 15  | 15  | 15  | 15  | 15  |
| EX6        |                                             | 30                           | 32  | 34  | 35  | 35  | 36  | 36  | 36  |
| EX7        |                                             | 84                           | 89  | 94  | 96  | 98  | 9   | 99  | 98  |
| EX8        |                                             | 224                          | 239 | 250 | 256 | 260 | 263 | 254 | 262 |
| EX4        | 90                                          | 4                            | 4   | 4   | 5   | 5   | 5   | 5   | 5   |
| EX5        |                                             | 11                           | 13  | 13  | 14  | 14  | 15  | 15  | 15  |
| EX6        |                                             | 27                           | 30  | 32  | 33  | 34  | 35  | 35  | 35  |
| EX7        |                                             | 75                           | 83  | 87  | 92  | 94  | 96  | 97  | 96  |
| EX8        |                                             | 201                          | 220 | 233 | 244 | 250 | 256 | 259 | 257 |
| EX4        | 80                                          | 3                            | 4   | 4   | 4   | 4   | 5   | 5   | 5   |
| EX5        |                                             | 10                           | 11  | 12  | 13  | 13  | 14  | 14  | 14  |
| EX6        |                                             | 23                           | 26  | 29  | 31  | 32  | 33  | 34  | 34  |
| EX7        |                                             | 63                           | 73  | 80  | 85  | 88  | 91  | 93  | 93  |
| EX8        |                                             | 169                          | 193 | 212 | 227 | 235 | 243 | 247 | 248 |
| EX4        | 70                                          | 2                            | 3   | 4   | 4   | 4   | 4   | 4   | 4   |
| EX5        |                                             | 7                            | 9   | 11  | 12  | 13  | 13  | 14  | 14  |
| EX6        |                                             | 17                           | 22  | 26  | 28  | 30  | 31  | 32  | 33  |
| EX7        |                                             | 47                           | 61  | 71  | 77  | 83  | 87  | 89  | 90  |
| EX8        |                                             | 125                          | 164 | 190 | 206 | 220 | 231 | 236 | 239 |
| EX4        | 60                                          | 0                            | 2   | 3   | 3   | 4   | 4   | 4   | 4   |
| EX5        |                                             | 2                            | 7   | 9   | 10  | 11  | 12  | 13  | 13  |
| EX6        |                                             | 4                            | 16  | 21  | 24  | 27  | 29  | 30  | 31  |
| EX7        |                                             | 10                           | 43  | 58  | 67  | 74  | 79  | 82  | 85  |
| EX8        |                                             | 26                           | 115 | 154 | 179 | 197 | 211 | 219 | 225 |

|     |    |    |   |     |     |     |     |     |     |
|-----|----|----|---|-----|-----|-----|-----|-----|-----|
| EX4 | 50 | -  | - | 2   | 3   | 3   | 4   | 4   | 4   |
| EX5 |    | -  | - | 6   | 8   | 10  | 11  | 12  | 12  |
| EX6 |    | -  | - | 15  | 20  | 23  | 26  | 27  | 29  |
| EX7 |    | -  | - | 40  | 55  | 64  | 70  | 75  | 79  |
| EX8 |    | -- | - | 107 | 146 | 170 | 187 | 201 | 210 |

**R-22 Extended Capacities (Tons) - EX4-8 Series, as expansion and liquid injection valves**

The following tables provide the capacity of valves at different conditions considering 20 psi pressure drop through liquid line:

| Valve Type | Condensing Temperature (°F) | Evaporating Temperature (°F) |     |     |     |     |     |     |     |     |     |     |     |
|------------|-----------------------------|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|            |                             | 60                           | 50  | 40  | 30  | 20  | 10  | 0   | -10 | -20 | -30 | -40 | -50 |
| EX4        | 140                         | 5                            | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   |
| EX5        |                             | 15                           | 15  | 15  | 16  | 16  | 16  | 16  | 15  | 15  | 15  | 15  | 15  |
| EX6        |                             | 35                           | 36  | 37  | 37  | 38  | 38  | 37  | 37  | 37  | 36  | 36  | 35  |
| EX7        |                             | 97                           | 100 | 101 | 102 | 103 | 104 | 103 | 102 | 102 | 100 | 98  | 96  |
| EX8        |                             | 260                          | 266 | 270 | 273 | 275 | 276 | 272 | 271 | 266 | 262 | 262 | 257 |
| EX4        | 130                         | 5                            | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   |
| EX5        |                             | 14                           | 15  | 15  | 15  | 16  | 16  | 16  | 15  | 15  | 15  | 15  | 15  |
| EX6        |                             | 34                           | 35  | 36  | 37  | 37  | 37  | 37  | 37  | 37  | 37  | 36  | 36  |
| EX7        |                             | 94                           | 97  | 100 | 101 | 102 | 103 | 102 | 102 | 101 | 101 | 99  | 98  |
| EX8        |                             | 251                          | 258 | 266 | 270 | 273 | 274 | 273 | 273 | 270 | 268 | 264 | 260 |
| EX4        | 120                         | 4                            | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   |
| EX5        |                             | 14                           | 14  | 15  | 15  | 15  | 15  | 16  | 15  | 15  | 15  | 15  | 15  |
| EX6        |                             | 33                           | 34  | 35  | 36  | 37  | 37  | 37  | 37  | 37  | 37  | 37  | 36  |
| EX7        |                             | 90                           | 94  | 97  | 99  | 100 | 102 | 103 | 102 | 102 | 101 | 100 | 99  |
| EX8        |                             | 240                          | 250 | 259 | 264 | 268 | 272 | 274 | 272 | 271 | 270 | 268 | 263 |
| EX4        | 110                         | 4                            | 4   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   |
| EX5        |                             | 12                           | 13  | 14  | 14  | 15  | 15  | 15  | 15  | 15  | 15  | 15  | 15  |
| EX6        |                             | 30                           | 32  | 34  | 34  | 35  | 36  | 36  | 36  | 37  | 36  | 36  | 36  |
| EX7        |                             | 82                           | 88  | 92  | 95  | 98  | 99  | 100 | 100 | 101 | 99  | 99  | 98  |
| EX8        |                             | 219                          | 234 | 246 | 253 | 260 | 263 | 266 | 266 | 268 | 265 | 263 | 261 |
| EX4        | 100                         | 4                            | 4   | 4   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   |
| EX5        |                             | 11                           | 12  | 13  | 14  | 14  | 15  | 15  | 15  | 15  | 15  | 15  | 15  |
| EX6        |                             | 27                           | 29  | 31  | 33  | 34  | 35  | 35  | 36  | 36  | 36  | 35  | 35  |
| EX7        |                             | 74                           | 81  | 87  | 91  | 93  | 96  | 97  | 98  | 98  | 98  | 98  | 97  |
| EX8        |                             | 197                          | 216 | 231 | 242 | 249 | 256 | 259 | 263 | 263 | 262 | 260 | 258 |
| EX4        | 90                          | 3                            | 4   | 4   | 4   | 4   | 5   | 5   | 5   | 5   | 5   | 5   | 5   |
| EX5        |                             | 9                            | 11  | 12  | 13  | 13  | 14  | 14  | 14  | 14  | 14  | 14  | 14  |
| EX6        |                             | 22                           | 26  | 29  | 31  | 32  | 33  | 34  | 34  | 35  | 35  | 35  | 34  |
| EX7        |                             | 61                           | 71  | 78  | 84  | 87  | 91  | 93  | 94  | 95  | 95  | 95  | 94  |
| EX8        |                             | 163                          | 190 | 209 | 224 | 233 | 242 | 249 | 251 | 255 | 254 | 253 | 251 |
| EX4        | 80                          | 2                            | 3   | 3   | 4   | 4   | 4   | 4   | 4   | 5   | 5   | 5   | 5   |
| EX5        |                             | 7                            | 9   | 10  | 11  | 12  | 13  | 13  | 14  | 14  | 14  | 14  | 14  |
| EX6        |                             | 16                           | 21  | 25  | 27  | 29  | 30  | 32  | 33  | 33  | 33  | 33  | 33  |
| EX7        |                             | 44                           | 58  | 68  | 75  | 81  | 84  | 87  | 89  | 90  | 91  | 91  | 91  |
| EX8        |                             | 117                          | 156 | 182 | 201 | 215 | 224 | 233 | 239 | 240 | 243 | 243 | 241 |
| EX4        | 70                          | -                            | 2   | 3   | 3   | 4   | 4   | 4   | 4   | 4   | 4   | 4   | 4   |
| EX5        |                             | -                            | 6   | 8   | 10  | 11  | 12  | 12  | 13  | 13  | 13  | 13  | 13  |
| EX6        |                             | -                            | 15  | 20  | 24  | 26  | 28  | 30  | 31  | 31  | 32  | 32  | 32  |
| EX7        |                             | -                            | 40  | 55  | 65  | 72  | 77  | 81  | 84  | 85  | 87  | 88  | 87  |
| EX8        |                             | -                            | 108 | 147 | 173 | 191 | 205 | 217 | 224 | 227 | 231 | 234 | 233 |
| EX4        | 60                          | -                            | -   | 2   | 3   | 3   | 3   | 4   | 4   | 4   | 4   | 4   | 4   |
| EX5        |                             | -                            | -   | 6   | 8   | 9   | 10  | 11  | 12  | 12  | 12  | 12  | 12  |
| EX6        |                             | -                            | -   | 13  | 19  | 22  | 25  | 27  | 28  | 29  | 29  | 30  | 30  |
| EX7        |                             | -                            | -   | 36  | 51  | 61  | 68  | 74  | 76  | 79  | 81  | 82  | 82  |
| EX8        |                             | -                            | -   | 97  | 137 | 163 | 182 | 196 | 204 | 211 | 216 | 219 | 219 |

|     |    |   |   |   |    |     |     |     |     |     |     |     |     |
|-----|----|---|---|---|----|-----|-----|-----|-----|-----|-----|-----|-----|
| EX4 | 50 | - | - | - | 2  | 2   | 3   | 3   | 3   | 4   | 4   | 4   | 4   |
| EX5 |    | - | - | - | 5  | 7   | 9   | 10  | 11  | 11  | 11  | 12  | 12  |
| EX6 |    | - | - | - | 11 | 17  | 21  | 23  | 25  | 26  | 27  | 28  | 28  |
| EX7 |    | - | - | - | 31 | 47  | 57  | 65  | 69  | 73  | 74  | 76  | 77  |
| EX8 |    | - | - | - | 83 | 126 | 152 | 172 | 185 | 194 | 199 | 203 | 206 |

**R-134a Extended Capacities (Tons) - EX4-8 Series, as expansion and liquid injection valves**

The following tables provide the capacity of valves at different conditions considering 20 psi pressure drop through liquid line:

| Valve Type | Condensing Temperature (°F) | Evaporating Temperature (°F) |     |     |     |     |     |     |     |     |
|------------|-----------------------------|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
|            |                             | 60                           | 50  | 40  | 30  | 20  | 10  | 0   | -10 | -20 |
| EX4        | 140                         | 4                            | 4   | 4   | 4   | 4   | 4   | 4   | 3   | 3   |
| EX5        |                             | 11                           | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 10  |
| EX6        |                             | 27                           | 27  | 27  | 27  | 27  | 26  | 26  | 25  | 25  |
| EX7        |                             | 74                           | 75  | 75  | 75  | 73  | 73  | 71  | 69  | 68  |
| EX8        |                             | 197                          | 200 | 200 | 199 | 196 | 194 | 190 | 185 | 181 |
| EX4        | 130                         | 4                            | 4   | 4   | 4   | 4   | 4   | 4   | 4   | 3   |
| EX5        |                             | 11                           | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 10  |
| EX6        |                             | 26                           | 26  | 27  | 27  | 27  | 27  | 26  | 26  | 25  |
| EX7        |                             | 72                           | 73  | 74  | 74  | 73  | 73  | 72  | 70  | 69  |
| EX8        |                             | 191                          | 194 | 198 | 197 | 196 | 194 | 192 | 187 | 183 |
| EX4        | 120                         | 3                            | 4   | 4   | 4   | 4   | 4   | 4   | 4   | 4   |
| EX5        |                             | 10                           | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 11  |
| EX6        |                             | 25                           | 26  | 26  | 27  | 27  | 27  | 26  | 26  | 25  |
| EX7        |                             | 68                           | 71  | 73  | 73  | 73  | 73  | 72  | 71  | 70  |
| EX8        |                             | 182                          | 188 | 194 | 196 | 195 | 195 | 193 | 189 | 186 |
| EX4        | 110                         | 3                            | 3   | 3   | 4   | 4   | 4   | 4   | 4   | 3   |
| EX5        |                             | 10                           | 10  | 11  | 11  | 11  | 11  | 11  | 11  | 11  |
| EX6        |                             | 23                           | 24  | 25  | 26  | 26  | 26  | 26  | 26  | 25  |
| EX7        |                             | 63                           | 65  | 69  | 70  | 71  | 71  | 71  | 70  | 69  |
| EX8        |                             | 168                          | 176 | 183 | 187 | 189 | 191 | 189 | 188 | 184 |
| EX4        | 100                         | 3                            | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   |
| EX5        |                             | 9                            | 9   | 10  | 10  | 10  | 11  | 11  | 11  | 10  |
| EX6        |                             | 20                           | 22  | 24  | 24  | 25  | 25  | 25  | 25  | 25  |
| EX7        |                             | 56                           | 60  | 65  | 67  | 69  | 69  | 69  | 69  | 68  |
| EX8        |                             | 149                          | 161 | 173 | 178 | 183 | 184 | 185 | 184 | 182 |
| EX4        | 90                          | 2                            | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   |
| EX5        |                             | 7                            | 8   | 9   | 9   | 10  | 10  | 10  | 10  | 10  |
| EX6        |                             | 16                           | 19  | 21  | 22  | 23  | 24  | 24  | 24  | 24  |
| EX7        |                             | 44                           | 52  | 58  | 61  | 64  | 66  | 66  | 66  | 66  |
| EX8        |                             | 118                          | 139 | 153 | 163 | 170 | 175 | 177 | 176 | 177 |
| EX4        | 80                          | 1                            | 2   | 2   | 3   | 3   | 3   | 3   | 3   | 3   |
| EX5        |                             | 4                            | 6   | 7   | 8   | 9   | 9   | 9   | 10  | 10  |
| EX6        |                             | 10                           | 15  | 18  | 20  | 21  | 22  | 23  | 23  | 23  |
| EX7        |                             | 27                           | 40  | 49  | 54  | 58  | 60  | 62  | 62  | 63  |
| EX8        |                             | 72                           | 107 | 130 | 144 | 154 | 160 | 165 | 166 | 167 |
| EX4        | 70                          | -                            | 1   | 2   | 2   | 3   | 3   | 3   | 3   | 3   |
| EX5        |                             | -                            | 3   | 6   | 7   | 8   | 8   | 9   | 9   | 9   |
| EX6        |                             | -                            | 8   | 13  | 16  | 18  | 20  | 21  | 21  | 22  |
| EX7        |                             | -                            | 22  | 37  | 45  | 50  | 54  | 57  | 59  | 59  |
| EX8        |                             | -                            | 58  | 98  | 120 | 134 | 145 | 152 | 156 | 158 |
| EX4        | 60                          | -                            | -   | 1   | 2   | 2   | 2   | 3   | 3   | 3   |
| EX5        |                             | -                            | -   | 2   | 5   | 6   | 7   | 8   | 8   | 8   |
| EX6        |                             | -                            | -   | 5   | 12  | 15  | 17  | 18  | 19  | 20  |
| EX7        |                             | -                            | -   | 14  | 32  | 40  | 46  | 50  | 52  | 53  |
| EX8        |                             | -                            | -   | 38  | 84  | 107 | 122 | 133 | 139 | 143 |

## EX Extended Capacity Tables

|     |    |   |   |   |   |    |    |     |     |     |
|-----|----|---|---|---|---|----|----|-----|-----|-----|
| EX4 | 50 | - | - | - | - | 1  | 2  | 2   | 2   | 2   |
| EX5 |    | - | - | - | - | 4  | 5  | 6   | 7   | 7   |
| EX6 |    | - | - | - | - | 9  | 13 | 15  | 16  | 17  |
| EX7 |    | - | - | - | - | 26 | 36 | 42  | 45  | 48  |
| EX8 |    | - | - | - | - | 69 | 95 | 111 | 120 | 128 |

**R-404A/R-507 Extended Capacities (Tons) - EX4-8 Series, as expansion and liquid injection valves**

The following tables provide the capacity of valves at different conditions considering 20 psi pressure drop through liquid line:

| Valve Type | Condensing Temperature (°F) | Evaporating Temperature (°F) |     |     |     |     |     |     |     |     |     |     |     |
|------------|-----------------------------|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|            |                             | 60                           | 50  | 40  | 30  | 20  | 10  | 0   | -10 | -20 | -30 | -40 | -50 |
| EX4        | 130                         | 3                            | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 2   | 2   | 2   |
| EX5        |                             | 9                            | 9   | 9   | 9   | 9   | 9   | 8   | 8   | 8   | 8   | 7   | 7   |
| EX6        |                             | 21                           | 21  | 22  | 21  | 21  | 21  | 20  | 20  | 19  | 18  | 17  | 16  |
| EX7        |                             | 58                           | 59  | 59  | 58  | 58  | 57  | 56  | 54  | 52  | 50  | 48  | 45  |
| EX8        |                             | 153                          | 156 | 157 | 156 | 154 | 152 | 148 | 143 | 139 | 133 | 127 | 120 |
| EX4        | 120                         | 3                            | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   |
| EX5        |                             | 9                            | 9   | 9   | 10  | 9   | 9   | 9   | 9   | 9   | 9   | 8   | 8   |
| EX6        |                             | 22                           | 22  | 23  | 23  | 23  | 23  | 22  | 22  | 21  | 20  | 20  | 19  |
| EX7        |                             | 59                           | 61  | 62  | 63  | 62  | 62  | 61  | 60  | 58  | 56  | 54  | 52  |
| EX8        |                             | 158                          | 162 | 165 | 168 | 166 | 165 | 163 | 169 | 165 | 149 | 144 | 138 |
| EX4        | 110                         | 3                            | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   |
| EX5        |                             | 9                            | 9   | 10  | 10  | 10  | 10  | 10  | 9   | 9   | 9   | 9   | 8   |
| EX6        |                             | 21                           | 22  | 23  | 23  | 23  | 23  | 23  | 23  | 22  | 22  | 21  | 20  |
| EX7        |                             | 58                           | 60  | 63  | 63  | 64  | 64  | 63  | 62  | 61  | 59  | 58  | 56  |
| EX8        |                             | 153                          | 161 | 167 | 168 | 170 | 171 | 168 | 165 | 163 | 158 | 154 | 148 |
| EX4        | 100                         | 3                            | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   |
| EX5        |                             | 8                            | 9   | 9   | 10  | 10  | 10  | 10  | 10  | 10  | 10  | 9   | 9   |
| EX6        |                             | 20                           | 21  | 23  | 23  | 24  | 24  | 24  | 24  | 23  | 23  | 22  | 22  |
| EX7        |                             | 54                           | 59  | 62  | 64  | 65  | 66  | 66  | 66  | 64  | 63  | 62  | 59  |
| EX8        |                             | 145                          | 156 | 165 | 171 | 174 | 175 | 176 | 173 | 171 | 168 | 164 | 158 |
| EX4        | 90                          | 2                            | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   |
| EX5        |                             | 7                            | 8   | 9   | 9   | 10  | 10  | 10  | 10  | 10  | 10  | 10  | 9   |
| EX6        |                             | 17                           | 20  | 21  | 23  | 23  | 24  | 24  | 24  | 24  | 23  | 23  | 23  |
| EX7        |                             | 48                           | 54  | 58  | 62  | 64  | 65  | 66  | 66  | 66  | 64  | 63  | 62  |
| EX8        |                             | 127                          | 144 | 156 | 164 | 170 | 173 | 176 | 176 | 175 | 171 | 169 | 165 |
| EX4        | 80                          | 2                            | 2   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   |
| EX5        |                             | 6                            | 7   | 8   | 9   | 9   | 10  | 10  | 10  | 10  | 10  | 10  | 9   |
| EX6        |                             | 13                           | 17  | 19  | 21  | 22  | 23  | 23  | 24  | 24  | 23  | 23  | 23  |
| EX7        |                             | 37                           | 46  | 53  | 58  | 61  | 63  | 64  | 65  | 65  | 64  | 63  | 62  |
| EX8        |                             | 98                           | 124 | 142 | 154 | 162 | 168 | 171 | 173 | 172 | 171 | 169 | 166 |
| EX4        | 70                          | 1                            | 2   | 2   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   |
| EX5        |                             | 2                            | 5   | 7   | 8   | 9   | 9   | 9   | 10  | 10  | 10  | 10  | 10  |
| EX6        |                             | 6                            | 13  | 17  | 19  | 21  | 22  | 23  | 23  | 24  | 23  | 23  | 23  |
| EX7        |                             | 16                           | 35  | 46  | 52  | 57  | 60  | 62  | 64  | 64  | 64  | 64  | 63  |
| EX8        |                             | 42                           | 94  | 122 | 138 | 152 | 160 | 166 | 170 | 172 | 170 | 170 | 168 |
| EX4        | 60                          | -                            | 1   | 2   | 2   | 2   | 3   | 3   | 3   | 3   | 3   | 3   | 3   |
| EX5        |                             | -                            | 2   | 5   | 7   | 8   | 8   | 9   | 9   | 9   | 9   | 9   | 9   |
| EX6        |                             | -                            | 4   | 12  | 16  | 18  | 20  | 21  | 22  | 22  | 22  | 23  | 22  |
| EX7        |                             | -                            | 11  | 33  | 43  | 50  | 55  | 58  | 60  | 61  | 62  | 62  | 61  |
| EX8        |                             | -                            | 30  | 89  | 116 | 133 | 146 | 155 | 159 | 163 | 164 | 165 | 162 |
| EX4        | 50                          | -                            | -   | -   | 2   | 2   | 2   | 3   | 3   | 3   | 3   | 3   | 3   |
| EX5        |                             | -                            | -   | -   | 5   | 6   | 7   | 8   | 9   | 9   | 9   | 9   | 9   |
| EX6        |                             | -                            | -   | -   | 11  | 15  | 18  | 19  | 20  | 21  | 21  | 22  | 22  |
| EX7        |                             | -                            | -   | -   | 31  | 42  | 48  | 53  | 56  | 58  | 59  | 60  | 59  |
| EX8        |                             | -                            | -   | -   | 82  | 111 | 128 | 142 | 149 | 154 | 157 | 160 | 158 |

|     |    |   |   |   |   |    |     |     |     |     |     |     |     |
|-----|----|---|---|---|---|----|-----|-----|-----|-----|-----|-----|-----|
| EX4 | 40 | - | - | - | - | 1  | 2   | 2   | 2   | 3   | 3   | 3   | 3   |
| EX5 |    | - | - | - | - | 4  | 6   | 7   | 8   | 8   | 8   | 8   | 9   |
| EX6 |    | - | - | - | - | 10 | 14  | 17  | 18  | 19  | 20  | 20  | 21  |
| EX7 |    | - | - | - | - | 27 | 38  | 46  | 50  | 53  | 55  | 56  | 56  |
| EX8 |    | - | - | - | - | 72 | 102 | 122 | 133 | 142 | 146 | 149 | 150 |

**R-23 Extended Capacities (Tons) - EX4-8 Series, as expansion and liquid injection valves**

The following tables provide the capacity of valves at different conditions considering 20 psi pressure drop through liquid line:

| Valve Type | Condensing Temperature (°F) | Evaporating Temperature (°F) |     |     |     |     |      |      |      |      |      |
|------------|-----------------------------|------------------------------|-----|-----|-----|-----|------|------|------|------|------|
|            |                             | -50                          | -60 | -70 | -80 | -90 | -100 | -110 | -120 | -130 | -140 |
| EX4        | 0                           | 5                            | 5   | 5   | 5   | 5   | 5    | 5    | 5    | 5    | 5    |
| EX5        |                             | 14                           | 15  | 15  | 16  | 16  | 16   | 16   | 16   | 16   | 16   |
| EX6        |                             | 33                           | 35  | 36  | 38  | 38  | 39   | 39   | 39   | 39   | 38   |
| EX4        | -10                         | 4                            | 4   | 5   | 5   | 5   | 5    | 5    | 5    | 5    | 5    |
| EX5        |                             | 12                           | 13  | 14  | 15  | 15  | 15   | 16   | 15   | 16   | 15   |
| EX6        |                             | 29                           | 32  | 34  | 35  | 36  | 37   | 37   | 37   | 37   | 37   |
| EX4        | -20                         | 3                            | 4   | 4   | 4   | 5   | 5    | 5    | 5    | 5    | 5    |
| EX5        |                             | 10                           | 12  | 13  | 14  | 14  | 15   | 15   | 15   | 15   | 15   |
| EX6        |                             | 24                           | 28  | 31  | 33  | 34  | 35   | 36   | 36   | 36   | 36   |
| EX4        | -30                         | 2                            | 3   | 4   | 4   | 4   | 4    | 5    | 5    | 5    | 5    |
| EX5        |                             | 7                            | 9   | 11  | 12  | 13  | 13   | 14   | 14   | 14   | 14   |
| EX6        |                             | 17                           | 23  | 26  | 29  | 31  | 32   | 33   | 33   | 33   | 34   |
| EX4        | -40                         | -                            | 2   | 3   | 3   | 4   | 4    | 4    | 4    | 4    | 4    |
| EX5        |                             | -                            | 6   | 9   | 10  | 11  | 12   | 12   | 13   | 13   | 13   |
| EX6        |                             | -                            | 16  | 21  | 25  | 27  | 29   | 30   | 31   | 31   | 31   |
| EX4        | -50                         | -                            | -   | 2   | 3   | 3   | 3    | 4    | 4    | 4    | 4    |
| EX5        |                             | -                            | -   | 5   | 8   | 9   | 10   | 11   | 11   | 12   | 12   |
| EX6        |                             | -                            | -   | 13  | 19  | 23  | 25   | 26   | 27   | 28   | 28   |

**R-124 Extended Capacities (Tons) - EX4-8 Series, as expansion and liquid injection valves**

The following tables provide the capacity of valves at different conditions considering 20 psi pressure drop through liquid line:

| Valve Type | Condensing Temperature (°F) | Evaporating Temperature (°F) |    |    |    |    |
|------------|-----------------------------|------------------------------|----|----|----|----|
|            |                             | 80                           | 70 | 60 | 50 | 40 |
| EX4        | 210                         | 2                            | 2  | 2  | 2  | 2  |
| EX5        |                             | 6                            | 6  | 6  | 5  | 5  |
| EX6        |                             | 15                           | 14 | 13 | 13 | 12 |
| EX4        | 200                         | 2                            | 2  | 2  | 2  | 2  |
| EX5        |                             | 7                            | 6  | 6  | 6  | 6  |
| EX6        |                             | 16                           | 15 | 15 | 14 | 14 |
| EX4        | 190                         | 2                            | 2  | 2  | 2  | 2  |
| EX5        |                             | 7                            | 7  | 7  | 7  | 6  |
| EX6        |                             | 17                           | 17 | 17 | 16 | 15 |
| EX4        | 180                         | 3                            | 2  | 2  | 2  | 2  |
| EX5        |                             | 8                            | 8  | 7  | 7  | 7  |
| EX6        |                             | 18                           | 18 | 18 | 17 | 17 |
| EX4        | 170                         | 3                            | 3  | 2  | 2  | 2  |
| EX5        |                             | 8                            | 8  | 8  | 7  | 7  |
| EX6        |                             | 18                           | 18 | 18 | 18 | 17 |
| EX4        | 160                         | 3                            | 3  | 3  | 3  | 3  |
| EX5        |                             | 8                            | 8  | 8  | 8  | 8  |
| EX6        |                             | 18                           | 19 | 19 | 18 | 18 |
| EX4        | 150                         | 2                            | 2  | 3  | 3  | 3  |
| EX5        |                             | 7                            | 8  | 8  | 8  | 8  |
| EX6        |                             | 18                           | 18 | 18 | 18 | 18 |

**R-744 Extended Capacities (Tons) - EX4-8 Series, as expansion and liquid injection valves**

The following tables provide the capacity of valves at different conditions considering 20 psi pressure drop through liquid line:

| Valve Type | Condensing Temperature (°F) | Evaporating Temperature (°F) |     |     |     |     |     |     |
|------------|-----------------------------|------------------------------|-----|-----|-----|-----|-----|-----|
|            |                             | 10                           | 0   | -10 | -20 | -30 | -40 | -50 |
| EX4        | 30                          | 6                            | 7   | 8   | 9   | 10  | 10  | 10  |
| EX5        |                             | 18                           | 22  | 25  | 27  | 29  | 30  | 31  |
| EX6        |                             | 43                           | 53  | 60  | 65  | 70  | 73  | 75  |
| EX7        |                             | 117                          | 145 | 165 | 179 | 191 | 200 | 206 |
| EX8        |                             | 312                          | 388 | 439 | 479 | 510 | 534 | 549 |
| EX4        | 20                          | -                            | 6   | 7   | 8   | 9   | 9   | 10  |
| EX5        |                             | -                            | 18  | 22  | 25  | 27  | 29  | 30  |
| EX6        |                             | -                            | 43  | 53  | 60  | 65  | 69  | 72  |
| EX7        |                             | -                            | 119 | 145 | 164 | 178 | 189 | 197 |
| EX8        |                             | -                            | 319 | 387 | 437 | 476 | 506 | 526 |
| EX4        | 10                          | -                            | -   | 6   | 7   | 8   | 9   | 9   |
| EX5        |                             | -                            | -   | 18  | 22  | 25  | 27  | 29  |
| EX6        |                             | -                            | -   | 43  | 53  | 60  | 65  | 68  |
| EX7        |                             | -                            | -   | 119 | 145 | 163 | 178 | 187 |
| EX8        |                             | -                            | -   | 318 | 386 | 436 | 474 | 500 |
| EX4        | 0                           | -                            | -   | -   | 6   | 7   | 8   | 9   |
| EX5        |                             | -                            | -   | -   | 17  | 21  | 24  | 26  |
| EX6        |                             | -                            | -   | -   | 41  | 51  | 58  | 63  |
| EX7        |                             | -                            | -   | -   | 114 | 140 | 159 | 172 |
| EX8        |                             | -                            | -   | -   | 303 | 373 | 423 | 458 |
| EX4        | -10                         | -                            | -   | -   | -   | 5   | 7   | 8   |
| EX5        |                             | -                            | -   | -   | -   | 17  | 20  | 23  |
| EX6        |                             | -                            | -   | -   | -   | 40  | 49  | 55  |
| EX7        |                             | -                            | -   | -   | -   | 109 | 134 | 152 |
| EX8        |                             | -                            | -   | -   | -   | 290 | 359 | 405 |
| EX4        | -20                         | -                            | -   | -   | -   | 3   | 5   | 6   |
| EX5        |                             | -                            | -   | -   | -   | 19  | 16  | 20  |
| EX6        |                             | -                            | -   | -   | -   | 22  | 38  | 47  |
| EX7        |                             | -                            | -   | -   | -   | 61  | 104 | 129 |
| EX8        |                             | -                            | -   | -   | -   | 163 | 278 | 344 |
| EX4        | -30                         | -                            | -   | -   | -   | -   | 3   | 5   |
| EX5        |                             | -                            | -   | -   | -   | -   | 8   | 15  |
| EX6        |                             | -                            | -   | -   | -   | -   | 19  | 35  |
| EX7        |                             | -                            | -   | -   | -   | -   | 53  | 96  |
| EX8        |                             | -                            | -   | -   | -   | -   | 142 | 257 |

**EX4-8 Nominal capacities (Tons) - as hot gas bypass regulator**

| Valve Type | R-22/R-407C | R-134a | R-404A/R-507 |
|------------|-------------|--------|--------------|
| EX4        | 1.4         | 1.0    | 1.3          |
| EX5        | 4.5         | 3.1    | 4.3          |
| EX6        | 10.5        | 7.3    | 10.1         |
| EX7        | 37.3        | 26.0   | 35.7         |
| EX8        | 113.0       | 79.0   | 108.5        |

The nominal capacity is based on the following conditions:

| Refrigerant                 | Evaporating Temperature | Condensing Temperature | Subcooling |
|-----------------------------|-------------------------|------------------------|------------|
| R-22, R-134a, R-404A, R-507 | +40°F                   | +100°F                 | 2°F        |
| R-407C                      | +40°F bubble point      | +100°F dew point       | 2°F        |

**Remarks:** Note 1: Bi-flow versions are not released for hot gas bypass applications.

Note 2: EX4, EX5, EX6, EX7 and EX8 must be installed with motor downward in hot gas line applications.

This insures the valve life expectancy.

**Extended Capacities (Tons) - EX4-8 Series**

| Valve Type | Liquid / Condensing Temperature°F                                   | R-22 / R-407C | R-134a | R-404A / R-507 |
|------------|---------------------------------------------------------------------|---------------|--------|----------------|
| EX4        | 140 bubble point for all refrigerants<br>(147 dew point for R-407C) | 2             | 1      | 2              |
| EX5        |                                                                     | 7             | 5      | 6              |
| EX6        |                                                                     | 15            | 11     | 13             |
| EX7        |                                                                     | 54            | 38     | 46             |
| EX8        |                                                                     | 165           | 117    | 139            |
| EX4        | 130 bubble point for all refrigerants<br>(138 dew point for R-407C) | 2             | 1      | 2              |
| EX5        |                                                                     | 6             | 4      | 5              |
| EX6        |                                                                     | 14            | 10     | 12             |
| EX7        |                                                                     | 49            | 35     | 44             |
| EX8        |                                                                     | 150           | 106    | 132            |
| EX4        | 120 bubble point for all refrigerants<br>(128 dew point for R-407C) | 2             | 1      | 2              |
| EX5        |                                                                     | 6             | 4      | 5              |
| EX6        |                                                                     | 13            | 9      | 12             |
| EX7        |                                                                     | 45            | 32     | 41             |
| EX8        |                                                                     | 138           | 97     | 126            |
| EX4        | 110 bubble point for all refrigerants<br>(119 dew point for R-407C) | 2             | 1      | 1              |
| EX5        |                                                                     | 5             | 3      | 5              |
| EX6        |                                                                     | 12            | 8      | 11             |
| EX7        |                                                                     | 41            | 29     | 38             |
| EX8        |                                                                     | 124           | 87     | 117            |

### EX6-8 Nominal capacities (Tons) - as suction pressure regulator (evaporator or crankcase)

| Valve Type | R-407C | R-22 | R-134a | R-404A |
|------------|--------|------|--------|--------|
| EX6        | 1.1    | 1.1  | 0.9    | 1.0    |
| EX7        | 3.8    | 4.0  | 3.0    | 3.5    |
| EX8        | 11.5   | 12.2 | 9.2    | 10.5   |

The nominal capacity is based on the following conditions:

| Refrigerant          | Evaporating Temperature | Condensing Temperature | Subcooling | Pressure Drop |
|----------------------|-------------------------|------------------------|------------|---------------|
| R-22, R-134a, R-404A | +40°F                   | +100°F                 | 2°F        | 2 psid        |
| R-407C               | +40°F bubble point      | +100°F dew point       | 2°F        | 2 psid        |

**Remarks:** Bi-flow versions are not released for use below -40°F.  
EX6, EX7 and EX8 must be installed with motor downward in suction line applications.  
This insures the valve life expectancy.

Multiply above nominal capacities by following factors to obtain capacities at different pressure drops:

| ΔP, psid          | 1.5  | 2.0  | 3.0  | 4.5  |
|-------------------|------|------|------|------|
| Correction factor | 0.82 | 1.00 | 1.15 | 1.41 |

**Example:** EX6 provides 1 ton at 2.0 psid pressure drop with R-404A: 4 psi pressure drop.

### R-22 Extended Capacities (Tons) - EX6-8 Series, suction pressure regulator duty

| Valve Type | Condensing Temperature °F | Evaporating Temperature °F |    |    |    |    |   |     |     |     |     |
|------------|---------------------------|----------------------------|----|----|----|----|---|-----|-----|-----|-----|
|            |                           | 50                         | 40 | 30 | 20 | 10 | 0 | -10 | -20 | -30 | -40 |
| EX6        | 140                       | 1                          | 1  | 1  | 1  | 1  | 1 | 1   | 0   | 0   | 0   |
| EX7        |                           | 4                          | 3  | 3  | 3  | 2  | 2 | 2   | 2   | 1   | 1   |
| EX8        |                           | 11                         | 10 | 9  | 8  | 7  | 6 | 5   | 5   | 4   | 3   |
| EX6        | 130                       | 1                          | 1  | 1  | 1  | 1  | 1 | 1   | 0   | 0   | 0   |
| EX7        |                           | 4                          | 3  | 3  | 3  | 3  | 2 | 2   | 2   | 1   | 1   |
| EX8        |                           | 12                         | 11 | 10 | 8  | 8  | 7 | 6   | 5   | 4   | 4   |
| EX6        | 120                       | 1                          | 1  | 1  | 1  | 1  | 1 | 1   | 0   | 0   | 0   |
| EX7        |                           | 4                          | 4  | 3  | 3  | 3  | 2 | 2   | 2   | 1   | 1   |
| EX8        |                           | 12                         | 11 | 10 | 9  | 8  | 7 | 6   | 5   | 4   | 4   |
| EX6        | 110                       | 1                          | 1  | 1  | 1  | 1  | 1 | 1   | 1   | 0   | 0   |
| EX7        |                           | 4                          | 4  | 3  | 3  | 3  | 2 | 2   | 2   | 2   | 1   |
| EX8        |                           | 13                         | 12 | 11 | 9  | 8  | 7 | 6   | 6   | 5   | 4   |
| EX6        | 100                       | 1                          | 1  | 1  | 1  | 1  | 1 | 1   | 1   | 0   | 0   |
| EX7        |                           | 4                          | 4  | 4  | 3  | 3  | 3 | 2   | 2   | 2   | 1   |
| EX8        |                           | 14                         | 12 | 11 | 10 | 9  | 8 | 7   | 6   | 5   | 4   |

**R-407C Extended Capacities (Tons) - EX6-8 Series, suction pressure regulator duty**

| Valve Type | Condensing Temperature Bubble Point °F | Evaporating Temperature °F |    |    |    |    |
|------------|----------------------------------------|----------------------------|----|----|----|----|
|            |                                        | 50                         | 40 | 30 | 20 | 10 |
| EX6        | 140                                    | 1                          | 1  | 1  | 1  | 1  |
| EX7        |                                        | 3                          | 3  | 3  | 2  | 2  |
| EX8        |                                        | 10                         | 9  | 8  | 7  | 6  |
| EX6        | 130                                    | 1                          | 1  | 1  | 1  | 1  |
| EX7        |                                        | 4                          | 3  | 3  | 2  | 2  |
| EX8        |                                        | 11                         | 9  | 8  | 7  | 7  |
| EX6        | 120                                    | 1                          | 1  | 1  | 1  | 1  |
| EX7        |                                        | 4                          | 3  | 3  | 3  | 2  |
| EX8        |                                        | 12                         | 10 | 9  | 8  | 7  |
| EX6        | 110                                    | 1                          | 1  | 1  | 1  | 1  |
| EX7        |                                        | 4                          | 4  | 3  | 3  | 2  |
| EX8        |                                        | 12                         | 11 | 10 | 8  | 8  |
| EX6        | 100                                    | 1                          | 1  | 1  | 1  | 1  |
| EX7        |                                        | 4                          | 4  | 3  | 3  | 3  |
| EX8        |                                        | 13                         | 11 | 10 | 9  | 8  |

**R-134a Extended Capacities (Tons) - EX6-8 Series, suction pressure regulator duty**

| Valve Type | Condensing Temperature °F | Evaporating Temperature °F |    |    |    |    |
|------------|---------------------------|----------------------------|----|----|----|----|
|            |                           | 50                         | 40 | 30 | 20 | 10 |
| EX6        | 140                       | 1                          | 1  | 1  | 1  | 0  |
| EX7        |                           | 3                          | 2  | 2  | 2  | 2  |
| EX8        |                           | 8                          | 7  | 6  | 5  | 5  |
| EX6        | 130                       | 1                          | 1  | 1  | 1  | 0  |
| EX7        |                           | 3                          | 3  | 2  | 2  | 2  |
| EX8        |                           | 9                          | 8  | 7  | 6  | 5  |
| EX6        | 120                       | 1                          | 1  | 1  | 1  | 1  |
| EX7        |                           | 3                          | 3  | 2  | 2  | 2  |
| EX8        |                           | 9                          | 8  | 7  | 6  | 5  |
| EX6        | 110                       | 1                          | 1  | 1  | 1  | 1  |
| EX7        |                           | 3                          | 3  | 3  | 2  | 2  |
| EX8        |                           | 10                         | 9  | 8  | 7  | 6  |
| EX6        | 100                       | 1                          | 1  | 1  | 1  | 1  |
| EX7        |                           | 3                          | 3  | 3  | 2  | 2  |
| EX8        |                           | 11                         | 9  | 8  | 7  | 6  |

**R-404A/R-507 Extended Capacities (Tons) - EX6-8 Series, suction pressure regulator duty**

| Valve Type | Condensing Temperature °F | Evaporating Temperature °F |    |    |    |    |   |     |     |     |     |
|------------|---------------------------|----------------------------|----|----|----|----|---|-----|-----|-----|-----|
|            |                           | 50                         | 40 | 30 | 20 | 10 | 0 | -10 | -20 | -30 | -40 |
| EX6        | 140                       | 1                          | 1  | 1  | 0  | 0  | 0 | 0   | 0   | 0   | 0   |
| EX7        |                           | 3                          | 2  | 2  | 2  | 2  | 1 | 1   | 1   | 1   | 1   |
| EX8        |                           | 8                          | 7  | 6  | 5  | 5  | 4 | 3   | 3   | 2   | 2   |
| EX6        | 130                       | 1                          | 1  | 1  | 1  | 1  | 0 | 0   | 0   | 0   | 0   |
| EX7        |                           | 3                          | 3  | 2  | 2  | 2  | 2 | 1   | 1   | 1   | 1   |
| EX8        |                           | 9                          | 8  | 7  | 6  | 5  | 5 | 4   | 3   | 3   | 2   |
| EX6        | 120                       | 1                          | 1  | 1  | 1  | 1  | 0 | 0   | 0   | 0   | 0   |
| EX7        |                           | 3                          | 3  | 3  | 2  | 2  | 2 | 1   | 1   | 1   | 1   |
| EX8        |                           | 10                         | 9  | 8  | 7  | 6  | 5 | 4   | 4   | 3   | 3   |
| EX6        | 110                       | 1                          | 1  | 1  | 1  | 1  | 1 | 0   | 0   | 0   | 0   |
| EX7        |                           | 4                          | 3  | 3  | 2  | 2  | 2 | 2   | 1   | 1   | 1   |
| EX8        |                           | 11                         | 10 | 9  | 8  | 7  | 6 | 5   | 4   | 4   | 3   |
| EX6        | 100                       | 1                          | 1  | 1  | 1  | 1  | 1 | 1   | 0   | 0   | 0   |
| EX7        |                           | 4                          | 3  | 3  | 3  | 2  | 2 | 2   | 2   | 1   | 1   |
| EX8        |                           | 12                         | 11 | 9  | 8  | 7  | 6 | 5   | 5   | 4   | 3   |

**EX5-8 Nominal capacities (Tons) - as condensing pressure regulator and liquid duty**

| Valve Type | R-407C | R-22 | R-134a | R-404A |
|------------|--------|------|--------|--------|
| EX5        | 5      | 6    | 5      | 4      |
| EX6        | 12     | 13   | 12     | 9      |
| EX7        | 44     | 46   | 43     | 31     |
| EX8        | 133    | 140  | 131    | 93     |

| Refrigerant          | Evaporating Temperature | Condensing Temperature | Subcooling | Pressure Drop |
|----------------------|-------------------------|------------------------|------------|---------------|
| R-22, R-134a, R-404A | +40°F                   | +100°F                 | 2°F        | 5 psid        |
| R-407C               | +40°F dew point         | +100°F bubble          | 2°F        | 5 psid        |

Multiply above nominal capacities by following factors to obtain capacities at different pressure drops.

| ΔP, psid          | 2.0  | 3.0  | 5.0  |
|-------------------|------|------|------|
| Correction factor | 0.65 | 0.76 | 1.00 |

**R-22 Extended Capacities (Tons) - EX5-8 Series, condensing pressure regulator and liquid duty**

| Valve Type | Condensing Temperature °F | Evaporating Temperature °F |     |     |     |     |     |     |     |     |     |
|------------|---------------------------|----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|            |                           | 50                         | 40  | 30  | 20  | 10  | 0   | -10 | -20 | -30 | -40 |
| EX5        | 140                       | 4                          | 4   | 4   | 4   | 4   | 4   | 4   | 4   | 4   | 4   |
| EX6        |                           | 10                         | 10  | 10  | 10  | 10  | 9   | 9   | 9   | 9   | 9   |
| EX7        |                           | 36                         | 36  | 35  | 35  | 34  | 33  | 33  | 32  | 31  | 31  |
| EX8        |                           | 111                        | 109 | 107 | 105 | 104 | 102 | 100 | 98  | 96  | 94  |
| EX5        | 130                       | 5                          | 5   | 5   | 4   | 4   | 4   | 4   | 4   | 4   | 4   |
| EX6        |                           | 11                         | 11  | 11  | 10  | 10  | 10  | 10  | 10  | 10  | 9   |
| EX7        |                           | 39                         | 38  | 38  | 37  | 37  | 36  | 35  | 35  | 34  | 33  |
| EX8        |                           | 118                        | 116 | 115 | 113 | 111 | 109 | 107 | 105 | 103 | 101 |
| EX5        | 120                       | 5                          | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 4   | 4   |
| EX6        |                           | 12                         | 12  | 11  | 11  | 11  | 11  | 11  | 10  | 10  | 10  |
| EX7        |                           | 42                         | 41  | 41  | 40  | 39  | 39  | 38  | 37  | 37  | 36  |
| EX8        |                           | 126                        | 125 | 123 | 121 | 119 | 117 | 115 | 113 | 111 | 109 |
| EX5        | 110                       | 5                          | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   |
| EX6        |                           | 12                         | 12  | 12  | 12  | 12  | 12  | 11  | 11  | 11  | 11  |
| EX7        |                           | 44                         | 43  | 43  | 42  | 42  | 41  | 40  | 40  | 39  | 38  |
| EX8        |                           | 133                        | 132 | 130 | 128 | 126 | 124 | 122 | 120 | 118 | 116 |
| EX5        | 100                       | 6                          | 6   | 6   | 5   | 5   | 5   | 5   | 5   | 5   | 5   |
| EX6        |                           | 13                         | 13  | 13  | 13  | 12  | 12  | 12  | 12  | 12  | 11  |
| EX7        |                           | 47                         | 46  | 46  | 45  | 44  | 44  | 43  | 42  | 41  | 41  |
| EX8        |                           | 142                        | 140 | 138 | 136 | 134 | 132 | 130 | 128 | 126 | 124 |

**R-134a Extended Capacities (Tons) - EX5-8 Series, condensing pressure regulator and liquid duty**

| Valve Type | Condensing Temperature °F | Evaporating Temperature °F |     |     |    |
|------------|---------------------------|----------------------------|-----|-----|----|
|            |                           | 50                         | 40  | 30  | 20 |
| EX5        | 140                       | 4                          | 4   | 4   | 4  |
| EX6        |                           | 9                          | 9   | 9   | 8  |
| EX7        |                           | 33                         | 32  | 31  | 30 |
| EX8        |                           | 100                        | 98  | 95  | 92 |
| EX5        | 130                       | 4                          | 4   | 4   | 4  |
| EX6        |                           | 10                         | 10  | 9   | 9  |
| EX7        |                           | 36                         | 35  | 34  | 33 |
| EX8        |                           | 108                        | 105 | 102 | 99 |

## EX Extended Capacity Tables

|     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|
| EX5 | 120 | 5   | 5   | 4   | 4   |
| EX6 |     | 11  | 11  | 10  | 10  |
| EX7 |     | 39  | 38  | 37  | 36  |
| EX8 |     | 117 | 115 | 112 | 108 |
| EX5 | 110 | 5   | 5   | 5   | 5   |
| EX6 |     | 12  | 11  | 11  | 11  |
| EX7 |     | 41  | 40  | 39  | 38  |
| EX8 |     | 125 | 122 | 119 | 116 |
| EX5 | 100 | 5   | 5   | 5   | 5   |
| EX6 |     | 12  | 12  | 12  | 12  |
| EX7 |     | 44  | 43  | 42  | 41  |
| EX8 |     | 134 | 131 | 128 | 125 |

**R-1404A/R-507 Extended Capacities (Tons) - EX5-8 Series,  
condensing pressure regulator and liquid duty**

| Valve Type | Condensing Temperature °F | Evaporating Temperature °F |    |    |    |    |    |     |     |     |     |
|------------|---------------------------|----------------------------|----|----|----|----|----|-----|-----|-----|-----|
|            |                           | 50                         | 40 | 30 | 20 | 10 | 0  | -10 | -20 | -30 | -40 |
| EX5        | 140                       | 2                          | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   | 2   |
| EX6        |                           | 5                          | 5  | 5  | 5  | 5  | 4  | 4   | 4   | 4   | 4   |
| EX7        |                           | 19                         | 19 | 18 | 17 | 17 | 16 | 15  | 14  | 13  | 13  |
| EX8        |                           | 59                         | 57 | 55 | 52 | 50 | 48 | 45  | 43  | 41  | 38  |
| EX5        | 130                       | 3                          | 3  | 3  | 2  | 2  | 2  | 2   | 2   | 2   | 2   |
| EX6        |                           | 6                          | 6  | 6  | 6  | 5  | 5  | 5   | 5   | 5   | 4   |
| EX7        |                           | 22                         | 22 | 21 | 20 | 19 | 19 | 18  | 17  | 16  | 15  |
| EX8        |                           | 68                         | 66 | 63 | 61 | 59 | 56 | 54  | 52  | 49  | 47  |
| EX5        | 120                       | 3                          | 3  | 3  | 3  | 3  | 3  | 3   | 2   | 2   | 2   |
| EX6        |                           | 7                          | 7  | 7  | 7  | 6  | 6  | 6   | 6   | 5   | 5   |
| EX7        |                           | 26                         | 25 | 24 | 23 | 23 | 22 | 21  | 20  | 19  | 19  |
| EX8        |                           | 78                         | 76 | 73 | 71 | 69 | 66 | 64  | 61  | 59  | 56  |
| EX5        | 110                       | 3                          | 3  | 3  | 3  | 3  | 3  | 3   | 3   | 3   | 3   |
| EX6        |                           | 8                          | 8  | 8  | 7  | 7  | 7  | 7   | 6   | 6   | 6   |
| EX7        |                           | 28                         | 28 | 27 | 26 | 25 | 24 | 23  | 23  | 22  | 21  |
| EX8        |                           | 86                         | 84 | 81 | 79 | 77 | 74 | 71  | 69  | 66  | 64  |
| EX5        | 100                       | 4                          | 4  | 4  | 4  | 3  | 3  | 3   | 3   | 3   | 3   |
| EX6        |                           | 9                          | 9  | 8  | 8  | 8  | 8  | 7   | 7   | 7   | 7   |
| EX7        |                           | 31                         | 31 | 30 | 29 | 28 | 27 | 26  | 26  | 25  | 24  |
| EX8        |                           | 95                         | 93 | 91 | 88 | 86 | 83 | 80  | 78  | 75  | 73  |

**R-407C Extended Capacities (Tons) - EX5-8 Series,  
condensing pressure regulator and liquid duty**

| Valve Type | Condensing Temperature<br>Dew Point °F | Evaporating Temperature °F |     |     |     |
|------------|----------------------------------------|----------------------------|-----|-----|-----|
|            |                                        | 50                         | 40  | 30  | 20  |
| EX5        | 140                                    | 4                          | 4   | 4   | 4   |
| EX6        |                                        | 9                          | 9   | 9   | 8   |
| EX7        |                                        | 32                         | 32  | 31  | 30  |
| EX8        |                                        | 98                         | 96  | 94  | 91  |
| EX5        | 130                                    | 4                          | 4   | 4   | 4   |
| EX6        |                                        | 10                         | 10  | 9   | 9   |
| EX7        |                                        | 35                         | 34  | 34  | 33  |
| EX8        |                                        | 106                        | 105 | 102 | 100 |
| EX5        | 120                                    | 5                          | 5   | 4   | 4   |
| EX6        |                                        | 11                         | 11  | 10  | 10  |
| EX7        |                                        | 38                         | 38  | 37  | 36  |
| EX8        |                                        | 117                        | 115 | 112 | 110 |
| EX5        | 110                                    | 5                          | 5   | 5   | 5   |
| EX6        |                                        | 12                         | 11  | 11  | 11  |
| EX7        |                                        | 41                         | 40  | 40  | 39  |
| EX8        |                                        | 125                        | 123 | 120 | 118 |
| EX5        | 100                                    | 5                          | 5   | 5   | 5   |
| EX6        |                                        | 12                         | 12  | 12  | 12  |
| EX7        |                                        | 44                         | 44  | 43  | 42  |
| EX8        |                                        | 135                        | 133 | 130 | 128 |

**EX6-8 Nominal capacities (Tons) - for hot gas flow such as heat reclaim application**

| Valve Type | R-22 / R-407C | R-404A / R-507 |
|------------|---------------|----------------|
| EX6        | 3.1           | 2.8            |
| EX7        | 11.1          | 10.2           |
| EX8        | 33.8          | 30.7           |

**The nominal capacity is based on the following conditions:**

| Refrigerant         | Evaporating temperature | Condensing temperature | Subcooling | Pressure Drop | Isentropic Efficiency |
|---------------------|-------------------------|------------------------|------------|---------------|-----------------------|
| R-22, R-404A, R-507 | +40°F                   | +100°F                 | 2°F        | 2 psid        | 80%                   |
| R-407C              | +40°F bubble point      | +100°F dew point       | 2°F        | 2 psid        | 80%                   |

**Remarks:** Bi-flow versions are not released for hot gas flow applications.

EX6, EX7 and EX8 must be installed with motor downward in suction line applications.

This insures the valve life expectancy.

**R-22/R-407C Extended Capacities (Tons) - EX6-8 Series,  
hot gas flow such as heat reclaim application**

| Valve Type | Condensing Temperature °F | Pressure Drop psi | Evaporating Temperature °F |      |      |      |      |      |      |      |      |      |      |      |
|------------|---------------------------|-------------------|----------------------------|------|------|------|------|------|------|------|------|------|------|------|
|            |                           |                   | 60                         | 50   | 40   | 30   | 20   | 10   | 0    | -10  | -20  | -30  | -40  | -50  |
| EX6        | 140                       | 1.5               | 1.6                        | 1.5  | 1.5  | 1.5  | 1.4  | 1.4  | 1.3  | 1.3  | 1.2  | 1.2  | 1.2  | 1.1  |
| EX7        |                           |                   | 5.6                        | 5.5  | 5.3  | 5.2  | 5.0  | 4.9  | 4.7  | 4.6  | 4.4  | 4.3  | 4.1  | 4.0  |
| EX8        |                           |                   | 17.0                       | 16.6 | 16.2 | 15.7 | 15.3 | 14.8 | 14.4 | 13.9 | 13.4 | 13.0 | 12.5 | 12.0 |
| EX6        |                           | 7                 | 3.4                        | 3.3  | 3.3  | 3.2  | 3.1  | 3.0  | 2.9  | 2.8  | 2.7  | 2.6  | 2.5  | 2.4  |
| EX7        |                           |                   | 12.2                       | 11.9 | 11.6 | 11.3 | 10.9 | 10.6 | 10.3 | 10.0 | 9.6  | 9.3  | 9.0  | 8.6  |
| EX8        |                           |                   | 37.0                       | 36.1 | 35.2 | 34.2 | 33.3 | 32.3 | 31.3 | 30.3 | 29.3 | 28.2 | 27.2 | 26.2 |
| EX6        |                           | 14                | 4.8                        | 4.7  | 4.5  | 4.4  | 4.3  | 4.2  | 4.0  | 3.9  | 3.8  | 3.7  | 3.5  | 3.4  |
| EX7        |                           |                   | 17.3                       | 16.9 | 16.4 | 16.0 | 15.6 | 15.1 | 14.6 | 14.2 | 13.7 | 13.2 | 12.7 | 12.3 |
| EX8        |                           |                   | 52.5                       | 51.3 | 49.9 | 48.6 | 47.3 | 45.9 | 44.5 | 43.0 | 41.6 | 40.2 | 38.7 | 37.3 |
| EX6        | 120                       | 1.5               | 1.5                        | 1.5  | 1.5  | 1.4  | 1.4  | 1.4  | 1.3  | 1.3  | 1.2  | 1.2  | 1.2  | 1.1  |
| EX7        |                           |                   | 5.5                        | 5.3  | 5.2  | 5.1  | 4.9  | 4.8  | 4.7  | 4.5  | 4.4  | 4.3  | 4.1  | 4.0  |
| EX8        |                           |                   | 16.6                       | 16.2 | 15.8 | 15.4 | 15.0 | 14.6 | 14.2 | 13.8 | 13.4 | 12.9 | 12.5 | 12.1 |
| EX6        |                           | 7                 | 3.3                        | 3.3  | 3.2  | 3.1  | 3.0  | 2.9  | 2.9  | 2.8  | 2.7  | 2.6  | 2.5  | 2.4  |
| EX7        |                           |                   | 11.8                       | 11.6 | 11.3 | 11.0 | 10.7 | 10.4 | 10.1 | 9.9  | 9.6  | 9.3  | 8.9  | 8.6  |
| EX8        |                           |                   | 35.9                       | 35.1 | 34.3 | 33.5 | 32.6 | 31.7 | 30.8 | 29.9 | 29.0 | 28.1 | 27.2 | 26.2 |
| EX6        |                           | 14                | 4.6                        | 4.5  | 4.4  | 4.3  | 4.2  | 4.1  | 4.0  | 3.9  | 3.7  | 3.6  | 3.5  | 3.4  |
| EX7        |                           |                   | 16.8                       | 16.4 | 16.0 | 15.6 | 15.2 | 14.8 | 14.4 | 14.0 | 13.5 | 13.1 | 12.7 | 12.3 |
| EX8        |                           |                   | 50.9                       | 49.7 | 48.6 | 47.4 | 46.2 | 44.9 | 43.7 | 42.4 | 41.1 | 39.8 | 38.5 | 37.2 |
| EX6        | 100                       | 1.5               | 1.5                        | 1.4  | 1.4  | 1.4  | 1.3  | 1.3  | 1.3  | 1.2  | 1.2  | 1.2  | 1.1  | 1.1  |
| EX7        |                           |                   | 5.2                        | 5.1  | 5.0  | 4.9  | 4.7  | 4.6  | 4.5  | 4.4  | 4.3  | 4.1  | 4.0  | 3.9  |
| EX8        |                           |                   | 15.8                       | 15.4 | 15.1 | 14.7 | 14.4 | 14.0 | 13.7 | 13.3 | 12.9 | 12.5 | 12.2 | 11.8 |
| EX6        |                           | 7                 | 3.2                        | 3.1  | 3.0  | 3.0  | 2.9  | 2.8  | 2.7  | 2.7  | 2.6  | 2.5  | 2.4  | 2.4  |
| EX7        |                           |                   | 11.2                       | 11.0 | 10.7 | 10.5 | 10.2 | 10.0 | 9.7  | 9.5  | 9.2  | 8.9  | 8.7  | 8.4  |
| EX8        |                           |                   | 34.1                       | 33.4 | 32.6 | 31.9 | 31.1 | 30.4 | 29.6 | 28.8 | 28.0 | 27.1 | 26.3 | 25.5 |
| EX6        |                           | 14                | 4.4                        | 4.3  | 4.2  | 4.1  | 4.0  | 3.9  | 3.8  | 3.7  | 3.6  | 3.5  | 3.4  | 3.3  |
| EX7        |                           |                   | 15.8                       | 15.5 | 15.2 | 14.8 | 14.5 | 14.1 | 13.7 | 13.4 | 13.0 | 12.6 | 12.2 | 11.8 |
| EX8        |                           |                   | 48.0                       | 47.0 | 46.0 | 45.0 | 43.9 | 42.8 | 41.7 | 40.6 | 39.5 | 38.3 | 37.2 | 36.0 |
| EX6        | 80                        | 1.5               | 1.4                        | 1.3  | 1.3  | 1.3  | 1.2  | 1.2  | 1.2  | 1.2  | 1.1  | 1.1  | 1.1  | 1.0  |
| EX7        |                           |                   | 4.8                        | 4.7  | 4.6  | 4.5  | 4.4  | 4.3  | 4.2  | 4.1  | 4.0  | 3.9  | 3.8  | 3.7  |
| EX8        |                           |                   | 14.7                       | 14.4 | 14.1 | 13.8 | 13.5 | 13.2 | 12.8 | 12.5 | 12.2 | 11.9 | 11.5 | 11.2 |
| EX6        |                           | 7                 | 2.9                        | 2.9  | 2.8  | 2.8  | 2.7  | 2.6  | 2.6  | 2.5  | 2.4  | 2.4  | 2.3  | 2.2  |
| EX7        |                           |                   | 10.4                       | 10.2 | 10.0 | 9.8  | 9.6  | 9.3  | 9.1  | 8.9  | 8.6  | 8.4  | 8.2  | 7.9  |
| EX8        |                           |                   | 31.6                       | 31.0 | 30.4 | 29.7 | 29.0 | 28.4 | 27.7 | 27.0 | 26.3 | 25.6 | 24.8 | 24.1 |
| EX6        |                           | 14                | 4.0                        | 4.0  | 3.9  | 3.8  | 3.7  | 3.6  | 3.5  | 3.4  | 3.4  | 3.3  | 3.2  | 3.1  |
| EX7        |                           |                   | 14.6                       | 14.3 | 14.0 | 13.7 | 13.4 | 13.1 | 12.8 | 12.5 | 12.1 | 11.8 | 11.5 | 11.1 |
| EX8        |                           |                   | 44.3                       | 43.4 | 42.6 | 41.7 | 40.7 | 39.8 | 38.8 | 37.9 | 36.9 | 35.9 | 34.8 | 33.8 |

**R-404A/R-507 Extended Capacities (Tons) - EX6-8 Series,  
hot gas flow such a heat reclaim applications**

| Valve Type | Condensing Temperature °F | Pressure Drop psi | Evaporating Temperature °F |      |      |      |      |      |      |      |      |      |      |      |
|------------|---------------------------|-------------------|----------------------------|------|------|------|------|------|------|------|------|------|------|------|
|            |                           |                   | 60                         | 50   | 40   | 30   | 20   | 10   | 0    | -10  | -20  | -30  | -40  | -50  |
| EX6        | 140                       | 1.5               | 1.2                        | 1.1  | 1.1  | 1.0  | 1.0  | 0.9  | 0.9  | 0.8  | 0.8  | 0.7  | 0.7  | 0.6  |
| EX7        |                           |                   | 4.2                        | 4.1  | 3.9  | 3.7  | 3.5  | 3.3  | 3.2  | 3.0  | 2.8  | 2.6  | 2.4  | 2.2  |
| EX8        |                           |                   | 12.8                       | 12.3 | 11.8 | 11.3 | 10.7 | 10.1 | 9.6  | 9.0  | 8.4  | 7.8  | 7.2  | 6.6  |
| EX6        |                           | 7                 | 2.6                        | 2.5  | 2.4  | 2.3  | 2.2  | 2.0  | 1.9  | 1.8  | 1.7  | 1.6  | 1.4  | 1.3  |
| EX7        |                           |                   | 9.2                        | 8.8  | 8.4  | 8.1  | 7.7  | 7.3  | 6.8  | 6.4  | 6.0  | 5.6  | 5.2  | 4.7  |
| EX8        |                           |                   | 27.8                       | 26.7 | 25.6 | 24.5 | 23.3 | 22.0 | 20.8 | 19.5 | 18.2 | 16.9 | 15.6 | 14.4 |
| EX6        |                           | 14                | 3.6                        | 3.4  | 3.3  | 3.2  | 3.0  | 2.8  | 2.7  | 2.5  | 2.4  | 2.2  | 2.0  | 1.9  |
| EX7        |                           |                   | 13.0                       | 12.5 | 12.0 | 11.4 | 10.9 | 10.3 | 9.7  | 9.1  | 8.5  | 7.9  | 7.3  | 6.7  |
| EX8        |                           |                   | 39.4                       | 37.9 | 36.3 | 34.7 | 33.0 | 31.3 | 29.5 | 27.7 | 25.9 | 24.1 | 22.2 | 20.4 |
| EX6        | 120                       | 1.5               | 1.3                        | 1.3  | 1.2  | 1.2  | 1.1  | 1.1  | 1.0  | 1.0  | 0.9  | 0.9  | 0.8  | 0.8  |
| EX7        |                           |                   | 4.6                        | 4.5  | 4.3  | 4.2  | 4.0  | 3.8  | 3.7  | 3.5  | 3.3  | 3.2  | 3.0  | 2.8  |
| EX8        |                           |                   | 14.0                       | 13.6 | 13.1 | 12.7 | 12.2 | 11.7 | 11.2 | 10.7 | 10.1 | 9.6  | 9.1  | 8.5  |
| EX6        |                           | 7                 | 2.8                        | 2.7  | 2.6  | 2.5  | 2.4  | 2.3  | 2.2  | 2.1  | 2.0  | 1.9  | 1.8  | 1.7  |
| EX7        |                           |                   | 10.0                       | 9.7  | 9.4  | 9.0  | 8.7  | 8.3  | 8.0  | 7.6  | 7.2  | 6.9  | 6.5  | 6.1  |
| EX8        |                           |                   | 30.4                       | 29.5 | 28.5 | 27.5 | 26.4 | 25.4 | 24.3 | 23.1 | 22.0 | 20.9 | 19.7 | 18.6 |
| EX6        |                           | 14                | 3.9                        | 3.8  | 3.7  | 3.5  | 3.4  | 3.3  | 3.1  | 3.0  | 2.8  | 2.7  | 2.5  | 2.4  |
| EX7        |                           |                   | 14.1                       | 13.7 | 13.3 | 12.8 | 12.3 | 11.8 | 11.3 | 10.8 | 10.3 | 9.7  | 9.2  | 8.7  |
| EX8        |                           |                   | 43.0                       | 41.7 | 40.3 | 38.9 | 37.4 | 35.9 | 34.4 | 32.8 | 31.2 | 29.6 | 28.0 | 26.3 |
| EX6        | 100                       | 1.5               | 1.3                        | 1.3  | 1.2  | 1.2  | 1.2  | 1.1  | 1.1  | 1.1  | 1.0  | 1.0  | 0.9  | 0.9  |
| EX7        |                           |                   | 4.7                        | 4.6  | 4.4  | 4.3  | 4.2  | 4.0  | 3.9  | 3.7  | 3.6  | 3.4  | 3.3  | 3.1  |
| EX8        |                           |                   | 14.2                       | 13.9 | 13.5 | 13.1 | 12.7 | 12.2 | 11.8 | 11.4 | 10.9 | 10.4 | 10.0 | 9.5  |
| EX6        |                           | 7                 | 2.9                        | 2.8  | 2.7  | 2.6  | 2.5  | 2.5  | 2.4  | 2.3  | 2.2  | 2.1  | 2.0  | 1.9  |
| EX7        |                           |                   | 10.1                       | 9.9  | 9.6  | 9.3  | 9.0  | 8.7  | 8.4  | 8.1  | 7.8  | 7.4  | 7.1  | 6.8  |
| EX8        |                           |                   | 30.8                       | 30.0 | 29.2 | 28.3 | 27.4 | 26.5 | 25.5 | 24.6 | 23.6 | 22.6 | 21.6 | 20.6 |
| EX6        |                           | 14                | 4.0                        | 3.9  | 3.7  | 3.6  | 3.5  | 3.4  | 3.3  | 3.2  | 3.0  | 2.9  | 2.8  | 2.6  |
| EX7        |                           |                   | 14.3                       | 13.9 | 13.5 | 13.1 | 12.7 | 12.3 | 11.9 | 11.4 | 11.0 | 10.5 | 10.0 | 9.6  |
| EX8        |                           |                   | 43.5                       | 42.3 | 41.2 | 39.9 | 38.7 | 37.4 | 36.1 | 34.7 | 33.3 | 31.9 | 30.5 | 29.1 |
| EX6        | 80                        | 1.5               | 1.3                        | 1.3  | 1.2  | 1.2  | 1.2  | 1.1  | 1.1  | 1.1  | 1.0  | 1.0  | 0.9  | 0.9  |
| EX7        |                           |                   | 4.6                        | 4.5  | 4.4  | 4.2  | 4.1  | 4.0  | 3.9  | 3.8  | 3.6  | 3.5  | 3.4  | 3.2  |
| EX8        |                           |                   | 13.9                       | 13.6 | 13.3 | 12.9 | 12.6 | 12.2 | 11.8 | 11.4 | 11.0 | 10.6 | 10.2 | 9.8  |
| EX6        |                           | 7                 | 2.8                        | 2.7  | 2.6  | 2.6  | 2.5  | 2.4  | 2.4  | 2.3  | 2.2  | 2.1  | 2.0  | 2.0  |
| EX7        |                           |                   | 9.9                        | 9.6  | 9.4  | 9.2  | 8.9  | 8.7  | 8.4  | 8.1  | 7.8  | 7.6  | 7.3  | 7.0  |
| EX8        |                           |                   | 30.0                       | 29.3 | 28.6 | 27.8 | 27.1 | 26.3 | 25.5 | 24.7 | 23.8 | 22.9 | 22.1 | 21.2 |
| EX6        |                           | 14                | 3.8                        | 3.7  | 3.7  | 3.6  | 3.5  | 3.4  | 3.3  | 3.2  | 3.0  | 2.9  | 2.8  | 2.7  |
| EX7        |                           |                   | 13.9                       | 13.5 | 13.2 | 12.9 | 12.5 | 12.2 | 11.8 | 11.4 | 11.0 | 10.6 | 10.2 | 9.8  |
| EX8        |                           |                   | 42.1                       | 41.1 | 40.1 | 39.1 | 38.0 | 36.9 | 35.8 | 34.7 | 33.5 | 32.3 | 31.1 | 29.8 |

## R-134a Extended Capacities (kWatts) EX4-8 Series, as expansion and liquid injection valves

| Valve Type | Condensing Temperature °C | Extended capacity (kW) Evaporating Temperature (°C) |     |     |     |     |     |     |     |     |     |     |     |     |
|------------|---------------------------|-----------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|            |                           | +15                                                 | +10 | +5  | 0   | -5  | -10 | -15 | -20 | -25 | -30 | -35 | -40 | -45 |
| EX4        | +60                       | 13                                                  | 13  | 13  | 13  | 13  | 13  | 12  | 12  | 12  | 12  | 11  | 11  | 11  |
| EX5        |                           | 39                                                  | 39  | 39  | 39  | 39  | 39  | 38  | 37  | 36  | 35  | 34  | 33  | 32  |
| EX6        |                           | 93                                                  | 94  | 94  | 94  | 93  | 92  | 90  | 89  | 87  | 84  | 82  | 79  | 77  |
| EX7        |                           | 255                                                 | 257 | 258 | 257 | 255 | 252 | 248 | 243 | 237 | 231 | 224 | 217 | 210 |
| EX8        |                           | 679                                                 | 686 | 688 | 686 | 680 | 672 | 661 | 648 | 633 | 616 | 598 | 580 | 560 |
| EX4        | +55                       | 12                                                  | 13  | 13  | 13  | 13  | 13  | 13  | 12  | 12  | 12  | 12  | 11  | 11  |
| EX5        |                           | 38                                                  | 39  | 39  | 39  | 39  | 39  | 38  | 38  | 37  | 36  | 35  | 34  | 33  |
| EX6        |                           | 91                                                  | 92  | 93  | 94  | 93  | 93  | 92  | 90  | 88  | 86  | 84  | 82  | 80  |
| EX7        |                           | 249                                                 | 253 | 256 | 257 | 256 | 254 | 251 | 247 | 242 | 237 | 231 | 225 | 218 |
| EX8        |                           | 663                                                 | 676 | 683 | 685 | 683 | 678 | 670 | 659 | 647 | 632 | 616 | 599 | 582 |
| EX4        | +50                       | 12                                                  | 12  | 13  | 13  | 13  | 13  | 13  | 12  | 12  | 12  | 12  | 12  | 11  |
| EX5        |                           | 36                                                  | 38  | 38  | 39  | 39  | 39  | 38  | 38  | 37  | 37  | 36  | 35  | 34  |
| EX6        |                           | 87                                                  | 90  | 91  | 92  | 93  | 92  | 92  | 91  | 89  | 88  | 86  | 84  | 81  |
| EX7        |                           | 238                                                 | 246 | 250 | 253 | 254 | 253 | 251 | 249 | 245 | 240 | 235 | 229 | 223 |
| EX8        |                           | 636                                                 | 655 | 668 | 675 | 677 | 676 | 671 | 663 | 653 | 640 | 627 | 611 | 595 |
| EX4        | +45                       | 11                                                  | 12  | 12  | 12  | 12  | 13  | 12  | 12  | 12  | 12  | 12  | 12  | 11  |
| EX5        |                           | 34                                                  | 36  | 37  | 38  | 38  | 38  | 38  | 38  | 37  | 37  | 36  | 35  | 35  |
| EX6        |                           | 81                                                  | 85  | 88  | 90  | 91  | 91  | 91  | 90  | 89  | 88  | 86  | 84  | 82  |
| EX7        |                           | 223                                                 | 234 | 241 | 246 | 248 | 249 | 249 | 247 | 244 | 240 | 236 | 231 | 226 |
| EX8        |                           | 595                                                 | 623 | 642 | 655 | 662 | 664 | 663 | 658 | 651 | 641 | 629 | 616 | 602 |
| EX4        | +40                       | 10                                                  | 11  | 11  | 12  | 12  | 12  | 12  | 12  | 12  | 12  | 12  | 12  | 11  |
| EX5        |                           | 31                                                  | 33  | 35  | 36  | 37  | 37  | 37  | 37  | 37  | 36  | 36  | 35  | 34  |
| EX6        |                           | 74                                                  | 79  | 83  | 85  | 87  | 88  | 89  | 88  | 88  | 87  | 85  | 84  | 82  |
| EX7        |                           | 202                                                 | 217 | 227 | 234 | 239 | 242 | 243 | 242 | 240 | 238 | 234 | 230 | 225 |
| EX8        |                           | 539                                                 | 578 | 606 | 625 | 638 | 645 | 647 | 646 | 641 | 634 | 625 | 614 | 601 |
| EX4        | +35                       | 9                                                   | 10  | 10  | 11  | 11  | 12  | 12  | 12  | 12  | 12  | 12  | 11  | 11  |
| EX5        |                           | 27                                                  | 30  | 32  | 34  | 35  | 35  | 36  | 36  | 36  | 36  | 35  | 35  | 34  |
| EX6        |                           | 63                                                  | 71  | 76  | 80  | 83  | 84  | 85  | 86  | 85  | 85  | 84  | 83  | 81  |
| EX7        |                           | 173                                                 | 194 | 209 | 219 | 226 | 231 | 234 | 235 | 234 | 232 | 230 | 227 | 223 |
| EX8        |                           | 463                                                 | 517 | 556 | 584 | 604 | 616 | 623 | 625 | 624 | 620 | 613 | 604 | 594 |
| EX4        | +30                       | 7                                                   | 8   | 9   | 10  | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 11  |
| EX5        |                           | 20                                                  | 25  | 28  | 30  | 32  | 33  | 34  | 34  | 34  | 34  | 34  | 34  | 33  |
| EX6        |                           | 49                                                  | 60  | 67  | 73  | 76  | 79  | 81  | 82  | 82  | 82  | 81  | 80  | 79  |
| EX7        |                           | 133                                                 | 164 | 184 | 199 | 210 | 217 | 221 | 224 | 225 | 224 | 223 | 221 | 217 |
| EX8        |                           | 356                                                 | 436 | 492 | 534 | 559 | 578 | 590 | 597 | 600 | 599 | 595 | 588 | 580 |
| EX4        | +25                       | 3                                                   | 6   | 8   | 9   | 9   | 10  | 10  | 11  | 11  | 11  | 11  | 11  | 11  |
| EX5        |                           | 10                                                  | 18  | 23  | 26  | 29  | 30  | 31  | 32  | 33  | 33  | 33  | 32  | 32  |
| EX6        |                           | 23                                                  | 121 | 152 | 137 | 188 | 198 | 206 | 210 | 213 | 214 | 213 | 212 | 210 |
| EX7        |                           | 63                                                  | 121 | 152 | 173 | 188 | 198 | 206 | 210 | 213 | 214 | 213 | 212 | 210 |
| EX8        |                           | 169                                                 | 322 | 406 | 462 | 501 | 529 | 548 | 560 | 567 | 570 | 569 | 565 | 559 |
| EX4        | +20                       |                                                     | 2   | 5   | 7   | 8   | 9   | 9   | 10  | 10  | 10  | 10  | 10  | 10  |
| EX5        |                           |                                                     | 5   | 16  | 21  | 25  | 27  | 28  | 29  | 30  | 31  | 31  | 31  | 31  |
| EX6        |                           |                                                     | 12  | 38  | 51  | 58  | 64  | 68  | 70  | 72  | 73  | 73  | 73  | 73  |
| EX7        |                           |                                                     | 34  | 105 | 139 | 160 | 175 | 186 | 193 | 197 | 200 | 201 | 201 | 199 |
| EX8        |                           |                                                     | 90  | 281 | 370 | 427 | 467 | 495 | 514 | 526 | 533 | 536 | 535 | 532 |
| EX4        | +15                       |                                                     |     |     | 4   | 6   | 7   | 8   | 9   | 9   | 9   | 9   | 9   | 9   |
| EX5        |                           |                                                     |     |     | 13  | 19  | 22  | 25  | 26  | 27  | 28  | 28  | 29  | 29  |
| EX6        |                           |                                                     |     |     | 32  | 45  | 53  | 59  | 62  | 65  | 67  | 68  | 68  | 68  |
| EX7        |                           |                                                     |     |     | 87  | 123 | 145 | 161 | 171 | 178 | 183 | 186 | 187 | 187 |
| EX8        |                           |                                                     |     |     | 231 | 328 | 388 | 428 | 456 | 475 | 488 | 495 | 498 | 498 |

## EX Extended Capacity Tables

|     |     |  |  |  |  |     |     |     |     |     |     |     |     |     |
|-----|-----|--|--|--|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| EX4 | +10 |  |  |  |  | 3   | 5   | 6   | 7   | 8   | 8   | 8   | 9   | 9   |
| EX5 |     |  |  |  |  | 9   | 16  | 20  | 22  | 24  | 25  | 26  | 26  | 26  |
| EX6 |     |  |  |  |  | 22  | 38  | 47  | 52  | 56  | 59  | 61  | 62  | 62  |
| EX7 |     |  |  |  |  | 61  | 104 | 128 | 144 | 155 | 162 | 167 | 170 | 171 |
| EX8 |     |  |  |  |  | 162 | 277 | 341 | 384 | 413 | 432 | 445 | 452 | 455 |

## R-22 Extended Capacities (kWatts) EX4-8 Series, as expansion and liquid injection valves

| Valve Type | Condensing Temperature (°C) | Evaporating Temperature (°C) |     |     |     |     |     |     |     |     |     |     |     |     |
|------------|-----------------------------|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|            |                             | +15                          | +10 | +5  | 0   | -5  | -10 | -15 | -20 | -25 | -30 | -35 | -40 | -45 |
| EX4        | +60                         | 17                           | 17  | 18  | 18  | 18  | 18  | 18  | 18  | 18  | 17  | 17  | 17  | 17  |
| EX5        |                             | 51                           | 52  | 53  | 54  | 54  | 54  | 54  | 54  | 53  | 53  | 52  | 52  | 51  |
| EX6        |                             | 123                          | 126 | 128 | 129 | 130 | 130 | 130 | 129 | 128 | 127 | 126 | 124 | 122 |
| EX7        |                             | 337                          | 345 | 351 | 355 | 357 | 358 | 357 | 356 | 353 | 350 | 345 | 340 | 335 |
| EX8        |                             | 900                          | 921 | 936 | 946 | 952 | 954 | 953 | 948 | 941 | 932 | 921 | 908 | 893 |
| EX4        | +55                         | 16                           | 17  | 17  | 18  | 18  | 18  | 18  | 18  | 18  | 18  | 17  | 17  | 17  |
| EX5        |                             | 50                           | 51  | 52  | 53  | 54  | 54  | 54  | 54  | 54  | 53  | 53  | 52  | 52  |
| EX6        |                             | 119                          | 123 | 126 | 128 | 129 | 130 | 130 | 130 | 129 | 128 | 127 | 126 | 124 |
| EX7        |                             | 328                          | 339 | 346 | 352 | 355 | 357 | 358 | 357 | 356 | 353 | 350 | 345 | 340 |
| EX8        |                             | 876                          | 903 | 923 | 938 | 948 | 953 | 955 | 953 | 949 | 941 | 932 | 921 | 908 |
| EX4        | +50                         | 16                           | 16  | 17  | 17  | 18  | 18  | 18  | 18  | 18  | 18  | 18  | 17  | 17  |
| EX5        |                             | 48                           | 50  | 51  | 52  | 53  | 54  | 54  | 54  | 54  | 54  | 53  | 53  | 52  |
| EX6        |                             | 114                          | 119 | 123 | 125 | 127 | 129 | 129 | 129 | 129 | 128 | 127 | 126 | 125 |
| EX7        |                             | 314                          | 327 | 337 | 345 | 350 | 354 | 355 | 356 | 355 | 353 | 351 | 347 | 343 |
| EX8        |                             | 838                          | 873 | 899 | 919 | 933 | 943 | 948 | 949 | 947 | 942 | 935 | 925 | 914 |
| EX4        | +45                         | 15                           | 16  | 16  | 17  | 17  | 17  | 17  | 18  | 18  | 18  | 17  | 17  | 17  |
| EX5        |                             | 45                           | 47  | 49  | 51  | 52  | 52  | 53  | 53  | 53  | 53  | 53  | 52  | 52  |
| EX6        |                             | 107                          | 113 | 118 | 121 | 124 | 126 | 127 | 128 | 128 | 127 | 127 | 126 | 124 |
| EX7        |                             | 295                          | 311 | 324 | 334 | 341 | 346 | 349 | 351 | 351 | 350 | 348 | 346 | 342 |
| EX8        |                             | 787                          | 830 | 864 | 890 | 909 | 923 | 932 | 936 | 937 | 934 | 929 | 922 | 912 |
| EX4        | +40                         | 13                           | 15  | 15  | 16  | 16  | 17  | 17  | 17  | 17  | 17  | 17  | 17  | 17  |
| EX5        |                             | 41                           | 44  | 46  | 48  | 50  | 51  | 52  | 52  | 52  | 52  | 52  | 52  | 51  |
| EX6        |                             | 98                           | 106 | 111 | 116 | 119 | 122 | 124 | 125 | 125 | 125 | 125 | 124 | 123 |
| EX7        |                             | 270                          | 290 | 306 | 319 | 328 | 335 | 340 | 343 | 345 | 345 | 344 | 342 | 339 |
| EX8        |                             | 719                          | 774 | 817 | 850 | 875 | 894 | 907 | 915 | 919 | 919 | 916 | 911 | 903 |
| EX4        | +35                         | 12                           | 13  | 14  | 15  | 16  | 16  | 16  | 17  | 17  | 17  | 17  | 17  | 17  |
| EX5        |                             | 36                           | 40  | 43  | 45  | 47  | 49  | 50  | 50  | 51  | 51  | 51  | 51  | 50  |
| EX6        |                             | 86                           | 96  | 103 | 109 | 113 | 117 | 119 | 121 | 122 | 122 | 122 | 122 | 121 |
| EX7        |                             | 237                          | 264 | 284 | 300 | 312 | 321 | 327 | 332 | 335 | 336 | 336 | 335 | 333 |
| EX8        |                             | 632                          | 703 | 757 | 799 | 831 | 856 | 873 | 885 | 893 | 896 | 896 | 893 | 888 |
| EX4        | +30                         | 10                           | 11  | 13  | 14  | 15  | 15  | 16  | 16  | 16  | 16  | 16  | 16  | 16  |
| EX5        |                             | 29                           | 35  | 39  | 42  | 44  | 46  | 47  | 48  | 49  | 49  | 49  | 49  | 49  |
| EX6        |                             | 70                           | 83  | 93  | 100 | 106 | 110 | 113 | 116 | 117 | 118 | 118 | 118 | 118 |
| EX7        |                             | 194                          | 229 | 256 | 276 | 291 | 303 | 312 | 318 | 322 | 325 | 326 | 326 | 324 |
| EX8        |                             | 516                          | 611 | 682 | 735 | 776 | 808 | 831 | 848 | 859 | 866 | 869 | 868 | 865 |
| EX4        | +25                         | 7                            | 9   | 11  | 12  | 13  | 14  | 15  | 15  | 15  | 16  | 16  | 16  | 16  |
| EX5        |                             | 20                           | 28  | 33  | 37  | 40  | 43  | 44  | 46  | 46  | 47  | 47  | 48  | 48  |
| EX6        |                             | 47                           | 67  | 80  | 90  | 97  | 102 | 106 | 109 | 112 | 113 | 114 | 114 | 114 |
| EX7        |                             | 130                          | 184 | 220 | 246 | 266 | 281 | 292 | 301 | 307 | 311 | 313 | 314 | 314 |
| EX8        |                             | 347                          | 491 | 587 | 656 | 709 | 749 | 779 | 802 | 818 | 829 | 835 | 837 | 836 |

**R-22 Extended Capacities (kWatts) EX4-8 Series, as expansion and liquid injection valves**

| Valve Type | Condensing Temperature (°C) | Evaporating Temperature (°C) |     |     |     |     |     |     |     |     |     |     |     |     |
|------------|-----------------------------|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|            |                             | +15                          | +10 | +5  | 0   | -5  | -10 | -15 | -20 | -25 | -30 | -35 | -40 | -45 |
| EX4        | +20                         |                              | 6   | 9   | 10  | 12  | 13  | 13  | 14  | 14  | 15  | 15  | 15  | 15  |
| EX5        |                             |                              | 18  | 26  | 32  | 36  | 39  | 41  | 42  | 44  | 45  | 45  | 45  | 46  |
| EX6        |                             |                              | 43  | 63  | 76  | 85  | 93  | 98  | 102 | 105 | 107 | 108 | 109 | 109 |
| EX7        |                             |                              | 117 | 173 | 209 | 235 | 254 | 269 | 280 | 288 | 294 | 298 | 300 | 300 |
| EX8        |                             |                              | 312 | 461 | 557 | 627 | 678 | 718 | 747 | 768 | 784 | 793 | 799 | 801 |
| EX4        | +15                         |                              |     | 5   | 8   | 10  | 11  | 12  | 13  | 13  | 14  | 14  | 14  | 14  |
| EX5        |                             |                              |     | 15  | 24  | 30  | 34  | 37  | 39  | 40  | 42  | 42  | 43  | 43  |
| EX6        |                             |                              |     | 37  | 58  | 71  | 81  | 88  | 93  | 97  | 100 | 102 | 103 | 104 |
| EX7        |                             |                              |     | 101 | 160 | 196 | 222 | 241 | 256 | 266 | 274 | 279 | 283 | 285 |
| EX8        |                             |                              |     | 269 | 426 | 524 | 593 | 644 | 682 | 710 | 731 | 745 | 754 | 759 |
| EX4        | +10                         |                              |     |     | 4   | 7   | 9   | 10  | 11  | 12  | 13  | 13  | 13  | 13  |
| EX5        |                             |                              |     |     | 12  | 22  | 28  | 31  | 34  | 36  | 38  | 39  | 40  | 40  |
| EX6        |                             |                              |     |     | 29  | 53  | 66  | 76  | 82  | 87  | 91  | 94  | 96  | 97  |
| EX7        |                             |                              |     |     | 80  | 145 | 182 | 208 | 227 | 241 | 251 | 258 | 263 | 267 |
| EX8        |                             |                              |     |     | 214 | 386 | 485 | 554 | 604 | 642 | 669 | 689 | 702 | 711 |

**R-404A/R-507 Extended Capacities (kWatts) EX4-8 Series,  
as expansion and liquid injection valves**

| Valve Type | Condensing Temperature (°C) | Evaporating Temperature (°C) |     |     |     |     |     |     |     |     |     |     |     |     |
|------------|-----------------------------|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|            |                             | +15                          | 10+ | +5  | 0   | -5  | -10 | -15 | -20 | -25 | -30 | -35 | -40 | -45 |
| EX4        | +60                         | 9                            | 9   | 9   | 9   | 9   | 9   | 9   | 8   | 8   | 8   | 7   | 7   | 6   |
| EX5        |                             | 28                           | 28  | 28  | 28  | 28  | 27  | 26  | 25  | 24  | 23  | 22  | 21  | 20  |
| EX6        |                             | 68                           | 68  | 68  | 67  | 66  | 65  | 63  | 61  | 58  | 56  | 33  | 50  | 47  |
| EX7        |                             | 186                          | 187 | 186 | 184 | 181 | 177 | 172 | 166 | 160 | 153 | 145 | 137 | 129 |
| EX8        |                             | 495                          | 498 | 496 | 491 | 482 | 471 | 458 | 443 | 425 | 407 | 387 | 366 | 344 |
| EX4        | +55                         | 10                           | 10  | 10  | 10  | 10  | 10  | 10  | 9   | 9   | 9   | 8   | 8   | 8   |
| EX5        |                             | 30                           | 31  | 31  | 31  | 30  | 30  | 29  | 29  | 28  | 27  | 26  | 25  | 23  |
| EX6        |                             | 72                           | 73  | 74  | 74  | 73  | 72  | 70  | 69  | 67  | 64  | 62  | 59  | 56  |
| EX7        |                             | 198                          | 201 | 202 | 202 | 200 | 197 | 193 | 188 | 182 | 176 | 169 | 162 | 154 |
| EX8        |                             | 527                          | 535 | 538 | 537 | 533 | 525 | 514 | 501 | 486 | 470 | 451 | 432 | 411 |
| EX4        | +50                         | 10                           | 10  | 11  | 11  | 11  | 11  | 10  | 10  | 10  | 10  | 9   | 9   | 9   |
| EX5        |                             | 31                           | 32  | 32  | 32  | 32  | 32  | 32  | 31  | 30  | 30  | 29  | 28  | 27  |
| EX6        |                             | 74                           | 76  | 77  | 78  | 78  | 77  | 76  | 75  | 73  | 71  | 69  | 66  | 64  |
| EX7        |                             | 203                          | 208 | 211 | 213 | 219 | 211 | 208 | 204 | 200 | 194 | 188 | 181 | 174 |
| EX8        |                             | 541                          | 555 | 564 | 567 | 567 | 562 | 555 | 545 | 532 | 518 | 501 | 484 | 465 |
| EX4        | +45                         | 10                           | 10  | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 10  | 10  | 10  | 9   |
| EX5        |                             | 31                           | 32  | 33  | 33  | 33  | 33  | 33  | 33  | 32  | 32  | 31  | 30  | 29  |
| EX6        |                             | 74                           | 77  | 79  | 80  | 80  | 80  | 80  | 79  | 78  | 76  | 74  | 72  | 69  |
| EX7        |                             | 201                          | 210 | 215 | 219 | 220 | 220 | 219 | 216 | 212 | 208 | 202 | 196 | 190 |
| EX8        |                             | 537                          | 559 | 574 | 583 | 587 | 586 | 582 | 575 | 566 | 553 | 539 | 524 | 506 |
| EX4        | +40                         | 10                           | 10  | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 10  | 10  |
| EX5        |                             | 29                           | 31  | 33  | 33  | 34  | 34  | 34  | 34  | 34  | 33  | 32  | 32  | 31  |
| EX6        |                             | 71                           | 75  | 78  | 80  | 81  | 82  | 82  | 81  | 81  | 79  | 78  | 76  | 74  |
| EX7        |                             | 193                          | 205 | 214 | 219 | 223 | 225 | 225 | 223 | 221 | 217 | 213 | 208 | 202 |
| EX8        |                             | 515                          | 547 | 570 | 585 | 594 | 598 | 598 | 595 | 588 | 578 | 567 | 553 | 538 |
| EX4        | +35                         | 9                            | 10  | 10  | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 11  |
| EX5        |                             | 27                           | 30  | 31  | 33  | 34  | 34  | 34  | 34  | 34  | 34  | 33  | 33  | 32  |
| EX6        |                             | 65                           | 71  | 75  | 79  | 81  | 82  | 83  | 83  | 82  | 81  | 80  | 79  | 77  |
| EX7        |                             | 178                          | 195 | 207 | 215 | 221 | 225 | 226 | 226 | 225 | 223 | 219 | 215 | 210 |
| EX8        |                             | 474                          | 519 | 551 | 574 | 590 | 599 | 603 | 604 | 600 | 594 | 585 | 573 | 560 |
| EX4        | +30                         | 8                            | 9   | 10  | 10  | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 11  |
| EX5        |                             | 23                           | 27  | 30  | 31  | 33  | 34  | 34  | 34  | 34  | 34  | 34  | 33  | 33  |
| EX6        |                             | 56                           | 65  | 71  | 75  | 78  | 81  | 82  | 83  | 83  | 82  | 81  | 80  | 79  |
| EX7        |                             | 153                          | 177 | 194 | 206 | 215 | 221 | 224 | 226 | 226 | 225 | 223 | 219 | 215 |
| EX8        |                             | 409                          | 472 | 517 | 550 | 573 | 588 | 598 | 603 | 603 | 600 | 593 | 584 | 573 |

**R-404A/R-507 Extended Capacities (kWatts) EX4-8 Series,  
as expansion and liquid injection valves**

| Valve Type | Condensing Temperature (°C) | Evaporating Temperature (°C) |     |     |     |     |     |     |     |     |     |     |     |     |
|------------|-----------------------------|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|            |                             | +15                          | 10+ | +5  | 0   | -5  | -10 | -15 | -20 | -25 | -30 | -35 | -40 | -45 |
| EX4        | +25                         | 6                            | 8   | 9   | 10  | 10  | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 11  |
| EX5        |                             | 17                           | 23  | 27  | 29  | 31  | 32  | 33  | 34  | 34  | 34  | 34  | 34  | 33  |
| EX6        |                             | 42                           | 55  | 64  | 70  | 74  | 78  | 80  | 81  | 82  | 82  | 81  | 80  | 79  |
| EX7        |                             | 114                          | 150 | 174 | 191 | 204 | 213 | 218 | 222 | 224 | 224 | 223 | 220 | 217 |
| EX8        |                             | 305                          | 400 | 465 | 510 | 543 | 566 | 582 | 592 | 596 | 597 | 593 | 587 | 579 |
| EX4        | +20                         | 1                            | 5   | 7   | 8   | 9   | 10  | 10  | 11  | 11  | 11  | 11  | 11  | 11  |
| EX5        |                             | 3                            | 16  | 22  | 26  | 28  | 30  | 32  | 33  | 33  | 33  | 33  | 33  | 33  |
| EX6        |                             | 8                            | 40  | 53  | 62  | 68  | 73  | 76  | 78  | 80  | 80  | 80  | 80  | 79  |
| EX7        |                             | 21                           | 108 | 146 | 170 | 187 | 200 | 208 | 214 | 218 | 219 | 220 | 218 | 216 |
| EX8        |                             | 56                           | 289 | 388 | 453 | 499 | 532 | 555 | 571 | 580 | 585 | 585 | 582 | 576 |
| EX4        | +15                         |                              |     | 5   | 7   | 8   | 9   | 10  | 10  | 10  | 11  | 11  | 11  | 11  |
| EX5        |                             |                              |     | 15  | 21  | 25  | 28  | 29  | 31  | 32  | 32  | 32  | 33  | 32  |
| EX6        |                             |                              |     | 37  | 51  | 60  | 66  | 71  | 74  | 76  | 77  | 78  | 78  | 78  |
| EX7        |                             |                              |     | 101 | 139 | 164 | 181 | 194 | 202 | 208 | 212 | 213 | 214 | 213 |
| EX8        |                             |                              |     | 268 | 371 | 437 | 484 | 516 | 540 | 555 | 564 | 569 | 569 | 566 |
| EX4        | +10                         |                              |     |     | 5   | 7   | 8   | 9   | 9   | 10  | 10  | 10  | 10  | 10  |
| EX5        |                             |                              |     |     | 14  | 20  | 24  | 26  | 28  | 30  | 31  | 31  | 31  | 31  |
| EX6        |                             |                              |     |     | 33  | 48  | 57  | 64  | 68  | 71  | 73  | 75  | 75  | 75  |
| EX7        |                             |                              |     |     | 91  | 131 | 156 | 174 | 186 | 195 | 201 | 204 | 206 | 206 |
| EX8        |                             |                              |     |     | 242 | 350 | 417 | 464 | 496 | 519 | 535 | 544 | 548 | 549 |

## R-407C Extended Capacities (kWatts) EX4-8 Series, as expansion and liquid injection valves

| Valve Type | Condensing Temperature°C |              | Evaporating Temperature (°C) |     |     |     |     |     |     |     |     |     |     |     |     |
|------------|--------------------------|--------------|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|            | Dew Point                | Bubble Point | +15                          | +10 | +5  | 0   | -5  | -10 | -15 | -20 | -25 | -30 | -35 | -40 | -45 |
| EX4        | +64                      | +60          | 16                           | 17  | 17  | 17  | 17  | 17  | 16  | 16  | 16  | 15  | 15  | 15  | 14  |
| EX5        |                          |              | 50                           | 51  | 51  | 51  | 51  | 50  | 50  | 49  | 48  | 47  | 46  | 45  | 43  |
| EX6        |                          |              | 119                          | 120 | 121 | 121 | 121 | 119 | 118 | 116 | 114 | 112 | 109 | 106 | 103 |
| EX7        |                          |              | 328                          | 332 | 333 | 333 | 332 | 329 | 325 | 320 | 314 | 308 | 301 | 293 | 285 |
| EX8        |                          |              | 874                          | 884 | 889 | 889 | 885 | 877 | 867 | 854 | 838 | 821 | 802 | 781 | 759 |
| EX4        | +59                      | +55          | 17                           | 17  | 17  | 17  | 17  | 17  | 17  | 17  | 16  | 16  | 16  | 15  | 15  |
| EX5        |                          |              | 50                           | 51  | 52  | 52  | 52  | 52  | 51  | 51  | 50  | 49  | 48  | 47  | 46  |
| EX6        |                          |              | 120                          | 122 | 123 | 124 | 124 | 123 | 122 | 121 | 119 | 117 | 114 | 112 | 109 |
| EX7        |                          |              | 330                          | 336 | 339 | 341 | 341 | 339 | 336 | 332 | 328 | 322 | 315 | 308 | 301 |
| EX8        |                          |              | 879                          | 895 | 904 | 909 | 908 | 904 | 897 | 886 | 873 | 858 | 840 | 821 | 801 |
| EX4        | +54                      | +50          | 16                           | 17  | 17  | 17  | 17  | 17  | 17  | 17  | 17  | 17  | 16  | 16  | 16  |
| EX5        |                          |              | 50                           | 51  | 52  | 52  | 53  | 53  | 52  | 52  | 51  | 51  | 50  | 49  | 48  |
| EX6        |                          |              | 118                          | 121 | 123 | 125 | 125 | 125 | 125 | 123 | 122 | 120 | 118 | 116 | 113 |
| EX7        |                          |              | 326                          | 334 | 340 | 343 | 345 | 345 | 343 | 340 | 336 | 331 | 325 | 319 | 312 |
| EX8        |                          |              | 869                          | 891 | 906 | 915 | 919 | 919 | 914 | 907 | 896 | 883 | 868 | 851 | 832 |
| EX4        | +50                      | +45          | 16                           | 16  | 17  | 17  | 17  | 17  | 17  | 17  | 17  | 17  | 17  | 16  | 16  |
| EX5        |                          |              | 48                           | 50  | 51  | 52  | 53  | 53  | 53  | 52  | 52  | 51  | 51  | 50  | 49  |
| EX6        |                          |              | 115                          | 119 | 122 | 124 | 125 | 125 | 125 | 125 | 124 | 122 | 120 | 118 | 116 |
| EX7        |                          |              | 316                          | 327 | 336 | 341 | 344 | 346 | 345 | 344 | 341 | 337 | 332 | 326 | 320 |
| EX8        |                          |              | 843                          | 873 | 894 | 909 | 918 | 921 | 920 | 916 | 908 | 897 | 884 | 869 | 853 |
| EX4        | +45                      | +40          | 15                           | 16  | 16  | 17  | 17  | 17  | 17  | 17  | 17  | 17  | 17  | 17  | 16  |
| EX5        |                          |              | 46                           | 48  | 50  | 51  | 52  | 52  | 52  | 52  | 52  | 52  | 51  | 50  | 49  |
| EX6        |                          |              | 109                          | 114 | 118 | 121 | 123 | 124 | 125 | 125 | 124 | 123 | 121 | 120 | 118 |
| EX7        |                          |              | 300                          | 315 | 326 | 334 | 339 | 342 | 344 | 343 | 341 | 338 | 334 | 330 | 324 |
| EX8        |                          |              | 801                          | 840 | 870 | 891 | 905 | 913 | 916 | 915 | 910 | 902 | 891 | 878 | 864 |
| EX4        | +40                      | +35          | 14                           | 15  | 16  | 16  | 17  | 17  | 17  | 17  | 17  | 17  | 17  | 17  | 16  |
| EX5        |                          |              | 42                           | 45  | 48  | 49  | 50  | 51  | 52  | 52  | 52  | 51  | 51  | 50  | 50  |
| EX6        |                          |              | 101                          | 108 | 113 | 117 | 120 | 122 | 123 | 123 | 123 | 122 | 121 | 120 | 118 |
| EX7        |                          |              | 278                          | 297 | 312 | 323 | 330 | 335 | 338 | 339 | 338 | 337 | 334 | 330 | 325 |
| EX8        |                          |              | 742                          | 793 | 832 | 860 | 880 | 894 | 901 | 904 | 902 | 897 | 889 | 879 | 866 |

## R-407C Extended Capacities (kWatts) EX4-8 Series, as expansion and liquid injection valves

| Valve Type | Condensing Temperature °C |              | Evaporating Temperature (°C) |     |     |     |     |     |     |     |     |     |     |     |     |
|------------|---------------------------|--------------|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|            | Dew Point                 | Bubble Point | +15                          | +10 | +5  | 0   | -5  | -10 | -15 | -20 | -25 | -30 | -35 | -40 | -45 |
| EX4        | +35                       | +30          | 12                           | 14  | 15  | 15  | 16  | 16  | 16  | 17  | 17  | 17  | 17  | 16  | 16  |
| EX5        |                           |              | 38                           | 42  | 45  | 47  | 48  | 49  | 50  | 51  | 51  | 51  | 50  | 50  | 49  |
| EX6        |                           |              | 90                           | 99  | 106 | 111 | 115 | 118 | 119 | 120 | 121 | 120 | 120 | 119 | 117 |
| EX7        |                           |              | 248                          | 273 | 292 | 306 | 317 | 324 | 329 | 331 | 332 | 331 | 329 | 326 | 323 |
| EX8        |                           |              | 661                          | 729 | 779 | 817 | 844 | 864 | 876 | 883 | 885 | 884 | 878 | 870 | 860 |
| EX4        | +30                       | +25          | 10                           | 12  | 13  | 14  | 15  | 15  | 16  | 16  | 16  | 16  | 16  | 16  | 16  |
| EX5        |                           |              | 32                           | 37  | 41  | 44  | 46  | 47  | 48  | 49  | 49  | 49  | 49  | 49  | 48  |
| EX6        |                           |              | 75                           | 88  | 97  | 103 | 108 | 112 | 115 | 116 | 117 | 117 | 117 | 116 | 115 |
| EX7        |                           |              | 207                          | 241 | 266 | 285 | 299 | 309 | 316 | 320 | 322 | 323 | 322 | 320 | 317 |
| EX8        |                           |              | 552                          | 644 | 710 | 760 | 796 | 823 | 841 | 853 | 860 | 861 | 859 | 854 | 846 |
| EX4        | +26                       | +20          | 7                            | 10  | 12  | 13  | 14  | 14  | 15  | 15  | 16  | 16  | 16  | 16  | 15  |
| EX5        |                           |              | 23                           | 30  | 36  | 39  | 42  | 44  | 46  | 47  | 47  | 48  | 48  | 48  | 47  |
| EX6        |                           |              | 54                           | 72  | 85  | 94  | 100 | 105 | 108 | 111 | 112 | 113 | 113 | 113 | 112 |
| EX7        |                           |              | 148                          | 199 | 233 | 258 | 276 | 289 | 299 | 305 | 309 | 312 | 312 | 311 | 309 |
| EX8        |                           |              | 395                          | 530 | 621 | 687 | 735 | 770 | 796 | 814 | 825 | 831 | 832 | 829 | 824 |
| EX4        | +21                       | +15          |                              | 7   | 9   | 11  | 12  | 13  | 14  | 14  | 15  | 15  | 15  | 15  | 15  |
| EX5        |                           |              |                              | 21  | 29  | 34  | 38  | 40  | 42  | 44  | 45  | 45  | 46  | 46  | 46  |
| EX6        |                           |              |                              | 50  | 69  | 81  | 90  | 96  | 101 | 104 | 106 | 108 | 108 | 108 | 108 |
| EX7        |                           |              |                              | 137 | 189 | 223 | 247 | 265 | 277 | 287 | 293 | 297 | 299 | 299 | 298 |
| EX8        |                           |              |                              | 365 | 503 | 594 | 658 | 705 | 740 | 764 | 781 | 791 | 796 | 796 | 795 |
| EX4        | +16                       | +10          |                              |     | 6   | 9   | 11  | 12  | 13  | 13  | 14  | 14  | 14  | 14  | 14  |
| EX5        |                           |              |                              |     | 19  | 27  | 32  | 36  | 38  | 40  | 42  | 43  | 43  | 43  | 43  |
| EX6        |                           |              |                              |     | 45  | 64  | 76  | 85  | 91  | 96  | 99  | 101 | 103 | 103 | 103 |
| EX7        |                           |              |                              |     | 123 | 176 | 210 | 234 | 251 | 264 | 273 | 279 | 282 | 282 | 284 |
| EX8        |                           |              |                              |     | 329 | 470 | 561 | 624 | 670 | 704 | 727 | 743 | 753 | 753 | 758 |

## R-410A Extended Capacities (kWatts) EX4-8 Series, as expansion and liquid injection valves

| Valve Type | Condensing Temperature °C | Evaporating Temperature (°C) |     |      |      |      |      |      |      |      |      |      |      |      |
|------------|---------------------------|------------------------------|-----|------|------|------|------|------|------|------|------|------|------|------|
|            |                           | +15                          | +10 | +5   | 0    | -5   | -10  | -15  | -20  | 18   | -30  | -35  | -40  | -45  |
| EX4        | +60                       | 17                           | 17  | 18   | 18   | 18   | 18   | 18   | 18   | 18   | 18   | 17   | 17   | 17   |
| EX5        |                           | 51                           | 52  | 53   | 54   | 54   | 54   | 54   | 54   | 53   | 53   | 52   | 51   | 50   |
| EX6        |                           | 123                          | 126 | 129  | 130  | 131  | 131  | 131  | 130  | 129  | 127  | 125  | 123  | 120  |
| EX7        |                           | 339                          | 348 | 354  | 358  | 360  | 361  | 360  | 358  | 354  | 350  | 344  | 338  | 331  |
| EX8        |                           | -                            | -   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| EX4        | +55                       | 18                           | 18  | 19   | 19   | 19   | 19   | 19   | 19   | 19   | 19   | 19   | 18   | 18   |
| EX5        |                           | 53                           | 55  | 56   | 57   | 57   | 58   | 58   | 58   | 57   | 57   | 56   | 55   | 54   |
| EX6        |                           | 127                          | 132 | 135  | 137  | 138  | 139  | 139  | 139  | 138  | 137  | 135  | 133  | 131  |
| EX7        |                           | 350                          | 362 | 370  | 377  | 381  | 383  | 383  | 382  | 380  | 377  | 372  | 366  | 360  |
| EX8        |                           | 935                          | 965 | 988  | 1005 | 1016 | 1021 | 1023 | 1020 | 1014 | 1005 | 992  | 978  | 961  |
| EX4        | +50                       | 18                           | 18  | 19   | 19   | 20   | 20   | 20   | 20   | 20   | 20   | 20   | 19   | 19   |
| EX5        |                           | 53                           | 55  | 57   | 58   | 59   | 60   | 60   | 60   | 60   | 59   | 59   | 58   | 57   |
| EX6        |                           | 128                          | 133 | 137  | 140  | 142  | 144  | 145  | 145  | 144  | 143  | 142  | 140  | 138  |
| EX7        |                           | 351                          | 366 | 377  | 386  | 392  | 396  | 398  | 398  | 397  | 394  | 391  | 386  | 380  |
| EX8        |                           | 936                          | 975 | 1006 | 1029 | 1045 | 1056 | 1061 | 1062 | 1059 | 1052 | 1043 | 1030 | 1015 |
| EX4        | +45                       | 17                           | 18  | 19   | 19   | 20   | 20   | 20   | 20   | 20   | 20   | 20   | 20   | 20   |
| EX5        |                           | 52                           | 54  | 57   | 58   | 60   | 60   | 61   | 61   | 61   | 61   | 61   | 60   | 59   |
| EX6        |                           | 124                          | 131 | 136  | 141  | 144  | 146  | 147  | 148  | 148  | 147  | 146  | 145  | 143  |
| EX7        |                           | 342                          | 361 | 375  | 387  | 395  | 401  | 405  | 407  | 407  | 405  | 403  | 399  | 394  |
| EX8        |                           | 913                          | 962 | 1001 | 1031 | 1054 | 1070 | 1080 | 1085 | 1085 | 1082 | 1075 | 1064 | 1052 |
| EX4        | +40                       | 16                           | 17  | 18   | 19   | 20   | 20   | 20   | 21   | 21   | 21   | 21   | 20   | 20   |
| EX5        |                           | 49                           | 52  | 55   | 57   | 59   | 60   | 61   | 62   | 62   | 62   | 62   | 61   | 61   |
| EX6        |                           | 118                          | 126 | 133  | 138  | 142  | 145  | 147  | 149  | 149  | 149  | 149  | 148  | 146  |
| EX7        |                           | 324                          | 348 | 366  | 381  | 392  | 400  | 406  | 409  | 411  | 411  | 409  | 406  | 402  |
| EX8        |                           | 864                          | 927 | 977  | 1015 | 1045 | 1067 | 1082 | 1091 | 1095 | 1095 | 1091 | 1084 | 1073 |
| EX4        | +35                       | 15                           | 16  | 18   | 18   | 19   | 20   | 20   | 20   | 21   | 21   | 21   | 20   | 20   |
| EX5        |                           | 45                           | 49  | 53   | 55   | 58   | 59   | 60   | 61   | 62   | 62   | 62   | 62   | 61   |
| EX6        |                           | 108                          | 118 | 127  | 134  | 139  | 143  | 146  | 148  | 149  | 149  | 149  | 149  | 148  |
| EX7        |                           | 296                          | 326 | 349  | 368  | 382  | 393  | 401  | 406  | 409  | 411  | 410  | 409  | 406  |
| EX8        |                           | 789                          | 869 | 932  | 981  | 1019 | 1048 | 1069 | 1083 | 1092 | 1095 | 1095 | 1090 | 1082 |

## R-410A Extended Capacities (kWatts) EX4-8 Series, as expansion and liquid injection valves

| Valve Type | Condensing Temperature °C | Evaporating Temperature (°C) |     |     |     |     |      |      |      |      |      |      |      |      |
|------------|---------------------------|------------------------------|-----|-----|-----|-----|------|------|------|------|------|------|------|------|
|            |                           | +15                          | +10 | +5  | 0   | -5  | -10  | -15  | -20  | 18   | -30  | -35  | -40  | -45  |
| EX4        | +30                       | 13                           | 15  | 16  | 17  | 18  | 19   | 20   | 20   | 20   | 20   | 20   | 20   | 20   |
| EX5        |                           | 38                           | 44  | 49  | 52  | 55  | 57   | 59   | 60   | 61   | 61   | 61   | 61   | 61   |
| EX6        |                           | 93                           | 107 | 118 | 126 | 133 | 138  | 142  | 145  | 147  | 148  | 148  | 148  | 147  |
| EX7        |                           | 255                          | 294 | 325 | 348 | 366 | 380  | 390  | 398  | 403  | 406  | 407  | 406  | 405  |
| EX8        |                           | 680                          | 786 | 866 | 928 | 976 | 1013 | 1041 | 1061 | 1075 | 1083 | 1086 | 1084 | 1079 |
| EX4        | +25                       | 10                           | 13  | 15  | 16  | 17  | 18   | 19   | 19   | 20   | 20   | 20   | 20   | 20   |
| EX5        |                           | 29                           | 38  | 44  | 48  | 52  | 54   | 56   | 58   | 59   | 60   | 60   | 60   | 60   |
| EX6        |                           | 71                           | 91  | 106 | 117 | 125 | 131  | 136  | 140  | 143  | 144  | 145  | 146  | 145  |
| EX7        |                           | 195                          | 251 | 291 | 321 | 344 | 361  | 375  | 385  | 392  | 397  | 399  | 400  | 399  |
| EX8        |                           | 520                          | 669 | 775 | 855 | 916 | 964  | 1000 | 1027 | 1046 | 1058 | 1065 | 1067 | 1065 |
| EX4        | +20                       | 4                            | 9   | 12  | 14  | 16  | 17   | 18   | 18   | 19   | 19   | 19   | 20   | 20   |
| EX5        |                           | 13                           | 28  | 37  | 43  | 47  | 51   | 53   | 55   | 57   | 58   | 58   | 59   | 59   |
| EX6        |                           | 31                           | 68  | 89  | 103 | 114 | 122  | 129  | 133  | 137  | 139  | 141  | 142  | 142  |
| EX7        |                           | 84                           | 188 | 244 | 284 | 314 | 337  | 354  | 367  | 377  | 383  | 388  | 390  | 390  |
| EX8        |                           | 225                          | 501 | 652 | 758 | 837 | 898  | 944  | 979  | 1005 | 1023 | 1034 | 1040 | 1042 |
| EX4        | +15                       |                              | 3   | 9   | 12  | 14  | 15   | 16   | 17   | 18   | 18   | 19   | 19   | 19   |
| EX5        |                           |                              | 10  | 27  | 36  | 42  | 46   | 49   | 52   | 54   | 55   | 56   | 57   | 57   |
| EX6        |                           |                              | 23  | 65  | 86  | 100 | 111  | 119  | 125  | 130  | 133  | 135  | 137  | 137  |
| EX7        |                           |                              | 64  | 178 | 236 | 276 | 305  | 327  | 344  | 357  | 366  | 372  | 376  | 378  |
| EX8        |                           |                              | 172 | 475 | 629 | 735 | 813  | 873  | 917  | 951  | 976  | 992  | 1003 | 1008 |
| EX4        | +10                       |                              |     | 1   | 8   | 11  | 13   | 15   | 16   | 17   | 17   | 18   | 18   | 18   |
| EX5        |                           |                              |     | 4   | 25  | 34  | 40   | 44   | 47   | 50   | 52   | 53   | 54   | 55   |
| EX6        |                           |                              |     | 10  | 60  | 82  | 96   | 107  | 115  | 121  | 125  | 128  | 130  | 132  |
| EX7        |                           |                              |     | 28  | 166 | 225 | 265  | 294  | 315  | 332  | 344  | 352  | 358  | 362  |
| EX8        |                           |                              |     | 76  | 443 | 600 | 706  | 783  | 841  | 885  | 917  | 940  | 956  | 965  |

**R-124 Extended Capacities (kWatts) EX4-8 Series, as expansion and liquid injection valves**

| Valve Type | Condensing Temperature °C | Evaporating Temperature (°C) |     |     |     |     |    |    |
|------------|---------------------------|------------------------------|-----|-----|-----|-----|----|----|
|            |                           | +30                          | +25 | +20 | +15 | +10 | +5 | 0  |
| EX4        | +100                      | 7                            | 7   | 7   | 6   | 6   | 6  | 5  |
| EX5        |                           | 22                           | 21  | 20  | 19  | 18  | 17 | 16 |
| EX6        |                           | 53                           | 51  | 49  | 47  | 44  | 42 | 39 |
| EX4        | +95                       | 8                            | 8   | 7   | 7   | 7   | 7  | 6  |
| EX5        |                           | 24                           | 23  | 23  | 22  | 21  | 20 | 19 |
| EX6        |                           | 57                           | 56  | 54  | 52  | 50  | 47 | 45 |
| EX4        | +90                       | 8                            | 8   | 8   | 8   | 7   | 7  | 7  |
| EX5        |                           | 25                           | 25  | 24  | 24  | 23  | 22 | 21 |
| EX6        |                           | 61                           | 59  | 58  | 56  | 54  | 52 | 50 |
| EX4        | +85                       | 9                            | 9   | 8   | 8   | 8   | 8  | 7  |
| EX5        |                           | 26                           | 26  | 25  | 25  | 24  | 23 | 23 |
| EX6        |                           | 63                           | 62  | 61  | 60  | 58  | 56 | 54 |
| EX4        | +80                       | 9                            | 9   | 9   | 8   | 8   | 8  | 8  |
| EX5        |                           | 27                           | 27  | 26  | 26  | 25  | 25 | 24 |
| EX6        |                           | 64                           | 63  | 63  | 62  | 61  | 59 | 57 |
| EX4        | +75                       | 9                            | 9   | 9   | 9   | 9   | 8  | 8  |
| EX5        |                           | 27                           | 27  | 27  | 26  | 26  | 25 | 25 |
| EX6        |                           | 64                           | 64  | 64  | 63  | 62  | 61 | 60 |
| EX4        | +70                       | 9                            | 9   | 9   | 9   | 9   | 9  | 8  |
| EX5        |                           | 26                           | 26  | 27  | 27  | 26  | 26 | 25 |
| EX6        |                           | 62                           | 63  | 64  | 63  | 63  | 62 | 61 |
| EX4        | +65                       | 8                            | 8   | 9   | 9   | 9   | 9  | 8  |
| EX5        |                           | 25                           | 26  | 26  | 26  | 26  | 26 | 26 |
| EX6        |                           | 60                           | 61  | 62  | 63  | 63  | 62 | 62 |
| EX4        | +60                       | 8                            | 8   | 8   | 8   | 8   | 8  | 8  |
| EX5        |                           | 23                           | 24  | 25  | 26  | 26  | 26 | 26 |
| EX6        |                           | 56                           | 58  | 60  | 61  | 62  | 62 | 61 |

## R-23 Extended Capacities (kWatts) EX4-8 Series, as expansion and liquid injection valves

| Valve Type | Condensing Temperature °C | Evaporating Temperature (°C) |     |     |     |     |     |     |     |     |     |     |      |
|------------|---------------------------|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
|            |                           | -45                          | -50 | -55 | -60 | -65 | -70 | -75 | -80 | -85 | -90 | -95 | -100 |
| EX4        | -10                       | 17                           | 18  | 19  | 19  | 19  | 19  | 19  | 19  | 19  | 19  | 19  | 18   |
| EX5        |                           | 53                           | 55  | 56  | 57  | 58  | 58  | 58  | 58  | 58  | 57  | 57  | 56   |
| EX6        |                           | 127                          | 132 | 135 | 138 | 139 | 140 | 140 | 140 | 139 | 138 | 137 | 135  |
| EX4        | -15                       | 16                           | 17  | 18  | 18  | 19  | 19  | 19  | 19  | 19  | 19  | 18  | 18   |
| EX5        |                           | 50                           | 52  | 54  | 55  | 56  | 57  | 57  | 57  | 57  | 57  | 56  | 55   |
| EX6        |                           | 119                          | 125 | 130 | 133 | 135 | 137 | 137 | 137 | 137 | 136 | 135 | 134  |
| EX4        | -20                       | 15                           | 16  | 17  | 17  | 18  | 18  | 18  | 18  | 18  | 18  | 18  | 18   |
| EX5        |                           | 45                           | 48  | 51  | 53  | 54  | 55  | 55  | 55  | 55  | 55  | 55  | 54   |
| EX6        |                           | 109                          | 117 | 122 | 127 | 130 | 132 | 133 | 134 | 133 | 133 | 132 | 131  |
| EX4        | -25                       | 13                           | 14  | 15  | 16  | 17  | 17  | 17  | 18  | 18  | 18  | 18  | 17   |
| EX5        |                           | 40                           | 44  | 47  | 49  | 51  | 52  | 53  | 53  | 53  | 53  | 53  | 53   |
| EX6        |                           | 96                           | 106 | 113 | 118 | 122 | 125 | 127 | 128 | 129 | 128 | 128 | 127  |
| EX4        | -30                       | 11                           | 13  | 14  | 15  | 16  | 16  | 16  | 17  | 17  | 17  | 17  | 17   |
| EX5        |                           | 33                           | 38  | 42  | 45  | 47  | 49  | 50  | 51  | 51  | 51  | 51  | 51   |
| EX6        |                           | 78                           | 92  | 101 | 108 | 114 | 117 | 120 | 122 | 122 | 123 | 123 | 122  |
| EX4        | -35                       | 7                            | 10  | 12  | 13  | 14  | 15  | 15  | 16  | 16  | 16  | 16  | 16   |
| EX5        |                           | 22                           | 30  | 36  | 40  | 43  | 45  | 46  | 47  | 48  | 48  | 48  | 48   |
| EX6        |                           | 53                           | 73  | 86  | 96  | 103 | 108 | 111 | 114 | 115 | 116 | 116 | 116  |
| EX4        | -40                       |                              | 6   | 9   | 11  | 12  | 13  | 14  | 14  | 15  | 15  | 15  | 15   |
| EX5        |                           |                              | 19  | 28  | 33  | 37  | 40  | 42  | 43  | 44  | 45  | 45  | 45   |
| EX6        |                           |                              | 46  | 67  | 80  | 90  | 96  | 101 | 104 | 106 | 108 | 108 | 108  |
| EX4        | -45                       |                              |     | 5   | 8   | 10  | 11  | 12  | 13  | 13  | 13  | 14  | 14   |
| EX5        |                           |                              |     | 15  | 25  | 30  | 34  | 37  | 39  | 40  | 41  | 41  | 41   |
| EX6        |                           |                              |     | 37  | 60  | 73  | 82  | 88  | 93  | 96  | 98  | 99  | 100  |

## R-744 Extended Capacities (kWatts) EX4-8 Series, as expansion and liquid injection valves

| Valve Type | Condensing Temperature °C | Evaporating Temperature (°C) |     |     |     |      |      |      |      |      |      |      |      |      |
|------------|---------------------------|------------------------------|-----|-----|-----|------|------|------|------|------|------|------|------|------|
|            |                           | +8                           | +5  | 0   | -5  | -10  | -15  | -20  | -25  | -30  | -35  | -40  | -45  | -50  |
| EX4        | +10                       | 5                            | 12  | 18  | 22  | 26   | 29   | 31   | 33   | 34   | 35   | 36   | 37   | 38   |
| EX5        |                           | 15                           | 36  | 55  | 68  | 79   | 87   | 94   | 99   | 104  | 108  | 110  | 113  | 114  |
| EX6        |                           | 36                           | 86  | 132 | 164 | 189  | 208  | 225  | 238  | 249  | 257  | 264  | 269  | 273  |
| EX7        |                           | 99                           | 237 | 362 | 450 | 518  | 572  | 617  | 653  | 683  | 707  | 726  | 740  | 750  |
| EX8        |                           | -                            | -   | -   | -   | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| EX4        | +5                        |                              |     | 12  | 19  | 23   | 27   | 29   | 32   | 33   | 35   | 36   | 37   | 38   |
| EX5        |                           |                              |     | 37  | 57  | 71   | 81   | 90   | 96   | 102  | 106  | 110  | 113  | 115  |
| EX6        |                           |                              |     | 89  | 137 | 170  | 195  | 215  | 231  | 244  | 254  | 263  | 269  | 274  |
| EX7        |                           |                              |     | 244 | 376 | 466  | 535  | 589  | 634  | 670  | 699  | 722  | 739  | 753  |
| EX8        |                           |                              |     | -   | -   | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| EX4        | 0                         |                              |     |     | 12  | 19   | 24   | 27   | 30   | 32   | 34   | 35   | 36   | 37   |
| EX5        |                           |                              |     |     | 38  | 58   | 72   | 83   | 91   | 98   | 103  | 107  | 111  | 113  |
| EX6        |                           |                              |     |     | 90  | 139  | 173  | 198  | 218  | 234  | 247  | 257  | 265  | 271  |
| EX7        |                           |                              |     |     | 247 | 383  | 475  | 544  | 598  | 642  | 677  | 705  | 727  | 744  |
| EX8        |                           |                              |     |     | 659 | 1023 | 1267 | 1452 | 1598 | 1715 | 1809 | 1883 | 1942 | 1987 |
| EX4        | -5                        |                              |     |     |     | 12   | 19   | 24   | 27   | 30   | 32   | 34   | 35   | 36   |
| EX5        |                           |                              |     |     |     | 97   | 59   | 73   | 83   | 91   | 98   | 103  | 107  | 110  |
| EX6        |                           |                              |     |     |     | 89   | 140  | 174  | 199  | 219  | 234  | 247  | 257  | 264  |
| EX7        |                           |                              |     |     |     | 245  | 385  | 477  | 547  | 601  | 644  | 678  | 705  | 725  |
| EX8        |                           |                              |     |     |     | 654  | 1028 | 1275 | 1460 | 1604 | 1718 | 1809 | 1881 | 1937 |
| EX4        | -10                       |                              |     |     |     |      | 12   | 19   | 24   | 27   | 30   | 32   | 34   | 35   |
| EX5        |                           |                              |     |     |     |      | 36   | 58   | 72   | 83   | 91   | 97   | 102  | 106  |
| EX6        |                           |                              |     |     |     |      | 87   | 139  | 173  | 198  | 217  | 233  | 245  | 254  |
| EX7        |                           |                              |     |     |     |      | 239  | 382  | 475  | 544  | 597  | 639  | 671  | 697  |
| EX8        |                           |                              |     |     |     |      | 639  | 1021 | 1269 | 1452 | 1594 | 1705 | 1793 | 1861 |
| EX4        | -15                       |                              |     |     |     |      |      | 11   | 19   | 23   | 27   | 29   | 31   | 33   |
| EX5        |                           |                              |     |     |     |      |      | 35   | 57   | 71   | 82   | 89   | 96   | 100  |
| EX6        |                           |                              |     |     |     |      |      | 84   | 137  | 171  | 195  | 214  | 229  | 240  |
| EX7        |                           |                              |     |     |     |      |      | 229  | 376  | 468  | 536  | 588  | 628  | 660  |
| EX8        |                           |                              |     |     |     |      |      | 613  | 1003 | 1250 | 1431 | 1570 | 1677 | 1761 |

## R-744 Extended Capacities (kWatts) EX4-8 Series, as expansion and liquid injection valves

| Valve Type | Condensing Temperature °C | Evaporating Temperature (°C) |    |   |    |     |     |     |     |     |      |      |      |      |
|------------|---------------------------|------------------------------|----|---|----|-----|-----|-----|-----|-----|------|------|------|------|
|            |                           | +8                           | +5 | 0 | -5 | -10 | -15 | -20 | -25 | -30 | -35  | -40  | -45  | -50  |
| EX4        | -20                       |                              |    |   |    |     |     |     | 11  | 18  | 23   | 26   | 29   | 31   |
| EX5        |                           |                              |    |   |    |     |     |     | 33  | 56  | 70   | 80   | 87   | 93   |
| EX6        |                           |                              |    |   |    |     |     |     | 79  | 133 | 166  | 191  | 209  | 223  |
| EX7        |                           |                              |    |   |    |     |     |     | 216 | 365 | 457  | 523  | 574  | 613  |
| EX8        |                           |                              |    |   |    |     |     |     | 576 | 974 | 1220 | 1398 | 1532 | 1636 |
| EX4        | -25                       |                              |    |   |    |     |     |     |     | 10  | 18   | 22   | 25   | 28   |
| EX5        |                           |                              |    |   |    |     |     |     |     | 30  | 53   | 67   | 77   | 85   |
| EX6        |                           |                              |    |   |    |     |     |     |     | 72  | 128  | 161  | 185  | 202  |
| EX7        |                           |                              |    |   |    |     |     |     |     | 198 | 350  | 442  | 507  | 556  |
| EX8        |                           |                              |    |   |    |     |     |     |     | 528 | 935  | 1179 | 1353 | 1483 |
| EX4        | -30                       |                              |    |   |    |     |     |     |     |     | 9    | 17   | 21   | 24   |
| EX5        |                           |                              |    |   |    |     |     |     |     |     | 27   | 51   | 64   | 74   |
| EX6        |                           |                              |    |   |    |     |     |     |     |     | 64   | 121  | 154  | 177  |
| EX7        |                           |                              |    |   |    |     |     |     |     |     | 175  | 332  | 423  | 486  |
| EX8        |                           |                              |    |   |    |     |     |     |     |     | 466  | 887  | 1129 | 1298 |
| EX4        | -35                       |                              |    |   |    |     |     |     |     |     |      | 7    | 16   | 20   |
| EX5        |                           |                              |    |   |    |     |     |     |     |     |      | 22   | 47   | 61   |
| EX6        |                           |                              |    |   |    |     |     |     |     |     |      | 53   | 113  | 146  |
| EX7        |                           |                              |    |   |    |     |     |     |     |     |      | 145  | 310  | 400  |
| EX8        |                           |                              |    |   |    |     |     |     |     |     |      | 386  | 828  | 1068 |
| EX4        | -40                       |                              |    |   |    |     |     |     |     |     |      |      | 5    | 14   |
| EX5        |                           |                              |    |   |    |     |     |     |     |     |      |      | 16   | 43   |
| EX6        |                           |                              |    |   |    |     |     |     |     |     |      |      | 37   | 103  |
| EX7        |                           |                              |    |   |    |     |     |     |     |     |      |      | 103  | 284  |
| EX8        |                           |                              |    |   |    |     |     |     |     |     |      |      | 275  | 759  |

**R-407 Extended Capacities (EXV)**

As Expansion Valve The Following Correction Factors (kt) Related To Evaporating And Condensing Temperatures Apply

| Liquid temperature °C | Correction factors for EXV Evaporating temperature °C |      |      |      |      |      |      |      |      |      |      |      |      |      |
|-----------------------|-------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                       | +20                                                   | +15  | +10  | +5   | 0    | -5   | -10  | -15  | -20  | -25  | -30  | -35  | -40  | -45  |
| +65                   | 1.51                                                  | 1.53 | 1.55 | 1.58 | 1.61 | 1.64 | 1.68 | 1.71 | 1.75 | 1.80 | 1.85 | 1.90 | 1.96 | 2.02 |
| +60                   | 1.35                                                  | 1.37 | 1.39 | 1.41 | 1.43 | 1.46 | 1.49 | 1.52 | 1.55 | 1.59 | 1.63 | 1.67 | 1.71 | 1.76 |
| +55                   | 1.23                                                  | 1.25 | 1.26 | 1.28 | 1.30 | 1.32 | 1.35 | 1.37 | 1.40 | 1.43 | 1.46 | 1.50 | 1.53 | 1.57 |
| +50                   | 1.14                                                  | 1.15 | 1.16 | 1.18 | 1.20 | 1.22 | 1.24 | 1.26 | 1.28 | 1.31 | 1.33 | 1.36 | 1.39 | 1.43 |
| +45                   | 1.06                                                  | 1.07 | 1.08 | 1.10 | 1.11 | 1.13 | 1.14 | 1.16 | 1.18 | 1.20 | 1.23 | 1.25 | 1.28 | 1.31 |
| +40                   | 0.99                                                  | 1.00 | 1.01 | 1.02 | 1.04 | 1.05 | 1.07 | 1.08 | 1.10 | 1.12 | 1.14 | 1.16 | 1.18 | 1.21 |
| +35                   | 0.93                                                  | 0.94 | 0.95 | 0.96 | 0.97 | 0.99 | 1.00 | 1.01 | 1.03 | 1.05 | 1.06 | 1.08 | 1.10 | 1.13 |
| +30                   | 0.88                                                  | 0.89 | 0.90 | 0.91 | 0.92 | 0.93 | 0.94 | 0.95 | 0.97 | 0.98 | 1.00 | 1.02 | 1.03 | 1.05 |
| +25                   | 0.83                                                  | 0.84 | 0.85 | 0.86 | 0.87 | 0.88 | 0.89 | 0.90 | 0.91 | 0.93 | 0.94 | 0.96 | 0.97 | 0.99 |
| +20                   | 0.79                                                  | 0.80 | 0.81 | 0.82 | 0.82 | 0.83 | 0.84 | 0.85 | 0.87 | 0.88 | 0.89 | 0.91 | 0.92 | 0.94 |
| +15                   | 0.76                                                  | 0.76 | 0.77 | 0.78 | 0.78 | 0.79 | 0.80 | 0.81 | 0.82 | 0.83 | 0.85 | 0.86 | 0.87 | 0.89 |
| +10                   | 0.72                                                  | 0.73 | 0.74 | 0.74 | 0.75 | 0.76 | 0.77 | 0.77 | 0.78 | 0.79 | 0.81 | 0.82 | 0.83 | 0.84 |
| +5                    | 0.69                                                  | 0.70 | 0.70 | 0.71 | 0.72 | 0.72 | 0.73 | 0.74 | 0.75 | 0.76 | 0.77 | 0.78 | 0.79 | 0.80 |
| 0                     | 0.66                                                  | 0.67 | 0.68 | 0.68 | 0.69 | 0.69 | 0.70 | 0.71 | 0.72 | 0.73 | 0.73 | 0.74 | 0.75 | 0.77 |
| -5                    | 0.64                                                  | 0.64 | 0.65 | 0.65 | 0.66 | 0.67 | 0.67 | 0.68 | 0.69 | 0.70 | 0.70 | 0.71 | 0.72 | 0.73 |
| -10                   | 0.62                                                  | 0.62 | 0.62 | 0.63 | 0.63 | 0.64 | 0.65 | 0.65 | 0.66 | 0.67 | 0.68 | 0.68 | 0.69 | 0.70 |

**For Applications As Expansion Valve The Following Correction Factors (kΔp) Related To The Pressure Drop At Valve Apply**

| Correction factors for EXVs |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| ΔP (bar)                    | 1    | 1.5  | 2    | 2.5  | 3    | 3.5  | 4    | 4.5  | 5    | 5.5  | 6    | 6.5  | 7    | 7.5  |
| kΔP                         | 3.51 | 2.87 | 2.48 | 2.22 | 2.03 | 1.88 | 1.76 | 1.66 | 1.57 | 1.5  | 1.43 | 1.38 | 1.33 | 1.28 |
| ΔP (bar)                    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   |
| kΔP                         | 1.24 | 1.17 | 1.11 | 1.06 | 1.01 | 0.97 | 0.94 | 0.91 | 0.88 | 0.85 | 0.83 | 0.81 | 0.79 | 0.77 |

**Application Hot Gas Bypass - Nominal Capacities (kW)**

| Valve Type | Kv, m3/h | R22 / R407C | R134a | R404A / R507 |
|------------|----------|-------------|-------|--------------|
| EX4        | 0.21     | 4.9         | 3.4   | 4.6          |
| EX5        | 0.68     | 16          | 11    | 15           |
| EX6        | 1.57     | 37          | 26    | 35           |
| EX7        | 5.58     | 131         | 92    | 126          |
| EX8        | 16.95    | 399         | 278   | 382          |

The nominal capacity (Qn) is based on the following conditions:

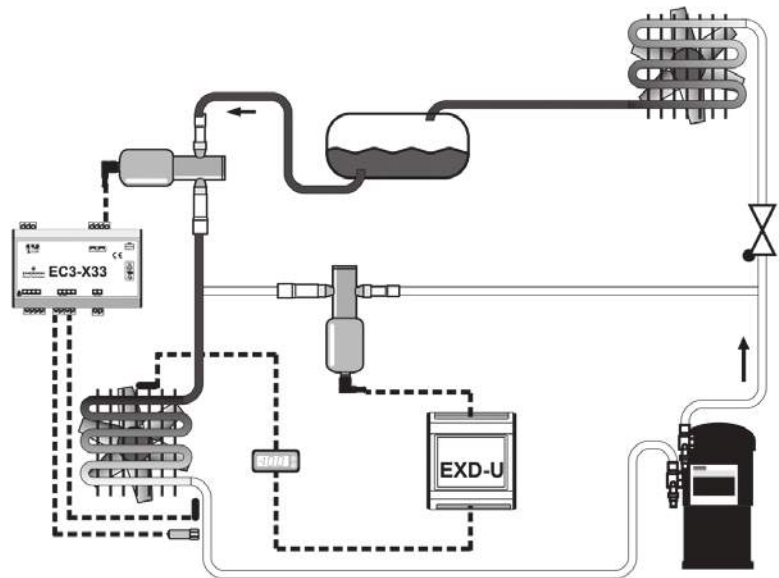
| Refrigerant             | Evaporating temperature | Condensing temperature                  | Subcooling |
|-------------------------|-------------------------|-----------------------------------------|------------|
| R407C                   | +4°C (dew point)        | +38°C bubble point /<br>+43°C dew point | 1K         |
| R22, R134a, R404A, R507 | +4°C                    | +38°C                                   | 1K         |

For other operating conditions use Excel-based Selection Tool (download from [www.emersonclimate.eu](http://www.emersonclimate.eu)) or use the following quick selection tables.

Biflow versions are not released for hot gas bypass applications.

EX4 .. EX8 must be installed with motor downward in hot gas line applications. This ensures the valve life expectancy. Install a check valve on main hot gas line just after branch to Control Valve.

| Valve type | Extended Capacity kW |       |              | Condensing Temperature °C                                  |
|------------|----------------------|-------|--------------|------------------------------------------------------------|
|            | R22 / R407C          | R134a | R404A / R507 |                                                            |
| EX4        | 7                    | 4.9   | 5.8          | 60 bubble point for all refig.<br>(64 dew point for R407C) |
| EX5        | 23                   | 16    | 19           |                                                            |
| EX6        | 54                   | 38    | 45           |                                                            |
| EX7        | 191                  | 135   | 161          |                                                            |
| EX8        | 581                  | 411   | 488          |                                                            |
| EX4        | 6.1                  | 4.3   | 5.5          | 50 bubble point for all refig.<br>(54 dew point for R407C) |
| EX5        | 20                   | 14    | 18           |                                                            |
| EX6        | 46                   | 32    | 41           |                                                            |
| EX7        | 163                  | 115   | 147          |                                                            |
| EX8        | 495                  | 348   | 447          |                                                            |
| EX4        | 4.9                  | 3.7   | 4.9          | 40 bubble point for all refig.<br>(45 dew point for R407C) |
| EX5        | 16                   | 12    | 16           |                                                            |
| EX6        | 38                   | 27    | 36           |                                                            |
| EX7        | 136                  | 95    | 130          |                                                            |
| EX8        | 414                  | 289   | 394          |                                                            |
| EX4        | 4.3                  | 2.8   | 4            | 30 bubble point for all refig.<br>(35 dew point for R407C) |
| EX5        | 14                   | 9     | 13           |                                                            |
| EX6        | 32                   | 22    | 31           |                                                            |
| EX7        | 112                  | 78    | 111          |                                                            |
| EX8        | 340                  | 236   | 336          |                                                            |



## Application Suction Pressure Regulation (Evaporating or Crankcase Pressure) - Nominal Capacities (kW)

| Valve Type | Kv, m3/h | R407C | R22 | R134a | R404A |
|------------|----------|-------|-----|-------|-------|
| EX6        | 1.57     | 3.9   | 4.1 | 3.1   | 3.5   |
| EX7        | 5.58     | 14    | 15  | 11    | 13    |
| EX8        | 16.95    | 42    | 45  | 34    | 38    |

The nominal capacity (Qn) is based on the following conditions:

| Refrigerant       | Evaporating temperature | Condensing temperature                  | Subcooling | Pressure Drop |
|-------------------|-------------------------|-----------------------------------------|------------|---------------|
| R407C             | +4°C (dew point)        | +38°C bubble point /<br>+43°C dew point | 1K         | 0.15 bar      |
| R22, R134a, R404A | +4°C                    | +38°C                                   | 1K         | 0.15 bar      |

For other operating conditions use Excel-based Selection Tool (download from [www.emersonclimate.eu](http://www.emersonclimate.eu)) or use the following quick selection tables.

For biflow versions attention should be paid to the temperature range TS -40°C to +80°C ! The EX6 .. EX8 must be installed with motor downward in suction line applications. This ensures the valve life expectancy.

Example:

The EX6 provides 3.5 kW at 0.15 bar pressure drop with R404A or  
3.5\*1.41=4.9 kW at 0.3 bar pressure drop.

Multiply above nominal capacities by following factors to obtain capacities at different pressure drops:

### Typical Order Package

- 1) Valve EX6, EX7 or EX8 Plug and cable assembly EXV-M60
- 2) Controller Kit EXD-U00 Part No. 808 038

| ΔP, bar           | 0.10 | 0.15 | 0.20 | 0.30 |
|-------------------|------|------|------|------|
| Correction factor | 0.82 | 1.00 | 1.15 | 1.41 |

## R-134a Extended Capacities (kWatts) EX6-8 Series

| Valve Type | Condensing Temperature °C | Evaporating Temperature (°C) |    |    |     |     |
|------------|---------------------------|------------------------------|----|----|-----|-----|
|            |                           | +10                          | +5 | 0  | -10 | -20 |
| EX6        | +60                       | 3                            | 2  | 2  | 2   | 1   |
| EX7        |                           | 10                           | 9  | 8  | 6   | 4   |
| EX8        |                           | 30                           | 27 | 24 | 18  | 13  |
| EX6        | +50                       | 3                            | 3  | 2  | 2   | 1   |
| EX7        |                           | 11                           | 10 | 9  | 7   | 5   |
| EX8        |                           | 34                           | 30 | 27 | 21  | 15  |
| EX6        | +40                       | 3                            | 3  | 3  | 2   | 2   |
| EX7        |                           | 12                           | 11 | 10 | 8   | 6   |
| EX8        |                           | 38                           | 34 | 30 | 23  | 17  |
| EX6        | +30                       | 4                            | 3  | 3  | 2   | 2   |
| EX7        |                           | 14                           | 12 | 11 | 8   | 6   |
| EX8        |                           | 41                           | 37 | 33 | 26  | 19  |
| EX6        | +20                       | 4                            | 4  | 3  | 3   | 2   |
| EX7        |                           | 15                           | 13 | 12 | 9   | 7   |
| EX8        |                           | 45                           | 40 | 36 | 28  | 21  |

## R-22 Extended Capacities (kWatts) EX6-8 Series

| Valve Type | Condensing Temperature °C | Evaporating Temperature (°C) |    |    |     |     |     |     |
|------------|---------------------------|------------------------------|----|----|-----|-----|-----|-----|
|            |                           | +10                          | +5 | 0  | -10 | -20 | -30 | -40 |
| EX6        | +60                       | 4                            | 3  | 3  | 3   | 2   | 2   | 1   |
| EX7        |                           | 13                           | 12 | 11 | 9   | 7   | 5   | 4   |
| EX8        |                           | 41                           | 37 | 34 | 27  | 22  | 17  | 12  |
| EX6        | +50                       | 4                            | 4  | 3  | 3   | 2   | 2   | 1   |
| EX7        |                           | 15                           | 13 | 12 | 10  | 8   | 6   | 5   |
| EX8        |                           | 45                           | 41 | 37 | 30  | 24  | 19  | 14  |
| EX6        | +40                       | 5                            | 4  | 4  | 3   | 2   | 2   | 1   |
| EX7        |                           | 16                           | 15 | 13 | 11  | 9   | 7   | 5   |
| EX8        |                           | 49                           | 45 | 41 | 33  | 27  | 21  | 15  |
| EX6        | +30                       | 5                            | 4  | 4  | 3   | 3   | 2   | 2   |
| EX7        |                           | 17                           | 16 | 14 | 12  | 9   | 7   | 5   |
| EX8        |                           | 53                           | 48 | 44 | 36  | 29  | 22  | 16  |
| EX6        | +20                       | 5                            | 5  | 4  | 4   | 3   | 2   | 2   |
| EX7        |                           | 19                           | 17 | 15 | 13  | 10  | 8   | 6   |
| EX8        |                           | 56                           | 52 | 47 | 39  | 31  | 24  | 18  |

**R-404A/R-507 Extended Capacities (kWatts) EX6-8 Series,  
Application Suction Pressure Regulation (Evaporating or Crankcase Pressure)**

| Valve Type | Condensing Temperature<br>°C | Evaporating Temperature (°C) |    |    |     |     |     |
|------------|------------------------------|------------------------------|----|----|-----|-----|-----|
|            |                              | +10                          | +5 | 0  | -20 | -30 | -40 |
| EX6        | +60                          | 3                            | 2  | 2  | 1   | 1   | 1   |
| EX7        |                              | 9                            | 8  | 8  | 4   | 3   | 2   |
| EX8        |                              | 29                           | 26 | 23 | 13  | 10  | 7   |
| EX6        | +50                          | 3                            | 3  | 3  | 2   | 1   | 1   |
| EX7        |                              | 12                           | 11 | 9  | 6   | 4   | 3   |
| EX8        |                              | 36                           | 32 | 29 | 18  | 13  | 9   |
| EX6        | +40                          | 4                            | 3  | 3  | 2   | 1   | 1   |
| EX7        |                              | 14                           | 12 | 11 | 7   | 5   | 4   |
| EX8        |                              | 42                           | 38 | 34 | 21  | 16  | 12  |
| EX6        | +30                          | 4                            | 4  | 4  | 2   | 2   | 1   |
| EX7        |                              | 16                           | 14 | 13 | 8   | 6   | 5   |
| EX8        |                              | 48                           | 43 | 39 | 25  | 19  | 14  |
| EX6        | +20                          | 5                            | 4  | 4  | 3   | 2   | 1   |
| EX7        |                              | 17                           | 16 | 14 | 9   | 7   | 5   |
| EX8        |                              | 53                           | 48 | 44 | 28  | 21  | 16  |

**R-407C Extended Capacities (kWatts) EX6-8 Series, Application Suction Pressure Regulation  
(Evaporating or Crankcase Pressure)**

| Valve Type | Condensing Temperature |                    | Evaporating Temperature (°C) |    |    |     |     |
|------------|------------------------|--------------------|------------------------------|----|----|-----|-----|
|            | Dew point<br>°C        | Bubble point<br>°C | +10                          | +5 | 0  | -10 | -20 |
| EX6        | +64                    | +60                | 3                            | 3  | 3  | 2   | 2   |
| EX7        |                        |                    | 12                           | 11 | 10 | 8   | 6   |
| EX8        |                        |                    | 36                           | 33 | 29 | 23  | 18  |
| EX6        | +54                    | +50                | 4                            | 3  | 3  | 2   | 2   |
| EX7        |                        |                    | 14                           | 12 | 11 | 9   | 7   |
| EX8        |                        |                    | 41                           | 37 | 34 | 27  | 21  |
| EX6        | +45                    | +40                | 4                            | 4  | 3  | 3   | 2   |
| EX7        |                        |                    | 15                           | 14 | 12 | 10  | 8   |
| EX8        |                        |                    | 46                           | 42 | 38 | 30  | 23  |
| EX6        | +35                    | +30                | 5                            | 4  | 4  | 3   | 2   |
| EX7        |                        |                    | 17                           | 15 | 14 | 11  | 9   |
| EX8        |                        |                    | 51                           | 46 | 41 | 33  | 26  |
| EX6        | +26                    | +20                | 5                            | 5  | 4  | 3   | 3   |
| EX7        |                        |                    | 18                           | 16 | 15 | 12  | 9   |
| EX8        |                        |                    | 55                           | 50 | 45 | 36  | 28  |

## Application Condensing Pressure Regulation and Liquid Duty - Nominal Capacities (kW)

| Valve Type | Kv, m3/h | R407C | R22 | R134a | R404A |
|------------|----------|-------|-----|-------|-------|
| EX5        | 0.68     | 18    | 20  | 18    | 13    |
| EX6        | 1.57     | 43    | 46  | 42    | 30    |
| EX7        | 5.58     | 153   | 162 | 151   | 106   |
| EX8        | 16.95    | 463   | 491 | 458   | 323   |

The nominal capacity (Qn) is based on the following conditions:

| Refrigerant       | Evaporating temperature | Condensing temperature                  | Subcooling | Pressure Drop |
|-------------------|-------------------------|-----------------------------------------|------------|---------------|
| R407C             | +4°C (dew point)        | +38°C bubble point /<br>+43°C dew point | 1K         | 0.35 bar      |
| R22, R134a, R404A | +4°C                    | +38°C                                   | 1K         | 0.35 bar      |

Multiply above nominal capacities by following factors to obtain capacities at different pressure drops:

| ΔP, bar           | 0.15 | 0.20 | 0.35 |
|-------------------|------|------|------|
| Correction factor | 0.65 | 0.76 | 1.00 |

Example:

The EX6 provides 30kW at 0.35bar pressure drop with R404A or  
 $30 \times 0.76 = 22.8$  kW at 0.2 bar pressure drop.

## R-134a Extended Capacities (kWatts) EX5-8 Series

| Valve Type | Condensing Temperature °C | Evaporating Temperature (°C) |     |     |     |
|------------|---------------------------|------------------------------|-----|-----|-----|
|            |                           | +10                          | 0   | -10 | -20 |
| EX5        | +60                       | 14                           | 13  | 13  | 12  |
| EX6        |                           | 32                           | 31  | 29  | 27  |
| EX7        |                           | 115                          | 109 | 104 | 98  |
| EX8        |                           | 350                          | 332 | 315 | 296 |
| EX5        | +50                       | 16                           | 15  | 15  | 14  |
| EX6        |                           | 37                           | 36  | 34  | 32  |
| EX7        |                           | 133                          | 127 | 121 | 115 |
| EX8        |                           | 405                          | 387 | 369 | 350 |
| EX5        | +30                       | 18                           | 18  | 17  | 16  |
| EX6        |                           | 42                           | 41  | 39  | 37  |
| EX7        |                           | 151                          | 145 | 139 | 133 |
| EX8        |                           | 458                          | 440 | 422 | 403 |
| EX5        | +40                       | 20                           | 20  | 19  | 18  |
| EX6        |                           | 47                           | 46  | 44  | 42  |
| EX7        |                           | 168                          | 162 | 156 | 150 |
| EX8        |                           | 512                          | 493 | 474 | 455 |
| EX5        | +20                       | 22                           | 22  | 21  | 20  |
| EX6        |                           | 52                           | 51  | 49  | 47  |
| EX7        |                           | 186                          | 180 | 173 | 167 |
| EX8        |                           | 564                          | 546 | 526 | 507 |

**R-22 Extended Capacities (kWatts) EX5-8 Series, as expansion and liquid injection valves**

| Valve Type | Condensing Temperature °C | Evaporating Temperature (°C) |     |     |     |     |     |
|------------|---------------------------|------------------------------|-----|-----|-----|-----|-----|
|            |                           | +10                          | 0   | -10 | -20 | -30 | -40 |
| EX5        | +60                       | 15                           | 15  | 15  | 14  | 14  | 13  |
| EX6        |                           | 36                           | 35  | 34  | 33  | 32  | 30  |
| EX7        |                           | 128                          | 124 | 120 | 116 | 112 | 108 |
| EX8        |                           | 387                          | 377 | 365 | 353 | 341 | 328 |
| EX5        | +50                       | 17                           | 17  | 16  | 17  | 16  | 15  |
| EX6        |                           | 41                           | 40  | 36  | 39  | 36  | 35  |
| EX7        |                           | 144                          | 141 | 129 | 137 | 129 | 124 |
| EX8        |                           | 439                          | 428 | 391 | 416 | 391 | 377 |
| EX5        | +30                       | 19                           | 19  | 19  | 18  | 17  | 17  |
| EX6        |                           | 45                           | 44  | 43  | 42  | 41  | 39  |
| EX7        |                           | 161                          | 157 | 153 | 149 | 145 | 140 |
| EX8        |                           | 488                          | 477 | 465 | 453 | 439 | 426 |
| EX5        | +40                       | 21                           | 21  | 20  | 20  | 19  | 19  |
| EX6        |                           | 50                           | 49  | 48  | 46  | 45  | 44  |
| EX7        |                           | 177                          | 173 | 169 | 165 | 160 | 156 |
| EX8        |                           | 536                          | 525 | 513 | 500 | 486 | 472 |
| EX5        | +20                       | 23                           | 23  | 22  | 22  | 21  | 21  |
| EX6        |                           | 54                           | 53  | 52  | 51  | 49  | 48  |
| EX7        |                           | 192                          | 188 | 184 | 180 | 175 | 171 |
| EX8        |                           | 584                          | 572 | 560 | 547 | 533 | 519 |

**R-404A/R-507 Extended Capacities (kWatts) EX5-8 Series,  
Application Condensing Pressure Regulation and Liquid Duty**

| Valve Type | Condensing Temperature °C | Evaporating Temperature (°C) |     |     |     |     |     |
|------------|---------------------------|------------------------------|-----|-----|-----|-----|-----|
|            |                           | +10                          | 0   | -10 | -20 | -30 | -40 |
| EX5        | +60                       | 8                            | 8   | 7   | 6   | 6   | 5   |
| EX6        |                           | 19                           | 17  | 16  | 15  | 13  | 12  |
| EX7        |                           | 66                           | 62  | 58  | 53  | 48  | 43  |
| EX8        |                           | 202                          | 189 | 175 | 160 | 146 | 130 |
| EX5        | +50                       | 11                           | 10  | 9   | 9   | 8   | 8   |
| EX6        |                           | 24                           | 23  | 22  | 20  | 19  | 17  |
| EX7        |                           | 87                           | 82  | 78  | 73  | 67  | 62  |
| EX8        |                           | 264                          | 250 | 236 | 220 | 205 | 189 |
| EX5        | +30                       | 13                           | 12  | 12  | 11  | 10  | 10  |
| EX6        |                           | 30                           | 28  | 27  | 26  | 24  | 23  |
| EX7        |                           | 106                          | 101 | 96  | 91  | 85  | 80  |
| EX8        |                           | 321                          | 306 | 291 | 276 | 260 | 243 |
| EX5        | +40                       | 15                           | 14  | 14  | 13  | 12  | 12  |
| EX6        |                           | 35                           | 33  | 32  | 30  | 29  | 27  |
| EX7        |                           | 123                          | 119 | 114 | 108 | 103 | 97  |
| EX8        |                           | 375                          | 360 | 345 | 329 | 312 | 295 |
| EX5        | +20                       | 17                           | 16  | 16  | 15  | 14  | 14  |
| EX6        |                           | 40                           | 38  | 37  | 35  | 34  | 32  |
| EX7        |                           | 141                          | 136 | 131 | 125 | 120 | 114 |
| EX8        |                           | 427                          | 412 | 397 | 380 | 363 | 346 |

### R-407C Extended Capacities (kWatts) EX5-8 Series, Application Condensing Pressure Regulation and Liquid Duty

| Valve Type | Condensing Temperature |              | Evaporating Temperature (°C) |     |     |     |
|------------|------------------------|--------------|------------------------------|-----|-----|-----|
|            | Dew Point °C           | Dew Point °C | +10                          | 0   | -10 | -20 |
| EX5        | +64                    | +60          | 14                           | 13  | 12  | 12  |
| EX6        |                        |              | 32                           | 30  | 29  | 28  |
| EX7        |                        |              | 112                          | 108 | 103 | 98  |
| EX8        |                        |              | 340                          | 327 | 313 | 298 |
| EX5        | +54                    | +50          | 16                           | 15  | 15  | 14  |
| EX6        |                        |              | 37                           | 36  | 35  | 33  |
| EX7        |                        |              | 132                          | 128 | 123 | 118 |
| EX8        |                        |              | 402                          | 388 | 373 | 358 |
| EX5        | +45                    | +30          | 18                           | 18  | 17  | 17  |
| EX6        |                        |              | 43                           | 41  | 40  | 38  |
| EX7        |                        |              | 152                          | 147 | 142 | 137 |
| EX8        |                        |              | 460                          | 446 | 431 | 415 |
| EX5        | +35                    | +40          | 21                           | 20  | 19  | 19  |
| EX6        |                        |              | 48                           | 47  | 45  | 44  |
| EX7        |                        |              | 170                          | 166 | 160 | 155 |
| EX8        |                        |              | 517                          | 503 | 487 | 471 |
| EX5        | +26                    | +20          | 23                           | 22  | 22  | 21  |
| EX6        |                        |              | 53                           | 52  | 50  | 49  |
| EX7        |                        |              | 189                          | 184 | 179 | 173 |
| EX8        |                        |              | 573                          | 558 | 543 | 526 |

### Application Hot Gas Flow such as Heat Reclaim Application - Nominal Capacities (kW)

| Valve Type                                                      | Kv, m3/h                | R22 / R407C                          | R134a      | R404A / R507  | R410A                 |
|-----------------------------------------------------------------|-------------------------|--------------------------------------|------------|---------------|-----------------------|
| EX6                                                             | 1.57                    | 11                                   | 9          | 10            | 13                    |
| EX7                                                             | 5.58                    | 39                                   | 33         | 36            | 47                    |
| EX8                                                             | 16.95                   | 119                                  | 101        | 108           | 144                   |
| The nominal capacity (Qn) is based on the following conditions: |                         |                                      |            |               |                       |
| Refrigerant                                                     | Evaporating temperature | Condensing temperature               | Subcooling | Pressure Drop | Isentropic Efficiency |
| R407C                                                           | +4°C (dew point)        | +38°C bubble point / +43°C dew point | 1K         | 0.35 bar      | 80%                   |
| R22, R134a, R404A, R507                                         | +4°C                    | +38°C                                | 1K         | 0.35 bar      | 80%                   |

For other conditions see following tables.

Valves must be installed with motor downward in hot gas line applications. This ensures the valve life expectancy. Bi-flow versions are not released for hot gas flow applications.

## R-134a Extended Capacities (kWatts) EX6-8 Series

| Valve Type | Condensing Temperature °C | Pressure Drop bar | Evaporating Temperature (°C) |     |     |     |     |     |     |     |     |     |     |     |     |
|------------|---------------------------|-------------------|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|            |                           |                   | +15                          | +10 | +5  | 0   | -5  | -10 | -15 | -20 | -25 | -30 | -35 | -40 | -45 |
| EX6        | +60                       | 0.1               | 5                            | 5   | 4   | 4   | 4   | 4   | 4   | 4   | 4   | 3   | 3   | 3   | 3   |
| EX7        |                           |                   | 16                           | 16  | 16  | 15  | 15  | 14  | 14  | 13  | 13  | 12  | 12  | 11  | 10  |
| EX8        |                           |                   | 50                           | 49  | 47  | 46  | 44  | 43  | 41  | 40  | 38  | 37  | 35  | 33  | 32  |
| EX6        |                           | 0.5               | 10                           | 10  | 10  | 9   | 9   | 9   | 8   | 8   | 8   | 7   | 7   | 7   | 6   |
| EX7        |                           |                   | 36                           | 35  | 34  | 33  | 32  | 31  | 30  | 29  | 28  | 26  | 25  | 24  | 23  |
| EX8        |                           |                   | 110                          | 107 | 104 | 101 | 97  | 94  | 91  | 87  | 84  | 80  | 77  | 74  | 70  |
| EX6        |                           | 1.0               | 14                           | 14  | 13  | 13  | 12  | 12  | 12  | 11  | 11  | 10  | 10  | 9   | 9   |
| EX7        |                           |                   | 50                           | 49  | 47  | 46  | 44  | 43  | 41  | 40  | 38  | 37  | 35  | 34  | 32  |
| EX8        |                           |                   | 152                          | 148 | 144 | 139 | 135 | 130 | 126 | 121 | 116 | 112 | 107 | 102 | 97  |
| EX6        | +50                       | 0.1               | 5                            | 4   | 4   | 4   | 4   | 4   | 4   | 4   | 4   | 3   | 3   | 3   | 3   |
| EX7        |                           |                   | 16                           | 16  | 15  | 15  | 14  | 14  | 14  | 13  | 13  | 12  | 12  | 11  | 11  |
| EX8        |                           |                   | 49                           | 48  | 47  | 45  | 44  | 43  | 41  | 40  | 39  | 37  | 36  | 35  | 33  |
| EX6        |                           | 0.5               | 10                           | 10  | 9   | 9   | 9   | 9   | 8   | 8   | 8   | 8   | 7   | 7   | 7   |
| EX7        |                           |                   | 35                           | 35  | 34  | 33  | 32  | 31  | 30  | 29  | 28  | 27  | 26  | 25  | 24  |
| EX8        |                           |                   | 108                          | 105 | 102 | 99  | 97  | 94  | 91  | 88  | 85  | 82  | 79  | 76  | 73  |
| EX6        |                           | 1.0               | 14                           | 13  | 13  | 13  | 12  | 12  | 12  | 11  | 11  | 10  | 10  | 10  | 9   |
| EX7        |                           |                   | 49                           | 48  | 46  | 45  | 44  | 43  | 41  | 40  | 39  | 37  | 36  | 34  | 33  |
| EX8        |                           |                   | 148                          | 145 | 141 | 137 | 133 | 129 | 125 | 121 | 117 | 113 | 109 | 105 | 100 |
| EX6        | +40                       | 0.1               | 4                            | 4   | 4   | 4   | 4   | 4   | 4   | 4   | 4   | 3   | 3   | 3   | 3   |
| EX7        |                           |                   | 16                           | 15  | 15  | 14  | 14  | 14  | 13  | 13  | 13  | 12  | 12  | 11  | 11  |
| EX8        |                           |                   | 47                           | 46  | 45  | 44  | 43  | 42  | 40  | 39  | 38  | 37  | 36  | 34  | 33  |
| EX6        |                           | 0.5               | 10                           | 9   | 9   | 9   | 9   | 8   | 8   | 8   | 8   | 7   | 7   | 7   | 7   |
| EX7        |                           |                   | 34                           | 33  | 32  | 32  | 31  | 30  | 29  | 28  | 27  | 26  | 26  | 25  | 24  |
| EX8        |                           |                   | 103                          | 100 | 98  | 96  | 93  | 91  | 88  | 86  | 83  | 80  | 78  | 75  | 73  |
| EX6        |                           | 1.0               | 13                           | 13  | 12  | 12  | 12  | 12  | 11  | 11  | 11  | 10  | 10  | 10  | 9   |
| EX7        |                           |                   | 46                           | 45  | 44  | 43  | 42  | 41  | 40  | 39  | 38  | 36  | 35  | 34  | 33  |
| EX8        |                           |                   | 141                          | 138 | 134 | 131 | 128 | 124 | 121 | 117 | 114 | 110 | 107 | 103 | 100 |
| EX6        | +30                       | 0.1               | 4                            | 4   | 4   | 4   | 4   | 4   | 4   | 3   | 3   | 3   | 3   | 3   | 3   |
| EX7        |                           |                   | 15                           | 14  | 14  | 14  | 13  | 13  | 13  | 12  | 12  | 12  | 11  | 11  | 11  |
| EX8        |                           |                   | 44                           | 43  | 42  | 42  | 41  | 40  | 39  | 38  | 37  | 35  | 34  | 33  | 32  |
| EX6        |                           | 0.5               | 9                            | 9   | 9   | 8   | 8   | 8   | 8   | 8   | 7   | 7   | 7   | 7   | 6   |
| EX7        |                           |                   | 32                           | 31  | 30  | 30  | 29  | 28  | 28  | 27  | 26  | 25  | 25  | 24  | 23  |
| EX8        |                           |                   | 96                           | 94  | 92  | 90  | 88  | 86  | 84  | 81  | 79  | 77  | 75  | 72  | 70  |
| EX6        |                           | 1.0               | 12                           | 12  | 12  | 11  | 11  | 11  | 11  | 10  | 10  | 10  | 9   | 9   | 9   |
| EX7        |                           |                   | 43                           | 42  | 41  | 40  | 39  | 38  | 37  | 36  | 35  | 34  | 33  | 32  | 31  |
| EX8        |                           |                   | 130                          | 128 | 125 | 122 | 119 | 117 | 114 | 111 | 108 | 105 | 102 | 98  | 95  |

**R-22/R-407C Extended Capacities (kWatts) EX5-8 Series,  
Application Hot Gas Flow such as Heat Reclaim Application**

| Valve Type | Condensing Temperature °C | Pressure Drop bar | Evaporating Temperature (°C) |     |     |     |     |     |     |     |     |     |     |     |     |
|------------|---------------------------|-------------------|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|            |                           |                   | +15                          | +10 | +5  | 0   | -5  | -10 | -15 | -20 | -25 | -30 | -35 | -40 | -45 |
| EX6        | +60                       | 0.1               | 6                            | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 4   | 4   | 4   | 4   | 4   |
| EX7        |                           |                   | 20                           | 19  | 19  | 18  | 18  | 17  | 17  | 16  | 16  | 15  | 15  | 14  | 14  |
| EX8        |                           |                   | 59                           | 58  | 57  | 55  | 54  | 53  | 51  | 50  | 48  | 47  | 45  | 44  | 42  |
| EX6        |                           | 0.5               | 12                           | 12  | 12  | 11  | 11  | 11  | 10  | 10  | 10  | 10  | 9   | 9   | 9   |
| EX7        |                           |                   | 43                           | 42  | 41  | 40  | 39  | 38  | 37  | 36  | 35  | 34  | 33  | 32  | 31  |
| EX8        |                           |                   | 131                          | 129 | 126 | 123 | 119 | 116 | 113 | 110 | 107 | 103 | 100 | 97  | 94  |
| EX6        |                           | 1.0               | 17                           | 17  | 16  | 16  | 15  | 15  | 15  | 14  | 14  | 13  | 13  | 13  | 12  |
| EX7        |                           |                   | 60                           | 59  | 58  | 56  | 55  | 53  | 52  | 51  | 49  | 48  | 46  | 45  | 43  |
| EX8        |                           |                   | 183                          | 179 | 175 | 171 | 167 | 162 | 158 | 154 | 149 | 145 | 140 | 135 | 131 |
| EX6        | +50                       | 0.1               | 5                            | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 4   | 4   | 4   | 4   | 4   |
| EX7        |                           |                   | 19                           | 19  | 18  | 18  | 17  | 17  | 17  | 16  | 16  | 15  | 15  | 14  | 14  |
| EX8        |                           |                   | 58                           | 57  | 56  | 54  | 53  | 52  | 51  | 49  | 48  | 47  | 45  | 44  | 42  |
| EX6        |                           | 0.5               | 12                           | 12  | 11  | 11  | 11  | 11  | 10  | 10  | 10  | 10  | 9   | 9   | 9   |
| EX7        |                           |                   | 42                           | 41  | 40  | 40  | 39  | 38  | 37  | 36  | 35  | 34  | 33  | 32  | 31  |
| EX8        |                           |                   | 128                          | 126 | 123 | 120 | 117 | 115 | 112 | 109 | 106 | 103 | 100 | 97  | 94  |
| EX6        |                           | 1.0               | 17                           | 16  | 16  | 15  | 15  | 15  | 14  | 14  | 14  | 13  | 13  | 13  | 12  |
| EX7        |                           |                   | 59                           | 57  | 56  | 55  | 54  | 52  | 51  | 50  | 49  | 47  | 46  | 44  | 43  |
| EX8        |                           |                   | 178                          | 175 | 171 | 167 | 163 | 159 | 155 | 151 | 147 | 143 | 139 | 135 | 131 |
| EX6        | +40                       | 0.1               | 5                            | 5   | 5   | 5   | 5   | 5   | 5   | 4   | 4   | 4   | 4   | 4   | 4   |
| EX7        |                           |                   | 18                           | 18  | 18  | 17  | 17  | 16  | 16  | 16  | 15  | 15  | 15  | 14  | 14  |
| EX8        |                           |                   | 56                           | 55  | 54  | 52  | 51  | 50  | 49  | 48  | 47  | 45  | 44  | 43  | 42  |
| EX6        |                           | 0.5               | 11                           | 11  | 11  | 11  | 10  | 10  | 10  | 10  | 9   | 9   | 9   | 9   | 8   |
| EX7        |                           |                   | 40                           | 40  | 39  | 38  | 37  | 36  | 35  | 35  | 34  | 33  | 32  | 31  | 30  |
| EX8        |                           |                   | 123                          | 120 | 118 | 115 | 113 | 110 | 108 | 105 | 103 | 100 | 97  | 94  | 92  |
| EX6        |                           | 1.0               | 16                           | 15  | 15  | 15  | 14  | 14  | 14  | 14  | 13  | 13  | 12  | 12  | 12  |
| EX7        |                           |                   | 56                           | 55  | 54  | 53  | 52  | 50  | 49  | 48  | 47  | 46  | 44  | 43  | 42  |
| EX8        |                           |                   | 170                          | 167 | 163 | 160 | 157 | 153 | 149 | 146 | 142 | 139 | 135 | 131 | 127 |
| EX6        | +30                       | 0.1               | 5                            | 5   | 5   | 5   | 4   | 4   | 4   | 4   | 4   | 4   | 4   | 4   | 4   |
| EX7        |                           |                   | 17                           | 17  | 17  | 16  | 16  | 16  | 15  | 15  | 15  | 14  | 14  | 14  | 13  |
| EX8        |                           |                   | 53                           | 52  | 51  | 50  | 49  | 48  | 46  | 45  | 44  | 43  | 42  | 41  | 40  |
| EX6        |                           | 0.5               | 11                           | 10  | 10  | 10  | 10  | 10  | 9   | 9   | 9   | 9   | 9   | 8   | 8   |
| EX7        |                           |                   | 38                           | 37  | 37  | 36  | 35  | 34  | 34  | 33  | 32  | 31  | 30  | 30  | 29  |
| EX8        |                           |                   | 115                          | 113 | 111 | 109 | 107 | 104 | 102 | 100 | 97  | 95  | 93  | 90  | 88  |
| EX6        |                           | 1.0               | 15                           | 14  | 14  | 14  | 14  | 13  | 13  | 13  | 12  | 12  | 12  | 12  | 11  |
| EX7        |                           |                   | 52                           | 51  | 50  | 49  | 48  | 47  | 46  | 45  | 44  | 43  | 42  | 41  | 40  |
| EX8        |                           |                   | 159                          | 156 | 153 | 150 | 147 | 144 | 141 | 138 | 134 | 131 | 128 | 124 | 121 |

\* Condensing temperatures R407C:

The relation between bubble points and dew points is as follows:

| Bubble point °C | Dew point °C |
|-----------------|--------------|
| +60             | +64          |
| +50             | +54          |
| +40             | +45          |
| +30             | +35          |

**R-404A Extended Capacities (kWatts) EX5-8 Series,  
Application Hot Gas Flow such as Heat Reclaim Application**

| Valve Type | Condensing Temperature °C | Pressure Drop bar | Evaporating Temperature (°C) |     |     |     |     |     |     |     |     |     |     |     |     |
|------------|---------------------------|-------------------|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|            |                           |                   | +15                          | +10 | +5  | 0   | -5  | -10 | -15 | -20 | -25 | -30 | -35 | -40 | -45 |
| EX6        | +60                       | 0.1               | 4                            | 4   | 4   | 4   | 4   | 3   | 3   | 3   | 3   | 3   | 3   | 2   | 2   |
| EX7        |                           |                   | 15                           | 14  | 14  | 13  | 13  | 12  | 11  | 11  | 10  | 10  | 9   | 8   | 8   |
| EX8        |                           |                   | 45                           | 43  | 42  | 40  | 38  | 36  | 35  | 33  | 31  | 29  | 27  | 25  | 23  |
| EX6        |                           | 0.5               | 9                            | 9   | 8   | 8   | 8   | 7   | 7   | 7   | 6   | 6   | 6   | 5   | 5   |
| EX7        |                           |                   | 32                           | 31  | 30  | 29  | 28  | 26  | 25  | 24  | 22  | 21  | 20  | 18  | 17  |
| EX8        |                           |                   | 99                           | 95  | 92  | 88  | 84  | 80  | 76  | 72  | 68  | 64  | 60  | 56  | 52  |
| EX6        |                           | 1.0               | 13                           | 12  | 12  | 11  | 11  | 10  | 10  | 9   | 9   | 8   | 8   | 7   | 7   |
| EX7        |                           |                   | 45                           | 44  | 42  | 40  | 39  | 37  | 35  | 33  | 31  | 29  | 27  | 26  | 24  |
| EX8        |                           |                   | 137                          | 132 | 127 | 122 | 117 | 112 | 106 | 101 | 95  | 89  | 84  | 78  | 72  |
| EX6        | +50                       | 0.1               | 5                            | 4   | 4   | 4   | 4   | 4   | 4   | 4   | 3   | 3   | 3   | 3   | 3   |
| EX7        |                           |                   | 16                           | 16  | 15  | 15  | 14  | 14  | 13  | 13  | 12  | 11  | 11  | 10  | 10  |
| EX8        |                           |                   | 49                           | 47  | 46  | 44  | 43  | 41  | 40  | 38  | 36  | 35  | 33  | 31  | 30  |
| EX6        |                           | 0.5               | 10                           | 10  | 9   | 9   | 9   | 8   | 8   | 8   | 7   | 7   | 7   | 6   | 6   |
| EX7        |                           |                   | 35                           | 34  | 33  | 32  | 31  | 30  | 29  | 28  | 26  | 25  | 24  | 23  | 22  |
| EX8        |                           |                   | 107                          | 104 | 101 | 98  | 95  | 91  | 88  | 84  | 80  | 77  | 73  | 69  | 65  |
| EX6        |                           | 1.0               | 14                           | 13  | 13  | 13  | 12  | 12  | 11  | 11  | 10  | 10  | 9   | 9   | 8   |
| EX7        |                           |                   | 49                           | 48  | 46  | 45  | 43  | 42  | 40  | 38  | 37  | 35  | 33  | 32  | 30  |
| EX8        |                           |                   | 149                          | 145 | 141 | 136 | 131 | 127 | 122 | 117 | 112 | 107 | 102 | 96  | 91  |
| EX6        | +40                       | 0.1               | 5                            | 4   | 4   | 4   | 4   | 4   | 4   | 4   | 4   | 3   | 3   | 3   | 3   |
| EX7        |                           |                   | 16                           | 16  | 16  | 15  | 15  | 14  | 14  | 13  | 13  | 12  | 12  | 11  | 11  |
| EX8        |                           |                   | 50                           | 49  | 47  | 46  | 45  | 43  | 42  | 40  | 39  | 37  | 36  | 34  | 33  |
| EX6        |                           | 0.5               | 10                           | 10  | 10  | 9   | 9   | 9   | 9   | 8   | 8   | 8   | 7   | 7   | 7   |
| EX7        |                           |                   | 36                           | 35  | 34  | 33  | 32  | 31  | 30  | 29  | 28  | 27  | 26  | 25  | 24  |
| EX8        |                           |                   | 109                          | 107 | 104 | 101 | 98  | 95  | 92  | 89  | 86  | 83  | 79  | 76  | 73  |
| EX6        |                           | 1.0               | 14                           | 14  | 13  | 13  | 13  | 12  | 12  | 11  | 11  | 11  | 10  | 10  | 9   |
| EX7        |                           |                   | 50                           | 49  | 48  | 46  | 45  | 44  | 42  | 41  | 39  | 38  | 36  | 35  | 33  |
| EX8        |                           |                   | 152                          | 148 | 144 | 140 | 136 | 132 | 128 | 124 | 119 | 115 | 110 | 105 | 101 |
| EX6        | +30                       | 0.1               | 5                            | 4   | 4   | 4   | 4   | 4   | 4   | 4   | 4   | 4   | 3   | 3   | 3   |
| EX7        |                           |                   | 16                           | 16  | 15  | 15  | 15  | 14  | 14  | 13  | 13  | 13  | 12  | 12  | 11  |
| EX8        |                           |                   | 49                           | 48  | 47  | 46  | 45  | 43  | 42  | 41  | 40  | 38  | 37  | 36  | 34  |
| EX6        |                           | 0.5               | 10                           | 10  | 10  | 9   | 9   | 9   | 9   | 8   | 8   | 8   | 8   | 7   | 7   |
| EX7        |                           |                   | 35                           | 35  | 34  | 33  | 32  | 31  | 31  | 30  | 29  | 28  | 27  | 26  | 25  |
| EX8        |                           |                   | 108                          | 105 | 103 | 101 | 98  | 95  | 93  | 90  | 87  | 84  | 81  | 78  | 76  |
| EX6        |                           | 1.0               | 14                           | 13  | 13  | 13  | 13  | 12  | 12  | 12  | 11  | 11  | 10  | 10  | 10  |
| EX7        |                           |                   | 49                           | 48  | 47  | 46  | 45  | 43  | 42  | 41  | 40  | 38  | 37  | 36  | 34  |
| EX8        |                           |                   | 149                          | 146 | 142 | 139 | 135 | 132 | 128 | 124 | 120 | 117 | 113 | 109 | 104 |

**R-410A Extended Capacities (kWatts) EX 5-8 Series,  
Application Hot Gas Flow such as Heat Reclaim Application**

| Valve Type | Condensing Temperature °C | Pressure Drop bar | Evaporating Temperature (°C) |     |     |     |     |     |     |     |     |     |     |     |     |
|------------|---------------------------|-------------------|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|            |                           |                   | +15                          | +10 | +5  | 0   | -5  | -10 | -15 | -20 | -25 | -30 | -35 | -40 | -45 |
| EX6        | +60                       | 0.1               | 6                            | 6   | 6   | 6   | 5   | 5   | 5   | 5   | 5   | 5   | 4   | 4   | 4   |
| EX7        |                           |                   | 21                           | 21  | 20  | 20  | 19  | 19  | 18  | 18  | 17  | 16  | 16  | 15  | 15  |
| EX8        |                           |                   | 64                           | 63  | 62  | 60  | 58  | 57  | 55  | 53  | 52  | 50  | 48  | 46  | 44  |
| EX6        |                           | 0.5               | 13                           | 13  | 13  | 12  | 12  | 12  | 11  | 11  | 11  | 10  | 10  | 10  | 9   |
| EX7        |                           |                   | 47                           | 46  | 45  | 44  | 43  | 41  | 40  | 39  | 38  | 36  | 35  | 34  | 32  |
| EX8        |                           |                   | 143                          | 140 | 137 | 133 | 130 | 126 | 122 | 118 | 115 | 111 | 107 | 103 | 99  |
| EX6        |                           | 1.0               | 19                           | 18  | 18  | 17  | 17  | 16  | 16  | 15  | 15  | 14  | 14  | 13  | 13  |
| EX7        |                           |                   | 66                           | 64  | 63  | 61  | 60  | 58  | 56  | 55  | 53  | 51  | 49  | 47  | 46  |
| EX8        |                           |                   | 200                          | 196 | 191 | 186 | 182 | 177 | 171 | 166 | 161 | 155 | 150 | 144 | 138 |
| EX6        | +50                       | 0.1               | 6                            | 6   | 6   | 6   | 6   | 6   | 5   | 5   | 5   | 5   | 5   | 5   | 4   |
| EX7        |                           |                   | 22                           | 22  | 21  | 21  | 20  | 20  | 19  | 19  | 18  | 18  | 17  | 17  | 16  |
| EX8        |                           |                   | 67                           | 66  | 65  | 63  | 62  | 60  | 59  | 57  | 55  | 54  | 52  | 50  | 48  |
| EX6        |                           | 0.5               | 14                           | 14  | 13  | 13  | 13  | 12  | 12  | 12  | 11  | 11  | 11  | 10  | 10  |
| EX7        |                           |                   | 49                           | 48  | 47  | 46  | 45  | 44  | 43  | 42  | 40  | 39  | 38  | 37  | 35  |
| EX8        |                           |                   | 149                          | 146 | 143 | 140 | 137 | 133 | 130 | 126 | 123 | 119 | 115 | 111 | 108 |
| EX6        |                           | 1.0               | 19                           | 19  | 19  | 18  | 18  | 17  | 17  | 16  | 16  | 15  | 15  | 14  | 14  |
| EX7        |                           |                   | 69                           | 67  | 66  | 64  | 63  | 61  | 60  | 58  | 57  | 55  | 53  | 51  | 50  |
| EX8        |                           |                   | 209                          | 204 | 200 | 196 | 191 | 186 | 182 | 177 | 172 | 167 | 161 | 156 | 151 |
| EX6        | +40                       | 0.1               | 6                            | 6   | 6   | 6   | 6   | 6   | 5   | 5   | 5   | 5   | 5   | 5   | 5   |
| EX7        |                           |                   | 22                           | 22  | 21  | 21  | 20  | 20  | 19  | 19  | 18  | 18  | 17  | 17  | 16  |
| EX8        |                           |                   | 67                           | 66  | 65  | 63  | 62  | 60  | 59  | 58  | 56  | 54  | 53  | 51  | 50  |
| EX6        |                           | 0.5               | 14                           | 13  | 13  | 13  | 13  | 12  | 12  | 12  | 11  | 11  | 11  | 11  | 10  |
| EX7        |                           |                   | 49                           | 48  | 47  | 46  | 45  | 44  | 43  | 42  | 41  | 40  | 39  | 37  | 36  |
| EX8        |                           |                   | 148                          | 146 | 143 | 140 | 137 | 134 | 131 | 127 | 124 | 121 | 117 | 114 | 110 |
| EX6        |                           | 1.0               | 19                           | 19  | 18  | 18  | 18  | 17  | 17  | 16  | 16  | 16  | 15  | 15  | 14  |
| EX7        |                           |                   | 68                           | 67  | 66  | 64  | 63  | 61  | 60  | 59  | 57  | 55  | 54  | 52  | 51  |
| EX8        |                           |                   | 207                          | 203 | 199 | 195 | 191 | 187 | 182 | 178 | 173 | 168 | 164 | 159 | 154 |
| EX6        | +30                       | 0.1               | 6                            | 6   | 6   | 6   | 6   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   |
| EX7        |                           |                   | 21                           | 21  | 21  | 20  | 20  | 19  | 19  | 19  | 18  | 18  | 17  | 17  | 16  |
| EX8        |                           |                   | 65                           | 64  | 63  | 61  | 60  | 59  | 58  | 56  | 55  | 53  | 52  | 51  | 49  |
| EX6        |                           | 0.5               | 13                           | 13  | 13  | 13  | 12  | 12  | 12  | 12  | 11  | 11  | 11  | 10  | 10  |
| EX7        |                           |                   | 47                           | 46  | 45  | 45  | 44  | 43  | 42  | 41  | 40  | 39  | 38  | 37  | 36  |
| EX8        |                           |                   | 143                          | 141 | 138 | 135 | 133 | 130 | 127 | 124 | 121 | 118 | 115 | 112 | 109 |
| EX6        |                           | 1.0               | 18                           | 18  | 18  | 17  | 17  | 17  | 16  | 16  | 16  | 15  | 15  | 14  | 14  |
| EX7        |                           |                   | 65                           | 64  | 63  | 62  | 61  | 60  | 58  | 57  | 56  | 54  | 53  | 51  | 50  |
| EX8        |                           |                   | 199                          | 195 | 192 | 188 | 185 | 181 | 177 | 173 | 169 | 165 | 160 | 156 | 152 |



## Quick Select Guide – Refrigeration Applications

| Application                                  | Feature                                    | Valve          | Nominal Liquid Capacity<br>R-22 (in tons)* | Nominal Liquid Capacity<br>R-410A (in tons)* |
|----------------------------------------------|--------------------------------------------|----------------|--------------------------------------------|----------------------------------------------|
| Liquid Line<br>Discharge Gas<br>Suction Line | Two Way, Normally Closed<br>Solenoid Valve | 50RB           | .54                                        |                                              |
|                                              |                                            | 100RB2         | 1.3                                        |                                              |
|                                              |                                            | 200RB2         | 3.6                                        |                                              |
|                                              |                                            | 200RB3         | 4.8                                        |                                              |
|                                              |                                            | 200RB4         | 8.0                                        |                                              |
|                                              |                                            | 200RB5         | 8.2                                        |                                              |
|                                              |                                            | 200RB6         | 9.5                                        |                                              |
|                                              |                                            | 200RB7         | 17.0                                       |                                              |
|                                              |                                            | 200RB9         | 30.5                                       |                                              |
|                                              |                                            | 200RB12        | 34.9                                       |                                              |
|                                              |                                            | 200RD 2        |                                            | 3.4                                          |
|                                              |                                            | 200RD 3        |                                            | 4.5                                          |
|                                              |                                            | 200RD 4        |                                            | 7.5                                          |
|                                              |                                            | 200RD 5        |                                            | 7.7                                          |
|                                              |                                            | 200RD 6        |                                            | 8.9                                          |
|                                              |                                            | 240RA8         | 15.6                                       |                                              |
|                                              |                                            | 240RA9 (5/8)   | 23.3                                       |                                              |
|                                              |                                            | 240RA9 (1-1/8) | 30.5                                       |                                              |
|                                              |                                            | 240RA12        | 34.9                                       |                                              |
|                                              |                                            | 240RA16        | 58.0                                       |                                              |
|                                              |                                            | 240RA20        | 95.4                                       |                                              |
|                                              | Two Way, Normally Open<br>Solenoid Valve   | 500RB2         | 3.1                                        |                                              |
|                                              |                                            | 500RB3         | 4.8                                        |                                              |
|                                              |                                            | 500RB4         | 5.6                                        |                                              |
|                                              |                                            | 500RB5         | 8.2                                        |                                              |
|                                              |                                            | 500RB6         | 10.0                                       |                                              |
|                                              |                                            | 500RB7         | 15.6                                       |                                              |
|                                              |                                            | 540RA8         | 15.6                                       |                                              |
|                                              |                                            | 540RA9 (5/8)   | 23.3                                       |                                              |
|                                              |                                            | 540RA9 (1-1/8) | 30.5                                       |                                              |
|                                              |                                            | 540RA12        | 34.9                                       |                                              |
|                                              |                                            | 540RA16        | 58.0                                       |                                              |
|                                              |                                            | 540RA20        | 95.4                                       |                                              |

\* 3 psi pressure drop per ARI Standard 760.  
All ratings are based on largest connection size.

The 50RB is a direct-acting, 2-way, normally closed valve. 50RB valves are used for liquid or discharge gas refrigerant service.

### Features

- Long-life molded coils
- Extended ends for easy installation (standard)
- Screw-on coil
- 100 mesh inlet screen standard

### Options

- Connection sizes to fit your system
- Straight-thru design
- Replace with RMF coil

### Specifications

- PTFE seat material
- 30" leads
- Maximum fluid temperature: 250°F
- Maximum working pressure: 500 psig
- MOPD: 300 psig
- UL/CUL file number: MH25894

*NOTE: Mounting enclosing tube more than 90° off vertical up position is not recommended.*

**Nomenclature** example: 50RB 4T22 SML 120/50-60

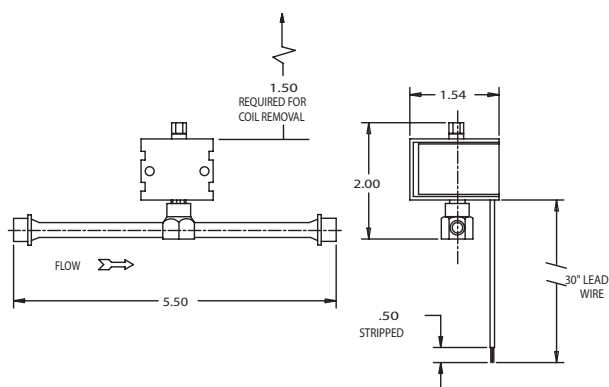
| 50R              | B             | 4                    | T                                        | 2                               | 2                                | SML                       | 120/50-60     |
|------------------|---------------|----------------------|------------------------------------------|---------------------------------|----------------------------------|---------------------------|---------------|
| Basic Valve Type | Design Series | Port Size (in 1/64") | Connection Type<br>T = ODF straight thru | Inlet Connection Size (in 1/8") | Outlet Connection Size (in 1/8") | Coil (RMF as replacement) | Coil Voltages |

### Ordering Information and Nominal\* Liquid Capacity Table – Tons (kW)

| PCN    | DESCRIPTION      | CONNECTION SIZE | COIL VOLTAGE/HZ | R-134a    | R-22      | R-407C    | R-404A/R-507 |
|--------|------------------|-----------------|-----------------|-----------|-----------|-----------|--------------|
| 063588 | 50RB 4 T 2 2 SML | 1/4" ODF        | 24/50-60        | 0.5 (1.8) | .54 (1.9) | .51 (1.8) | .34 (1.2)    |
| 063455 | 50RB 4 T 2 2 SML |                 | 120/50-60       |           |           |           |              |
| 063514 | 50RB 4 T 2 2 SML |                 | 220/50-60       |           |           |           |              |

Capacities based on 100°F liquid and 40°F saturated evaporator per ARI standard 760-87.  
\*See Extended Capacity Tables for ratings at a wide range of conditions.

### Dimensional Data (in)



50RB4T22

The 100RB is a direct-acting, 2-way, normally closed valve. 100 RB valves are used for liquid or discharge gas refrigerant service.

### Features

- One coil fits all valve sizes
- Extended ends for easy installation (standard)
- Long-life molded coils
- PTFE O-ring for superior external sealing



### Options

- SAE or ODF connection sizes in 1/4" and 3/8", 1/4" NPTF

### Specifications

- Maximum fluid temperature: 250°F
- Maximum working pressure: 500 psig
- MOPD: 300 psig
- UL/CUL file number: MP 604

*NOTE: Mounting enclosing tube more than 90° off vertical up position is not recommended.*

### Nomenclature example: 100RB 2F2 VLC

| 100R         | B             | 2                       | F                                                 | 2                            | VLC   |
|--------------|---------------|-------------------------|---------------------------------------------------|------------------------------|-------|
| Valve Series | Design Series | Port Size<br>(in 1/16") | Connection Type<br>F = SAE<br>S = ODF<br>P = NPTF | Connection Size<br>(in 1/8") | Coil* |

\*NOTE: Valves are shipped without the solenoid coils (VLC = Valve Less Coil). See coil assemblies for availability.

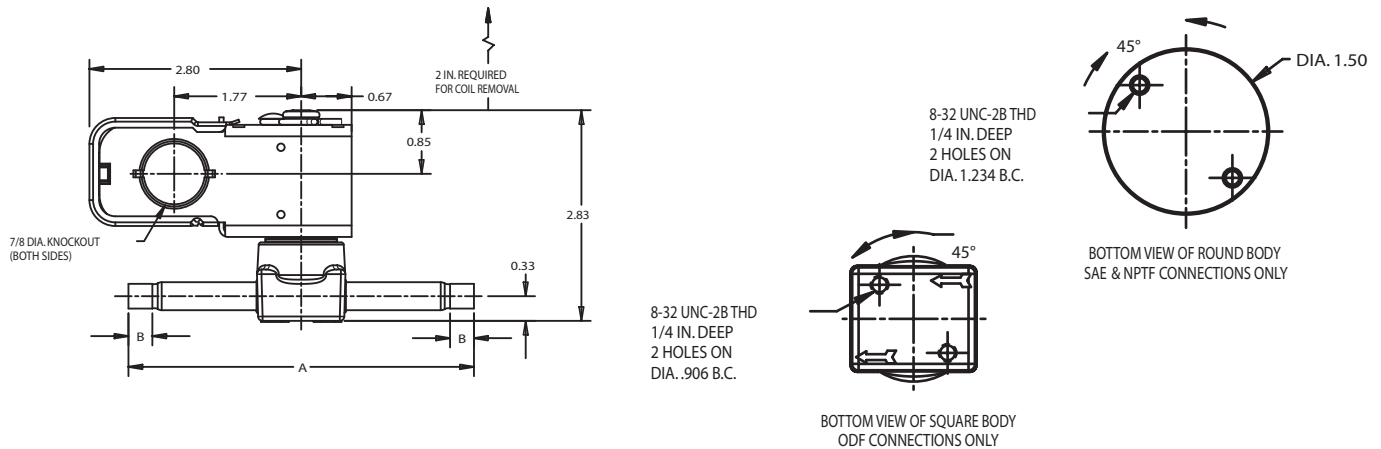
### Ordering Information and Nominal\* Liquid Capacity Table – Tons (kW)

| PCN    | Product Description | Connection Size | R-134a    | R-22       | R-407C     | R-404A/R-507 |
|--------|---------------------|-----------------|-----------|------------|------------|--------------|
| 047503 | 100RB 2S2 VLC       | 1/4" ODF        | 1.2 (4.2) | 1.27 (4.5) | 1.21 (4.3) | .85 (3.0)    |
| 047504 | 100RB 2S3 VLC       | 3/8" ODF        |           |            |            |              |
| 047505 | 100RB 2S4 VLC       | 1/2" ODF        |           |            |            |              |
| 047500 | 100RB 2F2 VLC       | 1/4" SAE        |           |            |            |              |
| 047501 | 100RB 2F3 VLC       | 3/8" SAE        |           |            |            |              |
| 047502 | 100RB 2P2 VLC       | 1/4" NPTF       |           |            |            |              |

Capacities based on 100°F liquid and 40°F saturated evaporator per ARI standard 760-87.

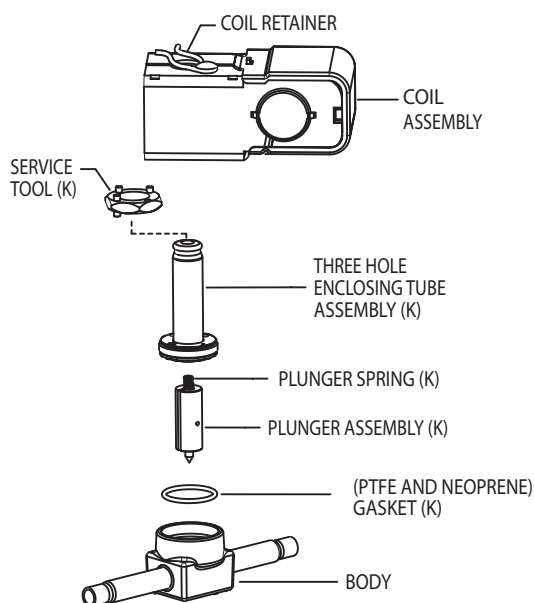
\*See Extended Capacity Tables for ratings at a wide range of conditions.

### Dimensional Data (in)



| Valve         | Connection Size | A    | B    |
|---------------|-----------------|------|------|
| 100RB 2S2 VLC | 1/4 ODF         | 4.63 | 0.31 |
| 100RB 2S3 VLC | 3/8 ODF         | 4.63 | 0.31 |
| 100RB 2S4 VLC | 1/2 ODF         | 4.63 | 0.38 |
| 100RB 2F2 VLC | 1/4 SAE         | 3.10 | -    |
| 100RB 2F3 VLC | 3/8 SAE         | 3.47 | -    |
| 100RB 2P2 VLC | 1/4 NPTF        | 1.56 | -    |

### Exploded View & Parts Kit Data



#### Valve Repair Kit

"K" indicates part is supplied in valve repair kit **KS30112** (PCN 049191)  
 Note: Universal (2/3 hole) spanner wrench X11981-1 (PCN 027451) included in complete repair kit.

#### Coil Assembly

See coil assemblies for availability.

#### Parts Kit

KG-10041 PCN: 054812  
 (Contains 12 pieces each of PTFE and neoprene O-rings.)

The 200RB is a pilot-operated, 2-way, normally closed valve. 200RB valves are used for liquid, discharge, or suction gas refrigerant service.

- One coil fits all valve sizes
- Extended ends for easy installation (standard)
- Long-life molded coils
- PTFE O-ring for superior external sealing

Options

- Available in 7 orifice sizes
- Manual stem or mounting stud
- Bi-Flow operation-conversion either factory assembled or with kit (except 200RB 7 & 9 )



Specifications

- Maximum fluid temperature: 250°F
- Maximum working pressure: 500 psig
- Minimum operating pressure drop: 2 psi
- MOPD: 300 psig
- UL/CUL file number: MP604

NOTE: Mounting enclosing tube more than 90° off vertical up position is not recommended.

NOTE: MOPD based on AC application. Consult application engineer for DC application.

Nomenclature example: 200RB 4T3M VLC

| 200R         | B             | 4                       | T                                                                 | 3                            | M                                                  | VLC   |
|--------------|---------------|-------------------------|-------------------------------------------------------------------|------------------------------|----------------------------------------------------|-------|
| Valve Series | Design Series | Port Size<br>(in 1/16") | Connection Type<br>F = SAE<br>S = ODF<br>T = Copper Extended Ends | Connection Size<br>(in 1/8") | M = manual stem<br>T = mounting stud<br>(optional) | Coil* |

\*NOTE: Valves are shipped without the solenoid coils (VLC = Valve Less Coil). See coil assemblies for availability.

## Ordering Information and Nominal \* Liquid Capacity Table – Tons (kW)

| PCN            |                            |                          | Description | Connection Size   | R-134a      | R-22         | R-407C       | R-404A/R-507 |
|----------------|----------------------------|--------------------------|-------------|-------------------|-------------|--------------|--------------|--------------|
| Standard Valve | Mounting Stud <sup>1</sup> | Manual Stem <sup>2</sup> |             |                   |             |              |              |              |
| 053104         | --                         | N/A                      | 200RB 2 F 2 | 1/4 SAE           | 2.7 (9.5)   | 3.6 (12.7)   | 3.4 (12.0)   | 1.9 (6.7)    |
| 062611         | --                         | N/A                      | 200RB 2 F 3 | 3/8 SAE           |             |              |              |              |
| 053105         | 053236                     | N/A                      | 200RB 2 T 2 | 1/4 ODF           |             |              |              |              |
| 053106         | 054170                     | N/A                      | 200RB 2 T 3 | 3/8 ODF           |             |              |              |              |
| 052725         | --                         | --                       | 200RB 3 F 2 | 1/4 SAE           | 3.6 (12.7)  | 4.8 (16.9)   | 4.5 (15.8)   | 2.5 (8.8)    |
| 052726         | 056438                     | --                       | 200RB 3 F 3 | 3/8 SAE           |             |              |              |              |
| 052727         | 055855                     | --                       | 200RB 3 F 4 | 1/2 SAE           |             |              |              |              |
| 049608         | --                         | --                       | 200RB 3 T 2 | 1/4 ODF           |             |              |              |              |
| 049609         | 049585                     | 065620                   | 200RB 3 T 3 | 3/8 ODF           |             |              |              |              |
| 049692         | --                         | 065621                   | 200RB 3 T 4 | 1/2 ODF           |             |              |              |              |
| 047506         | 047508                     | 047507                   | 200RB 4 F 3 | 3/8 SAE           |             |              |              |              |
| 047511         | 047513                     | 047512                   | 200RB 4 S 3 | 3/8 ODF X 1/2 ODM | 6.0 (21.1)  | 8.0 (28.1)   | 7.5 (26.4)   | 4.2 (14.8)   |
| 047516         | 047515                     | 047514                   | 200RB 4 S 4 | 1/2 ODF X 5/8 ODM |             |              |              |              |
| 047517         | 049162                     | 049186                   | 200RB 4 T 3 | 3/8 ODF           |             |              |              |              |
| 047518         | 049163                     | 049187                   | 200RB 4 T 4 | 1/2 ODF           |             |              |              |              |
| 058950         | 058045                     | 056518                   | 200RB 4 T 5 | 5/8 ODF           |             |              |              |              |
| 047519         | 047521                     | 047520                   | 200RB 5 F 4 | 1/2 SAE           | 6.2 (21.8)  | 8.2 (28.8)   | 7.7 (27.1)   | 4.3 (15.1)   |
| 059729         | 047523                     | 047522                   | 200RB 5 F 5 | 5/8 SAE           |             |              |              |              |
| 047524         | 047526                     | 047525                   | 200RB 5 S 4 | 1/2 ODF X 5/8 ODM |             |              |              |              |
| 049201         | 047528                     | 047527                   | 200RB 5 S 5 | 5/8 ODF           |             |              |              |              |
| 061227         | 054323                     | --                       | 200RB 5 T 3 | 3/8 ODF           |             |              |              |              |
| 057206         | 049164                     | 049188                   | 200RB 5 T 4 | 1/2 ODF           |             |              |              |              |
| 059730         | 049165                     | 049189                   | 200RB 5 T 5 | 5/8 ODF           |             |              |              |              |
| 059731         | 047531                     | 047530                   | 200RB 6 F 4 | 1/2 SAE           | 7.2 (25.3)  | 9.5 (33.4)   | 8.9 (31.3)   | 5.0 (17.6)   |
| 059732         | 047534                     | 047533                   | 200RB 6 F 5 | 5/8 SAE           |             |              |              |              |
| 047537         | 047539                     | 047538                   | 200RB 6 S 4 | 1/2 ODF X 5/8 ODM |             |              |              |              |
| 047540         | 047542                     | 047541                   | 200RB 6 S 5 | 5/8 ODF           |             |              |              |              |
| 047544         | 047546                     | 047545                   | 200RB 6 T 4 | 1/2 ODF           |             |              |              |              |
| 056766         | 047548                     | 047547                   | 200RB 6 T 5 | 5/8 ODF           |             |              |              |              |
| 064037         | --                         | --                       | 200RB 7 S 5 | 5/8 ODF X 7/8 ODM | 12.7 (44.7) | 17.0 (59.8)  | 16.2 (57.0)  | 9.1 (32.0)   |
| 064062         | --                         | --                       | 200RB 7 T 4 | 1/2 ODF           |             |              |              |              |
| 064063         | 064562                     | 064267                   | 200RB 7 T 5 | 5/8 ODF           |             |              |              |              |
| 064282         | 064284                     | 064283                   | 200RB 7 T 7 | 7/8 ODF           |             |              |              |              |
| 064762         | 064764                     | 064763                   | 200RB 9 T 5 | 5/8 ODF           | 23.6 (83.0) | 30.5 (107.3) | 29.0 (102.0) | 16.4 (57.7)  |
| 064645         | 064766                     | 064765                   | 200RB 9 T 7 | 7/8 ODF           |             |              |              |              |
| 064767         | 064769                     | 064768                   | 200RB 9 T 9 | 1 1/8 ODF         |             |              |              |              |

<sup>1</sup> Add "T" to the end of description for Mounting Stud<sup>2</sup> Add "M" to the end of the description for Manual Stem

Capacities based on 100°F liquid and 40°F saturated evaporator per ARI standard 760-87.

All ratings are based on largest connection size.

\*See Extended Capacity Tables for ratings at a wide range of conditions.

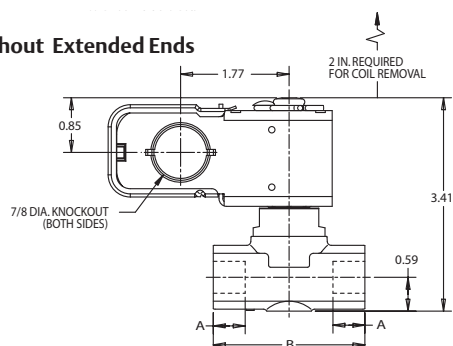
## Ordering Information and Nominal Liquid Capacity Table for Bi-Flow Solenoids

- Tons (kW)

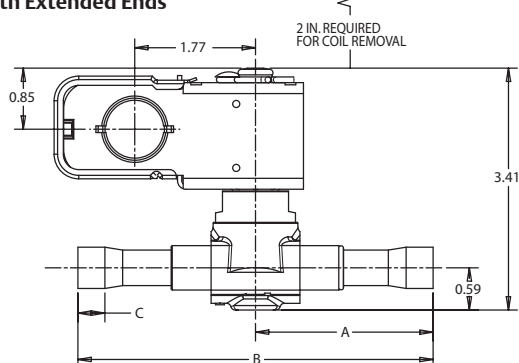
| PCN            |               |             | Description         | Connection Size | R-134a     | R-22        | R-407C     | R-404A/R-507 |
|----------------|---------------|-------------|---------------------|-----------------|------------|-------------|------------|--------------|
| Standard Valve | Mounting Stud | Manual Stem |                     |                 |            |             |            |              |
| 009689         | --            | --          | 200RB GS-1925 3 T 3 | 3/8 ODF         | 4.4 (15.6) | 4.8 (17.0)  | 4.5 (16.0) | 3.2 (11.3)   |
| 009690         | --            | --          | 200RB GS-1926 4 T 3 | 3/8 ODF         | 5.3 (18.6) | 5.6 (19.8)  | 5.3 (18.8) | 3.7 (13.1)   |
| 009692         | --            | --          | 200RB GS-1928 5 T 4 | 1/2 ODF         | 7.8 (27.7) | 8.2 (29.0)  | 7.8 (27.6) | 54. (19.1)   |
| 009693         | --            | --          | 200RB GS-1929 5 T 5 | 5/8 ODF         |            |             |            |              |
| 009694         | --            | --          | 200RB GS-1930 6 T 5 | 5/8 ODF         | 9.4 (33.4) | 10.0 (35.4) | 9.5 (33.6) | 6.5 (23.0)   |

## 200RB2-6 Dimensional Data (in)

Without Extended Ends



With Extended Ends



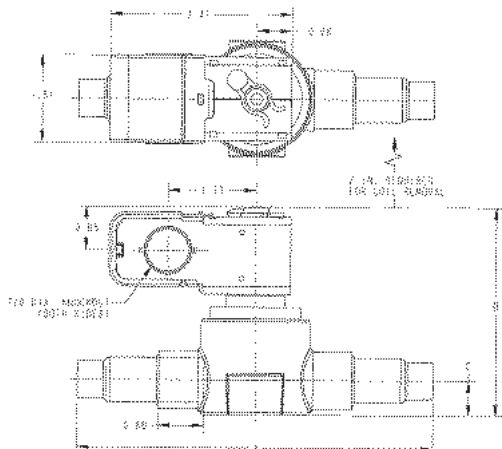
## Without Extended Ends

| Valve     | Port Size | Conn. Size & Style   | A    | B    |
|-----------|-----------|----------------------|------|------|
| 200RB 4S3 | 1/4       | 3/8 ODF x 1/2 ODM    | 0.50 |      |
| 200RB 4S4 |           | 1/2 ODF x 5/8 ODM    | 0.56 |      |
| 200RB 4F3 | 5/16      | 3/8 SAE (male flare) | —    | 3.12 |
| 200RB 5S4 |           | 1/2 ODF x 5/8 ODM    | 0.56 | 2.37 |
| 200RB 5S5 |           | 5/8 ODF              |      |      |
| 200RB 5F4 |           | 1/2 SAE (male flare) | —    | 3.50 |
| 200RB 5F5 | 3/8       | 5/8 SAE (male flare) |      | 3.75 |
| 200RB 6S4 |           | 1/2 ODF x 5/8 ODM    | 0.56 | 2.37 |
| 200RB 6S5 |           | 5/8 ODF              |      |      |
| 200RB 6F4 |           | 1/2 SAE (male flare) | —    | 3.50 |
| 200RB 6F5 |           | 5/8 SAE (male flare) |      | 3.75 |

## With Extended Ends

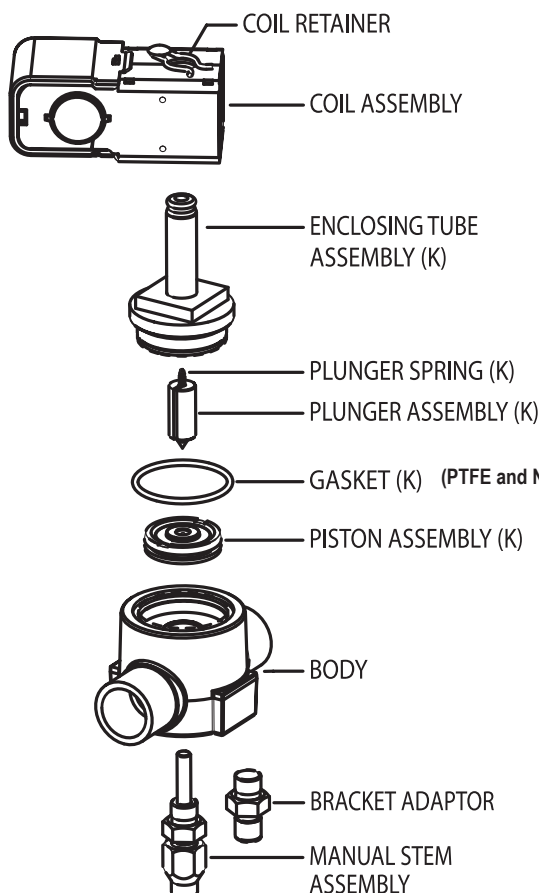
| Valve     | Port Size | Conn. Size & Style | A    | B    | C    |
|-----------|-----------|--------------------|------|------|------|
| 200RB 2T2 | 1/8       | 1/4 ODF            | 2.42 | 4.62 | 0.25 |
| 200RB 2T3 |           | 3/8 ODF            |      |      | 0.31 |
| 200RB 3T2 | 3/16      | 1/4 ODF            | 2.50 | 5.00 | 0.25 |
| 200RB 3T3 |           | 3/8 ODF            |      |      | 0.31 |
| 200RB 3T4 | 1/4       | 1/2 ODF            |      |      | 0.38 |
| 200RB 4T4 |           | 5/8 ODF            | 3.25 | 6.50 | 0.50 |
| 200RB 4T5 | 5/16      | 3/8 ODF            | 2.31 | 4.62 | 0.31 |
| 200RB 5T4 |           | 1/2 ODF            | 2.50 | 5.00 | 0.38 |
| 200RB 5T5 |           | 5/8 ODF            | 3.25 | 6.50 | 0.50 |
| 200RB 6T3 | 3/8       | 3/8 ODF            | 2.31 | 4.62 | 0.31 |
| 200RB 6T4 |           | 1/2 ODF            | 2.50 | 5.00 | 0.38 |
| 200RB 6T5 |           | 5/8 ODF            | 3.25 | 6.50 | 0.50 |

## 200RB7 and 200RB9 Dimensional Data (in)



| Valve    | Port Size | Conn. Size & Style    | A    | B    | C    |
|----------|-----------|-----------------------|------|------|------|
| 200RB7S5 | 7/16      | 5/8 ODF x 7/8 ODM     | 2.98 | 3.69 | 0.53 |
| 200RB7T5 |           | 5/8 ODF x 5/8 ODF     | 6.88 |      |      |
| 200RB7T7 |           | 7/8 ODF x 7/8 ODF     | 7.13 |      |      |
| 200RB9T5 | 9/16      | 5/8 ODF x 5/8 ODF     | 6.88 | 4.05 | 0.68 |
| 200RB9T6 |           | 3/4 ODF x 3/4 ODF     | 7.38 |      |      |
| 200RB9T7 |           | 7/8 ODF x 7/8 ODF     | 7.13 |      |      |
| 200RB9T9 |           | 1 1/8 ODF x 1 1/8 ODF | 8.50 |      |      |

### Exploded View & Parts Kit Data



#### Valve Repair Kit

"K" indicates part is supplied in valve repair kit **KS30386**. (PCN 066223)

#### Gasket Kit

Gasket Kit **KG10025** (PCN 049190)  
(contains 12 pieces - each of PTFE and neoprene O-rings)

#### Coil Assembly

See coil assemblies for availability.

### Valve Kits

| Valve  | Complete Kit | PCN    | Manual Opening Kit | PCN    | Bi-Flow Kit | PCN    | Gasket Kit | PCN    |
|--------|--------------|--------|--------------------|--------|-------------|--------|------------|--------|
| 200RB2 | KS30386      | 066223 | N/A                | N/A    | KS30387     | 066224 | KG10025    | 049190 |
| 200RB3 | KS30386      | 066223 | KS30377            | 065695 | KS30387     | 066224 | KG10025    | 049190 |
| 200RB4 | KS30386      | 066223 | KS30117            | 053959 | KS30387     | 066224 | KG10025    | 049190 |
| 200RB5 | KS30386      | 066223 | KS30117            | 053959 | KS30387     | 066224 | KG10025    | 049190 |
| 200RB6 | KS30386      | 066223 | KS30117            | 053959 | KS30387     | 066224 | KG10025    | 049190 |
| 200RB7 | KS30354      | 064263 | KS30361            | 064831 | N/A         | N/A    | KG00002    | 064262 |
| 200RB9 | KS30362      | 064825 | KS30364            | 064832 | N/A         | N/A    | KG00003    | 064830 |

### 200RB Bi-Flow Conversion

Standard 200RB uni-directional valves can be converted to Bi-Flow operation by replacing the internal parts with the components in kit KS30387 (PCN 066224). Unlike the standard valve which permits flow in one direction only when energized, the Bi-Flow version allows the valve to flow in either direction, depending on differential pressures, when energized. If the valve is not energized when flowing in the reverse direction, valve "flutter" will occur. Also, with the valve de-energized, a higher downstream pressure than upstream (back-flow) will force the valve open.

**NOTE: A 200RB7 and 200RB9 cannot be converted to a Bi-Flow valve.**

The 200RD is a pilot-operated, 2-way, normally closed, solenoid valve that is suitable for all refrigerants, including R-410A and R-744. 200RD valves are used for liquid, discharge, or suction gas refrigerant service.

### Features

- One coil fits all valve sizes
- Extended ends for easy installation (standard)
- Long-life molded coils
- PTFE O-ring for superior external sealing

### Options

- Available in 7 orifice sizes
- Manual stem or mounting stud
- Bi-Flow operation-conversion either factory assembled or with kit except 200RD7 and 200RD9



### Specifications

- Maximum fluid temperature: 250°F
- Maximum working pressure: 680 psig
- Minimum operating pressure drop: 2 psi
- MOPD: 550 psig
- UL/CUL file number: MP604

*NOTE: Mounting enclosing tube more than 90° off vertical up position is not recommended.*

*NOTE: MOPD based on AC application. Consult application engineer for DC application.*

### Nomenclature example: 200RD 4T3M VLC

| 200R         | D             | 4                       | T                                           | 3                            | M                                                  | VLC   |
|--------------|---------------|-------------------------|---------------------------------------------|------------------------------|----------------------------------------------------|-------|
| Valve Series | Design Series | Port Size<br>(in 1/16") | Connection Type<br>T = Copper Extended Ends | Connection Size<br>(In 1/8") | M = manual stem<br>T = mounting stud<br>(optional) | Coil* |

\*NOTE: Valves are shipped without the solenoid coils (VLC = Valve Less Coil). See available coil assemblies.

### Ordering Information and Nominal \* Liquid Capacity - Tons (kW)

| PCN            |                            |                          | Description | Connection Size | R-410A      | R-744         |
|----------------|----------------------------|--------------------------|-------------|-----------------|-------------|---------------|
| Standard Valve | Mounting Stud <sup>1</sup> | Manual Stem <sup>2</sup> |             |                 |             |               |
| 066158         | 066179                     | —                        | 200RD 2 T 2 | 1/4 ODF         | 3.4 (11.9)  | 8.16 (28.7)   |
| 066159         | 066180                     | —                        | 200RD 2 T 3 | 3/8 ODF         |             |               |
| 066160         | —                          | —                        | 200RD 3 T 2 | 1/4 ODF         | 4.5 (15.8)  | 10.86 (38.2)  |
| 066161         | 066182                     | 066203                   | 200RD 3 T 3 | 3/8 ODF         |             |               |
| 066162         | 066183                     | 066204                   | 200RD 3 T 4 | 1/2 ODF         |             |               |
| 066163         | 066184                     | 066205                   | 200RD 4 T 3 | 3/8 ODF         |             |               |
| 066164         | 066185                     | 066206                   | 200RD 4 T 4 | 1/2 ODF         | 7.5 (26.4)  | 18.01 (63.3)  |
| 066165         | 066186                     | 066181                   | 200RD 4 T 5 | 5/8 ODF         |             |               |
| 066166         | 066187                     | 066208                   | 200RD 5 T 3 | 3/8 ODF         | 7.7 (27.1)  | 18.62 (65.5)  |
| 066167         | 066188                     | 066209                   | 200RD 5 T 4 | 1/2 ODF         |             |               |
| 066168         | 066189                     | 066210                   | 200RD 5 T 5 | 5/8 ODF         |             |               |
| 066169         | 066190                     | 066211                   | 200RD 6 T 4 | 1/2 ODF         | 8.9 (31.3)  | 21.49 (75.6)  |
| 066170         | 066191                     | 066212                   | 200RD 6 T 5 | 5/8 ODF         |             |               |
| 066172         | 066195                     | 066214                   | 200RD 7 T 5 | 5/8 ODF         | 15.7 (55.2) | 37.62 (132.3) |
| 066173         | 066194                     | 066215                   | 200RD 7 T 7 | 7/8 ODF         |             |               |
| 066174         | 066202                     | 066216                   | 200RD 9 T 5 | 5/8 ODF         | 27.7 (97.6) | 67.66 (238.0) |
| 066175         | 066196                     | 066217                   | 200RD 9 T 7 | 7/8 ODF         |             |               |
| 066176         | 066197                     | 066218                   | 200RD 9 T 9 | 1 1/8 ODF       |             |               |

<sup>1</sup> Add "T" to the end of description for Mounting Stud

<sup>2</sup> Add "M" to the end of the description for Manual Stem

Capacities based on ARI standard.

All ratings are based on largest connection size

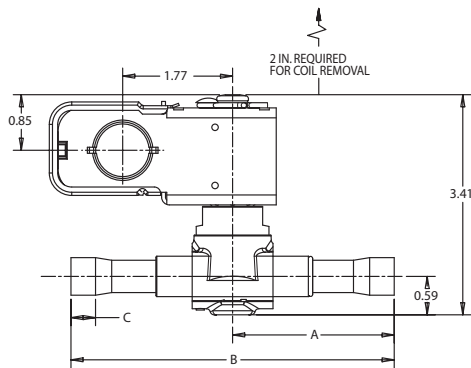
\*See Extended Capacity Tables for ratings at a wide range of conditions.

## Ordering Information and Nominal Liquid Capacity Table for Bi-Flow Solenoids - Tons

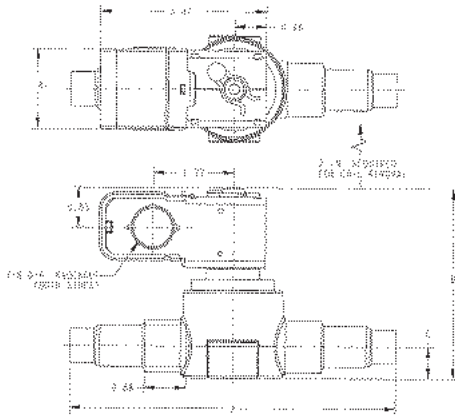
(kW)

| PCN            |               |             | Description     | Connection Size | R-134a       | R-22         | R-407C       | R-404A/R-507 | R-410A       |
|----------------|---------------|-------------|-----------------|-----------------|--------------|--------------|--------------|--------------|--------------|
| Standard Valve | Mounting Stud | Manual Stem |                 |                 |              |              |              |              |              |
| 016996         | --            | --          | 200RD3T3 VLC BF | 3/8 ODF         | 3.62 (12.73) | 4.80 (16.88) | 4.51 (15.86) | 2.52 (8.86)  | 4.50 (15.83) |
| 016997         | --            | --          | 200RD4T3 VLC BF | 3/8 ODF         | 6.00 (21.10) | 7.95 (27.96) | 7.48 (26.31) | 4.18 (14.70) | 7.45 (26.20) |
| 016998         | --            | --          | 200RD5T4 VLC BF | 1/2 ODF         | 6.21 (21.84) | 8.22 (28.91) | 7.73 (27.19) | 4.33 (15.23) | 7.71 (27.11) |
| 016999         | --            | --          | 200RD5T5 VLC BF | 5/8 ODF         |              |              |              |              |              |
| 017000         | --            | --          | 200RD6T5 VLC BF | 5/8 ODF         | 7.16 (25.18) | 9.48 (33.34) | 8.92 (31.37) | 4.99 (17.55) | 8.89 (31.26) |

With Extended Ends



200RD7 and 200RD9 Dimensional Data (in)



| Valve    | Port Size | Connection Size & Style | A    | B    | C    |
|----------|-----------|-------------------------|------|------|------|
| 200RD7S5 | 7/16      | 5/8 ODF x 7/8 ODM       | 2.98 | 3.69 | 0.53 |
| 200RD7T5 |           | 5/8 ODF x 5/8 ODF       | 6.88 |      |      |
| 200RD7T7 |           | 7/8 ODF x 7/8 ODF       | 7.13 |      |      |
| 200RD9T5 | 9/16      | 5/8 ODF x 5/8 ODF       | 6.88 | 4.05 | 0.68 |
| 200RD9T6 |           | 3/4 ODF x 3/4 ODF       | 7.38 |      |      |
| 200RD9T7 |           | 7/8 ODF x 7/8 ODF       | 7.13 |      |      |
| 200RD9T9 |           | 1 1/8 ODF x 1 1/8 ODF   | 8.50 |      |      |

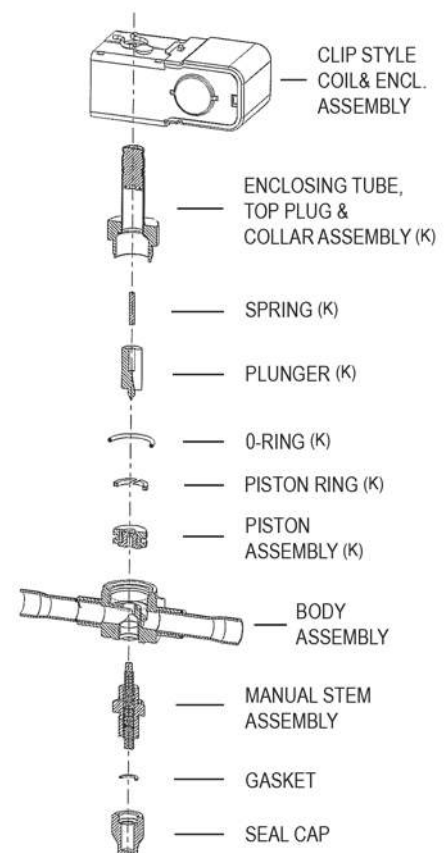
### Valve Kits

| Valve    | Complete Kit | PCN    | Gasket Kit | PCN    | Bi-Flow Kit | PCN    |
|----------|--------------|--------|------------|--------|-------------|--------|
| 200RD2-6 | KS30386      | 066223 | KG10025    | 049190 | KS30387     | 066224 |
| 200RD7   | KS30390      | 066449 | KG00002    | 064262 | N/A         | N/A    |
| 200RD9   | KS30391      | 066450 | KG00003    | 064830 | N/A         | N/A    |

With Extended Ends

| Valve     | Port Size | Connection Size & Style | A    | B    | C    |
|-----------|-----------|-------------------------|------|------|------|
| 200RD 2T2 | 1/8       | 1/4 ODF                 | 2.42 | 4.62 | 0.25 |
| 200RD 2T3 |           | 3/8 ODF                 |      |      | 0.31 |
| 200RD 3T2 | 3/16      | 1/4 ODF                 |      |      | 0.25 |
| 200RD 3T3 |           | 3/8 ODF                 |      |      | 0.31 |
| 200RD 3T4 | 1/4       | 1/2 ODF                 | 2.50 | 5.00 | 0.38 |
| 200RD 4T4 |           | 5/8 ODF                 | 3.25 | 6.50 | 0.50 |
| 200RD 4T5 |           | 3/8 ODF                 | 2.31 | 4.62 | 0.31 |
| 200RD 5T3 | 5/16      | 1/2 ODF                 | 2.50 | 5.00 | 0.38 |
| 200RD 5T4 |           | 5/8 ODF                 | 3.25 | 6.50 | 0.50 |
| 200RD 5T5 | 3/8       | 1/2 ODF                 | 2.50 | 5.00 | 0.38 |
| 200RD 6T4 |           | 5/8 ODF                 | 3.25 | 6.50 | 0.50 |
| 200RD 6T5 |           | 5/8 ODF                 | 3.25 | 6.50 | 0.50 |

### Exploded View & Parts Kit Data



(K) Indicate parts supplied in a complete valve repair kit.

The 240RA is a 2-way, normally closed diaphragm valve. 240RA valves are used for liquid, suction, and hot gas service.

### Features

- One coil fits all valve sizes
- Can be brazed into the line without disassembly
- PTFE diaphragm for high temperature applications
- Extended ends for easy installation (standard)
- Long-life molded coils
- Mounting stud models can be field converted to manual stem

### Options

- Manual stem or mounting stud



### Specifications

- Maximum fluid temperature: 250°F
- Maximum working pressure: 500 psig
- MOPD: 300 psig
- UL/CUL file number: MP604

**NOTE:** Mounting enclosing tube more than 90° off vertical up position is not recommended.

### Nomenclature example: 240RA 8T5M VLC

| 240R         | A**           | 8                    | T                                           | 5                         | M                                               | VLC   |
|--------------|---------------|----------------------|---------------------------------------------|---------------------------|-------------------------------------------------|-------|
| Valve Series | Design Series | Port Size (in 1/16") | Connection Type<br>T = copper extended ends | Connection Size (in 1/8") | M = manual stem<br>T = mounting stud (optional) | Coil* |

\* NOTE: Valves are shipped without the solenoid coils (VLC = Valve Less Coil). See coil assemblies for availability.

\*\*NOTE: Letter "H" is no longer used since all 240RA valves now contain the high temperature diaphragm for hot gas.

### Ordering Information and Nominal\* Liquid Capacity Table – Tons (kW)

| PCN            |                            |                          | Description   | Connection Size | R-134a       | R-22         | R-407C       | R-404A/R-507 |
|----------------|----------------------------|--------------------------|---------------|-----------------|--------------|--------------|--------------|--------------|
| Standard Valve | Mounting Stud <sup>1</sup> | Manual Stem <sup>2</sup> |               |                 |              |              |              |              |
| 060374         | 040846                     | 040845                   | 240RA 8 T 5   | 5/8 ODF         | 14.8 (52.5)  | 15.6 (55.2)  | 14.8 (52.4)  | 8.4 (29.5)   |
| 060375         | 044860                     | 045753                   | 240RA 8 T 7   | 7/8 ODF         |              |              |              |              |
| 060376         | 040848                     | 040847                   | 240RA 9 T 5   | 5/8 ODF         | 22.0 (78.0)  | 23.3 (82.5)  | 22.1 (78.2)  | 15.3 (54.2)  |
| 060377         | 043205                     | 043204                   | 240RA 9 T 7   | 7/8 ODF         |              |              |              |              |
| 060378         | 044861                     | 045752                   | 240RA 9 T 9   | 1 1/8 ODF       | 28.9 (102.3) | 30.5 (108.0) | 29.0 (103.0) | 21.0 (71.1)  |
| 060379         | 040850                     | 040849                   | 240RA 12 T 7  | 7/8 ODF         |              |              |              |              |
| 060380         | 043959                     | 045549                   | 240RA 12 T 9  | 1 1/8 ODF       | 33.2 (117.5) | 34.9 (124.0) | 33.2 (118.0) | 23.0 (81.4)  |
| 060381         | 042549                     | 042548                   | 240RA 16 T 9  | 1 1/8 ODF       |              |              |              |              |
| 060382         | 044428                     | 044788                   | 240RA 16 T 11 | 1 3/8 ODF       | 55.1 (195.1) | 58.0 (205.0) | 55.2 (195.0) | 38.3 (135.0) |
| 060383         | 047761                     | 046636                   | 240RA 20 T 11 | 1 3/8 ODF       |              |              |              |              |
| 060384         | 047747                     | 046637                   | 240RA 20 T 13 | 1 5/8 ODF       | 86.8 (307.4) | 95.4 (338.0) | 90.8 (321.0) | 65.7 (230.0) |
| 060385         | 054297                     | 046638                   | 240RA 20 T 17 | 2 1/8 ODF       |              |              |              |              |

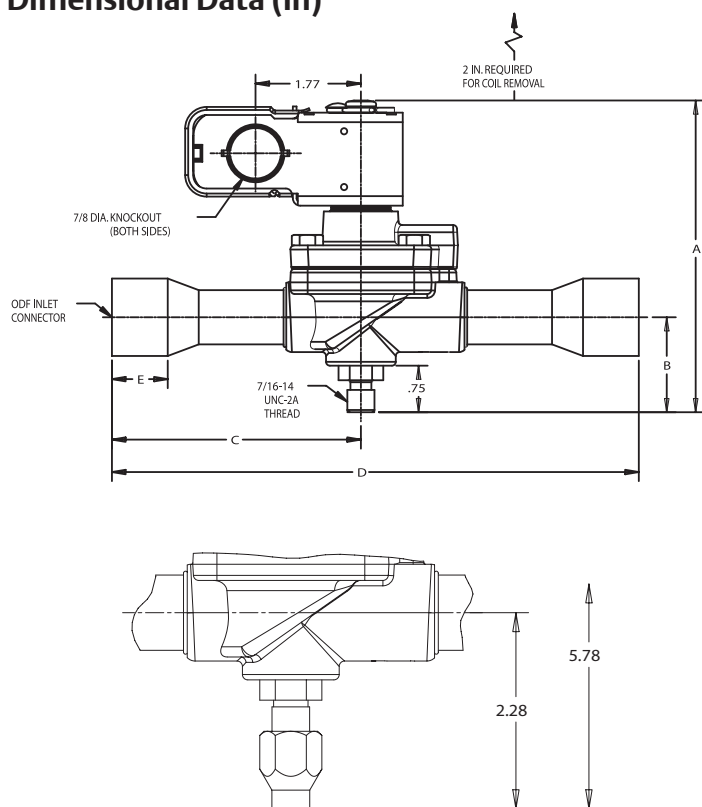
<sup>1</sup> Add "T" to the end of description for Mounting Stud

<sup>2</sup> Add "M" to the end of the description for Manual Stem

Capacities based on 100°F liquid and 40°F saturated evaporator per ARI standard 760-87.

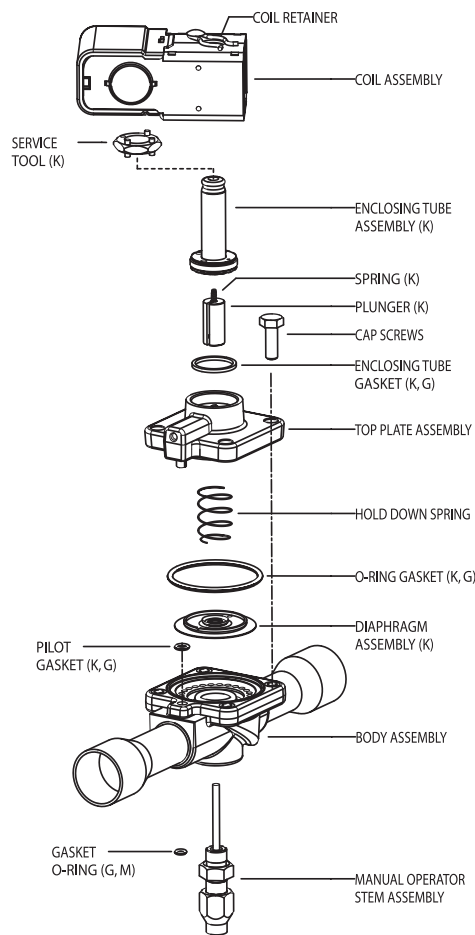
\*See Extended Capacity Tables for ratings at a wide range of conditions.

## Dimensional Data (in)



WITH MANUAL STEM - "M" VERSION

| Valve       | Port Size | Conn. Size | A    | B    | C    | D     | E    |
|-------------|-----------|------------|------|------|------|-------|------|
| 240RA8T5T   | 1/2       | 5/8 ODF    | 4.80 | 1.34 | 3.28 | 6.88  | 0.50 |
| 240RA8T5M   |           |            | 5.28 | 1.83 |      |       |      |
| 240RA8T7T   |           | 7/8 ODF    | 4.80 | 1.34 | 3.41 | 7.13  | 0.75 |
| 240RA8T7M   |           |            | 5.28 | 1.83 |      |       |      |
| 240RA9T5T   | 9/16      | 5/8 ODF    | 5.08 | 1.50 | 3.20 | 6.88  | 0.50 |
| 240RA9T5M   |           |            | 5.56 | 2.08 |      |       |      |
| 240RA9T7T   |           | 7/8 ODF    | 5.08 | 1.50 | 3.33 | 7.13  | 0.75 |
| 240RA9T7M   |           |            | 5.56 | 2.08 |      |       |      |
| 240RA9T9T   |           | 1-1/8 ODF  | 5.08 | 1.50 | 4.02 | 8.50  | 0.91 |
| 240RA9T9M   |           |            | 5.56 | 2.08 |      |       |      |
| 240RA12T7T  | 3/4       | 7/8 ODF    | 5.08 | 1.50 | 3.52 | 7.50  | 0.75 |
| 240RA12T7M  |           |            | 5.56 | 2.08 |      |       |      |
| 240RA12T9T  |           | 1-1/8 ODF  | 5.08 | 1.50 | 4.02 | 8.50  | 0.91 |
| 240RA12T9M  |           |            | 5.56 | 2.08 |      |       |      |
| 240RA16T9T  | 1         | 1-1/8 ODF  | 5.34 | 1.66 | 4.13 | 9.06  | 0.97 |
| 240RA16T9M  |           |            | 5.80 | 2.23 |      |       |      |
| 240RA16T11T |           | 1-3/8 ODF  | 5.34 | 1.66 | 5.13 | 11.06 | 0.97 |
| 240RA16T11M |           |            | 5.80 | 2.23 |      |       |      |
| 240RA20T11T | 1-1/4     | 1-3/8 ODF  | 5.45 | 1.31 | 5.11 | 10.81 | 1.09 |
| 240RA20T11M |           |            | 6.47 | 2.33 |      |       |      |
| 240RA20T13T |           | 1-5/8 ODF  | 5.45 | 1.31 | 5.89 | 12.38 | 1.09 |
| 240RA20T13M |           |            | 6.47 | 2.33 |      |       |      |
| 240RA20T17T |           | 2-1/8 ODF  | 5.45 | 1.31 | 6.58 | 13.75 | 1.34 |
| 240RA20T17M |           |            | 6.47 | 2.33 |      |       |      |

Exploded View  
& Parts Kit Data

## Valve Kits

| Valve   | Complete Kit | PCN    | Manual Opener Kit | PCN    |
|---------|--------------|--------|-------------------|--------|
| 240RA8  | KS30321      | 060626 | KS30066           | 044657 |
| 240RA9  | KS30322      | 060627 | KS30067           | 044658 |
| 240RA12 | KS30323      | 060628 | KS30067           | 044658 |
| 240RA16 | KS30324      | 060629 | KS30068           | 044491 |
| 240RA20 | KS30325      | 060630 | KS30098           | 047723 |

Gasket Kit for all 240RA valves is KG10028 (PCN 054356)

## Valve Repair Kit

"K" indicates part is supplied in complete valve repair kit.

## Manual Stem Kit

"M" indicates part is supplied in manual stem kit.

## Gasket Kit

"G" indicates gasket is supplied in gasket kit.  
 Note: Spanner wrench (X11981-1 service tool) included in complete valve kit.

## Coil Assembly

See coil assemblies for availability.

The 500RB is a pilot-operated, 2-way, normally open valve. 500RB valves are used for liquid, suction or discharge gas refrigerant service.

Features

- One coil fits all valve sizes
- Extended ends for easy installation
- Can be positioned in remote locations
- Long-life molded coils
- Low pressure differential required for full opening
- PTFE O-ring for superior external sealing

Options

- Connection types: SAE, ODF, NPTF and ODF inlet with ODM outlet



Specifications

- Maximum fluid temperature: 250°F
- Maximum working pressure: 500 psig
- MOPD: 275 psig
- UL/CUL file number: MP604

NOTE: Mounting enclosing tube more than 90° off vertical up position is not recommended.

NOTE: This valve requires a DM, MM or ASC2-Type coil assembly. ASC2-Type Coil requires cable assembly (PCN:059261).

Nomenclature example: 500RB 4T3 VLC

| 500R         | B             | 4                       | T                                                                                                        | 3                            | VLC   |
|--------------|---------------|-------------------------|----------------------------------------------------------------------------------------------------------|------------------------------|-------|
| Valve Series | Design Series | Port Size<br>(in 1/16") | Connection Type<br>F = SAE<br>T = ODF (copper entended fittings)<br>P = NPTF<br>S = ODF inlet/ODM outlet | Connection Size<br>(in 1/8") | Coil* |

\* NOTE: Valves are shipped without the solenoid coils (VLC = Valve Less Coil). See coil assemblies for availability.

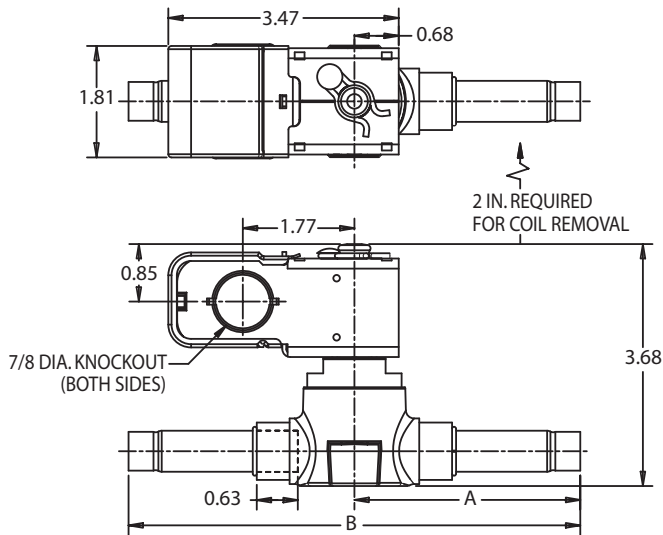
## Ordering Information and Nominal\* Liquid Capacity Table – Tons (kW)

| PCN    | Description | Connection Size   | R-134a      | R-22        | R-407C      | R-404A/R-507 |
|--------|-------------|-------------------|-------------|-------------|-------------|--------------|
| 063274 | 500RB 2 F 2 | 1/4 SAE           | 2.9 (10.4)  | 3.1 (11.0)  | 2.9 (10.3)  | 2.1 (7.4)    |
| 063278 | 500RB 2 T 2 | 1/4 ODF           |             |             |             |              |
| 063280 | 500RB 2 T 3 | 3/8 ODF           |             |             |             |              |
| 063286 | 500RB 3 F 4 | 1/2 SAE           | 4.4 (15.6)  | 4.8 (17.0)  | 4.5 (16.0)  | 3.2 (11.3)   |
| 063288 | 500RB 3 T 2 | 1/4 ODF           |             |             |             |              |
| 063290 | 500RB 3 T 3 | 3/8 ODF           |             |             |             |              |
| 063292 | 500RB 3 T 4 | 1/2 ODF           |             |             |             |              |
| 063294 | 500RB 4 F 3 | 3/8 SAE           | 5.3 (18.6)  | 5.6 (19.8)  | 5.3 (18.8)  | 3.7 (13.1)   |
| 063298 | 500RB 4 P 3 | 3/8 NPTF          |             |             |             |              |
| 063302 | 500RB 4 S 4 | 1/2 ODF x 5/8 ODM |             |             |             |              |
| 063304 | 500RB 4 T 2 | 1/4 ODF           |             |             |             |              |
| 063306 | 500RB 4 T 3 | 3/8 ODF           |             |             |             |              |
| 063308 | 500RB 4 T 4 | 1/2 ODF           |             |             |             |              |
| 063310 | 500RB 4 T 5 | 5/8 ODF           | 7.8 (27.7)  | 8.2 (29.0)  | 7.8 (27.6)  | 5.4 (19.1)   |
| 063312 | 500RB 5 F 4 | 1/2 SAE           |             |             |             |              |
| 063314 | 500RB 5 F 5 | 5/8 SAE           |             |             |             |              |
| 063316 | 500RB 5 P 3 | 3/8 NPTF          |             |             |             |              |
| 063318 | 500RB 5 S 4 | 1/2 ODF x 5/8 ODM |             |             |             |              |
| 063320 | 500RB 5 S 5 | 5/8 ODF           |             |             |             |              |
| 063322 | 500RB 5 T 3 | 3/8 ODF           |             |             |             |              |
| 063323 | 500RB 5 T 4 | 1/2 ODF           |             |             |             |              |
| 063325 | 500RB 5 T 5 | 5/8 ODF           | 9.4 (33.4)  | 10.0 (35.4) | 9.5 (33.6)  | 6.5 (23.0)   |
| 063329 | 500RB 6 F 5 | 5/8 SAE           |             |             |             |              |
| 063331 | 500RB 6 P 3 | 3/8 NPTF          |             |             |             |              |
| 063333 | 500RB 6 S 4 | 1/2 ODF x 5/8 ODM |             |             |             |              |
| 063335 | 500RB 6 S 5 | 5/8 ODF           |             |             |             |              |
| 063337 | 500RB 6 T 3 | 3/8 ODF           |             |             |             |              |
| 063339 | 500RB 6 T 4 | 1/2 ODF           | 14.8 (52.5) | 15.6 (55.2) | 14.8 (52.4) | 10.3 (36.5)  |
| 064038 | 500RB 7 S 5 | 5/8 ODF x 7/8 ODM |             |             |             |              |
| 064064 | 500RB 7 T 4 | 1/2 ODF           |             |             |             |              |

Capacities based on 100°F liquid and 40°F saturated evaporator per ARI standard 760-87.

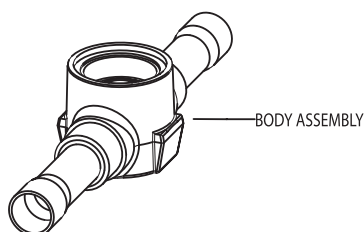
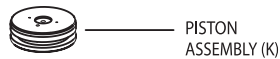
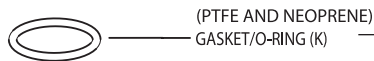
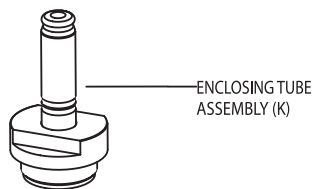
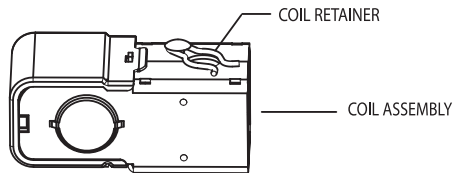
\*See Extended Capacity Tables for ratings at a wide range of conditions.

## Dimensional Data (in)



\*NOTE: Drawing indicates extended copper tube version.

## Exploded View &amp; Parts Kit Data



## Without Extended Ends

| Valve     | Port Size | Conn. Size & Style   | A    | B    |
|-----------|-----------|----------------------|------|------|
| 500RB 4P3 | 1/4       | 3/8 NPTF             | -    | 2.37 |
| 500RB 4S4 |           | 1/2 ODF X 5/8 ODM    | 0.56 | 2.37 |
| 500RB 4F3 |           | 3/8 SAE (male flare) | -    | 3.12 |
| 500RB 5P3 | 5/16      | 3/8 NPTF             | -    | 2.37 |
| 500RB 5S4 |           | 1/2 ODF X 5/8 ODM    | 0.56 | 2.37 |
| 500RB 5S5 |           | 5/8 ODF              | -    | 2.37 |
| 500RB 5F4 | 3/8       | 1/2 SAE (male flare) | -    | 3.50 |
| 500RB 5F5 |           | 5/8 SAE (male flare) | -    | 3.75 |
| 500RB 6P3 |           | 3/8 NPTF             | 0.56 | 2.37 |
| 500RB 6S4 | 7/16      | 1/2 ODF X 5/8 ODM    | -    | 2.37 |
| 500RB 6S5 |           | 5/8 ODF              | -    | 2.37 |
| 500RB 6F5 |           | 5/8 SAE (male flare) | -    | 3.75 |
| 500RB 7S5 |           | 5/8 ODF X 7/8 ODM    | 0.63 | 2.98 |

## With Extended Ends

| Valve     | Port Size | Conn. Size & Style | A    | B    |
|-----------|-----------|--------------------|------|------|
| 500RB 2T2 | 1/8       | 1/4 ODF            | 2.42 | 4.67 |
| 500RB 2T3 |           | 3/8 ODF            |      |      |
| 500RB 3T2 | 3/16      | 1/4 ODF            | 2.50 | 5.00 |
| 500RB 3T3 |           | 3/8 ODF            |      |      |
| 500RB 3T4 |           | 1/2 ODF            |      |      |
| 500RB 4T4 | 1/4       | 1/2 ODF            | 2.50 | 5.00 |
| 500RB 4T5 |           | 5/8 ODF            | 3.25 | 6.50 |
| 500RB 5T3 | 5/16      | 3/8 ODF            | 2.31 | 4.63 |
| 500RB 5T4 |           | 1/2 ODF            | 2.50 | 5.00 |
| 500RB 5T5 |           | 5/8 ODF            | 3.25 | 6.50 |
| 500RB 6T3 | 3/8       | 3/8 ODF            | 2.31 | 4.63 |
| 500RB 6T4 |           | 1/2 ODF            | 2.50 | 5.00 |

## Valve Kits

| Valve     | Complete Kit | PCN    |
|-----------|--------------|--------|
| 500RB 2-6 | KS-30353     | 064268 |
| 500RB 7   | KS-30355     | 064264 |

Replace with same gasket color and material; discard other

## Gasket Kit

Gasket Kit **KG10025 - PCN 049190**  
(contains 12 pieces - each of PTFE and Neoprene O-rings).

## Coil Assembly

DM, MM or ASC-Type style only

Use MagMax style coil for operation on DC voltage.  
No other DC coil may be used.

The 540RA is a 2-way, normally open diaphragm valve. 540RA valves are used for liquid, suction and hot gas service.

## Features

- Can be brazed into the line without disassembly
- PTFE diaphragm
- Extended ends for easy installation
- Long-life molded coils
- Low pressure differential required for full opening



## Specifications

- Maximum fluid temperature: 250°F
- Maximum working pressure: 500 psig
- MOPD: 250 psig
- UL/CUL file number: MP604

**NOTE:** Mounting enclosing tube more than 90° off vertical up position is not recommended.

**NOTE:** This valve requires a DM, MM or ASC2-Type coil assembly. ASC2-Type Coil requires snap cap and cable assembly (PCN:059261).

## Nomenclature example: 540RA 8T5 VLC

| 540R         | A             | 8                    | T                                        | 5                         | VLC   |
|--------------|---------------|----------------------|------------------------------------------|---------------------------|-------|
| Valve Series | Design Series | Port Size (in 1/16") | Connection Type<br>T = copper ented ends | Connection Size (in 1/8") | Coil* |

\* NOTE: Valves are shipped without the solenoid coils (VLC = Valve Less Coil). See coil assemblies for availability.

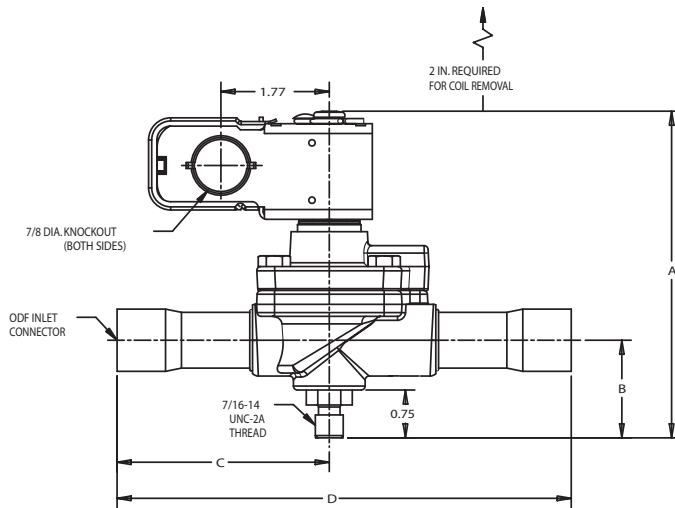
## Ordering Information and Nominal\* Liquid Capacity Table – Tons (kW)

| PCN            |                            | Description   | Connection Size | R-134a       | R-22         | R-407C       | R-404A/R-507 |
|----------------|----------------------------|---------------|-----------------|--------------|--------------|--------------|--------------|
| Standard Valve | Mounting Stud <sup>1</sup> |               |                 |              |              |              |              |
|                | 058573                     | 540RA 8 T 4   | 1/2 ODF         | 14.8 (52.5)  | 15.6 (55.2)  | 14.8 (52.4)  | 10.3 (36.5)  |
| 060392         | 046265                     | 540RA 8 T 5   | 5/8 ODF         |              |              |              |              |
|                | 046266                     | 540RA 9 T 5   | 5/8 ODF         | 22.0 (78.0)  | 23.3 (82.5)  | 22.1 (78.2)  | 15.3 (54.2)  |
| 060395         | 046268                     | 540RA 9 T 7   | 7/8 ODF         | 28.9 (102.3) | 30.5 (108.0) | 29.0 (103.0) | 20.1 (71.1)  |
| 060396         | 047497                     | 540RA 9 T 9   | 1 1/8 ODF       |              |              |              |              |
| 060397         | 046269                     | 540RA 12 T 7  | 7/8 ODF         | 33.2 (117.5) | 34.9 (123.0) | 33.2 (118.0) | 23.0 (81.0)  |
| 060398         | 047498                     | 540RA 12 T 9  | 1 1/8 ODF       |              |              |              |              |
| 060399         | 046270                     | 540RA 16 T 9  | 1 1/8 ODF       | 55.1 (195.1) | 58.0 (205.0) | 55.2 (195.0) | 38.3 (136.0) |
|                | 047953                     | 540RA 20 T 11 | 1 3/8 ODF       | 86.8 (307.4) | 95.4 (338.0) | 90.8 (321.0) | 65.7 (233.0) |
| 060402         | 047954                     | 540RA 20 T 13 | 1 5/8 ODF       |              |              |              |              |

<sup>1</sup> Add "T" to the end of description for Mounting Stud

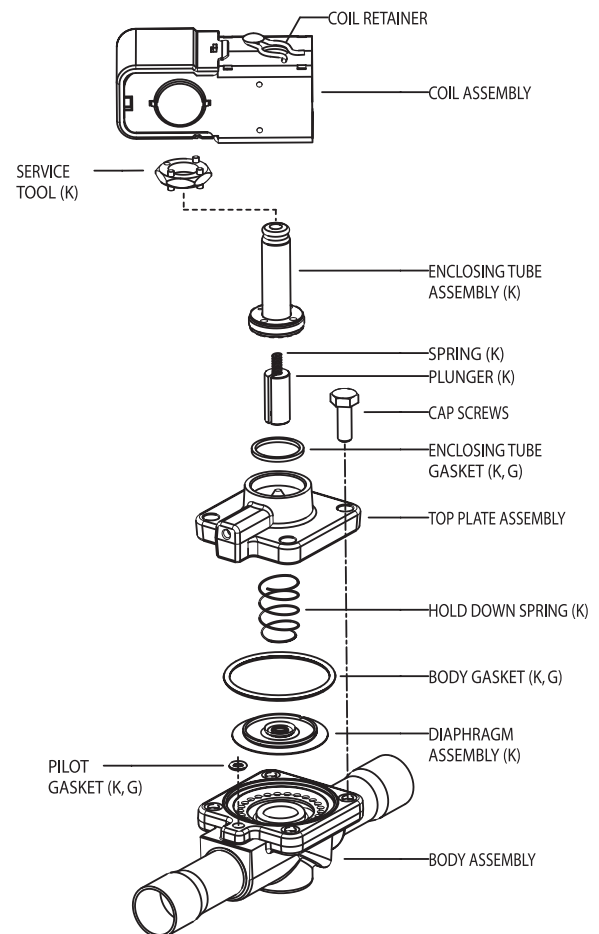
Capacities based on 100°F liquid and 40°F saturated evaporator per ARI standard 760-87.

\*See Extended Capacity Tables for ratings at a wide range of conditions.



| Valve        | Port Size | Conn. Size | A    | B    | C    | D     |
|--------------|-----------|------------|------|------|------|-------|
| 540RA8T5-T   | 1/2       | 5/8 ODF    | 4.80 | 1.34 | 3.28 | 6.88  |
| 540RA9T5-T   | 9/16      | 5/8 ODF    | 5.08 | 1.50 | 3.20 | 6.88  |
| 540RA9T7-T   |           | 7/8 ODF    |      |      | 3.33 | 7.13  |
| 540RA9T9-T   |           | 1 1/8 ODF  |      |      | 4.02 | 8.50  |
| 540RA12T7-T  | 3/4       | 7/8 ODF    | 5.08 | 1.50 | 3.52 | 7.50  |
| 540RA12T9-T  |           | 1 1/8 ODF  |      |      | 4.02 | 8.50  |
| 540RA16T9-T  | 1         | 1 1/8 ODF  | 5.34 | 1.66 | 4.25 | 9.06  |
| 540RA20T11-T | 1-1/4     | 1 3/8 ODF  | 5.45 | 1.31 | 5.11 | 10.81 |
| 540RA20T13-T |           | 1 5/8 ODF  |      |      | 5.89 | 12.38 |

### Exploded View & Parts Kit Data



### 540RA Valve Kits

| Valve   | Kit #   | PCN    |
|---------|---------|--------|
| 540RA8  | KS30328 | 060633 |
| 540RA9  | KS30329 | 060634 |
| 540RA12 | KS30330 | 060635 |
| 540RA16 | KS30331 | 060636 |
| 540RA20 | KS30332 | 060637 |

Gasket Kit for all 540RA valves is KG10028 (PCN 054356)

### Valve Repair Kit

"K" indicates part is supplied in complete valve repair kit.

### Gasket Kit

"G" indicates gasket is supplied in gasket kit.

**Note:** Spanner wrench **X11981-1** (PCN 027451) is included in complete valve kit. (service tool used to remove and replace enclosing tube collar)

### Coil Assembly

See coil assemblies for availability.

### 3-way Solenoid Valves Series M36

#### Features

- For heat reclaim application
- Pilot connection to suction line required, no minimum pressure drop
- Compact size
- Snap-on clip for attaching solenoid coils
- No disassembly necessary for brazing
- Max. allowable pressure PS: 35 bar

#### Options:

- Actuation coil and cable assemblies available for various voltages, see "2-Way Solenoid Valves coils ASC"



M36-118



M36-078 with ASC Coil and DS2 Chopper Plug

#### Capacity Data

| Type    | Part No. | Connection Solder/ODF |       | Nominal Capacity Q <sub>n</sub> (kW) |      |              |       | kv-Value<br>m <sup>3</sup> /h | Coil Type |
|---------|----------|-----------------------|-------|--------------------------------------|------|--------------|-------|-------------------------------|-----------|
|         |          | mm                    | inch  | R134a                                | R22  | R404A / R507 | R407C |                               |           |
| M36-078 | 801 420  | 22                    | 7/8   | 28.9                                 | 35.1 | 31.3         | 38.5  | 6.7                           | ASC       |
| M36-118 | 801 421  |                       | 1-1/8 |                                      |      |              |       |                               |           |

Nominal capacities at +38°C condensing temperature, +4°C evaporating temperature (saturated pressures / dew point), 0.15 bar pressure drop between valve inlet and outlet.

Q<sub>o</sub>: Required cooling capacity  
 K<sub>t</sub>: Correction factor for evaporating and liquid temperature  
 K<sub>Δp</sub>: Correction factor for pressure drop at valve  
 Q<sub>n</sub>: Nominal valve capacity

For other operating conditions multiply required capacity Q<sub>o</sub> with correction factors K<sub>t</sub> and K<sub>Δp</sub>.

$$Q_o \times K_t \times K_{\Delta p} = Q_n$$

#### Correction Tables

| Correction Factor K <sub>t</sub><br>Evaporating Temperature (°C)      |      |      |      |      |      |      |      |      |      |      |      |
|-----------------------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
|                                                                       | +10  | +5   | 0    | -5   | -10  | -15  | -20  | -25  | -30  | -35  | -40  |
| K <sub>t</sub>                                                        | 0.96 | 1.00 | 1.03 | 1.06 | 1.10 | 1.13 | 1.17 | 1.20 | 1.24 | 1.29 | 1.33 |
| Correction Factor K <sub>Δp</sub><br>Pressure drop across Valve (bar) |      |      |      |      |      |      |      |      |      |      |      |
|                                                                       | 0.10 | 0.14 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 1.00 |
| K <sub>Δp</sub>                                                       | 1.22 | 1.00 | 0.87 | 0.71 | 0.61 | 0.55 | 0.50 | 0.46 | 0.43 | 0.41 | 0.39 |

#### Accessories and spare parts for series M36

| Description                                             | Part No. |
|---------------------------------------------------------|----------|
| Repair Kit for M36-UNF (O-Ring Gasket & pilot assembly) | 801 440  |

#### Conversion Table 3031 Series to M36

3031 Series has been replaced by M36 Series

| former type  | Part No. | Replacement | Part No. |
|--------------|----------|-------------|----------|
| 3031 RC 12S7 | 055 939  | M36-078     | 801 420  |
| 3031 RC 12S9 | 055 940  | M36-118     | 801 421  |

### Features

- Compact designs
- Coil windings are insulated to provide shock and vibration protection
- ASC2 is designed to provide weather protection
- Interchangeable housings

### Voltage Options

- 24V 50/60 Hz
- 120V 50/60 Hz (standard)
- 208-220/208-240V 50/60 Hz
- 480V 50/60 Hz
- 120-240V 50/60 Hz
- 12V D.C. (MM Series recommended)
- 24V D.C. (MM Series recommended)

### Nomenclature

| Coil Code                                                             |                                                |                                                                                                                     |
|-----------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| A                                                                     | M                                              | G                                                                                                                   |
| Series                                                                | Insulation                                     | Enclosure                                                                                                           |
| A = 12 Watt<br>B = 15 Watt<br>C = 18 Watt<br>D = 7 Watt<br>M = 4 Watt | B or G = Class B<br>M = Class F<br>H = Class H | C = Conduit Connection<br>F = Open Frame Leads<br>G = Junction Box<br>L = Grommet 18" Leads<br>S = Spade Connection |

ASC2 – DIN



Requires ASC2 female connector (PCN 059261).

MMG – Special DC



AMC - 1/2" Conduit



AMG - Junction Box



AMS - Open Frame



### MAGMAX Coil (Type MM): For Use On DC Applications Only

| Voltage | Amperes Holding | Watts Holding |
|---------|-----------------|---------------|
| 12VDC   | 0.4             | 4             |
| 24VDC   | 0.4             | 4             |

### Solenoid Coil Prefix Selection Table

1) Select Prefix 2) Select Voltage 3) Select PCN

| Valve Type             | J-Box | Conduit | Leads | Spades | Molded-DIN With Connector |
|------------------------|-------|---------|-------|--------|---------------------------|
| 50RB                   | -     | -       | SML*  | -      | -                         |
| 100RB                  | AMG   | AMC     | AMF   | AMS    | ASC2                      |
| 200RB / 200RD          | AMG   | AMC     | AMF   | AMS    | ASC2                      |
| 222CB (Steam)          | AHG   | AHC     | -     | -      | -                         |
| 500RB                  | DMG   | -       | DMF   | DMS    | -                         |
| 540RA                  | -     | -       | -     | DMS    | ASC2                      |
| 222CB (Water)          | AMG   | AMC     | AMF   | AMS    | ASC2                      |
| Special DC Application | MMG   | -       | MMF   | -      | -                         |

\* SML is OEM - RMF is Wholesale replacement

Note - All coils NEMA1 except ASC2 NEMA2

### AM/EM Coil:

204CD

214CB

211CA

222CB

210CA

| Nominal Voltage and Frequency | Applied Voltage and Frequency | 204CD  |         | 214C   |         | 211CA  |         | 222CB  |         | 210CA  |         |
|-------------------------------|-------------------------------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|
|                               |                               | Inrush | Holding | Inrush | Holding | Inrush | Holding | Inrush | Holding | Inrush | Holding |
| 24/60                         | 24/60                         | 1.23   | 0.61    | 1.17   | 0.61    | 0.92   | 0.61    | 1.00   | 0.74    | 0.92   | 0.61    |
| 120/60                        | 120/60                        | 0.23   | 0.14    | 0.22   | 0.14    | 0.17   | 0.14    | 0.19   | 0.16    | 0.17   | 0.14    |
| 240/60                        | 240/60                        | 0.13   | 0.08    | 0.12   | 0.08    | 0.10   | 0.08    | 0.11   | 0.08    | 0.10   | 0.08    |
| 480/60                        | 480/60                        | 0.06   | 0.04    | 0.05   | 0.04    | 0.05   | 0.04    | 0.05   | 0.04    | 0.05   | 0.04    |

See the MM (MAGMAX) Series Coil for DC Applications

### AM Coil: 702RA

| Nominal Voltage and Frequency | Applied Voltage and Frequency | Amperes |         | VA Holding | Watts Max. | Coil Insulation |
|-------------------------------|-------------------------------|---------|---------|------------|------------|-----------------|
|                               |                               | Inrush  | Holding |            |            |                 |
| 24-50/60                      | 24/50                         | 1.70    | 1.00    | 24         | 17/12      | Class F Molded  |
| 24-50/60                      | 24/60                         | 1.41    | 0.64    | 15         |            |                 |
| 120-50/60                     | 120/50                        | 0.38    | 0.24    | 29         |            |                 |
| 120-50/60                     | 120/60                        | 0.32    | 0.16    | 19         |            |                 |
| 208-220/50 208-240/60         | 208/50                        | 0.17    | 0.10    | 21         |            |                 |
| 208-220/50 208-240/60         | 208/60                        | 0.15    | 0.06    | 13         |            |                 |
| 208-220/50 208-240/60         | 220/50                        | 0.20    | 0.14    | 33         |            |                 |
| 208-220/50 208-240/60         | 240/60                        | 0.22    | 0.09    | 22         |            |                 |
| 480-50/60                     | 480/50                        | 0.10    | 0.07    | 33         |            |                 |
| 480-50/60                     | 480/60                        | 0.09    | 0.04    | 22         |            |                 |

See the MM (MAGMAX) Series Coil for DC Applications

### AM Coil: 100RB 240RA 710/713RA

| Nominal Voltage and Frequency | Applied Voltage and Frequency | Amperes |         | VA      | Watts Max. | Coil Insulation |
|-------------------------------|-------------------------------|---------|---------|---------|------------|-----------------|
|                               |                               | Inrush  | Holding | Holding |            |                 |
| 24-50/60                      | 24/50                         | 1.20    | .96     | 23      | 17/12      | Class F Molded  |
| 24-50/60                      | 24/60                         | 1.0     | .74     | 18      |            |                 |
| 120-50/60                     | 120/50                        | .25     | .21     | 25      |            |                 |
| 120-50/60                     | 120/60                        | .19     | .16     | 19      |            |                 |
| 208-220/50 208-240/60         | 208/50                        | .14     | .08     | 17      |            |                 |
| 208-220/50 208-240/60         | 208/60                        | .12     | .06     | 12      |            |                 |
| 208-220/50 208-240/60         | 220/50                        | .16     | .10     | 24      |            |                 |
| 208-220/50 208-240/60         | 240/60                        | .13     | .08     | 19      |            |                 |
| 480-50/60                     | 480/50                        | .06     | .05     | 24      |            |                 |
| 480-50/60                     | 480/60                        | .05     | .04     | 19      |            |                 |

See the MM (MAGMAX) Series Coil for DC Applications

### AM Coil: 200RB/200RD

| Nominal Voltage and Frequency | Applied Voltage and Frequency | Amperes |         | VA Holding | Watts Max. | Coil Insulation |
|-------------------------------|-------------------------------|---------|---------|------------|------------|-----------------|
|                               |                               | Inrush  | Holding |            |            |                 |
| 24-50/60                      | 24/50                         | 2.00    | .96     | 23         | 17/12      | Class F Molded  |
| 24-50/60                      | 24/60                         | 1.6     | .74     | 18         |            |                 |
| 120-50/60                     | 120/50                        | .45     | .21     | 25         |            |                 |
| 120-50/60                     | 120/60                        | .36     | .16     | 19         |            |                 |
| 208-220/50 208-240/60         | 208/50                        | .19     | .08     | 17         |            |                 |
| 208-220/50 208-240/60         | 208/60                        | .15     | .06     | 12         |            |                 |
| 208-220/50 208-240/60         | 220/50                        | .24     | .10     | 24         |            |                 |
| 208-220/50 208-240/60         | 240/60                        | .19     | .08     | 19         |            |                 |
| 480-50/60                     | 480/50                        | .11     | .05     | 24         |            |                 |
| 480-50/60                     | 480/60                        | .09     | .04     | 19         |            |                 |

See the MM (MAGMAX) Series Coil for DC Applications

### ASC2 Coil: 200RB/200RD 540RA

| Nominal Voltage and Frequency | Applied Voltage and Frequency | Amperes |         | VA Holding | Watts Max. | Coil Insulation |
|-------------------------------|-------------------------------|---------|---------|------------|------------|-----------------|
|                               |                               | Inrush  | Holding |            |            |                 |
| 24-50/60                      | 24/50                         | 2.18    | 1.07    | 26         | 15/12      | Class H Molded  |
| 24-50/60                      | 24/60                         | 1.90    | .81     | 19         |            |                 |
| 120-50/60                     | 120/50                        | .43     | .21     | 25         |            |                 |
| 120-50/60                     | 120/60                        | .38     | .16     | 19         |            |                 |
| 240-50/60                     | 240/50                        | .24     | .12     | 30         |            |                 |
| 240-50/60                     | 240/60                        | .21     | .09     | 22         |            |                 |

### DM Coil: 500RB

| Nominal Voltage and Frequency | Applied Voltage and Frequency | Amperes |         | VA Holding | Watts Max. | Coil Insulation |
|-------------------------------|-------------------------------|---------|---------|------------|------------|-----------------|
|                               |                               | Inrush  | Holding |            |            |                 |
| 24-50/60                      | 24/50                         | 1.80    | .71     | 17         | 17/12      | Class F Molded  |
| 24-50/60                      | 24/60                         | 1.56    | .52     | 12         |            |                 |
| 120-50/60                     | 120/50                        | .36     | .14     | 17         |            |                 |
| 120-50/60                     | 120/60                        | .31     | .10     | 12         |            |                 |
| 240-50/60                     | 240/50                        | .19     | .08     | 19         |            |                 |
| 240-50/60                     | 240/60                        | .17     | .06     | 14         |            |                 |

### ASC2 Coil: 100RB 240RA 710/713RA

| Nominal Voltage and Frequency | Applied Voltage and Frequency | Amperes |         | VA Holding | Watts Max. | Coil Insulation |
|-------------------------------|-------------------------------|---------|---------|------------|------------|-----------------|
|                               |                               | Inrush  | Holding |            |            |                 |
| 24-50/60                      | 24/50                         | 1.67    | 1.10    | 26         | 15/12      | Class H Molded  |
| 24-50/60                      | 24/60                         | 1.41    | .83     | 20         |            |                 |
| 120-50/60                     | 120/50                        | .31     | .22     | 26         |            |                 |
| 120-50/60                     | 120/60                        | .26     | .16     | 20         |            |                 |
| 240-50/60                     | 240/50                        | .17     | .13     | 31         |            |                 |
| 240-50/60                     | 240/60                        | .15     | .10     | 23         |            |                 |

### DM Coil: 100RB 240RA 710/713RA

| Nominal Voltage and Frequency | Applied Voltage and Frequency | Amperes |         | VA Holding | Watts Max. | Coil Insulation |
|-------------------------------|-------------------------------|---------|---------|------------|------------|-----------------|
|                               |                               | Inrush  | Holding |            |            |                 |
| 24-50/60                      | 24/50                         | 1.21    | .72     | 17         | 17/12      | Class F Molded  |
| 24-50/60                      | 24/60                         | 1.02    | .52     | 13         |            |                 |
| 120-50/60                     | 120/50                        | .24     | .14     | 17         |            |                 |
| 120-50/60                     | 120/60                        | .20     | .10     | 12         |            |                 |
| 240-50/60                     | 240/50                        | .13     | .08     | 20         |            |                 |
| 240-50/60                     | 240/60                        | .11     | .06     | 14         |            |                 |

### RMS/RMF Coil: 50RB

| Nominal Voltage and Frequency | Applied Voltage and Frequency | Amperes |         | VA Holding | Watts Max.      | Coil Insulation |
|-------------------------------|-------------------------------|---------|---------|------------|-----------------|-----------------|
|                               |                               | Inrush  | Holding |            |                 |                 |
| 24-50/60                      | 24/50                         | .87     | .50     | 12         | RMF/7<br>RMS/10 | Class F Molded  |
| 24-50/60                      | 24/60                         | .90     | .40     | 10         |                 |                 |
| 120-50/60                     | 120/50                        | .19     | .19     | 22         |                 |                 |
| 120-50/60                     | 120/60                        | .17     | .09     | 10         |                 |                 |
| 208-50/60                     | 208/60                        | .08     | .03     | 7          |                 |                 |
| 220-50/60                     | 220/50                        | .10     | .05     | 11         |                 |                 |
| 240-50/60                     | 240/50                        | .11     | .06     | 14         |                 |                 |
| 240-50/60                     | 240/60                        | .10     | .04     | 11         |                 |                 |

### Ordering Information

AMG Junction Box



6" Leads

AMC - 1/2" Conduit



18" Leads

AMS - Open Frame



18" Leads or  
1.4" Spades

| Voltage / Frequency      | Description                  | PCN    | Description                  | PCN    | Description                  | PCN    |
|--------------------------|------------------------------|--------|------------------------------|--------|------------------------------|--------|
| 24V 50/60 Hz             | AHG 24V 50/60 Hz             | 057669 | AMC 24V 50/60 Hz             | 057631 | AMF 24V 50/60 Hz             | 057539 |
|                          | AMG 24V 50/60 Hz             | 057341 | AHC 24V 50/60 Hz             | 057736 | AMF 24V 50/60 Hz             | 057538 |
|                          |                              |        |                              |        | DMS 24V 50/60 Hz             | 062013 |
|                          | DMG 24V 50/60 Hz             | 055129 | --                           | --     | RMF 24V 50/60 Hz             | 065677 |
|                          | --                           | --     | --                           | --     | AMS 24V 50/60 Hz             | 057603 |
| 120V 50/60 Hz            |                              |        |                              |        | RMS 24V 50/60 Hz             | 065680 |
|                          | AHG 120V 50/60 Hz            | 057673 | AMC 120V 50/60 Hz            | 057598 | RMF 120V 50/60 Hz            | 065678 |
|                          | AMG 120V 50/60 Hz            | 057331 | AHC 120V 50/60 Hz            | 057743 | AMS 120V 50/60 Hz            | 057349 |
|                          | DMG 120V 50-60 Hz            | 054762 | --                           | --     | RMS 120V 50/60 Hz            | 065204 |
| 208-220/208-240 50/60 Hz | AHG 208-220/208-240 50/60 Hz | 057671 |                              |        | AMF 208-220/208-240 50/60 Hz | 057540 |
|                          | AMG 208-220/208-240 50/60 Hz | 057342 | AMC 208-220/208-240 50/60 Hz | 057594 | RMF 208-220/208-240 50/60 Hz | 065679 |
|                          | DMG 208-220/208-240 50/60 Hz | 054764 | --                           | --     | AMS 208-220/208-240 50/60 Hz | 057531 |
|                          | --                           | --     | --                           | --     | RMS 208-220/208-240 50/60 Hz | 065681 |
|                          | --                           | --     | --                           | --     | DMS 208-220/208-240 50/60 Hz | 063399 |
| 480V 50/60 Hz            | AMG 480V 50/60 Hz            | 057527 | --                           | --     | AMF 480V 50/60 Hz            | 057534 |
| 120-240V 50/60 Hz        | AMG 120-240V 50/60 Hz        | 057343 | AMC 120-240V 50/60 Hz        | 057730 | AMF 120-240V 50/60 Hz        | 062410 |
| 277V 60 Hz               | AMG 277V 60 Hz               | 057528 | --                           | --     | AMF 277V 50/60 Hz            | 057533 |
|                          | --                           | --     | --                           | --     | AMS 277V 50/60 Hz            | 057714 |
| 12V DC                   | AMG 12V DC                   | 057521 | AMC 12V DC                   | 057596 | --                           | --     |
| 24V DC                   | AMG 24V DC                   | 057523 | AMC 24V DC                   | 057633 | --                           | --     |

ASC2 – DIN



MMG



RMF



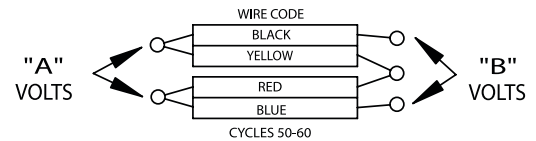
| Voltage/Frequency        | Description        | PCN    | Description | PCN    |
|--------------------------|--------------------|--------|-------------|--------|
| 24V 50/60 Hz             | ASC2 24/50-60      | 062792 | --          | --     |
| 24V 50/60 Hz             | ASC2L 24/50-60     | 063542 | --          | --     |
| 120V 50/60 Hz            | ASC2 120/50-60     | 062462 | --          | --     |
| 120V 50/60 Hz            | ASC2 GS-2562-1     | 015384 | --          | --     |
| 208-220/208-240 50-60 Hz | ASC2 208-240/50-60 | 062463 | --          | --     |
| 208-220/208-240 50-60 Hz | ASC2 GS-2562-2     | 015383 | --          | --     |
| 12V                      | --                 | --     | MMG 12V DC  | 063524 |
| 12V                      | --                 | --     | MMF 12V DC  | 062972 |
| 24V                      | ASC2 24V DC        | 064375 | MMG 24V DC  | 063526 |

AM and ASC 2 style DC coils should not be used for direct replacements on OEM equipment. The use of this coil on new applications may result in the valve not opening. New applications should use the MM coil because of the significant increase in opening power of the MM Coil over the standard AM and ASC 2 style DC coil.

### Coil Enclosure Options

| Options                | Code |
|------------------------|------|
| Junction Box           | G    |
| Conduit - 18" Leads    | C    |
| Open Frame - 18" Leads | F    |
| Open Frame - Spades    | S    |

### Dual Voltage Wiring Diagram



| A   | B   |
|-----|-----|
| 120 | 240 |
| 240 | 480 |



## Hot Gas Bypass Regulators Series CPHE

### Features

- High-quality materials and processes for high reliability and long lifetime
- Superior partial load performance due to double seat orifice design (CPHE3 to CPHE6)
- Modular design for economical logistics and easy assembly and servicing
- External equalization

Specific connection sizes and flanges available on request.  
For selection see last page of "Thermo-Expansion Valves" chapter.

### Technical Data

|                             |                 |
|-----------------------------|-----------------|
| Adjustment Range            | -0.4 ... 5 bar  |
| Factory Setting             | 1.4 bar         |
| Max. allowable Pressure PS  | 35 bar          |
| Medium Temperature Range TS | -40°C ... 120°C |
| Ambient Temperature Range   | -40 ... 50°C    |
| Transport Temperature Range | -40 ... 70°C    |



### Capacity Data CPHE

| Type        | Nominal Bypass Capacity Qn |     |       |              | Orifice     | Standard Flange                          |                                      | Power     |
|-------------|----------------------------|-----|-------|--------------|-------------|------------------------------------------|--------------------------------------|-----------|
|             | kW                         |     |       |              |             | Solder/ODF                               |                                      | Assembly  |
|             | R134a                      | R22 | R407C | R404A / R507 |             | mm                                       | inch                                 |           |
| CPHE - 1X   | 3.5                        | 5   | 5.8   | 4.5          | X 22440-B5B | C 501 - 7 mm<br>12 x 16                  | C 501 - 7<br>½ x ¾                   | X7818 - 1 |
| CPHE - 2X   | 6.4                        | 9   | 10.4  | 8.1          | X 22440-B8B | A 576 mm<br>16 x 22<br>(22 x 28O<br>ODM) | A 576<br>¾ x ⅞<br>(⅞ x 1-⅓<br>ODM)   |           |
| CPHE - 3X   | 12                         | 17  | 20    | 15           | X 11873-B5B | 10331<br>22 x 22                         | 10331<br>⅞ x ⅞<br>(1-⅓ x 1-⅓<br>ODM) |           |
| CPHE - 3.5X | 13                         | 19  | 22    | 17           | X 9117-B7B  | 9153 mm<br>22 x 22                       | 9153<br>⅞ x ⅞                        |           |
| CPHE - 4X   | 16                         | 23  | 27    | 21           | X 9117-B9B  |                                          |                                      |           |
| CPHE - 5X   | 21                         | 29  | 34    | 26           | X 9166-B10B |                                          |                                      |           |
| CPHE - 6X   | 35                         | 50  | 58    | 45           | X 9144-B13B | 9149<br>22 x 22                          | 9149<br>⅞ x ⅞                        |           |

Nominal capacities at +38°C condensing temperature, +4°C evaporating temperature (saturated temperatures / dew point) and 1 K liquid subcooling at the inlet of the expansion valve.

Specific connection sizes and flanges available on request. For selection, see last page of "Thermo-Expansion Valves" chapter.

**Correction Tables for Series ACP and CPHE**

For other evaporating temperatures the bypass capacity  $Q_{Byp}$  shall be multiplied with the correction factor  $K_{Byp}$ .

$$Q_{Byp} \times K_{Byp} = Q_n$$

$Q_{Byp}$ : Required bypass capacity  
 $K_{Byp}$ : Correction factor for evaporating temperature  
 $Q_n$ : Nominal valve capacity

| Refrigerant  | Condensing Temperature °C | Correction Factor $K_{Byp}$<br>Evaporating Temperature °C |      |      |      |      |      |
|--------------|---------------------------|-----------------------------------------------------------|------|------|------|------|------|
|              |                           | +10                                                       | 0    | -10  | -20  | -30  | -40  |
| R134a        | 50                        | 0.78                                                      | 0.77 | 0.78 | 0.80 |      |      |
|              | 40                        | 0.99                                                      | 0.94 | 0.93 | 0.94 |      |      |
|              | 30                        | 1.35                                                      | 1.21 | 1.15 | 1.14 |      |      |
| R22          | 50                        | 0.80                                                      | 0.77 | 0.77 | 0.77 | 0.79 | 0.82 |
|              | 40                        | 1.00                                                      | 0.93 | 0.91 | 0.91 | 0.92 | 0.95 |
|              | 30                        | 1.34                                                      | 1.19 | 1.12 | 1.10 | 1.09 | 1.12 |
| R407C        | 50                        | 0.83                                                      | 0.82 | 0.83 | 0.86 |      |      |
|              | 40                        | 0.99                                                      | 0.95 | 0.95 | 0.97 |      |      |
|              | 30                        | 1.26                                                      | 1.17 | 1.13 | 1.13 |      |      |
| R404A / R507 | 50                        | 0.86                                                      | 0.85 | 0.87 | 0.91 | 0.97 | 1.06 |
|              | 40                        | 0.99                                                      | 0.95 | 0.94 | 0.96 | 1.00 | 1.05 |
|              | 30                        | 1.26                                                      | 1.13 | 1.09 | 1.08 | 1.10 | 1.14 |

## 3-Way Solenoid Valves Series M36

### Features

- For heat reclaim application
- Schrader valve on inlet for ease of setting
- Direct operated regulator
- Balanced port design provides accurate pressure control
- Copper tubes for easy soldering



### Technical Data

|                                                     |                                                                           |
|-----------------------------------------------------|---------------------------------------------------------------------------|
| Refrigerants                                        | HFC, HCFC                                                                 |
| Oil compatibility                                   | Mineral, Alkyl Benzene and Polyol-Ester (POE) lubricants                  |
| Max. allowable pressure PS<br>Max. test pressure PT | 25 bar<br>30 bar                                                          |
| Material, housing                                   | CW509L (EN12420)                                                          |
| Temperature range                                   | Storage -30°C to 80°C<br>Medium TS -30°C to 80°C<br>Ambient -30°C to 80°C |

|                                                           |                         |
|-----------------------------------------------------------|-------------------------|
| Pressure change per turn:<br>Valve size 1<br>Valve size 2 | 0.6 bar<br>0.4 bar      |
| Pressure range<br>Factory setting                         | 0.5 to 6.9 bar<br>2 bar |
| Weight:<br>PRC/PRE-1..<br>PRC/PRE-2..                     | 0.6 kg<br>1.3 kg        |

### Evaporator Pressure Regulator Series PRE

#### Selection

| Type      | Part No. | Tube Connection<br>ODF | Nominal Capacity* Q <sub>n</sub> (kW) |              |       |      |
|-----------|----------|------------------------|---------------------------------------|--------------|-------|------|
|           |          |                        | R134a                                 | R404A / R507 | R407C | R22  |
| PRE - 11A | 800 380  | 16 mm - 5/8"           | 3.0                                   | 4.5          | 4.5   | 4.8  |
| PRE - 11B | 800 381  | 22 mm - 7/8"           |                                       |              |       |      |
| PRE - 21C | 800 382  | 28 mm                  | 7.4                                   | 11.1         | 11.1  | 11.9 |
| PRE - 21D | 800 383  | 1 - 1/8"               |                                       |              |       |      |

\* Nominal capacities are based on evaporating Temperature +4°C, condensing temperature +38°C and a pressure drop of 1K.

### Correction Table

Selection for operating conditions other than +38°C/+4°C and 1 K liquid subcooling at the inlet of the valve:  $Q_n = Q_o \times K_f$

Q<sub>n</sub>: Nominal valve capacity  
Q<sub>o</sub>: Required cooling capacity

| Refrigerant  | Condensing Temperature °C | Correction Factor K <sub>f</sub><br>Evaporating Temperature °C |      |      |      |      |
|--------------|---------------------------|----------------------------------------------------------------|------|------|------|------|
|              |                           | +10                                                            | 0    | -10  | -20  | -30  |
| R404A / R507 | 60                        | 1.35                                                           | 1.91 | 2.77 | 4.18 | 6.53 |
|              | 50                        | 1.05                                                           | 1.46 | 2.07 | 3.05 | 4.62 |
|              | 40                        | 0.88                                                           | 1.22 | 1.71 | 2.48 | 3.69 |
|              | 30                        | 0.77                                                           | 1.06 | 1.48 | 2.12 | 3.13 |
| R407C        | 55                        | 1.02                                                           | 1.42 | 2.04 |      |      |
|              | 50                        | 0.94                                                           | 1.31 | 1.87 |      |      |
|              | 40                        | 0.84                                                           | 1.17 | 1.66 |      |      |
|              | 30                        | 0.77                                                           | 1.06 | 1.50 |      |      |
| R134a        | 60                        | 1.04                                                           | 1.51 | 2.17 |      |      |
|              | 50                        | 0.92                                                           | 1.34 | 1.91 |      |      |
|              | 40                        | 0.83                                                           | 1.20 | 1.71 |      |      |
|              | 30                        | 0.76                                                           | 1.10 | 1.55 |      |      |
| R22          | 60                        | 1.02                                                           | 1.37 | 1.87 | 2.67 | 3.91 |
|              | 50                        | 0.93                                                           | 1.25 | 1.70 | 2.42 | 3.53 |
|              | 40                        | 0.86                                                           | 1.15 | 1.57 | 2.22 | 3.23 |
|              | 30                        | 0.80                                                           | 1.07 | 1.45 | 2.05 | 2.98 |

## Crankcase Pressure Regulator Series PRC

## Selection

| Type      | Part No.       | Tube Connection<br>ODF      | Nominal Capacity* Q <sub>n</sub> (kW) |              |       |      |
|-----------|----------------|-----------------------------|---------------------------------------|--------------|-------|------|
|           |                |                             | R134a                                 | R404A / R507 | R407C | R22  |
| PRC - 11A | <b>800 384</b> | 16 mm - $\frac{5}{8}$ "     | 3.0                                   | 4.5          | 4.5   | 4.8  |
| PRC - 11B | <b>800 385</b> | 22 mm - $\frac{7}{8}$ "     |                                       |              |       |      |
| PRC - 21C | <b>800 386</b> | 28 mm                       | 7.4                                   | 11.1         | 11.1  | 11.9 |
| PRC - 21D | <b>800 387</b> | 1 - $\frac{1}{8}$ "         |                                       |              |       |      |
| PRC - 21C | <b>800 388</b> | 35 mm - 1 - $\frac{3}{8}$ " |                                       |              |       |      |

\* Nominal capacities are based on evaporating temperature +4°C and condensing temperature +38°C and a pressure drop of 1 K.

## Capacity Table

Selection for operating conditions other than +38°C / +4°C and 1 K liquid subcooling at the inlet of the valve: (capacities are based on a pressure drop of 0.07 bar).

| Refrigerant     | Evaporating<br>Temperature<br>°C | Capacity (kW) Valve setting °C |     |     |     |     |     |     |                       |     |      |      |      |      |      |
|-----------------|----------------------------------|--------------------------------|-----|-----|-----|-----|-----|-----|-----------------------|-----|------|------|------|------|------|
|                 |                                  | Valve Size 1: PRC-11x          |     |     |     |     |     |     | Valve Size 2: PRC-21x |     |      |      |      |      |      |
|                 |                                  | -20                            | -15 | -10 | -5  | 0   | +5  | +10 | -20                   | -15 | -10  | -5   | 0    | +5   | +10  |
| R22             | -29                              | 2.3                            | 3.4 | 4.4 | 4.8 | 4.9 |     |     | 5.8                   | 8.8 | 10.0 | 10.0 | 10.0 |      |      |
|                 | -21                              |                                | 2.4 | 4.1 | 5.4 | 5.8 |     |     |                       | 6.5 | 12.1 | 12.1 | 12.1 |      |      |
|                 | -14                              |                                |     | 2.7 | 4.9 | 6.2 |     |     |                       |     | 8.1  | 13.8 | 13.8 |      |      |
|                 | -8                               |                                |     |     | 3.5 | 5.3 |     |     |                       |     |      | 9.0  | 15.4 |      |      |
|                 | -3                               |                                |     |     |     | 3.1 |     |     |                       |     |      |      | 9.9  |      |      |
| R407 C          | -6                               |                                |     |     | 3.1 | 4.8 |     |     |                       |     |      | 7.9  | 13.9 |      |      |
|                 | -1                               |                                |     |     |     | 2.9 |     |     |                       |     |      |      | 9.2  |      |      |
| R134 a          | -6                               |                                |     |     |     | 2.1 | 3.9 | 5.3 |                       |     |      |      | 5.2  | 10.3 | 12.9 |
|                 | 1                                |                                |     |     |     |     | 2.4 | 4.7 |                       |     |      |      |      | 6.1  | 12.2 |
|                 | 7                                |                                |     |     |     |     |     | 3.3 |                       |     |      |      |      |      | 8.1  |
| R404A /<br>R507 | -27                              | 1.6                            | 2.9 | 3.7 | 3.9 |     |     |     | 4.8                   | 8.2 | 8.2  | 8.2  |      |      |      |
|                 | -20                              |                                | 1.9 | 3.5 | 4.5 |     |     |     |                       | 5.7 | 9.8  | 9.8  |      |      |      |
|                 | -14                              |                                |     | 2.2 | 4.5 |     |     |     |                       |     | 6.8  | 11.6 |      |      |      |
|                 | -10                              |                                |     |     | 3.1 |     |     |     |                       |     |      | 8.1  |      |      |      |

The ACK check valve is a normally closed magnetic check valve that prevents reverse refrigerant flow in liquid lines and compressor discharge lines.



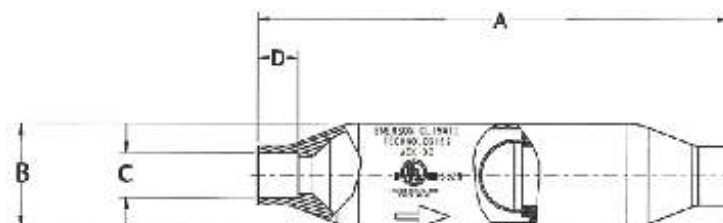
### Features

- Copper Connection Sizes 1/4" through 2-5/8"
- Hermetic Spun Copper Design
- Magnetic Checking Action
- Built-In 30 Mesh Stainless Steel Strainer
- Can Be Installed In Any Position

### Specifications

- UL/CUL File number: SA 5312

### Dimensional Data



### Nomenclature example: ACK-4

| ACK                | 4                                           |
|--------------------|---------------------------------------------|
| Check Valve Series | Copper ODF<br>Connection Size<br>(in 1/16") |

### Ordering Information and Dimensional Data (in)

| PCN    | Description | Connection Size | A     | B    | C             | D    | Opening Pressure (oz/sq in) | Opening Pressure (psig) | MWP (psig) | Nominal Tons R-22 Suction 40°F @ 1 psi | Nominal Tons R-22 Liquid 40°F @ 1 psi | Cv   |
|--------|-------------|-----------------|-------|------|---------------|------|-----------------------------|-------------------------|------------|----------------------------------------|---------------------------------------|------|
| 064985 | ACK-4       | 1/4 ODF         | 4.00  | 0.88 | 0.254 ± 0.002 | 0.19 | 1.20                        | 0.08                    | 800        | 0.40                                   | 2.60                                  | 0.9  |
| 064986 | ACK-6       | 3/8 ODF         |       |      | 0.379 ± 0.002 | 0.40 | 1.30                        | 0.08                    |            | 0.60                                   | 3.10                                  | 1.0  |
| 064987 | ACK-8       | 1/2 ODF         | 5.00  | 1.13 | 0.504 ± 0.002 | 0.31 | 3.50                        | 0.22                    | 680        | 1.20                                   | 9.40                                  | 3.1  |
| 064988 | ACK-10      | 5/8 ODF         |       |      | 0.629 ± 0.002 | 0.50 |                             |                         |            | 1.40                                   | 13                                    | 3.6  |
| 064989 | ACK-12      | 3/4 ODF         | 7.00  | 1.63 | 0.754 ± 0.002 | 0.63 | 3.80                        | 0.24                    | 680        | 3.30                                   | 27                                    | 8.0  |
| 064990 | ACK-14      | 7/8 ODF         |       |      | 0.879 ± 0.003 | 0.42 |                             |                         |            | 3.70                                   | 29                                    | 9.2  |
| 064991 | ACK-18      | 1-1/8 ODF       | 8.38  | 2.13 | 1.130 ± 0.003 | 0.94 | 6.80                        | 0.43                    | 680        | 6                                      | 51                                    | 15.4 |
| 064992 | ACK-22      | 1-3/8 ODF       | 9.38  | 2.63 | 1.380 ± 0.003 | 1.04 | 10.20                       | 0.64                    | 680        | 9.50                                   | 79                                    | 23.8 |
| 064993 | ACK-26      | 1-5/8 ODF       | 10.50 | 3.13 | 1.630 ± 0.003 | 1.07 | 11.40                       | 0.71                    | 680        | 17                                     | 102                                   | 24.2 |
| 064994 | ACK-34      | 2-1/8 ODF       | 12.00 | 3.63 | 2.130 ± 0.003 | 1.34 | 18.10                       | 1.13                    | 680        | 30                                     | 213                                   | 38.7 |
| 064995 | ACK-42      | 2-5/8 ODF       | 13.00 | 4.13 | 2.630 ± 0.003 | 1.50 | 23.00                       | 1.44                    | 680        | 50                                     | 375                                   | 71.7 |

### Cross Reference (Identical Lay-In)

| Emerson | A-1 Components | Superior |
|---------|----------------|----------|
| ACK-4   | MS-4           | 900M-4S  |
| ACK-6   | MS-6           | 900M-6S  |
| ACK-8   | MS-8           | 900M-8S  |
| ACK-10  | MS-10          | 900M-10S |
| ACK-12  | MS-12          | 900M-12S |
| ACK-14  | MS-14          | 900M-14S |
| ACK-18  | MS-18          | N/A      |
| ACK-22  | MS-22          | N/A      |
| ACK-26  | MS-26          | N/A      |
| ACK-34  | MS-34          | N/A      |
| ACK-42  | MS-42          | N/A      |

# BV Series Refrigeration Ball Valves

Shut Off Valves

The BVE/BVS series welded refrigeration ball valves isolate suction, discharge, and liquid line pipework during maintenance shutdown periods.

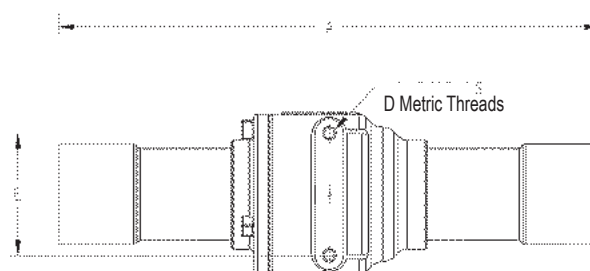
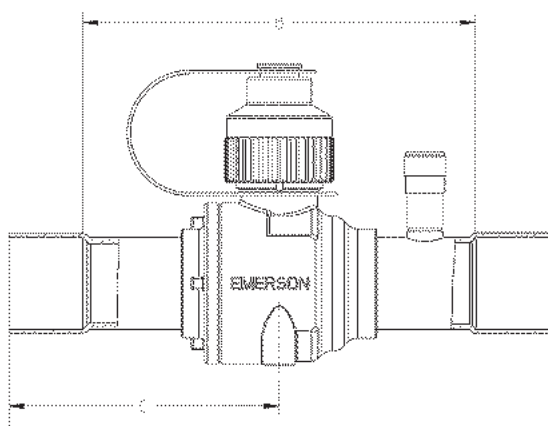
## Features

- Forged brass body
- Compact, lightweight, hermetic welded design
- Compatible with HCFC and HFC refrigerants/lubricants including R-410A and CO<sub>2</sub>
- Full flow design\*
- Bi-directional flow characteristics
- Valve stem cap retained by strap attached to main body
- Integrated access port available on all sizes
- Low operating friction design

**Nomenclature** example: BVE 1 1/8

| BV         | E                                       | 1/8                          |
|------------|-----------------------------------------|------------------------------|
| Ball Valve | Access Valve<br>E = without<br>S = with | Connection Size<br>(in 1/8") |

## Dimensional Data



## Specifications

- Body: Forged Brass
- Extended tubes: 100% Copper Connections
- Maximum working pressure: 650 psig
- Fluid temperature range: -40°F to 250°F (302°F short term)
- UL/CUL file number: SA 5312

## Replacement Parts: Locking Seal Caps

| BVE/BVS Valve Size (in.) | PCN    | Quantity (per pack) |
|--------------------------|--------|---------------------|
| 1/4 - 7/8                | 806770 | 10 pcs.             |
| 1 1/8 - 1 3/8            | 806771 | 10 pcs.             |
| 1 5/8 - 2 5/8            | 806772 | 10 pcs.             |

## Selection & Ordering Information

| Models Without Access Valve |        | Models With Access Valve |        | Connection Size (in.) | Dimensions |      |      |    |      | Port Size | Weight (lbs.) |
|-----------------------------|--------|--------------------------|--------|-----------------------|------------|------|------|----|------|-----------|---------------|
| Model                       | PCN    | Model                    | PCN    |                       | A          | B    | C    | D  | E    |           |               |
| BVE 014                     | 806730 | BVS 014                  | 806750 | 1/4 ODF               | 4.72       | 4.02 | 2.36 | M3 | 0.59 | Full Port | 0.79          |
| BVE 038                     | 806732 | BVS 038                  | 806752 | 3/8 ODF               | 4.72       | 4.02 | 2.36 |    | 0.59 | Full Port | 0.79          |
| BVE 012                     | 806734 | BVS 012                  | 806754 | 1/2 ODF               | 5.00       | 4.21 | 2.50 | M4 | 0.87 | Full Port | 0.79          |
| BVE 058                     | 806736 | BVS 058                  | 806756 | 5/8 ODF               | 5.00       | 3.98 | 2.50 |    | 0.87 | Full Port | 0.84          |
| BVE 034                     | 806737 | BVS 034                  | 806757 | 3/4 ODF               | 6.18       | 4.92 | 3.09 |    | 1.22 | Full Port | 1.45          |
| BVE 078                     | 806738 | BVS 078                  | 806758 | 7/8 ODF               | 6.18       | 4.65 | 3.09 |    | 1.22 | Full Port | 1.45          |
| BVE 118                     | 806739 | BVS 118                  | 806759 | 1 1/8 ODF             | 6.65       | 4.84 | 3.33 | M6 | 1.50 | Full Port | 2.29          |
| BVE 138                     | 806741 | BVS 138                  | 806761 | 1 3/8 ODF             | 9.09       | 7.17 | 4.55 |    | 1.89 | Full Port | 3.61          |
| BVE 158                     | 806742 | BVS 158                  | 806762 | 1 5/8 ODF             | 10.91      | 8.66 | 5.45 |    | 2.17 | Full Port | 5.35          |
| BVE 218*                    | 806744 | BVS 218*                 | 806764 | 2 1/8 ODF             | 11.69      | 8.98 | 5.85 |    | 2.91 | 2" Port   | 10.48         |
| BVE 258*                    | 806745 | BVS 258*                 | 806765 | 2 5/8 ODF             | 11.69      | 8.74 | 5.85 |    | 2.91 | 2" Port   | 12.20         |
| BVE 318*                    | 806746 | BVS 318"                 | 806766 | 3 1/8 ODF             | 11.69      | 8.39 | 5.85 |    | 2.91 | 2" Port   | 12.60         |

\* 2" port

## Quick Select Guide

| Hermetic Filter Driers                          |               |                  |                                   |
|-------------------------------------------------|---------------|------------------|-----------------------------------|
| Type                                            | Filter Drier  | Recommended Use  | Function                          |
| Liquid                                          | EK            | CFC, HCFC, HFC   | Premium Universal Replacement     |
| Liquid                                          | ADK           | CFC, HCFC, HFC   | High Acid and Water Removal       |
| Liquid                                          | BOK-HH        | CFC, HCFC, HFC   | Burnout Cleanup with Charcoal     |
| Liquid                                          | BFK           | CFC, HCFC, HFC   | Bi-Flow Heat Pump                 |
| Suction                                         | SFD           | CFC, HCFC, HFC   | Suction Line Filter Drier         |
| Suction                                         | CSFD          | CFC, HCFC, HFC   | Compact Suction Line Filter Drier |
| Suction                                         | ASD           | CFC, HCFC, HFC   | Premium Suction Line Filter Drier |
| Suction                                         | ASK-HH        | CFC, HCFC, HFC   | Burnout Cleanup with Charcoal     |
| Suction                                         | ASF           | CFC, HCFC, HFC   | Filter Only                       |
| Take-Apart Filter Driers                        |               |                  |                                   |
| Type                                            | Filter Drier  | Liquid           | Suction                           |
| Take-Apart                                      | STAS          | X                | X                                 |
| Take-Apart                                      | ADKS          | X                | X                                 |
| Take-Apart                                      | BTAS          |                  | X                                 |
| Replaceable Cores/Filters for Take-Apart Shells |               |                  |                                   |
| Type                                            | Core/Filter   | Recommended use  | Function                          |
| Core                                            | UK-48/100     | CFC, HCFC, HFC   | Premium Universal Replacement     |
| Core                                            | D-42/48       | CFC, HCFC        | High Acid Removal                 |
| Core                                            | H-42/48/100   | CFC, HCFC        | High Acid and Water Removal       |
| Core                                            | W-42/48/100HH | CFC, HCFC, HFC   | Burnout Cleanup with Charcoal     |
| Filter                                          | F-48/100      | CFC, HCFC, HFC   | Filter Only                       |
| Core                                            | RH-48         | Reclaim Use Only | High Acid and Water Removal       |
| Core                                            | RW-48         | Reclaim Use Only | Burnout Cleanup                   |

### Take-Apart Liquid Line Filter Driers in Tons\*

| Description  | Refrigeration, Low Temp. & Commercial Installations |      |                         | Air Conditioning                        |                                 |
|--------------|-----------------------------------------------------|------|-------------------------|-----------------------------------------|---------------------------------|
|              |                                                     |      |                         | Field Replacement & Field Installations |                                 |
|              | R-12/R-134a                                         | R-22 | R-404A/R-502/<br>R-507A | R-12/R-134a                             | R-22/R-407C/R-410A <sup>+</sup> |
| STAS 485T    | 8                                                   | 10   | 8                       | 8                                       | 10                              |
| STAS 487T    | 10                                                  | 13   | 10                      | 10                                      | 12 1/2                          |
| STAS 489T    | 10                                                  | 15   | 10                      | 10                                      | 15                              |
| STAS 4811T   | 13                                                  | 20   | 13                      | 13                                      | 20                              |
| STAS 967T    | 20                                                  | 25   | 15                      | 20                                      | 25                              |
| STAS 969T    | 25                                                  | 30   | 20                      | 25                                      | 30                              |
| STAS 9611T   | 30                                                  | 35   | 25                      | 30                                      | 35                              |
| STAS 9613T   | 35                                                  | 40   | 30                      | 35                                      | 40                              |
| STAS-9625S-V | 40                                                  | 45   | 35                      | 40                                      | 45                              |
| STAS 1449T   | 30                                                  | 40   | 30                      | 30                                      | 40                              |
| STAS 14411T  | 40                                                  | 50   | 35                      | 40                                      | 50                              |
| STAS 14413T  | 45                                                  | 55   | 40                      | 45                                      | 55                              |
| STAS 14417T  | 60                                                  | 50   | 45                      | 50                                      | 60                              |
| STAS 19211T  | 50                                                  | 70   | 45                      | 50                                      | 70                              |
| STAS 19213T  | 60                                                  | 80   | 55                      | 60                                      | 80                              |
| STAS 19217T  | 65                                                  | 85   | 60                      | 65                                      | 85                              |
| ADKS 30013T  | 50                                                  | 65   | 45                      | 50                                      | 65                              |
| ADKS 30017T  | 60                                                  | 80   | 50                      | 60                                      | 80                              |
| ADKS 40017T  | 65                                                  | 85   | 55                      | 65                                      | 85                              |
| ADKS 40021T  | 75                                                  | 100  | 65                      | 75                                      | 100                             |

\* For kW, multiply tons by 3.5

+ Consult product catalog pages for R-410A suitability.

### Hermetic Liquid Line Filter Driers (EK, ADK, BFK, BOK)

(Recommended Capacities at 2 psi drop (See catalog page showing ARI data for capacity at 1 psi drop.)

| Description | Refrigeration<br>Low Temp. & Commercial Installations |       |              | Air Conditioning<br>Field Replacement & Field Installations |                    |
|-------------|-------------------------------------------------------|-------|--------------|-------------------------------------------------------------|--------------------|
|             | R-134a                                                | R-22  | R-404A/R-507 | R-134a                                                      | R-22/R-407C/R-410A |
| 032         | 1/2                                                   | 1/2   | 1/2          | 1                                                           | 1-1/2              |
| 032S        |                                                       |       |              |                                                             |                    |
| 033         |                                                       |       |              |                                                             |                    |
| 033S        |                                                       |       |              |                                                             |                    |
| 052         | 3/4                                                   | 3/4   |              |                                                             |                    |
| 052S        |                                                       |       |              |                                                             |                    |
| 053         | 1-1/2                                                 | 2     | 1-1/2        | 3                                                           | 4                  |
| 053S        |                                                       |       |              |                                                             |                    |
| 082         | 1                                                     | 1     | 3/4          | 1-1/2                                                       | 2                  |
| 082S        |                                                       |       |              |                                                             |                    |
| 0825S       |                                                       | 2     | 1            | 3                                                           | 4                  |
| 083         | 2                                                     | 3     | 2            | 4                                                           | 5                  |
| 083S        |                                                       |       |              |                                                             |                    |
| 084         |                                                       | 4     |              | 5                                                           | 7-1/2              |
| 084S        |                                                       |       |              |                                                             |                    |
| 162         | 1-1/2                                                 | 2     | 1            | 1-1/2                                                       | 2                  |
| 162S        |                                                       |       |              |                                                             |                    |
| 1625S       | 2                                                     | 3     | 2            | 3                                                           | 4                  |
| 163         | 3                                                     | 5     | 3            | 4                                                           | 5                  |
| 163S        |                                                       |       |              |                                                             |                    |
| 164         |                                                       |       |              | 5                                                           | 10                 |
| 164S        |                                                       |       |              |                                                             |                    |
| 165         |                                                       | 7-1/2 |              | 7-1/2                                                       | 12                 |
| 165S        |                                                       |       |              |                                                             |                    |
| 303         | 4                                                     | 5     | 4            | 4                                                           | 6                  |
| 303S        |                                                       |       |              |                                                             |                    |
| 304         |                                                       | 7-1/2 |              | 7-1/2                                                       | 10                 |
| 304S        |                                                       |       |              |                                                             |                    |
| 305         | 7-1/2                                                 | 10    | 5            | 10                                                          | 15                 |
| 305S        |                                                       |       |              |                                                             |                    |
| 307S        |                                                       |       |              | 18                                                          | 24                 |
| 309S        |                                                       | 15    |              | 20                                                          | 26                 |
| 413         | 4                                                     | 5     | 4            | 5                                                           | 5                  |
| 414         |                                                       |       |              |                                                             |                    |
| 414S        |                                                       |       | 5            | 7-1/2                                                       | 12                 |
| 415         | 7-1/2                                                 | 7-1/2 | 7-1/2        | 12                                                          | 18                 |
| 415S        |                                                       |       |              |                                                             |                    |
| 417S        | 10                                                    | 10    | 10           | 18                                                          | 25                 |
| 419S        |                                                       | 12    |              | 20                                                          | 27                 |
| 757S        | 20                                                    | 25    | 15           | 22                                                          | 30                 |
| 759S        | 22                                                    | 30    | 20           | 25                                                          | 34                 |

The EK Liquid Line filter drier is a premium compacted bead filter drier with a 20 micron outlet pad for maximum filtration. The EK is a premium universal replacement liquid line filter drier for CFC, HCFC and HFC refrigerants including R-134a, R-22, R-404A, R-407C, R-410A, R-500 and R-507.



### Features

- Filtration first for more effective use of surface area of desiccant
- High moisture and acid removal capacity
- Solid copper connections
- Corrosion resistant epoxy powder paint finish
- Approved for POE oils with Copeland™ compressors
- Shock resistant steel shell construction

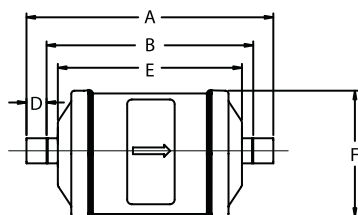
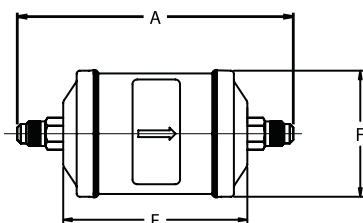
### Specifications

- Desiccant blend - optimized for high water capacity and acid capacity
- Filtration: 20 microns
- Maximum working pressure: 680 psig
- UL/CUL file number: SA 3124

### Nomenclature example: EK-083S

| EK           | 08                     | 3                         | S                                  |
|--------------|------------------------|---------------------------|------------------------------------|
| Drier Series | Unit Size (in cu. in.) | Connection Size (in 1/8") | S = ODF connections (omit for SAE) |

### Dimensional Data



### Ordering Information

| PCN    | Description | Dimensions (in) |       |      |       |      | Weight (lbs) |
|--------|-------------|-----------------|-------|------|-------|------|--------------|
|        |             | A               | B     | D    | E     | F    |              |
| 060009 | EK 032      | 4.38            |       |      |       |      |              |
| 060012 | EK 032S     | 3.83            | 2.71  | 0.56 |       |      |              |
| 060011 | EK 032FM    | 3.92            |       |      | 2.57  | 1.75 | 0.48         |
| 060010 | EK 032MF    | 3.92            |       |      |       |      |              |
| 060013 | EK 033      | 4.69            |       |      |       |      |              |
| 060014 | EK 033S     | 4.03            | 2.79  | 0.62 |       |      |              |
| 047601 | EK 052      | 4.83            |       |      | 3.02  |      |              |
| 057013 | EK 052MF    | 4.37            |       |      |       |      |              |
| 063978 | EK 0525S    | 4.20            | 3.56  | 0.32 | 3.02  |      | 1.04         |
| 047602 | EK 052S     | 4.15            | 3.46  | 0.35 |       |      |              |
| 047603 | EK 053      | 5.14            |       |      | 3.02  |      |              |
| 047604 | EK 053S     | 4.48            | 3.24  | 0.62 |       |      |              |
| 047605 | EK 082      | 5.64            |       |      |       |      |              |
| 047606 | EK 082S     | 4.96            | 4.27  | 0.35 |       |      |              |
| 049551 | EK 0825S    | 5.01            | 4.37  | 0.32 |       |      |              |
| 056906 | EK 083MF    | 5.70            |       |      | 3.83  |      |              |
| 047607 | EK 083      | 5.95            |       |      | 3.83  |      |              |
| 047608 | EK 083S     | 5.29            | 4.05  | 0.62 |       | 2.64 | 1.23         |
| 047609 | EK 084      | 6.17            |       |      |       |      |              |
| 047610 | EK 084S     | 5.33            | 4.07  | 0.63 |       |      |              |
| 047611 | EK162       | 6.58            |       |      |       |      |              |
| 047612 | EK 162S     | 5.90            | 5.21  | 0.35 |       |      |              |
| 056045 | EK 1625S    | 5.95            | 5.31  | 0.32 |       |      |              |
| 047613 | EK 163      | 6.89            |       |      |       |      |              |
| 047614 | EK 163S     | 6.24            | 5.43  | 0.40 |       |      |              |
| 047615 | EK 164      | 7.11            |       |      | 4.77  |      | 1.49         |
| 047616 | EK 164S     | 6.33            | 5.33  | 0.50 |       |      |              |
| 047617 | EK 165      | 7.57            |       |      |       |      |              |
| 047618 | EK 165S     | 6.55            | 5.30  | 0.63 |       |      |              |
| 047619 | EK 167S     | 7.13            | 5.63  | 0.75 |       |      |              |
| 048210 | EK 303      | 9.66            |       |      |       |      |              |
| 048211 | EK 303S     | 9.01            | 8.21  | 0.40 |       |      |              |
| 048212 | EK 304      | 9.88            |       |      |       |      |              |
| 048213 | EK 304S     | 9.10            | 8.10  | 0.50 |       |      |              |
| 048214 | EK 305      | 10.34           |       |      | 7.54  | 3.14 | 3.01         |
| 048215 | EK 305S     | 9.32            | 8.07  | 0.63 |       |      |              |
| 048216 | EK 306S     | 9.73            | 8.48  | 0.63 |       |      |              |
| 048217 | EK 307S     | 9.90            | 8.40  | 0.75 |       |      |              |
| 048218 | EK 309S     | 10.26           | 8.45  | 0.90 |       |      |              |
| 048219 | EK 413      | 9.79            |       |      |       |      |              |
| 048220 | EK 414      | 10.01           |       |      |       |      |              |
| 048221 | EK 414S     | 9.23            | 8.23  | 0.50 |       |      |              |
| 048222 | EK 415      | 10.47           |       | -    | 7.67  | 3.64 | 3.35         |
| 048223 | EK 415S     | 9.45            | 8.20  | 0.63 |       |      |              |
| 048224 | EK 417S     | 10.03           | 8.53  | 0.75 |       |      |              |
| 048225 | EK 419S     | 10.39           | 8.58  | 0.91 |       |      |              |
| 048228 | EK 757S     | 15.25           | 14.02 | 0.61 |       |      |              |
| 048229 | EK 759S     | 15.88           | 14.07 | 0.91 | 13.16 |      | 6.14         |

The EK Contractor's Choice filter drier is designed for foodservice and residential air conditioning applications.

### Features

- Extended solid copper connections
- Dual access valves for faster and easier system diagnosis
- Incorporates all the internal features of the premium EK

### Specifications

- Desiccant blend - optimized for high water capacity and acid capacity
- Filtration: 20 microns
- Maximum working pressure: 680 psig
- UL/CUL file number: SA 3124



### Ordering Information

| PCN    | Description |
|--------|-------------|
| 063908 | EK 032S VV  |
| 065966 | EK 052S VV  |
| 065963 | EK 053S VV  |
| 065964 | EK 083S VV  |
| 065965 | EK 163S VV  |

# EK Cap Tube Filter Drier

The EK Cap Tube filter drier is designed for foodservice refrigeration systems.

### Features

- Schrader valve on the inlet side acts as a maintenance and charging port
- Outlet is designed to accept capillary tubing without the need for crimping
- Extended solid copper 1/4 ODF connection inlet by cap tube
- Incorporates all the internal features of the premium EK

### Specifications

- Desiccant blend - optimized for high water capacity and acid capacity
- Filtration: 20 microns
- Maximum working pressure: 680 psig
- UL/CUL file number: SA 3124



### Ordering Information

| PCN    | Description                  |
|--------|------------------------------|
| 063208 | EK 032 SV CAP (3 cubic inch) |
| 065846 | EK 052 SV CAP (5 cubic inch) |

## Capacity Tables

| Description | Connections<br>Inlet/Outlet |        |                 |        |                  |       |        |       |      |       |        |       |        |       |            |       |       |      |
|-------------|-----------------------------|--------|-----------------|--------|------------------|-------|--------|-------|------|-------|--------|-------|--------|-------|------------|-------|-------|------|
|             |                             |        |                 |        |                  |       | R-134a |       | R-22 |       | R-407C |       | R-410A |       | R-404A/507 |       | R-744 |      |
|             |                             | R-134a | R-22/<br>R-410A | R-407C | R-404A/<br>R-507 | R-744 | 75°F   | 125°F | 75°F | 125°F | 75°F   | 125°F | 75°F   | 125°F | 75°F       | 125°F | -10°F | 25°F |
| EK 03 2 FM  | 1/4 Fem/1/4 Male SAE        | 2.0    | 2.2             | 2.1    | 1.4              | 2.8   | 40     | 37    | 40   | 33    | 33     | 25    | 21     | 19    | 38         | 37    | 30    | 34   |
| EK 03 2 MF  | 1/4 Male/1/4 Fem SAE        | 2.0    | 2.2             | 2.1    | 1.4              | 2.8   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 03 2     | 1/4 SAE                     | 2.0    | 2.2             | 2.1    | 1.4              | 2.8   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 03 2 S   | 1/4 ODF                     | 2.7    | 2.9             | 2.9    | 2.0              | 3.7   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 032 SV   | 1/4 ODF                     | 2.7    | 2.9             | 2.9    | 2.0              | 3.7   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 03 3     | 3/8 SAE                     | 3.0    | 3.3             | 3.2    | 2.2              | 4.3   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 03 3 S   | 3/8 ODF                     | 3.0    | 3.3             | 3.2    | 2.2              | 4.3   | 116    | 106   | 114  | 97    | 95     | 75    | 64     | 58    | 109        | 106   | 81    | 89   |
| EK 05 2 FM  | 1/4 Fem/1/4 Male SAE        | 2.1    | 2.3             | 2.2    | 1.5              | 3.0   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 05 2 MF  | 1/4 Male/1/4 Fem SAE        | 2.1    | 2.3             | 2.2    | 1.5              | 3.0   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 05 2     | 1/4 SAE                     | 2.1    | 2.3             | 2.2    | 1.5              | 3.0   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 05 2 S   | 1/4 ODF                     | 3.3    | 3.6             | 3.5    | 2.4              | 4.6   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 05 3 MF  | 3/8 Male/3/8 Fem SAE        | 3.5    | 3.8             | 3.7    | 2.5              | 4.9   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 05 3     | 3/8 SAE                     | 3.5    | 3.8             | 3.7    | 2.5              | 4.9   | 237    | 218   | 235  | 200   | 195    | 155   | 159    | 118   | 224        | 217   | 163   | 180  |
| EK 05 3 S   | 3/8 ODF                     | 4.4    | 4.8             | 4.7    | 3.2              | 6.2   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 08 2 FM  | 1/4 Fem/1/4 Male SAE        | 2.3    | 2.5             | 2.4    | 1.7              | 3.2   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 08 2 MF  | 1/4 Male/1/4 Fem SAE        | 2.3    | 2.5             | 2.4    | 1.7              | 3.2   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 08 2     | 1/4 SAE                     | 2.3    | 2.5             | 2.4    | 1.7              | 3.2   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 08 2 S   | 1/4 ODF                     | 3.1    | 3.4             | 3.3    | 2.2              | 4.4   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 08 25 S  | 5/16 ODF                    | 3.5    | 3.8             | 3.7    | 2.5              | 4.9   | 371    | 341   | 368  | 313   | 305    | 240   | 206    | 186   | 350        | 340   | 260   | 286  |
| EK 08 3 MF  | 3/8 Male/3/8 Fem SAE        | 4.0    | 4.3             | 4.3    | 2.9              | 5.5   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 08 3     | 3/8 SAE                     | 4.0    | 4.3             | 4.3    | 2.9              | 5.5   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 08 3 S   | 3/8 ODF                     | 4.5    | 4.9             | 4.8    | 3.3              | 6.3   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 08 4     | 1/2 SAE                     | 6.7    | 7.3             | 7.1    | 4.9              | 9.4   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 08 4 S   | 1/2 ODF                     | 7.1    | 7.7             | 7.5    | 5.1              | 9.9   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 16 2 MF  | 1/4 Male/1/4 Fem SAE        | 2.3    | 2.5             | 2.4    | 1.7              | 3.2   | 664    | 611   | 657  | 561   | 548    | 434   | 515    | 355   | 627        | 608   | 458   | 504  |
| EK 16 2     | 1/4 SAE                     | 2.3    | 2.5             | 2.4    | 1.7              | 3.2   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 16 2 S   | 1/4 ODF                     | 3.1    | 3.4             | 3.3    | 2.2              | 4.4   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 16 25 S  | 5/16 ODF                    | 3.1    | 3.4             | 3.3    | 2.2              | 4.4   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 16 3     | 3/8 SAE                     | 3.9    | 4.2             | 4.1    | 2.8              | 5.4   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 16 3 S   | 3/8 ODF                     | 4.4    | 4.8             | 4.7    | 3.2              | 6.2   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 164      | 3/8 SAE                     | 6.1    | 4.4             | 6.5    | 4.2              | 10.1  |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 16 4 S   | 1/2 ODF                     | 8.5    | 9.2             | 9.0    | 6.2              | 11.9  |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 16 5     | 5/8 SAE                     | 9.7    | 10.5            | 10.3   | 7.0              | 13.5  |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 16 5 S   | 5/8 ODF                     | 10.1   | 10.9            | 10.7   | 7.3              | 14.1  |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 16 7 S   | 7/8 ODF                     | 15.5   | 16.8            | 16.5   | 11.2             | 21.7  | 938    | 854   | 919  | 785   | 765    | 607   | 715    | 465   | 876        | 850   | 638   | 702  |
| EK 30 3     | 3/8 SAE                     | 4.3    | 4.7             | 4.6    | 3.1              | 6.1   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 30 3 S   | 3/8 ODF                     | 6.3    | 6.8             | 6.7    | 4.6              | 8.8   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 30 4     | 1/2 SAE                     | 8.1    | 8.8             | 8.6    | 5.9              | 11.4  |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 30 4 S   | 1/2 ODF                     | 10.0   | 10.8            | 10.6   | 7.2              | 13.9  |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 30 5     | 5/8 SAE                     | 10.6   | 11.5            | 11.3   | 7.7              | 14.8  |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 30 6 S   | 3/4 ODF                     | 14.8   | 16.0            | 15.7   | 10.7             | 20.6  | 2159   | 2019  | 2159 | 1880  | 1810   | 1460  | 1460   | 1111  | 2019       | 2019  | 1578  | 1737 |
| EK 30 7 S   | 7/8 ODF                     | 16.8   | 18.2            | 17.9   | 12.2             | 23.5  |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 30 9 S   | 1 1/8 ODF                   | 19.6   | 21.2            | 20.8   | 14.2             | 27.3  |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 41 3     | 3/8 SAE                     | 4.3    | 4.7             | 4.6    | 3.1              | 6.1   |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 41 4     | 1/2 SAE                     | 10.4   | 11.3            | 11.1   | 7.5              | 14.6  |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 41 4 S   | 1/2 ODF                     | 10.8   | 11.7            | 11.5   | 7.8              | 15.1  |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 41 5     | 5/8 SAE                     | 12.0   | 13.0            | 12.8   | 8.7              | 16.8  |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 41 7 S   | 7/8 ODF                     | 20.3   | 22.0            | 21.6   | 14.7             | 28.4  |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 41 9 S   | 1 1/8 ODF                   | 27.7   | 30.0            | 29.4   | 20.1             | 38.7  |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 75 7 S   | 7/8 ODF                     | 22.2   | 24.1            | 23.6   | 16.1             | 31.1  |        |       |      |       |        |       |        |       |            |       |       |      |
| EK 75 9 S   | 1 1/8 ODF                   | 32.7   | 35.4            | 34.8   | 23.7             | 45.7  |        |       |      |       |        |       |        |       |            |       |       |      |

<sup>1</sup> All ratings in accordance with ARI Standard 710-04. 86°F liquid refrigerant temperature  
5°F saturated vapor temperature  
3.1 lbs./min./ton for R-134a  
2.9 lbs./min./ton for R-22 and R-407C  
4.0 lbs./min./ton for R-404A/507 and R-12  
2.7 lbs./min./ton for R-410A

<sup>5</sup> Since there is currently no ARI standard for R-744,

values are based on 1 ton of refrigeration at 20°F liquid refrigerant temperature and -20°F saturated vapor temperature.

<sup>2</sup> Water Capacities are based on:

Equilibrium Point Dryness (EPD) of:

50 parts per million for R-134a, R404-A/507,  
R-410A, R-407C, and R-744

60 parts per million for R-22

15 parts per million for R-12

<sup>3</sup> 20 drops of water = 1 gram = 1 cc

<sup>4</sup> For 2 PSI  $\Delta P$ , Multiply values by 1.4

## Liquid Refrigerant Holding Capacity-Ounces

| Unit Size | R-134a |       | R-22 |       | R-407C |       | R-410A |       | R-404A/R-507 |       | R-744 |       |
|-----------|--------|-------|------|-------|--------|-------|--------|-------|--------------|-------|-------|-------|
|           | 75°F   | 125°F | 75°F | 125°F | 75°F   | 125°F | 75°F   | 125°F | 75°F         | 125°F | 20°F  | -20°F |
| 03        | 2.6    | 2.3   | 2.6  | 2.3   | 2.5    | 2.1   | 2.3    | 1.9   | 2.3          | 1.9   | 2.1   | 2.3   |
| 05        | 6.0    | 5.4   | 5.9  | 5.3   | 5.6    | 4.9   | 5.3    | 4.4   | 5.2          | 4.4   | 4.8   | 5.3   |
| 08        | 7.6    | 6.9   | 7.5  | 6.8   | 7.2    | 6.3   | 6.7    | 5.7   | 6.6          | 5.6   | 6.1   | 6.7   |
| 16        | 9.4    | 8.6   | 9.3  | 8.4   | 8.9    | 7.8   | 8.3    | 7.0   | 8.2          | 6.9   | 7.5   | 8.3   |
| 30        | 26.4   | 23.9  | 26.1 | 23.5  | 24.9   | 21.9  | 23.3   | 19.6  | 22.9         | 19.4  | 21.1  | 23.4  |
| 41        | 36.9   | 33.1  | 36.4 | 32.5  | 34.7   | 30.3  | 32.5   | 27.2  | 31.9         | 26.8  | 29.2  | 32.4  |
| 75        | 66.7   | 60.3  | 65.8 | 59.2  | 62.8   | 55.2  | 58.7   | 49.5  | 57.7         | 48.9  | 53.1  | 58.9  |

The EK Liquid Line filter drier is a premium OEM R-410A filter drier with 20 micron filtration for maximum protection.

### Features

- Filtration first for more effective use of desiccant
- High moisture removal capacity to prevent POE oil damage
- Solid copper connections
- Corrosion resistant epoxy powder paint finish
- Copeland™ brand products approved for POE Oils
- Shock resistant steel shell construction



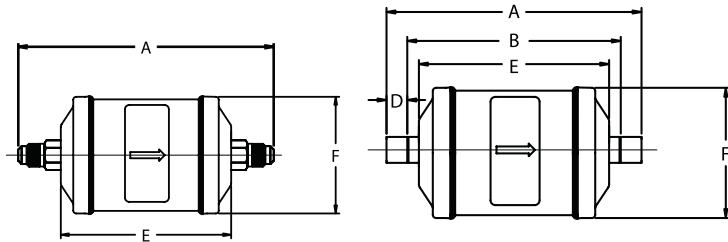
### Specifications

- Desiccant blend - 100% molecular sieve
- Filtration: 20 microns
- Maximum working pressure: 680 psig
- UL/CUL file number: SA 3124

### Dimensional Data

#### Nomenclature example: EKZ-083S

| EKZ          | 08                     | 3                         | S                   |
|--------------|------------------------|---------------------------|---------------------|
| Drier Series | Unit Size (in cu. in.) | Connection Size (in 1/8") | S = ODF connections |



### Ordering Information

| Description | Dimension (in) |      |      |      |      | Weight (lbs) |
|-------------|----------------|------|------|------|------|--------------|
|             | A              | B    | D    | E    | F    |              |
| EKZ-032S    | 3.94           | 3.25 | 0.35 | 2.57 | 1.75 | 0.62         |
| EKZ-033S    | 4.03           | 2.79 | 0.62 |      |      |              |
| EKZ-052S    | 4.15           | 3.46 | 0.35 | 3.00 | 2.64 | 0.99         |
| EKZ-0525S   | 4.20           | 3.56 | 0.32 |      |      |              |
| EKZ-053S    | 4.48           | 3.24 | 0.62 |      |      |              |
| EKZ-054S    | 4.58           | 3.58 | 0.50 |      |      |              |
| EKZ-083S    | 5.29           | 4.05 | 0.62 | 3.80 | 2.64 | 1.15         |
| EKZ-084S    | 5.33           | 4.07 | 0.63 |      |      |              |
| EKZ-085S    | 5.60           | 4.08 | 0.76 |      |      |              |
| EKZ-163S    | 6.24           | 5.43 | 0.40 | 4.76 | 2.64 | 1.48         |
| EKZ-164S    | 6.33           | 5.33 | 0.50 |      |      |              |
| EKZ-165S    | 6.55           | 5.30 | 0.63 |      |      |              |
| EKZ-167S    | 7.13           | 5.63 | 0.75 |      |      |              |
| EKZ-305S    | 9.32           | 8.07 | 0.63 | 7.46 | 3.14 | 2.80         |
| EKZ-306S    | 9.73           | 8.48 | 0.63 |      |      |              |
| EKZ-307S    | 9.90           | 8.40 | 0.75 |      |      |              |
| EKZ-417S    | 10.03          | 8.53 | 0.75 | 7.68 | 3.64 | 3.21         |
| EKZ-419S    | 10.39          | 8.58 | 0.91 |      |      |              |

## Capacity Tables

| Description | Connections<br>Inlet/Outlet | Flow Capacity Tons @ 1 psi ΔP <sup>1,4</sup><br>(For kW, multiply tons by 3.5 ) |                 |        |                 |       | Water Capacity <sup>2</sup><br>Drops of Water <sup>3</sup> |       |      |       |        |       |        |       |            |       |       |      |
|-------------|-----------------------------|---------------------------------------------------------------------------------|-----------------|--------|-----------------|-------|------------------------------------------------------------|-------|------|-------|--------|-------|--------|-------|------------|-------|-------|------|
|             |                             |                                                                                 |                 |        |                 |       | R-134a                                                     |       | R-22 |       | R-407C |       | R-410A |       | R-404A/507 |       | R-744 |      |
|             |                             | R-134a                                                                          | R-22/<br>R-410A | R-407C | R404A/<br>R-507 | R-744 | 75°F                                                       | 125°F | 75°F | 125°F | 75°F   | 125°F | 75°F   | 125°F | 75°F       | 125°F | -10°F | 25°F |
| EKZ 03 2 S  | 1/4 ODF                     | 2.7                                                                             | 2.9             | 2.9    | 2.0             | 3.7   | 49                                                         | 45    | 49   | 43    | 45     | 40    | 45     | 40    | 49         | 45    | 35    | 39   |
| EKZ 03 3 S  | 3/8 ODF                     | 3.0                                                                             | 3.3             | 3.2    | 2.2             | 4.3   |                                                            |       |      |       |        |       |        |       |            |       |       |      |
| EKZ 05 2 S  | 1/4 ODF                     | 3.3                                                                             | 3.6             | 3.5    | 2.4             | 4.6   | 130                                                        | 120   | 130  | 115   | 115    | 110   | 115    | 110   | 130        | 120   | 93    | 103  |
| EKZ 05 25 S | 5/16 ODF                    | 3.4                                                                             | 3.8             | 3.7    | 2.5             | 4.9   |                                                            |       |      |       |        |       |        |       |            |       |       |      |
| EKZ 05 3 S  | 3/8 ODF                     | 4.4                                                                             | 4.8             | 4.7    | 3.2             | 6.2   |                                                            |       |      |       |        |       |        |       |            |       |       |      |
| EKZ 05 4 S  | 1/2 ODF                     | 6.9                                                                             | 7.5             | 7.4    | 5.0             | 9.7   | 240                                                        | 225   | 240  | 210   | 215    | 210   | 215    | 210   | 240        | 225   | 173   | 191  |
| EKZ 08 3 S  | 3/8 ODF                     | 4.5                                                                             | 4.9             | 4.8    | 3.3             | 6.3   |                                                            |       |      |       |        |       |        |       |            |       |       |      |
| EKZ 08 4 S  | 1/2 ODF                     | 7.1                                                                             | 7.7             | 7.5    | 5.1             | 9.9   |                                                            |       |      |       |        |       |        |       |            |       |       |      |
| EKZ 08 5 S  | 5/8 ODF                     | 9.1                                                                             | 9.8             | 9.7    | 6.6             | 12.6  | 440                                                        | 415   | 445  | 390   | 400    | 390   | 400    | 390   | 440        | 415   | 317   | 350  |
| EKZ 16 3 S  | 3/8 ODF                     | 4.4                                                                             | 4.8             | 4.7    | 3.2             | 6.2   |                                                            |       |      |       |        |       |        |       |            |       |       |      |
| EKZ 16 4 S  | 1/2 ODF                     | 8.5                                                                             | 9.2             | 9.0    | 6.2             | 11.9  |                                                            |       |      |       |        |       |        |       |            |       |       |      |
| EKZ 16 5 S  | 5/8 ODF                     | 10.1                                                                            | 10.9            | 10.7   | 7.3             | 14.1  | 730                                                        | 690   | 730  | 645   | 660    | 640   | 660    | 640   | 730        | 690   | 522   | 576  |
| EKZ 16 7 S  | 7/8 ODF                     | 15.5                                                                            | 16.8            | 16.5   | 11.2            | 21.7  |                                                            |       |      |       |        |       |        |       |            |       |       |      |
| EKZ 30 5 S  | 5/8 ODF                     | 10.6                                                                            | 11.5            | 11.3   | 7.7             | 14.8  |                                                            |       |      |       |        |       |        |       |            |       |       |      |
| EKZ 30 6 S  | 3/4 ODF                     | 14.8                                                                            | 16.0            | 15.7   | 10.7            | 20.6  | 1030                                                       | 960   | 1030 | 900   | 930    | 900   | 930    | 900   | 1030       | 960   | 731   | 806  |
| EKZ 30 7 S  | 7/8 ODF                     | 16.8                                                                            | 18.2            | 17.9   | 12.2            | 23.5  |                                                            |       |      |       |        |       |        |       |            |       |       |      |
| EKZ 41 7 S  | 7/8 ODF                     | 20.3                                                                            | 22.0            | 21.6   | 14.7            | 28.4  |                                                            |       |      |       |        |       |        |       |            |       |       |      |
| EKZ 41 9 S  | 1 1/8 ODF                   | 27.7                                                                            | 30.0            | 29.4   | 20.1            | 38.7  |                                                            |       |      |       |        |       |        |       |            |       |       |      |

<sup>1</sup> All ratings in accordance with ARI Standard 710-04. 86°F liquid refrigerant temperature  
5°F saturated vapor temperature  
3.1 lbs./min./ton for R-134a  
2.9 lbs./min./ton for R-22 and R-407C  
4.0 lbs./min./ton for R-404A/507 and R-12  
4.4 lbs./min./ton for R-502  
2.7 lbs./min./ton for R-410A

<sup>5</sup> Since there is currently no ARI standard for R-744,

values are based on 1 ton of refrigeration at 20°F liquid refrigerant temperature and -20°F saturated vapor temperature.

<sup>2</sup> Water Capacities are based on:

Equilibrium Point Dryness (EPD) of:

50 parts per million for R-134a, R404-A/507,

R-410A, R-407C, and R-744

60 parts per million for R-22

15 parts per million for R-12

30 parts per million for R-502

<sup>3</sup> 20 drops of water = 1 gram = 1 cc

<sup>4</sup> For 2 PSI  $\Delta P$ , Multiply values by 1.4

## Liquid Refrigerant Holding Capacity-Ounces

| Unit Size | R-134a |       | R-22 |       | R-407C |       | R-410A |       | R-404A/R-507 |       | R-744 |       |
|-----------|--------|-------|------|-------|--------|-------|--------|-------|--------------|-------|-------|-------|
|           | 75°F   | 125°F | 75°F | 125°F | 75°F   | 125°F | 75°F   | 125°F | 75°F         | 125°F | 20°F  | -20°F |
| 03        | 2.6    | 2.3   | 2.6  | 2.3   | 2.5    | 2.1   | 2.3    | 1.9   | 2.3          | 1.9   | 2.1   | 2.3   |
| 05        | 6.0    | 5.4   | 5.9  | 5.3   | 5.6    | 4.9   | 5.3    | 4.4   | 5.2          | 4.4   | 4.8   | 5.3   |
| 08        | 7.6    | 6.9   | 7.5  | 6.8   | 7.2    | 6.3   | 6.7    | 5.7   | 6.6          | 5.6   | 6.1   | 6.7   |
| 16        | 9.4    | 8.6   | 9.3  | 8.4   | 8.9    | 7.8   | 8.3    | 7.0   | 8.2          | 6.9   | 7.5   | 8.3   |
| 30        | 26.4   | 23.9  | 26.1 | 23.5  | 24.9   | 21.9  | 23.3   | 19.6  | 22.9         | 19.4  | 21.1  | 23.4  |
| 41        | 36.9   | 33.1  | 36.4 | 32.5  | 34.7   | 30.3  | 32.5   | 27.2  | 31.9         | 26.8  | 29.2  | 32.4  |
| 75        |        |       |      |       |        |       |        |       |              |       | 53.1  | 58.9  |

The BFK is a solid core, bi-directional, liquid line filter drier for heat pump applications for use with CFC, HCFC, and HFC refrigerants.

### Features

- Available 5 to 30 cu. in. size
- Internal check valves allow flow and filtration in either direction, eliminates need for external check valves
- High moisture and acid removal capacity
- Corrosion resistant epoxy powder paint finish
- Approved for POE oils with Copeland™ compressors

### Nomenclature example: BFK 165S

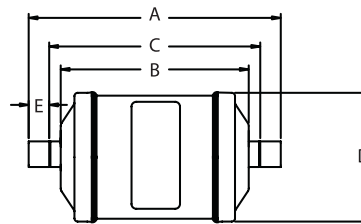
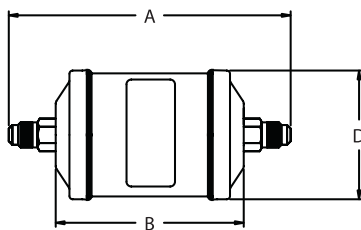
| BFK    | 16                        | 5                            | S                                        |
|--------|---------------------------|------------------------------|------------------------------------------|
| Series | Unit Size<br>(in cu. in.) | Connection Size<br>(in 1/8") | S = ODF<br>connections<br>(omit for SAE) |



### Specifications

- Desiccant Blend: optimized for high water capacity and acid capacity
- Filtration: 40 microns
- Maximum working pressure: 680 psig
- UL/CUL file number: SA 3124

### Dimensional Data



### Ordering Information

| PCN    | Description | Connection | Dimensions (in) |      |      |      |      | Weight (lbs) |
|--------|-------------|------------|-----------------|------|------|------|------|--------------|
|        |             |            | A               | B    | C    | D    | E    |              |
| 062300 | BFK-052     | 1/4 SAE    | 4.84            | 3.03 |      | 2.64 |      | 0.99         |
| 062425 | BFK-052S    | 1/4 ODF    | 4.16            |      | 3.47 |      | 0.35 |              |
| 062254 | BFK-053     | 3/8 SAE    | 5.15            |      |      |      |      |              |
| 062255 | BFK-053S    | 3/8 ODF    | 4.49            |      | 3.25 |      | 0.62 |              |
| 058597 | BFK-0825S   | 5/16 ODF   | 5.02            | 3.84 | 4.38 | 2.64 | 0.32 | 0.99         |
| 043321 | BFK-083     | 3/8 SAE    | 5.96            |      |      |      |      |              |
| 043323 | BFK-083S    | 3/8 ODF    | 5.31            |      | 4.50 |      | 0.40 |              |
| 043325 | BFK-084     | 1/2 SAE    | 6.184           |      |      |      |      |              |
| 043327 | BFK-084S    | 1/2 ODF    | 5.40            | 4.70 | 4.40 | 2.64 | 0.50 | 2.08         |
| 043728 | BFK085      | 5/8 SAE    | 6.64            |      |      |      |      |              |
| 043730 | BFK-085S    | 5/8 ODF    | 5.62            |      | 4.37 |      | 0.63 |              |
| 043330 | BFK-163     | 3/8 SAE    | 6.824           |      |      |      |      |              |
| 043333 | BFK-163S    | 3/8 ODF    | 6.17            | 7.55 | 5.37 | 3.14 | 0.40 | 0.35         |
| 043335 | BFK-164     | 1/2 SAE    | 7.04            |      |      |      |      |              |
| 043337 | BFK-164S    | 1/2 ODF    | 6.26            |      | 5.26 |      | 0.50 |              |
| 043732 | BFK-165     | 5/8 SAE    | 7.50            |      |      |      |      |              |
| 043734 | BFK-165S    | 5/8 ODF    | 6.48            | 7.55 | 5.23 | 3.14 | 0.63 | 0.35         |
| 058589 | BFK-167S    | 7/8 ODF    | 7.06            |      | 5.56 |      | 0.75 |              |
| 063076 | BFK303      | 3/8 SAE    | 9.674           |      |      |      |      |              |
| 063077 | BFK-303S    | 3/8 ODF    | 9.01            |      | 7.77 |      | 0.62 |              |
| 063078 | BFK-304     | 1/2 SAE    | 9.89            | 7.55 |      |      |      | 0.35         |
| 063079 | BFK-304S    | 1/2 ODF    | 9.05            |      | 7.79 |      | 0.63 |              |
| 063080 | BFK-305     | 5/8 SAE    | 10.35           |      |      |      |      |              |
| 063081 | BFK-305S    | 5/8 ODF    | 9.32            |      | 7.81 |      | 0.76 |              |
| 063082 | BFK-306     | 3/4 SAE    | 10.67           | 7.55 |      |      |      | 0.35         |
| 063083 | BFK-306S    | 3/4 ODF    | 9.74            |      | 7.83 |      | 0.96 |              |
| 063084 | BFK-307S    | 7/8 ODF    | 9.91            |      | 7.79 |      | 1.06 |              |
| 063451 | BFK-309S    | 1 1/8 ODF  | 10.27           |      | 7.98 |      | 1.14 |              |

### BFK Liquid Line Bi-Directional Filter Drier

| Description | Connection | Flow Capacity<br>Tons @ 1 psi $\Delta P$ <sup>1,4</sup><br>(For kW, multiply tons by 3.5) |        |        |       | Water Capacity <sup>2</sup><br>Drops Of Water <sup>3</sup> |       |        |       |        |       |       |      |
|-------------|------------|-------------------------------------------------------------------------------------------|--------|--------|-------|------------------------------------------------------------|-------|--------|-------|--------|-------|-------|------|
|             |            |                                                                                           |        |        |       | R-22                                                       |       | R-407C |       | R-410A |       | R-744 |      |
|             |            | R-22                                                                                      | R-410A | R-407C | R-744 | 75°F                                                       | 125°F | 75°F   | 125°F | 75°F   | 125°F | -10°F | 25°F |
| BFK-05 2    | 1/4 SAE    | 1.6                                                                                       | 1.6    | 1.6    | 2.1   | 73                                                         | 66    | 58     | 42    | 39     | 35    | 81    | 89   |
| BFK-05 2S   | 1/4 ODF    | 2.2                                                                                       | 2.2    | 2.2    | 2.8   |                                                            |       |        |       |        |       |       |      |
| BFK-05 3    | 3/8 SAE    | 3.5                                                                                       | 3.5    | 3.4    | 4.5   |                                                            |       |        |       |        |       |       |      |
| BFK-05 3S   | 3/8 ODF    | 4.0                                                                                       | 4.0    | 3.9    | 5.2   |                                                            |       |        |       |        |       |       |      |
| BFK-08 3    | 3/8 SAE    | 4.5                                                                                       | 4.5    | 4.4    | 5.8   | 159                                                        | 144   | 106    | 79    | 85     | 75    | 136   | 150  |
| BFK-08 3S   | 3/8 ODF    | 5.1                                                                                       | 5.1    | 5.0    | 6.6   |                                                            |       |        |       |        |       |       |      |
| BFK-08 4    | 1/2 SAE    | 6.4                                                                                       | 6.4    | 6.3    | 8.3   |                                                            |       |        |       |        |       |       |      |
| BFK-08 4S   | 1/2 ODF    | 6.7                                                                                       | 6.7    | 6.6    | 8.6   |                                                            |       |        |       |        |       |       |      |
| BFK-08 5    | 5/8 SAE    | 7.2                                                                                       | 7.2    | 7.0    | 9.3   |                                                            |       |        |       |        |       |       |      |
| BFK-08 5S   | 5/8 ODF    | 8.1                                                                                       | 8.1    | 7.9    | 10.4  | 323                                                        | 294   | 237    | 179   | 178    | 160   | 221   | 260  |
| BFK-16 3    | 3/8 SAE    | 4.6                                                                                       | 4.6    | 4.5    | 5.9   |                                                            |       |        |       |        |       |       |      |
| BFK-16 3S   | 3/8 ODF    | 5.2                                                                                       | 5.2    | 5.1    | 6.7   |                                                            |       |        |       |        |       |       |      |
| BFK-16 4    | 1/2 SAE    | 7.7                                                                                       | 7.7    | 7.6    | 9.9   |                                                            |       |        |       |        |       |       |      |
| BFK-16 4S   | 1/2 ODF    | 8.1                                                                                       | 8.1    | 7.9    | 10.4  |                                                            |       |        |       |        |       |       |      |
| BFK-16 5    | 5/8 SAE    | 8.3                                                                                       | 8.3    | 8.1    | 10.7  |                                                            |       |        |       |        |       |       |      |
| BFK-16 5S   | 5/8 ODF    | 8.7                                                                                       | 8.7    | 8.5    | 11.2  |                                                            |       |        |       |        |       |       |      |
| BFK-30 3S   | 3/8 ODF    | 5.8                                                                                       | 5.8    | 5.7    | 7.5   | 585                                                        | 532   | 452    | 345   | 415    | 293   | 453   | 533  |
| BFK-30 4    | 1/2 SAE    | 7.6                                                                                       | 7.6    | 7.5    | 9.8   |                                                            |       |        |       |        |       |       |      |
| BFK-30 4S   | 1/2 ODF    | 9.7                                                                                       | 9.7    | 9.5    | 12.5  |                                                            |       |        |       |        |       |       |      |
| BFK-30 5    | 5/8 SAE    | 10.3                                                                                      | 10.3   | 10.1   | 13.3  |                                                            |       |        |       |        |       |       |      |
| BFK-30 5S   | 5/8 ODF    | 14.2                                                                                      | 14.2   | 13.9   | 18.3  |                                                            |       |        |       |        |       |       |      |
| BFK-30 6S   | 3/4 ODF    | 16.0                                                                                      | 16.0   | 15.7   | 20.6  |                                                            |       |        |       |        |       |       |      |
| BFK-30 7S   | 7/8 ODF    | 16.7                                                                                      | 16.7   | 16.4   | 21.5  |                                                            |       |        |       |        |       |       |      |
| BFK-30 9S   | 1 1/8 ODF  | 18.0                                                                                      | 18.0   | 17.5   | 23.2  |                                                            |       |        |       |        |       |       |      |

<sup>1</sup> All ratings in accordance with ARI Standard 710-04. 86°F liquid refrigerant temperature  
 5°F saturated vapor temperature  
 3.1 lbs./min./ton for R-134a  
 2.9 lbs./min./ton for R-22 and R-407C  
 4.0 lbs./min./ton for R-404A/507 and R-12  
 2.7 lbs./min./ton for R-410A

<sup>5</sup> Since there is currently no ARI standard for R-744, values are based on 1 ton of refrigeration at 20°F liquid refrigerant temperature and -20°F saturated vapor temperature.

<sup>2</sup> Water Capacities are based on:  
 Equilibrium Point Dryness (EPD) of:  
 50 parts per million for R-134a, R404-A/507,  
 R-410A, R-407C, and R-744  
 60 parts per million for R-22  
 15 parts per million for R-12

<sup>3</sup> 20 drops of water = 1 gram = 1 cc

<sup>4</sup> For 2 PSI  $\Delta P$ , Multiply values by 1.4

### Liquid Refrigerant Holding Capacity-Ounces

| Unit Size | R-22 |       | R-407C |       | R-410A |       | R-744 |       |
|-----------|------|-------|--------|-------|--------|-------|-------|-------|
|           | 75°F | 125°F | 75°F   | 125°F | 75°F   | 125°F | 20°F  | -20°F |
| 05        | 4.6  | 4.2   | 4.4    | 3.9   | 4.1    | 3.5   | 3.7   | 4.1   |
| 08        | 7.7  | 6.9   | 7.3    | 6.4   | 6.9    | 5.8   | 6.2   | 6.9   |
| 16        | 14.2 | 12.7  | 13.5   | 11.8  | 12.6   | 10.6  | 11.4  | 12.7  |
| 30        | 21.0 | 18.7  | 20.0   | 17.4  | 19.6   | 16.5  | 16.8  | 18.7  |

# BFKZ Liquid Line Bi-Directional Filter Drier

**R-410A  
OPTIMIZED**

System Protectors

The BFKZ is a solid core, bi-directional, liquid line filter drier for OEM heat pump applications optimized for use with R-410A.

## Features

- Available 5 to 30 cu. in. size
- Internal check valves allow flow and filtration in either direction, eliminates need for external check valves
- High moisture and acid removal capacity
- Corrosion resistant epoxy powder paint finish
- Copeland™ brand products approved for POE oils



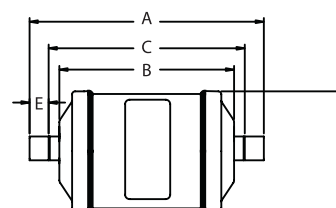
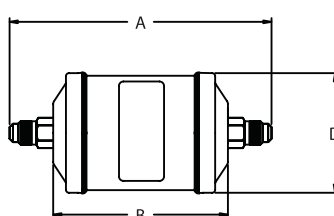
## Specifications

- Desiccant Blend: 100% Molecular Sieve Desiccant optimized for high water capacity
- Filtration: 40 microns
- Maximum working pressure: 680 psig
- UL/CUL file number: SA 3124

## Nomenclature example: BFKZ 165S

| BFKZ   | 16                        | 5                            | S                                        |
|--------|---------------------------|------------------------------|------------------------------------------|
| Series | Unit Size<br>(in cu. in.) | Connection Size<br>(in 1/8") | S = ODF<br>connections<br>(omit for SAE) |

## Dimensional Data



## Ordering Information

| Description | Connection | Dimension (in)       |      |                      |      |                      | Weight (lbs) |
|-------------|------------|----------------------|------|----------------------|------|----------------------|--------------|
|             |            | A                    | B    | C                    | D    | E                    |              |
| BFKZ-052    | 1/4 SAE    | 4.84                 | 3.00 | 0.00                 | 2.64 |                      | 1.03         |
| BFKZ-052S   | 1/4 ODF    | 4.16                 |      | 3.47                 |      | 0.35                 |              |
| BFKZ-053    | 3/8 SAE    | 5.15                 |      | 0.00                 |      |                      |              |
| BFKZ-053S   | 3/8 ODF    | 4.49                 |      | 3.25                 |      | 0.62                 |              |
| BFKZ-054    | 1/2 SAE    | 5.34                 |      |                      |      |                      |              |
| BFKZ-054S   | 1/2 ODF    | 4.50                 |      | 3.29                 |      | 0.61                 |              |
| BFKZ-0825S  | 5/16 ODF   | 5.02                 | 3.82 | 4.38                 |      | 0.32                 |              |
| BFKZ-083    | 3/8 SAE    | 5.96                 |      | 0.00                 |      |                      |              |
| BFKZ-083S   | 3/8 ODF    | 5.31                 |      | 4.50                 |      | 0.40                 |              |
| BFKZ-084    | 1/2 SAE    | 6.18                 |      | 0.00                 |      |                      |              |
| BFKZ-084S   | 1/2 ODF    | 5.40                 |      | 4.40                 |      | 0.50                 |              |
| BFKZ-085    | 5/8 SAE    | Is not set up in GDL |      | Is not set up in GDL |      |                      |              |
| BFKZ-085S   | 5/8 ODF    | 5.62                 |      | 4.37                 |      | 0.63                 |              |
| BFKZ-163    | 3/8 SAE    | 6.82                 | 4.64 | 0.00                 | 3.14 |                      | 2.07         |
| BFKZ-163S   | 3/8 ODF    | 6.17                 |      | 5.37                 |      | 0.40                 |              |
| BFKZ-164    | 1/2 SAE    | 7.04                 |      | 0.00                 |      |                      |              |
| BFKZ-164S   | 1/2 ODF    | 6.26                 |      | 5.26                 |      | 0.50                 |              |
| BFKZ-165    | 5/8 SAE    | 7.50                 |      | 0.00                 |      |                      |              |
| BFKZ-165S   | 5/8 ODF    | 6.48                 |      | 5.23                 |      | 0.63                 |              |
| BFKZ-166S   | 3/4 ODF    | Is not set up in GDL |      | Is not set up in GDL |      | Is not set up in GDL |              |
| BFKZ-167S   | 7/8 ODF    | 7.06                 | 7.50 | 5.56                 | 3.14 | 0.75                 | 3.18         |
| BFKZ-305    | 5/8 SAE    | 10.35                |      | 0.00                 |      |                      |              |
| BFKZ-305S   | 5/8 ODF    | 9.32                 |      | 7.81                 |      | 0.76                 |              |
| BFKZ-306S   | 3/4 ODF    | 9.74                 |      | 7.83                 |      | 0.96                 |              |
| BFKZ-307S   | 7/8 ODF    | 9.91                 |      | 7.79                 |      | 1.06                 |              |
| BFKZ-309S   | 1 1/8 ODF  | 10.27                |      | 7.98                 |      | 1.14                 |              |

### BFKZ Capacity Tables

| Description | Connection | Flow Capacity<br>Tons @ 1 psi $\Delta P$ <sup>1,4</sup><br>(For kW, multiply tons by 3.5) |        |        |       | Water Capacity <sup>2</sup><br>Drops Of Water <sup>3</sup> |       |        |       |        |       |       |      |
|-------------|------------|-------------------------------------------------------------------------------------------|--------|--------|-------|------------------------------------------------------------|-------|--------|-------|--------|-------|-------|------|
|             |            |                                                                                           |        |        |       | R-22                                                       |       | R-407C |       | R-410A |       | R-744 |      |
|             |            | R-22                                                                                      | R-410A | R-407C | R-744 | 75°F                                                       | 125°F | 75°F   | 125°F | 75°F   | 125°F | -10°F | 25°F |
| BFKZ-05 2   | 1/4 SAE    | 1.6                                                                                       | 1.6    | 1.6    | 2.1   | 95                                                         | 90    | 95     | 90    | 95     | 90    | 90    | 105  |
| BFKZ-05 2S  | 1/4 ODF    | 2.2                                                                                       | 2.2    | 2.2    | 2.8   |                                                            |       |        |       |        |       |       |      |
| BFKZ-05 3   | 3/8 SAE    | 3.5                                                                                       | 3.5    | 3.4    | 4.5   |                                                            |       |        |       |        |       |       |      |
| BFKZ-05 3S  | 3/8 ODF    | 4.0                                                                                       | 4.0    | 3.9    | 5.2   |                                                            |       |        |       |        |       |       |      |
| BFKZ-05 4   | 1/2 SAE    | 6.0                                                                                       | 6.0    | 5.9    | 7.7   |                                                            |       |        |       |        |       |       |      |
| BFKZ-05 4S  | 1/2 ODF    | 6.3                                                                                       | 6.3    | 6.2    | 8.1   | 150                                                        | 140   | 150    | 140   | 150    | 140   | 149   | 175  |
| BFKZ-082 5S | 5/16 ODF   | 3.0                                                                                       | 3.0    | 3.0    | 3.9   |                                                            |       |        |       |        |       |       |      |
| BFKZ-08 3   | 3/8 SAE    | 4.5                                                                                       | 4.5    | 4.4    | 5.8   |                                                            |       |        |       |        |       |       |      |
| BFKZ-08 3S  | 3/8 ODF    | 5.1                                                                                       | 5.1    | 5.0    | 6.6   |                                                            |       |        |       |        |       |       |      |
| BFKZ-08 4   | 1/2 SAE    | 6.4                                                                                       | 6.4    | 6.3    | 8.3   |                                                            |       |        |       |        |       |       |      |
| BFKZ-08 4S  | 1/2 ODF    | 6.7                                                                                       | 6.7    | 6.6    | 8.6   | 295                                                        | 280   | 295    | 280   | 295    | 280   | 289   | 338  |
| BFKZ-08 5   | 5/8 SAE    | 7.2                                                                                       | 7.2    | 7.0    | 9.3   |                                                            |       |        |       |        |       |       |      |
| BFKZ-08 5S  | 5/8 ODF    | 8.1                                                                                       | 8.1    | 7.9    | 10.4  |                                                            |       |        |       |        |       |       |      |
| BFKZ-16 3   | 3/8 SAE    | 4.6                                                                                       | 4.6    | 4.5    | 5.9   |                                                            |       |        |       |        |       |       |      |
| BFKZ-16 3S  | 3/8 ODF    | 5.2                                                                                       | 5.2    | 5.1    | 6.7   |                                                            |       |        |       |        |       |       |      |
| BFKZ-16 4   | 1/2 SAE    | 7.7                                                                                       | 7.7    | 7.6    | 9.9   | 550                                                        | 540   | 610    | 570   | 610    | 570   | 418   | 490  |
| BFKZ-16 4S  | 1/2 ODF    | 8.1                                                                                       | 8.1    | 7.9    | 10.4  |                                                            |       |        |       |        |       |       |      |
| BFKZ-16 5   | 5/8 SAE    | 8.3                                                                                       | 8.3    | 8.1    | 10.7  |                                                            |       |        |       |        |       |       |      |
| BFKZ-16 5S  | 5/8 ODF    | 8.7                                                                                       | 8.7    | 8.5    | 11.2  |                                                            |       |        |       |        |       |       |      |
| BFKZ-16 6S  | 3/4 ODF    | 15.0                                                                                      | 15.0   | 14.7   | 19.4  |                                                            |       |        |       |        |       |       |      |
| BFKZ-16 7S  | 7/8 ODF    | 16.0                                                                                      | 16.0   | 15.7   | 20.6  | 550                                                        | 540   | 610    | 570   | 610    | 570   | 418   | 490  |
| BFKZ-30 5   | 5/8 SAE    | 10.3                                                                                      | 10.3   | 10.1   | 13.3  |                                                            |       |        |       |        |       |       |      |
| BFKZ-30 5S  | 5/8 ODF    | 14.2                                                                                      | 14.2   | 13.9   | 18.3  |                                                            |       |        |       |        |       |       |      |
| BFKZ-30 6S  | 3/4 ODF    | 16.0                                                                                      | 16.0   | 15.7   | 20.6  |                                                            |       |        |       |        |       |       |      |
| BFKZ-30 7S  | 7/8 ODF    | 16.7                                                                                      | 16.7   | 16.4   | 21.5  |                                                            |       |        |       |        |       |       |      |
| BKFZ-30 9S  | 1-1/8 ODF  | 18.0                                                                                      | 18.0   | 17.5   | 23.2  |                                                            |       |        |       |        |       |       |      |

<sup>1</sup> All ratings in accordance with ARI Standard 710-04.  
86°F liquid refrigerant temperature  
5°F saturated vapor temperature  
3.1 lbs./min./ton for R-134a  
2.9 lbs./min./ton for R-22 and R-407C  
4.0 lbs./min./ton for R-404A/507 and R-12  
4.4 lbs./min./ton for R-502  
2.7 lbs./min./ton for R-410A

<sup>2</sup> Water Capacities are based on:  
Equilibrium Point Dryness (EPD) of:  
50 parts per million for R-134a,  
R404-A/507, R-410A, R-407C, and R-744  
60 parts per million for R-22  
15 parts per million for R-12  
30 parts per million for R-502

<sup>3</sup> 20 drops of water = 1 gram = 1 cc

<sup>4</sup> For 2 PSI  $\Delta P$ , Multiply values by 1.4

<sup>5</sup> Since there is currently no ARI standard for R-744, values are based on 1 ton of refrigeration at 20°F liquid refrigerant temperature and -20°F saturated vapor temperature.

### Liquid Refrigerant Holding Capacity-Ounces

| Unit Size | R-22 |       | R-407C |       | R-410A |       | R-744 |       |
|-----------|------|-------|--------|-------|--------|-------|-------|-------|
|           | 75°F | 125°F | 75°F   | 125°F | 75°F   | 125°F | 20°F  | -20°F |
| 05        | 4.6  | 4.2   | 4.4    | 3.9   | 4.1    | 3.5   | 3.7   | 4.1   |
| 08        | 7.7  | 6.9   | 7.3    | 6.4   | 6.9    | 5.8   | 6.2   | 6.9   |
| 16        | 14.2 | 12.7  | 13.5   | 11.8  | 12.6   | 10.6  | 11.4  | 12.7  |
| 30        | 21.0 | 18.7  | 20.0   | 17.4  | 19.6   | 16.5  | 16.3  | 18.7  |

The STAS is a replaceable core filter drier for CFC, HCFC, and HFC refrigerants for use in large commercial air conditioning and refrigeration systems.

### Features

- Slotted cover/unique internal hardware for hassle-free installation
- Full flow fittings for low pressure drop
- Corrosion resistant epoxy powder paint finish
- Sturdy steel shells for long life
- Solid copper connections
- 100 mesh outlet screen



### Nomenclature example: STAS 489T

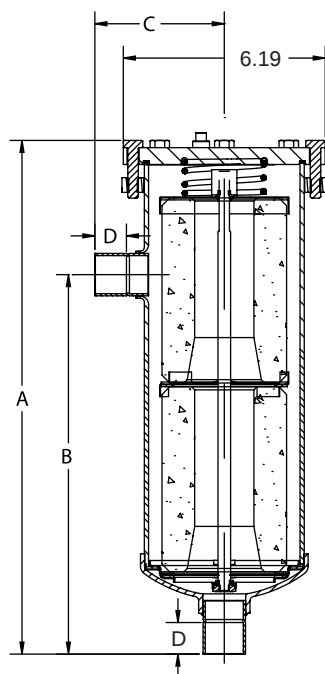
| STAS                    | 48                     | 9                         | T                                                                      |
|-------------------------|------------------------|---------------------------|------------------------------------------------------------------------|
| Steel Take-Apart Series | Unit Size (in cu. in.) | Connection Size (in 1/8") | System Service<br>T = Liquid Line Service<br>SV = Suction Line Service |

### Specifications

- Filtration (with core): 40 microns
- Maximum working pressure: SV version = 500 psig  
T version = 680 psig
- UL/CUL file number: SA7175

STAS Models are shipped without filter or filter drier cores.  
See filter or filter drier cores for availability.

### Dimensional Data



### Ordering Information

| PCN    | Description               | Connection Size | Number Of 48 in <sup>3</sup> Cores | Desiccant Volume (Cu. In.) | Dimensions (in) |       |      |           |
|--------|---------------------------|-----------------|------------------------------------|----------------------------|-----------------|-------|------|-----------|
|        |                           |                 |                                    |                            | A               | B     | C    | D         |
| 053001 | STAS-485T                 | 5/8 ODF         | 1                                  | 48                         | 9.94            | 6.00  | 3.78 | 0.63      |
| 053003 | STAS-487T                 | 7/8 ODF         |                                    |                            | 9.69            | 6.25  | 3.75 | 0.78      |
| 053005 | STAS-489T                 | 1 1/8 ODF       |                                    |                            | 9.75            | 6.31  | 3.84 | 0.94      |
| 053007 | STAS-4811T                | 1 3/8 ODF       |                                    |                            | 9.84            | 6.44  | 3.97 | 0.94      |
| 053043 | STAS-4813S-V <sup>1</sup> | 1 5/8 ODF       |                                    |                            | 9.88            | 6.02  | 4.03 | 1.13      |
| 053044 | STAS-4817S-V <sup>1</sup> | 2 1/8 ODF       |                                    |                            | 10.06           | 6.56  | 4.56 | 1.34      |
| 053045 | STAS-4821S-V <sup>1</sup> | 2 5/8 ODF       |                                    |                            | 10.44           | 7.03  | 4.75 | 1.04      |
| 053375 | STAS-4813T                | 1 5/8 ODF       |                                    |                            | 9.88            | 6.50  | 4.03 | 1.13      |
| 053938 | STAS-4811SV               | 1 3/8 ODF       |                                    |                            | 9.84            | 6.44  | 3.97 | 0.94      |
| 053010 | STAS-967T                 | 7/8 ODF         | 2                                  | 96                         | 15.19           | 11.72 | 3.75 | 0.78      |
| 053012 | STAS-969T                 | 1 1/8 ODF       |                                    |                            | 15.22           | 11.78 | 3.84 | 0.94      |
| 053014 | STAS-9611T                | 1 3/8 ODF       |                                    |                            | 15.31           | 11.91 | 3.97 | 1.03      |
| 053017 | STAS-9613T                | 1 5/8 ODF       |                                    |                            | 15.38           | 11.97 | 4.03 | 1.13      |
| 053018 | STAS-9617T                | 2 1/8 ODF       |                                    |                            | 15.56           | 12.03 | 4.56 | 1.34      |
| 053047 | STAS-9617S-V <sup>1</sup> | 2 1/8 ODF       |                                    |                            | 15.56           | 12.03 | 4.56 | 1.34      |
| 053048 | STAS-9621S-V <sup>1</sup> | 2 5/8 ODF       |                                    |                            | 15.94           | 12.50 | 4.75 | 1.50      |
| 059739 | STAS-9625 SV <sup>1</sup> | 3 1/8 ODF       |                                    |                            | 16.54           | 12.63 | 5.44 | 1.66      |
| 053020 | STAS-1449T                | 1 1/8 ODF       | 3                                  | 144                        | 21.25           | 17.38 | 3.84 | 0.94      |
| 053022 | STAS-14411T               | 1 3/8 ODF       |                                    |                            | 21.34           | 17.53 | 3.97 | 1.03      |
| 053024 | STAS-14413T               | 1 5/8 ODF       |                                    |                            | 21.38           | 17.59 | 4.03 | 1.13      |
| 053025 | STAS-14417T               | 2 1/8 ODF       |                                    |                            | 21.56           | 17.63 | 4.56 | 1.34      |
| 053028 | STAS-19211T               | 1 3/8 ODF       | 4                                  | 192                        | 26.91           | 23.00 | 3.97 | 1.03      |
| 053030 | STAS-19213T               | 1 5/8 ODF       |                                    |                            | 26.94           | 23.17 | 4.03 | 1.13      |
| 053031 | STAS-19217T               | 2 1/8 ODF       |                                    |                            | 27.13           | 23.13 | 4.56 | 1.34      |
| 056213 | STAS-1927/5T              | 7/8 X 5/8       |                                    |                            | 26.50           | 6.00  | 3.69 | 0.78/0.63 |

<sup>1</sup>"SV" style include stainless steel bolts and access valve.

NOTE: "T" style can be used for suction by removing pipe plug and installing X-11562-2.

| Description | Connections | Liquid Flow Capacity<br>Tons @ 1 psi $\Delta P$ <sup>1,2,3</sup> |      |        |            |        |
|-------------|-------------|------------------------------------------------------------------|------|--------|------------|--------|
|             |             | R-134a                                                           | R-22 | R-407C | R-404A/507 | R-410A |
| STAS-485T   | 5/8 ODF     | 21                                                               | 22   | 21     | 15         | 22     |
| STAS-487T   | 7/8 ODF     | 38                                                               | 41   | 39     | 27         | 41     |
| STAS-489T   | 1 1/8 ODF   | 53                                                               | 58   | 56     | 38         | 58     |
| STAS-4811T  | 1 3/8 ODF   | 75                                                               | 81   | 78     | 53         | 81     |
| STAS-4813T  | 1 5/8 ODF   | 81                                                               | 89   | 85     | 58         | 89     |
| STAS-967T   | 7/8 ODF     | 42                                                               | 45   | 43     | 30         | 45     |
| STAS-969T   | 1 1/8 ODF   | 65                                                               | 71   | 68     | 47         | 71     |
| STAS-9611T  | 1 3/8 ODF   | 80                                                               | 87   | 83     | 57         | 87     |
| STAS-9613T  | 1 5/8 ODF   | 92                                                               | 100  | 95     | 65         | 100    |
| STAS-1449T  | 1 1/8 ODF   | 66                                                               | 72   | 69     | 47         | 72     |
| STAS-14411T | 1 3/8 ODF   | 92                                                               | 100  | 96     | 65         | 100    |
| STAS-14413T | 1 5/8 ODF   | 93                                                               | 101  | 97     | 66         | 101    |
| STAS-14417T | 2 1/8 ODF   | 110                                                              | 120  | 115    | 78         | 120    |
| STAS-19211T | 1 3/8 ODF   | 94                                                               | 102  | 98     | 67         | 102    |
| STAS-19213T | 1 5/8 ODF   | 103                                                              | 113  | 108    | 74         | 113    |
| STAS-19217T | 2 1/8 ODF   | 113                                                              | 123  | 117    | 80         | 123    |

<sup>1</sup> All ratings in accordance with ARI Standard 710-04. 86°F liquid refrigerant temperature  
 • 5°F saturated vapor temperature  
 • 3.1 lbs./min./ton for R-134a  
 • 2.9 lbs./min./ton for R-22 and R-407C  
 • 4.0 lbs./min./ton for R-404A/507 and R-12

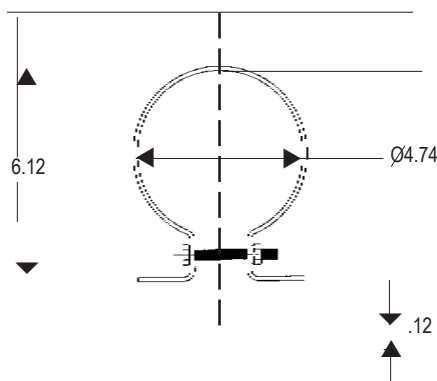
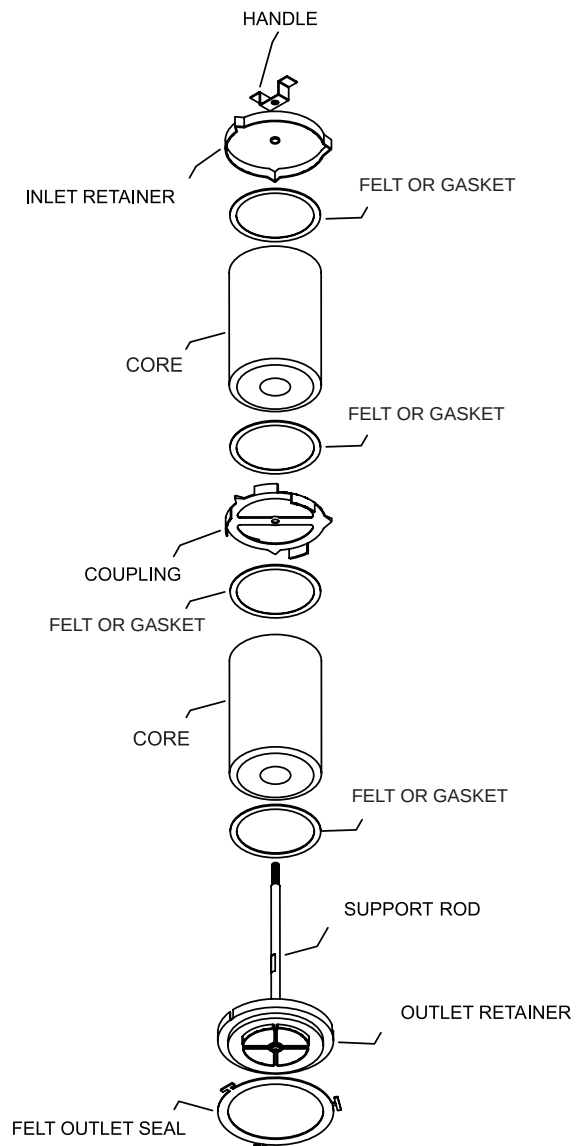
<sup>2</sup> For 2 PSI  $\Delta P$ , Multiply values by 1.4

<sup>3</sup> For kW, multiply by 3.5

### Replacement Parts For STAS

| Flange Cover Assembly                                                                    | Description | PCN    |
|------------------------------------------------------------------------------------------|-------------|--------|
| All STAS Driers - Include Flange Cover, Compression Spring, Pipe Plug, and Grade 5 Bolts | X12176-3    | 054046 |
| <b>Shell Strainer Assembly</b>                                                           |             |        |
| STAS-48                                                                                  | X27458-1    | 060274 |
| STAS-96                                                                                  | X27458-2    | 060275 |
| STAS-144                                                                                 | X27458-3    | 060276 |
| STAS-192                                                                                 | X27458-4    | 060277 |
| <b>Miscellaneous Parts</b>                                                               |             |        |
| Cover Bolts (Stainless Steel - suction line service)                                     | X25787-7    | 053121 |
| Access Valve (V Option)                                                                  | X11562-2    | 037409 |
| Gasket Set (Includes cover gasket)                                                       | X11983-1    | 027453 |
| Handle                                                                                   | 26446-1     | 053812 |
| Inlet Retainer                                                                           | 26477-1     | 053813 |
| Spring                                                                                   | 26439-1     | 060258 |
| Mounting Bracket                                                                         | X28747-1    | 061715 |

### Exploded View



### Mounting Bracket for STAS 48\*

\*More than one mounting bracket may be required for shell sizes 96 and above.

The ADKS is a replaceable core filter drier for use with CFC, HCFC, and HFC refrigerants in very large commercial air conditioning and refrigerant systems.

### Features

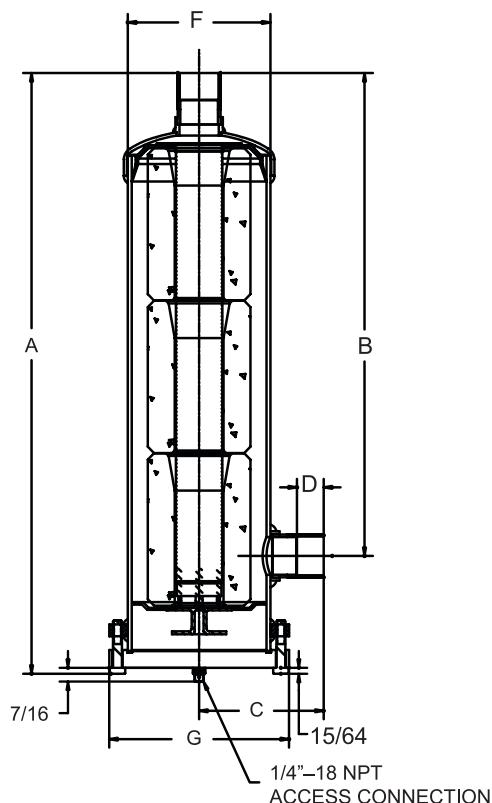
- Full flow fittings for low pressure drop
- Corrosion resistant epoxy powder paint finish
- Sturdy steel shells for long life durability

### Nomenclature example: ADKS 30013T

| ADKS                    | 300                    | 13                        | T                         |
|-------------------------|------------------------|---------------------------|---------------------------|
| System Protector Series | Unit Size (in cu. in.) | Connection Size (in 1/8") | T = Tap Access Connection |



### Dimensional Data



### Specifications

- Filtration (with core): 40 microns
- Maximum working pressure: 500 psig\*
- UL/CUL file number: SA 3124
- Bolt Torque: 35 ft-lbs

\*Note: Not suitable for R-410A applications above 500 psig.

### Ordering Information

| PCN    | Description | Connection Size | Number Of 100 in <sup>3</sup> Cores | Dimensions (in) |       |      |      |      |      | Weight (lbs) |
|--------|-------------|-----------------|-------------------------------------|-----------------|-------|------|------|------|------|--------------|
|        |             |                 |                                     | A               | B     | C    | D    | F*   | G    |              |
| 026570 | ADKS-30013T | 1 5/8 ODF       | 3                                   | 25.27           | 20.32 | 5.24 | 1.13 | 6.00 | 7.56 | 39.00        |
| 037978 | ADKS-30017T | 2 1/8 ODF       |                                     | 25.41           | 20.45 | 5.43 | 1.66 |      |      |              |
| 032105 | ADKS-40017T | 2 1/8 ODF       | 4                                   | 31.91           | 26.95 | 5.43 | 1.66 | 6.00 | 7.56 | 46.00        |
| 037570 | ADKS-40021T | 2 5/8 ODF       |                                     | 32.81           | 27.86 | 6.19 | 1.47 |      |      |              |

\* Does not include weld bead

<sup>1</sup> "H" Dimension is the clearance required to change the internal hardware assembly

T = 1/4" FPT access connection

**ADKS Models are shipped without filter cores or filter drier cores. See filter or filter drier cores for availability.**

## Capacity Tables (in Tons)

## Liquid Line for Replaceable Block Type ADKS Filter Driers

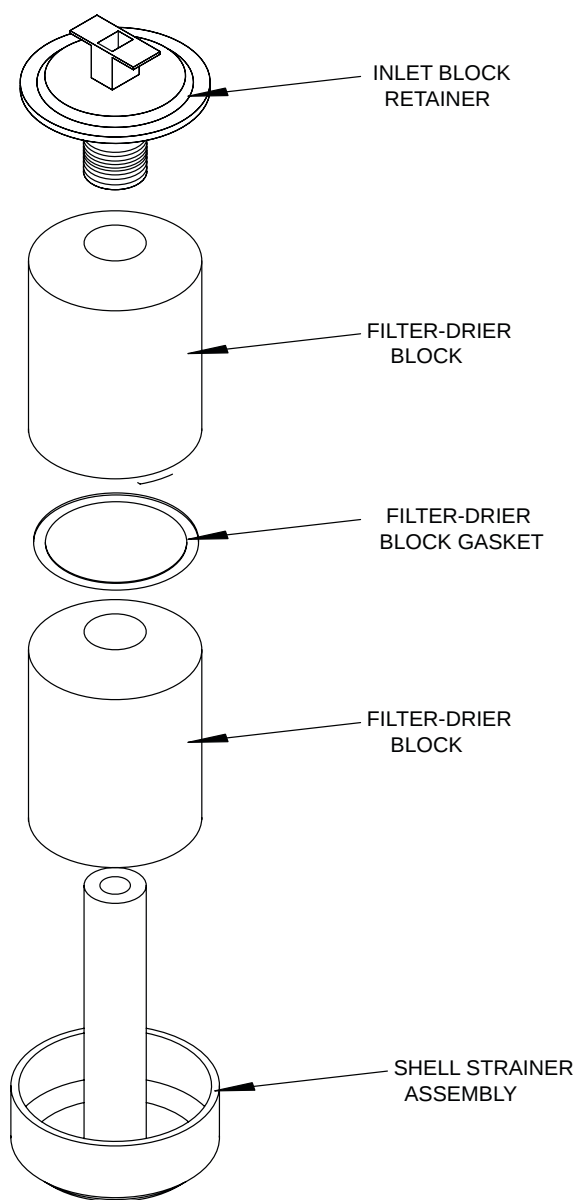
| Description | Connection | Flow Capacity In<br>Tons @ 1 psi $\Delta P$ <sup>1, 2</sup> |             |        |           |
|-------------|------------|-------------------------------------------------------------|-------------|--------|-----------|
|             |            | R-134a                                                      | R-22/R-410A | R-407C | R-404/507 |
| ADKS 30013T | 1 5/8 ODF  | 102                                                         | 110         | 108    | 73        |
| ADKS 30017T | 2 1/8 ODF  | 148                                                         | 160         | 157    | 107       |
| ADKS 40017T | 2 1/8 ODF  | 157                                                         | 170         | 167    | 114       |
| ADKS 40021T | 2 5/8 ODF  | 166                                                         | 180         | 177    | 120       |

<sup>1</sup> All ratings in accordance with ARI Standard 710-04. 86°F liquid refrigerant temperature  
 5°F saturated vapor temperature  
 3.1 lbs./min./ton for R-134a  
 2.9 lbs./min./ton for R-22 and R-407C  
 4.0 lbs./min./ton for R-404A/507 and R-12  
<sup>2</sup> For 2 PSI  $\Delta P$ . Multiply values by 1.4

## Replacement Parts

| Flange Cover                          | Description | PCN      |
|---------------------------------------|-------------|----------|
| ADKS-300, ADKS-400                    | X12176-2    | 027467   |
| Shell                                 | Strainer    | Assembly |
| ADKS-300                              | X10574-5    | 039967   |
| ADKS-400                              | X10574-6    | 038315   |
| Miscellaneous Parts                   |             |          |
| Gasket Set<br>(Includes cover gasket) | X-11983-2   | 027454   |

## Exploded View



Universal replacement cores and filter cores for use in our ADKS and STAS shells and similar competitive Take-Apart type filter drier shells. May not be used for BTAS.

### Features

- Water capacities to suit specific system conditions
- Exceptional acid capacities for normal system protection, or to effectively clean-up following a compressor burnout
- Activated carbon blend for soluble contaminant and wax removal (W-HH Series)

### Nomenclature example: H 48

| H      | 48         |
|--------|------------|
| Series | Cubic Inch |



### Specifications

- Interchangeable with competitive products

**NOTE:** Filter Drier cores are suitable for use with R-11 AND R-123 but filters are **NOT**.

### Ordering Information and Capacity Tables

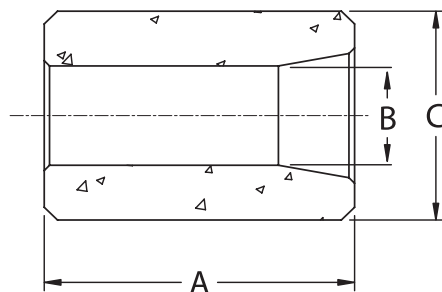
| PCN    | Description <sup>3</sup> | Recommended Refrigerant Type | Function                           |        |       |      |       |        |       |              |       |        |       |
|--------|--------------------------|------------------------------|------------------------------------|--------|-------|------|-------|--------|-------|--------------|-------|--------|-------|
|        |                          |                              |                                    | R-134a |       | R-22 |       | R-407C |       | R-404A/R-507 |       | R-410A |       |
|        |                          |                              |                                    | 75°F   | 125°F | 75°F | 125°F | 75°F   | 125°F | 75°F         | 125°F | 75°F   | 125°F |
| 061617 | UK-48                    | CFC, HCFC, HFC               | Premium Universal Replacement      | 1272   | 1168  | 1181 | 1072  | 1033   | 786   | 1319         | 1241  | 976    | 707   |
| 059541 | D-48                     | CFC, HCFC                    | High Acid Removal                  | 415    | 340   | 363  | 254   | 225    | 95    | 457          | 343   | 210    | 86    |
| 059542 | H-48                     | CFC, HCFC                    | High Acid and Water Removal        | 676    | 538   | 597  | 436   | 445    | 285   | 721          | 535   | 380    | 226   |
| 061235 | W-48-HH                  | CFC, HCFC, HFC               | Burnout Cleanup                    | 387    | 294   | 335  | 226   | 290    | 165   | 417          | 289   | 249    | 130   |
| 089338 | H-100                    | CFC, HCFC                    | High Acid and Water Removal        | 1112   | 834   | 962  | 673   | 726    | 418   | 1199         | 839   | 672    | 364   |
| 062549 | HX-48                    | CFC, HCFC, HFC               | Highest Water Removal              | 1710   | 1600  | 1600 | 1491  | 1459   | 1161  | 1765         | 1710  | 1280   | 930   |
| 062424 | UK-100                   | CFC, HCFC, HFC               | Premium Universal Replacement      | 2769   | 2550  | 2574 | 2345  | 2182   | 1682  | 2868         | 2710  | -      | -     |
| 043582 | W-100-HH                 | CFC, HCFC, HFC               | Burnout Cleanup                    | 1077   | 812   | 938  | 621   | 629    | 363   | 1162         | 792   | 573    | 307   |
| 089559 | F-48                     | CFC, HCFC, HFC               | Filter (Suction Only)              | N/A    |       |      |       |        |       |              |       |        |       |
| 047664 | F-48R                    | CFC, HCFC, HFC               | Filter (Suction Only) Reverse Flow |        |       |      |       |        |       |              |       |        |       |
| 095762 | F-100                    | CFC, HCFC, HFC               | Filter (Suction Only)              |        |       |      |       |        |       |              |       |        |       |
| 061237 | RH-48                    | CFC, HCFC                    | Removal                            | 1096   | 920   | 1037 | 790   | 750    | 530   | 1090         | 940   | 650    | 420   |
| 061238 | RW-48                    | CFC, HCFC                    | Cleanup                            | 583    | 493   | 532  | 380   | 380    | 230   | 600          | 482   | 350    | 197   |

<sup>1</sup> Water Capacities are based on:  
Equilibrium Point Dryness (EPD) of:  
50 parts per million for R-134a, R404-A/R-410A and R-407C  
60 parts per million for R-22  
15 parts per million for R-12

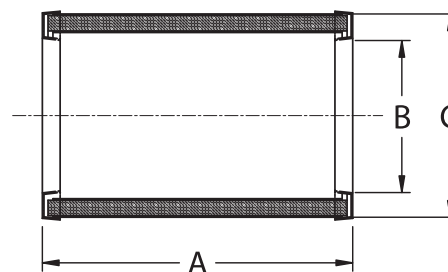
<sup>2</sup> 20 drops of water = 1 gram = 1 cc

<sup>3</sup> D-42, H-42 and W-42 include one neoprene composite lid gasket and one core gasket. All other cores include a universal neoprene composite gasket kit which includes 2 sizes of replacement lid gaskets, and gaskets for the top and bottom of the core or filter.

### Dimensional Data



| Filter Drier Block Size | Dimensions |      |      | Weight (lbs) |
|-------------------------|------------|------|------|--------------|
|                         | A          | B    | C    |              |
| 42                      | 6.00       | 1.58 | 3.12 | 1.00         |
| 48                      | 5.50       | 1.77 | 3.72 | 1.50         |
| 100                     | 6.50       | 2.06 | 4.81 | 4.00         |



| Catalog Number | Dimensions |      |      | Weight (lbs) |
|----------------|------------|------|------|--------------|
|                | A          | B    | C    |              |
| F-48/F-48R     | 5.50       | 2.81 | 3.88 | 0.75         |
| F-100          | 6.50       | 3.75 | 4.81 | 1.50         |

The ASF is a specifically designed filter to protect the compressor from dirt and all solid contaminants.

### Features

- Dual access valves for easy pressure readings
- Solid copper connections
- Corrosion resistant epoxy powder paint finish



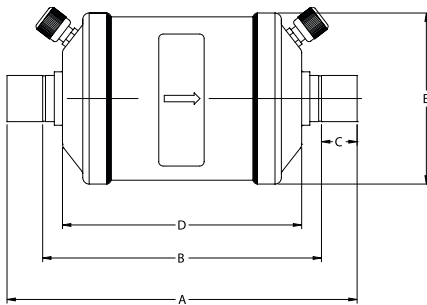
### Nomenclature example: ASF 35S5-VV

| ASF    | 35                        | S                                 | 5                            | VV                    |
|--------|---------------------------|-----------------------------------|------------------------------|-----------------------|
| Series | Unit Size<br>(in cu. in.) | Connections<br>S = ODF<br>F = SAE | Connection Size<br>(in 1/8") | Dual Access<br>Valves |

### Specifications

- Filtration: 40 microns
- Maximum working pressure: 500 psig
- UL/CUL file number: SA 3124

### Dimensional Data



### Ordering Information

| PCN    | Description  | Connection Size | Dimensions |       |      |      |      | Weight (lbs) |
|--------|--------------|-----------------|------------|-------|------|------|------|--------------|
|        |              |                 | A          | B     | C    | D    | E*   |              |
| 062961 | ASF 11S4     | 1/2 ODF         | 4.38       | 3.38  | 0.50 | 2.88 | 2.63 | 1.50         |
| 062962 | ASF 11S5     | 5/8 ODF         | 4.63       | 3.38  | 0.63 | 2.88 | 2.63 | 1.50         |
| 062963 | ASF 28S7     | 7/8 ODF         | 6.50       | 5.00  | 0.75 | 4.13 | 3.06 | 2.00         |
| 062964 | ASF 28S7-VV  | 1 1/8 ODF       | 7.41       | 5.61  | 0.91 | 4.13 | 3.06 | 2.00         |
| 049177 | ASF 28S3-VV  | 3/8 ODF         | 5.59       | 4.72  | 0.44 | 4.13 | 3.69 | 2.00         |
| 049178 | ASF 28S4-VV  | 1/2 ODF         | 5.69       | 4.69  | 0.50 | 4.13 | 3.69 | 2.00         |
| 049179 | ASF 35F5-VV  | 5/8 SAE         | 7.56       | —     | —    | 4.75 | 3.69 | 2.50         |
| 049180 | ASF 35S5-VV  | 5/8 ODF         | 6.53       | 5.28  | 0.63 | 4.75 | 3.69 | 2.50         |
| 059999 | ASF 45F3-VV  | 3/8 SAE         | 7.69       | —     | —    | 5.56 | 3.69 | 3.00         |
| 049181 | ASF 45S6-VV  | 3/4 ODF         | 7.75       | 6.50  | 0.63 | 5.56 | 3.69 | 3.00         |
| 049182 | ASF 45S7-VV  | 7/8 ODF         | 7.94       | 6.44  | 0.75 | 5.56 | 3.69 | 3.00         |
| 049183 | ASF 50S9-VV  | 1 1/8 ODF       | 8.84       | 7.03  | 0.91 | 6.13 | 5.00 | 3.50         |
| 063113 | ASF 64S17-V  | 2 1/8 ODF       | 11.75      | 9.06  | 1.31 | 7.63 | 5.00 | 3.50         |
| 063115 | ASF 64S21-V  | 2 5/8 ODF       | 13.00      | 10.00 | 1.50 | 7.88 | 5.00 | 3.50         |
| 049184 | ASF 75S11-VV | 1 3/8 ODF       | 12.25      | 10.31 | 0.97 | 8.25 | 5.00 | 5.00         |
| 049185 | ASF 75S13-VV | 1 5/8 ODF       | 12.16      | 9.91  | 1.13 | 8.25 | 5.00 | 5.00         |

\* Dimension does not include weld bead

The HMI is designed to provide an accurate method of determining the moisture content of a system's refrigerant. The HMI has a unique high accuracy moisture indicator for CFC, HCFC, and HFC refrigerants.

### Features

- Highest sensitivity moisture indicator available
- Hermetic, leak-free construction
- Single indicator for all common refrigerants
- Accurate color calibration at low ppm levels and higher temperatures
- Wide angle viewing/high visibility window for ease of monitoring
- All brass corrosion resistant body for fewer leaks
- Solid copper connections

### Specifications

- Maximum working pressure: 680 psig
- UL/CUL file number: SA 9566

### Nomenclature example: HMI 1TT4

| HMI                         | 1      | TT                                     | 4                            |
|-----------------------------|--------|----------------------------------------|------------------------------|
| Hermetic Moisture Indicator | Series | Connection Style<br>TT = Sweat x Sweat | Connection Size<br>(in 1/8") |



### Ordering Information

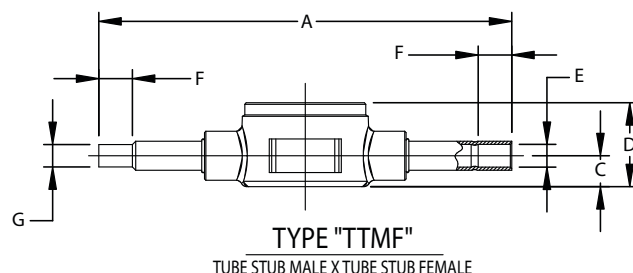
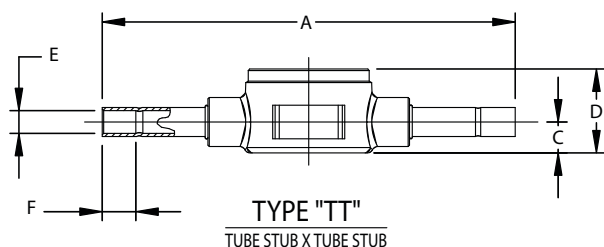
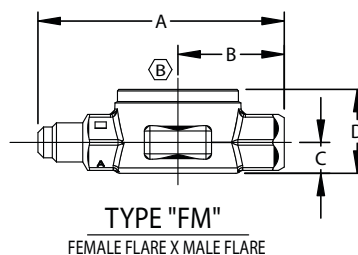
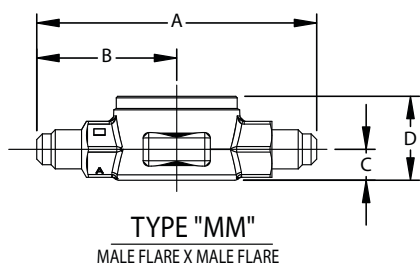
| PCN    | Description | Series                    | Connection Size |
|--------|-------------|---------------------------|-----------------|
| 065391 | HMI-1MM2    | Male Flare x Male Flare   | 1/4             |
| 065392 | HMI-1MM3    |                           | 3/8             |
| 065393 | HMI-1MM4    |                           | 1/2             |
| 065394 | HMI-1MM5    |                           | 5/8             |
| 065395 | HMI-1MM6    |                           | 3/4             |
| 065405 | HMI-1TT2    | Sweat x Sweat (ODF)       | 1/4             |
| 065406 | HMI-1TT3    |                           | 3/8             |
| 065407 | HMI-1TT4    |                           | 1/2             |
| 065408 | HMI-1TT5    |                           | 5/8             |
| 065409 | HMI-1TT6    |                           | 3/4             |
| 065410 | HMI-1TT7    |                           | 7/8             |
| 065411 | HMI-1TT9    |                           | 1 1/8           |
| 065396 | HMI-1FM2    | Female Flare x Male Flare | 1/4             |
| 065397 | HMI-1FM3    |                           | 3/8             |
| 065398 | HMI-1FM4    |                           | 1/2             |
| 065622 | HMI-1TT2MF  | Sweat x Sweat (ODM x ODF) | 1/4             |
| 065814 | HMI-1TT3MF  |                           | 3/8             |
| 065979 | HMI-1TT4MF  |                           | 1/2             |
| 065980 | HMI-1TT5MF  |                           | 5/8             |

### Moisture Content Color Code (ppm H<sub>2</sub>O)

| Indication Liquid Temperature | Dry (Dark Blue) |       |       | Caution (Purple) |       |       | Wet (Salmon) |       |       |
|-------------------------------|-----------------|-------|-------|------------------|-------|-------|--------------|-------|-------|
|                               | 75°F            | 100°F | 125°F | 75°F             | 100°F | 125°F | 75°F         | 100°F | 125°F |
| R-12                          | 1.4             | 2.5   | 4     | 5                | 9     | 15    | 25           | 43    | 70    |
| R-134A                        | 20              | 35    | 60    | 35               | 55    | 85    | 130          | 160   | 190   |
| R-22                          | 25              | 35    | 50    | 40               | 65    | 90    | 145          | 205   | 290   |
| R-407C                        | 26              | 40    | 64    | 42               | 68    | 109   | 150          | 230   | 370   |
| R-410A                        | 30              | 55    | 75    | 50               | 85    | 120   | 165          | 290   | 420   |
| R-404A/507                    | 15              | 25    | 45    | 33               | 50    | 80    | 120          | 150   | 180   |

| Indication Liquid Temperature | Dry (Dark Blue) |      |      |      | Caution (Purple) |      |      |      | Wet (Salmon) |      |      |      |
|-------------------------------|-----------------|------|------|------|------------------|------|------|------|--------------|------|------|------|
|                               | -40°F           | -4°F | 32°F | 68°F | -40°F            | -4°F | 32°F | 68°F | -40°F        | -4°F | 32°F | 68°F |
| R-744                         | 3               | 6    | 11   | 20   | 5                | 10   | 19   | 34   | 16           | 32   | 63   | 116  |

### Dimensional Data



### Dimensional Data (in)

| Type Number  | Connection Size   | A    | B    | C    | D    | E    | F Min | G    |
|--------------|-------------------|------|------|------|------|------|-------|------|
| HMI - 1MM2   | 1/4 SAE           | 3.13 | 1.56 | 0.34 | 0.94 |      |       |      |
| HMI - 1MM3   | 3/8 SAE           | 3.38 | 1.69 | 0.34 | 0.94 |      |       |      |
| HMI - 1MM4   | 1/2 SAE           | 3.62 | 1.81 | 0.47 | 1.19 |      |       |      |
| HMI - 1MM5   | 5/8 SAE           | 3.88 | 1.94 | 0.47 | 1.19 |      |       |      |
| HMI - 1MM6   | 3/4 SAE           | 5.00 | 2.50 | 0.59 | 1.53 |      |       |      |
| HMI - 1FM2   | 1/4 SAE FM        | 2.75 | 1.19 | 0.34 | 0.94 |      |       |      |
| HMI - 1FM3   | 3/8 SAE FM        | 3.00 | 1.31 | 0.47 | 1.19 |      |       |      |
| HMI - 1FM4   | 1/2 SAE FM        | 3.22 | 1.41 | 0.47 | 1.19 |      |       |      |
| HMI - 1TT2   | 1/4 ODF           | 5.56 |      | 0.34 | 0.94 | 0.25 | 0.38  |      |
| HMI - 1TT3   | 3/8 ODF           | 5.61 |      | 0.34 | 0.94 | 0.38 | 0.40  |      |
| HMI - 1TT4   | 1/2 ODF           | 5.87 |      | 0.47 | 1.19 | 0.50 | 0.50  |      |
| HMI - 1TT5   | 5/8 ODF           | 5.87 |      | 0.61 | 1.19 | 0.63 | 0.63  |      |
| HMI - 1TT6   | 3/4 ODF           | 6.56 |      | 0.61 | 1.50 | 0.75 | 0.63  |      |
| HMI - 1TT7   | 7/8 ODF           | 6.31 |      | 0.61 | 1.50 | 0.88 | 0.75  |      |
| HMI - 1TT9   | 1 1/8 ODF         | 6.59 |      | 0.67 | 1.37 | 1.13 | 0.90  |      |
| HMI - 1TT2MF | 1/4 ODM x 1/4 ODF | 5.56 |      | 0.34 | 0.94 | 0.25 | 0.38  | 0.25 |
| HMI - 1TT3MF | 3/8 ODM x 3/8 ODF | 5.61 |      | 0.34 | 0.94 | 0.38 | 0.38  | 0.38 |
| HMI - 1TT4MF | 1/2 ODM x 1/2 ODF | 5.87 |      | 0.47 | 1.19 | 0.50 | 0.50  | 0.50 |
| HMI - 1TT5MF | 5/8 ODM x 5/8 ODF | 5.87 |      | 0.61 | 1.19 | 0.63 | 0.50  | 0.62 |

The AMI is designed to provide an accurate method of determining the moisture content of a system's refrigerant. The AMI has a unique high accuracy moisture indicator for CFC, HCFC and HFC refrigerants. For the AMI-2 Series, see the bottom of the following page.

## Features

- Highest sensitivity moisture indicator available
- Take-Apart design for easy repair
- Single indicator for all common refrigerants
- Accurate color calibration at low ppm levels and higher temperatures
- Wide angle viewing/high visibility window for ease of monitoring
- Solid copper connections



## Specifications

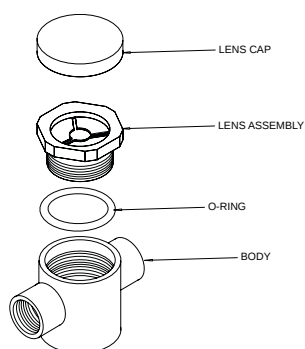
- Maximum working pressure: 650 psig
- UL/CUL file number: SA 9566

## Nomenclature example: AMI 1SS4

| AMI                       | 1                                                             | SS                                     | 4                            |
|---------------------------|---------------------------------------------------------------|----------------------------------------|------------------------------|
| Moisture Indicator Series | Design Series<br>1 = standard connection<br>2 = bushing style | Connection Style<br>TT = Sweat x Sweat | Connection Size<br>(in 1/8") |

## Replacement Parts For AMI

| PCN    | Part                                                                    | Number   |
|--------|-------------------------------------------------------------------------|----------|
| 021371 | Lenscap                                                                 | 12740-1  |
| 020877 | "O" Ring                                                                | PS1525-2 |
| 027511 | Lens Assembly Kit<br>(Consists of lens assembly, lens cap and "O" ring) | X12978-1 |



## Ordering Information

| PCN    | Description            | Series                    | Connection Size |
|--------|------------------------|---------------------------|-----------------|
| 048804 | AMI-1MM3               | Male Flare x Male Flare   | 3/8             |
| 048805 | AMI-1MM4               |                           | 1/2             |
| 048806 | AMI-1MM5               |                           | 5/8             |
| 048811 | AMI-1SS2               | Sweat x Sweat (OD Female) | 1/4             |
| 048812 | AMI-1SS3               |                           | 3/8             |
| 048813 | AMI-1SS4               |                           | 1/2             |
| 048814 | AMI-1SS5               |                           | 5/8             |
| 048815 | AMI-1SS7               |                           | 7/8             |
| 048816 | AMI-1SS9               |                           | 1 1/8           |
| 047298 | AMI-1TT2 EXTENDED ENDS |                           | 1/4             |
| 042771 | AMI-1TT3 EXTENDED ENDS |                           | 3/8             |
| 022302 | AMI-1TT4 EXTENDED ENDS |                           | 1/2             |
| 031136 | AMI-1TT5 EXTENDED ENDS |                           | 5/8             |
| 031357 | AMI-1TT7 EXTENDED ENDS |                           | 7/8             |
| 031578 | AMI-1TT9 EXTENDED ENDS |                           | 1 1/8           |
| 048800 | AMI-1FM2               | Female Flare x Male Flare | 1/4             |
| 048801 | AMI-1FM3               |                           | 3/8             |
| 048802 | AMI-1FM4               |                           | 1/2             |

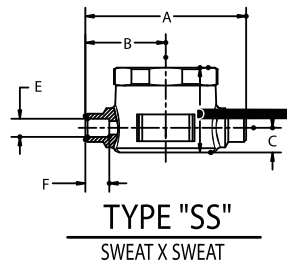
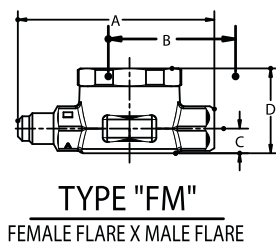
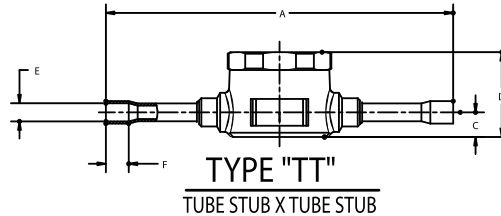
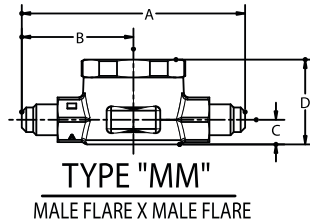
## Moisture Content Color Code (ppm H<sub>2</sub>O)

| Indication<br>Liquid Temperature | Dry (Dark Blue) |       |       | Caution (Purple) |       |       | Wet (Salmon) |       |       |
|----------------------------------|-----------------|-------|-------|------------------|-------|-------|--------------|-------|-------|
|                                  | 75°F            | 100°F | 125°F | 75°F             | 100°F | 125°F | 75°F         | 100°F | 125°F |
| R-12                             | 1.4             | 2.5   | 4     | 5                | 9     | 15    | 25           | 43    | 70    |
| R-134A                           | 20              | 35    | 60    | 35               | 55    | 85    | 130          | 160   | 190   |
| R-22                             | 25              | 35    | 50    | 40               | 65    | 90    | 145          | 205   | 290   |
| R-407C                           | 26              | 40    | 64    | 42               | 68    | 109   | 150          | 230   | 370   |
| R-410A                           | 30              | 55    | 75    | 50               | 85    | 120   | 165          | 290   | 420   |
| R-404A/507                       | 15              | 25    | 45    | 33               | 50    | 80    | 120          | 150   | 180   |

| Indication<br>Liquid Temperature | Dry (Dark Blue) |      |      |      | Caution (Purple) |      |      |      | Wet (Salmon) |      |      |      |
|----------------------------------|-----------------|------|------|------|------------------|------|------|------|--------------|------|------|------|
|                                  | -40°F           | -4°F | 32°F | 68°F | -40°F            | -4°F | 32°F | 68°F | -40°F        | -4°F | 32°F | 68°F |
| R-744                            | 3               | 6    | 11   | 20   | 5                | 10   | 19   | 34   | 16           | 32   | 63   | 116  |

## AMI-1

### Dimensional Data



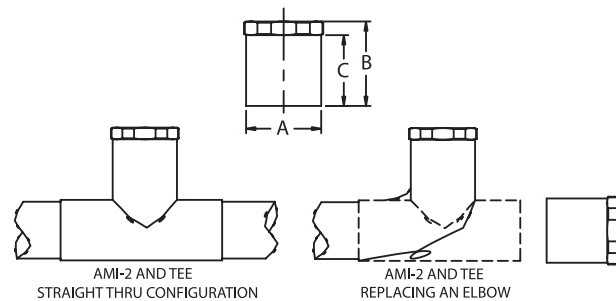
### Dimensional Data (in)

| Description | Connection Size | A    | B    | C    | D    | E     | F Min. |
|-------------|-----------------|------|------|------|------|-------|--------|
| AMI-1MM2    | 1/4 SAE         | 3.13 | 1.56 | 0.34 | 1.19 |       |        |
| AMI-1MM3    | 3/8 SAE         | 3.38 | 1.69 |      |      |       |        |
| AMI-1MM4    | 1/2 SAE         | 3.63 | 1.81 | 0.47 | 1.44 |       |        |
| AMI-1MM5    | 5/8 SAE         | 3.88 | 1.94 |      |      |       |        |
| AMI-1FM2    | 1/4 SAE         | 2.75 | 1.19 |      |      |       |        |
| AMI-1FM3    | 3/8 SAE         | 3.00 | 1.31 | 0.47 | 1.44 |       |        |
| AMI-1FM4    | 1/2 SAE         | 3.22 | 1.41 |      |      |       |        |
| AMI-1SS2    | 1/4 ODF         | 2.25 | 1.13 | 0.34 | 1.19 | 0.25  | .32    |
| AMI-1SS3    | 3/8 ODF         |      |      |      |      | 0.38  | .32    |
| AMI-1SS4    | 1/2 ODF         | 2.63 | 1.31 | 0.47 | 1.44 | 0.50  | .38    |
| AMI-1SS5    | 5/8 ODF         |      |      |      |      | 0.63  | .50    |
| AMI-1SS7    | 7/8 ODF         |      |      |      |      | 0.88  | .76    |
| AMI-1SS9    | 1 1/8 ODF       | 3.38 | 1.69 | 0.67 | 1.92 | 1.13  | .90    |
| AMI-1TT2    | 1/4 ODF         | 4.89 |      | 0.34 | 1.19 | .25   | .32    |
| AMI-1TT3    | 3/8 ODF         |      |      |      |      | 0.38  | .32    |
| AMI-1TT4    | 1/2 ODF         | 4.92 |      | 0.47 | 1.44 | 0.50  | .38    |
| AMI-1TT5    | 5/8 ODF         | 4.91 |      |      |      | 0.63  | .50    |
| AMI-1TT7    | 7/8 ODF         | 6.36 |      |      |      | 0.88  | .76    |
| AMI-1TT9    | 1 1/8 ODF       | 6.59 |      | 0.67 | 1.92 | 1.125 | .90    |
| AMI 1TT11   | 1 3/8 ODF       | 6.94 |      | 1.00 | 2.39 | 1.38  | 1.3    |

## AMI-2

### AMI-2 Series Dimensions (in)

| PCN    | Description | Connection Size | A Dia. | B    | C    |
|--------|-------------|-----------------|--------|------|------|
| 064167 | AMI-2S7     | 7/8 ODM         | 0.88   | 1.34 | 1.00 |
| 064168 | AMI-2S9     | 1 1/8 ODM       | 1.13   | 1.25 | 1.00 |
| 022303 | AMI-2S11    | 1 3/8 ODM       | 1.38   | 1.56 | 1.94 |
| 028388 | AMI-2S13    | 1 5/8 ODM       | 1.63   | 1.69 | 1.44 |
| 031219 | AMI-2S17    | 2 1/8 ODM       | 2.13   | 1.94 | 1.69 |



The A-IHL saddle design moisture indicator is used for large diameter tubing in CFC, HCFC, and HFC refrigerants.

### Features

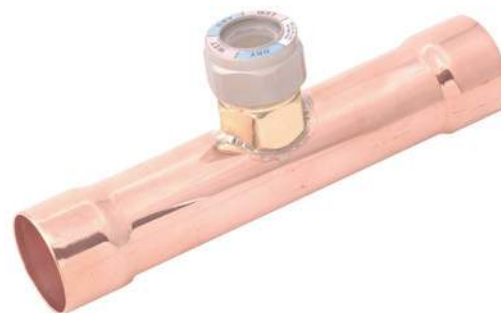
- Saddle design
- Solid copper connections
- Replaceable moisture indicator
- Eliminates the need for bypass installation - positive reaction to system moisture levels

### Specifications

- Maximum working pressure: 680 psig
- UL/CUL file number: SA 9566

### Nomenclature example: A-IHL 9S

|              |                           |          |
|--------------|---------------------------|----------|
| <b>A-IHL</b> | <b>9</b>                  | <b>S</b> |
| Series       | Connection Size (in 1/8") | S = ODF  |



### Ordering Information

| PCN     | Model      | Connection Size | Overall Length (in) |
|---------|------------|-----------------|---------------------|
| 060853  | A-IHL-9S   | 1 1/8 ODF       | 6.31                |
| 061030  | A-IHL-11S  | 1 3/8 ODF       | 7.12                |
| 061031  | A-IHL-13S  | 1 5/8 ODF       | 7.87                |
| 061032  | A-IHL-17S  | 2 1/8 ODF       | 8.68                |
| *060973 | *A-IHL-21S | 2 5/8 ODF       | 9.45                |

\*A-IHL - 21S has a maximum working pressure of 500 psig

The A-AS protects the compressor from liquid slugging and is used with CFC, HCFC, and HFC refrigerants. It is available for systems through 28 tons nominal capacity.

### Features

- Designed to operate in a range of +40°F to -40°F evaporator temperature
- Fusible plug on larger diameter units
- Solid copper connections
- Corrosion resistant epoxy powder paint finish
- Inlet deflector directs refrigerant flow to prevent internal splashing and aid in the collection of refrigerant oil



### Nomenclature example: A-AS 3 125

| A      | AS                  | 3             | 12          | 5                    |
|--------|---------------------|---------------|-------------|----------------------|
| Series | Accumulator Suction | Diameter (in) | Height (in) | Fitting Size in 1/8" |

### Specifications

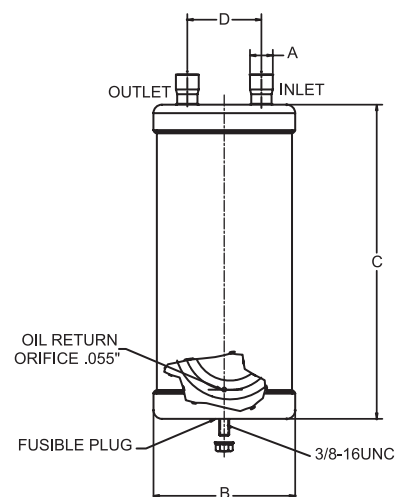
- Maximum working pressure: 300 psig
- Fusible plug temperature: 430°F
- UL/CUL file number: SA 10225

### Ordering Information and Dimensional Data (in)

| PCN    | Description | A<br>Fitting Size<br>(nominal) | B<br>Diameter | C<br>Height | D<br>Fitting Separation | Weight<br>(lbs) | Tons<br>R-22<br>(+40°F) | Holding Capacity (lbs)<br>50% of System Charge |                             |
|--------|-------------|--------------------------------|---------------|-------------|-------------------------|-----------------|-------------------------|------------------------------------------------|-----------------------------|
|        |             |                                |               |             |                         |                 |                         | 40°F Liquid<br>R-22/R-134a                     | 40°F Liquid<br>R-404A/R-507 |
| 060819 | A-AS 3 84*  | 1/2                            | 3.00          | 8.00        | 1.63                    | 2.00            | 2.00                    | 1.50                                           | 1.50                        |
| 060963 | A-AS 3 105* | 5/8                            | 3.00          | 10.00       | 1.63                    | 2.40            | 3.00                    | 2.00                                           | 2.00                        |
| 060812 | A-AS 3 125* | 5/8                            | 3.00          | 12.00       | 1.63                    | 2.90            | 3.00                    | 3.00                                           | 2.50                        |
| 060813 | A-AS 3 126* | 3/4                            | 3.00          | 12.00       | 1.63                    | 2.90            | 4.00                    | 3.00                                           | 2.50                        |
| 060964 | A-AS 3 145* | 5/8                            | 3.00          | 15.00       | 1.63                    | 3.30            | 3.00                    | 3.50                                           | 3.00                        |
| 060965 | A-AS 3 146* | 3/4                            | 3.00          | 14.00       | 1.63                    | 3.30            | 4.00                    | 3.50                                           | 2.75                        |
| 060967 | A-AS 4 64   | 1/2                            | 4.00          | 6.00        | 2.50                    | 2.80            | 2.00                    | 2.50                                           | 2.00                        |
| 060821 | A-AS 4 65   | 5/8                            | 4.00          | 6.00        | 2.50                    | 2.80            | 3.00                    | 2.50                                           | 2.00                        |
| 060966 | A-AS 4 105  | 5/8                            | 4.00          | 10.00       | 2.50                    | 4.60            | 3.00                    | 4.00                                           | 3.50                        |
| 060820 | A-AS 4 106  | 3/4                            | 4.00          | 10.00       | 2.50                    | 4.60            | 4.00                    | 4.00                                           | 3.50                        |
| 060824 | A-AS 5 96   | 3/4                            | 5.00          | 9.00        | 2.75                    | 5.10            | 4.00                    | 6.00                                           | 5.50                        |
| 060818 | A-AS 5 97   | 7/8                            | 5.00          | 9.00        | 2.75                    | 5.10            | 7.30                    | 6.00                                           | 5.50                        |
| 060822 | A-AS 5 126  | 3/4                            | 5.00          | 12.00       | 2.75                    | 6.60            | 4.00                    | 8.00                                           | 7.50                        |
| 060823 | A-AS 5 127  | 7/8                            | 5.00          | 12.00       | 2.75                    | 6.60            | 7.30                    | 8.00                                           | 7.50                        |
| 060814 | A-AS 5 137  | 7/8                            | 5.00          | 13.00       | 2.75                    | 7.10            | 7.30                    | 8.50                                           | 8.00                        |
| 060815 | A-AS 5 139  | 1-1/8                          | 5.00          | 13.00       | 2.75                    | 7.10            | 11.80                   | 8.50                                           | 8.00                        |
| 060817 | A-AS 5 179  | 1-1/8                          | 5.00          | 17.00       | 2.75                    | 8.40            | 11.80                   | 12.00                                          | 10.00                       |
| 060816 | A-AS 5 1711 | 1-3/8                          | 5.00          | 17.00       | 2.75                    | 8.40            | 18.80                   | 12.00                                          | 10.00                       |
| 060825 | A-AS 6 117  | 7/8                            | 6.00          | 11.00       | 2.94                    | 10.00           | 7.30                    | 10.00                                          | 9.00                        |
| 060826 | A-AS 6 137  | 7/8                            | 6.00          | 13.00       | 2.94                    | 11.70           | 7.30                    | 12.84                                          | 11.49                       |
| 060968 | A-AS 6 139  | 1-1/8                          | 6.00          | 13.00       | 2.94                    | 11.70           | 11.80                   | 12.84                                          | 11.49                       |
| 060827 | A-AS 6 1411 | 1-3/8                          | 6.00          | 14.00       | 2.94                    | 12.10           | 18.80                   | 14.05                                          | 12.57                       |
| 060969 | A-AS 6 1713 | 1-5/8                          | 6.00          | 17.00       | 2.94                    | 15.40           | 28.50                   | 17.32                                          | 15.49                       |
| 060828 | A-AS 6 2013 | 1-5/8                          | 6.00          | 20.00       | 2.94                    | 18.10           | 28.50                   | 20.62                                          | 18.44                       |
| 060970 | A-AS 6 2513 | 1-5/8                          | 6.00          | 25.00       | 2.94                    | 22.60           | 28.50                   | 25.81                                          | 23.08                       |

\*Not supplied with a fusible plug

### Dimensional Data



The ACC is a charge compensator that is designed to work in heat pump applications. It increases system efficiency by storing extra refrigerant in the heating mode. It then returns refrigerant back into circulation in the cooling mode.

### Features

- Solid copper connection
- Corrosion resistant epoxy powder paint finish

### Nomenclature example: ACC-3637S

| ACC    | 36                        | 3              | 7                          | S   |
|--------|---------------------------|----------------|----------------------------|-----|
| Series | Internal Volume (cu. in.) | Diameter (in.) | Connection Size (in. 1/8") | ODF |



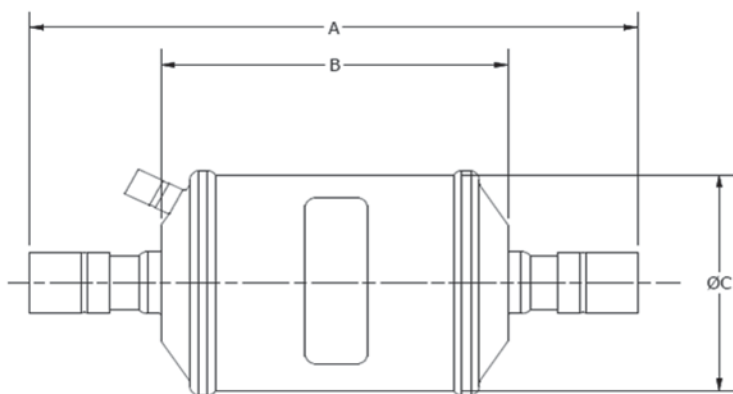
### Specifications

- Maximum working pressure: 680 psig
- UL/CUL file number: SA5760

### Ordering Information

| PCN    | Description | Internal Volume (cu. in.) | Liquid Line Connection | Connection | Dimensions (in.) |       |      | Holding Capacity (oz.) |       |
|--------|-------------|---------------------------|------------------------|------------|------------------|-------|------|------------------------|-------|
|        |             |                           |                        |            | A                | B     | C    | R-410A                 |       |
|        |             |                           |                        |            |                  |       |      | 75°F                   | 125°F |
| 066631 | ACC-2336S   | 23                        | 3/8 ODF                | 3/4 ODF    | 7.19             | 3.33  | 3.50 | 15                     | 13    |
| 066632 | ACC-3636S   | 36                        | 3/8 ODF                | 3/4 ODF    | 8.94             | 5.08  | 3.50 | 24                     | 20    |
| 066633 | ACC-3637S   |                           | 3/8 ODF                | 7/8 ODF    | 8.94             | 5.08  | 3.50 | 24                     | 20    |
| 066634 | ACC-4736S   | 47                        | 3/8 ODF                | 3/4 ODF    | 10.18            | 6.32  | 3.50 | 31                     | 26    |
| 066635 | ACC-4737S   |                           | 3/8 ODF                | 7/8 ODF    | 10.18            | 6.32  | 3.50 | 30                     | 25    |
| 066493 | ACC-6236S   | 62                        | 3/8 ODF                | 3/4 ODF    | 12.06            | 8.20  | 3.50 | 40                     | 34    |
| 066636 | ACC-6237S   |                           | 3/8 ODF                | 7/8 ODF    | 12.06            | 8.20  | 3.50 | 40                     | 33    |
| 066637 | ACC-7837S   | 78                        | 3/8 ODF                | 7/8 ODF    | 14.11            | 10.25 | 3.50 | 51                     | 43    |
| 066638 | ACC-7836S   |                           | 3/8 ODF                | 3/4 ODF    | 14.11            | 10.25 | 3.50 | 50                     | 42    |
| 066639 | ACC-9536S   | 95                        | 3/8 ODF                | 3/4 ODF    | 15.86            | 12.00 | 3.50 | 60                     | 51    |
| 066640 | ACC-9537S   |                           | 3/8 ODF                | 7/8 ODF    | 15.86            | 12.00 | 3.50 | 59                     | 50    |

### Dimensional Data



## Hermetic Suction Line Filter Drier Flow Capacities

| Description    | Connections | Flow Capacity In Tons Refrigerant <sup>1</sup> (For kW, Multiply Tons By 3.5) <sup>2</sup> |      |      |     |        |     |     |     |       |       |       |       |
|----------------|-------------|--------------------------------------------------------------------------------------------|------|------|-----|--------|-----|-----|-----|-------|-------|-------|-------|
|                |             | R-12                                                                                       |      |      |     | R-134a |     |     |     | R-744 |       |       |       |
|                |             | Evaporator Temperature (°F)                                                                |      |      |     |        |     |     |     |       |       |       |       |
|                |             | 40                                                                                         | 20   | 0    | -20 | 40     | 20  | 0   | -20 | 20    | 0     | -20   | -40   |
|                |             | Pressure Drop (PSI)                                                                        |      |      |     |        |     |     |     |       |       |       |       |
|                |             | 2                                                                                          | 1.5  | 1    | 0.5 | 2      | 1.5 | 1   | 0.5 | 6     | 5     | 4     | 3     |
| ASD 28S3-VV    | 3/8 ODF     | 1.1                                                                                        | 0.6  | 0.5  | 0.5 | 1.1    | 0.6 | 0.5 | 0.4 | 7.2   | 6.3   | 6.8   | 8.5   |
| ASD 28S4-VV    | 1/2 ODF     | 1.8                                                                                        | 1.2  | 0.8  | 0.7 | 1.9    | 1.2 | 0.8 | 0.6 | 11.8  | 10.2  | 10.6  | 14.2  |
| ASD 35F5-VV    | 5/8 SAE     | 2.1                                                                                        | 1.4  | 1.1  | 0.9 | 2.2    | 1.4 | 1.0 | 0.8 | 13.7  | 12.2  | 12.9  | 17.0  |
| ASD 35S5-VV    | 5/8 ODF     | 2.8                                                                                        | 1.9  | 1.4  | 1.1 | 2.9    | 1.9 | 1.3 | 1.0 | 18.1  | 15.6  | 16.7  | 22.7  |
| ASD 45S6-VV    | 3/4 ODF     | 3.8                                                                                        | 2.5  | 1.8  | 1.2 | 3.9    | 2.5 | 1.7 | 1.1 | 21.8  | 22.4  | 24.2  | 28.4  |
| ASD 45S7-VV    | 7/8 ODF     | 5.0                                                                                        | 3.6  | 2.3  | 1.5 | 5.1    | 3.5 | 2.2 | 1.3 | 28.7  | 29.2  | 31.1  | 36.9  |
| ASD 50S9-VV    | 1-1/8 ODF   | 7.1                                                                                        | 5.0  | 3.2  | 1.8 | 7.3    | 4.9 | 3.0 | 1.6 | 41.1  | 41.3  | 43.2  | 49.6  |
| ASD 75S11-VV   | 1-3/8 ODF   | 8.6                                                                                        | 5.9  | 3.7  | 2.0 | 8.8    | 5.8 | 3.5 | 1.8 | 50.5  | 49.6  | 50.8  | 56.7  |
| ASD 75S13-VV   | 1-5/8 ODF   | 9.0                                                                                        | 6.2  | 3.9  | 2.1 | 9.3    | 6.1 | 3.7 | 1.9 | 53.9  | 52.0  | 53.0  | 59.6  |
| ASF 28S3-VV    | 3/8 ODF     | 1.2                                                                                        | 0.8  | 0.5  | 0.5 | 1.2    | 0.8 | 0.5 | 0.4 | 7.5   | 6.3   | 6.8   | 9.9   |
| ASF 28S4-VV    | 1/2 ODF     | 1.9                                                                                        | 1.3  | 0.9  | 0.8 | 2.0    | 1.3 | 0.9 | 0.7 | 12.8  | 11.2  | 12.1  | 17.0  |
| ASF 35F5-VV    | 5/8 SAE     | 2.2                                                                                        | 1.5  | 1.1  | 0.9 | 2.3    | 1.5 | 1.0 | 0.8 | 14.6  | 12.6  | 13.6  | 18.4  |
| ASF 35S5-VV    | 5/8 ODF     | 3.2                                                                                        | 2.2  | 1.6  | 1.4 | 3.3    | 2.2 | 1.5 | 1.2 | 20.6  | 18.0  | 19.7  | 26.9  |
| ASF 45S6-VV    | 3/4 ODF     | 4.7                                                                                        | 3.2  | 2.3  | 1.8 | 4.8    | 3.1 | 2.2 | 1.6 | 30.5  | 26.7  | 28.0  | 38.3  |
| ASF 45S7-VV    | 7/8 ODF     | 6.5                                                                                        | 4.8  | 3.3  | 1.9 | 6.7    | 4.7 | 3.1 | 1.7 | 37.4  | 38.9  | 42.4  | 51.0  |
| ASF 50S9-VV    | 1-1/8 ODF   | 9.2                                                                                        | 6.8  | 4.5  | 2.6 | 9.5    | 6.7 | 4.3 | 2.3 | 59.2  | 58.3  | 62.1  | 69.5  |
| ASF 64S17-VV   | 2-1/8 ODF   | 25.3                                                                                       | 18.3 | 12.6 | 7.2 | 26.0   | 18  | 12  | 6.4 | 127.8 | 131.2 | 144.0 | 170.2 |
| ASF 75S11-VV   | 1-3/8 ODF   | 11.7                                                                                       | 8.8  | 5.9  | 3.4 | 12.0   | 8.7 | 5.6 | 3.0 | 49.9  | 72.9  | 83.4  | 95.0  |
| ASF 75S13-VV   | 1-5/8 ODF   | 13.6                                                                                       | 9.7  | 6.6  | 3.8 | 14.0   | 9.5 | 6.3 | 3.4 | 74.8  | 72.9  | 75.8  | 92.2  |
| ASK 165S-VV-HH | 5/8 ODF     | 1.9                                                                                        | 1.4  | 0.8  | 0.6 | 2.0    | 1.4 | 0.8 | 0.5 | 10.6  | 10.2  | 10.6  | 12.8  |
| ASK 166S-VV-HH | 3/4 ODF     | 2.4                                                                                        | 1.7  | 1.1  | 0.7 | 2.5    | 1.7 | 1.0 | 0.6 | 13.1  | 12.6  | 12.9  | 14.2  |
| ASK 167S-VV-HH | 7/8 ODF     | 2.6                                                                                        | 1.8  | 1.2  | 0.7 | 2.7    | 1.8 | 1.1 | 0.6 | 14.3  | 13.6  | 14.4  | 15.6  |
| ASK 306S-VV-HH | 3/4 ODF     | 3.3                                                                                        | 2.3  | 1.5  | 0.9 | 3.4    | 2.3 | 1.4 | 0.8 | 17.1  | 17.0  | 17.4  | 19.9  |
| ASK 307S-VV-HH | 7/8 ODF     | 3.5                                                                                        | 2.5  | 1.6  | 0.9 | 3.6    | 2.5 | 1.5 | 0.8 | 19.0  | 18.5  | 18.9  | 21.3  |
| ASK 309S-VV-HH | 1-1/8 ODF   | 3.8                                                                                        | 2.6  | 1.7  | 0.9 | 3.9    | 2.6 | 1.6 | 0.8 | 20.3  | 19.4  | 19.7  | 22.7  |
| CSFD 14S4-VV   | 1/2 ODF     | 1.3                                                                                        | 0.9  | 0.5  | 0.3 | 1.3    | 0.9 | 0.5 | 0.3 | 6.2   | 6.3   | 6.8   | 8.5   |
| CSFD 14S5-VV   | 5/8 ODF     | 2.2                                                                                        | 1.5  | 0.9  | 0.6 | 2.3    | 1.5 | 0.9 | 0.5 | 11.2  | 11.7  | 12.1  | 14.2  |
| CSFD 14S6-VV   | 3/4 ODF     | 3.0                                                                                        | 2.1  | 13.7 | 0.8 | 3.1    | 2.1 | 13  | 0.7 | 15.3  | 15.6  | 16.7  | 19.9  |
| CSFD 14S7-VV   | 7/8 ODF     | 3.2                                                                                        | 2.2  | 1.5  | 0.8 | 3.3    | 2.2 | 1.4 | 0.7 | 16.2  | 16.5  | 17.4  | 21.3  |
| CSFD 14S9-VV   | 1-1/8 ODF   | 4.4                                                                                        | 3.1  | 1.9  | 1.1 | 4.5    | 3.0 | 1.8 | 1.0 | 21.8  | 22.4  | 23.5  | 28.4  |
| SFD 13F3-VV    | 3/8 SAE     | 0.7                                                                                        | 0.4  | 0.2  | 0.1 | 0.7    | 0.4 | 0.2 | 0.1 | 4.4   | 3.9   | 3.0   | 2.8   |
| SFD 13S3-VV    | 3/8 ODF     | 1.3                                                                                        | 0.8  | 0.5  | 0.2 | 1.3    | 0.8 | 0.5 | 0.2 | 6.9   | 6.3   | 6.1   | 7.1   |
| SFD 13F4-VV    | 1/2 SAE     | 1.5                                                                                        | 1.0  | 0.6  | 0.3 | 1.5    | 1.0 | 0.6 | 0.3 | 7.5   | 7.8   | 8.3   | 9.9   |
| SFD 13S4-VV    | 1/2 ODF     | 2.2                                                                                        | 1.5  | 1.1  | 0.6 | 2.3    | 1.5 | 1.0 | 0.5 | 10.9  | 11.2  | 12.1  | 14.2  |
| SFD 13F5-VV    | 5/8 SAE     | 2.4                                                                                        | 1.7  | 1.2  | 0.7 | 2.5    | 1.7 | 1.1 | 0.6 | 11.5  | 11.7  | 12.1  | 14.2  |
| SFD 13S5-VV    | 5/8 ODF     | 3.0                                                                                        | 2.1  | 1.4  | 0.8 | 3.1    | 2.1 | 1.3 | 0.7 | 15.3  | 15.6  | 16.7  | 19.9  |
| SFD 13S6-VV    | 3/4 ODF     | 4.0                                                                                        | 2.7  | 1.8  | 1.0 | 4.1    | 2.7 | 1.7 | 0.9 | 19.9  | 20.4  | 21.2  | 25.5  |
| SFD 13S7-VV    | 7/8 ODF     | 4.3                                                                                        | 3.1  | 2.0  | 1.1 | 4.4    | 3.0 | 1.9 | 1.0 | 22.4  | 22.4  | 22.7  | 26.9  |
| SFD 27S6-VV    | 3/4 ODF     | 4.0                                                                                        | 2.7  | 1.8  | 1.0 | 4.1    | 2.7 | 1.7 | 0.9 | 19.9  | 20.4  | 21.2  | 25.5  |
| SFD 27S7-VV    | 7/8 ODF     | 4.6                                                                                        | 3.2  | 2.0  | 1.1 | 4.7    | 3.1 | 1.9 | 1.0 | 23.4  | 23.3  | 24.2  | 28.4  |
| SFD 27S9-VV    | 1-1/8 ODF   | 5.1                                                                                        | 3.5  | 2.1  | 1.1 | 5.2    | 3.4 | 2.0 | 1.0 | 26.5  | 26.2  | 26.5  | 29.8  |
| SFD 54S11-VV   | 1-3/8 ODF   | 4.4                                                                                        | 2.9  | 1.8  | 1.0 | 4.5    | 2.9 | 1.7 | 0.9 | 22.8  | 22.4  | 22.7  | 25.5  |
| SFD 54S13-VV   | 1-5/8 ODF   | 4.5                                                                                        | 3.1  | 1.9  | 1.0 | 4.6    | 3.0 | 1.8 | 0.9 | 23.1  | 22.8  | 24.2  | 28.4  |

<sup>1</sup> All ratings in accordance with ARI Standard 730-04.

<sup>2</sup> Example: 1.0 tons x 3.5 = 3.5 kW

## Hermetic Suction Line Filter Drier Flow Capacities

| Description    | Connections | Flow Capacity In Tons Refrigerant <sup>1</sup> (For kW, Multiply Tons By 3.5) <sup>2</sup> |      |      |      |     |        |      |      |      |     |        |      |      |      |     |
|----------------|-------------|--------------------------------------------------------------------------------------------|------|------|------|-----|--------|------|------|------|-----|--------|------|------|------|-----|
|                |             | R-22                                                                                       |      |      |      |     | R-407C |      |      |      |     | R-410A |      |      |      |     |
|                |             | Evaporator Temperature (°F)                                                                |      |      |      |     |        |      |      |      |     |        |      |      |      |     |
|                |             | 40                                                                                         | 20   | 0    | -20  | -40 | 40     | 20   | 0    | -20  | -40 | 40     | 20   | 0    | -20  | -40 |
|                |             | Pressure Drop (PSI)                                                                        |      |      |      |     |        |      |      |      |     |        |      |      |      |     |
| 3              | 2           | 1.5                                                                                        | 1    | 0.5  | 3    | 2   | 1.5    | 1    | 0.5  | 3    | 2   | 1.5    | 1    | 0.5  |      |     |
| ASD 28S3-VV    | 3/8 ODF     | 2.3                                                                                        | 1.3  | 0.9  | 0.6  | 0.5 | 2.1    | 1.2  | 0.8  | 0.5  | 0.4 | 2.8    | 1.6  | 1.1  | 0.7  | 0.6 |
| ASD 28S4-VV    | 1/2 ODF     | 3.8                                                                                        | 2.1  | 1.4  | 1.0  | 0.8 | 3.5    | 1.9  | 1.2  | 0.9  | 0.7 | 4.6    | 2.6  | 1.7  | 1.2  | 1.0 |
| ASD 35F5-VV    | 5/8 SAE     | 4.4                                                                                        | 2.5  | 1.7  | 1.2  | 0.9 | 4.1    | 2.3  | 1.5  | 1.0  | 0.7 | 5.3    | 3.0  | 2.1  | 1.5  | 1.1 |
| ASD 35S5-VV    | 5/8 ODF     | 5.8                                                                                        | 3.2  | 2.2  | 1.6  | 1.0 | 5.4    | 2.9  | 1.9  | 1.4  | 0.8 | 7.0    | 3.9  | 2.7  | 2.0  | 1.3 |
| ASD 45S6-VV    | 3/4 ODF     | 7.0                                                                                        | 4.6  | 3.2  | 2.0  | 1.1 | 6.5    | 4.2  | 2.8  | 1.7  | 0.9 | 8.5    | 5.6  | 3.9  | 2.5  | 1.4 |
| ASD 45S7-VV    | 7/8 ODF     | 9.2                                                                                        | 6.0  | 4.1  | 2.6  | 1.4 | 8.5    | 5.5  | 3.6  | 2.3  | 1.2 | 11.2   | 7.3  | 5.0  | 3.2  | 1.8 |
| ASD 50S9-VV    | 1-1/8 ODF   | 13.2                                                                                       | 8.5  | 5.7  | 3.5  | 1.8 | 12.2   | 7.7  | 5.0  | 3.1  | 1.5 | 16.0   | 10.3 | 7.0  | 4.3  | 2.3 |
| ASD 75S11-VV   | 1-3/8 ODF   | 16.2                                                                                       | 10.2 | 6.7  | 4.0  | 2.0 | 15.0   | 9.3  | 5.9  | 3.5  | 1.7 | 19.6   | 12.4 | 8.2  | 5.0  | 2.5 |
| ASD 75S13-VV   | 1-5/8 ODF   | 17.3                                                                                       | 10.7 | 7.0  | 4.2  | 2.1 | 16.0   | 9.7  | 6.2  | 3.7  | 1.7 | 21.0   | 13.0 | 8.6  | 5.2  | 2.6 |
| ASF 28S3-VV    | 3/8 ODF     | 2.4                                                                                        | 1.3  | 0.9  | 0.7  | 0.5 | 2.2    | 1.2  | 0.8  | 0.6  | 0.4 | 2.9    | 1.6  | 1.1  | 0.9  | 0.6 |
| ASF 28S4-VV    | 1/2 ODF     | 4.1                                                                                        | 2.3  | 1.6  | 1.2  | 0.9 | 3.8    | 2.1  | 1.4  | 1.0  | 0.7 | 5.0    | 2.8  | 2.0  | 1.5  | 1.1 |
| ASF 35F5-VV    | 5/8 SAE     | 4.7                                                                                        | 2.6  | 1.8  | 1.3  | 1.0 | 4.4    | 2.4  | 1.6  | 1.1  | 0.8 | 5.7    | 3.2  | 2.2  | 1.6  | 1.3 |
| ASF 35S5-VV    | 5/8 ODF     | 6.6                                                                                        | 3.7  | 2.6  | 1.9  | 1.6 | 6.1    | 3.4  | 2.3  | 1.7  | 1.3 | 8.0    | 4.5  | 3.2  | 2.4  | 2.0 |
| ASF 45S6-VV    | 3/4 ODF     | 9.8                                                                                        | 5.5  | 3.7  | 2.7  | 2.2 | 9.1    | 5.0  | 3.3  | 2.4  | 1.8 | 11.9   | 6.7  | 4.5  | 3.4  | 2.8 |
| ASF 45S7-VV    | 7/8 ODF     | 12.0                                                                                       | 8.0  | 5.6  | 3.6  | 3.0 | 11.1   | 7.3  | 5.0  | 3.1  | 2.5 | 14.6   | 9.7  | 6.9  | 4.5  | 3.8 |
| ASF 50S9-VV    | 1-1/8 ODF   | 19.0                                                                                       | 12.0 | 8.2  | 4.9  | 2.6 | 17.6   | 10.9 | 7.3  | 4.3  | 2.2 | 23.0   | 14.6 | 10.1 | 6.1  | 3.3 |
| ASF 64S17-VV   | 2-1/8 ODF   | 41.0                                                                                       | 27.0 | 19.0 | 12.0 | 6.9 | 38.0   | 24.5 | 16.8 | 10.5 | 5.7 | 49.7   | 32.8 | 23.3 | 14.9 | 8.6 |
| ASF 75S11-VV   | 1-3/8 ODF   | 16.0                                                                                       | 15.0 | 11.0 | 6.7  | 3.3 | 14.8   | 13.6 | 9.7  | 5.8  | 2.7 | 19.4   | 18.2 | 13.5 | 8.3  | 4.1 |
| ASF 75S13-VV   | 1-5/8 ODF   | 24.0                                                                                       | 15.0 | 10.0 | 6.5  | 3.2 | 22.2   | 13.6 | 8.9  | 5.7  | 2.7 | 29.1   | 18.2 | 12.3 | 8.1  | 4.0 |
| ASK 165S-VV-HH | 5/8 ODF     | 3.4                                                                                        | 2.1  | 1.4  | 0.9  | 0.4 | 3.2    | 1.9  | 1.2  | 0.8  | 0.3 | 4.1    | 2.6  | 1.7  | 1.1  | 0.5 |
| ASK 166S-VV-HH | 3/4 ODF     | 4.2                                                                                        | 2.6  | 1.7  | 1.0  | 0.5 | 3.9    | 2.4  | 1.5  | 0.9  | 0.4 | 5.1    | 3.2  | 2.1  | 1.2  | 0.6 |
| ASK 167S-VV-HH | 7/8 ODF     | 4.6                                                                                        | 2.8  | 1.9  | 1.1  | 0.6 | 4.3    | 2.5  | 1.7  | 1.0  | 0.5 | 5.6    | 3.4  | 2.3  | 1.4  | 0.8 |
| ASK 306S-VV-HH | 3/4 ODF     | 5.5                                                                                        | 3.5  | 2.3  | 1.4  | 0.8 | 5.1    | 3.2  | 2.0  | 1.2  | 0.7 | 6.7    | 4.3  | 2.8  | 1.7  | 1.0 |
| ASK 307S-VV-HH | 7/8 ODF     | 6.1                                                                                        | 3.8  | 2.5  | 1.5  | 0.8 | 5.7    | 3.5  | 2.2  | 1.3  | 0.7 | 7.4    | 4.6  | 3.1  | 1.9  | 1.0 |
| ASK 309S-VV-HH | 1-1/8 ODF   | 6.5                                                                                        | 4.0  | 2.6  | 1.6  | 0.8 | 6.0    | 3.6  | 2.3  | 1.4  | 0.7 | 7.9    | 4.9  | 3.2  | 2.0  | 1.0 |
| CSFD 14S4-VV   | 1/2 ODF     | 2.0                                                                                        | 1.3  | 0.9  | 0.6  | 0.3 | 1.9    | 1.2  | 0.8  | 0.5  | 0.2 | 2.4    | 1.6  | 1.1  | 0.7  | 0.4 |
| CSFD 14S5-VV   | 5/8 ODF     | 3.6                                                                                        | 2.4  | 1.6  | 1.0  | 0.5 | 3.3    | 2.2  | 1.4  | 0.9  | 0.4 | 4.4    | 2.9  | 2.0  | 1.2  | 0.6 |
| CSFD 14S6-VV   | 3/4 ODF     | 4.9                                                                                        | 3.2  | 2.2  | 1.4  | 0.7 | 4.5    | 2.9  | 1.9  | 1.2  | 0.6 | 5.9    | 3.9  | 2.7  | 1.7  | 0.9 |
| CSFD 14S7-VV   | 7/8 ODF     | 5.2                                                                                        | 3.4  | 2.3  | 1.5  | 0.8 | 4.8    | 3.1  | 2.0  | 1.3  | 0.7 | 6.3    | 4.1  | 2.8  | 1.9  | 1.0 |
| CSFD 14S9-VV   | 1-1/8 ODF   | 7.0                                                                                        | 4.6  | 3.1  | 2.0  | 1.0 | 6.5    | 4.2  | 2.7  | 1.7  | 0.8 | 8.5    | 5.6  | 3.8  | 2.5  | 1.3 |
| SFD 13F3-VV    | 3/8 SAE     | 1.4                                                                                        | 0.8  | 0.4  | 0.2  | 0.1 | 1.3    | 0.7  | 0.4  | 0.2  | 0.1 | 1.7    | 1.0  | 0.5  | 0.2  | 0.1 |
| SFD 13S3-VV    | 3/8 ODF     | 2.2                                                                                        | 1.3  | 0.8  | 0.5  | 0.2 | 2.0    | 1.2  | 0.7  | 0.4  | 0.2 | 2.7    | 1.6  | 1.0  | 0.6  | 0.3 |
| SFD 13F4-VV    | 1/2 SAE     | 2.4                                                                                        | 1.6  | 1.1  | 0.7  | 0.4 | 2.2    | 1.5  | 1.0  | 0.6  | 0.3 | 2.9    | 1.9  | 1.3  | 0.9  | 0.5 |
| SFD 13S4-VV    | 1/2 ODF     | 3.5                                                                                        | 2.3  | 1.6  | 1.0  | 0.6 | 3.2    | 2.1  | 1.4  | 0.9  | 0.5 | 4.2    | 2.8  | 2.0  | 1.2  | 0.8 |
| SFD 13F5-VV    | 5/8 SAE     | 3.7                                                                                        | 2.4  | 1.6  | 1.0  | 0.6 | 3.4    | 2.2  | 1.4  | 0.9  | 0.5 | 4.5    | 2.9  | 2.0  | 1.2  | 0.8 |
| SFD 13S5-VV    | 5/8 ODF     | 4.9                                                                                        | 3.2  | 2.2  | 1.4  | 0.8 | 4.5    | 2.9  | 1.9  | 1.2  | 0.7 | 5.9    | 3.9  | 2.7  | 1.7  | 1.0 |
| SFD 13S6-VV    | 3/4 ODF     | 6.4                                                                                        | 4.2  | 2.8  | 1.8  | 1.0 | 5.9    | 3.8  | 2.5  | 1.6  | 0.8 | 7.8    | 5.1  | 3.4  | 2.2  | 1.3 |
| SFD 13S7-VV    | 7/8 ODF     | 7.2                                                                                        | 4.6  | 3.0  | 1.9  | 1.0 | 6.7    | 4.2  | 2.7  | 1.7  | 0.8 | 8.7    | 5.6  | 3.7  | 2.4  | 1.3 |
| SFD 27S6-VV    | 3/4 ODF     | 6.4                                                                                        | 4.2  | 2.8  | 1.8  | 1.0 | 5.9    | 3.8  | 2.5  | 1.6  | 0.8 | 7.8    | 5.1  | 3.4  | 2.2  | 1.3 |
| SFD 27S7-VV    | 7/8 ODF     | 7.5                                                                                        | 4.8  | 3.2  | 2.0  | 1.1 | 7.0    | 4.4  | 2.8  | 1.7  | 0.9 | 9.1    | 5.8  | 3.9  | 2.5  | 1.4 |
| SFD 27S9-VV    | 1-1/8 ODF   | 8.5                                                                                        | 5.4  | 3.5  | 2.1  | 1.1 | 7.9    | 4.9  | 3.1  | 1.8  | 0.9 | 10.3   | 6.6  | 4.3  | 2.6  | 1.4 |
| SFD 54S11-VV   | 1-3/8 ODF   | 7.3                                                                                        | 4.6  | 3.0  | 1.8  | 1.0 | 6.8    | 4.2  | 2.7  | 1.6  | 0.8 | 8.9    | 5.6  | 3.7  | 2.2  | 1.3 |
| SFD 54S13-VV   | 1-5/8 ODF   | 7.4                                                                                        | 4.7  | 3.2  | 2.0  | 1.0 | 6.9    | 4.3  | 2.8  | 1.7  | 0.8 | 9.0    | 5.7  | 3.9  | 2.5  | 1.3 |

<sup>1</sup> All ratings in accordance with ARI Standard 730-04.

<sup>2</sup> Example: 1.0 tons x 3.5 = 3.5 kW

## Hermetic Suction Line Filter Drier Flow Capacities

| Description    | Connections | Flow Capacity In Tons Refrigerant <sup>1</sup> (For kW, Multiply Tons By 3.5) <sup>2</sup> |      |      |     |              |      |      |     |     |
|----------------|-------------|--------------------------------------------------------------------------------------------|------|------|-----|--------------|------|------|-----|-----|
|                |             | R-502                                                                                      |      |      |     | R-404A/R-507 |      |      |     |     |
|                |             | Evaporator Temperature (°F)                                                                |      |      |     |              |      |      |     |     |
|                |             | 40                                                                                         | 20   | 0    | -20 | 40           | 20   | 0    | -20 | -40 |
|                |             | Pressure Drop (PSI)                                                                        |      |      |     |              |      |      |     |     |
| 3              | 2           | 1.5                                                                                        | 1    | 3    | 2   | 1.5          | 1    | 0.5  |     |     |
| ASD 28S3-VV    | 3/8 ODF     | 2.2                                                                                        | 1.1  | 0.7  | 0.5 | 2.1          | 1.1  | 0.7  | 0.5 | 0.3 |
| ASD 28S4-VV    | 1/2 ODF     | 3.7                                                                                        | 1.8  | 1.1  | 0.7 | 3.6          | 1.8  | 1.1  | 0.7 | 0.5 |
| ASD 35F5-VV    | 5/8 SAE     | 4.2                                                                                        | 2.1  | 1.3  | 0.9 | 4.1          | 2.1  | 1.3  | 0.9 | 0.6 |
| ASD 35S5-VV    | 5/8 ODF     | 5.6                                                                                        | 2.8  | 1.7  | 1.1 | 5.4          | 2.8  | 1.7  | 1.1 | 0.8 |
| ASD 45S6-VV    | 3/4 ODF     | 6.6                                                                                        | 3.7  | 2.5  | 1.5 | 6.4          | 3.7  | 2.5  | 1.6 | 1.0 |
| ASD 45S7-VV    | 7/8 ODF     | 7.7                                                                                        | 4.8  | 3.3  | 1.9 | 7.5          | 4.8  | 3.3  | 2.0 | 1.1 |
| ASD 50S9-VV    | 1-1/8 ODF   | 11.0                                                                                       | 6.9  | 4.6  | 2.7 | 11.0         | 6.9  | 4.6  | 2.8 | 1.4 |
| ASD 75S11-VV   | 1-3/8 ODF   | 14.0                                                                                       | 8.4  | 5.4  | 3.1 | 14.0         | 8.4  | 5.4  | 3.2 | 1.6 |
| ASD 75S13-VV   | 1-5/8 ODF   | 15.0                                                                                       | 8.9  | 5.7  | 3.3 | 15.0         | 8.9  | 5.7  | 3.4 | 1.7 |
| ASF 28S3-VV    | 3/8 ODF     | 2.3                                                                                        | 1.1  | 0.7  | 0.5 | 2.2          | 1.1  | 0.7  | 0.5 | 0.3 |
| ASF 28S4-VV    | 1/2 ODF     | 3.9                                                                                        | 2.0  | 1.2  | 0.8 | 3.8          | 2.0  | 1.2  | 0.8 | 0.6 |
| ASF 35F5-VV    | 5/8 SAE     | 4.5                                                                                        | 2.3  | 1.4  | 0.9 | 4.4          | 2.3  | 1.4  | 0.9 | 0.7 |
| ASF 35S5-VV    | 5/8 ODF     | 6.3                                                                                        | 3.2  | 2.0  | 1.4 | 6.1          | 3.2  | 2.0  | 1.4 | 1.0 |
| ASF 45S6-VV    | 3/4 ODF     | 9.4                                                                                        | 4.7  | 2.9  | 1.8 | 9.1          | 4.7  | 2.9  | 1.9 | 1.4 |
| ASF 45S7-VV    | 7/8 ODF     | 10.0                                                                                       | 6.3  | 4.5  | 2.7 | 9.8          | 6.3  | 4.5  | 2.8 | 1.5 |
| ASF 50S9-VV    | 1-1/8 ODF   | 16.0                                                                                       | 10.0 | 6.6  | 3.9 | 16.0         | 10.0 | 6.7  | 4.0 | 2.0 |
| ASF 64S17-VV   | 2-1/8 ODF   | 36.0                                                                                       | 23.0 | 15.0 | 9.5 | 35.0         | 23.0 | 15.0 | 9.8 | 5.2 |
| ASF 75S11-VV   | 1-3/8 ODF   | 21.0                                                                                       | 13.0 | 8.2  | 4.9 | 20.0         | 13.0 | 8.3  | 5.1 | 2.6 |
| ASF 75S13-VV   | 1-5/8 ODF   | 22.0                                                                                       | 13.0 | 8.3  | 5.0 | 21.0         | 13.0 | 8.4  | 5.2 | 2.7 |
| ASK 165S-VV-HH | 5/8 ODF     | 3.3                                                                                        | 1.9  | 1.2  | 0.8 | 3.2          | 1.9  | 1.2  | 0.8 | 0.3 |
| ASK 166S-VV-HH | 3/4 ODF     | 4.0                                                                                        | 2.4  | 1.6  | 0.9 | 3.9          | 2.4  | 1.6  | 0.9 | 0.5 |
| ASK 167S-VV-HH | 7/8 ODF     | 4.4                                                                                        | 2.6  | 1.7  | 1.0 | 4.3          | 2.6  | 1.7  | 1.0 | 0.6 |
| ASK 306S-VV-HH | 3/4 ODF     | 5.2                                                                                        | 3.2  | 2.2  | 1.2 | 5.0          | 3.2  | 2.2  | 1.2 | 0.7 |
| ASK 307S-VV-HH | 7/8 ODF     | 5.8                                                                                        | 3.5  | 2.3  | 1.4 | 5.6          | 3.5  | 2.3  | 1.4 | 0.7 |
| ASK 309S-VV-HH | 1-1/8 ODF   | 6.2                                                                                        | 3.7  | 2.4  | 1.4 | 6.0          | 3.7  | 2.4  | 1.5 | 0.7 |
| CSFD 14S4-VV   | 1/2 ODF     | 1.3                                                                                        | 0.8  | 0.5  | 0.3 | 1.3          | 0.8  | 0.5  | 0.3 | 0.2 |
| CSFD 14S5-VV   | 5/8 ODF     | 2.7                                                                                        | 1.7  | 1.1  | 0.7 | 2.6          | 1.7  | 1.1  | 0.7 | 0.3 |
| CSFD 14S6-VV   | 3/4 ODF     | 3.7                                                                                        | 2.3  | 1.5  | 0.9 | 3.6          | 2.3  | 1.5  | 0.9 | 0.5 |
| CSFD 14S7-VV   | 7/8 ODF     | 4.0                                                                                        | 2.4  | 1.6  | 1.0 | 3.9          | 2.4  | 1.6  | 1.0 | 0.5 |
| CSFD 14S9-VV   | 1-1/8 ODF   | 5.1                                                                                        | 3.1  | 2.0  | 1.3 | 4.9          | 3.1  | 2.0  | 1.3 | 0.7 |
| SFD 13F3-VV    | 3/8 SAE     | 1.3                                                                                        | 0.7  | 0.4  | 0.2 | 1.3          | 0.7  | 0.4  | 0.2 | 0.1 |
| SFD 13S3-VV    | 3/8 ODF     | 2.0                                                                                        | 1.1  | 0.7  | 0.4 | 1.9          | 1.1  | 0.7  | 0.4 | 0.2 |
| SFD 13F4-VV    | 1/2 SAE     | 2.2                                                                                        | 1.3  | 0.9  | 0.5 | 2.1          | 1.3  | 0.9  | 0.5 | 0.3 |
| SFD 13S4-VV    | 1/2 ODF     | 3.1                                                                                        | 1.9  | 1.3  | 0.8 | 3.0          | 1.9  | 1.3  | 0.8 | 0.4 |
| SFD 13F5-VV    | 5/8 SAE     | 3.3                                                                                        | 2.0  | 1.4  | 0.9 | 3.2          | 2.0  | 1.4  | 0.9 | 0.5 |
| SFD 13S5-VV    | 5/8 ODF     | 4.3                                                                                        | 2.7  | 1.8  | 1.1 | 4.2          | 2.7  | 1.8  | 1.1 | 0.6 |
| SFD 13S6-VV    | 3/4 ODF     | 5.8                                                                                        | 3.5  | 2.3  | 1.4 | 5.6          | 3.5  | 2.3  | 1.4 | 0.7 |
| SFD 13S7-VV    | 7/8 ODF     | 6.5                                                                                        | 3.9  | 2.6  | 1.4 | 6.3          | 3.9  | 2.6  | 1.5 | 0.8 |
| SFD 27S6-VV    | 3/4 ODF     | 5.8                                                                                        | 3.5  | 2.3  | 1.4 | 5.6          | 3.5  | 2.3  | 1.4 | 0.7 |
| SFD 27S7-VV    | 7/8 ODF     | 6.7                                                                                        | 4.1  | 2.7  | 1.5 | 6.5          | 4.1  | 2.7  | 1.6 | 0.8 |
| SFD 27S9-VV    | 1-1/8 ODF   | 7.7                                                                                        | 4.6  | 3.0  | 1.6 | 7.5          | 4.6  | 3.0  | 1.7 | 0.9 |
| SFD 54S11-VV   | 1-3/8 ODF   | 6.6                                                                                        | 3.9  | 2.5  | 1.4 | 6.4          | 3.9  | 2.5  | 1.5 | 0.7 |
| SFD 54S13-VV   | 1-5/8 ODF   | 6.7                                                                                        | 4.0  | 2.6  | 1.5 | 6.5          | 4.0  | 2.6  | 1.6 | 0.8 |

<sup>1</sup> All ratings in accordance with ARI Standard 730-04.

<sup>2</sup> Example: 1.0 tons x 3.5 = 3.5 kW

## Take-Apart Suction Line Filter Drier Flow Capacities

| Description   | Connections | Filter Drier Cartridge | Flow Capacity In Tons Refrigerant¹ (For kW, Multiply Tons By 3.5)² |      |      |      |        |      |      |      |
|---------------|-------------|------------------------|--------------------------------------------------------------------|------|------|------|--------|------|------|------|
|               |             |                        | R-12                                                               |      |      |      | R-134a |      |      |      |
|               |             |                        | Evaporator Temperature (°F)                                        |      |      |      |        |      |      |      |
|               |             |                        | 40                                                                 | 20   | 0    | -20  | 40     | 20   | 0    | -20  |
|               |             |                        | Pressure Drop (PSI)                                                |      |      |      |        |      |      |      |
| 2             | 1.5         | 1                      | 0.5                                                                | 2    | 1.5  | 1    | 0.5    |      |      |      |
| ADKS 30013T   | 1-5/8 ODF   | (3) F-100 Filter       | 24.0                                                               | 17.0 | 12.0 | 7.0  | 25.0   | 17.0 | 11.0 | 6.2  |
| ADKS 30017T   | 2-1/8 ODF   | (3) F-100 Filter       | 42.0                                                               | 31.0 | 20.0 | 12.0 | 43.0   | 30.0 | 19.0 | 11.0 |
| ADKS 40017T   | 2-1/8 ODF   | (4) F-100 Filter       | 44.0                                                               | 32.0 | 21.0 | 12.0 | 45.0   | 31.0 | 20.0 | 11.0 |
| ADKS 40021T   | 2-5/8 ODF   | (4) F-100 Filter       | 66.0                                                               | 48.0 | 32.0 | 19.0 | 68.0   | 47.0 | 30.0 | 17.0 |
| ADKS 30013T   | 1-5/8 ODF   | (3) 100 cu in Core     | 19.0                                                               | 14.0 | 9.1  | 5.5  | 20.0   | 14.0 | 8.7  | 4.9  |
| ADKS 30017T   | 2-1/8 ODF   | (3) 100 cu in Core     | 30.0                                                               | 22.0 | 15.0 | 8.7  | 31.0   | 22.0 | 14.0 | 7.7  |
| ADKS 40017T   | 2-1/8 ODF   | (4) 100 cu in Core     | 33.0                                                               | 23.0 | 16.0 | 9.5  | 34.0   | 23.0 | 15.0 | 8.4  |
| ADKS 40021T   | 2-5/8 ODF   | (4) 100 cu in Core     | 48.0                                                               | 35.0 | 23.0 | 14.0 | 49.0   | 34.0 | 22.0 | 12.0 |
| BTAS-27 S-V   | 7/8 ODF     | A2F Filter             | 4.7                                                                | 3.4  | 2.2  | 1.2  | 4.8    | 3.3  | 2.1  | 1.1  |
| BTAS-39 S-V   | 1-1/8 ODF   | A3F Filter             | 7.1                                                                | 5.1  | 3.4  | 1.9  | 7.3    | 5.0  | 3.2  | 1.7  |
| BTAS-311 S-V  | 1-3/8 ODF   | A3F Filter             | 7.9                                                                | 5.6  | 3.7  | 2.1  | 8.1    | 5.5  | 3.5  | 1.9  |
| BTAS-313 S-V  | 1-5/8 ODF   | A3F Filter             | 13.0                                                               | 8.9  | 5.9  | 3.4  | 13.0   | 8.8  | 5.6  | 3.0  |
| BTAS-317 S-V  | 2-1/8 ODF   | A3F Filter             | 15.0                                                               | 11.0 | 7.2  | 4.2  | 16.0   | 11.0 | 6.9  | 3.7  |
| BTAS-411 S-V  | 1-3/8 ODF   | A4F Filter             | 17.0                                                               | 12.0 | 8.0  | 4.5  | 17.0   | 12.0 | 7.4  | 4.0  |
| BTAS-413 S-V  | 1-5/8 ODF   | A4F Filter             | 20.0                                                               | 15.0 | 10.0 | 5.5  | 21.0   | 14.0 | 9.1  | 4.9  |
| BTAS-417 S-V  | 2-1/8 ODF   | A4F Filter             | 28.0                                                               | 20.0 | 13.0 | 7.5  | 29.0   | 20.0 | 12.0 | 6.7  |
| BTAS-421 S-V  | 2-5/8 ODF   | A4F Filter             | 34.0                                                               | 24.0 | 16.0 | 9.1  | 35.0   | 24.0 | 15.0 | 8.1  |
| BTAS-517 S-V  | 2-1/8 ODF   | A5F Filter             | 33.0                                                               | 24.0 | 16.0 | 9.1  | 34.0   | 24.0 | 15.0 | 8.1  |
| BTAS-521 S-V  | 2-5/8 ODF   | A5F Filter             | 44.0                                                               | 32.0 | 21.0 | 12.0 | 45.0   | 31.0 | 20.0 | 11.0 |
| BTAS-525 S-V  | 3-1/8 ODF   | A5F Filter             | 54.0                                                               | 39.0 | 25.0 | 15.0 | 56.0   | 38.0 | 24.0 | 13.0 |
| BTAS-25 S-V   | 5/8 ODF     | A2F-D Filter Drier     | 2.4                                                                | 1.7  | 1.2  | 0.7  | 2.5    | 1.7  | 1.1  | 0.6  |
| BTAS-27 S-V   | 7/8 ODF     | A2F-D Filter Drier     | 4.0                                                                | 2.8  | 1.9  | 1.1  | 4.1    | 2.8  | 1.8  | 1.0  |
| BTAS-39 S-V   | 1-1/8 ODF   | A3F-D Filter Drier     | 5.2                                                                | 3.7  | 2.4  | 1.4  | 5.3    | 3.6  | 2.3  | 1.2  |
| BTAS-311 S-V  | 1-3/8 ODF   | A3F-D Filter Drier     | 7.2                                                                | 5.2  | 3.4  | 1.9  | 7.4    | 5.1  | 3.2  | 1.7  |
| BTAS-313 S-V  | 1-5/8 ODF   | A3F-D Filter Drier     | 10.0                                                               | 7.4  | 4.8  | 2.8  | 11.0   | 7.3  | 4.6  | 2.5  |
| BTAS-317 S-V  | 2-1/8 ODF   | A3F-D Filter Drier     | 12.0                                                               | 8.5  | 5.7  | 3.3  | 12.0   | 8.4  | 5.4  | 2.9  |
| BTAS-411 S-V  | 1-3/8 ODF   | A4F-D Filter Drier     | 15.0                                                               | 11.0 | 7.0  | 4.1  | 15.0   | 11.0 | 6.7  | 3.6  |
| BTAS-413 S-V  | 1-5/8 ODF   | A4F-D Filter Drier     | 15.0                                                               | 11.0 | 7.2  | 4.2  | 16.0   | 11.0 | 6.9  | 3.7  |
| BTAS-417 S-V  | 2-1/8 ODF   | A4F-D Filter Drier     | 22.0                                                               | 16.0 | 11.0 | 6.1  | 23.0   | 16.0 | 10.0 | 5.4  |
| BTAS-421 S-V  | 2-5/8 ODF   | A4F-D Filter Drier     | 23.0                                                               | 17.0 | 11.0 | 6.3  | 24.0   | 16.0 | 10.0 | 5.6  |
| BTAS-517 S-V  | 2-1/8 ODF   | A5F-D Filter Drier     | 27.0                                                               | 19.0 | 13.0 | 7.2  | 28.0   | 19.0 | 12.0 | 6.4  |
| BTAS-521 S-V  | 2-5/8 ODF   | A5F-D Filter Drier     | 32.0                                                               | 23.0 | 15.0 | 8.8  | 33.0   | 23.0 | 14.0 | 7.8  |
| BTAS-525 S-V  | 3-1/8 ODF   | A5F-D Filter Drier     | 38.0                                                               | 27.0 | 18.0 | 10.0 | 39.0   | 27.0 | 17.0 | 9.2  |
| STAS-489 S-V  | 1-1/8 ODF   | (1) F-48 Filter        | 13.0                                                               | 8.0  | 5.0  | 2.0  | 13.0   | 8.0  | 5.0  | 2.0  |
| STAS-4811 S-V | 1-3/8 ODF   | (1) F-48 Filter        | 15.0                                                               | 10.0 | 6.0  | 3.0  | 15.0   | 10.0 | 6.0  | 3.0  |
| STAS-4813 S-V | 1-5/8 ODF   | (1) F-48 Filter        | 19.0                                                               | 12.0 | 7.0  | 5.0  | 20.0   | 12.0 | 7.0  | 4.0  |
| STAS-4817 S-V | 2-1/8 ODF   | (1) F-48 Filter        | 24.0                                                               | 15.0 | 11.0 | 6.0  | 25.0   | 15.0 | 10.0 | 5.0  |
| STAS-4821 S-V | 2-5/8 ODF   | (1) F-48 Filter        | 29.0                                                               | 20.0 | 14.0 | 7.0  | 30.0   | 20.0 | 13.0 | 6.0  |
| STAS-9617 S-V | 2-1/8 ODF   | (2) F-48 Filter        | 27.0                                                               | 18.0 | 11.0 | 6.0  | 28.0   | 18.0 | 10.0 | 5.0  |
| STAS-9621 S-V | 2-5/8 ODF   | (2) F-48 Filter        | 37.0                                                               | 25.0 | 16.0 | 8.0  | 38.0   | 25.0 | 15.0 | 7.0  |
| STAS-9625 S-V | 3-1/8 ODF   | (2) F-48 Filter        | 65.0                                                               | 52.0 | 38.0 | 21.0 | 79.0   | 61.0 | 43.0 | 20.0 |
| STAS-489 S-V  | 1-1/8 ODF   | (1) 48 cu in Core      | 8.0                                                                | 6.0  | 4.0  | 1.0  | 8.0    | 6.0  | 4.0  | 1.0  |
| STAS-4811 S-V | 1-3/8 ODF   | (1) 48 cu in Core      | 10.0                                                               | 7.0  | 4.0  | 2.0  | 10.0   | 7.0  | 4.0  | 2.0  |
| STAS-4813 S-V | 1-5/8 ODF   | (1) 48 cu in Core      | 13.0                                                               | 8.0  | 5.0  | 3.0  | 13.0   | 8.0  | 5.0  | 3.0  |
| STAS-4817 S-V | 2-1/8 ODF   | (1) 48 cu in Core      | 17.0                                                               | 10.0 | 7.0  | 5.0  | 17.0   | 10.0 | 7.0  | 4.0  |
| STAS-4821 S-V | 2-5/8 ODF   | (1) 48 cu in Core      | 19.0                                                               | 13.0 | 8.0  | 5.0  | 20.0   | 13.0 | 8.0  | 4.0  |
| STAS-9617 S-V | 2-1/8 ODF   | (2) 48 cu in Core      | 18.0                                                               | 12.0 | 6.0  | 5.0  | 18.0   | 12.0 | 6.0  | 4.0  |
| STAS-9621 S-V | 2-5/8 ODF   | (2) 48 cu in Core      | 24.0                                                               | 17.0 | 11.0 | 6.0  | 25.0   | 17.0 | 10.0 | 5.0  |
| STAS-9625 S-V | 3-1/8 ODF   | (2) 48 cu in Core      | 24.0                                                               | 19.0 | 14.0 | 7.4  | 29.0   | 23.0 | 16.0 | 7.0  |

<sup>1</sup> All ratings in accordance with ARI Standard 730-04.

<sup>2</sup> Example: 1.0 tons x 3.5 = 3.5 kW

## Take-Apart Suction Line Filter Drier Flow Capacities

| Description   | Connections | Filter Drier Cartridge | Flow Capacity In Tons Refrigerant <sup>1</sup> (For kW, Multiply Tons By 3.5) <sup>2</sup> |      |      |      |      |        |      |      |      |      |        |      |      |      |      |
|---------------|-------------|------------------------|--------------------------------------------------------------------------------------------|------|------|------|------|--------|------|------|------|------|--------|------|------|------|------|
|               |             |                        | R-22                                                                                       |      |      |      |      | R-407C |      |      |      |      | R-410A |      |      |      |      |
|               |             |                        | Evaporator Temperature (°F)                                                                |      |      |      |      |        |      |      |      |      |        |      |      |      |      |
|               |             |                        | 40                                                                                         | 20   | 0    | -20  | -40  | 40     | 20   | 0    | -20  | -40  | 40     | 20   | 0    | -20  | -40  |
|               |             |                        | Pressure Drop (PSI)                                                                        |      |      |      |      |        |      |      |      |      |        |      |      |      |      |
| 3             | 2           | 1.5                    | 1                                                                                          | 0.5  | 3    | 2    | 1.5  | 1      | 0.5  | 3    | 2    | 1.5  | 1      | 0.5  |      |      |      |
| ADKS 30013T   | 1-5/8 ODF   | (3) F-100 Filter       | 45.0                                                                                       | 30.0 | 20.0 | 13.0 | 7.0  | 41.7   | 27.3 | 17.7 | 11.3 | 5.8  | —      | —    | —    | —    | —    |
| ADKS 30017T   | 2-1/8 ODF   | (3) F-100 Filter       | 77.0                                                                                       | 50.0 | 35.0 | 22.0 | 12.0 | 71.4   | 45.5 | 31.0 | 19.2 | 10.0 | —      | —    | —    | —    | —    |
| ADKS 40017T   | 2-1/8 ODF   | (4) F-100 Filter       | 80.0                                                                                       | 53.0 | 37.0 | 23.0 | 13.0 | 74.2   | 48.2 | 32.8 | 20.0 | 10.8 | —      | —    | —    | —    | —    |
| ADKS 40021T   | 2-5/8 ODF   | (4) F-100 Filter       | 122.0                                                                                      | 80.0 | 55.0 | 34.0 | 19.0 | 113.1  | 72.7 | 48.7 | 29.6 | 15.8 | —      | —    | —    | —    | —    |
| ADKS 30013T   | 1-5/8 ODF   | (3) 100 cu in Core     | 35.0                                                                                       | 23.0 | 16.0 | 10.0 | 5.5  | 32.4   | 20.9 | 14.2 | 8.7  | 4.6  | —      | —    | —    | —    | —    |
| ADKS 30017T   | 2-1/8 ODF   | (3) 100 cu in Core     | 56.0                                                                                       | 37.0 | 25.0 | 16.0 | 8.8  | 51.9   | 33.6 | 22.1 | 13.9 | 7.3  | —      | —    | —    | —    | —    |
| ADKS 40017T   | 2-1/8 ODF   | (4) 100 cu in Core     | 61.0                                                                                       | 40.0 | 27.0 | 17.0 | 9.5  | 56.5   | 36.4 | 23.9 | 14.8 | 7.9  | —      | —    | —    | —    | —    |
| ADKS 40021T   | 2-5/8 ODF   | (4) 100 cu in Core     | 88.0                                                                                       | 58.0 | 40.0 | 25.0 | 14.0 | 81.6   | 52.7 | 35.4 | 21.8 | 11.6 | —      | —    | —    | —    | —    |
| BTAS-27 S-V   | 7/8 ODF     | A2F Filter             | 8.8                                                                                        | 5.7  | 3.9  | 2.5  | 1.3  | 8.2    | 5.2  | 3.5  | 2.2  | 1.1  | —      | —    | —    | —    | —    |
| BTAS-39 S-V   | 1-1/8 ODF   | A3F Filter             | 14.0                                                                                       | 8.8  | 5.9  | 3.7  | 2.0  | 13.0   | 8.0  | 5.2  | 3.2  | 1.7  | —      | —    | —    | —    | —    |
| BTAS-311 S-V  | 1-3/8 ODF   | A3F Filter             | 15.0                                                                                       | 10.0 | 6.6  | 4.1  | 2.2  | 13.9   | 9.1  | 5.8  | 3.6  | 1.8  | —      | —    | —    | —    | —    |
| BTAS-313 S-V  | 1-5/8 ODF   | A3F Filter             | 24.0                                                                                       | 16.0 | 11.0 | 6.6  | 3.5  | 22.2   | 14.5 | 9.7  | 5.8  | 2.9  | —      | —    | —    | —    | —    |
| BTAS-317 S-V  | 2-1/8 ODF   | A3F Filter             | 29.0                                                                                       | 19.0 | 13.0 | 8.1  | 4.3  | 26.9   | 17.3 | 11.5 | 7.1  | 3.6  | —      | —    | —    | —    | —    |
| BTAS-411 S-V  | 1-3/8 ODF   | A4F Filter             | 31.0                                                                                       | 20.0 | 14.0 | 8.7  | 4.6  | 28.7   | 18.2 | 12.4 | 7.6  | 3.8  | —      | —    | —    | —    | —    |
| BTAS-413 S-V  | 1-5/8 ODF   | A4F Filter             | 38.0                                                                                       | 25.0 | 17.0 | 11.0 | 5.7  | 35.2   | 22.7 | 15.1 | 9.6  | 4.7  | —      | —    | —    | —    | —    |
| BTAS-417 S-V  | 2-1/8 ODF   | A4F Filter             | 53.0                                                                                       | 34.0 | 23.0 | 15.0 | 7.8  | 49.1   | 30.9 | 20.4 | 13.1 | 6.5  | —      | —    | —    | —    | —    |
| BTAS-421 S-V  | 2-5/8 ODF   | A4F Filter             | 64.0                                                                                       | 42.0 | 29.0 | 18.0 | 10.0 | 59.3   | 38.2 | 25.7 | 15.7 | 8.3  | —      | —    | —    | —    | —    |
| BTAS-517 S-V  | 2-1/8 ODF   | A5F Filter             | 63.0                                                                                       | 41.0 | 28.0 | 18.0 | 9.4  | 58.4   | 37.3 | 24.8 | 15.7 | 7.8  | —      | —    | —    | —    | —    |
| BTAS-521 S-V  | 2-5/8 ODF   | A5F Filter             | 84.0                                                                                       | 54.0 | 37.0 | 23.0 | 12.0 | 77.9   | 49.1 | 32.8 | 20.0 | 10.0 | —      | —    | —    | —    | —    |
| BTAS-525 S-V  | 3-1/8 ODF   | A5F Filter             | 103.0                                                                                      | 67.0 | 46.0 | 29.0 | 15.0 | 95.5   | 60.9 | 40.7 | 25.3 | 12.5 | —      | —    | —    | —    | —    |
| BTAS-25 S-V   | 5/8 ODF     | A2F-D Filter Drier     | 4.6                                                                                        | 3.0  | 2.0  | 1.3  | 0.7  | 4.3    | 2.7  | 1.8  | 1.1  | 0.6  | —      | —    | —    | —    | —    |
| BTAS-27 S-V   | 7/8 ODF     | A2F-D Filter Drier     | 7.5                                                                                        | 4.9  | 3.3  | 2.1  | 1.1  | 7.0    | 4.5  | 2.9  | 1.8  | 0.9  | —      | —    | —    | —    | —    |
| BTAS-39 S-V   | 1-1/8 ODF   | A3F-D Filter Drier     | 10.0                                                                                       | 6.3  | 4.3  | 2.7  | 1.4  | 9.3    | 5.7  | 3.8  | 2.4  | 1.2  | —      | —    | —    | —    | —    |
| BTAS-311 S-V  | 1-3/8 ODF   | A3F-D Filter Drier     | 14.0                                                                                       | 8.9  | 6.0  | 3.8  | 2.0  | 13.0   | 8.1  | 5.3  | 3.3  | 1.7  | —      | —    | —    | —    | —    |
| BTAS-313 S-V  | 1-5/8 ODF   | A3F-D Filter Drier     | 20.0                                                                                       | 13.0 | 8.6  | 5.4  | 2.9  | 18.5   | 11.8 | 7.6  | 4.7  | 2.4  | —      | —    | —    | —    | —    |
| BTAS-317 S-V  | 2-1/8 ODF   | A3F-D Filter Drier     | 23.0                                                                                       | 15.0 | 10.0 | 6.3  | 3.4  | 21.3   | 13.6 | 8.9  | 5.5  | 2.8  | —      | —    | —    | —    | —    |
| BTAS-411 S-V  | 1-3/8 ODF   | A4F-D Filter Drier     | 28.0                                                                                       | 18.0 | 13.0 | 7.8  | 4.2  | 26.0   | 16.4 | 11.5 | 6.8  | 3.5  | —      | —    | —    | —    | —    |
| BTAS-413 S-V  | 1-5/8 ODF   | A4F-D Filter Drier     | 29.0                                                                                       | 19.0 | 13.0 | 8.1  | 4.3  | 26.9   | 17.3 | 11.5 | 7.1  | 3.6  | —      | —    | —    | —    | —    |
| BTAS-417 S-V  | 2-1/8 ODF   | A4F-D Filter Drier     | 43.0                                                                                       | 28.0 | 19.0 | 12.0 | 6.3  | 39.9   | 25.5 | 16.8 | 10.5 | 5.2  | —      | —    | —    | —    | —    |
| BTAS-421 S-V  | 2-5/8 ODF   | A4F-D Filter Drier     | 44.0                                                                                       | 29.0 | 19.0 | 12.0 | 6.5  | 40.8   | 26.4 | 16.8 | 10.5 | 5.4  | —      | —    | —    | —    | —    |
| BTAS-517 S-V  | 2-1/8 ODF   | A5F-D Filter Drier     | 51.0                                                                                       | 33.0 | 22.0 | 14.0 | 7.5  | 47.3   | 30.0 | 19.5 | 12.2 | 6.2  | —      | —    | —    | —    | —    |
| BTAS-521 S-V  | 2-5/8 ODF   | A5F-D Filter Drier     | 61.0                                                                                       | 40.0 | 27.0 | 17.0 | 9.0  | 56.5   | 36.4 | 23.9 | 14.8 | 7.5  | —      | —    | —    | —    | —    |
| BTAS-525 S-V  | 3-1/8 ODF   | A5F-D Filter Drier     | 72.0                                                                                       | 47.0 | 32.0 | 20.0 | 11.0 | 66.7   | 42.7 | 28.3 | 17.4 | 9.2  | —      | —    | —    | —    | —    |
| STAS-489 S-V  | 1-1/8 ODF   | (1) F-48 Filter        | 22.0                                                                                       | 14.0 | 10.0 | 6.0  | 2.0  | 20.0   | 13.0 | 9.0  | 5.0  | 2.0  | 27.0   | 17.0 | 12.0 | 7.4  | 2.5  |
| STAS-4811 S-V | 1-3/8 ODF   | (1) F-48 Filter        | 28.0                                                                                       | 17.0 | 12.0 | 7.0  | 3.0  | 26.0   | 15.0 | 11.0 | 6.0  | 2.0  | 34.0   | 21.0 | 15.0 | 8.6  | 3.7  |
| STAS-4813 S-V | 1-5/8 ODF   | (1) F-48 Filter        | 35.0                                                                                       | 20.0 | 15.0 | 8.0  | 4.0  | 32.0   | 18.0 | 13.0 | 7.0  | 3.0  | 43.0   | 24.0 | 18.0 | 9.8  | 4.9  |
| STAS-4817 S-V | 2-1/8 ODF   | (1) F-48 Filter        | 47.0                                                                                       | 30.0 | 20.0 | 10.0 | 5.0  | 44.0   | 27.0 | 18.0 | 9.0  | 4.0  | 57.0   | 36.0 | 24.0 | 12.0 | 6.2  |
| STAS-4821 S-V | 2-5/8 ODF   | (1) F-48 Filter        | 60.0                                                                                       | 40.0 | 25.0 | 15.0 | 7.0  | 56.0   | 36.0 | 22.0 | 13.0 | 6.0  | 73.0   | 48.0 | 30.0 | 18.0 | 8.6  |
| STAS-9617 S-V | 2-1/8 ODF   | (2) F-48 Filter        | 50.0                                                                                       | 30.0 | 20.0 | 12.0 | 6.0  | 46.0   | 27.0 | 18.0 | 10.0 | 5.0  | 61.0   | 36.0 | 24.0 | 15.0 | 7.4  |
| STAS-9621 S-V | 2-5/8 ODF   | (2) F-48 Filter        | 70.0                                                                                       | 43.0 | 28.0 | 17.0 | 8.0  | 65.0   | 39.0 | 25.0 | 15.0 | 7.0  | 85.0   | 52.0 | 34.0 | 21.0 | 9.9  |
| STAS-9625 S-V | 3-1/8 ODF   | (2) F-48 Filter        | 101.0                                                                                      | 82.0 | 65.0 | 46.0 | 22.0 | 94.0   | 75.0 | 58.0 | 40.0 | 18.0 | 113.0  | 93.0 | 75.0 | 55.0 | 30.0 |
| STAS-489 S-V  | 1-1/8 ODF   | (1) 48 cu in Core      | 15.0                                                                                       | 9.0  | 7.0  | 4.0  | 1.0  | 14.0   | 8.0  | 6.0  | 3.0  | 1.0  | 18.0   | 11.0 | 8.5  | 4.9  | 1.2  |
| STAS-4811 S-V | 1-3/8 ODF   | (1) 48 cu in Core      | 18.0                                                                                       | 11.0 | 8.0  | 5.0  | 2.0  | 17.0   | 10.0 | 7.0  | 4.0  | 2.0  | 22.0   | 13.0 | 9.7  | 6.1  | 2.5  |
| STAS-4813 S-V | 1-5/8 ODF   | (1) 48 cu in Core      | 23.0                                                                                       | 13.0 | 10.0 | 6.0  | 3.0  | 21.0   | 12.0 | 9.0  | 5.0  | 2.0  | 28.0   | 16.0 | 12.0 | 7.4  | 3.7  |
| STAS-4817 S-V | 2-1/8 ODF   | (1) 48 cu in Core      | 31.0                                                                                       | 20.0 | 13.0 | 7.0  | 3.0  | 29.0   | 18.0 | 12.0 | 6.0  | 2.0  | 38.0   | 24.0 | 16.0 | 8.6  | 3.7  |
| STAS-4821 S-V | 2-5/8 ODF   | (1) 48 cu in Core      | 40.0                                                                                       | 27.0 | 17.0 | 10.0 | 5.0  | 37.0   | 25.0 | 15.0 | 9.0  | 4.0  | 49.0   | 33.0 | 21.0 | 12.0 | 6.2  |
| STAS-9617 S-V | 2-1/8 ODF   | (2) 48 cu in Core      | 33.0                                                                                       | 20.0 | 13.0 | 8.0  | 4.0  | 31.0   | 18.0 | 12.0 | 7.0  | 3.0  | 40.0   | 24.0 | 16.0 | 9.8  | 4.9  |
| STAS-9621 S-V | 2-5/8 ODF   | (2) 48 cu in Core      | 47.0                                                                                       | 28.0 | 18.0 | 11.0 | 6.0  | 44.0   | 25.0 | 16.0 | 10.0 | 5.0  | 57.0   | 34.0 | 22.0 | 14.0 | 7.4  |
| STAS-9625 S-V | 3-1/8 ODF   | (2) 48 cu in Core      | 38.0                                                                                       | 30.0 | 24.0 | 17.0 | 7.6  | 35.0   | 27.0 | 24.0 | 15.0 | 6.0  | 43.0   | 35.0 | 28.0 | 20.0 | 11.0 |

<sup>1</sup> All ratings in accordance with ARI Standard 730-04.

<sup>2</sup> Example: 1.0 tons x 3.5 = 3.5 kW

## Take-Apart Suction Line Filter Drier Flow Capacities

| Description   | Connections | Filter Drier Cartridge | Flow Capacity In Tons Refrigerant <sup>1</sup> (For kW, Multiply Tons By 3.5) <sup>2</sup> |      |      |      |      |              |      |      |      |      |
|---------------|-------------|------------------------|--------------------------------------------------------------------------------------------|------|------|------|------|--------------|------|------|------|------|
|               |             |                        | R-502                                                                                      |      |      |      |      | R-404A/R-507 |      |      |      |      |
|               |             |                        | Evaporator Temperature (°F)                                                                |      |      |      |      |              |      |      |      |      |
|               |             |                        | 40                                                                                         | 20   | 0    | -20  | -40  | 40           | 20   | 0    | -20  | -40  |
|               |             |                        | Pressure Drop (PSI)                                                                        |      |      |      |      |              |      |      |      |      |
| 3             | 2           | 1.5                    | 1                                                                                          | 0.5  | 3    | 2    | 1.5  | 1            | 0.5  |      |      |      |
| ADKS 30013T   | 1-5/8 ODF   | (3) F-100 Filter       | 38.0                                                                                       | 24.0 | 16.0 | 9.9  | 5.2  | 37.0         | 24.0 | 16.0 | 10.0 | 5.5  |
| ADKS 30017T   | 2-1/8 ODF   | (3) F-100 Filter       | 64.0                                                                                       | 40.0 | 27.0 | 17.0 | 8.9  | 62.0         | 40.0 | 27.0 | 18.0 | 9.4  |
| ADKS 40017T   | 2-1/8 ODF   | (4) F-100 Filter       | 68.0                                                                                       | 43.0 | 28.0 | 17.0 | 9.2  | 66.0         | 43.0 | 29.0 | 18.0 | 9.8  |
| ADKS 40021T   | 2-5/8 ODF   | (4) F-100 Filter       | 102.0                                                                                      | 64.0 | 43.0 | 27.0 | 14.0 | 99.0         | 64.0 | 43.0 | 28.0 | 15.0 |
| ADKS 30013T   | 1-5/8 ODF   | (3) 100 cu in Core     | 30.0                                                                                       | 19.0 | 12.0 | 7.7  | 4.1  | 29.0         | 19.0 | 13.0 | 8.0  | 4.3  |
| ADKS 30017T   | 2-1/8 ODF   | (3) 100 cu in Core     | 47.0                                                                                       | 30.0 | 20.0 | 12.0 | 6.4  | 46.0         | 30.0 | 20.0 | 13.0 | 6.8  |
| ADKS 40017T   | 2-1/8 ODF   | (4) 100 cu in Core     | 51.0                                                                                       | 32.0 | 22.0 | 13.0 | 7.0  | 49.0         | 32.0 | 22.0 | 14.0 | 7.4  |
| ADKS 40021T   | 2-5/8 ODF   | (4) 100 cu in Core     | 74.0                                                                                       | 47.0 | 31.0 | 19.0 | 10.0 | 72.0         | 47.0 | 32.0 | 20.0 | 11.0 |
| BTAS-27 S-V   | 7/8 ODF     | A2F Filter             | 7.4                                                                                        | 4.6  | 3.1  | 1.8  | 0.9  | 7.2          | 4.6  | 3.1  | 1.9  | 1.0  |
| BTAS-39 S-V   | 1-1/8 ODF   | A3F Filter             | 11.0                                                                                       | 7.0  | 4.7  | 2.8  | 1.4  | 11.0         | 7.0  | 4.7  | 2.9  | 1.5  |
| BTAS-311 S-V  | 1-3/8 ODF   | A3F Filter             | 12.0                                                                                       | 7.8  | 5.2  | 3.1  | 1.6  | 12.0         | 7.8  | 5.2  | 3.2  | 1.7  |
| BTAS-313 S-V  | 1-5/8 ODF   | A3F Filter             | 20.0                                                                                       | 12.0 | 8.2  | 5.0  | 2.5  | 19.0         | 12.0 | 8.3  | 5.2  | 2.7  |
| BTAS-317 S-V  | 2-1/8 ODF   | A3F Filter             | 25.0                                                                                       | 15.0 | 10.0 | 6.1  | 3.1  | 24.0         | 15.0 | 10.0 | 6.3  | 3.3  |
| BTAS-411 S-V  | 1-3/8 ODF   | A4F Filter             | 27.0                                                                                       | 16.0 | 11.0 | 6.6  | 3.4  | 26.0         | 16.0 | 11.0 | 6.8  | 3.6  |
| BTAS-413 S-V  | 1-5/8 ODF   | A4F Filter             | 32.0                                                                                       | 20.0 | 13.0 | 8.1  | 4.1  | 31.0         | 20.0 | 14.0 | 8.4  | 4.4  |
| BTAS-417 S-V  | 2-1/8 ODF   | A4F Filter             | 44.0                                                                                       | 28.0 | 18.0 | 11.0 | 5.7  | 43.0         | 28.0 | 19.0 | 12.0 | 6.0  |
| BTAS-421 S-V  | 2-5/8 ODF   | A4F Filter             | 54.0                                                                                       | 34.0 | 23.0 | 14.0 | 6.9  | 52.0         | 34.0 | 23.0 | 14.0 | 7.3  |
| BTAS-517 S-V  | 2-1/8 ODF   | A5F Filter             | 54.0                                                                                       | 33.0 | 22.0 | 13.0 | 6.8  | 52.0         | 33.0 | 22.0 | 14.0 | 7.2  |
| BTAS-521 S-V  | 2-5/8 ODF   | A5F Filter             | 70.0                                                                                       | 44.0 | 29.0 | 18.0 | 9.0  | 68.0         | 44.0 | 29.0 | 18.0 | 9.6  |
| BTAS-525 S-V  | 3-1/8 ODF   | A5F Filter             | 87.0                                                                                       | 54.0 | 36.0 | 22.0 | 11.0 | 84.0         | 54.0 | 36.0 | 23.0 | 12.0 |
| BTAS-25 S-V   | 5/8 ODF     | A2F-D Filter Drier     | 3.9                                                                                        | 2.4  | 1.6  | 1.0  | 0.5  | 3.8          | 2.4  | 1.6  | 1.0  | 0.5  |
| BTAS-27 S-V   | 7/8 ODF     | A2F-D Filter Drier     | 6.3                                                                                        | 3.9  | 2.6  | 1.5  | 0.8  | 6.1          | 3.9  | 2.6  | 1.6  | 0.9  |
| BTAS-39 S-V   | 1-1/8 ODF   | A3F-D Filter Drier     | 8.1                                                                                        | 5.1  | 3.4  | 2.0  | 1.0  | 7.9          | 5.1  | 3.4  | 2.1  | 1.1  |
| BTAS-311 S-V  | 1-3/8 ODF   | A3F-D Filter Drier     | 11.0                                                                                       | 7.1  | 4.8  | 2.9  | 1.5  | 11.0         | 7.1  | 4.8  | 3.0  | 1.6  |
| BTAS-313 S-V  | 1-5/8 ODF   | A3F-D Filter Drier     | 16.0                                                                                       | 10.0 | 6.7  | 4.1  | 2.1  | 16.0         | 10.0 | 6.8  | 4.2  | 2.2  |
| BTAS-317 S-V  | 2-1/8 ODF   | A3F-D Filter Drier     | 19.0                                                                                       | 12.0 | 7.9  | 4.8  | 2.4  | 19.0         | 12.0 | 8.0  | 5.0  | 2.6  |
| BTAS-411 S-V  | 1-3/8 ODF   | A4F-D Filter Drier     | 24.0                                                                                       | 15.0 | 10.0 | 5.9  | 3.0  | 23.0         | 15.0 | 10.0 | 6.1  | 3.2  |
| BTAS-413 S-V  | 1-5/8 ODF   | A4F-D Filter Drier     | 25.0                                                                                       | 15.0 | 10.0 | 6.1  | 3.1  | 24.0         | 15.0 | 10.0 | 6.3  | 3.3  |
| BTAS-417 S-V  | 2-1/8 ODF   | A4F-D Filter Drier     | 36.0                                                                                       | 22.0 | 15.0 | 9.0  | 4.6  | 35.0         | 22.0 | 15.0 | 9.3  | 4.9  |
| BTAS-421 S-V  | 2-5/8 ODF   | A4F-D Filter Drier     | 37.0                                                                                       | 23.0 | 15.0 | 9.2  | 4.7  | 36.0         | 23.0 | 15.0 | 10.0 | 5.0  |
| BTAS-517 S-V  | 2-1/8 ODF   | A5F-D Filter Drier     | 42.0                                                                                       | 27.0 | 18.0 | 11.0 | 4.7  | 41.0         | 27.0 | 18.0 | 11.0 | 5.0  |
| BTAS-521 S-V  | 2-5/8 ODF   | A5F-D Filter Drier     | 52.0                                                                                       | 32.0 | 22.0 | 13.0 | 6.6  | 50.0         | 32.0 | 22.0 | 13.0 | 7.0  |
| BTAS-525 S-V  | 3-1/8 ODF   | A5F-D Filter Drier     | 61.0                                                                                       | 38.0 | 25.0 | 15.0 | 7.8  | 59.0         | 38.0 | 25.0 | 16.0 | 8.3  |
| STAS-489 S-V  | 1-1/8 ODF   | (1) F-48 Filter        | 21.0                                                                                       | 12.0 | 8.0  | 5.0  | 3.0  | 20.0         | 12.0 | 8.0  | 5.0  | 3.0  |
| STAS-4811 S-V | 1-3/8 ODF   | (1) F-48 Filter        | 15.0                                                                                       | 15.0 | 10.0 | 6.0  | 4.0  | 15.0         | 15.0 | 10.0 | 6.0  | 4.0  |
| STAS-4813 S-V | 1-5/8 ODF   | (1) F-48 Filter        | 31.0                                                                                       | 18.0 | 11.0 | 7.0  | 5.0  | 30.0         | 18.0 | 11.0 | 7.0  | 5.0  |
| STAS-4817 S-V | 2-1/8 ODF   | (1) F-48 Filter        | 41.0                                                                                       | 25.0 | 15.0 | 9.0  | 7.0  | 40.0         | 25.0 | 15.0 | 9.0  | 7.0  |
| STAS-4821 S-V | 2-5/8 ODF   | (1) F-48 Filter        | 57.0                                                                                       | 30.0 | 20.0 | 12.0 | 8.0  | 55.0         | 30.0 | 20.0 | 12.0 | 8.0  |
| STAS-9617 S-V | 2-1/8 ODF   | (2) F-48 Filter        | 41.0                                                                                       | 25.0 | 15.0 | 10.0 | 7.0  | 40.0         | 25.0 | 15.0 | 10.0 | 7.0  |
| STAS-9621 S-V | 2-5/8 ODF   | (2) F-48 Filter        | 62.0                                                                                       | 35.0 | 25.0 | 14.0 | 9.0  | 60.0         | 35.0 | 25.0 | 15.0 | 10.0 |
| STAS-9625 S-V | 3-1/8 ODF   | (2) F-48 Filter        | 73.0                                                                                       | 59.0 | 47.0 | 34.0 | 19.0 | 80.0         | 63.0 | 50.0 | 35.0 | 18.0 |
| STAS-489 S-V  | 1-1/8 ODF   | (1) 48 cu in Core      | 13.0                                                                                       | 8.0  | 6.0  | 4.0  | 2.0  | 13.0         | 8.0  | 6.0  | 4.0  | 2.0  |
| STAS-4811 S-V | 1-3/8 ODF   | (1) 48 cu in Core      | 18.0                                                                                       | 10.0 | 6.0  | 4.0  | 3.0  | 17.0         | 10.0 | 6.0  | 4.0  | 3.0  |
| STAS-4813 S-V | 1-5/8 ODF   | (1) 48 cu in Core      | 21.0                                                                                       | 12.0 | 7.0  | 5.0  | 4.0  | 20.0         | 12.0 | 7.0  | 5.0  | 4.0  |
| STAS-4817 S-V | 2-1/8 ODF   | (1) 48 cu in Core      | 28.0                                                                                       | 17.0 | 10.0 | 6.0  | 5.0  | 27.0         | 17.0 | 10.0 | 6.0  | 5.0  |
| STAS-4821 S-V | 2-5/8 ODF   | (1) 48 cu in Core      | 38.0                                                                                       | 20.0 | 13.0 | 8.0  | 6.0  | 37.0         | 20.0 | 13.0 | 8.0  | 6.0  |
| STAS-9617 S-V | 2-1/8 ODF   | (2) 48 cu in Core      | 28.0                                                                                       | 17.0 | 11.0 | 7.0  | 5.0  | 27.0         | 17.0 | 11.0 | 7.0  | 5.0  |
| STAS-9621 S-V | 2-5/8 ODF   | (2) 48 cu in Core      | 41.0                                                                                       | 23.0 | 17.0 | 10.0 | 7.0  | 40.0         | 23.0 | 17.0 | 10.0 | 7.0  |
| STAS-9625 S-V | 3-1/8 ODF   | (2) 48 cu in Core      | 27.0                                                                                       | 22.0 | 18.0 | 13.0 | 6.7  | 30.0         | 24.0 | 18.0 | 13.0 | 6.5  |

<sup>1</sup> All ratings in accordance with ARI Standard 730-04.

<sup>2</sup> Example: 1.0 tons x 3.5 = 3.5 kW

## A-AS Suction Accumulator Capacity Tables in Tons of Refrigeration

| Description | R-134a |       |      |       |       | R-404A/R-507 |       |       |       |       |
|-------------|--------|-------|------|-------|-------|--------------|-------|-------|-------|-------|
|             | -40°F  | -20°F | 0°F  | +20°F | +40°F | -40°F        | -20°F | 0°F   | +20°F | +40°F |
| A-AS 3 84   | 0.20   | 0.30  | 0.60 | 0.80  | 1.20  | 0.20         | 0.40  | 0.80  | 1.00  | 1.30  |
| A-AS 3 105  | 0.30   | 0.50  | 0.80 | 1.20  | 1.70  | 0.40         | 0.60  | 1.20  | 1.60  | 2.00  |
| A-AS 3 125  | 0.30   | 0.50  | 0.80 | 1.20  | 1.70  | 0.40         | 0.60  | 1.20  | 1.60  | 2.00  |
| A-AS 3 126  | 0.40   | 0.60  | 1.00 | 1.60  | 2.30  | 0.40         | 0.70  | 1.50  | 2.00  | 2.60  |
| A-AS 3 145  | 0.30   | 0.50  | 0.80 | 1.20  | 1.70  | 0.40         | 0.60  | 1.20  | 1.60  | 2.00  |
| A-AS 3 146  | 0.40   | 0.60  | 1.00 | 1.60  | 2.30  | 0.40         | 0.70  | 1.50  | 2.00  | 2.60  |
| A-AS 4 64   | 0.20   | 0.30  | 0.60 | 0.80  | 1.20  | 0.20         | 0.40  | 0.80  | 1.00  | 1.30  |
| A-AS 4 65   | 0.30   | 0.50  | 0.80 | 1.20  | 1.70  | 0.40         | 0.60  | 1.20  | 1.60  | 2.00  |
| A-AS 4 105  | 0.30   | 0.50  | 0.80 | 1.20  | 1.70  | 0.40         | 0.60  | 1.20  | 1.60  | 2.00  |
| A-AS 4 106  | 0.40   | 0.60  | 1.00 | 1.60  | 2.30  | 0.40         | 0.70  | 1.50  | 2.00  | 2.60  |
| A-AS 5 96   | 0.40   | 0.60  | 1.00 | 1.60  | 2.30  | 0.40         | 0.70  | 1.50  | 2.00  | 2.60  |
| A-AS 5 97   | 0.70   | 1.10  | 1.80 | 2.80  | 4.00  | 0.80         | 1.30  | 2.70  | 3.60  | 4.60  |
| A-AS 5 126  | 0.40   | 0.60  | 1.00 | 1.60  | 2.30  | 0.40         | 0.70  | 1.50  | 2.00  | 2.60  |
| A-AS 5 127  | 0.70   | 1.10  | 1.80 | 2.80  | 4.00  | 0.80         | 1.30  | 2.70  | 3.60  | 4.60  |
| A-AS 5 137  | 0.70   | 1.10  | 1.80 | 2.80  | 4.00  | 0.80         | 1.30  | 2.70  | 3.60  | 4.60  |
| A-AS 5 139  | 1.30   | 2.00  | 3.10 | 5.00  | 7.20  | 1.40         | 2.10  | 4.40  | 5.90  | 7.60  |
| A-AS 5 179  | 1.90   | 3.00  | 3.10 | 5.00  | 7.20  | 1.40         | 2.10  | 4.40  | 5.90  | 7.60  |
| A-AS 5 1711 | 1.90   | 3.00  | 4.60 | 7.30  | 10.70 | 2.20         | 3.40  | 7.20  | 9.60  | 12.20 |
| A-AS 6 117  | 0.70   | 1.10  | 1.80 | 2.80  | 4.00  | 0.80         | 1.30  | 2.70  | 3.60  | 4.60  |
| A-AS 6 137  | 0.70   | 1.10  | 1.80 | 2.80  | 4.00  | 0.80         | 1.30  | 2.70  | 3.60  | 4.60  |
| A-AS 6 139  | 1.30   | 2.00  | 3.10 | 5.00  | 7.20  | 1.40         | 2.10  | 4.40  | 5.90  | 7.60  |
| A-AS 6 1411 | 1.90   | 3.00  | 4.60 | 7.30  | 10.70 | 2.20         | 3.40  | 7.20  | 9.60  | 12.20 |
| A-AS 6 1713 | 3.00   | 4.80  | 7.30 | 11.70 | 17.00 | 3.30         | 5.10  | 10.70 | 14.20 | 18.20 |
| A-AS 6 2013 | 3.00   | 4.80  | 7.30 | 11.70 | 17.00 | 3.30         | 5.10  | 10.70 | 14.20 | 18.20 |
| A-AS 6 2513 | 3.00   | 4.80  | 7.30 | 11.70 | 17.00 | 3.30         | 5.10  | 10.70 | 14.20 | 18.20 |

## System Protector Capacity Tables

| Description | R-22  |       |       |       |       | R-502 |       |       |       |       |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|             | -40°F | -20°F | 0°F   | +20°F | +40°F | -40°F | -20°F | 0°F   | +20°F | +40°F |
| A-AS 3 84   | 0.40  | 0.60  | 0.90  | 1.40  | 2.00  | 0.30  | 0.50  | 0.80  | 1.30  | 1.80  |
| A-AS 3 105  | 0.50  | 0.80  | 1.40  | 2.10  | 3.00  | 0.50  | 0.80  | 1.20  | 1.90  | 2.70  |
| A-AS 3 125  | 0.50  | 0.80  | 1.40  | 2.10  | 3.00  | 0.50  | 0.80  | 1.20  | 1.90  | 2.70  |
| A-AS 3 126  | 0.72  | 1.10  | 1.80  | 2.80  | 4.00  | 0.60  | 1.00  | 1.60  | 2.50  | 3.50  |
| A-AS 3 145  | 0.50  | 0.80  | 1.40  | 2.10  | 3.00  | 0.60  | 0.80  | 1.20  | 1.90  | 2.70  |
| A-AS 3 146  | 0.72  | 1.10  | 1.80  | 2.80  | 4.00  | 0.60  | 1.00  | 1.60  | 2.50  | 3.50  |
| A-AS 4 64   | 0.40  | 0.60  | 0.90  | 1.40  | 2.00  | 0.30  | 0.50  | 0.80  | 1.30  | 1.80  |
| A-AS 4 65   | 0.50  | 0.80  | 1.40  | 2.10  | 3.00  | 0.50  | 0.80  | 1.20  | 1.90  | 2.70  |
| A-AS 4 105  | 0.50  | 0.80  | 1.40  | 2.10  | 3.00  | 0.50  | 0.80  | 1.20  | 1.90  | 2.70  |
| A-AS 4 106  | 0.72  | 1.10  | 1.80  | 2.80  | 4.00  | 0.60  | 1.00  | 1.60  | 2.50  | 3.50  |
| A-AS 5 96   | 0.72  | 1.10  | 1.80  | 2.80  | 4.00  | 0.60  | 1.00  | 1.60  | 2.50  | 3.50  |
| A-AS 5 97   | 1.30  | 2.00  | 3.30  | 5.10  | 7.30  | 1.10  | 1.70  | 2.80  | 4.30  | 6.20  |
| A-AS 5 126  | 0.72  | 1.10  | 1.80  | 2.80  | 4.00  | 0.60  | 1.00  | 1.60  | 2.50  | 3.50  |
| A-AS 5 127  | 1.30  | 2.00  | 3.30  | 5.10  | 7.30  | 1.10  | 1.70  | 2.80  | 4.30  | 6.20  |
| A-AS 5 137  | 1.30  | 2.00  | 3.30  | 5.10  | 7.30  | 1.10  | 1.70  | 2.80  | 4.30  | 6.20  |
| A-AS 5 139  | 2.10  | 3.30  | 5.30  | 8.30  | 11.80 | 1.90  | 2.90  | 4.60  | 7.10  | 10.20 |
| A-AS 5 179  | 2.10  | 3.30  | 5.30  | 8.30  | 11.80 | 1.90  | 2.90  | 4.60  | 7.10  | 10.20 |
| A-AS 5 1711 | 3.40  | 5.30  | 8.50  | 13.20 | 18.80 | 3.00  | 4.60  | 7.40  | 11.60 | 16.50 |
| A-AS 6 117  | 1.30  | 2.00  | 3.30  | 5.10  | 7.30  | 1.10  | 1.70  | 2.80  | 4.30  | 6.20  |
| A-AS 6 137  | 1.30  | 2.00  | 3.30  | 5.10  | 7.30  | 1.10  | 1.70  | 2.80  | 4.30  | 6.20  |
| A-AS 6 139  | 2.10  | 3.30  | 5.30  | 8.30  | 11.80 | 1.90  | 2.90  | 4.60  | 7.10  | 10.20 |
| A-AS 6 1411 | 3.40  | 5.30  | 8.50  | 13.20 | 18.80 | 3.00  | 4.60  | 7.40  | 11.60 | 16.50 |
| A-AS 6 1713 | 5.10  | 8.00  | 12.80 | 20.00 | 28.50 | 4.40  | 6.90  | 11.00 | 17.20 | 24.50 |
| A-AS 6 2013 | 5.10  | 8.00  | 12.80 | 20.00 | 28.50 | 4.40  | 6.90  | 11.00 | 17.20 | 24.50 |
| A-AS 6 2513 |       |       | 12.80 | 20.80 | 28.50 | 4.40  | 6.90  | 11.00 | 17.20 | 24.50 |

The maximum capacity in tons recommended is based on a pressure drop through the accumulator equivalent to 1.0°F.

- Note:**
- 1) The minimum system capacity in tons must be no less than 15% of the stated capacity in order to ensure a positive return of oil.
  - 2) All of the data is based on tons of refrigeration and is not related to horsepower.
  - 3) Minimum evaporator temperature of -40°F. Minimum temperature of the suction gas through the accumulator is 12°F.

## How to Calculate DCFM Charge

Example:

System: 10 tons, R-22

Evaporator Temperature: -32C/-27F

Condensing Temperature: 46C/115F

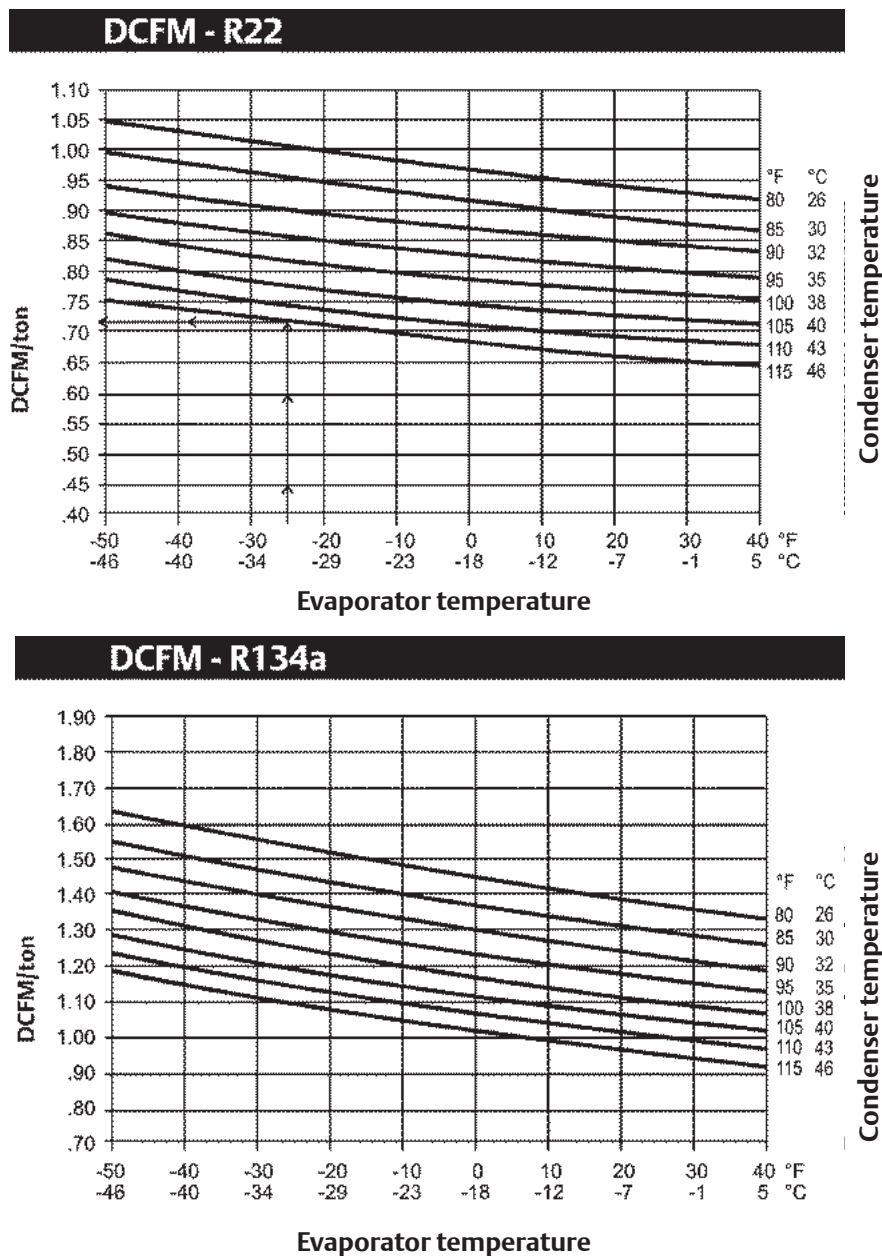
In the DCFM graphs below for R-22, follow the -32C/-27F evaporator temperature line to the intersection with the 46C/115F condensing temperature line. Extend a horizontal line from this point into the DCFM / ton line. Then, multiply the DCFM / ton factor by the capacity in tons provided to calculate the total compressor charge (DCFM).

Example:

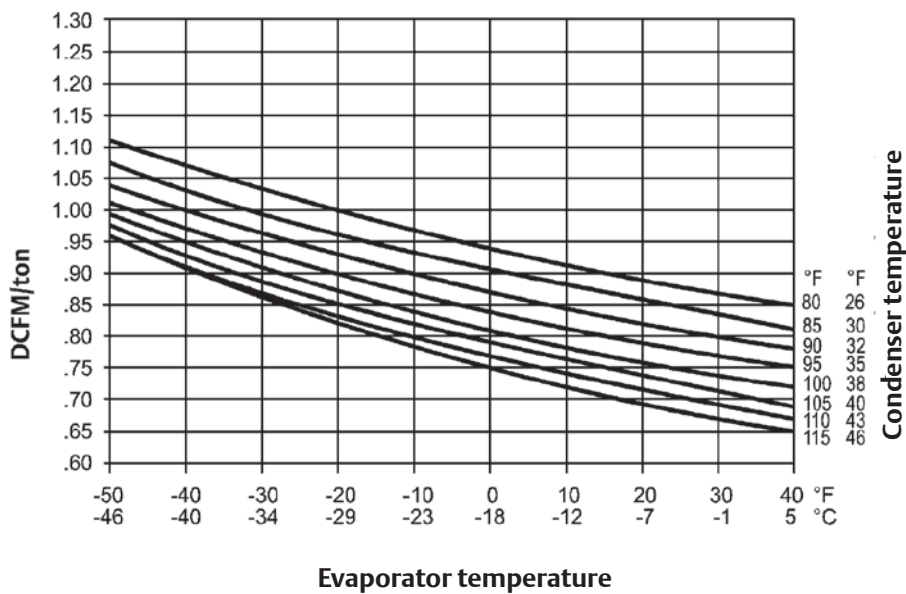
$$0.72 \frac{\text{DCFM}}{\text{ton}} \times 10 \text{ ton} = 7.2 \text{ CFM}$$

Oil Separator selected: AF-58889

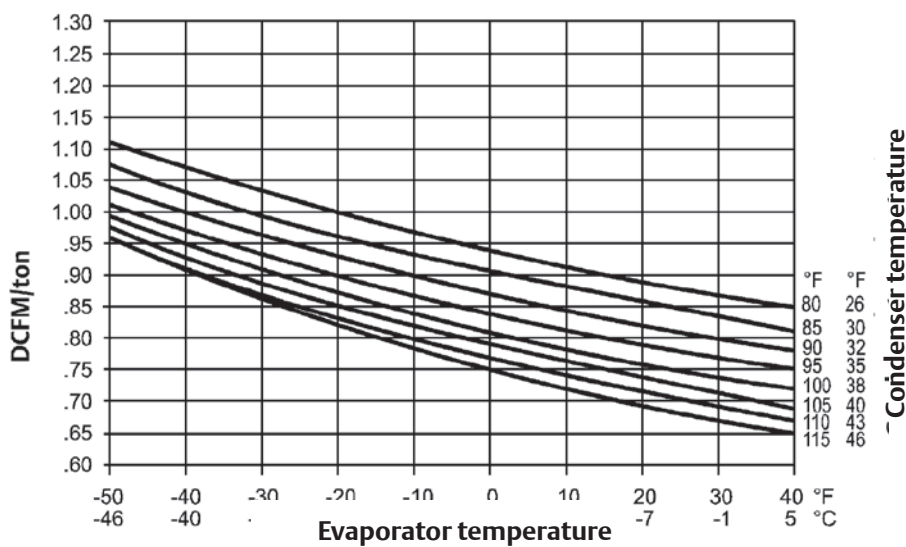
DCFM = Cubic feet per minute



**DCFm - R404A/R507**



**DCFm - R404A/R507**



# High Efficiency Centrifugal Oil Separator

Oil Controls

The High Efficiency Centrifugal Oil Separator is used in ultra-low temperature systems with long refrigerant lines or inherent oil return problems. It is also used on multiple compressor racks for supermarkets and air conditioning systems for use with CFCs, HCFCs, HFCs, and their lubricants. Suitable for use with R-410A.

## Features

- Internal oil collection screen
- Hermetic welded or accessible bolted flange construction
- Corrosion resistant epoxy powder paint
- High efficiency (99%) centrifugal separation
- R-410A pressure rated

## Nomenclature example: A-FC 8241717H

| A      | F                         | C           | 8                | 24             | 17                             | 17                              | H                                   |
|--------|---------------------------|-------------|------------------|----------------|--------------------------------|---------------------------------|-------------------------------------|
| Series | F = Flanged<br>W = Welded | Centrifugal | Diameter<br>(in) | Length<br>(in) | Inlet<br>Connection<br>in 1/8" | Outlet<br>Connection<br>in 1/8" | 5" Legs<br>Standard<br>H = 10" Legs |



## Specifications

- Maximum working pressure: 450 psi - flanged models\*  
600 psi - welded models\*
- UL/CUL file number: SA8547

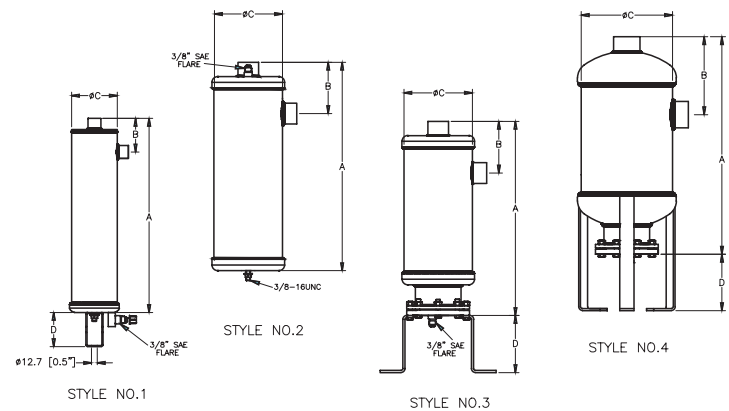
## Replacement Parts

| PCN    | Part                | Contains                                         |
|--------|---------------------|--------------------------------------------------|
| 065847 | Float Assembly Kit* | Flange w/intergral float ass'y and flange gasket |
| 065849 | Gasket Kit          | Flange gasket                                    |

\*Repairs AC & R series S1900 Standard and 5200 Helical Oil Separators

## Ordering Information

| PCN     | Description    | Solder Connection Size | Dimensions |      |       |       |
|---------|----------------|------------------------|------------|------|-------|-------|
|         |                |                        | A          | B    | C     | D     |
| 065895* | A-WC 41777     | 7/8                    | 17.01      | 2.95 | 4.00  | 2.95  |
| 065896* | A-WC 41999     | 1 1/8                  | 19.02      | 3.07 |       |       |
| 066094* | A-WC 6181111   | 1 3/8                  | 18.26      | 4.05 |       |       |
| 066095* | A-WC 6181313   | 1 5/8                  |            | 4.63 |       |       |
| 066096* | A-WC 6181717   | 2 1/8                  | 18.38      | 4.76 |       |       |
| 065930  | A-FC 6221111   | 1 3/8                  | 17.00      | 3.94 | 6.0   | 5.00  |
| 065931  | A-FC 6221111H  |                        |            |      |       | 10.00 |
| 065362  | A-FC 6221313   | 1 5/8                  | 17.00      | 4.53 | 6.0   | 5.00  |
| 065932  | A-FC 6221313H  |                        |            |      |       | 10.00 |
| 065933  | A-FC 6221717   | 2 1/8                  | 17.13      | 4.65 | 8.0   | 5.00  |
| 065934  | A-FC 6221717H  |                        |            |      |       | 10.00 |
| 065276  | A-FC 8241717   |                        |            |      |       | 5.00  |
| 065935  | A-FC 8241717H  |                        |            |      |       | 10.00 |
| 065936  | A-FC 10272121  | 2 5/8                  | 22.10      | 6.11 | 10.00 | 5.00  |
| 065937  | A-FC 10272121H |                        |            |      |       | 10.00 |
| 065938  | A-FC 12302525H | 3 1/8                  | 25.10      | 7.05 | 12.00 |       |



## Capacity Table

| Description    | Solder Connection Size (ODF) | Syle Number | Shell O.D. | Maximum Capacity of Refrigeration at Evaporator Temperature |     |      |     |           |     |      |     |            |     |      |       |               |     |      |       | Discharge Maximum CFM | Oil Pre-Charge Amount (oz.) | Replaceable Float PCN |        |       |
|----------------|------------------------------|-------------|------------|-------------------------------------------------------------|-----|------|-----|-----------|-----|------|-----|------------|-----|------|-------|---------------|-----|------|-------|-----------------------|-----------------------------|-----------------------|--------|-------|
|                |                              |             |            | R-134a                                                      |     |      |     | R-22/407C |     |      |     | R-404A/507 |     |      |       | R-410A        |     |      |       |                       |                             |                       |        |       |
|                |                              |             |            | -40F                                                        |     | +40F |     | -40F      |     | +40F |     | -40F       |     | +40F |       | -40F          |     | +40F |       |                       |                             |                       |        |       |
|                |                              |             |            | Tons                                                        | kW  | Tons | kW  | Tons      | kW  | Tons | kW  | Tons       | kW  | Tons | kW    | Tons          | kW  | Tons | kW    |                       |                             |                       |        |       |
| A-WC 41777     | 7/8"                         | 1           | 4"         | 4.5                                                         | 16  | 5.6  | 19  | 7.1       | 25  | 8    | 28  | 6.3        | 22  | 8.3  | 29    | 11            | 38  | 12   | 43    | 6.74                  | 14                          | N/A                   |        |       |
| A-WC 41999     | 1 1/8"                       |             |            | 5.3                                                         | 19  | 6.5  | 23  | 8.3       | 29  | 9.4  | 33  | 7.4        | 26  | 9.7  | 34    | 13            | 45  | 14   | 50    | 11.55                 |                             |                       |        |       |
| A-WC 6181111   | 1 3/8"                       | 2           | 6"         | 8.5                                                         | 30  | 10   | 37  | 13        | 46  | 15   | 53  | 12         | 41  | 16   | 54    | 20            | 71  | 23   | 80    | 15.94                 | 25                          |                       | 065847 |       |
| A-WC 6181313   | 1 5/8"                       |             | 6"         | 12                                                          | 42  | 15   | 51  | 19        | 65  | 21   | 74  | 16         | 58  | 22   | 76    | 28            | 100 | 32   | 112   | 24.42                 |                             |                       |        |       |
| A-WC 6181717   | 2 1/8"                       |             | 6"         | 14                                                          | 48  | 17   | 58  | 21        | 74  | 24   | 84  | 19         | 66  | 25   | 87    | 32            | 114 | 37   | 129   | 31.26                 |                             |                       |        |       |
| A-FC 6221111   | 1 3/8"                       | 3           | 6"         | 12                                                          | 42  | 15   | 51  | 19        | 65  | 21   | 74  | 16         | 58  | 22   | 76    | Not Available |     |      |       | 15.94                 |                             | N/A                   |        |       |
| A-FC 6221111H  |                              |             |            |                                                             |     |      |     |           |     |      |     |            |     |      |       |               |     |      |       | 15.94                 |                             |                       |        |       |
| A-FC 6221313   | 1 5/8"                       |             |            | 14                                                          | 48  | 17   | 58  | 21        | 74  | 24   | 84  | 19         | 66  | 25   | 87    |               |     |      |       | 24.42                 |                             |                       |        |       |
| A-FC 6221313H  |                              |             |            |                                                             |     |      |     |           |     |      |     |            |     |      | 24.42 |               |     |      |       |                       |                             |                       |        |       |
| A-FC 6221717   | 2 1/8"                       |             |            | 14                                                          | 50  | 17   | 61  | 22        | 77  | 25   | 88  | 20         | 69  | 26   | 91    |               |     |      |       | 31.26                 |                             |                       |        |       |
| A-FC 6221717H  |                              |             |            |                                                             |     |      |     |           |     |      |     |            |     |      | 31.26 |               |     |      |       |                       |                             |                       |        |       |
| A-FC 8241717   | 4                            | 8"          |            |                                                             |     |      |     |           |     |      |     |            |     |      |       |               |     |      |       |                       |                             |                       |        | 38.06 |
| A-FC 8241717H  |                              |             | 23         | 80                                                          | 28  | 97   | 35  | 124       | 40  | 140  | 31  | 110        | 41  | 145  | 38.06 |               |     |      |       |                       |                             |                       |        |       |
| A-FC 10272121  | 2 5/8"                       | 10"         |            |                                                             |     |      |     |           |     |      |     |            |     |      |       |               |     |      |       |                       |                             |                       |        | 66.05 |
| A-FC 10272121H |                              |             | 45         | 159                                                         | 56  | 195  | 71  | 248       | 80  | 280  | 63  | 220        | 83  | 290  | 66.05 |               |     |      |       |                       |                             |                       |        |       |
| A-FC 12302525H | 3 1/8"                       |             | 12"        | 72                                                          | 253 | 88   | 309 | 112       | 393 | 127  | 445 | 100        | 349 | 131  | 460   |               |     |      | 88.87 |                       | N/A                         |                       |        |       |

The A-F is used for multiple compressor racks in supermarkets and air conditioning systems for use with HCFCs, HFCs and their lubricants.

## Features

- Hermetic welded or accessible bolted flange construction
- Solid copper connections
- Corrosion resistant epoxy powder paint

## Nomenclature example: AF 5582 4

|        |             |              |                              |
|--------|-------------|--------------|------------------------------|
| A      | F           | 5582         | 4                            |
| Series | F = Flanged | Model Number | Connection Size<br>(in 1/8") |



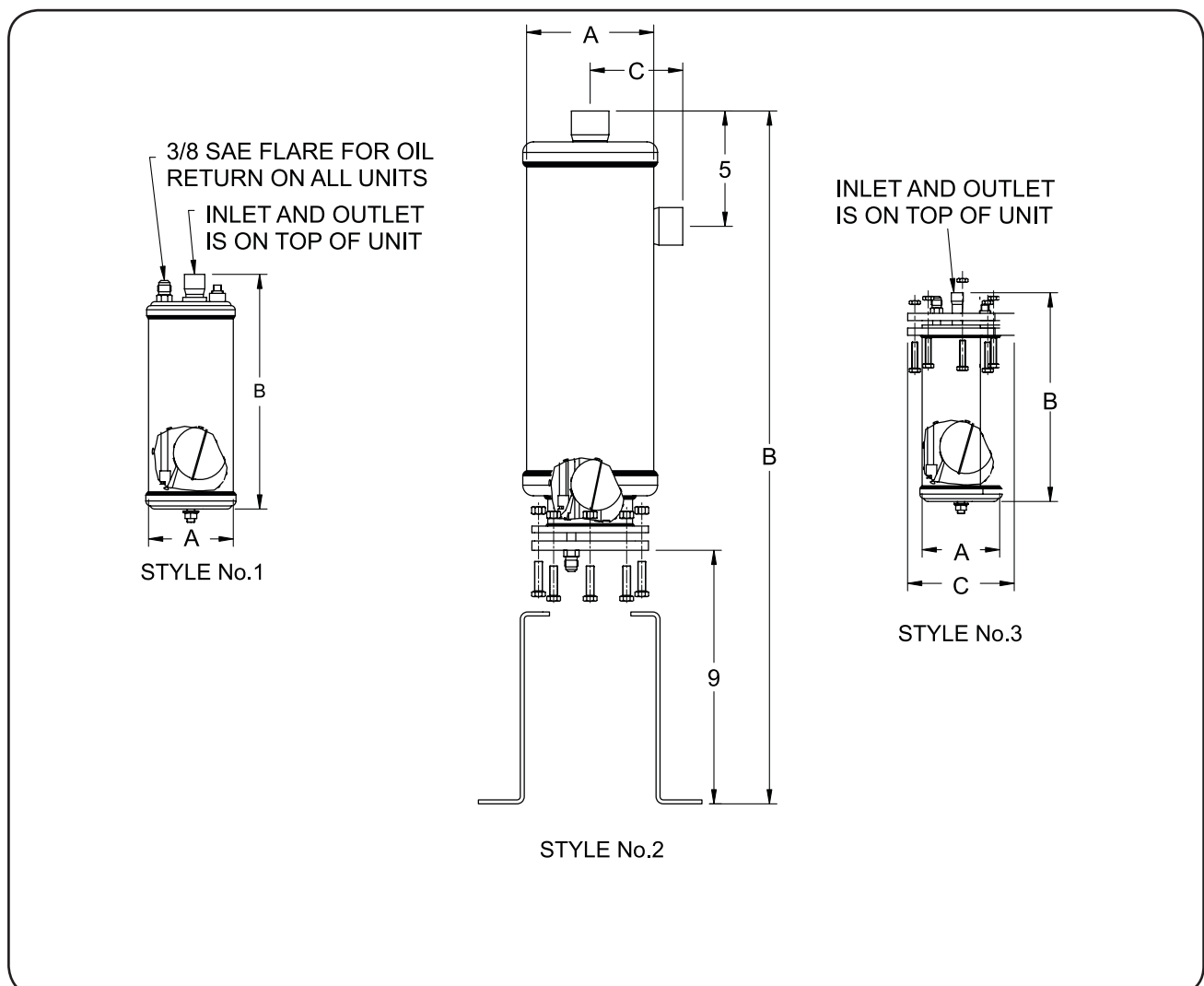
A-F Series

| Description |        | R-22/R-407 |      |          |       | R-134a |      |          |      | R-404A |      |          |       |
|-------------|--------|------------|------|----------|-------|--------|------|----------|------|--------|------|----------|-------|
| FLANGED     | PCN    | -40F/C     |      | 40F (4C) |       | -40F/C |      | 40F (4C) |      | -40F/C |      | 40F (4C) |       |
|             |        | Tons       | kW   | Tons     | kW    | Tons   | kW   | Tons     | kW   | Tons   | kW   | Tons     | kW    |
| A-F 58824   | 060877 | 1.5        | 5.3  | 2.0      | 7.1   | 1.0    | 3.5  | 1.8      | 6.2  | 1.5    | 5.3  | 2.0      | 7.0   |
| A-F 58855   | 060878 | 4.5        | 15.9 | 5.5      | 19.5  | 3.3    | 11.5 | 4.5      | 15.9 | 4.0    | 14.2 | 5.5      | 19.0  |
| A-F 58877   | 060879 | 7.0        | 24.8 | 8.0      | 28.3  | 4.8    | 16.8 | 6.5      | 23.0 | 6.5    | 23.0 | 8.5      | 30.0  |
| A-F 58889   | 060759 | 9.0        | 31.9 | 11.0     | 37.2  | 6.5    | 23.0 | 8.5      | 30.1 | 8.5    | 30.1 | 11.0     | 38.0  |
| A-F 589011  | 060760 | 11.5       | 40.7 | 14.0     | 47.8  | 8.0    | 28.3 | 11.5     | 40.7 | 10.5   | 37.2 | 14.0     | 49.0  |
| A-F 589213  | 060761 | 14.0       | 49.6 | 18.0     | 62.0  | 9.5    | 33.6 | 13.3     | 46.9 | 14.0   | 49.6 | 17.0     | 60.0  |
| A-F 579213  | 060875 | 16.0       | 56.6 | 18.0     | 63.7  | 11.8   | 41.6 | 16.0     | 56.6 | 17.5   | 62.0 | 23.0     | 81.0  |
| A-F 579417  | 060876 | 25.0       | 88.5 | 30.0     | 106.0 | 18.0   | 63.7 | 25.6     | 89.4 | 26.0   | 92.0 | 34.0     | 121.0 |

\*See replacement parts page. Repair kits for style 2 only.

| Description | Style No. | Connection Size (inch) | Dimensions (mm) |       |       | Oil Pre-charge Amount (0%) |
|-------------|-----------|------------------------|-----------------|-------|-------|----------------------------|
|             |           |                        | A               | B     | C     |                            |
| A-F 58824   | 2.0       | 1/2 ODF                | 101.6           | 266.7 | 139.7 | 500.0                      |
| A-F 58855   |           | 5/8 ODF                |                 | 381.0 |       |                            |
| A-F 58877   |           | 7/8 ODF                |                 | 457.2 |       |                            |
| A-F 58889   |           | 1 1/8 ODF              |                 | 541.0 |       |                            |
| A-F 589011  |           | 1 3/8 ODF              |                 | 543.6 |       |                            |
| A-F 589213  |           | 1 5/8 ODF              |                 | 553.7 |       |                            |
| A-F 579213  | 1.0       | 1 5/8 ODF              | 152.4           | 510.5 | 111.8 | 600.0                      |
| A-F 579417  |           | 2 1/8 ODF              |                 | 515.6 | 116.8 |                            |

## Dimensional Drawing



The A-WZ is used for multiple compressor racks in supermarkets and air conditioning systems for use with HCFCs, HFCs and their lubricants. Suitable for use with R-410A.

## Features

- Hermetic welded construction
- Copper plated steel connections
- Corrosion resistant epoxy powder paint

## Specifications

- Maximum working pressure: 600 psi
- UL/CUL file number: SA8547
- CE marked per PED 97/23EC

## Nomenclature example: A-WZ 55824

| A      | WZ         | 5582         | 4                            |
|--------|------------|--------------|------------------------------|
| Series | W = Welded | Model Number | Connection Size<br>(in 1/8") |

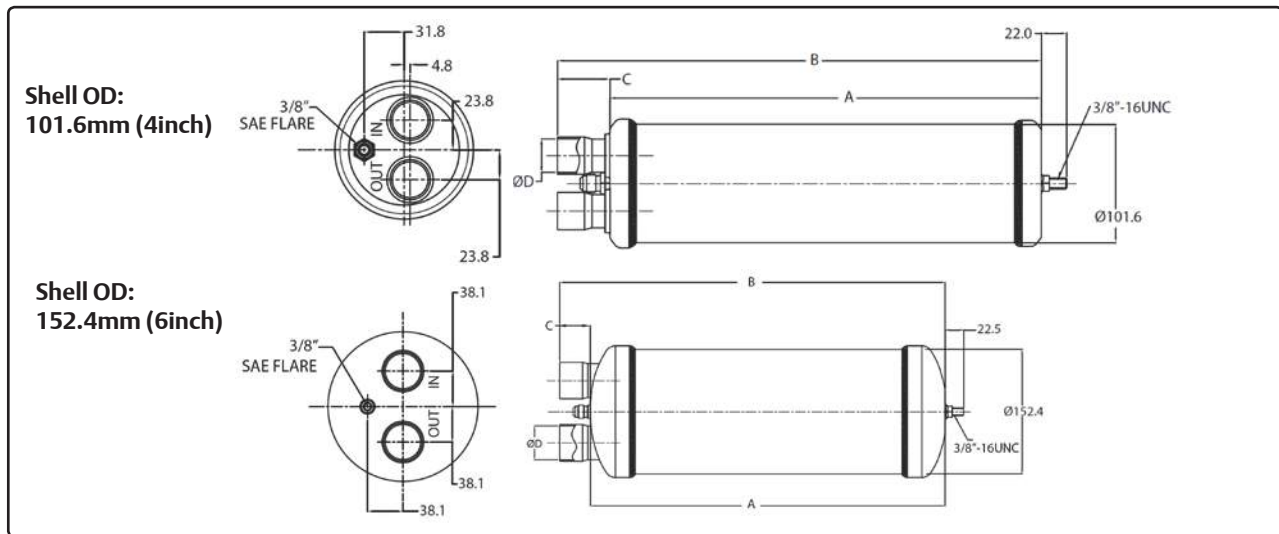


## Ordering Information and Capacity Table

| PCN    | Description | Solder Connection Size (ODF) (in) | Shell OD mm (in) | Length (mm) | Maximum Capacity of Refrigeration at Evaporator Temperature |      |          |      |             |      |          |       |        |      |          |       |        |      |          |      | Oil Pre-charge Amount (ml) |
|--------|-------------|-----------------------------------|------------------|-------------|-------------------------------------------------------------|------|----------|------|-------------|------|----------|-------|--------|------|----------|-------|--------|------|----------|------|----------------------------|
|        |             |                                   |                  |             | R-134a                                                      |      |          |      | R-22/R-407C |      |          |       | R-404A |      |          |       | R-410A |      |          |      |                            |
|        |             |                                   |                  |             | -40F/C                                                      |      | 40F (4C) |      | -40F/C      |      | 40F (4C) |       | -40F/C |      | 40F (4C) |       | -40F/C |      | 40F (4C) |      |                            |
|        |             |                                   |                  |             | Tons                                                        | kW   | Tons     | kW   | Tons        | kW   | Tons     | kW    | Tons   | kW   | Tons     | kW    | Tons   | kW   | Tons     | kW   |                            |
| 066666 | A-WZ 55824* | 1/2                               | 101.6 (4)        | 276.9       | 1.0                                                         | 3.5  | 1.8      | 6.2  | 1.5         | 5.3  | 2.0      | 7.1   | 1.5    | 5.3  | 2.0      | 7.0   | 2.7    | 9.5  | 3.1      | 10.9 | 500                        |
| 066667 | A-WZ 55855  | 5/8                               |                  | 338.0       | 3.3                                                         | 11.5 | 4.5      | 15.9 | 4.5         | 15.9 | 5.5      | 19.5  | 4.0    | 14.2 | 5.5      | 19.0  | 7.4    | 26.0 | 8.4      | 29.5 |                            |
| 066668 | A-WZ 55877  | 7/8                               |                  | 384.2       | 4.8                                                         | 16.8 | 6.5      | 23.0 | 7.0         | 24.8 | 8.0      | 28.3  | 6.5    | 23.0 | 8.5      | 30.0  | 11.0   | 38.7 | 12.0     | 42.2 |                            |
| 066669 | A-WZ 55889  | 1 1/8                             |                  | 415.8       | 6.5                                                         | 23.0 | 8.5      | 30.1 | 9.0         | 31.9 | 11.0     | 37.2  | 8.5    | 30.1 | 11.0     | 38.0  | 15.0   | 52.8 | 17.0     | 59.8 |                            |
| 066670 | A-WZ 559011 | 1 3/8                             |                  | 498.3       | 8.0                                                         | 28.3 | 11.5     | 40.7 | 11.5        | 40.7 | 14.0     | 47.8  | 10.5   | 37.2 | 14.0     | 49.0  | 19.0   | 66.8 | 21.0     | 73.9 |                            |
| 066671 | A-WZ 569011 | 1 3/8                             | 152.4 (6)        | 399.0       | 9.5                                                         | 33.4 | 13.7     | 48.2 | 13.0        | 45.8 | 14.0     | 49.8  | 11.0   | 38.7 | 19.0     | 66.9  | 19.0   | 66.8 | 21.0     | 73.9 | 750                        |
| 066672 | A-WZ 569213 | 1 5/8                             |                  | 469.2       | 18.0                                                        | 63.7 | 25.6     | 89.4 | 25.0        | 88.5 | 30.0     | 106.0 | 26.0   | 92.0 | 34.0     | 121.0 | 24.0   | 84.4 | 28.0     | 98.5 |                            |

\*Remark: This model inlet/outlet connector is pure copper tube.

## Dimensional Data



Unit: mm

| No | Shell OD | Model       | PCN    | A     | B     | C    | D      |
|----|----------|-------------|--------|-------|-------|------|--------|
| 1  | 4inch    | A-WZ 55824  | 066666 | 251.5 | 276.9 | 24.8 | 1/2"   |
| 2  |          | A-WZ 55855  | 066667 | 300.0 | 338.0 | 38.3 | 5/8"   |
| 3  |          | A-WZ 55877  | 066668 | 347.5 | 384.2 | 36.7 | 7/8"   |
| 4  |          | A-WZ 55889  | 066669 | 371.5 | 415.8 | 44.9 | 1 1/8" |
| 5  |          | A-WZ 559011 | 066670 | 451.7 | 498.3 | 47.8 | 1 3/8" |
| 6  | 6inch    | A-WZ 569011 | 066671 | 355.6 | 399.0 | 44.5 | 1 3/8" |
| 7  |          | A-WZ 569213 | 066672 | 431.8 | 469.2 | 38.1 | 1 5/8" |

The AOR oil reservoir is a holding vessel for stand-by oil necessary for the operation of commercial refrigeration systems. It is a direct replacement of popular competitive models.

### Features

- Two sight glasses with floating ball indicators - 2 gallon model
- Three sight glasses with floating ball indicators - 4 gallon model
- 3/8" flare rotolock valves on top and bottom
- Corrosion resistant epoxy powder paint finish
- Standard mounting stud 3/8 x 16 TPI

### Nomenclature example: AOR-3

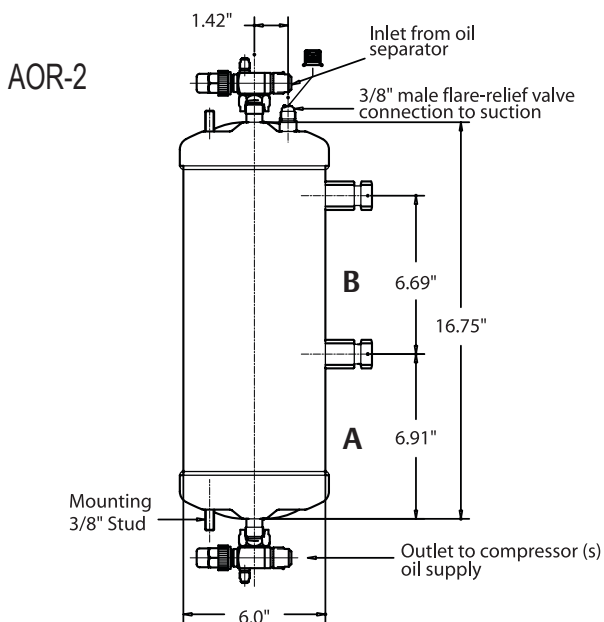
|            |          |
|------------|----------|
| <b>AOR</b> | <b>3</b> |
| Series     | Gallons  |



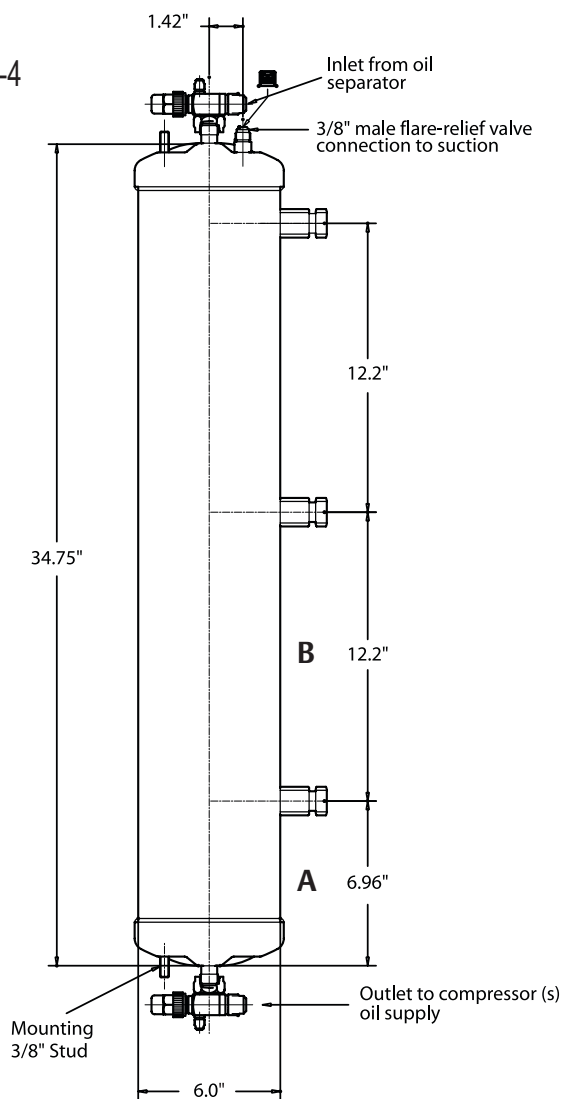
### Specifications

- Maximum working pressure: 450 psi
- UL/CUL file number: SA8547

### Dimensional Data



### AOR-4



### Ordering Information

| PCN    | Description | Total Volume Gallons | A Level Volume (gals) | B Level Volume (gals) | Length (in) | Number of sight glasses |
|--------|-------------|----------------------|-----------------------|-----------------------|-------------|-------------------------|
| 064950 | AOR-2       | 2                    | 3/4                   | 1-2/3                 | 20"         | 2                       |
| 065981 | AOR-3       | 3                    | 2/3                   | 2-2/3                 | 31"         | 3                       |
| 064951 | AOR-4       | 4                    | 1-1/2                 | 3-3/4                 | 38"         |                         |

### Replacement Parts for AOR Oil Reservoirs

| PCN    | Part         | Contains                                                     |
|--------|--------------|--------------------------------------------------------------|
| 066002 | Mounting Kit | Mounting brackets, self-tapping bolts and mounting stud nuts |

The OMB is a compressor crankcase oil level protective control ideal for use with Copeland Scroll™ models ZF, ZB, ZR and ZS. It is also recommended for Copeland™ brand products, Carlyle, Bitzer and other semi-hermetic compressors.

## Features

- Precision oil level measurement for maximum protection
- Easy monitoring with alarm and status lights
- Foam resistant design prevents nuisance trips unlike optical sensor designs
- Contaminant proof operation ensures accurate control
- Only approved oil level control for Copeland Scroll Compressors
- 5-time lockout feature protects compressor from repeated low oil level condition
- Self-contained unit with oil level sensor and integral solenoid to manage oil level supply
- Reverse Hall-effect sensor for precise measurement of oil level and protection from sensor magnetic debris contamination
- SPDT output contact for compressor shut-down and alarming
- Easy installation by sightglass replacement
- Adapters suitable for various types of scroll compressors (not required for reciprocating compressors)
- UL Recognized (File Number# MP604)
- Fluorescent floating ball
- Integral sight glass
- Debris retention magnet for reliable operation

**Nomenclature** example: OMB-JB1 ASC2 24 50/60

| OMB                    | JB1                                                    | ASC2 24 50/60                                                   |
|------------------------|--------------------------------------------------------|-----------------------------------------------------------------|
| Oil Management Control | JB1 - Junction Box<br>MO1 - Series<br>Relief Connector | Solenoid Coil Model<br>Number, Voltage, Frequency<br>(included) |

## Ordering Information

| PCN    | DESCRIPTION                  |
|--------|------------------------------|
|        | Oil Management Control       |
| 065365 | OMB-JB1 ASC 2 24/50-60 - STD |
| 065366 | OMB-MO1 ASC 2 24/50-60 - STD |
|        | Service Parts                |
| 048638 | Inlet Flare Screen           |
| 020877 | Sight Glass O-Ring           |
| 064812 | Mounting O-Rings (3 pieces)  |
| 049191 | KS-30112 Solenoid Repair Kit |

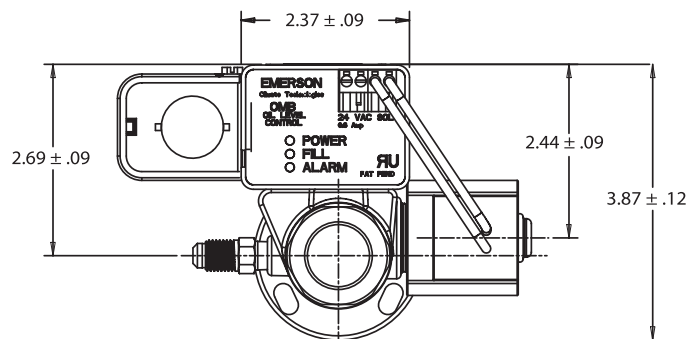


## Specifications

- Maximum working pressure: 870 psi
- Solenoid MOPD: 350 psi
- Supply voltage: 24 V AC, 50/60 Hz
- Solenoid coil: ASC 2L 24 V AC, 50/60 Hz
- Current consumption: 0.6A
- Time delay for low level signalling: 5-10 seconds
- Time delay for after setpoint recovery: 5-10 seconds
- Alarm delay time: 120 seconds
- Alarm switch: SPDT
- Alarm contact rating: 10A @ 125; 5A @ 220 V AC 50/60 Hz
- Refrigerant compatibility: HFC, HCFC, CFC
- Oil temperature: 180°F Max.
- Storage and transport temperature: 140°F Max.
- Operating ambient temperature: 120°F Max.
- Oil supply fitting: 1/4" Male SAE
- UL/CUL file number: SA8547
- Transformer VA requirements\*: 25"

*\*NOTE: Field supplied transformer should always be of the same primary voltage as the electrical supply system.*

## Dimensional Data



Unit must be mounted horizontally for correct operation.

| Description                                              | PCN                                                         | Recommended Torque<br>Adapter to Compressor | Drawing |
|----------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------|---------|
| Screw Adapter<br>3/4" x 14 NPTF                          | 065668<br>OMB-ACA                                           | 30 - 40 ft - lbs                            |         |
| Screw Adapter<br>1 1/8" x 12 UNF-2A THD                  | 065667<br>OMB - ACB                                         | 30 - 40 ft - lbs                            |         |
| Screw Adapter, Female<br>Nut<br>1 3/4" x 12 UNF - 2B THD | 066078<br>OMB - ACE                                         | 30 - 40 ft - lbs                            |         |
| Rotalock Adapter<br>1 1/4" x 12 UNF-2B THD               | 066650<br>OMB-ACF                                           | 80 ft - lbs                                 |         |
| Rotalock Adapter<br>1 1/4" x 12 UNF-2B THD               | 066652<br>OMB - ACG<br>replacement<br>for 066077<br>OMB-ACD | 80 ft - lbs                                 |         |
| Adapter for<br>Copeland Semi-Hermetic                    | 063521<br>OMB - AUA                                         | 120 in - lbs                                |         |
| Screw Adapter<br>1 1/2" x 18 UNEF - 2A<br>THD            | 065982<br>OMB - ASA                                         | 30 - 40 ft - lbs                            |         |

\*Install OMB to adapter flange (1/4" x 20 UNC x 1" Hex bolt) at 120 in- lbs

# W-OLC Mechanical Oil Level Regulator

Oil Controls

The W-OLC controls the oil level in the compressor crankcase with a float operated valve and keeps the oil level at the compressor manufacturer's recommended level. It is a direct replacement of popular competitive models.

## Features

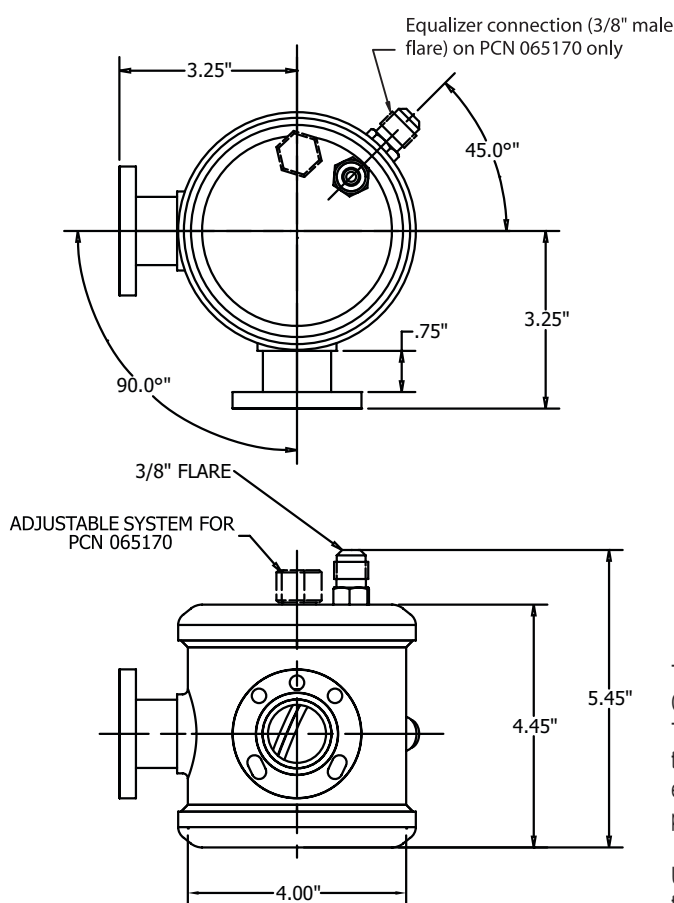
- Corrosion resistant epoxy powder paint finish
- Universal mounting pattern for standard semi-hermetic compressors

## Nomenclature example: W-OLC-2

| W-OLC  | 2            |
|--------|--------------|
| Series | Sight Glass* |

\* 2 = 1/2, 4 = 1/4, 2-4 = adjustable

## Dimensional Data



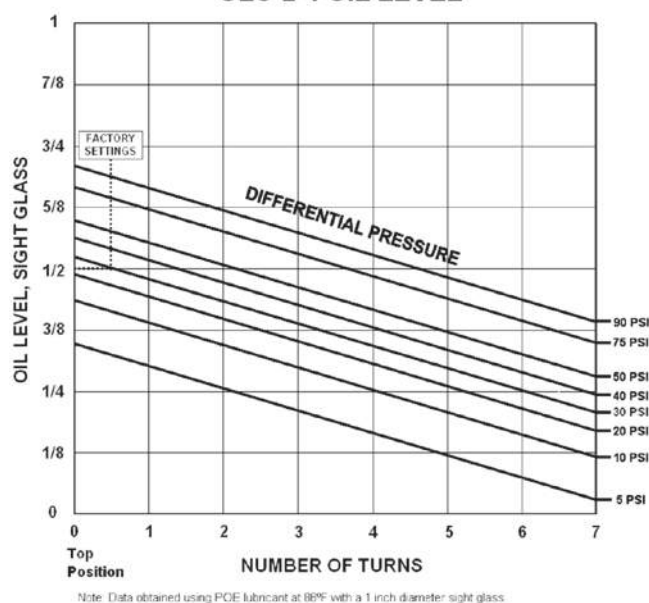
## Specifications

- Maximum working pressure: 450 psi
- UL/CUL file number: SA8547
- Max. OPD: 90 psi

## Ordering Information

| PCN    | Description | Sight Glass Level             |
|--------|-------------|-------------------------------|
| 064953 | W-OLC-2     | 1/2 sight glass               |
| 064954 | W-OLC-4     | 1/4 sight glass               |
| 065170 | W-OLC-2-4   | 1/4 to 1/2 level (adjustable) |

## OLC-2-4 OIL LEVEL



The Oil Level factory setting is in the middle of the Sight Glass at 30 PSI for the Oil Level Control. Located on the top of the control is the seal cap. Remove this to adjust the oil level. To adjust the stem, turn it clockwise and counterclockwise, respectively, to lower and raise the stem. One can determine the adjustment needed from the OLC-2-4 Oil Level Chart. One eighth of an inch increments are used to illustrate the oil level at a selection of differential pressure conditions.

Unlike our Competitors Controls no damage will occur when attempting to adjust beyond 7 turns. Our Design has a hard Stop to prevent damage.

In the case of an unexpected system defrost or load increase, large amounts of oil will return through the suction line. Consequently, the oil control will not be able to keep the oil level from rising beyond the control point.

See adapters page.



## Quick Select Guide

| Application                                        | Feature                                                        | Type  |
|----------------------------------------------------|----------------------------------------------------------------|-------|
| Commercial Refrigeration Air Conditioning Controls | Temperature Control, Adjustable Set Point and Differential     | TS1   |
|                                                    | Single Pressure Control, Adjustable Set Point and Differential | PS1   |
|                                                    | Dual Pressure Control, Adjustable Set Point and Differential   | PS2   |
|                                                    | Differential PressureControl                                   | FD113 |
| Mini-Pressure Controls                             | Mini-Pressure Control                                          | PSC   |
|                                                    | Electronic Fan Speed Control                                   | FSX   |
| Industrial Pressure Controls                       | Industrial Pressure Control, U.L. Approved                     | FF444 |

The TS1 series adjustable thermostats are designed for application in refrigeration and heat pump systems. In these systems, thermostats serve control and monitoring functions, such as space temperature control, high/low temperature alarming or defrost termination. By operating a set of electrical contacts, a temperature value is kept inside a certain limit.

### Features

- Adjustable temperature and differentials
- Range and differential individually lockable by wire seal
- Captive terminal and cover screws
- Manual toggle for system checkout and override
- Bellows heater for thermostats with vapour charge
- Standard accessories include mounting brackets and knob with lockplate on all individually packed controls
- Non-ambient sensitive
- Heavy-duty SPDT switch allows handling of most loads directly without the use of relays



### Specifications

- Ambient temperature ranges -50°C to +70°C (-58°F to +158°F)
- SPDT switch rated for 120 VAC/240VAC at 24FLA and 144 LRA
- Agency approvals include: UL/CUL file number E85974, VDE 0631/0660, TÜV, CE 73/23/EWG, CE 93/68/EWG

### Options

- Vapor charges
- Factory set to customer specification
- Different types of mounting brackets
- Sensor bulb wells and capillary tube holders
- Special approvals
- Range and differential pointer in units °C and °F

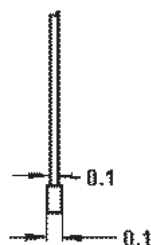
### Nomenclature example: TS1 B1E

| TS1                                                    | B                                                                | 1                                                                                                         | E                               |
|--------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------|
| Product Name                                           | Housing Variant/function                                         | Temperature Range                                                                                         | Sensor Type                     |
| TS1 = Adjustable thermostat<br>TSA = Customer specials | C = Frost monitor, auto reset<br>D = Frost monitor, manual reset | 0 = +40 to +68°F (+4.5 to +20°C)<br><br>NOTES<br>Temp ranges 0-4:<br>manual reset for falling temperature | P = Vapor Charge, 6m. capillary |

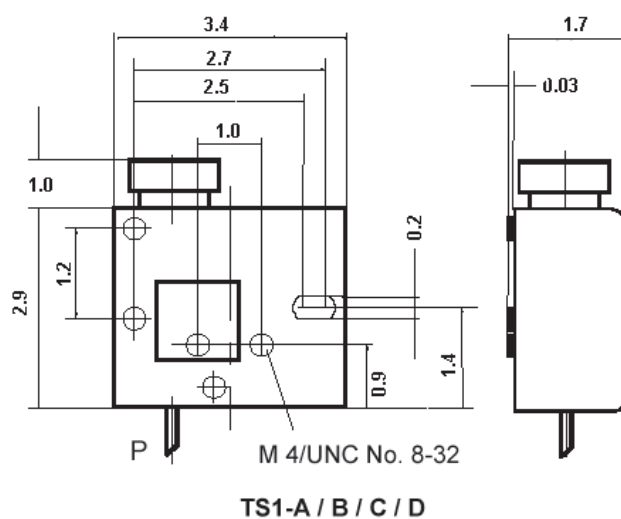
## Ordering Information

| Type                                                                 | PCN    | Adjustment Range      |                          | Factory Setting<br>°F (°C) | Temperature Sensor |                         |
|----------------------------------------------------------------------|--------|-----------------------|--------------------------|----------------------------|--------------------|-------------------------|
|                                                                      |        | Upper Setpoint        | Different Setpoint       |                            | Charge             | Type                    |
|                                                                      |        | °F (°C)               | °F (°K)                  |                            |                    |                         |
| Freeze-Stat, Top Operated Without Off-Switch (Capillary Type Sensor) |        |                       |                          |                            |                    |                         |
| TS1-C0P                                                              | 097882 | 40 TO 68 (+4.5...+20) | 5 (3) fix                | 40/36 (4.5/+2)             | VAPOR              | 20 FT. (6 m.) capillary |
| TS1-D0P                                                              | 097885 | 40 TO 68 (+4.5...+20) | man. reset ca. 5 (3) fix | 36 (+2)                    | VAPOR              | 20 FT. (6 m.) capillary |

## Dimensional Diagrams (in)



**Sensor type P**  
Vapor charge  
2m (6.56 ft)



PS1 Single Pressure Controls are designed for use on high and low pressure applications in refrigeration, airconditioning and heat pump systems, providing single-device control of the compressor or other electrical device.

### Features

- Adjustable pressures and differentials
- Narrow adjustable differential depending on model
- Range and differential pointer in units bar and psig
- Range and differential individually lockable by tab
- High rated SPDT contacts for all versions
- Captive terminal and cover screws
- Manual toggle for system checkout and override

### Options

- Different pressure connections
- Automatic and manual reset versions
- Factory set to customer specification



### Specifications

- SPDT switch rated for 12FLA and 72LRA at 240VAC and 16FLA and 96LRA at 120VAC
- Agency approvals include: UL/CUL file number E85974 CE per (LVD) low voltage directive

### Nomenclature

#### Type code

PS1 -   

#### Product Name

PS1 = Adjustable Single Pressostat

#### Function

A = Pressure control, automatic  
 B = Pressure cut out, external manual reset EN 12263  
 R = Pressure control, external manual reset  
 W = Pressure limiter, automatic, DIN/EN 12263

#### Pressure connector

A = 7/16" -20 UNF male (1/4" SAE male flare)  
 K = 1m cap tube and schrader valve opener, 7/16" -20UNF flare nut  
 U = 6mm ODF solder, 80mm lenght  
 R = 1/4" male, brass (1/4" BSPP Fitting)

#### Pressure range

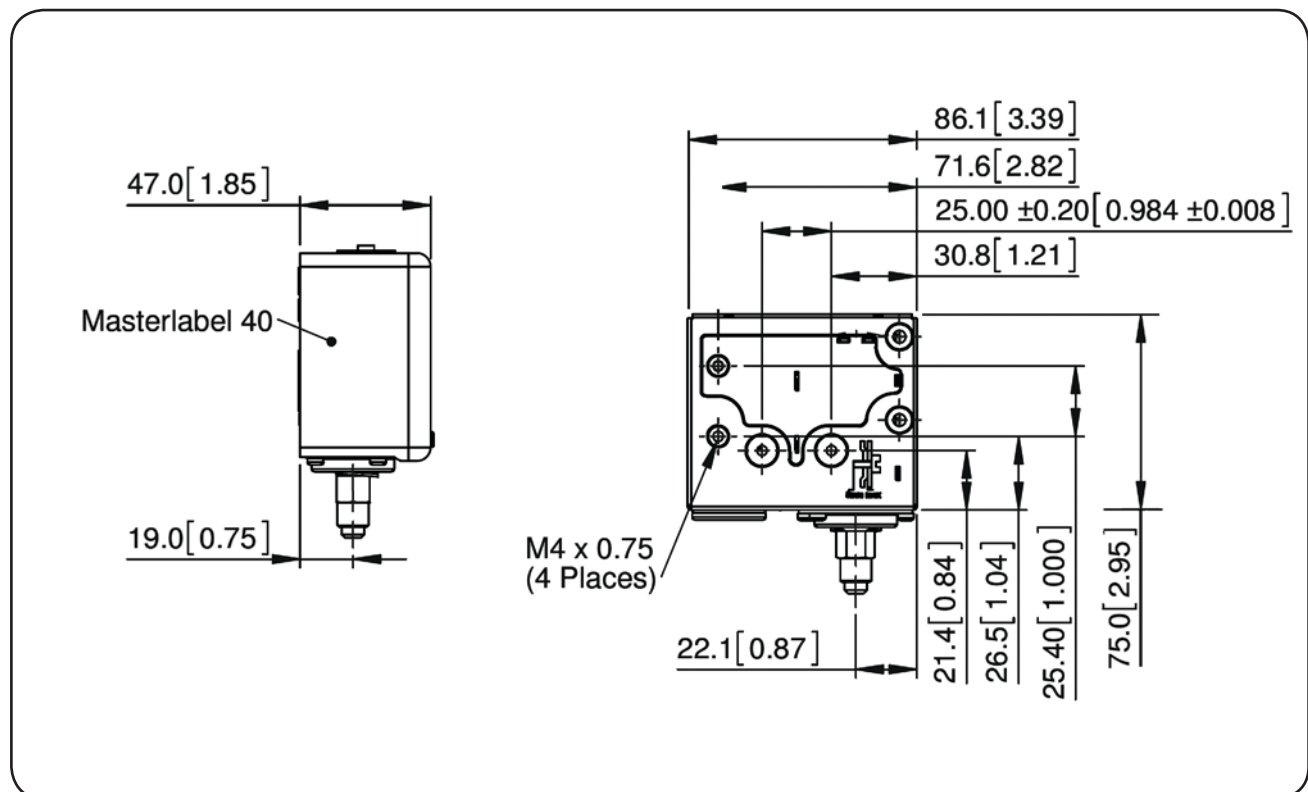
3 = -0.3 to 7 bar  
 4 = 2 to 20 bar  
 5 = 6 to 31 bar

### Ordering Information

| Single Pressure Control | PCN    | Pressure Range (bar) | Differential (bar) | Factory Setting (bar) | Function              | Pressure Connection   |
|-------------------------|--------|----------------------|--------------------|-----------------------|-----------------------|-----------------------|
| PS1-A3A                 | 099035 | -0.3 to 7            | 1 to 5             | 3.4                   | Automatic             | 1/4" SAE male flare   |
| PS1-A3K                 | 099041 | -0.3 to 7            | 1 to 5             | 3.4                   | Automatic             | 1m cap tube with nut  |
| PS1-A3R                 | 099014 | -0.3 to 7            | 1 to 5             | 3.4                   | Automatic             | 1/4" BSPP fitting     |
| PS1-A3U                 | 099015 | -0.3 to 7            | 1 to 5             | 3.4                   | Automatic             | 6mm tube, 80mm length |
| PS1-A4A                 | 099016 | 2 to 20              | 3 to 15            | 10                    | Automatic             | 1/4" SAE male flare   |
| PS1-X4A                 | 099043 | 2 to 20              | 3 to 15            | 10                    | Automatic             | 1/4" SAE male flare   |
| PS1-A5A                 | 099036 | 6 to 31              | 3 to 15            | 20                    | Automatic             | 1/4" SAE male flare   |
| PS1-A5K                 | 099039 | 6 to 31              | 3 to 15            | 20                    | Automatic             | 1m cap tube with nut  |
| PS1-B5U                 | 099020 | 6 to 31              | 3 to 15            | 20                    | Extrenal Manual Reset | 6mm tube, 80mm length |
| PS1-R5A                 | 099037 | 6 to 31              | Fixed              | 20                    | Extrenal Manual Reset | 1/4" SAE male flare   |
| PS1-W5U                 | 099033 | 6 to 31              | 3 to 15            | 20                    | Automatic             | 6mm tube, 80mm length |
| Bracket                 | 099019 |                      |                    |                       |                       |                       |

Note: Bracket not included with controls. Sold separately. 100 brackets per box.

### Dimensional Drawing



PS2 Dual Pressure Controls are designed for use on high and low pressure applications in refrigeration, airconditioning, and heat pump systems. This control react to changes in either low or high side pressures, providing single-device control of the compressor or other electrical device.

### Features

- Adjustable pressures and differentials
- Narrow adjustable differential depending on model
- Range and differential pointer in units bar and psig
- Range and differential individually lockable by tab
- High rated SPDT contacts for all versions
- Captive terminal and cover screws
- Manual toggle for system checkout and override
- Factory installed wire bridge for reduced installation effort
- High side convertible from manual to auto reset.

### Options

- Different pressure connections
- Automatic and manual reset versions
- Factory set to customer specification



### Specifications

- SPDT switch rated for 12FLA and 72LRA at 240VAC and 16FLA and 96LRA at 120VAC
- Agency approvals include:  
UL/CUL file number E85974,  
CE per (LVD) low voltage directive

### Nomenclature

#### Type code

PS2 -

#### Product Name

PS2 = Adjustable Dual Pressostat

#### Function

A = Both sides, automatic pressure controls  
 G = Left side: cut out, external manual reset EN 12263  
     Right side: cut out, external manual reset EN 12263  
 L = Left side: automatic pressure control  
     Right side: external manual reset  
 M = Left side: automatic pressure control  
     Right side: convertible R to A  
 R = Both sides: external manual reset

#### Pressure connector

A = 7/16" -20 UNF male (1/4" SAE male flare)  
 K = 1m cap tube and schrader valve opener, 7/16" -20UNF flare nut  
 R = 1/4" ODF solder, 80mm length

#### Pressure range

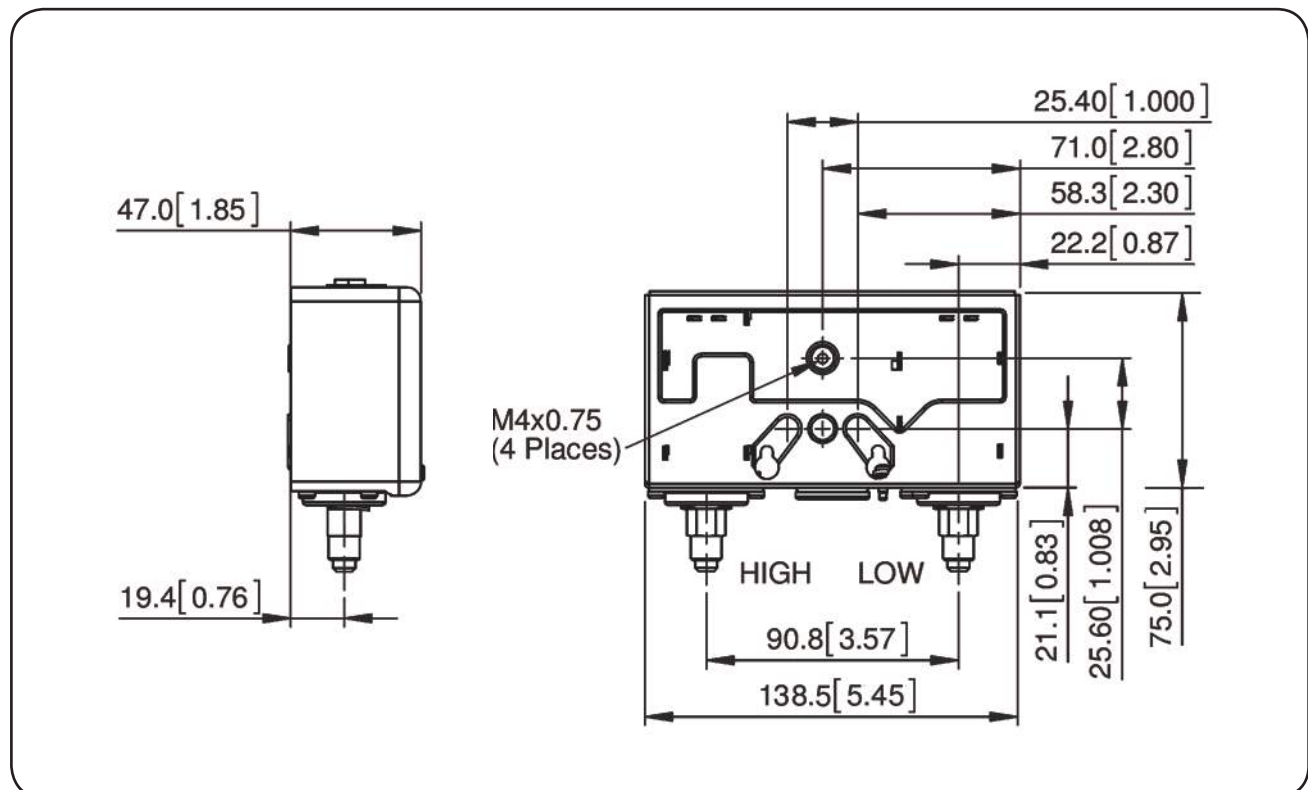
|                   |             |
|-------------------|-------------|
| 7 = -0.3 to 7 bar | 6 to 31 bar |
| 8 = 6 to 31 bar   | 6 to 31 bar |

## Ordering Information

| Dual Pressure Control | PCN    | Pressure Range (bar) |            |                 | Differential (bar) |            |                 | Function                                         | Pressure Connection                 |
|-----------------------|--------|----------------------|------------|-----------------|--------------------|------------|-----------------|--------------------------------------------------|-------------------------------------|
|                       |        | Left side            | Right Side | Factory setting | Left side          | Right side | Factory setting | Left / Right                                     |                                     |
| PS2-A7A               | 099038 | -0.3 to 7            | 6 to 31    | 3.4             | 1 to 5             | Fixed      | 20              | Automatic / Automatic                            | 1/4" SAE male flare                 |
| PS2-A7K               | 099001 | -0.3 to 7            | 6 to 31    | 3.4             | 1 to 5             | Fixed      | 20              | Automatic / Automatic                            | 1m cap tube with nut                |
| PS2-G8A               | 099002 | -0.3 to 7            | 6 to 31    | 20              | 1 to 5             | Fixed      | 21              | External Manual Reset / Internal Manual reset    | 1/4" SAE male flare                 |
| PS2-L7A               | 099040 | -0.3 to 7            | 6 to 31    | 3.4             | 1 to 5             | Fixed      | 20              | Automatic / External Manual Reset                | 1/4" SAE male flare                 |
| PS2-L7X               | 099004 | -0.3 to 7            | 6 to 31    | 3.4             | 1 to 5             | Fixed      | 20              | Automatic / External Manual Reset                | 80mm cap tube with 1/4" ODF fitting |
| PS2-M7A               | 099042 | -0.3 to 7            | 6 to 31    | 3.4             | 1 to 5             | Fixed      | 20              | Automatic / Convertible from Automatic to Manual | 1/4" SAE male flare                 |
| PS2-R7A               | 099007 | -0.3 to 7            | 6 to 31    | 3.4             | 1 to 5             | Fixed      | 20              | External Manual Reset / External Manual reset    | 1/4" SAE male flare                 |
| Bracket               | 099019 |                      |            |                 |                    |            |                 |                                                  |                                     |

Note: Bracket not included with controls. Sold separately. 100 brackets per box.

## Dimensional Drawing



## Pressure Controls Series PS3 / Standard types

### Compact Pressure Switch with fixed switch-point settings

#### Features

- Maximum allowable pressure up to 43 bar / test pressure up to 48 bar
- Standard factory settings from stock in small volumes
- High and low pressure switches
- High temperature version with snubber for direct compressor mounting (range 6)
- Direct mounting reduces the number of joints and thus avoiding potential leakage
- Precise setting and repeatability
- IP 65 protection if used with PS3-Nxx cables with plug (acc. EN 175301-803), no additional gasket required (molded into plug)
- Cables with plug to be ordered separately

#### Standards

-  per Low Voltage Directive
-  per PED Directive 97/23 EG, TÜV appr. versions only
- Manufactured and tested to  standards on our own responsibility
-  US LISTED Underwriter Laboratories (File No. E85974)



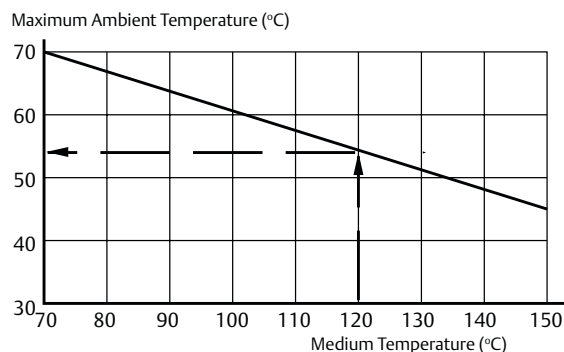
PS3

#### Technical Data

|                                            |                                                                                             |
|--------------------------------------------|---------------------------------------------------------------------------------------------|
| Protection according to EN 60529 / IEC 529 | IP 00<br>IP 30 with terminal cover<br>IP 65 with PS3-Nxx cables with plug or Plug DIN 43650 |
| Inductive Amp. (AC)                        | 3A / 230V AC                                                                                |
| Inductive Amp. (DC)                        | 0.1A / 230V DC                                                                              |
| Motor rating, full load Amp.               | 6A / 120/240V AC                                                                            |
| Motor rating, locked rotor Amp.            | 36A / 120/240V AC                                                                           |

|                                                                      |                                                    |
|----------------------------------------------------------------------|----------------------------------------------------|
| Temperature range TS *<br>ambient, storage and transportation medium | -40 °C .. 70 °C<br>-40 °C .. 70 °C (150°C range 6) |
| Pressure Range PS                                                    | - 0.6 .. 43 bar                                    |
| Vibration resistance (10..1000 Hz)                                   | 4 g                                                |
| Type of contacts                                                     | 1 SPDT                                             |
| Medium compatibility                                                 | HFC, HCFC                                          |

\*Note: For high temperature applications, i. e., medium temperatures between 70 °C and 150 °C, the maximum ambient temperature must be derated as per drawing. E.g.: on medium temperature 120 °C the ambient temperature of 55 °C around the switch housing should not be exceeded.



## Pressure Controls Series PS3 / Standard types

| Pressure Control Type                                                                                           | Part No.  | Fixed setting |                             | Reset                 | Max. Temperature |                        | Leakage Test Pressure bar | Pressure Connection                                        |
|-----------------------------------------------------------------------------------------------------------------|-----------|---------------|-----------------------------|-----------------------|------------------|------------------------|---------------------------|------------------------------------------------------------|
|                                                                                                                 |           | Cut-out bar   | Cut-in bar                  |                       | Ambient °C       | Pressure Connection °C |                           |                                                            |
| High Pressure Controls                                                                                          |           |               |                             |                       |                  |                        |                           |                                                            |
| PS3-A6S                                                                                                         | 0 715 603 | 16.0          | 11.0                        | auto                  | +70              | +150                   | 48                        | 7/16"-20UNF female thread with Schrader opener             |
| PS3-A6S                                                                                                         | 0 715 604 | 19.0          | 15.0                        |                       |                  |                        |                           |                                                            |
| PS3-A6S                                                                                                         | 0 715 600 | 26.5          | 22.5                        |                       |                  |                        |                           |                                                            |
| Low Pressure Controls / Pressure Limiter for low pressure protection<br>PSL TÜV / EN 12263                      |           |               |                             |                       |                  |                        |                           |                                                            |
| PS3-W1S                                                                                                         | 0 714 760 | -0.3          | 1.2                         | auto                  | +70              | +70                    | 30                        | 7/16"-20UNF female thread with Schrader opener             |
| PS3-W1S                                                                                                         | 0 714 761 | 0.3           | 1.8                         |                       |                  |                        |                           |                                                            |
| PS3-W1S                                                                                                         | 0 714 762 | 2.0           | 3.5                         |                       |                  |                        |                           |                                                            |
| Pressure Limiter for high pressure protection<br>PSH TÜV / EN 12263                                             |           |               |                             |                       |                  |                        |                           |                                                            |
| PS3-W6S                                                                                                         | 0 715 831 | 14.0          | 10.0                        | auto                  | +70              | +150                   | 48                        | 7/16"-20UNF female thread with Schrader opener and snubber |
| PS3-W6S                                                                                                         | 0 715 556 | 21.0          | 16.0                        |                       |                  |                        |                           |                                                            |
| PS3-W6S                                                                                                         | 0 715 555 | 25.0          | 20.0                        |                       |                  |                        |                           |                                                            |
| PS3-W6S                                                                                                         | 0 715 567 | 29.0          | 23.0                        |                       |                  |                        |                           |                                                            |
| PS3-W6S                                                                                                         | 0 715 550 | 33.5          | 27.5                        |                       |                  |                        |                           |                                                            |
| PS3-W6S                                                                                                         | 0 715 553 | 40.0          | 33.0                        |                       |                  |                        |                           |                                                            |
| Pressure Cut-Out for high pressure protection<br>PZH with snubber for direct compressor mounting TÜV / EN 12263 |           |               |                             |                       |                  |                        |                           |                                                            |
| PS3-B6S                                                                                                         | 0 715 568 | 19.2          | approx. 5 bar below cut-out | external manual reset | +70              | +150                   | 48                        | 7/16"-20UNF female thread with Schrader opener and snubber |
| PS3-B6S                                                                                                         | 0 715 564 | 22.7          |                             |                       |                  |                        |                           |                                                            |
| PS3-B6S                                                                                                         | 0 715 563 | 27.3          |                             |                       |                  |                        |                           |                                                            |
| PS3-B6S                                                                                                         | 0 715 569 | 29.5          |                             |                       |                  |                        |                           |                                                            |
| PS3-B6S                                                                                                         | 0 715 560 | 36.0          |                             |                       |                  |                        |                           |                                                            |

### Selection Chart Cable Assemblies

| Temperature Range<br>-50 to 80°C / no UL |          | Length (mtr.) | Leads        |
|------------------------------------------|----------|---------------|--------------|
| Type                                     | Part No. |               |              |
| PS3-N15                                  | 804 580  | 1.5           | 3 x 0.75 mm² |
| PS3-N30                                  | 804 581  | 3.0           |              |
| PS3-N60                                  | 804 582  | 6.0           |              |



| Plug according to EN 175301 | Part No. |
|-----------------------------|----------|
| PG9                         | 801 012  |
| PG11                        | 801 013  |

The FD113 Oil Pressure Safety Control senses the effective oil pressure on pressure lubricate compressors. If inadequate oil pressure exists, a time delay is energized. If the oil pressure does not recover to safe levels within the time delay setting, the compressor is shut down. The time delay allows the compressor adequate time to establish oil pressure on start up and avoids nuisance shutdowns on pressure drop of short duration during the run cycle.

Maximum application flexibility is assured by providing an adjustable differential pressure switch which can be adjusted to the compressor's minimum required oil pressure needs and an adjustable electronic time delay which allows the selection of the length of time the compressor runs below the minimum pressure before shutdown. The minimum pressure setting and time delay values specified by the compressor manufacturer should be used when installing the FD113 control.



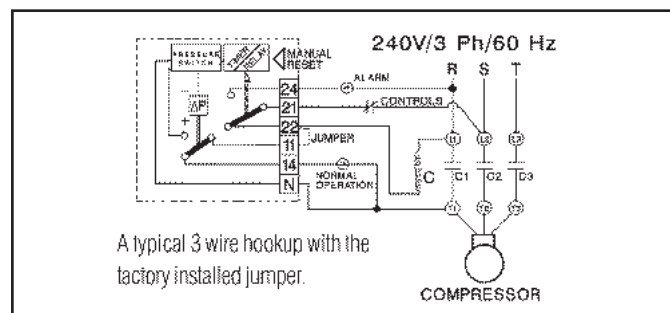
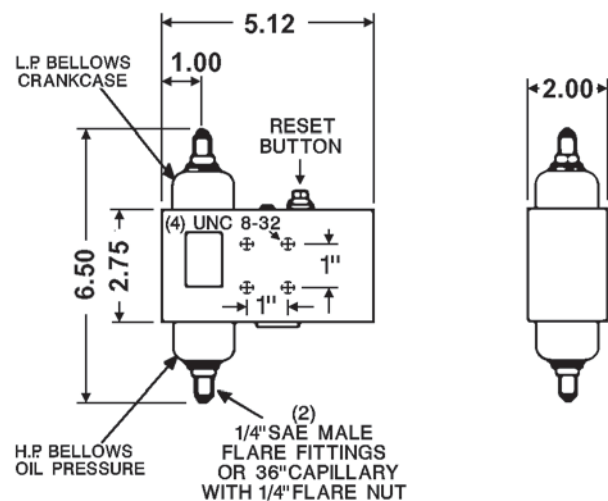
## Features

- Pressure range adjustable from 4 to 65 psid; Timer start pressure - timer stop pressure is 3 psid above timer start pressure
- A SPDT switch is used in the pressure portion of the control which allows the addition of a "safe-light" when desired
- Electronic Timer is Time-Adjustable from 20 to 150 seconds  
Supply voltage - 24 to 240 Volt AC/DC; Timing unaffected by voltage or ambient temperature variations
- A SPDT Manual Reset Switch is used in the Timer Module; Upon time-out, the compressor is stopped and an alarm circuit is energized; To restart the compressor and deenergize the alarm circuit, the reset button is pushed
- A factory installed Jumper allows the FD113 to be powered from a single source power; Should separate circuits be desired for the timer and "Lockout" switch, the Jumper can be removed

## Specifications

- Agency approvals include: UL/CUL file number E85974, VDE 0631/0660, TÜV, CE 73/23/EWG, CE 93/68/EWG

### Dimensional Data (in)



## Ordering Information

| PCN    | Part Number | Adjustable Pressure Range | Adjustable Time Delay                               | Supply Voltage   | Pressure Connection                   |
|--------|-------------|---------------------------|-----------------------------------------------------|------------------|---------------------------------------|
| 097456 | FD113-ZUK   | 4-65 psid                 | 20 to 150 seconds<br><br>Factory-set at 120 seconds | 24 to 240V AC/DC | (2) 36" capillary with 1/4" flare nut |

The PSC Mini Pressure Control provides the ultimate in reliability and flexibility in a commercial grade mini pressure control. A standard plug connectable design simplifies installation and service. The SPDT switch allows the addition of alarm circuits on high or low pressure applications. Models with high temperature bellows and built-in pressure pulsation snubbers make the

PSC ideally suited for compressor head mounting high pressure limit control applications—automatic or manual reset versions are available.

Pressure Ranges/Differential also make the PSC controls ideally suited for condenser fan cycling applications. Low Pressure versions with standard or narrow differential switches make these controls ideally suited low pressure limit or back-up safety controls on electronically controlled systems. Numerous options, such as panel mount or capillary connections are available on high volume applications. Standard on all models are worldwide agency approvals.

### Typical Applications

- High Pressure Limit/Alarm
- Condenser Fan Cycling
- Low Pressure Limit/Alarm
- Low Pressure Cycling (Back-Up)
- Defrost Termination/Fan Delay
- Rupture Guard Alarm

### Features

- Commercial Grade High/Low/Condenser Fan Cycling Pressure Controls for use on Refrigeration/AC Applications
- Mini-Size 2" x 1-1/2" x 2-3/4"
- Standard SPDT Switch Action
- Automatic or Manual Reset
- Models available with high temperature bellows and built-in pressure pulsation snubber for direct head mount high pressure sensing/limit applications
- Plug Connectable with hub for 1/2" flexible conduit
- Factory preset to customer's desired pressure specifications
- Precise, repeatable settings
- Narrow differential "Micro" switch available on low pressure models



### Specifications

- Worldwide Approvals: UL/CUL/VDE/TÜV
- UL/CUL file number: E85974

#### Electrical Ratings—SPDT Switch

- Standard Switch – High/Low Pressure
  - Load Contact: 6 FLA – 36 LRA – 120/240 VAC
  - Pilot Duty: 240VA @ 120, 480VA @ 240 VAC
  - Back Contact 0.5 Amp 120/240 VAC Pilot Duty
- Micro Switch – Low Pressure
  - 2.5 FLA – 15 LRA – 120/240 VAC
  - Pilot Duty: 120VA @ 120, 240VA @ 240 VAC
  - Back Contact 0.5 Amp 120/240 VAC Pilot Duty

#### Ambient Temperature

- Storage: -30° to +160°F Operating: -20° to +140°F
- Low Pressure
  - Single diaphragm
  - Maximum media temperature 150°F
- High Pressure
  - Bellows design
  - Maximum media temperature 300°F
  - Internal Pressure Pulsation Snubber available for direct head mount

#### Protection

- Protect from rain, direct sunlight and exterior damage

#### Weight

- Approximately 0.25 pound, depending upon configuration

#### Compatibility

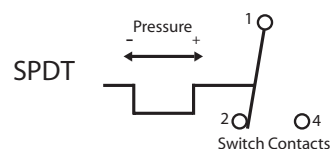
- HFC, HCFC, CFC

#### Agency Approvals

- UL/CUL/DIN/TÜV, depending upon configuration

### Switch Action

- SPDT Standard
  - 1-2 Open on Rise  
Close on Fall
  - 1-4 Close on Rise  
Open on Fall



### Nomenclature example: PSC-W6S

| PSC          | W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 6                                                                                                                                                                                                                          | S                                                                                                                                                                                 |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name | Function                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Pressure Range/Contacts                                                                                                                                                                                                    | Pressure Connections                                                                                                                                                              |
|              | <p>A = <b>Pressure control, automatic</b>, high or low pressure applications (Single diaphragm option, 158° F rating, Range 1-5 only, without snubber) (Bellows option, 300° F rating, with snubber, Range 6 only)</p> <p>B = <b>Pressure cut-out, external manual reset</b>, DIN/TUV approved (Double diaphragm option, 158° F, without snubber, Range 1-5) (Bellows option, 300° F rating, with snubber, Range 6 only)</p> <p>R = <b>Pressure control, external manual reset</b>, high or low pressure applications (Single diaphragm option, 158° F rating, Range 1-5 only, without snubber) (Bellows option, 300° F rating, with snubber, Range 6 only)</p> <p>W = <b>Pressure limiter, automatic</b>, DIN/TUV approved (Double diaphragm option, 158° F, without snubber, Range 1-5) (Bellows option, 300° F rating, with snubber, Range 6 only)</p> | <p>Standard Contacts</p> <p>1 = Low pressure 15" Hg to 90 psig</p> <p>5 = High pressure 100 to 465 psig</p> <p>6 = High pressure 145 to 623 psig</p> <p>Microswitch Contacts</p> <p>J = Low pressure 15" Hg to 90 psig</p> | <p>K = 1 m cap tube w/flare nut 7/16"-20 UNF (range 1-5)</p> <p>L = 1/4" ODM solder w/1 m cap tube (range 1-5)</p> <p>S = 7/16"-20 UNF female, Schrader depressor (range 1-6)</p> |

### Specification Selection Table

| PCN    | Type and Description  | High Event Range (PSIG) | Differential Range (PSID) | Setting | Reset Function | Pressure Connection                                      | Electrical Connction                                              | Electrical Ratings | Maximum Over Pressure | Mounting                   |                       |
|--------|-----------------------|-------------------------|---------------------------|---------|----------------|----------------------------------------------------------|-------------------------------------------------------------------|--------------------|-----------------------|----------------------------|-----------------------|
|        |                       |                         |                           |         |                |                                                          |                                                                   |                    |                       |                            | Low Pressure Controls |
| 097815 | PSC-AJS¹              | 15" to 90               | 4 Low / 7 High            | 1.5/6   | Auto           | 1/4" SAE Female with Valve Depressor                     | DIN Plug with 1/2" NPTF Hub for Flex Conduit Connection 36" Cable | 2.5 FLA/15 LRA     | 360 PSIG              | Free Standing Direct Mount |                       |
| 097849 | PSC-A1S               |                         | 9 Low / 15 High           | 5/15    |                |                                                          |                                                                   | 6 FLA/36 LRA       |                       |                            |                       |
| PCN    | High Pressure Contols |                         |                           |         |                |                                                          |                                                                   |                    |                       |                            |                       |
| 097793 | PSC-W6S               | 145 to 623              | 72 Low / 87 High          | 320/395 | Auto           | Same as above, plus stainless steel bellows with snubber | DIN Plug with 1/2" NPTF Hub for Flex Conduit Connection 36" Cable | 6 FLA/36 LRA       | 695 PSIG              | Free Standing Direct Mount |                       |
| 097998 | PSC-B6S               |                         |                           | 395     | Manual         |                                                          |                                                                   |                    |                       |                            |                       |

<sup>1</sup> Micro-Switch Construction.

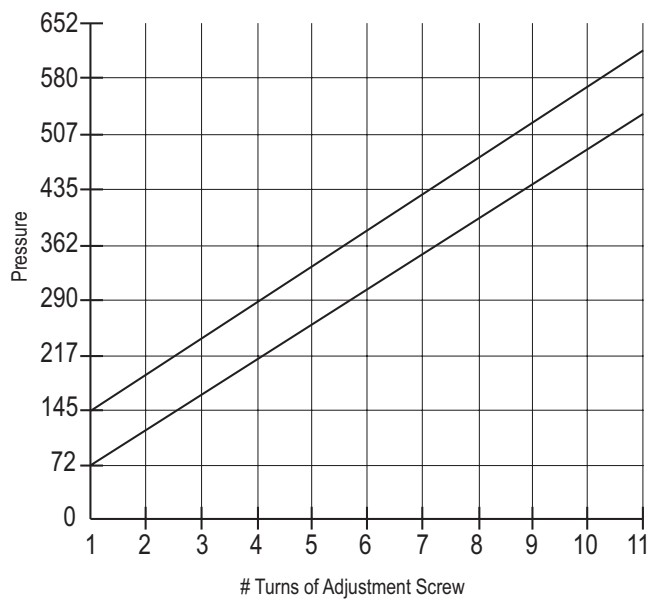
<sup>2</sup> All switches SPDT ratings stated are 1 side only 120/240 VAC. Opposite switch side – 1/2 amp pilot duty 120/240.

The PSC is factory preset.

For special applications, these controls can be factory preset to other values as illustrated on the appropriate graphs.

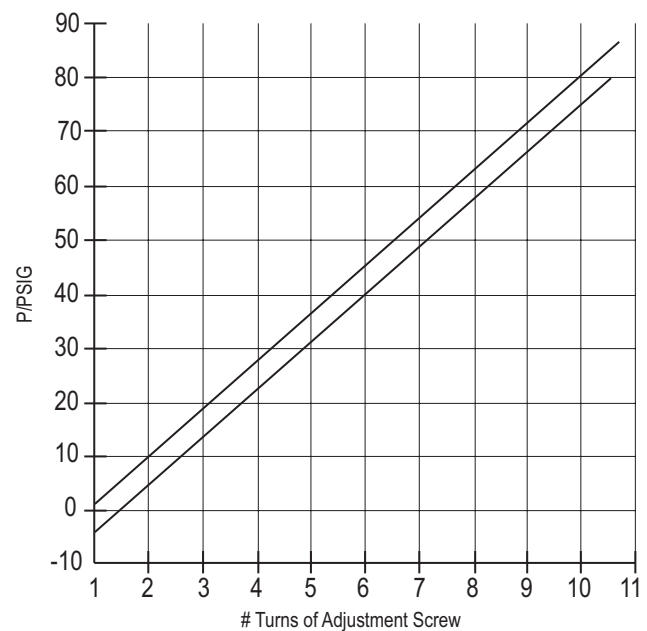
### Standard Switch Setting Capability

Pressure Range = 6



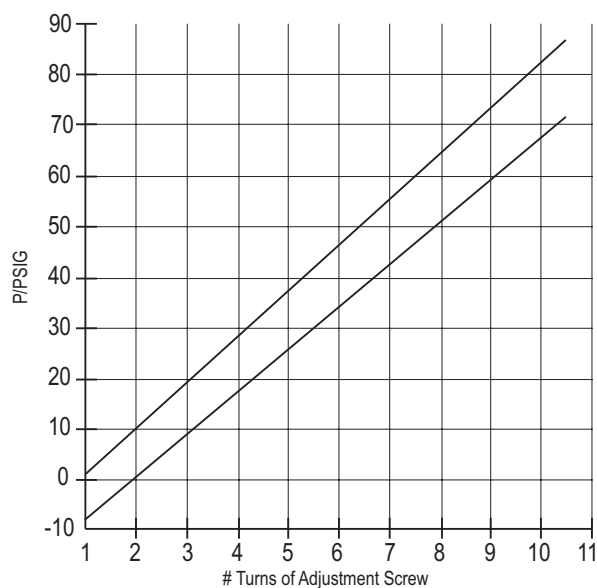
### Micro-Switch Setting Capability

Pressure Range = J



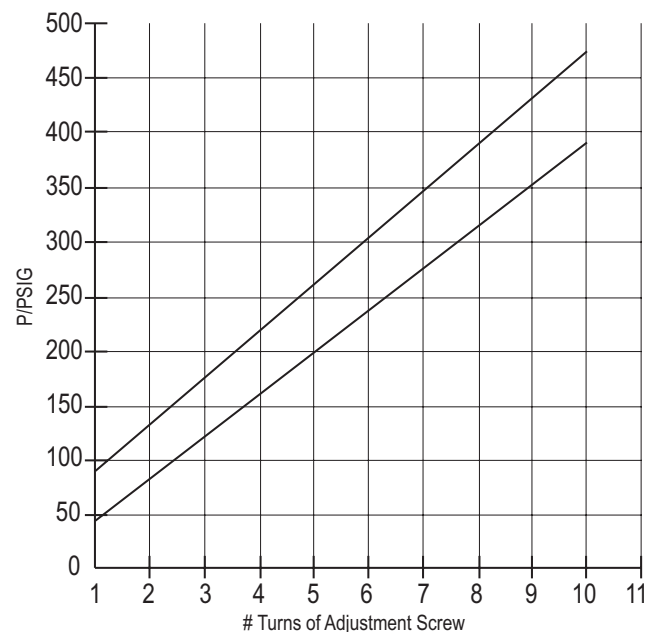
### Standard-Switch Setting Capability

Pressure Range = 1



### Standard-Switch Setting Capability

Pressure Range = 5



The FSX Fan Speed Control controls the head pressure in air-cooled condensers by reducing the fan speed to maintain head pressure as the outside temperatures/condenser pressure drops. As the motor speed drops under lower ambient/load condition fan noise is also reduced.

The FSX is designed for use with permanent split capacitor and shaded pole fan motors, approved for use by motor/equipment manufacturers for variable voltage, phase angle (triac) speed control.



## Features

- Connector includes 2 m. cable installed (FSF and FSO)
- Connector turnable (in 90° steps)
- Compact Design
- State-of-the-Art Electronics
- Direct mount—Easily retrofit to suitable motor
- Low Pressure “Turn Off” Operation
- Adjustable Pressure Setting
- Multiple FSX controls can be used in parallel on multi-circuit condensers
- 2 Cable types:  
FSF-N15 with internal circuit design to comply with EC-Directive 89/336/EC (Electromagnetic compatibility requirements for Europe)  
FSO-N15, standard with internal voltage spike and over current protection

## Options

- Custom Calibration
- Other Operating Voltages/Pressure Ranges

## Specifications

- Nominal current: 0.2 to 4 Amp max up to 104°F (40°C)  
0.2 to 2.5 Amp max up to 140°F (60°C)  
max. 8 Amp
- Starting current:
- Temperature Range  
Storage and transportation: -30°C to 70°C  
Ambient temperature: -20°C to 55°C  
Medium temperature: -20°C to 70°C
- Pressure Operated Fan Speed Control
- Supply Voltage: 230V AC + 15-20%.
- Protection: Provide an ultimate enclosure to protect from direct rain, sunlight and external damage.
- Weight: 3-1/2 ounces
- Approvals: UL/CUL file number E183816  
CE Low Voltage Directive 72/23/EC  
Connector per DIN 43650

## Nomenclature example: FSX-41S

| FS                | X      | 4                                                                      | 1                                  | S                                                           |
|-------------------|--------|------------------------------------------------------------------------|------------------------------------|-------------------------------------------------------------|
| Fan Speed Control | Series | Max. Current Rating<br>4 = 4 Amps maximum at 104°F ambient temperature | Pressure Range                     | Pressure Connection                                         |
|                   |        |                                                                        | Pressure Range                     |                                                             |
|                   |        |                                                                        | Modulating Band                    |                                                             |
|                   |        |                                                                        | Factory Setting                    |                                                             |
|                   |        |                                                                        | 1 = 6.5 to 15 bar (95 to 220psig)  | S = 1/4" SAE female (7/16" -20 UNF) with Schrader Depressor |
|                   |        |                                                                        | 2 = 13 to 25 bar (190 to 360 psig) |                                                             |
|                   |        |                                                                        | 3 = 12.4 to 28.4 (180 to 411 psig) |                                                             |
|                   |        |                                                                        | 35 psig                            | 11 bar (160 psig)                                           |
|                   |        |                                                                        | 55 psig                            | 16.2 bar (235 psig)                                         |
|                   |        |                                                                        | 66 psig                            | 21.8 bar (316 psig)                                         |

## Ordering Information

| Description | PCN    | Adjustable Range | Modulating Band | Factory Setting | Pressure Connection  |
|-------------|--------|------------------|-----------------|-----------------|----------------------|
|             |        | (PSI)            |                 |                 |                      |
| FSX-42S     | 097993 | 190 to 360       | 55              | 235             | 7/16" -20 UNF Female |
| FSX-43S     | 097774 | 180 to 411       | 66              | 316             |                      |

## Parts/Accessories

| PCN    | TYPE                     |
|--------|--------------------------|
| 097995 | FSF-N15 Cable (EMC)      |
| 097775 | FSO-N15 Cable (standard) |

The FF444 Industrial Pressure Controls are general purpose switches suitable for oil, water and air at pressures up to 465 psig.

### Typical Applications

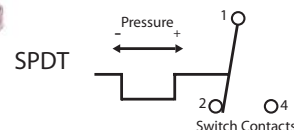
- Industrial Pressure Control
- Pneumatic and Hydraulic Systems
- Oil Lubrication Systems
- Pump/Compressor Control

### Features

- SPDT snap-action contacts
- Independent adjustable upper and lower switching pressures
- Diaphragm-type control for low pressure applications (Buna N diaphragm):
  - resistant to mineral oils
  - medium temperatures up to 160°F
- Transparent polyamide hood – U.V. resistant
- Surface mounted Type 4 enclosure
- Optional manual reset locking on pressure rise

### Options

- Optional manual reset locking on pressure rise



### Specifications

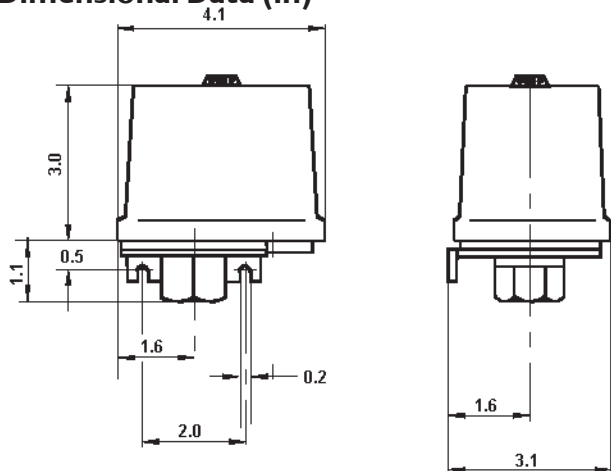
- Control circuit rating: 5 A (B300)
- Rated voltage: 300 VAC maximum
- Ambient operating temperature: -10°F to +120°F
- Medium temp. at pressure element: + 160°FMax.
- Resistance to vibration: (4 Hz to 1000 Hz) 4g
- Weight: 1.1 lbs.
- UL/CUL file number: E85974

| Description                       | 120VAC | 240VAC    |
|-----------------------------------|--------|-----------|
| Maximum motor rating single phase | 1/2 hp | 1 -1/2 hp |
| Motor rated, FLA                  | 10 A   | 10 A      |
| Motor rated, LRA                  | 60 A   | 60 A      |

### Nomenclature example: FF444-V2-DRF

| FF444                       | V2 |                           |                          |                                                   |                           | D                          | R                                                               | F                                                                 |
|-----------------------------|----|---------------------------|--------------------------|---------------------------------------------------|---------------------------|----------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------|
| Industrial Pressure Control |    | Lower Switch Point Range  | Upper Switch Point Range | Smallest Differential @ Lower-Higher end of Range | Standard Settings         | Valve Design D = Diaphragm | Reset Type A = Auto<br><br>R = Manual, Locking on Pressure Rise | Pressure Connection A = 7/16"-20 UNF male<br><br>F = 1/4"-18 NPTF |
|                             | V4 | 6-217 psig<br>0.4-15 bar  | 15-232 psig<br>1-16 bar  | 9-14 psig<br>0.6-1 bar                            | 58/174 psig<br>4/12 bar   |                            |                                                                 |                                                                   |
|                             | V5 | 12-435 psig<br>0.8-30 bar | 29-464 psig<br>2-32 bar  | 17-29 psig<br>1.2-2 bar                           | 145/290 psig<br>10/20 bar |                            |                                                                 |                                                                   |

### Dimensional Data (in)



### Ordering Information

| PCN    | Description  |
|--------|--------------|
| 097311 | FF444-V4-DAF |
| 097379 | FF444-V4-DRF |









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