

# Copeland scroll ZF/ZFI compressor

*For medium to low temperature refrigeration applications*



## ***Copeland, a leader in compression technology solutions, developed the ZF range of refrigeration scroll compressors to provide the best performance in medium to low temperatures application.***

The series has a wider application envelope that can operate at -40°C lowest evaporating temperature. Its optimized design perfectly fits cold rooms, retails, and light industrial application requirements while its scroll compliance mechanism makes it highly tolerant of liquid slugging

The range consists of:

- The ZF\*KQE models that operate with liquid injection in order to control discharge temperature and extend the operating envelop.
- The ZFI\*KQE and ZFI\*KNE models that are optimized for vapor injection with the use of a subcooler. This boosts the refrigeration system's cooling capacity and efficiency.
- The ZFJ\*KQE models are designed with the digital modulation and vapor injection technology which enables higher efficiencies, outstanding reliability, and provides users with an excellent value and outstanding life cycle cost.

### ***Features and benefits***

#### ***High efficiency all year round***

- The unique Copeland Compliant Scroll design patented by Copeland operates under continuous scroll flank contact, maintained by centrifugal force. This minimizes gas leakage while maximizing efficiency.
- With its capability for condensing operation down to 4°C on low temperature applications, Copeland Scroll technology provides the best seasonal efficiencies.
- Equipped with dynamic discharge valve that allows the discharge gas to reach desired pressure. This helps reduce efficiency loss by preventing gas re-compression.
- The vapor injection technology allows ZFI compressors to perform higher efficiency than single-stage compressors at low temperature operation condition. Thus makes ZFI the best in-class performance.

#### ***Compactness and light weight***

- The small footprint of Copeland scroll compressors enables compact system designs.
- Weight and dimensions for refrigeration equipment is reduced with increased capacity per compressor weight.

#### ***Robustness and reliability***

- The Copeland Compliant Scroll design is tolerant to stresses caused by liquid slugging, flooded starts and debris commonly found in refrigeration systems.
- Easy to service and maintain due to their compact size and lightweight, simple design.
- Engineered for optimum performance with today's chlorine-free refrigerants.
- The Copeland Scroll compressor design has several inherent reliability advantages:
  - 70% fewer moving parts than reciprocating compressors
  - Axial & radial scroll compliance provides improved liquid handling capability
  - Hermetic design reduces leak potential
- Redesigned suction gas flow results in lower oil circulation and better motor cooling.
- EVI vapor injection control kits provide advanced features to ensure optimum system operation.



Example: ZFI140KQE-TRD  
oil level sensor is optional

## ***Advanced compressor protection***

- The lower horsepower ZF, ZFI, ZFJ compressors are supplied with internal thermal protectors that prevent motor overheating in case of loss of phase or low refrigerant charge.
- The large ZFI scroll compressors are equipped with a new generation electronic control module for external scroll and motor protection, oil level protection.
- The ZF models that operate with liquid injection through DTC Valve in order to control the discharge temperature.
- All ZFI models that can operate with EVI control kits in order to control vapor injection superheat as well as a safe discharge temperature.

## ***Smooth operation***

- All Copeland Scroll compressors are designed with a discharge check valve that isolates the high pressure discharge gas. This allows the compressor to start unloaded, resulting in low inrush currents.
- Smooth operations are made possible by the continuous compression process. This generates less vibration than reciprocating technology.

## ***Delivers unmatched energy efficiency: 5%–20% improvement***

- Motor, scroll and bearing redesign minimize annual energy consumption.
- Precision machined scrolls provide the highest isentropic efficiency and wear-in for improved performance over time.
- New valving technology adjusts the scroll compression ratio based on operating condition, significantly improving low ambient performance.
- Using vapor injection improves system capacity by 50% and efficiency by 20% on average at the low temperature rating condition.

## ***Approved for multiple refrigerants***

- ZF range compressors are approved for R404A, R507, R22, R448A and R449A refrigerants. R407A, R407C, R407F and R134a is approved on selected models.  
(Notes: Please visit Copeland Select Software Asia for more information)
- The A2L (R454A, R454C, R455A) refrigerant is approved on YF series compressor which are made in Copeland USA.

## ***Wide product portfolio in 2-40HP range***

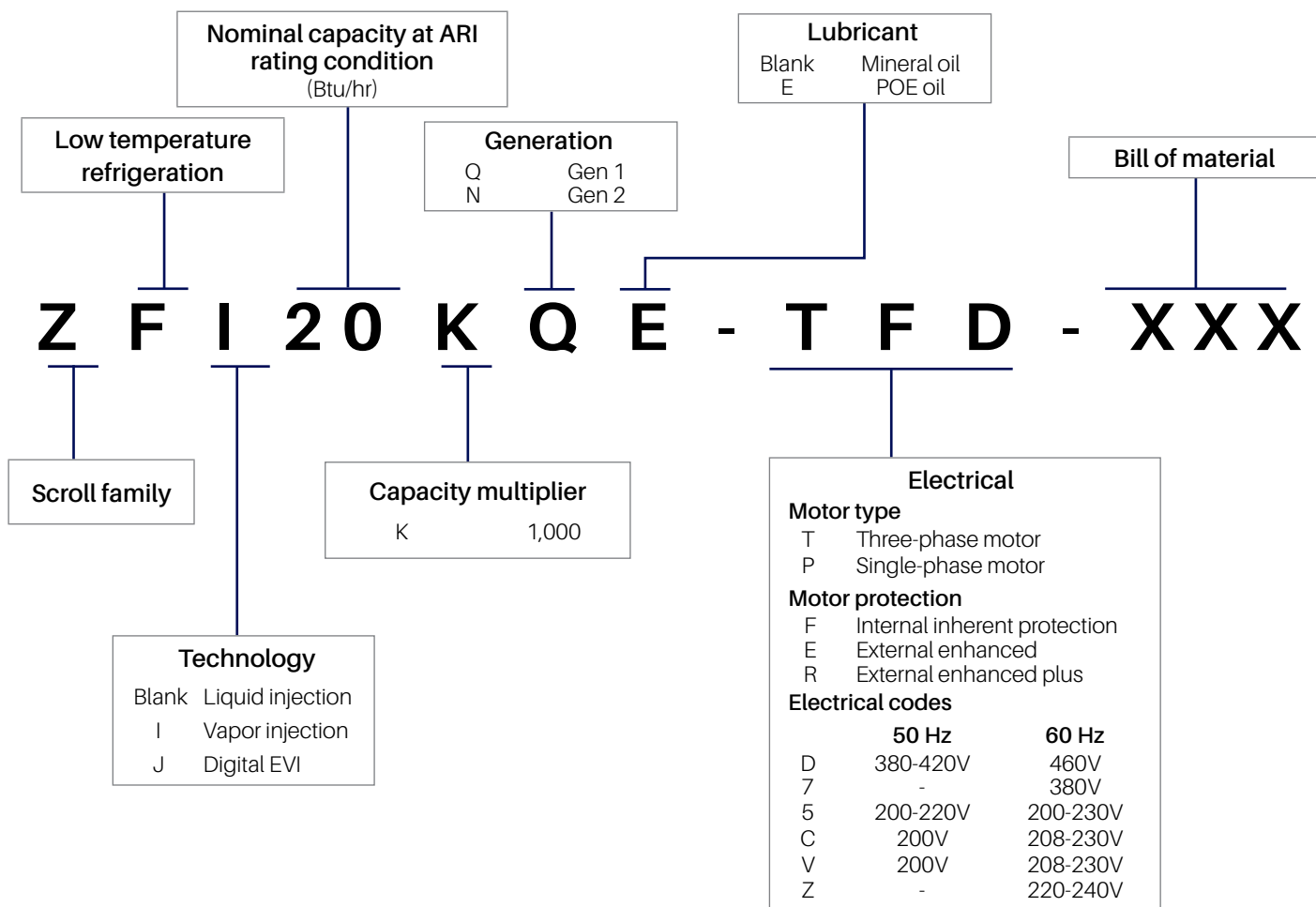
- Proven reliability and wide acceptance in the market.
- An ideal product solution to replace semi-hermetic reciprocating compressor.

| Models  |                    | 53 Frame  | 63 Frame     | 70 Frame        | 90 Frame     | 130 Frame   |
|---------|--------------------|-----------|--------------|-----------------|--------------|-------------|
| Liquid  | ZF*KQE             |           | 06/08/09/11K | 13/15/18/25/28K | 34/41/49/54K |             |
| Vapor   | ZFI*KQE            |           |              | 20/23/26/36/39K | 50/59/68/81K | 96/122/140K |
|         | ZFI*KNE<br>(Gen 2) | 09/11/13K | 16/19/23K    | 26/30K          |              |             |
| Digital | ZFJ*KQE            |           |              | 20/26/36K       |              |             |

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# Nomenclature



## Bill of material

| Compressor model   | Motor code                      | BOM number              | Connection |          | Oil sight glass | Schrader valve |
|--|---------------------------------|-------------------------|------------|----------|-----------------|----------------|
|  |                                 |                         | Stub tube  | Rotalock |                 |                |
| Vapor injection  |                                 |                         |            |          |                 |                |
| ZFI09KNE<br>ZFI11KNE<br>ZFI13KNE<br>ZFI16KNE             | TFD<br>PFZ<br>TF7<br>TF5<br>PFV | 558                     | ✓          |          | ✓               |                |
| ZFI20KQE<br>ZFI23KQE<br>ZFI26KQE<br>ZFI36KQE<br>ZFI39KQE | TFD<br>TF7<br>TFC               | 550                     | ✓          |          | ✓               | ✓              |
|  |                                 | 552                     |            | ✓        | ✓               | ✓              |
| ZFI39KQE   | TFC                             | 580                     | ✓          |          | ✓               | ✓              |
|  |                                 | 592                     |            | ✓        | ✓               | ✓              |
| ZFI50KQE<br>ZFI59KQE<br>ZFI68KQE<br>ZFI81KQE             | TFD<br>TF7<br>TFC               | 554                     | ✓          |          | ✓               | ✓              |
|  |                                 | 564<br>567 <sup>3</sup> |            | ✓        | ✓               | ✓              |
| ZFI96KQE<br>ZFI122KQE<br>ZFI140KQE                       | TRD<br>TR7<br>TRC               | 522                     | ✓          |          | ✓               | ✓              |
|  |                                 | 523                     |            | ✓        | ✓               | ✓              |

Remarks:

<sup>1</sup> Except ZF28KQE-TFC and ZFI39KQE-TFC

<sup>2</sup> PFV is for ZF13KQE and ZF15KQE only

<sup>3</sup> BOM554/564 is for OMB and BOM567 is for OM3 in rack application

| Compressor<br>model                                 | Motor<br>code                                      | BOM<br>number           | Connection   |          | Oil<br>sight<br>glass | Schrader<br>valve |
|---|--|-------------------------|--------------|----------|-----------------------|-------------------|
|   |  |                         | Stub<br>tube | Rotalock |                       |                   |
| Liquid injection                                    |  |                         |              |          |                       |                   |
| ZF06KQE<br>ZF08KQE<br>ZF09KQE<br>ZF11KQE            | TFD<br>TF5<br>PFV                                  | 550                     | ✓            |          | ✓                     | ✓                 |
|   |  | 551                     |              | ✓        | ✓                     | ✓                 |
| ZF13KQE<br>ZF15KQE<br>ZF18KQE<br>ZF25KQE<br>ZF28KQE | TFD<br>TF7<br>TFC <sup>1</sup><br>PFV <sup>2</sup> | 550                     | ✓            |          | ✓                     | ✓                 |
|   |  | 551                     |              | ✓        | ✓                     | ✓                 |
| ZF28KQE   | TFC  | 580                     | ✓            |          | ✓                     | ✓                 |
|   |  | 591                     |              | ✓        | ✓                     | ✓                 |
| ZF34KQE<br>ZF41KQE<br>ZF49KQE<br>ZF54KQE            | TFD<br>TF7<br>TFC                                  | 554                     | ✓            |          | ✓                     | ✓                 |
|   |  | 564<br>567 <sup>3</sup> |              | ✓        | ✓                     | ✓                 |
| Digital Vapor injection                             |  |                         |              |          |                       |                   |
| ZFJ20KQE<br>ZFJ26KQE<br>ZFJ36KQE                    | TFD<br>TF7<br>TF5                                  | 550                     | ✓            |          | ✓                     | ✓                 |
|   |  | 552                     |              | ✓        | ✓                     | ✓                 |

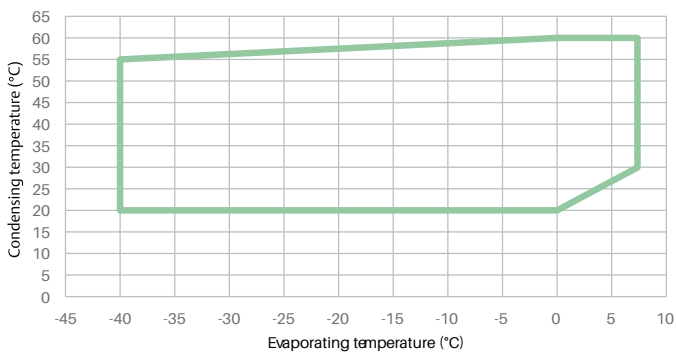
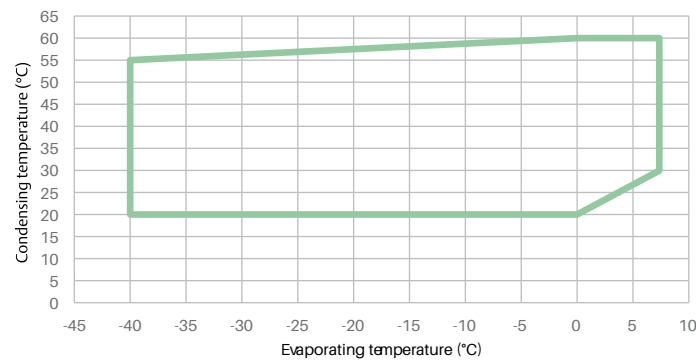


Vapor injection

Liquid injection

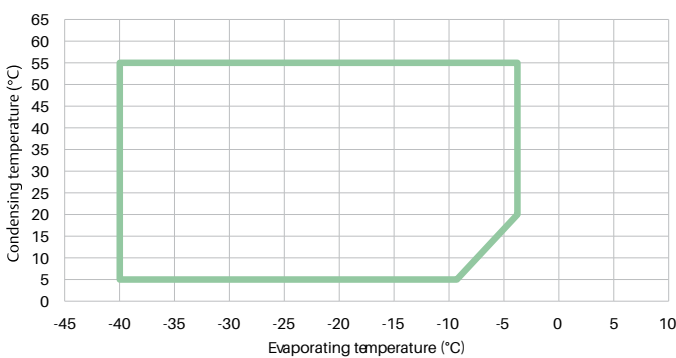
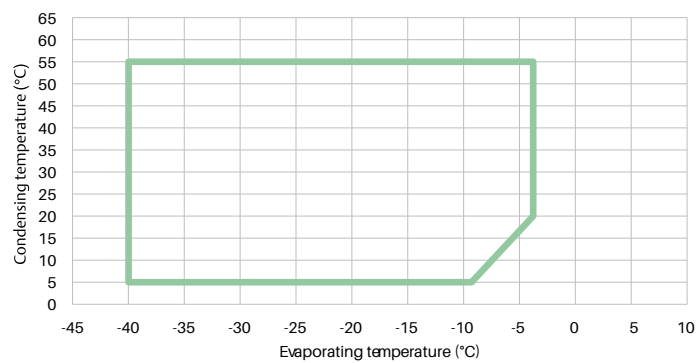
ZFI20-26KQE

ZF06-18KQE



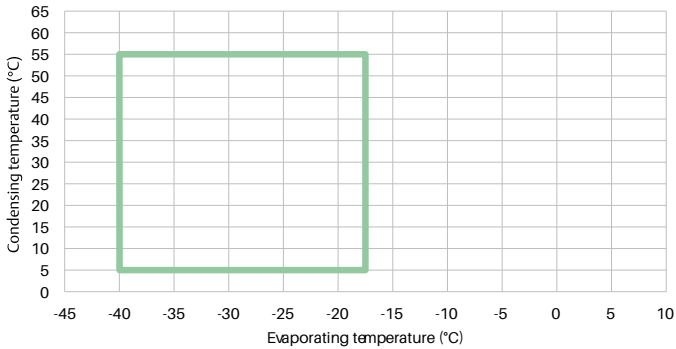
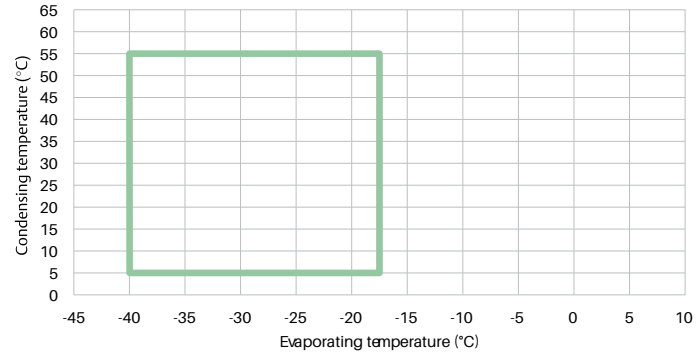
ZFI36-59KQE

ZF25-41KQE



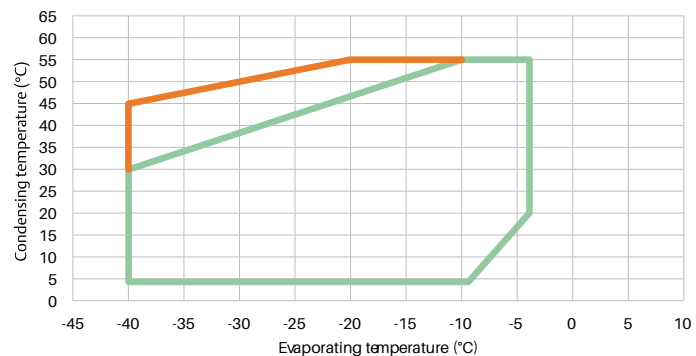
ZFI68-81KQE

ZF49-54KQE



Note: — 20°C Return gas + Liquid injection

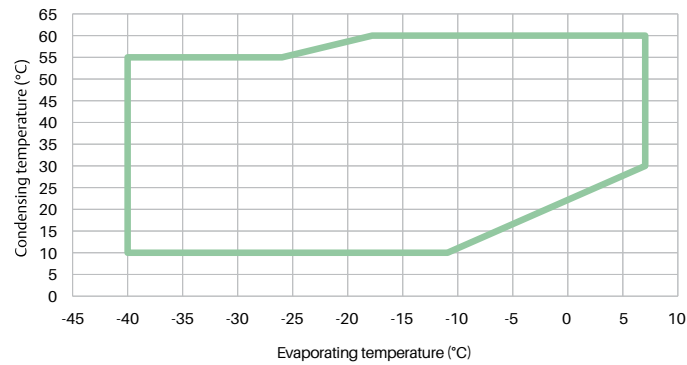
ZFI96-140KQE



Note: — 20°C Return gas + Vapor injection — 20K Superheat + Vapor injection

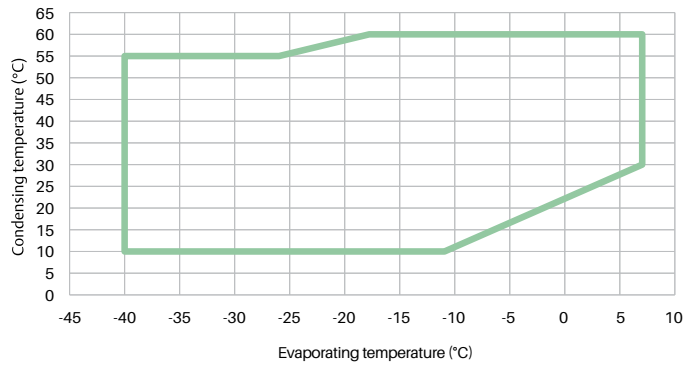
Vapor injection

ZFI20-26KQE, ZFI09-30KNE, ZFJ20-26KQE

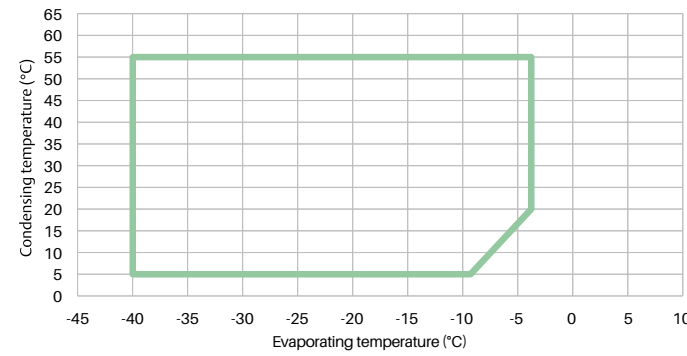


Liquid injection

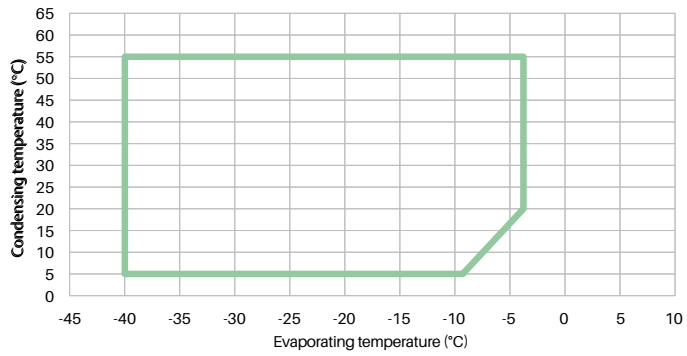
ZF06-18KQE



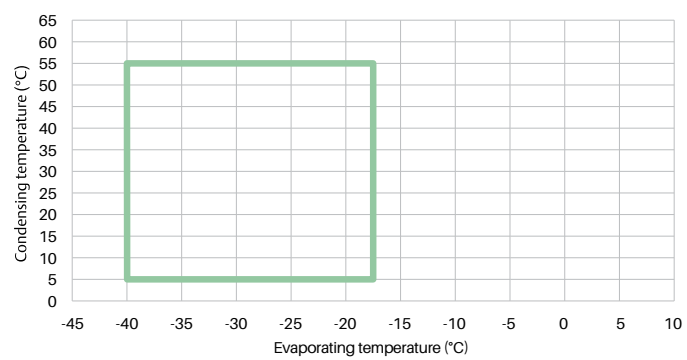
ZFI36-59KQE, ZFJ36KQE



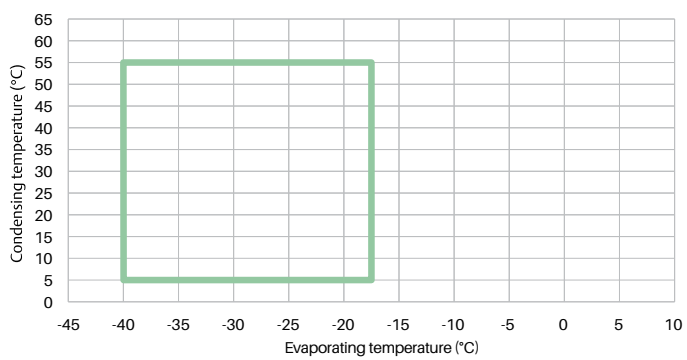
ZF25-41KQE



ZFI68-81KQE

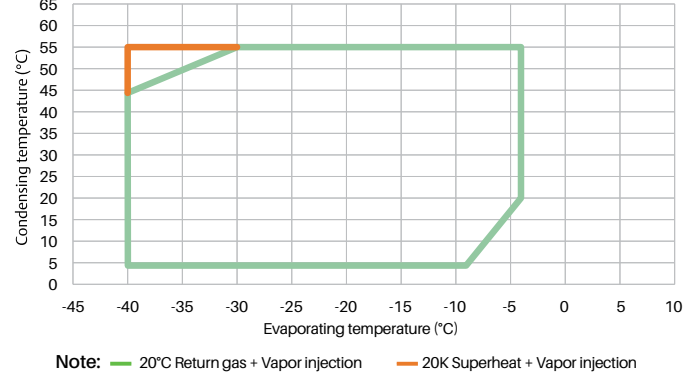


ZF49-54KQE



Note: — 20°C Return gas + Liquid injection

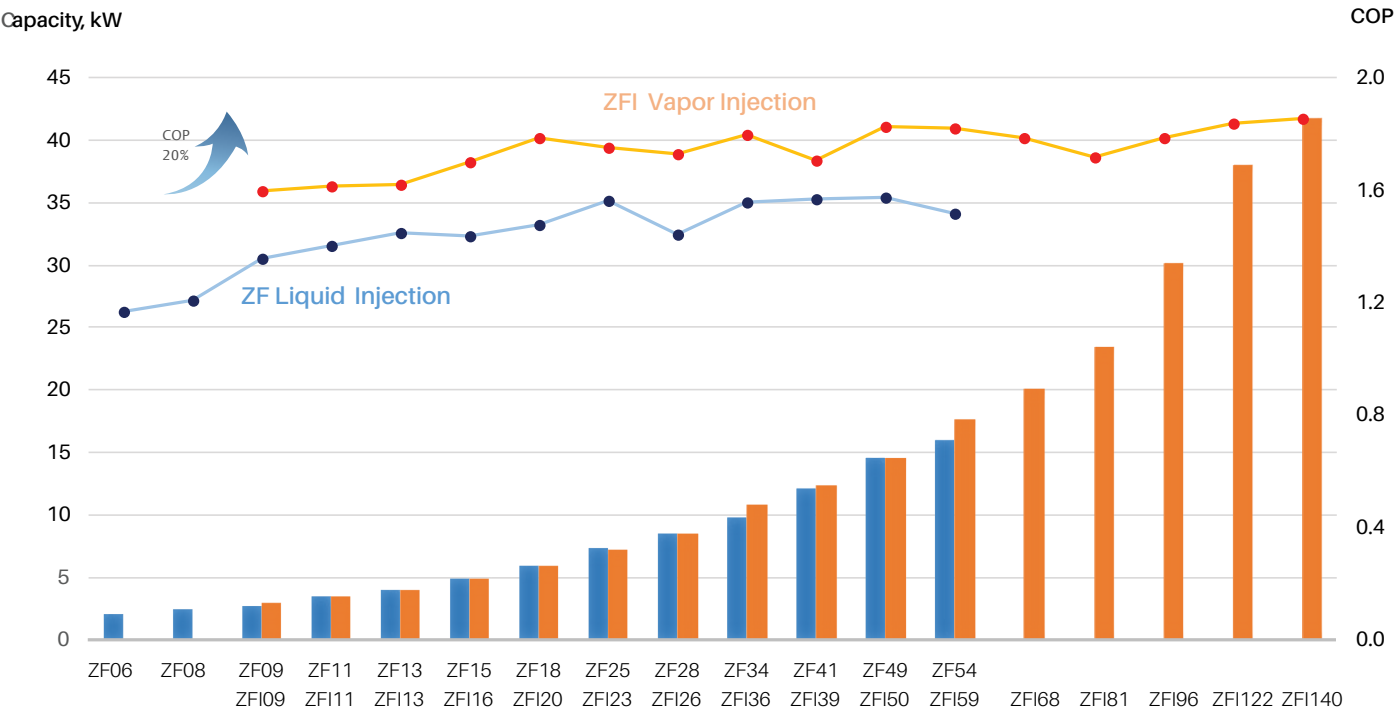
ZFI96-140KQE



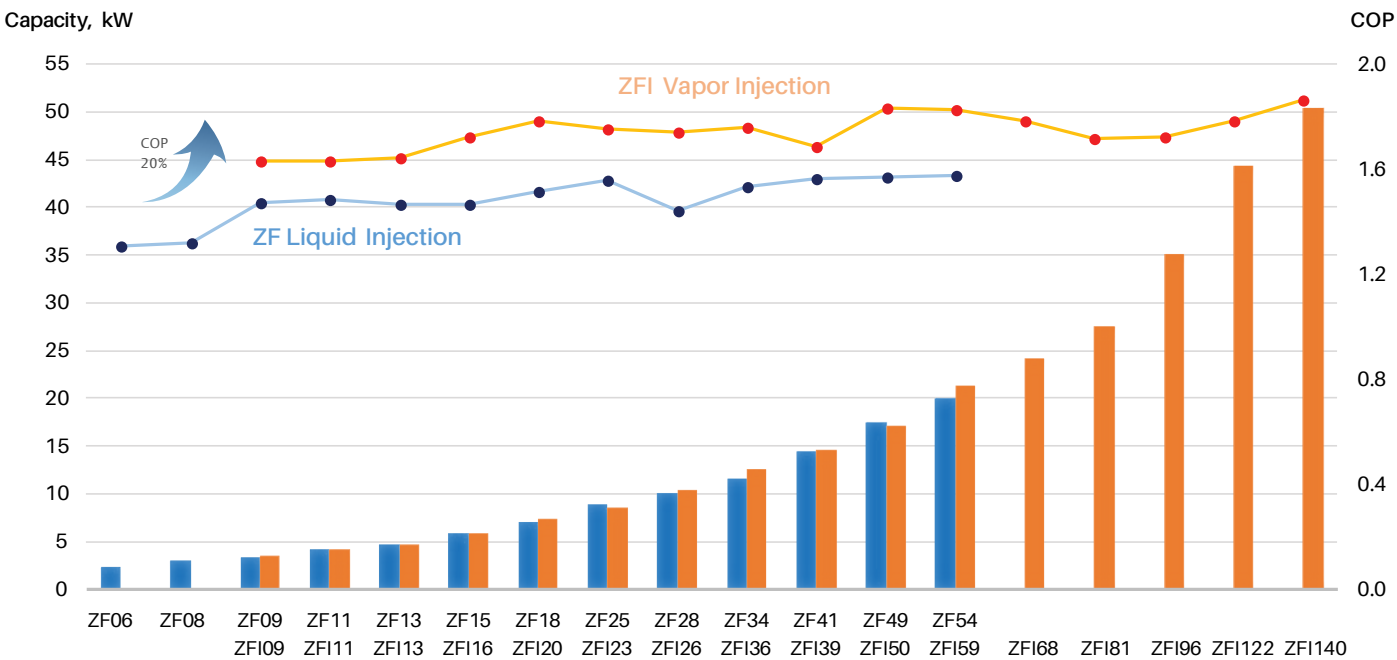
Note: — 20°C Return gas + Vapor injection — 20K Superheat + Vapor injection

Product line-up

R404A, 50Hz



R404A, 60Hz



Notes: Based on low temperature cold room conditions: -25°C evaporating, 45°C condensing and 20°C return gas temperature.



# Quick selection

R404A, 50Hz

| Model            | Nominal HP | Displacement<br>(cc/rev) | Condensing Temperature 45°C  |       |       |       |       |       |       |                              |       |       |       |       |       |       |
|------------------|------------|--------------------------|------------------------------|-------|-------|-------|-------|-------|-------|------------------------------|-------|-------|-------|-------|-------|-------|
|                  |            |                          | Capacity (kW)                |       |       |       |       |       |       | Power (kW)                   |       |       |       |       |       |       |
|                  |            |                          | Evaporating Temperature (°C) |       |       |       |       |       |       | Evaporating Temperature (°C) |       |       |       |       |       |       |
|                  |            |                          | -35                          | -30   | -25   | -20   | -15   | -10   | -5    | -35                          | -30   | -25   | -20   | -15   | -10   | -5    |
| Liquid Injection |            |                          |                              |       |       |       |       |       |       |                              |       |       |       |       |       |       |
| ZF06KQE          | 2          | 34.0                     | 1.32                         | 1.65  | 2.02  | 2.46  | 2.97  | 3.56  | 4.24  | 1.60                         | 1.66  | 1.73  | 1.80  | 1.89  | 1.98  | 2.09  |
| ZF08KQE          | 2.5        | 42.0                     | 1.63                         | 2.03  | 2.49  | 3.02  | 3.65  | 4.37  | 5.21  | 1.91                         | 1.98  | 2.06  | 2.15  | 2.25  | 2.36  | 2.49  |
| ZF09KQE          | 3          | 46.2                     | 1.80                         | 2.24  | 2.75  | 3.34  | 4.03  | 4.83  | 5.76  | 1.96                         | 1.98  | 2.03  | 2.09  | 2.16  | 2.25  | 2.36  |
| ZF11KQE          | 3.5        | 57.2                     | 2.28                         | 2.82  | 3.44  | 4.16  | 5.01  | 6.00  | 7.16  | 2.35                         | 2.39  | 2.45  | 2.54  | 2.64  | 2.75  | 2.89  |
| ZF13KQE          | 4          | 67.1                     | 2.59                         | 3.22  | 3.97  | 4.85  | 5.88  | 7.06  | 8.42  | 2.58                         | 2.65  | 2.74  | 2.84  | 2.95  | 3.07  | 3.21  |
| ZF15KQE          | 5          | 82.6                     | 3.18                         | 3.96  | 4.88  | 5.95  | 7.20  | 8.66  | 10.35 | 3.10                         | 3.25  | 3.40  | 3.55  | 3.72  | 3.91  | 4.11  |
| ZF18KQE          | 6          | 98.0                     | 3.88                         | 4.81  | 5.87  | 7.12  | 8.58  | 10.30 | 12.35 | 3.71                         | 3.84  | 3.98  | 4.14  | 4.31  | 4.50  | 4.70  |
| ZF25KQE          | 7.5        | 122.9                    | 4.78                         | 5.96  | 7.38  | 9.01  | 10.85 | 12.85 | 15.05 | 4.05                         | 4.41  | 4.73  | 5.06  | 5.43  | 5.86  | 6.39  |
| ZF28KQE          | 9          | 144.4                    | 5.46                         | 6.81  | 8.44  | 10.30 | 12.40 | 14.70 | 17.20 | 5.00                         | 5.44  | 5.84  | 6.25  | 6.70  | 7.23  | 7.89  |
| ZF34KQE          | 10         | 167.5                    | 6.32                         | 7.92  | 9.73  | 11.85 | 14.25 | 17.10 | 20.40 | 5.58                         | 5.91  | 6.25  | 6.58  | 6.91  | 7.25  | 7.58  |
| ZF41KQE          | 13         | 203.0                    | 7.96                         | 9.87  | 12.05 | 14.55 | 17.45 | 20.90 | 24.90 | 6.85                         | 7.27  | 7.68  | 8.11  | 8.53  | 8.97  | 9.42  |
| ZF49KQE          | 15         | 243.7                    | 9.47                         | 11.80 | 14.50 | 17.65 | -     | -     | -     | 8.33                         | 8.73  | 9.21  | 9.73  | -     | -     | -     |
| ZF54KQE          | 17         | 277.8                    | 10.40                        | 12.95 | 15.90 | 19.35 | -     | -     | -     | 9.49                         | 9.95  | 10.50 | 11.10 | -     | -     | -     |
| Vapor Injection  |            |                          |                              |       |       |       |       |       |       |                              |       |       |       |       |       |       |
| ZFI09KNE         | 2          | 34.5                     | 1.93                         | 2.36  | 2.91  | 3.55  | 4.27  | 5.04  | 5.83  | 1.66                         | 1.74  | 1.82  | 1.89  | 1.97  | 2.06  | 2.16  |
| ZFI11KNE         | 2.5        | 41.0                     | 2.32                         | 2.84  | 3.49  | 4.27  | 5.12  | 6.04  | 6.99  | 1.97                         | 2.07  | 2.16  | 2.25  | 2.34  | 2.44  | 2.57  |
| ZFI13KNE         | 3          | 46.0                     | 2.64                         | 3.23  | 3.97  | 4.85  | 5.82  | 6.86  | 7.94  | 2.23                         | 2.35  | 2.45  | 2.55  | 2.65  | 2.77  | 2.91  |
| ZFI16KNE         | 3.5        | 57.2                     |                              |       |       |       |       |       |       |                              |       |       |       |       |       |       |
| ZFI20KQE         | 4          | 67.1                     | 3.91                         | 4.81  | 5.85  | 7.05  | 8.40  | 9.96  | 11.70 | 3.14                         | 3.20  | 3.27  | 3.35  | 3.42  | 3.50  | 3.56  |
| ZFI23KQE         | 5          | 82.6                     | 5.31                         | 6.12  | 7.20  | 8.53  | 10.10 | 11.90 | 13.90 | 3.72                         | 3.92  | 4.10  | 4.27  | 4.43  | 4.57  | 4.71  |
| ZFI26KQE         | 6          | 98.0                     | 6.04                         | 7.18  | 8.53  | 10.10 | 11.95 | 14.10 | 16.55 | 4.50                         | 4.73  | 4.94  | 5.13  | 5.31  | 5.48  | 5.63  |
| ZFI36KQE         | 8          | 122.9                    | 7.53                         | 9.03  | 10.75 | 12.70 | 14.80 | 17.15 | 19.70 | 5.20                         | 5.61  | 5.98  | 6.29  | 6.56  | 6.80  | 7.00  |
| ZFI39KQE         | 10         | 144.4                    | 8.64                         | 10.35 | 12.35 | 14.55 | 17.00 | 19.70 | 22.60 | 6.31                         | 6.81  | 7.25  | 7.63  | 7.96  | 8.24  | 8.49  |
| ZFI50KQE         | 12         | 167.5                    | 9.99                         | 12.05 | 14.50 | 17.30 | 20.40 | 23.60 | 27.10 | 7.11                         | 7.53  | 7.94  | 8.32  | 8.70  | 9.10  | 9.52  |
| ZFI59KQE         | 15         | 203.0                    | 12.15                        | 14.70 | 17.65 | 21.10 | 24.80 | 28.80 | 33.00 | 8.67                         | 9.19  | 9.68  | 10.15 | 10.60 | 11.10 | 11.60 |
| ZFI68KQE         | 18         | 243.7                    | 13.80                        | 16.65 | 20.10 | 23.90 | -     | -     | -     | 10.10                        | 10.70 | 11.25 | 11.80 | -     | -     | -     |
| ZFI81KQE         | 20         | 277.8                    | 16.20                        | 19.50 | 23.50 | 28.00 | -     | -     | -     | 12.25                        | 13.00 | 13.70 | 14.35 | -     | -     | -     |
| ZFI96KQE         | 25         | 349.4                    | 20.60                        | 25.10 | 30.20 | 36.00 | 42.80 | 50.70 | 59.80 | 15.55                        | 16.25 | 16.90 | 17.60 | 18.30 | 19.00 | 19.85 |
| ZFI122KQE        | 30         | 444.5                    | 26.00                        | 31.60 | 38.00 | 45.40 | 53.90 | 63.80 | 75.40 | 18.95                        | 19.80 | 20.60 | 21.40 | 22.30 | 23.20 | 24.20 |
| ZFI140KQE        | 40         | 502.6                    | 28.50                        | 34.70 | 41.80 | 50.00 | 59.60 | 70.60 | 83.50 | 20.70                        | 21.70 | 22.50 | 23.40 | 24.30 | 25.30 | 26.40 |

R404A, 60Hz

| Model            | Nominal HP | Displacement<br>(cc/rev) | Condensing Temperature 45°C  |       |       |       |       |       |        |                              |       |       |       |       |       |       |
|------------------|------------|--------------------------|------------------------------|-------|-------|-------|-------|-------|--------|------------------------------|-------|-------|-------|-------|-------|-------|
|                  |            |                          | Capacity (kW)                |       |       |       |       |       |        | Power (kW)                   |       |       |       |       |       |       |
|                  |            |                          | Evaporating Temperature (°C) |       |       |       |       |       |        | Evaporating Temperature (°C) |       |       |       |       |       |       |
|                  |            |                          | -35                          | -30   | -25   | -20   | -15   | -10   | -5     | -35                          | -30   | -25   | -20   | -15   | -10   | -5    |
| Liquid Injection |            |                          |                              |       |       |       |       |       |        |                              |       |       |       |       |       |       |
| ZF06KQE          | 2          | 34.0                     | 1.56                         | 1.94  | 2.38  | 2.88  | 3.46  | 4.13  | 4.92   | 1.73                         | 1.76  | 1.82  | 1.91  | 2.02  | 2.15  | 2.27  |
| ZF08KQE          | 2.5        | 42.0                     | 1.97                         | 2.45  | 3.01  | 3.66  | 4.41  | 5.29  | 6.30   | 2.16                         | 2.21  | 2.28  | 2.38  | 2.49  | 2.62  | 2.77  |
| ZF09KQE          | 3          | 46.2                     | 2.20                         | 2.73  | 3.34  | 4.04  | 4.87  | 5.83  | 6.96   | 2.15                         | 2.20  | 2.27  | 2.36  | 2.48  | 2.61  | 2.76  |
| ZF11KQE          | 3.5        | 57.2                     | 2.74                         | 3.39  | 4.16  | 5.05  | 6.10  | 7.30  | 8.70   | 2.60                         | 2.69  | 2.80  | 2.93  | 3.09  | 3.27  | 3.47  |
| ZF13KQE          | 4          | 67.1                     | 3.07                         | 3.83  | 4.74  | 5.80  | 7.03  | 8.44  | 10.05  | 3.05                         | 3.13  | 3.23  | 3.36  | 3.52  | 3.70  | 3.92  |
| ZF15KQE          | 5          | 82.6                     | 3.86                         | 4.79  | 5.87  | 7.14  | 8.62  | 10.35 | 12.35  | 3.65                         | 3.83  | 4.01  | 4.21  | 4.43  | 4.67  | 4.95  |
| ZF18KQE          | 6          | 98.0                     | 4.72                         | 5.83  | 7.10  | 8.60  | 10.35 | 12.40 | 14.80  | 4.32                         | 4.48  | 4.69  | 4.95  | 5.24  | 5.56  | 5.90  |
| ZF25KQE          | 7.5        | 122.9                    | 5.80                         | 7.18  | 8.85  | 10.80 | 13.15 | 15.85 | 18.90  | 4.77                         | 5.24  | 5.68  | 6.09  | 6.49  | 6.89  | 7.28  |
| ZF28KQE          | 9          | 144.4                    | 6.62                         | 8.20  | 10.10 | 12.35 | 15.00 | 18.10 | 21.60  | 5.88                         | 6.46  | 7.00  | 7.52  | 8.01  | 8.50  | 8.98  |
| ZF34KQE          | 10         | 167.5                    | 7.57                         | 9.48  | 11.65 | 14.15 | 17.05 | 20.50 | 24.40  | 6.79                         | 7.20  | 7.61  | 8.01  | 8.42  | 8.82  | 9.23  |
| ZF41KQE          | 13         | 203.0                    | 9.59                         | 11.90 | 14.50 | 17.55 | 21.00 | 25.20 | 30.00  | 8.25                         | 8.75  | 9.26  | 9.77  | 10.30 | 10.80 | 11.35 |
| ZF49KQE          | 15         | 243.7                    | 11.40                        | 14.20 | 17.45 | 21.20 | -     | -     | -      | 10.05                        | 10.50 | 11.10 | 11.70 | -     | -     | -     |
| ZF54KQE          | 17         | 277.8                    | 13.00                        | 16.20 | 19.90 | 24.20 | -     | -     | -      | 11.45                        | 12.00 | 12.65 | 13.35 | -     | -     | -     |
| Vapor Injection  |            |                          |                              |       |       |       |       |       |        |                              |       |       |       |       |       |       |
| ZFI09KNE         | 2          | 34.5                     | 2.35                         | 2.87  | 3.54  | 4.32  | 5.19  | 6.13  | 7.09   | 1.97                         | 2.08  | 2.17  | 2.26  | 2.35  | 2.45  | 2.58  |
| ZFI11KNE         | 2.5        | 41.0                     | 2.74                         | 3.35  | 4.12  | 5.03  | 6.04  | 7.13  | 8.24   | 2.3                          | 2.42  | 2.53  | 2.63  | 2.74  | 2.86  | 3.01  |
| ZFI13KNE         | 3          | 46.0                     | 3.15                         | 3.84  | 4.73  | 5.77  | 6.93  | 8.17  | 9.46   | 2.62                         | 2.76  | 2.88  | 3.00  | 3.12  | 3.26  | 3.43  |
| ZFI16KNE         | 3.5        | 57.2                     |                              |       |       |       |       |       |        |                              |       |       |       |       |       |       |
| ZFI20KQE         | 4          | 67.1                     | 5.07                         | 6.13  | 7.34  | 8.72  | 10.30 | 12.10 | 14.15  | 3.78                         | 3.95  | 4.12  | 4.27  | 4.41  | 4.54  | 4.66  |
| ZFI23KQE         | 5          | 82.6                     | 6.32                         | 7.28  | 8.57  | 10.15 | 12.00 | 14.15 | 16.55  | 4.39                         | 4.63  | 4.84  | 5.04  | 5.22  | 5.40  | 5.55  |
| ZFI26KQE         | 6          | 98.0                     | 7.25                         | 8.77  | 10.45 | 12.35 | 14.50 | 16.90 | 19.70  | 5.31                         | 5.66  | 6.00  | 6.32  | 6.63  | 6.93  | 7.23  |
| ZFI36KQE         | 8          | 122.9                    | 9.02                         | 10.70 | 12.65 | 15.00 | 17.85 | 21.20 | 25.20  | 6.26                         | 6.74  | 7.19  | 7.63  | 8.09  | 8.59  | 9.17  |
| ZFI39KQE         | 10         | 144.4                    | 10.40                        | 12.30 | 14.55 | 17.25 | 20.50 | 24.40 | 28.90  | 7.50                         | 8.08  | 8.62  | 9.15  | 9.70  | 10.30 | 11.00 |
| ZFI50KQE         | 12         | 167.5                    | 11.85                        | 14.25 | 17.15 | 20.50 | 24.10 | 28.00 | 32.00  | 8.40                         | 8.90  | 9.37  | 9.83  | 10.30 | 10.75 | 11.25 |
| ZFI59KQE         | 15         | 203.0                    | 14.65                        | 17.70 | 21.30 | 25.40 | 29.90 | 34.70 | 39.70  | 10.45                        | 11.10 | 11.65 | 12.25 | 12.80 | 13.35 | 14.00 |
| ZFI68KQE         | 18         | 243.7                    | 16.55                        | 20.00 | 24.10 | 28.70 | -     | -     | -      | 12.10                        | 12.85 | 13.50 | 14.15 | -     | -     | -     |
| ZFI81KQE         | 20         | 277.8                    | 19.05                        | 23.00 | 27.60 | 33.00 | -     | -     | -      | 14.45                        | 15.30 | 16.10 | 16.90 | -     | -     | -     |
| ZFI96KQE         | 25         | 349.4                    | 24.00                        | 29.30 | 35.20 | 42.00 | 49.90 | 59.10 | 69.80  | 18.75                        | 19.60 | 20.40 | 21.20 | 22.10 | 23.00 | 24.00 |
| ZFI122KQE        | 30         | 444.5                    | 30.30                        | 36.90 | 44.40 | 53.00 | 62.90 | 74.50 | 88.00  | 22.90                        | 23.90 | 24.90 | 25.90 | 26.90 | 28.00 | 29.20 |
| ZFI140KQE        | 40         | 502.6                    | 34.40                        | 41.80 | 50.40 | 60.20 | 71.70 | 85.10 | 100.50 | 24.90                        | 26.00 | 27.10 | 28.10 | 29.20 | 30.30 | 31.60 |

Condition: 20°C return gas, 0K subcooling

# Performance data

R22

TFC: 200 V, 3-Phase, 50 Hz ; TFD: 380-420 V, 3-Phase, 50 Hz

Liquid injection

| Model   |            |   | Cond. temp. °C | Evap. temp. °C |      |      |      |      |      |       |       |       |       |       |
|---------|------------|---|----------------|----------------|------|------|------|------|------|-------|-------|-------|-------|-------|
|         |            |   |                | -40            | -35  | -30  | -25  | -20  | -15  | -10   | -5    | 0     | 5     | 7     |
| ZF06KQE | TF5<br>TFD | Q | 30             | 1.15           | 1.46 | 1.82 | 2.24 | 2.73 | 3.31 | 3.98  | 4.74  | 5.62  | 6.61  | 7.05  |
|         |            |   | 40             | 1.05           | 1.34 | 1.67 | 2.06 | 2.52 | 3.05 | 3.66  | 4.37  | 5.18  | 6.10  | 6.50  |
|         |            |   | 50             | 0.97           | 1.23 | 1.53 | 1.88 | 2.29 | 2.77 | 3.32  | 3.96  | 4.70  | 5.55  | 5.91  |
|         |            | P | 30             | 1.21           | 1.24 | 1.29 | 1.34 | 1.40 | 1.47 | 1.55  | 1.65  | 1.76  | 1.89  | 1.95  |
|         |            |   | 40             | 1.43           | 1.47 | 1.52 | 1.58 | 1.64 | 1.70 | 1.78  | 1.87  | 1.98  | 2.10  | 2.15  |
|         |            |   | 50             | 1.69           | 1.74 | 1.79 | 1.85 | 1.92 | 1.99 | 2.06  | 2.15  | 2.25  | 2.36  | 2.41  |
| ZF08KQE | TF5<br>TFD | Q | 30             | 1.41           | 1.79 | 2.23 | 2.75 | 3.36 | 4.07 | 4.89  | 5.83  | 6.91  | 8.13  | 8.66  |
|         |            |   | 40             | 1.29           | 1.65 | 2.06 | 2.54 | 3.10 | 3.75 | 4.50  | 5.37  | 6.36  | 7.50  | 7.99  |
|         |            |   | 50             | 1.19           | 1.52 | 1.89 | 2.32 | 2.82 | 3.40 | 4.09  | 4.87  | 5.78  | 6.82  | 7.27  |
|         |            | P | 30             | 1.44           | 1.48 | 1.54 | 1.60 | 1.67 | 1.75 | 1.85  | 1.96  | 2.10  | 2.25  | 2.32  |
|         |            |   | 40             | 1.70           | 1.76 | 1.81 | 1.88 | 1.95 | 2.03 | 2.12  | 2.23  | 2.35  | 2.50  | 2.56  |
|         |            |   | 50             | 2.01           | 2.07 | 2.14 | 2.21 | 2.28 | 2.36 | 2.46  | 2.56  | 2.68  | 2.81  | 2.87  |
| ZF09KQE | TF5<br>TFD | Q | 30             | 1.59           | 2.01 | 2.50 | 3.09 | 3.78 | 4.58 | 5.51  | 6.58  | 7.79  | 9.17  | 9.77  |
|         |            |   | 40             | 1.46           | 1.85 | 2.30 | 2.84 | 3.48 | 4.22 | 5.07  | 6.06  | 7.18  | 8.46  | 9.01  |
|         |            |   | 50             | 1.34           | 1.69 | 2.11 | 2.59 | 3.16 | 3.83 | 4.60  | 5.50  | 6.52  | 7.69  | 8.20  |
|         |            | P | 30             | 1.52           | 1.57 | 1.61 | 1.67 | 1.72 | 1.79 | 1.86  | 1.94  | 2.04  | 2.15  | 2.19  |
|         |            |   | 40             | 1.80           | 1.85 | 1.90 | 1.95 | 2.01 | 2.07 | 2.14  | 2.22  | 2.31  | 2.41  | 2.45  |
|         |            |   | 50             | 2.10           | 2.16 | 2.22 | 2.28 | 2.34 | 2.41 | 2.48  | 2.56  | 2.65  | 2.75  | 2.79  |
| ZF11KQE | TF5<br>TFD | Q | 30             | 1.97           | 2.49 | 3.10 | 3.82 | 4.67 | 5.65 | 6.78  | 8.07  | 9.54  | 11.20 | 11.91 |
|         |            |   | 40             | 1.81           | 2.29 | 2.86 | 3.52 | 4.30 | 5.21 | 6.26  | 7.47  | 8.84  | 10.39 | 11.06 |
|         |            |   | 50             | 1.65           | 2.08 | 2.59 | 3.19 | 3.89 | 4.72 | 5.67  | 6.78  | 8.04  | 9.47  | 10.09 |
|         |            | P | 30             | 1.69           | 1.74 | 1.81 | 1.88 | 1.97 | 2.08 | 2.20  | 2.34  | 2.50  | 2.67  | 2.74  |
|         |            |   | 40             | 2.00           | 2.06 | 2.13 | 2.21 | 2.30 | 2.40 | 2.52  | 2.65  | 2.80  | 2.97  | 3.04  |
|         |            |   | 50             | 2.37           | 2.44 | 2.51 | 2.59 | 2.69 | 2.79 | 2.91  | 3.04  | 3.19  | 3.35  | 3.42  |
| ZF13KQE | TFC<br>TFD | Q | 30             | 2.30           | 2.89 | 3.60 | 4.44 | 5.44 | 6.60 | 7.94  | 9.48  | 11.23 | 13.21 | 14.07 |
|         |            |   | 40             | 2.12           | 2.66 | 3.32 | 4.09 | 5.01 | 6.07 | 7.31  | 8.73  | 10.34 | 12.17 | 12.97 |
|         |            |   | 50             | 1.93           | 2.43 | 3.02 | 3.72 | 4.55 | 5.51 | 6.63  | 7.93  | 9.41  | 11.08 | 11.82 |
|         |            | P | 30             | 2.02           | 2.08 | 2.15 | 2.23 | 2.31 | 2.41 | 2.51  | 2.62  | 2.74  | 2.87  | 2.93  |
|         |            |   | 40             | 2.38           | 2.45 | 2.52 | 2.61 | 2.70 | 2.81 | 2.92  | 3.04  | 3.17  | 3.31  | 3.37  |
|         |            |   | 50             | 2.79           | 2.86 | 2.94 | 3.04 | 3.14 | 3.26 | 3.38  | 3.51  | 3.65  | 3.80  | 3.87  |
| ZF15KQE | TFC<br>TFD | Q | 30             | 2.79           | 3.52 | 4.39 | 5.42 | 6.63 | 8.03 | 9.63  | 11.47 | 13.54 | 15.87 | 16.87 |
|         |            |   | 40             | 2.57           | 3.25 | 4.05 | 5.01 | 6.12 | 7.42 | 8.91  | 10.62 | 12.55 | 14.73 | 15.68 |
|         |            |   | 50             | 2.34           | 2.95 | 3.68 | 4.54 | 5.56 | 6.74 | 8.11  | 9.68  | 11.46 | 13.48 | 14.35 |
|         |            | P | 30             | 2.47           | 2.53 | 2.61 | 2.70 | 2.82 | 2.95 | 3.11  | 3.29  | 3.52  | 3.78  | 3.89  |
|         |            |   | 40             | 2.89           | 2.97 | 3.06 | 3.15 | 3.27 | 3.40 | 3.55  | 3.74  | 3.95  | 4.19  | 4.30  |
|         |            |   | 50             | 3.38           | 3.47 | 3.58 | 3.68 | 3.81 | 3.94 | 4.10  | 4.28  | 4.49  | 4.73  | 4.83  |
| ZF18KQE | TFC<br>TFD | Q | 30             | 3.25           | 4.12 | 5.17 | 6.42 | 7.89 | 9.60 | 11.58 | 13.84 | 16.41 | 19.31 | 20.57 |
|         |            |   | 40             | 2.98           | 3.78 | 4.75 | 5.90 | 7.25 | 8.82 | 10.64 | 12.73 | 15.11 | 17.80 | 18.97 |
|         |            |   | 50             | 2.69           | 3.42 | 4.30 | 5.34 | 6.56 | 7.99 | 9.65  | 11.55 | 13.73 | 16.20 | 17.27 |
|         |            | P | 30             | 3.13           | 3.18 | 3.25 | 3.33 | 3.43 | 3.55 | 3.69  | 3.86  | 4.05  | 4.27  | 4.36  |
|         |            |   | 40             | 3.68           | 3.75 | 3.82 | 3.91 | 4.02 | 4.14 | 4.29  | 4.46  | 4.65  | 4.86  | 4.96  |
|         |            |   | 50             | 4.31           | 4.39 | 4.49 | 4.60 | 4.72 | 4.86 | 5.02  | 5.20  | 5.40  | 5.62  | 5.72  |

## Notes:

1. Q for capacity; P for power. Units in kW

2. All ZF\*KQE values are rated at return gas temperature: 20°C and subcooling: 0 K

# Performance data

R22

TFC: 200 V, 3-Phase, 50 Hz ; TFD: 380-420 V, 3-Phase, 50 Hz

Liquid injection

| Model   |            |   | Cond. temp. °C | Evap. temp. °C |       |       |       |       |       |       |       |   |   |   |
|---------|------------|---|----------------|----------------|-------|-------|-------|-------|-------|-------|-------|---|---|---|
|         |            |   |                | -40            | -35   | -30   | -25   | -20   | -15   | -10   | -5    | 0 | 5 | 7 |
| ZF25KQE | TFC<br>TFD | Q | 30             | 4.08           | 5.17  | 6.48  | 8.04  | 9.89  | 12.04 | 14.52 | 17.35 |   |   |   |
|         |            |   | 40             | 3.73           | 4.74  | 5.95  | 7.39  | 9.09  | 11.06 | 13.34 | 15.96 |   |   |   |
|         |            |   | 50             | 3.37           | 4.29  | 5.39  | 6.69  | 8.22  | 10.02 | 12.09 | 14.48 |   |   |   |
|         |            | P | 30             | 3.93           | 3.99  | 4.07  | 4.17  | 4.30  | 4.45  | 4.63  | 4.84  |   |   |   |
|         |            |   | 40             | 4.62           | 4.70  | 4.79  | 4.90  | 5.04  | 5.19  | 5.38  | 5.59  |   |   |   |
|         |            |   | 50             | 5.40           | 5.50  | 5.62  | 5.76  | 5.92  | 6.09  | 6.29  | 6.52  |   |   |   |
| ZF28KQE | TFC<br>TFD | Q | 30             | 4.79           | 6.07  | 7.61  | 9.45  | 11.62 | 14.14 | 17.06 | 20.39 |   |   |   |
|         |            |   | 40             | 4.39           | 5.57  | 7.00  | 8.69  | 10.68 | 13.00 | 15.68 | 18.76 |   |   |   |
|         |            |   | 50             | 3.96           | 5.04  | 6.33  | 7.86  | 9.66  | 11.77 | 14.21 | 17.02 |   |   |   |
|         |            | P | 30             | 4.72           | 4.79  | 4.88  | 5.01  | 5.16  | 5.34  | 5.55  | 5.80  |   |   |   |
|         |            |   | 40             | 5.54           | 5.63  | 5.75  | 5.88  | 6.04  | 6.23  | 6.45  | 6.70  |   |   |   |
|         |            |   | 50             | 6.48           | 6.61  | 6.75  | 6.91  | 7.10  | 7.31  | 7.55  | 7.82  |   |   |   |
| ZF34KQE | TFC<br>TFD | Q | 30             | 5.31           | 6.77  | 8.52  | 10.59 | 13.01 | 15.82 | 19.06 | 22.74 |   |   |   |
|         |            |   | 40             | 4.81           | 6.19  | 7.83  | 9.75  | 12.00 | 14.59 | 17.58 | 20.99 |   |   |   |
|         |            |   | 50             | 4.22           | 5.51  | 7.03  | 8.79  | 10.84 | 13.22 | 15.95 | 19.06 |   |   |   |
|         |            | P | 30             | 4.32           | 4.50  | 4.68  | 4.87  | 5.06  | 5.26  | 5.46  | 5.66  |   |   |   |
|         |            |   | 40             | 4.95           | 5.21  | 5.46  | 5.71  | 5.95  | 6.19  | 6.42  | 6.64  |   |   |   |
|         |            |   | 50             | 5.67           | 6.02  | 6.36  | 6.68  | 6.98  | 7.27  | 7.53  | 7.77  |   |   |   |
| ZF41KQE | TFC<br>TFD | Q | 30             | 6.35           | 8.03  | 10.03 | 12.41 | 15.21 | 18.48 | 22.26 | 26.61 |   |   |   |
|         |            |   | 40             | 5.80           | 7.40  | 9.27  | 11.46 | 14.03 | 17.01 | 20.46 | 24.42 |   |   |   |
|         |            |   | 50             | 5.09           | 6.61  | 8.36  | 10.38 | 12.72 | 15.43 | 18.56 | 22.15 |   |   |   |
|         |            | P | 30             | 5.24           | 5.49  | 5.75  | 6.01  | 6.27  | 6.53  | 6.80  | 7.06  |   |   |   |
|         |            |   | 40             | 6.05           | 6.38  | 6.71  | 7.03  | 7.35  | 7.66  | 7.97  | 8.27  |   |   |   |
|         |            |   | 50             | 6.95           | 7.36  | 7.76  | 8.16  | 8.53  | 8.90  | 9.26  | 9.61  |   |   |   |
| ZF49KQE | TFC<br>TFD | Q | 30             | 7.81           | 9.82  | 12.30 | 15.28 | 18.78 |       |       |       |   |   |   |
|         |            |   | 40             | 7.10           | 8.99  | 11.31 | 14.08 | 17.33 |       |       |       |   |   |   |
|         |            |   | 50             | 6.23           | 8.00  | 10.16 | 12.72 | 15.71 |       |       |       |   |   |   |
|         |            | P | 30             | 6.48           | 6.68  | 6.94  | 7.25  | 7.59  |       |       |       |   |   |   |
|         |            |   | 40             | 7.52           | 7.76  | 8.08  | 8.45  | 8.86  |       |       |       |   |   |   |
|         |            |   | 50             | 8.78           | 9.07  | 9.43  | 9.86  | 10.32 |       |       |       |   |   |   |
| ZF54KQE | TFC<br>TFD | Q | 30             | 8.99           | 11.36 | 14.18 | 17.49 | 21.36 |       |       |       |   |   |   |
|         |            |   | 40             | 8.31           | 10.54 | 13.16 | 16.23 | 19.82 |       |       |       |   |   |   |
|         |            |   | 50             | 7.50           | 9.56  | 11.96 | 14.78 | 18.06 |       |       |       |   |   |   |
|         |            | P | 30             | 4.26           | 4.73  | 5.16  | 5.62  | 6.14  |       |       |       |   |   |   |
|         |            |   | 40             | 5.54           | 6.02  | 6.48  | 6.95  | 7.47  |       |       |       |   |   |   |
|         |            |   | 50             | 7.25           | 7.80  | 8.31  | 8.83  | 9.40  |       |       |       |   |   |   |

## Notes:

1. Q for capacity; P for power. Units in kW

2. All ZF\*KQE values are rated at return gas temperature: 20°C and subcooling: 0 K

# Performance data

R22

TFC: 200 V, 3-Phase, 50 Hz ; TFD: 380-420 V, 3-Phase, 50 Hz

Vapor injection

| Model    |            |    | Cond. temp. °C | Evap. temp. °C |        |        |        |        |        |       |       |       |       |       |
|----------|------------|----|----------------|----------------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|
|          |            |    |                | -40            | -35    | -30    | -25    | -20    | -15    | -10   | -5    | 0     | 5     | 7     |
| ZFI20KQE | TFC<br>TFD | Q  | 30             | 2.56           | 3.22   | 4.01   | 4.94   | 6.00   | 7.18   | 8.47  | 9.87  | 11.37 | 12.97 | 13.64 |
|          |            |    | 40             | 2.55           | 3.21   | 3.99   | 4.90   | 5.93   | 7.06   | 8.30  | 9.63  | 11.06 | 12.56 | 13.18 |
|          |            |    | 50             | 2.32           | 2.99   | 3.78   | 4.68   | 5.68   | 6.78   | 7.97  | 9.24  | 10.59 | 12.01 | 12.60 |
|          |            | P  | 30             | 2.14           | 2.18   | 2.27   | 2.39   | 2.55   | 2.72   | 2.91  | 3.09  | 3.28  | 3.45  | 3.51  |
|          |            |    | 40             | 2.39           | 2.50   | 2.63   | 2.76   | 2.90   | 3.02   | 3.13  | 3.22  | 3.26  | 3.27  | 3.26  |
|          |            |    | 50             | 2.98           | 3.13   | 3.27   | 3.39   | 3.48   | 3.53   | 3.53  | 3.48  | 3.37  | 3.18  | 3.09  |
|          |            | LO | 30             | -7.70          | -6.20  | -4.40  | -1.80  | 1.30   | 4.90   | 8.80  | 12.80 | 16.70 | 20.60 | 22.00 |
|          |            |    | 40             | -4.90          | -3.60  | -1.70  | 0.90   | 4.30   | 8.10   | 12.20 | 16.30 | 20.40 | 24.40 | 25.90 |
|          |            |    | 50             | 3.60           | 2.60   | 3.10   | 5.00   | 7.90   | 11.60  | 15.60 | 19.80 | 23.90 | 28.00 | 29.50 |
| ZFI23KQE | TFC<br>TFD | Q  | 30             | 3.46           | 4.39   | 5.48   | 6.74   | 8.19   | 9.84   | 11.75 | 13.85 | 16.25 | 18.90 | 20.10 |
|          |            |    | 40             | 3.36           | 4.28   | 5.34   | 6.55   | 7.93   | 9.50   | 11.30 | 13.30 | 15.55 | 18.10 | 19.15 |
|          |            |    | 50             | 3.19           | 4.10   | 5.12   | 6.28   | 7.60   | 9.09   | 10.80 | 12.70 | 14.80 | 17.20 | 18.20 |
|          |            | P  | 30             | 2.48           | 2.56   | 2.65   | 2.75   | 2.87   | 3.01   | 3.18  | 3.39  | 3.63  | 3.92  | 4.05  |
|          |            |    | 40             | 2.97           | 3.10   | 3.21   | 3.34   | 3.46   | 3.60   | 3.76  | 3.95  | 4.17  | 4.42  | 4.53  |
|          |            |    | 50             | 3.58           | 3.75   | 3.91   | 4.06   | 4.21   | 4.36   | 4.52  | 4.70  | 4.90  | 5.13  | 5.23  |
|          |            | LO | 30             | -13.10         | -14.70 | -16.20 | -16.20 | -14.40 | -11.00 | -6.40 | -1.30 | 3.90  | 9.00  | 11.00 |
|          |            |    | 40             | -17.30         | -14.70 | -13.90 | -12.90 | -10.70 | -7.40  | -3.20 | 1.60  | 6.50  | 11.40 | 13.20 |
|          |            |    | 50             | -12.30         | -6.10  | -3.90  | -2.50  | -0.70  | 1.80   | 5.10  | 8.90  | 13.00 | 17.00 | 18.60 |
| ZFI26KQE | TFC<br>TFD | Q  | 30             | 3.85           | 4.79   | 5.97   | 7.36   | 8.94   | 10.66  | 12.51 | 14.45 | 16.45 | 18.49 | 19.30 |
|          |            |    | 40             | 3.79           | 4.73   | 5.89   | 7.25   | 8.78   | 10.45  | 12.22 | 14.07 | 15.96 | 17.87 | 18.63 |
|          |            |    | 50             | 3.44           | 4.38   | 5.55   | 6.89   | 8.38   | 9.99   | 11.70 | 13.47 | 15.26 | 17.06 | 17.77 |
|          |            | P  | 30             | 2.98           | 3.08   | 3.21   | 3.36   | 3.57   | 3.84   | 4.19  | 4.65  | 5.21  | 5.91  | 6.23  |
|          |            |    | 40             | 3.37           | 3.57   | 3.75   | 3.92   | 4.10   | 4.31   | 4.56  | 4.86  | 5.24  | 5.70  | 5.91  |
|          |            |    | 50             | 4.23           | 4.49   | 4.69   | 4.84   | 4.95   | 5.05   | 5.15  | 5.26  | 5.41  | 5.60  | 5.69  |
|          |            | LO | 30             | -5.40          | -3.40  | -1.70  | 0.50   | 3.50   | 7.20   | 11.50 | 16.20 | 21.10 | 26.10 | 28.10 |
|          |            |    | 40             | -2.20          | -0.40  | 1.20   | 3.50   | 6.60   | 10.50  | 15.00 | 19.80 | 24.80 | 29.90 | 32.00 |
|          |            |    | 50             | 6.20           | 5.90   | 6.20   | 7.70   | 10.40  | 14.10  | 18.50 | 23.30 | 28.40 | 33.60 | 35.60 |
| ZFI36KQE | TFC<br>TFD | Q  | 30             | 5.37           | 6.66   | 8.04   | 9.62   | 11.52  | 13.85  | 16.72 | 20.25 |       |       |       |
|          |            |    | 40             | 5.00           | 6.28   | 7.63   | 9.17   | 11.02  | 13.29  | 16.09 | 19.54 |       |       |       |
|          |            |    | 50             | 4.41           | 5.65   | 6.96   | 8.44   | 10.22  | 12.42  | 15.13 | 18.49 |       |       |       |
|          |            | P  | 30             | 3.08           | 3.38   | 3.73   | 4.11   | 4.51   | 4.90   | 5.29  | 5.64  |       |       |       |
|          |            |    | 40             | 4.00           | 4.27   | 4.57   | 4.90   | 5.24   | 5.57   | 5.88  | 6.16  |       |       |       |
|          |            |    | 50             | 5.64           | 5.82   | 6.03   | 6.27   | 6.51   | 6.73   | 6.93  | 7.09  |       |       |       |
|          |            | LO | 30             | -12.40         | -11.80 | -7.70  | -3.60  | -0.90  | -0.30  | -1.70 | -5.00 |       |       |       |
|          |            |    | 40             | -2.20          | -3.10  | 0.10   | 3.60   | 5.80   | 6.10   | 4.40  | 0.90  |       |       |       |
|          |            |    | 50             | 5.20           | 3.80   | 6.80   | 10.30  | 12.40  | 12.60  | 10.80 | 7.20  |       |       |       |
| ZFI39KQE | TFC<br>TFD | Q  | 30             | 6.15           | 7.66   | 9.25   | 11.06  | 13.23  | 15.92  | 19.27 | 23.43 |       |       |       |
|          |            |    | 40             | 5.74           | 7.22   | 8.77   | 10.54  | 12.66  | 15.28  | 18.55 | 22.62 |       |       |       |
|          |            |    | 50             | 5.07           | 6.51   | 8.00   | 9.70   | 11.74  | 14.28  | 17.46 | 21.42 |       |       |       |
|          |            | P  | 30             | 3.50           | 3.78   | 4.16   | 4.60   | 5.06   | 5.47   | 5.80  | 6.01  |       |       |       |
|          |            |    | 40             | 4.50           | 4.75   | 5.10   | 5.49   | 5.87   | 6.22   | 6.46  | 6.57  |       |       |       |
|          |            |    | 50             | 6.32           | 6.49   | 6.74   | 7.02   | 7.30   | 7.51   | 7.62  | 7.58  |       |       |       |
|          |            | LO | 30             | -19.40         | -14.90 | -10.50 | -6.90  | -4.30  | -3.00  | -2.90 | -3.80 |       |       |       |
|          |            |    | 40             | -6.70          | -5.20  | -2.40  | 0.40   | 2.50   | 3.50   | 3.40  | 2.30  |       |       |       |
|          |            |    | 50             | 2.00           | 2.10   | 4.50   | 7.20   | 9.20   | 10.20  | 10.10 | 9.00  |       |       |       |

## Notes:

1. Q for capacity, P for power. Units in kW; LO for liquid out temperature in °C
2. All ZF\*KQE values are rated at return gas temperature: 20°C and max subcooling

# Performance data

R22

TFC: 200 V, 3-Phase, 50 Hz ; TFD: 380-420 V, 3-Phase, 50 Hz  
Vapor injection

| Model     |            |    | Cond. temp. °C | Evap. temp. °C |       |       |       |       |       |       |       |   |   |   |
|-----------|------------|----|----------------|----------------|-------|-------|-------|-------|-------|-------|-------|---|---|---|
|           |            |    |                | -40            | -35   | -30   | -25   | -20   | -15   | -10   | -5    | 0 | 5 | 7 |
| ZFI59KQE  | TFC<br>TFD | Q  | 30             | 8.79           | 10.88 | 13.11 | 15.67 | 18.75 | 22.54 | 27.23 | 32.99 |   |   |   |
|           |            |    | 40             | 8.19           | 10.25 | 12.43 | 14.93 | 17.94 | 21.63 | 26.19 | 31.81 |   |   |   |
|           |            |    | 50             | 7.19           | 9.20  | 11.32 | 13.74 | 16.64 | 20.21 | 24.63 | 30.10 |   |   |   |
|           |            | P  | 30             | 5.07           | 5.37  | 5.91  | 6.57  | 7.23  | 7.76  | 8.05  | 7.97  |   |   |   |
|           |            |    | 40             | 6.45           | 6.73  | 7.23  | 7.83  | 8.40  | 8.83  | 8.98  | 8.74  |   |   |   |
|           |            |    | 50             | 9.02           | 9.20  | 9.58  | 10.03 | 10.43 | 10.66 | 10.60 | 10.12 |   |   |   |
|           |            | LO | 30             | -11.60         | -9.20 | -5.00 | -1.20 | 1.30  | 2.20  | 1.40  | -0.70 |   |   |   |
|           |            |    | 40             | -0.50          | -0.20 | 2.70  | 5.80  | 7.80  | 8.40  | 7.50  | 5.10  |   |   |   |
|           |            |    | 50             | 7.30           | 6.60  | 9.30  | 12.30 | 14.30 | 14.90 | 13.90 | 11.50 |   |   |   |
| ZFI68KQE  | TFC<br>TFD | Q  | 30             | 10.54          | 12.93 | 15.57 | 18.63 | 22.31 |       |       |       |   |   |   |
|           |            |    | 40             | 9.77           | 12.15 | 14.76 | 17.76 | 21.34 |       |       |       |   |   |   |
|           |            |    | 50             | 8.55           | 10.90 | 13.44 | 16.35 | 19.81 |       |       |       |   |   |   |
|           |            | P  | 30             | 5.92           | 6.38  | 7.04  | 7.79  | 8.56  |       |       |       |   |   |   |
|           |            |    | 40             | 7.61           | 8.03  | 8.62  | 9.29  | 9.95  |       |       |       |   |   |   |
|           |            |    | 50             | 10.69          | 10.97 | 11.40 | 11.89 | 12.35 |       |       |       |   |   |   |
|           |            | LO | 30             | -9.50          | -8.30 | -4.20 | -0.20 | 2.30  |       |       |       |   |   |   |
|           |            |    | 40             | 0.70           | 0.30  | 3.30  | 6.70  | 8.80  |       |       |       |   |   |   |
|           |            |    | 50             | 8.20           | 7.10  | 10.00 | 13.20 | 15.20 |       |       |       |   |   |   |
| ZFI96KQE  | TRC<br>TRD | Q  | 30             | 15.70          | 18.80 | 22.70 | 27.50 | 33.50 | 40.70 | 49.30 | 59.40 |   |   |   |
|           |            |    | 40             | 15.40          | 18.70 | 22.50 | 26.50 | 31.70 | 38.00 | 45.30 | 53.80 |   |   |   |
|           |            |    | 50             |                |       | 21.10 | 25.30 | 30.00 | 35.40 | 41.40 | 48.50 |   |   |   |
|           |            | P  | 30             | 9.74           | 10.20 | 10.70 | 11.25 | 11.85 | 12.60 | 13.40 | 14.35 |   |   |   |
|           |            |    | 40             | 12.30          | 12.85 | 13.40 | 13.80 | 14.40 | 15.05 | 15.75 | 16.55 |   |   |   |
|           |            |    | 50             |                |       | 16.60 | 17.20 | 17.75 | 18.35 | 18.90 | 19.60 |   |   |   |
|           |            | LO | 30             | -20.50         | -9.30 | -1.90 | 2.60  | 4.80  | 5.50  | 5.10  | 3.70  |   |   |   |
|           |            |    | 40             | -6.70          | -3.50 | 1.70  | 7.00  | 11.60 | 15.10 | 17.50 | 18.80 |   |   |   |
|           |            |    | 50             |                |       | 9.50  | 13.40 | 18.80 | 24.10 | 28.60 | 32.10 |   |   |   |
| ZFI122KQE | TRC<br>TRD | Q  | 30             | 19.81          | 23.68 | 28.57 | 34.68 | 42.18 | 51.26 | 62.10 | 74.88 |   |   |   |
|           |            |    | 40             | 19.42          | 23.58 | 28.34 | 33.36 | 40.00 | 47.83 | 57.05 | 67.82 |   |   |   |
|           |            |    | 50             |                |       | 26.57 | 31.90 | 37.83 | 44.57 | 52.15 | 61.16 |   |   |   |
|           |            | P  | 30             | 11.73          | 12.30 | 12.90 | 13.56 | 14.30 | 15.14 | 16.12 | 17.26 |   |   |   |
|           |            |    | 40             | 14.80          | 15.48 | 16.12 | 16.60 | 17.33 | 18.11 | 18.97 | 19.94 |   |   |   |
|           |            |    | 50             |                |       | 20.01 | 20.72 | 21.40 | 21.99 | 22.76 | 23.58 |   |   |   |
|           |            | LO | 30             | -20.5          | -9.3  | -1.9  | 2.6   | 4.9   | 5.5   | 5.1   | 3.7   |   |   |   |
|           |            |    | 40             | -6.7           | -3.5  | 1.7   | 7     | 11.6  | 15.1  | 17.5  | 18.9  |   |   |   |
|           |            |    | 50             |                |       | 9.5   | 13.5  | 18.8  | 24.1  | 28.6  | 32.1  |   |   |   |
| ZFI140KQE | TRC<br>TRD | Q  | 30             | 22.8           | 27.3  | 32.9  | 40    | 48.6  | 59    | 71.5  | 86.2  |   |   |   |
|           |            |    | 40             | 22.4           | 27.2  | 32.6  | 38.4  | 46    | 55    | 65.6  | 78    |   |   |   |
|           |            |    | 50             |                |       | 30.5  | 36.7  | 43.5  | 50.9  | 59.9  | 70.3  |   |   |   |
|           |            | P  | 30             | 12.8           | 13.4  | 14.05 | 14.75 | 15.6  | 16.5  | 17.55 | 18.8  |   |   |   |
|           |            |    | 40             | 16.15          | 16.9  | 17.6  | 18.1  | 18.9  | 19.75 | 20.7  | 21.7  |   |   |   |
|           |            |    | 50             |                |       | 21.8  | 22.6  | 23.3  | 24    | 24.8  | 25.7  |   |   |   |
|           |            | LO | 30             | -22.7          | -11.6 | -4.1  | 0.5   | 3     | 3.8   | 3.3   | 2     |   |   |   |
|           |            |    | 40             | -8.6           | -5.5  | -0.2  | 5.4   | 10.1  | 13.7  | 16.1  | 17.4  |   |   |   |
|           |            |    | 50             |                |       | 8     | 12.1  | 17.6  | 23    | 27.5  | 30.9  |   |   |   |

## Notes:

1. Q for capacity, P for power. Units in kW; LO for liquid out temperature in °C
2. All ZF\*KQE values are rated at return gas temperature: 20°C and max subcooling
3.   20K Superheat

# Performance data

R22

TF7: 380 V, 3-Phase, 60 Hz ; TFC: 208-230 V, 3-Phase, 60 Hz ; TFD: 460 V, 3-Phase, 60 Hz

Liquid injection

| Model   |                   |   | Cond. temp. °C | Evap. temp. °C |      |      |      |      |       |       |       |       |       |       |
|---------|-------------------|---|----------------|----------------|------|------|------|------|-------|-------|-------|-------|-------|-------|
|         |                   |   |                | -40            | -35  | -30  | -25  | -20  | -15   | -10   | -5    | 0     | 5     | 7     |
| ZF06KQE | TF5<br>TFD        | Q | 30             | 1.32           | 1.66 | 2.08 | 2.59 | 3.18 | 3.87  | 4.66  | 5.54  | 6.54  | 7.64  | 8.11  |
|         |                   |   | 40             | 1.23           | 1.55 | 1.94 | 2.42 | 2.97 | 3.61  | 4.35  | 5.17  | 6.10  | 7.13  | 7.57  |
|         |                   |   | 50             | 1.15           | 1.44 | 1.80 | 2.23 | 2.73 | 3.32  | 3.99  | 4.75  | 5.59  | 6.54  | 6.94  |
|         |                   | P | 30             | 1.31           | 1.35 | 1.39 | 1.44 | 1.49 | 1.56  | 1.65  | 1.75  | 1.88  | 2.05  | 2.12  |
|         |                   |   | 40             | 1.57           | 1.60 | 1.64 | 1.67 | 1.71 | 1.77  | 1.85  | 1.95  | 2.07  | 2.23  | 2.30  |
|         |                   |   | 50             | 1.90           | 1.92 | 1.94 | 1.96 | 2.00 | 2.05  | 2.12  | 2.21  | 2.33  | 2.48  | 2.55  |
| ZF08KQE | TF5<br>TFD        | Q | 30             | 1.68           | 2.11 | 2.64 | 3.29 | 4.04 | 4.92  | 5.92  | 7.05  | 8.31  | 9.71  | 10.31 |
|         |                   |   | 40             | 1.57           | 1.97 | 2.47 | 3.07 | 3.78 | 4.60  | 5.53  | 6.58  | 7.76  | 9.06  | 9.62  |
|         |                   |   | 50             | 1.46           | 1.83 | 2.29 | 2.83 | 3.47 | 4.22  | 5.07  | 6.03  | 7.11  | 8.31  | 8.83  |
|         |                   | P | 30             | 1.63           | 1.68 | 1.73 | 1.79 | 1.86 | 1.94  | 2.05  | 2.18  | 2.34  | 2.55  | 2.64  |
|         |                   |   | 40             | 1.96           | 2.00 | 2.03 | 2.08 | 2.13 | 2.20  | 2.30  | 2.42  | 2.58  | 2.77  | 2.86  |
|         |                   |   | 50             | 2.36           | 2.39 | 2.41 | 2.44 | 2.49 | 2.55  | 2.63  | 2.75  | 2.89  | 3.08  | 3.17  |
| ZF09KQE | TF5<br>TFD        | Q | 30             | 1.92           | 2.43 | 3.03 | 3.74 | 4.56 | 5.52  | 6.64  | 7.92  | 9.38  | 11.04 | 11.77 |
|         |                   |   | 40             | 1.76           | 2.24 | 2.80 | 3.45 | 4.20 | 5.09  | 6.11  | 7.29  | 8.65  | 10.19 | 10.86 |
|         |                   |   | 50             | 1.62           | 2.06 | 2.56 | 3.14 | 3.83 | 4.62  | 5.55  | 6.62  | 7.85  | 9.26  | 9.87  |
|         |                   | P | 30             | 1.64           | 1.69 | 1.75 | 1.82 | 1.91 | 2.00  | 2.11  | 2.25  | 2.40  | 2.58  | 2.66  |
|         |                   |   | 40             | 1.95           | 2.01 | 2.07 | 2.15 | 2.23 | 2.32  | 2.43  | 2.55  | 2.69  | 2.86  | 2.93  |
|         |                   |   | 50             | 2.30           | 2.37 | 2.44 | 2.52 | 2.61 | 2.70  | 2.81  | 2.93  | 3.07  | 3.22  | 3.29  |
| ZF11KQE | TF5<br>TFD        | Q | 30             | 2.38           | 3.01 | 3.75 | 4.62 | 5.63 | 6.81  | 8.16  | 9.70  | 11.46 | 13.44 | 14.30 |
|         |                   |   | 40             | 2.18           | 2.76 | 3.45 | 4.25 | 5.19 | 6.28  | 7.54  | 8.99  | 10.63 | 12.50 | 13.31 |
|         |                   |   | 50             | 1.98           | 2.51 | 3.12 | 3.84 | 4.69 | 5.68  | 6.83  | 8.16  | 9.68  | 11.40 | 12.16 |
|         |                   | P | 30             | 1.82           | 1.89 | 1.98 | 2.09 | 2.22 | 2.37  | 2.54  | 2.75  | 2.97  | 3.23  | 3.34  |
|         |                   |   | 40             | 2.16           | 2.24 | 2.33 | 2.44 | 2.57 | 2.72  | 2.89  | 3.08  | 3.29  | 3.53  | 3.63  |
|         |                   |   | 50             | 2.57           | 2.66 | 2.77 | 2.88 | 3.01 | 3.16  | 3.32  | 3.51  | 3.71  | 3.94  | 4.04  |
| ZF13KQE | TF7<br>TFC<br>TFD | Q | 30             | 2.75           | 3.46 | 4.33 | 5.35 | 6.56 | 7.96  | 9.57  | 11.41 | 13.49 | 15.83 | 16.84 |
|         |                   |   | 40             | 2.54           | 3.20 | 3.99 | 4.94 | 6.04 | 7.33  | 8.81  | 10.51 | 12.43 | 14.60 | 15.54 |
|         |                   |   | 50             | 2.30           | 2.90 | 3.62 | 4.48 | 5.48 | 6.65  | 8.00  | 9.55  | 11.31 | 13.31 | 14.17 |
|         |                   | P | 30             | 2.17           | 2.29 | 2.41 | 2.53 | 2.64 | 2.75  | 2.85  | 2.95  | 3.04  | 3.12  | 3.14  |
|         |                   |   | 40             | 2.55           | 2.67 | 2.80 | 2.94 | 3.08 | 3.22  | 3.37  | 3.53  | 3.68  | 3.83  | 3.90  |
|         |                   |   | 50             | 2.97           | 3.08 | 3.21 | 3.36 | 3.52 | 3.70  | 3.88  | 4.09  | 4.30  | 4.52  | 4.61  |
| ZF15KQE | TF7<br>TFC<br>TFD | Q | 30             | 3.38           | 4.27 | 5.32 | 6.57 | 8.02 | 9.70  | 11.63 | 13.82 | 16.29 | 19.06 | 20.25 |
|         |                   |   | 40             | 3.12           | 3.94 | 4.92 | 6.07 | 7.41 | 8.97  | 10.76 | 12.80 | 15.11 | 17.70 | 18.82 |
|         |                   |   | 50             | 2.83           | 3.57 | 4.46 | 5.50 | 6.73 | 8.15  | 9.79  | 11.67 | 13.80 | 16.20 | 17.24 |
|         |                   | P | 30             | 2.75           | 2.84 | 2.95 | 3.08 | 3.25 | 3.45  | 3.68  | 3.96  | 4.28  | 4.64  | 4.80  |
|         |                   |   | 40             | 3.21           | 3.32 | 3.44 | 3.58 | 3.74 | 3.94  | 4.16  | 4.42  | 4.73  | 5.07  | 5.22  |
|         |                   |   | 50             | 3.75           | 3.87 | 4.01 | 4.16 | 4.33 | 4.53  | 4.76  | 5.01  | 5.30  | 5.63  | 5.77  |
| ZF18KQE | TF7<br>TFC<br>TFD | Q | 30             | 3.96           | 5.02 | 6.28 | 7.79 | 9.56 | 11.63 | 14.01 | 16.75 | 19.86 | 23.37 | 24.89 |
|         |                   |   | 40             | 3.65           | 4.62 | 5.79 | 7.17 | 8.79 | 10.68 | 12.87 | 15.39 | 18.26 | 21.50 | 22.91 |
|         |                   |   | 50             | 3.31           | 4.20 | 5.26 | 6.51 | 7.97 | 9.69  | 11.68 | 13.97 | 16.59 | 19.57 | 20.86 |
|         |                   | P | 30             | 3.38           | 3.43 | 3.52 | 3.66 | 3.83 | 4.03  | 4.23  | 4.44  | 4.63  | 4.81  | 4.88  |
|         |                   |   | 40             | 3.94           | 4.01 | 4.12 | 4.29 | 4.48 | 4.70  | 4.94  | 5.18  | 5.41  | 5.62  | 5.70  |
|         |                   |   | 50             | 4.57           | 4.66 | 4.80 | 4.98 | 5.21 | 5.46  | 5.73  | 6.00  | 6.27  | 6.53  | 6.62  |

## Notes:

1. Q for capacity; P for power. Units in kW

2. All ZF\*KQE values are rated at return gas temperature: 20°C and subcooling: 0 K

# Performance data

R22

TF7: 380 V, 3-Phase, 60 Hz ; TFC: 208-230 V, 3-Phase, 60 Hz ; TFD: 460 V, 3-Phase, 60 Hz  
Liquid injection

| Model   |                   |   | Cond. temp. °C | Evap. temp. °C |       |       |       |       |       |       |       |   |   |   |
|---------|-------------------|---|----------------|----------------|-------|-------|-------|-------|-------|-------|-------|---|---|---|
|         |                   |   |                | -40            | -35   | -30   | -25   | -20   | -15   | -10   | -5    | 0 | 5 | 7 |
| ZF25KQE | TF7<br>TFC<br>TFD | Q | 30             | 4.97           | 6.29  | 7.88  | 9.76  | 11.99 | 14.58 | 17.57 | 21.00 |   |   |   |
|         |                   |   | 40             | 4.57           | 5.80  | 7.26  | 8.99  | 11.02 | 13.39 | 16.14 | 19.30 |   |   |   |
|         |                   |   | 50             | 4.15           | 5.27  | 6.59  | 8.16  | 10.00 | 12.15 | 14.64 | 17.52 |   |   |   |
|         |                   | P | 30             | 4.24           | 4.30  | 4.42  | 4.59  | 4.81  | 5.05  | 5.30  | 5.56  |   |   |   |
|         |                   |   | 40             | 4.95           | 5.02  | 5.17  | 5.37  | 5.62  | 5.90  | 6.19  | 6.49  |   |   |   |
|         |                   |   | 50             | 5.74           | 5.84  | 6.01  | 6.25  | 6.53  | 6.85  | 7.18  | 7.52  |   |   |   |
| ZF28KQE | TF7<br>TFC<br>TFD | Q | 30             | 5.84           | 7.39  | 9.26  | 11.47 | 14.08 | 17.13 | 20.64 | 24.67 |   |   |   |
|         |                   |   | 40             | 5.37           | 6.81  | 8.52  | 10.56 | 12.95 | 15.74 | 18.97 | 22.67 |   |   |   |
|         |                   |   | 50             | 4.87           | 6.19  | 7.74  | 9.58  | 11.75 | 14.28 | 17.21 | 20.58 |   |   |   |
|         |                   | P | 30             | 5.09           | 5.15  | 5.30  | 5.51  | 5.77  | 6.06  | 6.37  | 6.68  |   |   |   |
|         |                   |   | 40             | 5.93           | 6.03  | 6.20  | 6.45  | 6.74  | 7.08  | 7.43  | 7.79  |   |   |   |
|         |                   |   | 50             | 6.88           | 7.01  | 7.22  | 7.50  | 7.84  | 8.21  | 8.62  | 9.03  |   |   |   |
| ZF34KQE | TF7<br>TFC<br>TFD | Q | 30             | 6.40           | 8.16  | 10.27 | 12.76 | 15.68 | 19.06 | 22.96 | 27.40 |   |   |   |
|         |                   |   | 40             | 5.79           | 7.46  | 9.43  | 11.75 | 14.45 | 17.58 | 21.18 | 25.28 |   |   |   |
|         |                   |   | 50             | 5.08           | 6.64  | 8.47  | 10.59 | 13.07 | 15.92 | 19.21 | 22.96 |   |   |   |
|         |                   | P | 30             | 5.21           | 5.42  | 5.64  | 5.86  | 6.10  | 6.33  | 6.58  | 6.82  |   |   |   |
|         |                   |   | 40             | 5.96           | 6.27  | 6.58  | 6.88  | 7.17  | 7.46  | 7.73  | 8.00  |   |   |   |
|         |                   |   | 50             | 6.83           | 7.25  | 7.66  | 8.04  | 8.41  | 8.75  | 9.07  | 9.37  |   |   |   |
| ZF41KQE | TF7<br>TFC<br>TFD | Q | 30             | 7.65           | 9.67  | 12.09 | 14.95 | 18.32 | 22.26 | 26.82 | 32.06 |   |   |   |
|         |                   |   | 40             | 6.99           | 8.91  | 11.16 | 13.81 | 16.90 | 20.49 | 24.65 | 29.43 |   |   |   |
|         |                   |   | 50             | 6.13           | 7.97  | 10.07 | 12.51 | 15.33 | 18.59 | 22.36 | 26.69 |   |   |   |
|         |                   | P | 30             | 6.31           | 6.62  | 6.93  | 7.24  | 7.55  | 7.87  | 8.19  | 8.51  |   |   |   |
|         |                   |   | 40             | 7.29           | 7.69  | 8.08  | 8.47  | 8.85  | 9.23  | 9.60  | 9.96  |   |   |   |
|         |                   |   | 50             | 8.38           | 8.87  | 9.35  | 9.83  | 10.28 | 10.73 | 11.16 | 11.57 |   |   |   |
| ZF49KQE | TF7<br>TFC<br>TFD | Q | 30             | 9.41           | 11.83 | 14.82 | 18.41 | 22.63 |       |       |       |   |   |   |
|         |                   |   | 40             | 8.56           | 10.84 | 13.63 | 16.97 | 20.88 |       |       |       |   |   |   |
|         |                   |   | 50             | 7.50           | 9.64  | 12.24 | 15.32 | 18.93 |       |       |       |   |   |   |
|         |                   | P | 30             | 7.81           | 8.04  | 8.36  | 8.73  | 9.14  |       |       |       |   |   |   |
|         |                   |   | 40             | 9.06           | 9.35  | 9.74  | 10.18 | 10.67 |       |       |       |   |   |   |
|         |                   |   | 50             | 10.58          | 10.92 | 11.36 | 11.88 | 12.44 |       |       |       |   |   |   |
| ZF54KQE | TF7<br>TFC<br>TFD | Q | 30             | 10.79          | 13.63 | 17.01 | 20.99 | 25.64 |       |       |       |   |   |   |
|         |                   |   | 40             | 9.98           | 12.65 | 15.79 | 19.48 | 23.79 |       |       |       |   |   |   |
|         |                   |   | 50             | 9.00           | 11.47 | 14.35 | 17.73 | 21.68 |       |       |       |   |   |   |
|         |                   | P | 30             | 7.93           | 8.49  | 9.01  | 9.56  | 10.19 |       |       |       |   |   |   |
|         |                   |   | 40             | 9.46           | 10.05 | 10.59 | 11.16 | 11.79 |       |       |       |   |   |   |
|         |                   |   | 50             | 11.51          | 12.18 | 12.79 | 13.41 | 14.09 |       |       |       |   |   |   |

## Notes:

1. Q for capacity; P for power. Units in kW
2. All ZF\*KQE values are rated at return gas temperature: 20°C and subcooling: 0 K



# Performance data

R22

TF7: 380 V, 3-Phase, 60 Hz ; TFC: 208-230 V, 3-Phase, 60 Hz ; TFD: 460 V, 3-Phase, 60 Hz  
Vapor injection

| Model    |                   |    | Cond. temp. °C | Evap. temp. °C |        |        |        |        |       |       |       |       |       |       |
|----------|-------------------|----|----------------|----------------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|
|          |                   |    |                | -40            | -35    | -30    | -25    | -20    | -15   | -10   | -5    | 0     | 5     | 7     |
| ZFI20KQE | TF7<br>TFC<br>TFD | Q  | 30             | 3.17           | 3.98   | 4.96   | 6.11   | 7.42   | 8.88  | 10.50 | 12.26 | 14.16 | 16.21 | 17.06 |
|          |                   |    | 40             | 3.16           | 3.98   | 4.96   | 6.08   | 7.35   | 8.75  | 10.30 | 11.97 | 13.77 | 15.70 | 16.50 |
|          |                   |    | 50             | 2.88           | 3.72   | 4.70   | 5.81   | 7.05   | 8.41  | 9.89  | 11.49 | 13.21 | 15.02 | 15.78 |
|          |                   | P  | 30             | 2.47           | 2.52   | 2.62   | 2.76   | 2.93   | 3.14  | 3.36  | 3.62  | 3.88  | 4.16  | 4.28  |
|          |                   |    | 40             | 2.77           | 2.91   | 3.05   | 3.21   | 3.36   | 3.50  | 3.64  | 3.77  | 3.87  | 3.96  | 3.99  |
|          |                   |    | 50             | 3.46           | 3.65   | 3.81   | 3.94   | 4.04   | 4.10  | 4.12  | 4.09  | 4.00  | 3.86  | 3.79  |
|          |                   | LO | 30             | -6.90          | -5.80  | -4.00  | -1.40  | 1.80   | 5.30  | 8.90  | 12.50 | 16.00 | 19.30 | 20.50 |
|          |                   |    | 40             | -5.00          | -4.00  | -2.00  | 0.90   | 4.40   | 8.10  | 12.00 | 15.90 | 19.60 | 23.10 | 24.40 |
|          |                   |    | 50             | 3.50           | 2.00   | 2.60   | 4.70   | 7.80   | 11.40 | 15.30 | 19.20 | 23.00 | 26.60 | 28.00 |
| ZFI23KQE | TF7<br>TFC<br>TFD | Q  | 30             | 4.22           | 5.36   | 6.68   | 8.22   | 9.99   | 12.00 | 14.30 | 16.90 | 19.80 | 23.10 | 24.50 |
|          |                   |    | 40             | 4.10           | 5.22   | 6.51   | 7.98   | 9.67   | 11.60 | 13.75 | 16.20 | 19.00 | 22.10 | 23.40 |
|          |                   |    | 50             | 3.90           | 5.00   | 6.25   | 7.67   | 9.27   | 11.10 | 13.15 | 15.45 | 18.05 | 21.00 | 22.20 |
|          |                   | P  | 30             | 2.87           | 2.97   | 3.08   | 3.20   | 3.33   | 3.49  | 3.69  | 3.93  | 4.21  | 4.55  | 4.70  |
|          |                   |    | 40             | 3.45           | 3.59   | 3.73   | 3.87   | 4.02   | 4.18  | 4.37  | 4.58  | 4.83  | 5.13  | 5.26  |
|          |                   |    | 50             | 4.15           | 4.35   | 4.54   | 4.71   | 4.88   | 5.06  | 5.25  | 5.45  | 5.69  | 5.95  | 6.07  |
|          |                   | LO | 30             | -11.40         | -13.00 | -14.50 | -14.40 | -12.60 | -9.30 | -4.80 | 0.20  | 5.40  | 10.40 | 12.30 |
|          |                   |    | 40             | -15.60         | -13.00 | -12.20 | -11.20 | -9.10  | -5.80 | -1.60 | 3.10  | 8.00  | 12.70 | 14.60 |
|          |                   |    | 50             | -10.60         | -4.50  | -2.30  | -0.90  | 0.80   | 3.30  | 6.60  | 10.40 | 14.40 | 18.30 | 19.90 |
| ZFI26KQE | TF7<br>TFC<br>TFD | Q  | 30             | 4.70           | 5.84   | 7.28   | 8.97   | 10.89  | 12.99 | 15.24 | 17.60 | 20.04 | 22.51 | 23.50 |
|          |                   |    | 40             | 4.63           | 5.78   | 7.19   | 8.85   | 10.71  | 12.74 | 14.89 | 17.13 | 19.43 | 21.75 | 22.67 |
|          |                   |    | 50             | 4.20           | 5.36   | 6.77   | 8.41   | 10.23  | 12.20 | 14.27 | 16.42 | 18.60 | 20.78 | 21.64 |
|          |                   | P  | 30             | 3.51           | 3.64   | 3.79   | 3.98   | 4.23   | 4.56  | 4.99  | 5.54  | 6.24  | 7.10  | 7.50  |
|          |                   |    | 40             | 3.95           | 4.20   | 4.42   | 4.63   | 4.85   | 5.10  | 5.41  | 5.79  | 6.27  | 6.86  | 7.14  |
|          |                   |    | 50             | 4.98           | 5.29   | 5.52   | 5.70   | 5.84   | 5.96  | 6.09  | 6.25  | 6.45  | 6.72  | 6.85  |
|          |                   | LO | 30             | -3.00          | -1.60  | 0.00   | 2.30   | 5.30   | 8.80  | 12.70 | 16.90 | 21.30 | 25.60 | 27.40 |
|          |                   |    | 40             | -0.30          | 0.90   | 2.60   | 5.00   | 8.10   | 11.90 | 16.00 | 20.40 | 24.90 | 29.40 | 31.20 |
|          |                   |    | 50             | 7.70           | 6.90   | 7.30   | 9.00   | 11.70  | 15.30 | 19.40 | 23.80 | 28.40 | 33.10 | 34.90 |
| ZFI36KQE | TF7<br>TFC<br>TFD | Q  | 30             | 6.45           | 8.00   | 9.65   | 11.54  | 13.82  | 16.63 | 20.12 | 24.42 |       |       |       |
|          |                   |    | 40             | 6.00           | 7.53   | 9.15   | 10.99  | 13.21  | 15.95 | 19.35 | 23.56 |       |       |       |
|          |                   |    | 50             | 5.29           | 6.78   | 8.35   | 10.12  | 12.26  | 14.91 | 18.20 | 22.28 |       |       |       |
|          |                   | P  | 30             | 3.63           | 3.99   | 4.40   | 4.85   | 5.32   | 5.79  | 6.23  | 6.62  |       |       |       |
|          |                   |    | 40             | 4.73           | 5.03   | 5.39   | 5.78   | 6.18   | 6.57  | 6.93  | 7.24  |       |       |       |
|          |                   |    | 50             | 6.66           | 6.87   | 7.12   | 7.40   | 7.68   | 7.94  | 8.17  | 8.33  |       |       |       |
|          |                   | LO | 30             | -10.70         | -10.10 | -5.90  | -1.70  | 0.80   | 1.10  | -0.80 | -4.70 |       |       |       |
|          |                   |    | 40             | -0.40          | -1.40  | 1.80   | 5.30   | 7.40   | 7.40  | 5.30  | 1.30  |       |       |       |
|          |                   |    | 50             | 6.70           | 5.20   | 8.30   | 11.80  | 13.90  | 13.90 | 11.70 | 7.60  |       |       |       |
| ZFI39KQE | TF7<br>TFC<br>TFD | Q  | 30             | 7.41           | 9.17   | 11.08  | 13.27  | 15.89  | 19.09 | 23.01 | 27.81 |       |       |       |
|          |                   |    | 40             | 6.89           | 8.64   | 10.51  | 12.64  | 15.20  | 18.32 | 22.14 | 26.82 |       |       |       |
|          |                   |    | 50             | 6.08           | 7.78   | 9.58   | 11.64  | 14.10  | 17.11 | 20.81 | 25.35 |       |       |       |
|          |                   | P  | 30             | 4.10           | 4.47   | 4.93   | 5.44   | 5.96   | 6.47  | 6.93  | 7.30  |       |       |       |
|          |                   |    | 40             | 5.31           | 5.63   | 6.03   | 6.48   | 6.93   | 7.35  | 7.71  | 7.98  |       |       |       |
|          |                   |    | 50             | 7.46           | 7.68   | 7.97   | 8.28   | 8.60   | 8.88  | 9.09  | 9.19  |       |       |       |
|          |                   | LO | 30             | -17.90         | -13.00 | -8.60  | -5.20  | -2.70  | -1.30 | -0.90 | -1.40 |       |       |       |
|          |                   |    | 40             | -5.00          | -3.20  | -0.60  | 2.00   | 3.90   | 5.10  | 5.30  | 4.80  |       |       |       |
|          |                   |    | 50             | 3.60           | 4.00   | 6.10   | 8.60   | 10.60  | 11.80 | 12.10 | 11.50 |       |       |       |

## Notes:

1. Q for capacity, P for power. Units in kW; LO for liquid out temperature in °C
2. All ZF\*KQE values are rated at return gas temperature: 20°C and max subcooling

# Performance data

R22

TF7: 380 V, 3-Phase, 60 Hz ; TFC: 208-230 V, 3-Phase, 60 Hz ; TFD: 460 V, 3-Phase, 60 Hz  
Vapor injection

| Model     |                   |    | Cond. temp. °C | Evap. temp. °C |        |       |       |       |       |       |        |   |   |   |  |
|-----------|-------------------|----|----------------|----------------|--------|-------|-------|-------|-------|-------|--------|---|---|---|--|
|           |                   |    |                | -40            | -35    | -30   | -25   | -20   | -15   | -10   | -5     | 0 | 5 | 7 |  |
| ZFI50KQE  | TF7<br>TFC<br>TFD | Q  | 30             | 9.02           | 11.02  | 13.28 | 15.92 | 19.08 | 22.86 | 27.41 | 32.84  |   |   |   |  |
|           |                   |    | 40             | 8.34           | 10.35  | 12.59 | 15.18 | 18.25 | 21.93 | 26.34 | 31.61  |   |   |   |  |
|           |                   |    | 50             | 7.30           | 9.29   | 11.47 | 13.98 | 16.94 | 20.48 | 24.72 | 29.80  |   |   |   |  |
|           |                   | P  | 30             | 4.88           | 5.27   | 5.82  | 6.44  | 7.07  | 7.64  | 8.09  | 8.34   |   |   |   |  |
|           |                   |    | 40             | 6.28           | 6.64   | 7.12  | 7.67  | 8.22  | 8.69  | 9.02  | 9.14   |   |   |   |  |
|           |                   |    | 50             | 8.83           | 9.07   | 9.42  | 9.82  | 10.20 | 10.50 | 10.63 | 10.54  |   |   |   |  |
|           |                   | LO | 30             | -12.80         | -11.30 | -7.40 | -3.50 | -0.90 | -0.10 | -0.90 | -3.20  |   |   |   |  |
|           |                   |    | 40             | -2.10          | -2.40  | 0.50  | 3.60  | 5.70  | 6.20  | 5.30  | 2.80   |   |   |   |  |
|           |                   |    | 50             | 5.20           | 4.40   | 7.10  | 10.20 | 12.30 | 12.80 | 11.80 | 9.30   |   |   |   |  |
| ZFI59KQE  | TF7<br>TFC<br>TFD | Q  | 30             | 10.78          | 13.13  | 15.81 | 18.96 | 22.71 | 27.21 | 32.59 | 39.00  |   |   |   |  |
|           |                   |    | 40             | 9.96           | 12.33  | 14.98 | 18.07 | 21.73 | 26.10 | 31.31 | 37.52  |   |   |   |  |
|           |                   |    | 50             | 8.70           | 11.05  | 13.65 | 16.64 | 20.17 | 24.37 | 29.39 | 35.35  |   |   |   |  |
|           |                   | P  | 30             | 5.87           | 6.45   | 7.12  | 7.85  | 8.61  | 9.36  | 10.08 | 10.73  |   |   |   |  |
|           |                   |    | 40             | 7.63           | 8.13   | 8.72  | 9.35  | 10.00 | 10.64 | 11.23 | 11.73  |   |   |   |  |
|           |                   |    | 50             | 10.77          | 11.11  | 11.52 | 11.97 | 12.43 | 12.85 | 13.22 | 13.49  |   |   |   |  |
|           |                   | LO | 30             | -11.50         | -8.10  | -4.30 | -1.10 | 1.20  | 2.50  | 2.80  | 2.30   |   |   |   |  |
|           |                   |    | 40             | 0.30           | 1.20   | 3.40  | 5.80  | 7.70  | 8.70  | 8.90  | 8.20   |   |   |   |  |
|           |                   |    | 50             | 7.60           | 7.70   | 9.80  | 12.20 | 14.10 | 15.20 | 15.50 | 14.90  |   |   |   |  |
| ZFI68KQE  | TF7<br>TFC<br>TFD | Q  | 30             | 12.64          | 15.56  | 18.75 | 22.45 | 26.88 |       |       |        |   |   |   |  |
|           |                   |    | 40             | 11.73          | 14.64  | 17.78 | 21.40 | 25.71 |       |       |        |   |   |   |  |
|           |                   |    | 50             | 10.30          | 13.15  | 16.20 | 19.70 | 23.86 |       |       |        |   |   |   |  |
|           |                   | P  | 30             | 7.03           | 7.49   | 8.25  | 9.16  | 10.07 |       |       |        |   |   |   |  |
|           |                   |    | 40             | 8.97           | 9.40   | 10.10 | 10.91 | 11.70 |       |       |        |   |   |   |  |
|           |                   |    | 50             | 12.57          | 12.85  | 13.37 | 13.98 | 14.53 |       |       |        |   |   |   |  |
|           |                   | LO | 30             | -8.50          | -5.20  | -1.30 | 2.10  | 4.50  |       |       |        |   |   |   |  |
|           |                   |    | 40             | 2.80           | 3.70   | 6.30  | 8.90  | 10.80 |       |       |        |   |   |   |  |
|           |                   |    | 50             | 10.50          | 10.40  | 12.60 | 15.20 | 17.10 |       |       |        |   |   |   |  |
| ZFI96KQE  | TR7<br>TRC<br>TRD | Q  | 30             | 18.35          | 21.90  | 26.50 | 32.10 | 39.10 | 47.50 | 57.50 | 69.40  |   |   |   |  |
|           |                   |    | 40             | 17.95          | 21.80  | 26.20 | 30.90 | 37.10 | 44.30 | 52.80 | 62.80  |   |   |   |  |
|           |                   |    | 50             |                |        | 24.50 | 29.50 | 35.00 | 41.20 | 48.30 | 56.70  |   |   |   |  |
|           |                   | P  | 30             | 11.60          | 12.20  | 12.75 | 13.40 | 14.15 | 15.00 | 15.95 | 17.10  |   |   |   |  |
|           |                   |    | 40             | 14.60          | 15.25  | 15.90 | 16.45 | 17.15 | 17.95 | 18.80 | 19.75  |   |   |   |  |
|           |                   |    | 50             |                |        | 19.75 | 20.50 | 21.20 | 21.80 | 22.50 | 23.30  |   |   |   |  |
|           |                   | LO | 30             | -14.60         | -3.80  | 3.30  | 7.50  | 9.70  | 10.40 | 9.90  | 8.60   |   |   |   |  |
|           |                   |    | 40             | -1.30          | 1.70   | 6.70  | 11.80 | 16.20 | 19.60 | 21.80 | 23.10  |   |   |   |  |
|           |                   |    | 50             |                |        | 14.20 | 18.00 | 23.20 | 28.20 | 32.50 | 35.80  |   |   |   |  |
| ZFI122KQE | TR7<br>TRC<br>TRD | Q  | 30             | 23.12          | 27.63  | 33.35 | 40.48 | 49.23 | 59.83 | 72.48 | 87.40  |   |   |   |  |
|           |                   |    | 40             | 22.59          | 27.44  | 32.99 | 38.94 | 46.69 | 55.83 | 66.58 | 79.16  |   |   |   |  |
|           |                   |    | 50             |                |        | 30.92 | 37.15 | 44.07 | 51.94 | 60.87 | 71.39  |   |   |   |  |
|           |                   | P  | 30             | 14.17          | 14.86  | 15.58 | 16.38 | 17.27 | 18.30 | 19.48 | 20.86  |   |   |   |  |
|           |                   |    | 40             | 17.80          | 18.63  | 19.41 | 20.05 | 20.93 | 21.88 | 22.92 | 24.09  |   |   |   |  |
|           |                   |    | 50             |                |        | 24.10 | 24.98 | 25.81 | 26.57 | 27.50 | 28.49  |   |   |   |  |
|           |                   | LO | 30             | -14.60         | -3.80  | 3.30  | 7.50  | 9.70  | 10.40 | 9.90  | 8.60   |   |   |   |  |
|           |                   |    | 40             | -1.30          | 1.70   | 6.70  | 11.80 | 16.20 | 19.60 | 21.80 | 23.10  |   |   |   |  |
|           |                   |    | 50             |                |        | 14.20 | 18.00 | 23.20 | 28.20 | 32.50 | 35.90  |   |   |   |  |
| ZFI140KQE | TR7<br>TRC<br>TRD | Q  | 30             | 27.40          | 32.80  | 39.50 | 48.00 | 58.30 | 70.80 | 85.80 | 103.50 |   |   |   |  |
|           |                   |    | 40             | 26.80          | 32.60  | 39.10 | 46.10 | 55.20 | 66.00 | 78.70 | 93.60  |   |   |   |  |
|           |                   |    | 50             |                |        | 36.60 | 44.00 | 52.10 | 61.10 | 71.90 | 84.40  |   |   |   |  |
|           |                   | P  | 30             | 15.60          | 16.35  | 17.15 | 18.05 | 19.00 | 20.10 | 21.40 | 23.00  |   |   |   |  |
|           |                   |    | 40             | 19.70          | 20.60  | 21.40 | 22.10 | 23.00 | 24.10 | 25.20 | 26.50  |   |   |   |  |
|           |                   |    | 50             |                |        | 26.60 | 27.60 | 28.50 | 29.20 | 30.30 | 31.40  |   |   |   |  |
|           |                   | LO | 30             | -20.90         | -9.90  | -2.50 | 2.10  | 4.50  | 5.30  | 4.90  | 3.50   |   |   |   |  |
|           |                   |    | 40             | -6.90          | -3.80  | 1.40  | 6.90  | 11.50 | 15.10 | 17.50 | 18.80  |   |   |   |  |
|           |                   |    | 50             |                |        | 9.50  | 13.60 | 19.00 | 24.20 | 28.70 | 32.10  |   |   |   |  |

## Notes:

1. Q for capacity, P for power. Units in kW; LO for liquid out temperature in °C
2. All ZF\*KQE values are rated at return gas temperature: 20°C and max subcooling
3.   20K Superheat

# Performance data

R404A

TFC: 200 V, 3-Phase, 50 Hz ; TFD: 380-420 V, 3-Phase, 50 Hz

Liquid injection

| Model   |            |   | Cond. temp. °C | Evap. temp. °C |      |      |      |      |       |       |       |       |       |       |
|---------|------------|---|----------------|----------------|------|------|------|------|-------|-------|-------|-------|-------|-------|
|         |            |   |                | -40            | -35  | -30  | -25  | -20  | -15   | -10   | -5    | 0     | 5     | 7     |
| ZF06KQE | TF5<br>TFD | Q | 30             | 1.28           | 1.61 | 2.00 | 2.47 | 3.01 | 3.64  | 4.38  | 5.22  | 6.19  | 7.28  | 7.76  |
|         |            |   | 40             | 1.13           | 1.43 | 1.77 | 2.18 | 2.65 | 3.21  | 3.85  | 4.58  | 5.43  | 6.39  | 6.81  |
|         |            |   | 50             | 0.96           | 1.22 | 1.51 | 1.85 | 2.25 | 2.71  | 3.25  | 3.87  | 4.59  | 5.41  | 5.77  |
|         |            | P | 30             | 1.17           | 1.23 | 1.30 | 1.37 | 1.45 | 1.54  | 1.64  | 1.75  | 1.87  | 2.00  | 2.05  |
|         |            |   | 40             | 1.40           | 1.46 | 1.52 | 1.59 | 1.67 | 1.76  | 1.85  | 1.96  | 2.08  | 2.20  | 2.26  |
|         |            |   | 50             | 1.72           | 1.77 | 1.82 | 1.89 | 1.96 | 2.04  | 2.13  | 2.24  | 2.35  | 2.47  | 2.52  |
| ZF08KQE | TF5<br>TFD | Q | 30             | 1.58           | 1.98 | 2.46 | 3.03 | 3.70 | 4.48  | 5.38  | 6.42  | 7.61  | 8.96  | 9.54  |
|         |            |   | 40             | 1.39           | 1.75 | 2.18 | 2.68 | 3.26 | 3.94  | 4.73  | 5.64  | 6.68  | 7.86  | 8.37  |
|         |            |   | 50             | 1.18           | 1.50 | 1.86 | 2.28 | 2.77 | 3.34  | 4.00  | 4.76  | 5.64  | 6.65  | 7.10  |
|         |            | P | 30             | 1.39           | 1.47 | 1.54 | 1.63 | 1.73 | 1.84  | 1.95  | 2.08  | 2.22  | 2.37  | 2.44  |
|         |            |   | 40             | 1.67           | 1.74 | 1.81 | 1.89 | 1.99 | 2.09  | 2.21  | 2.33  | 2.47  | 2.62  | 2.69  |
|         |            |   | 50             | 2.05           | 2.10 | 2.17 | 2.25 | 2.33 | 2.43  | 2.54  | 2.66  | 2.79  | 2.94  | 3.00  |
| ZF09KQE | TF5<br>TFD | Q | 30             | 1.71           | 2.17 | 2.71 | 3.35 | 4.10 | 4.97  | 5.97  | 7.13  | 8.45  | 9.96  | 10.61 |
|         |            |   | 40             | 1.53           | 1.94 | 2.41 | 2.96 | 3.60 | 4.35  | 5.23  | 6.23  | 7.39  | 8.71  | 9.29  |
|         |            |   | 50             | 1.32           | 1.67 | 2.07 | 2.52 | 3.06 | 3.69  | 4.42  | 5.27  | 6.25  | 7.38  | 7.88  |
|         |            | P | 30             | 1.46           | 1.48 | 1.52 | 1.57 | 1.65 | 1.74  | 1.84  | 1.96  | 2.09  | 2.23  | 2.29  |
|         |            |   | 40             | 1.77           | 1.78 | 1.81 | 1.86 | 1.92 | 2.00  | 2.10  | 2.21  | 2.33  | 2.47  | 2.52  |
|         |            |   | 50             | 2.16           | 2.16 | 2.18 | 2.22 | 2.27 | 2.34  | 2.43  | 2.53  | 2.65  | 2.78  | 2.84  |
| ZF11KQE | TF5<br>TFD | Q | 30             | 2.17           | 2.74 | 3.41 | 4.19 | 5.10 | 6.16  | 7.41  | 8.85  | 10.50 | 12.39 | 13.22 |
|         |            |   | 40             | 1.94           | 2.45 | 3.03 | 3.70 | 4.49 | 5.41  | 6.49  | 7.75  | 9.20  | 10.86 | 11.60 |
|         |            |   | 50             | 1.65           | 2.09 | 2.58 | 3.15 | 3.81 | 4.58  | 5.48  | 6.55  | 7.78  | 9.22  | 9.86  |
|         |            | P | 30             | 1.79           | 1.82 | 1.87 | 1.94 | 2.03 | 2.14  | 2.27  | 2.41  | 2.57  | 2.75  | 2.83  |
|         |            |   | 40             | 2.13           | 2.15 | 2.20 | 2.26 | 2.34 | 2.45  | 2.57  | 2.70  | 2.85  | 3.02  | 3.09  |
|         |            |   | 50             | 2.53           | 2.56 | 2.60 | 2.67 | 2.75 | 2.85  | 2.97  | 3.10  | 3.24  | 3.40  | 3.47  |
| ZF13KQE | TFC<br>TFD | Q | 30             | 2.45           | 3.15 | 3.98 | 4.93 | 6.03 | 7.30  | 8.74  | 10.36 | 12.19 | 14.24 | 15.12 |
|         |            |   | 40             | 2.19           | 2.78 | 3.48 | 4.31 | 5.27 | 6.38  | 7.66  | 9.11  | 10.76 | 12.61 | 13.41 |
|         |            |   | 50             | 1.94           | 2.40 | 2.95 | 3.62 | 4.42 | 5.35  | 6.44  | 7.70  | 9.13  | 10.77 | 11.48 |
|         |            | P | 30             | 1.87           | 1.93 | 2.00 | 2.08 | 2.19 | 2.30  | 2.44  | 2.59  | 2.76  | 2.95  | 3.03  |
|         |            |   | 40             | 2.27           | 2.33 | 2.41 | 2.49 | 2.59 | 2.70  | 2.83  | 2.97  | 3.13  | 3.30  | 3.37  |
|         |            |   | 50             | 2.78           | 2.85 | 2.93 | 3.02 | 3.12 | 3.23  | 3.35  | 3.48  | 3.62  | 3.78  | 3.85  |
| ZF15KQE | TFC<br>TFD | Q | 30             | 3.01           | 3.89 | 4.91 | 6.08 | 7.44 | 9.01  | 10.82 | 12.89 | 15.26 | 17.93 | 19.10 |
|         |            |   | 40             | 2.66           | 3.42 | 4.29 | 5.30 | 6.47 | 7.84  | 9.43  | 11.26 | 13.36 | 15.76 | 16.81 |
|         |            |   | 50             | 2.36           | 2.95 | 3.64 | 4.44 | 5.40 | 6.53  | 7.86  | 9.41  | 11.22 | 13.31 | 14.22 |
|         |            | P | 30             | 2.21           | 2.33 | 2.45 | 2.58 | 2.73 | 2.90  | 3.09  | 3.31  | 3.56  | 3.85  | 3.97  |
|         |            |   | 40             | 2.68           | 2.82 | 2.95 | 3.09 | 3.24 | 3.41  | 3.60  | 3.80  | 4.04  | 4.30  | 4.41  |
|         |            |   | 50             | 3.26           | 3.42 | 3.58 | 3.73 | 3.90 | 4.07  | 4.25  | 4.45  | 4.67  | 4.92  | 5.02  |
| ZF18KQE | TFC<br>TFD | Q | 30             | 3.70           | 4.70 | 5.85 | 7.20 | 8.78 | 10.64 | 12.81 | 15.33 | 18.25 | 21.58 | 23.04 |
|         |            |   | 40             | 3.29           | 4.17 | 5.17 | 6.34 | 7.70 | 9.30  | 11.17 | 13.36 | 15.91 | 18.84 | 20.13 |
|         |            |   | 50             | 2.81           | 3.57 | 4.41 | 5.37 | 6.50 | 7.83  | 9.40  | 11.25 | 13.42 | 15.94 | 17.06 |
|         |            | P | 30             | 2.79           | 2.89 | 3.01 | 3.14 | 3.29 | 3.46  | 3.65  | 3.85  | 4.07  | 4.30  | 4.40  |
|         |            |   | 40             | 3.29           | 3.40 | 3.53 | 3.67 | 3.83 | 4.00  | 4.18  | 4.38  | 4.59  | 4.82  | 4.91  |
|         |            |   | 50             | 3.92           | 4.04 | 4.18 | 4.33 | 4.49 | 4.67  | 4.85  | 5.05  | 5.26  | 5.48  | 5.57  |

## Notes:

1. Q for capacity; P for power. Units in kW

2. All ZF\*KQE values are rated at return gas temperature: 20°C and subcooling: 0 K

# Performance data

R404A

TFC: 200 V, 3-Phase, 50 Hz ; TFD: 380-420 V, 3-Phase, 50 Hz

Liquid injection

| Model   |            |   | Cond. temp. °C | Evap. temp. °C |       |       |       |       |       |       |       |   |   |   |
|---------|------------|---|----------------|----------------|-------|-------|-------|-------|-------|-------|-------|---|---|---|
|         |            |   |                | -40            | -35   | -30   | -25   | -20   | -15   | -10   | -5    | 0 | 5 | 7 |
| ZF25KQE | TFC<br>TFD | Q | 30             | 4.59           | 5.81  | 7.32  | 9.08  | 11.09 | 13.32 | 15.75 | 18.37 |   |   |   |
|         |            |   | 40             | 4.09           | 5.12  | 6.42  | 7.96  | 9.73  | 11.71 | 13.87 | 16.20 |   |   |   |
|         |            |   | 50             | 3.63           | 4.45  | 5.50  | 6.79  | 8.28  | 9.96  | 11.81 | 13.82 |   |   |   |
|         |            | P | 30             | 3.03           | 3.31  | 3.54  | 3.76  | 4.00  | 4.30  | 4.67  | 5.16  |   |   |   |
|         |            |   | 40             | 3.43           | 3.80  | 4.11  | 4.39  | 4.69  | 5.03  | 5.44  | 5.95  |   |   |   |
|         |            |   | 50             | 3.84           | 4.31  | 4.72  | 5.09  | 5.46  | 5.85  | 6.32  | 6.87  |   |   |   |
| ZF28KQE | TFC<br>TFD | Q | 30             | 5.25           | 6.65  | 8.36  | 10.38 | 12.67 | 15.22 | 18.00 | 21.00 |   |   |   |
|         |            |   | 40             | 4.67           | 5.85  | 7.34  | 9.10  | 11.12 | 13.38 | 15.85 | 18.51 |   |   |   |
|         |            |   | 50             | 4.15           | 5.08  | 6.29  | 7.76  | 9.46  | 11.39 | 13.50 | 15.79 |   |   |   |
|         |            | P | 30             | 3.74           | 4.08  | 4.37  | 4.64  | 4.94  | 5.30  | 5.76  | 6.37  |   |   |   |
|         |            |   | 40             | 4.23           | 4.68  | 5.07  | 5.42  | 5.78  | 6.20  | 6.71  | 7.34  |   |   |   |
|         |            |   | 50             | 4.74           | 5.32  | 5.82  | 6.28  | 6.73  | 7.22  | 7.79  | 8.48  |   |   |   |
| ZF34KQE | TFC<br>TFD | Q | 30             | 6.03           | 7.72  | 9.67  | 11.94 | 14.57 | 17.62 | 21.16 | 25.23 |   |   |   |
|         |            |   | 40             | 5.30           | 6.82  | 8.54  | 10.51 | 12.79 | 15.44 | 18.51 | 22.06 |   |   |   |
|         |            |   | 50             | 4.47           | 5.79  | 7.25  | 8.90  | 10.81 | 13.01 | 15.59 | 18.58 |   |   |   |
|         |            | P | 30             | 4.18           | 4.41  | 4.67  | 4.93  | 5.22  | 5.53  | 5.85  | 6.20  |   |   |   |
|         |            |   | 40             | 4.85           | 5.16  | 5.46  | 5.77  | 6.08  | 6.40  | 6.73  | 7.07  |   |   |   |
|         |            |   | 50             | 5.66           | 6.04  | 6.41  | 6.77  | 7.13  | 7.48  | 7.82  | 8.16  |   |   |   |
| ZF41KQE | TFC<br>TFD | Q | 30             | 7.57           | 9.62  | 11.96 | 14.69 | 17.88 | 21.62 | 25.98 | 31.04 |   |   |   |
|         |            |   | 40             | 6.71           | 8.56  | 10.62 | 12.98 | 15.71 | 18.90 | 22.64 | 26.99 |   |   |   |
|         |            |   | 50             | 5.65           | 7.29  | 9.06  | 11.04 | 13.31 | 15.96 | 19.05 | 22.68 |   |   |   |
|         |            | P | 30             | 5.07           | 5.40  | 5.75  | 6.11  | 6.48  | 6.88  | 7.30  | 7.75  |   |   |   |
|         |            |   | 40             | 5.95           | 6.33  | 6.72  | 7.12  | 7.52  | 7.94  | 8.36  | 8.81  |   |   |   |
|         |            |   | 50             | 6.95           | 7.40  | 7.85  | 8.29  | 8.74  | 9.18  | 9.63  | 10.09 |   |   |   |
| ZF49KQE | TFC<br>TFD | Q | 30             | 9.14           | 11.54 | 14.39 | 17.75 | 21.67 |       |       |       |   |   |   |
|         |            |   | 40             | 8.07           | 10.21 | 12.72 | 15.65 | 19.05 |       |       |       |   |   |   |
|         |            |   | 50             | 6.80           | 8.66  | 10.80 | 13.27 | 16.14 |       |       |       |   |   |   |
|         |            | P | 30             | 6.24           | 6.53  | 6.90  | 7.33  | 7.81  |       |       |       |   |   |   |
|         |            |   | 40             | 7.36           | 7.67  | 8.06  | 8.52  | 9.02  |       |       |       |   |   |   |
|         |            |   | 50             | 8.73           | 9.07  | 9.48  | 9.97  | 10.51 |       |       |       |   |   |   |
| ZF54KQE | TFC<br>TFD | Q | 30             | 10.46          | 13.21 | 16.47 | 20.31 | 24.80 |       |       |       |   |   |   |
|         |            |   | 40             | 9.23           | 11.69 | 14.56 | 17.91 | 21.80 |       |       |       |   |   |   |
|         |            |   | 50             | 7.78           | 9.91  | 12.36 | 15.19 | 18.47 |       |       |       |   |   |   |
|         |            | P | 30             | 7.14           | 7.47  | 7.90  | 8.39  | 8.94  |       |       |       |   |   |   |
|         |            |   | 40             | 8.42           | 8.77  | 9.22  | 9.75  | 10.33 |       |       |       |   |   |   |
|         |            |   | 50             | 9.99           | 10.37 | 10.85 | 11.41 | 12.03 |       |       |       |   |   |   |

## Notes:

1. Q for capacity; P for power. Units in kW

2. All ZF\*KQE values are rated at return gas temperature: 20°C and subcooling: 0 K

# Performance data

R404A

TFC: 200 V, 3-Phase, 50 Hz ; TFD: 380-420 V, 3-Phase, 50 Hz  
Vapor injection

| Model    |            |    | Cond. temp. °C | Evap. temp. °C |        |       |       |       |       |       |       |       |       |       |
|----------|------------|----|----------------|----------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|          |            |    |                | -40            | -35    | -30   | -25   | -20   | -15   | -10   | -5    | 0     | 5     | 7     |
| ZFI20KQE | TFC<br>TFD | Q  | 30             | 3.43           | 4.28   | 5.23  | 6.30  | 7.50  | 8.86  | 10.40 | 12.14 | 14.09 | 16.28 | 17.23 |
|          |            |    | 40             | 3.25           | 4.07   | 4.99  | 6.04  | 7.23  | 8.60  | 10.14 | 11.90 | 13.88 | 16.11 | 17.08 |
|          |            |    | 50             | 2.92           | 3.70   | 4.59  | 5.62  | 6.80  | 8.17  | 9.73  | 11.50 | 13.51 | 15.76 | 16.74 |
|          |            | P  | 30             | 2.17           | 2.23   | 2.30  | 2.38  | 2.46  | 2.53  | 2.58  | 2.62  | 2.62  | 2.59  | 2.57  |
|          |            |    | 40             | 2.73           | 2.78   | 2.84  | 2.92  | 3.01  | 3.09  | 3.16  | 3.22  | 3.25  | 3.27  | 3.26  |
|          |            |    | 50             | 3.56           | 3.58   | 3.62  | 3.68  | 3.75  | 3.82  | 3.90  | 3.96  | 4.01  | 4.04  | 4.05  |
|          |            | LO | 30             | -13.50         | -9.80  | -6.10 | -2.00 | 2.30  | 6.50  | 10.50 | 14.20 | 17.40 | 20.00 | 20.90 |
|          |            |    | 40             | -6.70          | -4.80  | -2.20 | 1.00  | 4.60  | 8.30  | 12.00 | 15.40 | 18.20 | 20.60 | 21.40 |
|          |            |    | 50             | 6.00           | 4.80   | 5.10  | 6.50  | 8.90  | 11.60 | 14.50 | 17.20 | 19.70 | 21.80 | 22.50 |
| ZFI23KQE | TFC<br>TFD | Q  | 30             | 4.85           | 5.51   | 6.46  | 7.67  | 9.13  | 10.80 | 12.75 | 14.85 | 17.15 | 19.65 | 20.70 |
|          |            |    | 40             | 4.78           | 5.36   | 6.23  | 7.35  | 8.73  | 10.35 | 12.20 | 14.25 | 16.45 | 18.90 | 19.90 |
|          |            |    | 50             | 4.78           | 5.26   | 6.01  | 7.04  | 8.31  | 9.82  | 11.55 | 13.50 | 15.65 | 18.00 | 18.95 |
|          |            | P  | 30             | 2.68           | 2.82   | 2.96  | 3.09  | 3.21  | 3.32  | 3.44  | 3.55  | 3.66  | 3.76  | 3.80  |
|          |            |    | 40             | 3.19           | 3.38   | 3.55  | 3.72  | 3.87  | 4.02  | 4.15  | 4.28  | 4.40  | 4.51  | 4.55  |
|          |            |    | 50             | 3.90           | 4.13   | 4.35  | 4.55  | 4.73  | 4.90  | 5.05  | 5.19  | 5.32  | 5.43  | 5.48  |
|          |            | LO | 30             | -33.40         | -15.50 | -6.10 | -0.50 | 3.60  | 7.10  | 10.60 | 13.90 | 17.30 | 20.40 | 21.60 |
|          |            |    | 40             | -28.70         | -12.10 | -3.00 | 2.70  | 6.80  | 10.40 | 13.80 | 17.20 | 20.40 | 23.50 | 24.70 |
|          |            |    | 50             | -25.90         | -9.70  | -0.40 | 5.60  | 10.00 | 13.80 | 17.40 | 20.80 | 24.10 | 27.10 | 28.20 |
| ZFI26KQE | TFC<br>TFD | Q  | 30             | 5.14           | 6.29   | 7.61  | 9.14  | 10.90 | 12.91 | 15.20 | 17.79 | 20.72 | 24.02 | 25.44 |
|          |            |    | 40             | 5.09           | 6.12   | 7.33  | 8.74  | 10.39 | 12.30 | 14.49 | 17.01 | 19.86 | 23.06 | 24.45 |
|          |            |    | 50             | 5.08           | 5.97   | 7.03  | 8.32  | 9.84  | 11.62 | 13.70 | 16.10 | 18.83 | 21.94 | 23.30 |
|          |            | P  | 30             | 3.22           | 3.38   | 3.54  | 3.70  | 3.84  | 3.98  | 4.11  | 4.24  | 4.37  | 4.50  | 4.55  |
|          |            |    | 40             | 3.85           | 4.07   | 4.28  | 4.47  | 4.65  | 4.81  | 4.97  | 5.12  | 5.26  | 5.39  | 5.44  |
|          |            |    | 50             | 4.74           | 5.01   | 5.26  | 5.50  | 5.70  | 5.90  | 6.07  | 6.24  | 6.38  | 6.52  | 6.57  |
|          |            | LO | 30             | -13.00         | -8.10  | -4.00 | -0.10 | 3.70  | 7.20  | 10.50 | 13.60 | 16.10 | 18.10 | 18.80 |
|          |            |    | 40             | -10.10         | -5.20  | -0.80 | 3.30  | 7.30  | 10.90 | 14.20 | 17.10 | 19.50 | 21.50 | 22.10 |
|          |            |    | 50             | -7.30          | -2.10  | 2.60  | 7.00  | 11.10 | 14.90 | 18.20 | 21.00 | 23.40 | 25.10 | 25.70 |
| ZFI36KQE | TFC<br>TFD | Q  | 30             | 6.48           | 8.01   | 9.76  | 11.70 | 13.85 | 16.20 | 18.73 | 21.45 |       |       |       |
|          |            |    | 40             | 6.29           | 7.67   | 9.27  | 11.08 | 13.09 | 15.32 | 17.74 | 20.32 |       |       |       |
|          |            |    | 50             | 6.24           | 7.42   | 8.82  | 10.43 | 12.26 | 14.30 | 16.54 | 18.97 |       |       |       |
|          |            | P  | 30             | 3.78           | 4.05   | 4.29  | 4.52  | 4.75  | 4.97  | 5.19  | 5.42  |       |       |       |
|          |            |    | 40             | 4.46           | 4.86   | 5.21  | 5.52  | 5.80  | 6.05  | 6.27  | 6.47  |       |       |       |
|          |            |    | 50             | 5.21           | 5.78   | 6.29  | 6.72  | 7.09  | 7.42  | 7.69  | 7.91  |       |       |       |
|          |            | LO | 30             | -13.80         | -10.00 | -5.40 | -0.70 | 3.90  | 8.10  | 12.00 | 15.40 |       |       |       |
|          |            |    | 40             | -10.80         | -5.80  | -0.50 | 4.50  | 9.10  | 13.20 | 16.90 | 20.20 |       |       |       |
|          |            |    | 50             | -11.10         | -3.70  | 3.00  | 9.00  | 14.20 | 18.50 | 22.30 | 25.40 |       |       |       |
| ZFI39KQE | TFC<br>TFD | Q  | 30             | 7.44           | 9.19   | 11.19 | 13.43 | 15.89 | 18.58 | 21.49 | 24.61 |       |       |       |
|          |            |    | 40             | 7.22           | 8.80   | 10.63 | 12.71 | 15.04 | 17.58 | 20.35 | 23.34 |       |       |       |
|          |            |    | 50             | 7.16           | 8.51   | 10.12 | 11.97 | 14.06 | 16.41 | 18.97 | 21.76 |       |       |       |
|          |            | P  | 30             | 4.49           | 4.81   | 5.10  | 5.38  | 5.64  | 5.91  | 6.17  | 6.45  |       |       |       |
|          |            |    | 40             | 5.30           | 5.78   | 6.19  | 6.56  | 6.90  | 7.19  | 7.46  | 7.70  |       |       |       |
|          |            |    | 50             | 6.19           | 6.87   | 7.47  | 7.99  | 8.43  | 8.82  | 9.14  | 9.40  |       |       |       |
|          |            | LO | 30             | -13.80         | -10.00 | -5.40 | -0.70 | 3.90  | 8.10  | 12.00 | 15.40 |       |       |       |
|          |            |    | 40             | -10.80         | -5.80  | -0.50 | 4.50  | 9.00  | 13.20 | 16.90 | 20.10 |       |       |       |
|          |            |    | 50             | -11.10         | -3.70  | 3.00  | 9.00  | 14.20 | 18.50 | 22.30 | 25.40 |       |       |       |
| ZFI50KQE | TFC<br>TFD | Q  | 30             | 9.11           | 10.80  | 12.99 | 15.63 | 18.68 | 22.06 | 25.71 | 29.59 |       |       |       |
|          |            |    | 40             | 8.66           | 10.29  | 12.40 | 14.91 | 17.77 | 20.94 | 24.34 | 27.91 |       |       |       |
|          |            |    | 50             | 8.04           | 9.65   | 11.68 | 14.07 | 16.79 | 19.75 | 22.91 | 26.23 |       |       |       |
|          |            | P  | 30             | 5.04           | 5.42   | 5.76  | 6.08  | 6.38  | 6.67  | 6.98  | 7.31  |       |       |       |
|          |            |    | 40             | 6.06           | 6.49   | 6.89  | 7.26  | 7.61  | 7.97  | 8.33  | 8.72  |       |       |       |
|          |            |    | 50             | 7.31           | 7.79   | 8.25  | 8.67  | 9.09  | 9.50  | 9.92  | 10.38 |       |       |       |
|          |            | LO | 30             | -18.10         | -7.60  | -2.60 | 0.50  | 3.40  | 6.70  | 10.50 | 14.80 |       |       |       |
|          |            |    | 40             | -12.10         | -2.70  | 1.90  | 5.00  | 8.10  | 11.70 | 15.70 | 20.20 |       |       |       |
|          |            |    | 50             | -3.60          | 3.70   | 7.30  | 10.10 | 13.10 | 16.70 | 20.80 | 25.20 |       |       |       |

## Notes:

1. Q for capacity, P for power. Units in kW; LO for liquid out temperature in °C
2. All ZF\*KQE values are rated at return gas temperature: 20°C and max subcooling

# Performance data

R404A

TFC: 200 V, 3-Phase, 50 Hz ; TFD: 380-420 V, 3-Phase, 50 Hz  
Vapor injection

| Model     |            |    | Cond. temp. °C | Evap. temp. °C |       |       |       |       |       |       |       |   |   |   |
|-----------|------------|----|----------------|----------------|-------|-------|-------|-------|-------|-------|-------|---|---|---|
|           |            |    |                | -40            | -35   | -30   | -25   | -20   | -15   | -10   | -5    | 0 | 5 | 7 |
| ZFI59KQE  | TFC<br>TFD | Q  | 30             | 11.10          | 13.15 | 15.82 | 19.05 | 22.74 | 26.86 | 31.31 | 36.02 |   |   |   |
|           |            |    | 40             | 10.55          | 12.53 | 15.09 | 18.16 | 21.65 | 25.51 | 29.65 | 34.01 |   |   |   |
|           |            |    | 50             | 9.80           | 11.75 | 14.21 | 17.14 | 20.45 | 24.05 | 27.92 | 31.93 |   |   |   |
|           |            | P  | 30             | 6.15           | 6.61  | 7.03  | 7.41  | 7.77  | 8.14  | 8.51  | 8.92  |   |   |   |
|           |            |    | 40             | 7.39           | 7.91  | 8.39  | 8.85  | 9.29  | 9.72  | 10.17 | 10.65 |   |   |   |
|           |            |    | 50             | 8.92           | 9.51  | 10.05 | 10.58 | 11.09 | 11.58 | 12.11 | 12.66 |   |   |   |
|           |            | LO | 30             | -15.40         | -5.10 | -0.30 | 2.70  | 5.60  | 8.80  | 12.60 | 16.70 |   |   |   |
|           |            |    | 40             | -9.50          | -0.30 | 4.20  | 7.20  | 10.20 | 13.60 | 17.50 | 21.80 |   |   |   |
|           |            |    | 50             | -1.20          | 5.90  | 9.50  | 12.10 | 15.00 | 18.60 | 22.50 | 26.90 |   |   |   |
| ZFI68KQE  | TFC<br>TFD | Q  | 30             | 12.60          | 14.92 | 17.95 | 21.61 | 25.81 |       |       |       |   |   |   |
|           |            |    | 40             | 11.97          | 14.23 | 17.13 | 20.60 | 24.56 |       |       |       |   |   |   |
|           |            |    | 50             | 11.12          | 13.33 | 16.14 | 19.45 | 23.20 |       |       |       |   |   |   |
|           |            | P  | 30             | 7.15           | 7.68  | 8.17  | 8.62  | 9.04  |       |       |       |   |   |   |
|           |            |    | 40             | 8.60           | 9.20  | 9.77  | 10.29 | 10.80 |       |       |       |   |   |   |
|           |            |    | 50             | 10.36          | 11.05 | 11.70 | 12.30 | 12.89 |       |       |       |   |   |   |
|           |            | LO | 30             | -15.40         | -5.10 | -0.30 | 2.70  | 5.50  |       |       |       |   |   |   |
|           |            |    | 40             | -9.60          | -0.40 | 4.10  | 7.20  | 10.20 |       |       |       |   |   |   |
|           |            |    | 50             | -1.20          | 5.90  | 9.40  | 12.10 | 15.00 |       |       |       |   |   |   |
| ZFI81KQE  | TFC<br>TFD | Q  | 30             | 14.37          | 17.01 | 20.46 | 24.63 | 29.43 |       |       |       |   |   |   |
|           |            |    | 40             | 13.66          | 16.23 | 19.55 | 23.50 | 28.03 |       |       |       |   |   |   |
|           |            |    | 50             | 12.68          | 15.21 | 18.41 | 22.18 | 26.47 |       |       |       |   |   |   |
|           |            | P  | 30             | 8.26           | 8.87  | 9.44  | 9.96  | 10.45 |       |       |       |   |   |   |
|           |            |    | 40             | 9.94           | 10.64 | 11.30 | 11.90 | 12.49 |       |       |       |   |   |   |
|           |            |    | 50             | 11.98          | 12.78 | 13.53 | 14.23 | 14.91 |       |       |       |   |   |   |
|           |            | LO | 30             | -10.00         | -0.20 | 4.40  | 7.30  | 9.90  |       |       |       |   |   |   |
|           |            |    | 40             | -4.50          | 4.20  | 8.50  | 11.40 | 14.20 |       |       |       |   |   |   |
|           |            |    | 50             | 3.50           | 10.20 | 13.60 | 16.10 | 18.80 |       |       |       |   |   |   |
| ZFI96KQE  | TRC<br>TRD | Q  | 30             | 18.35          | 22.00 | 26.50 | 32.20 | 39.10 | 47.50 | 57.60 | 69.40 |   |   |   |
|           |            |    | 40             | 17.45          | 21.30 | 25.70 | 30.90 | 37.10 | 44.40 | 52.90 | 62.90 |   |   |   |
|           |            |    | 50             | 14.30          | 18.70 | 24.20 | 29.20 | 34.80 | 41.10 | 48.40 | 56.80 |   |   |   |
|           |            | P  | 30             | 10.75          | 11.30 | 11.85 | 12.45 | 13.10 | 13.90 | 14.80 | 15.85 |   |   |   |
|           |            |    | 40             | 13.30          | 13.95 | 14.60 | 15.25 | 15.90 | 16.60 | 17.40 | 18.30 |   |   |   |
|           |            |    | 50             | 16.85          | 17.80 | 18.10 | 18.80 | 19.50 | 20.20 | 20.90 | 21.60 |   |   |   |
|           |            | LO | 30             | -10.40         | -2.80 | 2.10  | 5.00  | 6.40  | 6.60  | 5.90  | 4.60  |   |   |   |
|           |            |    | 40             | -0.90          | 1.10  | 4.60  | 8.10  | 11.00 | 13.20 | 14.60 | 15.20 |   |   |   |
|           |            |    | 50             | 16.20          | 10.20 | 10.00 | 12.50 | 16.10 | 19.50 | 22.40 | 24.40 |   |   |   |
| ZFI122KQE | TRC<br>TRD | Q  | 30             | 23.14          | 27.67 | 33.39 | 40.53 | 49.30 | 59.91 | 72.57 | 87.50 |   |   |   |
|           |            |    | 40             | 21.96          | 26.81 | 32.42 | 38.99 | 46.75 | 55.91 | 66.68 | 79.27 |   |   |   |
|           |            |    | 50             | 18.04          | 23.62 | 30.52 | 36.81 | 43.84 | 51.83 | 60.98 | 71.51 |   |   |   |
|           |            | P  | 30             | 13.14          | 13.77 | 14.45 | 15.18 | 16.01 | 16.96 | 18.06 | 19.33 |   |   |   |
|           |            |    | 40             | 16.21          | 17.02 | 17.80 | 18.59 | 19.40 | 20.28 | 21.24 | 22.32 |   |   |   |
|           |            |    | 50             | 20.57          | 21.72 | 22.09 | 22.95 | 23.78 | 24.62 | 25.48 | 26.39 |   |   |   |
|           |            | LO | 30             | -10.40         | -2.80 | 2.10  | 5.00  | 6.40  | 6.60  | 5.90  | 4.60  |   |   |   |
|           |            |    | 40             | -0.90          | 1.10  | 4.60  | 8.10  | 11.00 | 13.20 | 14.60 | 15.20 |   |   |   |
|           |            |    | 50             | 16.20          | 10.20 | 10.00 | 12.50 | 16.10 | 19.50 | 22.40 | 24.40 |   |   |   |
| ZFI140KQE | TRC<br>TRD | Q  | 30             | 25.70          | 30.70 | 37.00 | 44.90 | 54.60 | 66.50 | 80.60 | 97.20 |   |   |   |
|           |            |    | 40             | 24.30          | 29.50 | 35.70 | 43.00 | 51.60 | 61.90 | 73.90 | 87.90 |   |   |   |
|           |            |    | 50             | 19.80          | 27.20 | 33.60 | 40.50 | 48.30 | 57.30 | 67.50 | 79.20 |   |   |   |
|           |            | P  | 30             | 14.30          | 15.05 | 15.80 | 16.60 | 17.50 | 18.50 | 19.65 | 21.00 |   |   |   |
|           |            |    | 40             | 17.70          | 18.60 | 19.50 | 20.30 | 21.20 | 22.10 | 23.10 | 24.30 |   |   |   |
|           |            |    | 50             | 22.40          | 23.10 | 24.10 | 25.10 | 25.90 | 26.80 | 27.80 | 28.80 |   |   |   |
|           |            | LO | 30             | -8.00          | 0.00  | 4.90  | 7.60  | 8.80  | 8.90  | 8.10  | 6.80  |   |   |   |
|           |            |    | 40             | 2.20           | 4.60  | 7.90  | 11.10 | 13.80 | 15.70 | 16.80 | 17.30 |   |   |   |
|           |            |    | 50             | 18.80          | 13.50 | 13.30 | 15.60 | 18.80 | 21.90 | 24.50 | 26.40 |   |   |   |

## Notes:

1. Q for capacity, P for power. Units in kW; LO for liquid out temperature in °C
2. All ZF+KQE values are rated at return gas temperature: 20°C and max subcooling
3.   20K Superheat

# Performance data

R404A

TF7: 380 V, 3-Phase, 60 Hz ; TFC : 208-230 V, 3-Phase, 60 Hz ; TFD : 460 V, 3-Phase, 60 Hz  
Liquid injection

| Model   |                   |   | Cond. temp. °C | Evap. temp. °C |      |      |      |       |       |       |       |       |       |       |
|---------|-------------------|---|----------------|----------------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
|         |                   |   |                | -40            | -35  | -30  | -25  | -20   | -15   | -10   | -5    | 0     | 5     | 7     |
| ZF06KQE | TF5<br>TFD        | Q | 30             | 1.49           | 1.90 | 2.36 | 2.90 | 3.53  | 4.26  | 5.12  | 6.12  | 7.27  | 8.59  | 9.17  |
|         |                   |   | 40             | 1.30           | 1.67 | 2.09 | 2.56 | 3.10  | 3.74  | 4.48  | 5.34  | 6.34  | 7.49  | 7.99  |
|         |                   |   | 50             | 1.11           | 1.45 | 1.80 | 2.20 | 2.65  | 3.17  | 3.78  | 4.49  | 5.32  | 6.29  | 6.72  |
|         |                   | P | 30             | 1.27           | 1.29 | 1.34 | 1.43 | 1.52  | 1.63  | 1.74  | 1.84  | 1.93  | 1.99  | 2.00  |
|         |                   |   | 40             | 1.57           | 1.57 | 1.60 | 1.67 | 1.77  | 1.88  | 2.00  | 2.12  | 2.22  | 2.32  | 2.34  |
|         |                   |   | 50             | 1.94           | 1.90 | 1.92 | 1.97 | 2.06  | 2.17  | 2.30  | 2.43  | 2.56  | 2.68  | 2.72  |
| ZF08KQE | TF5<br>TFD        | Q | 30             | 1.90           | 2.39 | 2.98 | 3.66 | 4.47  | 5.42  | 6.51  | 7.76  | 9.20  | 10.83 | 11.53 |
|         |                   |   | 40             | 1.68           | 2.12 | 2.64 | 3.24 | 3.95  | 4.77  | 5.72  | 6.81  | 8.07  | 9.50  | 10.12 |
|         |                   |   | 50             | 1.42           | 1.81 | 2.25 | 2.76 | 3.35  | 4.03  | 4.83  | 5.76  | 6.82  | 8.04  | 8.58  |
|         |                   | P | 30             | 1.57           | 1.63 | 1.71 | 1.80 | 1.92  | 2.04  | 2.17  | 2.32  | 2.46  | 2.61  | 2.66  |
|         |                   |   | 40             | 1.91           | 1.95 | 2.01 | 2.09 | 2.20  | 2.32  | 2.45  | 2.60  | 2.75  | 2.91  | 2.98  |
|         |                   |   | 50             | 2.40           | 2.40 | 2.44 | 2.50 | 2.59  | 2.69  | 2.82  | 2.96  | 3.11  | 3.27  | 3.34  |
| ZF09KQE | TF5<br>TFD        | Q | 30             | 2.11           | 2.67 | 3.32 | 4.08 | 4.98  | 6.02  | 7.23  | 8.62  | 10.23 | 12.05 | 12.85 |
|         |                   |   | 40             | 1.87           | 2.37 | 2.94 | 3.60 | 4.37  | 5.27  | 6.32  | 7.53  | 8.93  | 10.54 | 11.24 |
|         |                   |   | 50             | 1.60           | 2.03 | 2.51 | 3.06 | 3.71  | 4.46  | 5.34  | 6.36  | 7.56  | 8.94  | 9.55  |
|         |                   | P | 30             | 1.58           | 1.63 | 1.69 | 1.78 | 1.88  | 2.01  | 2.15  | 2.31  | 2.49  | 2.68  | 2.76  |
|         |                   |   | 40             | 1.92           | 1.95 | 2.01 | 2.09 | 2.18  | 2.30  | 2.44  | 2.59  | 2.76  | 2.95  | 3.03  |
|         |                   |   | 50             | 2.34           | 2.37 | 2.41 | 2.48 | 2.56  | 2.67  | 2.80  | 2.95  | 3.12  | 3.30  | 3.38  |
| ZF11KQE | TF5<br>TFD        | Q | 30             | 2.60           | 3.30 | 4.11 | 5.07 | 6.19  | 7.49  | 8.99  | 10.72 | 12.68 | 14.90 | 15.87 |
|         |                   |   | 40             | 2.33           | 2.94 | 3.65 | 4.48 | 5.46  | 6.59  | 7.90  | 9.41  | 11.13 | 13.10 | 13.95 |
|         |                   |   | 50             | 1.99           | 2.52 | 3.11 | 3.81 | 4.62  | 5.57  | 6.68  | 7.96  | 9.44  | 11.14 | 11.88 |
|         |                   | P | 30             | 1.90           | 1.97 | 2.06 | 2.18 | 2.33  | 2.50  | 2.70  | 2.92  | 3.17  | 3.45  | 3.57  |
|         |                   |   | 40             | 2.30           | 2.37 | 2.46 | 2.57 | 2.71  | 2.86  | 3.05  | 3.25  | 3.48  | 3.74  | 3.85  |
|         |                   |   | 50             | 2.79           | 2.86 | 2.95 | 3.06 | 3.19  | 3.35  | 3.52  | 3.71  | 3.93  | 4.17  | 4.27  |
| ZF13KQE | TF7<br>TFC<br>TFD | Q | 30             | 2.95           | 3.80 | 4.79 | 5.93 | 7.24  | 8.73  | 10.40 | 12.29 | 14.40 | 16.74 | 17.74 |
|         |                   |   | 40             | 2.60           | 3.32 | 4.16 | 5.15 | 6.31  | 7.63  | 9.14  | 10.85 | 12.77 | 14.92 | 15.85 |
|         |                   |   | 50             | 2.28           | 2.83 | 3.50 | 4.31 | 5.27  | 6.39  | 7.70  | 9.20  | 10.91 | 12.84 | 13.68 |
|         |                   | P | 30             | 2.24           | 2.30 | 2.39 | 2.50 | 2.65  | 2.82  | 3.03  | 3.28  | 3.56  | 3.89  | 4.03  |
|         |                   |   | 40             | 2.70           | 2.76 | 2.85 | 2.95 | 3.09  | 3.25  | 3.44  | 3.67  | 3.92  | 4.22  | 4.35  |
|         |                   |   | 50             | 3.30           | 3.37 | 3.45 | 3.55 | 3.68  | 3.83  | 4.01  | 4.21  | 4.45  | 4.71  | 4.83  |
| ZF15KQE | TF7<br>TFC<br>TFD | Q | 30             | 3.74           | 4.72 | 5.88 | 7.25 | 8.86  | 10.73 | 12.90 | 15.40 | 18.26 | 21.50 | 22.91 |
|         |                   |   | 40             | 3.30           | 4.16 | 5.17 | 6.35 | 7.74  | 9.36  | 11.24 | 13.41 | 15.91 | 18.76 | 20.00 |
|         |                   |   | 50             | 2.81           | 3.54 | 4.38 | 5.36 | 6.51  | 7.85  | 9.43  | 11.27 | 13.39 | 15.83 | 16.90 |
|         |                   | P | 30             | 2.70           | 2.79 | 2.92 | 3.07 | 3.26  | 3.49  | 3.78  | 4.13  | 4.54  | 5.02  | 5.24  |
|         |                   |   | 40             | 3.19           | 3.34 | 3.49 | 3.66 | 3.85  | 4.07  | 4.32  | 4.62  | 4.96  | 5.36  | 5.54  |
|         |                   |   | 50             | 3.77           | 3.98 | 4.19 | 4.40 | 4.62  | 4.84  | 5.08  | 5.36  | 5.66  | 6.01  | 6.16  |
| ZF18KQE | TF7<br>TFC<br>TFD | Q | 30             | 4.46           | 5.67 | 7.07 | 8.70 | 10.61 | 12.84 | 15.43 | 18.42 | 21.87 | 25.81 | 27.53 |
|         |                   |   | 40             | 3.98           | 5.05 | 6.26 | 7.66 | 9.29  | 11.21 | 13.44 | 16.04 | 19.05 | 22.51 | 24.03 |
|         |                   |   | 50             | 3.47           | 4.37 | 5.37 | 6.53 | 7.87  | 9.46  | 11.32 | 13.51 | 16.06 | 19.03 | 20.34 |
|         |                   | P | 30             | 3.27           | 3.37 | 3.52 | 3.72 | 3.96  | 4.24  | 4.55  | 4.88  | 5.23  | 5.59  | 5.73  |
|         |                   |   | 40             | 3.88           | 3.98 | 4.13 | 4.34 | 4.59  | 4.87  | 5.19  | 5.53  | 5.88  | 6.24  | 6.39  |
|         |                   |   | 50             | 4.57           | 4.68 | 4.85 | 5.07 | 5.33  | 5.63  | 5.96  | 6.31  | 6.68  | 7.05  | 7.20  |

## Notes:

1. Q for capacity; P for power. Units in kW
2. All ZF\*KQE values are rated at return gas temperature: 20°C and subcooling: 0 K



# Performance data

R404A

TF7: 380 V, 3-Phase, 60 Hz ; TFC : 208-230 V, 3-Phase, 60 Hz ; TFD : 460 V, 3-Phase, 60 Hz  
Liquid injection

| Model   |                   |   | Cond. temp. °C | Evap. temp. °C |       |       |       |       |       |       |       |   |   |   |
|---------|-------------------|---|----------------|----------------|-------|-------|-------|-------|-------|-------|-------|---|---|---|
|         |                   |   |                | -40            | -35   | -30   | -25   | -20   | -15   | -10   | -5    | 0 | 5 | 7 |
| ZF25KQE | TF7<br>TFC<br>TFD | Q | 30             | 5.52           | 7.01  | 8.78  | 10.86 | 13.27 | 16.05 | 19.21 | 22.79 |   |   |   |
|         |                   |   | 40             | 4.93           | 6.19  | 7.72  | 9.53  | 11.67 | 14.15 | 17.01 | 20.27 |   |   |   |
|         |                   |   | 50             | 4.44           | 5.42  | 6.65  | 8.15  | 9.96  | 12.10 | 14.60 | 17.48 |   |   |   |
|         |                   | P | 30             | 3.63           | 3.96  | 4.28  | 4.60  | 4.90  | 5.21  | 5.53  | 5.87  |   |   |   |
|         |                   |   | 40             | 4.06           | 4.50  | 4.91  | 5.30  | 5.68  | 6.04  | 6.41  | 6.78  |   |   |   |
|         |                   |   | 50             | 4.46           | 5.03  | 5.56  | 6.06  | 6.52  | 6.97  | 7.40  | 7.82  |   |   |   |
| ZF28KQE | TF7<br>TFC<br>TFD | Q | 30             | 6.31           | 8.01  | 10.03 | 12.41 | 15.16 | 18.33 | 21.94 | 26.03 |   |   |   |
|         |                   |   | 40             | 5.63           | 7.07  | 8.82  | 10.89 | 13.33 | 16.17 | 19.43 | 23.15 |   |   |   |
|         |                   |   | 50             | 5.07           | 6.19  | 7.59  | 9.31  | 11.38 | 13.82 | 16.67 | 19.97 |   |   |   |
|         |                   | P | 30             | 4.47           | 4.89  | 5.29  | 5.67  | 6.05  | 6.43  | 6.83  | 7.25  |   |   |   |
|         |                   |   | 40             | 5.00           | 5.55  | 6.06  | 6.54  | 7.00  | 7.45  | 7.90  | 8.36  |   |   |   |
|         |                   |   | 50             | 5.50           | 6.21  | 6.86  | 7.47  | 8.05  | 8.59  | 9.12  | 9.64  |   |   |   |
| ZF34KQE | TF7<br>TFC<br>TFD | Q | 30             | 7.22           | 9.25  | 11.58 | 14.29 | 17.44 | 21.10 | 25.33 | 30.21 |   |   |   |
|         |                   |   | 40             | 6.34           | 8.16  | 10.22 | 12.59 | 15.32 | 18.49 | 22.16 | 26.41 |   |   |   |
|         |                   |   | 50             | 5.35           | 6.93  | 8.68  | 10.66 | 12.94 | 15.58 | 18.66 | 22.24 |   |   |   |
|         |                   | P | 30             | 5.08           | 5.37  | 5.68  | 6.01  | 6.36  | 6.73  | 7.13  | 7.55  |   |   |   |
|         |                   |   | 40             | 5.91           | 6.28  | 6.65  | 7.02  | 7.40  | 7.79  | 8.19  | 8.60  |   |   |   |
|         |                   |   | 50             | 6.89           | 7.35  | 7.80  | 8.25  | 8.68  | 9.10  | 9.52  | 9.93  |   |   |   |
| ZF41KQE | TF7<br>TFC<br>TFD | Q | 30             | 9.12           | 11.59 | 14.41 | 17.70 | 21.55 | 26.05 | 31.30 | 37.40 |   |   |   |
|         |                   |   | 40             | 8.09           | 10.31 | 12.80 | 15.64 | 18.93 | 22.78 | 27.27 | 32.51 |   |   |   |
|         |                   |   | 50             | 6.81           | 8.79  | 10.92 | 13.30 | 16.04 | 19.22 | 22.96 | 27.33 |   |   |   |
|         |                   | P | 30             | 6.11           | 6.51  | 6.92  | 7.36  | 7.81  | 8.29  | 8.80  | 9.34  |   |   |   |
|         |                   |   | 40             | 7.17           | 7.63  | 8.10  | 8.57  | 9.06  | 9.56  | 10.08 | 10.61 |   |   |   |
|         |                   |   | 50             | 8.37           | 8.92  | 9.45  | 9.99  | 10.52 | 11.06 | 11.60 | 12.15 |   |   |   |
| ZF49KQE | TF7<br>TFC<br>TFD | Q | 30             | 11.01          | 13.90 | 17.34 | 21.38 | 26.11 |       |       |       |   |   |   |
|         |                   |   | 40             | 9.72           | 12.31 | 15.33 | 18.85 | 22.95 |       |       |       |   |   |   |
|         |                   |   | 50             | 8.19           | 10.44 | 13.01 | 15.99 | 19.44 |       |       |       |   |   |   |
|         |                   | P | 30             | 7.52           | 7.87  | 8.31  | 8.83  | 9.41  |       |       |       |   |   |   |
|         |                   |   | 40             | 8.86           | 9.24  | 9.71  | 10.26 | 10.87 |       |       |       |   |   |   |
|         |                   |   | 50             | 10.52          | 10.92 | 11.43 | 12.01 | 12.67 |       |       |       |   |   |   |
| ZF54KQE | TF7<br>TFC<br>TFD | Q | 30             | 12.55          | 15.85 | 19.76 | 24.38 | 29.76 |       |       |       |   |   |   |
|         |                   |   | 40             | 11.08          | 14.03 | 17.47 | 21.49 | 26.17 |       |       |       |   |   |   |
|         |                   |   | 50             | 9.33           | 11.90 | 14.83 | 18.23 | 22.16 |       |       |       |   |   |   |
|         |                   | P | 30             | 8.57           | 8.97  | 9.48  | 10.07 | 10.73 |       |       |       |   |   |   |
|         |                   |   | 40             | 10.10          | 10.53 | 11.07 | 11.70 | 12.39 |       |       |       |   |   |   |
|         |                   |   | 50             | 11.99          | 12.45 | 13.02 | 13.69 | 14.44 |       |       |       |   |   |   |

## Notes:

1. Q for capacity; P for power. Units in kW
2. All ZF\*KQE values are rated at return gas temperature: 20°C and subcooling: 0 K

# Performance data

R404A

TF7: 380 V, 3-Phase, 60 Hz ; TFC : 208-230 V, 3-Phase, 60 Hz ; TFD : 460 V, 3-Phase, 60 Hz  
Vapor injection

| Model    |                   |    | Cond. temp. °C | Evap. temp. °C |        |       |       |       |       |       |       |       |       |       |
|----------|-------------------|----|----------------|----------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|          |                   |    |                | -40            | -35    | -30   | -25   | -20   | -15   | -10   | -5    | 0     | 5     | 7     |
| ZFI20KQE | TF7<br>TFC<br>TFD | Q  | 30             | 4.27           | 5.27   | 6.40  | 7.69  | 9.15  | 10.81 | 12.68 | 14.80 | 17.16 | 19.82 | 20.96 |
|          |                   |    | 40             | 4.21           | 5.16   | 6.25  | 7.48  | 8.89  | 10.50 | 12.32 | 14.38 | 16.71 | 19.30 | 20.43 |
|          |                   |    | 50             | 4.01           | 4.91   | 5.95  | 7.13  | 8.49  | 10.05 | 11.82 | 13.84 | 16.11 | 18.67 | 19.78 |
|          |                   | P  | 30             | 2.65           | 2.79   | 2.93  | 3.05  | 3.16  | 3.26  | 3.35  | 3.43  | 3.49  | 3.55  | 3.57  |
|          |                   |    | 40             | 3.24           | 3.41   | 3.57  | 3.72  | 3.86  | 3.99  | 4.10  | 4.21  | 4.31  | 4.39  | 4.42  |
|          |                   |    | 50             | 4.00           | 4.19   | 4.38  | 4.55  | 4.71  | 4.87  | 5.01  | 5.15  | 5.28  | 5.40  | 5.45  |
|          |                   | LO | 30             | -9.30          | -6.50  | -3.30 | 0.20  | 3.90  | 7.70  | 11.30 | 14.50 | 17.50 | 19.80 | 20.60 |
|          |                   |    | 40             | -9.40          | -6.00  | -2.40 | 1.60  | 5.70  | 9.80  | 13.50 | 16.90 | 19.80 | 22.20 | 22.90 |
|          |                   |    | 50             | -7.10          | -3.50  | 0.40  | 4.70  | 8.90  | 13.00 | 16.80 | 20.10 | 22.90 | 25.10 | 25.80 |
| ZFI23KQE | TF7<br>TFC<br>TFD | Q  | 30             | 5.77           | 6.56   | 7.69  | 9.13  | 10.85 | 12.90 | 15.15 | 17.70 | 20.40 | 23.40 | 24.60 |
|          |                   |    | 40             | 5.69           | 6.38   | 7.41  | 8.75  | 10.40 | 12.30 | 14.50 | 16.95 | 19.60 | 22.50 | 23.70 |
|          |                   |    | 50             | 5.69           | 6.26   | 7.16  | 8.37  | 9.89  | 11.70 | 13.75 | 16.10 | 18.65 | 21.40 | 22.60 |
|          |                   | P  | 30             | 3.16           | 3.33   | 3.49  | 3.64  | 3.78  | 3.92  | 4.06  | 4.19  | 4.31  | 4.44  | 4.49  |
|          |                   |    | 40             | 3.76           | 3.98   | 4.19  | 4.39  | 4.57  | 4.74  | 4.90  | 5.05  | 5.19  | 5.32  | 5.37  |
|          |                   |    | 50             | 4.60           | 4.88   | 5.13  | 5.37  | 5.58  | 5.78  | 5.96  | 6.13  | 6.28  | 6.41  | 6.46  |
|          |                   | LO | 30             | -31.80         | -14.00 | -4.70 | 0.80  | 4.70  | 8.20  | 11.50 | 14.90 | 18.20 | 21.40 | 22.60 |
|          |                   |    | 40             | -27.20         | -10.70 | -1.70 | 3.80  | 7.80  | 11.30 | 14.70 | 18.10 | 21.40 | 24.50 | 25.70 |
|          |                   |    | 50             | -24.10         | -8.10  | 1.00  | 6.70  | 11.00 | 14.80 | 18.30 | 21.70 | 25.00 | 28.00 | 29.20 |
| ZFI26KQE | TF7<br>TFC<br>TFD | Q  | 30             | 6.30           | 7.81   | 9.47  | 11.34 | 13.43 | 15.81 | 18.50 | 21.55 | 24.98 | 28.86 | 30.55 |
|          |                   |    | 40             | 6.03           | 7.47   | 9.04  | 10.79 | 12.76 | 14.98 | 17.49 | 20.35 | 23.58 | 27.23 | 28.81 |
|          |                   |    | 50             | 5.64           | 6.99   | 8.46  | 10.08 | 11.89 | 13.94 | 16.27 | 18.91 | 21.90 | 25.29 | 26.77 |
|          |                   | P  | 30             | 3.80           | 4.05   | 4.30  | 4.55  | 4.80  | 5.07  | 5.34  | 5.64  | 5.97  | 6.33  | 6.49  |
|          |                   |    | 40             | 4.50           | 4.83   | 5.15  | 5.46  | 5.75  | 6.04  | 6.34  | 6.64  | 6.95  | 7.29  | 7.43  |
|          |                   |    | 50             | 5.46           | 5.89   | 6.28  | 6.64  | 6.98  | 7.30  | 7.61  | 7.92  | 8.22  | 8.54  | 8.67  |
|          |                   | LO | 30             | -12.20         | -8.00  | -4.10 | -0.10 | 3.90  | 7.80  | 11.30 | 14.40 | 17.20 | 19.20 | 19.90 |
|          |                   |    | 40             | -9.60          | -4.70  | -0.20 | 4.30  | 8.60  | 12.60 | 16.20 | 19.30 | 21.90 | 23.90 | 24.50 |
|          |                   |    | 50             | -5.80          | -0.30  | 4.80  | 9.60  | 14.10 | 18.20 | 21.80 | 24.90 | 27.40 | 29.20 | 29.80 |
| ZFI36KQE | TF7<br>TFC<br>TFD | Q  | 30             | 7.73           | 9.58   | 11.62 | 13.92 | 16.56 | 19.64 | 23.23 | 27.39 |       |       |       |
|          |                   |    | 40             | 7.53           | 9.15   | 10.97 | 13.08 | 15.56 | 18.50 | 21.95 | 26.01 |       |       |       |
|          |                   |    | 50             | 7.74           | 9.00   | 10.49 | 12.29 | 14.48 | 17.14 | 20.35 | 24.21 |       |       |       |
|          |                   | P  | 30             | 4.46           | 4.84   | 5.16  | 5.45  | 5.73  | 6.03  | 6.38  | 6.79  |       |       |       |
|          |                   |    | 40             | 5.25           | 5.74   | 6.17  | 6.56  | 6.95  | 7.36  | 7.80  | 8.31  |       |       |       |
|          |                   |    | 50             | 6.26           | 6.85   | 7.37  | 7.88  | 8.38  | 8.89  | 9.44  | 10.08 |       |       |       |
|          |                   | LO | 30             | -12.60         | -9.00  | -4.10 | 0.60  | 4.70  | 7.70  | 9.80  | 11.00 |       |       |       |
|          |                   |    | 40             | -9.90          | -3.90  | 2.10  | 7.10  | 10.80 | 13.40 | 14.90 | 15.50 |       |       |       |
|          |                   |    | 50             | -16.10         | -3.90  | 5.40  | 12.10 | 16.70 | 19.50 | 20.90 | 21.00 |       |       |       |
| ZFI39KQE | TF7<br>TFC<br>TFD | Q  | 30             | 8.89           | 11.02  | 13.36 | 16.01 | 19.06 | 22.59 | 26.72 | 31.51 |       |       |       |
|          |                   |    | 40             | 8.66           | 10.53  | 12.62 | 15.05 | 17.90 | 21.28 | 25.25 | 29.93 |       |       |       |
|          |                   |    | 50             | 8.91           | 10.35  | 12.06 | 14.14 | 16.65 | 19.72 | 23.41 | 27.86 |       |       |       |
|          |                   | P  | 30             | 5.35           | 5.80   | 6.18  | 6.53  | 6.87  | 7.23  | 7.65  | 8.14  |       |       |       |
|          |                   |    | 40             | 6.29           | 6.88   | 7.39  | 7.87  | 8.33  | 8.82  | 9.35  | 9.96  |       |       |       |
|          |                   |    | 50             | 7.51           | 8.21   | 8.84  | 9.45  | 10.04 | 10.66 | 11.32 | 12.08 |       |       |       |
|          |                   | LO | 30             | -12.60         | -9.00  | -4.10 | 0.60  | 4.70  | 7.70  | 9.80  | 11.00 |       |       |       |
|          |                   |    | 40             | -9.90          | -3.90  | 2.10  | 7.10  | 10.80 | 13.40 | 14.90 | 15.50 |       |       |       |
|          |                   |    | 50             | -16.10         | -3.90  | 5.40  | 12.10 | 16.70 | 19.50 | 20.90 | 21.00 |       |       |       |
| ZFI50KQE | TF7<br>TFC<br>TFD | Q  | 30             | 10.79          | 12.78  | 15.38 | 18.52 | 22.10 | 26.11 | 30.43 | 35.02 |       |       |       |
|          |                   |    | 40             | 10.25          | 12.19  | 14.67 | 17.65 | 21.05 | 24.80 | 28.83 | 33.06 |       |       |       |
|          |                   |    | 50             | 9.53           | 11.42  | 13.82 | 16.66 | 19.88 | 23.40 | 27.14 | 31.04 |       |       |       |
|          |                   | P  | 30             | 5.95           | 6.40   | 6.80  | 7.18  | 7.53  | 7.88  | 8.24  | 8.63  |       |       |       |
|          |                   |    | 40             | 7.15           | 7.66   | 8.13  | 8.57  | 8.99  | 9.41  | 9.84  | 10.31 |       |       |       |
|          |                   |    | 50             | 8.63           | 9.20   | 9.73  | 10.25 | 10.74 | 11.23 | 11.72 | 12.25 |       |       |       |
|          |                   | LO | 30             | -15.40         | -5.10  | -0.30 | 2.70  | 5.60  | 8.80  | 12.60 | 16.70 |       |       |       |
|          |                   |    | 40             | -9.50          | -0.40  | 4.20  | 7.20  | 10.20 | 13.60 | 17.50 | 21.80 |       |       |       |
|          |                   |    | 50             | -1.20          | 5.90   | 9.50  | 12.10 | 15.00 | 18.50 | 22.50 | 26.90 |       |       |       |

## Notes:

1. Q for capacity, P for power. Units in kW; LO for liquid out temperature in °C
2. All ZF\*KQE values are rated at return gas temperature: 20°C and max subcooling

# Performance data

R404A

TF7: 380 V, 3-Phase, 60 Hz ; TFC : 208-230 V, 3-Phase, 60 Hz ; TFD : 460 V, 3-Phase, 60 Hz  
Vapor injection

| Model     |                   |    | Cond. temp. °C | Evap. temp. °C |       |       |       |       |       |       |        |   |   |   |
|-----------|-------------------|----|----------------|----------------|-------|-------|-------|-------|-------|-------|--------|---|---|---|
|           |                   |    |                | -40            | -35   | -30   | -25   | -20   | -15   | -10   | -5     | 0 | 5 | 7 |
| ZFI59KQE  | TF7<br>TFC<br>TFD | Q  | 30             | 13.38          | 15.84 | 19.06 | 22.95 | 27.40 | 32.36 | 37.72 | 43.40  |   |   |   |
|           |                   |    | 40             | 12.71          | 15.10 | 18.18 | 21.88 | 26.09 | 30.74 | 35.73 | 40.97  |   |   |   |
|           |                   |    | 50             | 11.81          | 14.16 | 17.12 | 20.65 | 24.64 | 28.97 | 33.64 | 38.46  |   |   |   |
|           |                   | P  | 30             | 7.41           | 7.96  | 8.46  | 8.93  | 9.37  | 9.80  | 10.25 | 10.74  |   |   |   |
|           |                   |    | 40             | 8.90           | 9.53  | 10.11 | 10.66 | 11.19 | 11.71 | 12.25 | 12.83  |   |   |   |
|           |                   |    | 50             | 10.74          | 11.45 | 12.11 | 12.75 | 13.36 | 13.95 | 14.59 | 15.25  |   |   |   |
|           |                   | LO | 30             | -15.40         | -5.10 | -0.30 | 2.70  | 5.60  | 8.80  | 12.60 | 16.70  |   |   |   |
|           |                   |    | 40             | -9.50          | -0.30 | 4.20  | 7.20  | 10.20 | 13.60 | 17.50 | 21.80  |   |   |   |
|           |                   |    | 50             | -1.20          | 5.90  | 9.50  | 12.10 | 15.00 | 18.60 | 22.50 | 26.90  |   |   |   |
| ZFI68KQE  | TF7<br>TFC<br>TFD | Q  | 30             | 15.12          | 17.91 | 21.54 | 25.94 | 30.99 |       |       |        |   |   |   |
|           |                   |    | 40             | 14.37          | 17.08 | 20.57 | 24.73 | 29.49 |       |       |        |   |   |   |
|           |                   |    | 50             | 13.35          | 16.00 | 19.37 | 23.35 | 27.85 |       |       |        |   |   |   |
|           |                   | P  | 30             | 8.58           | 9.22  | 9.80  | 10.34 | 10.86 |       |       |        |   |   |   |
|           |                   |    | 40             | 10.32          | 11.05 | 11.73 | 12.35 | 12.96 |       |       |        |   |   |   |
|           |                   |    | 50             | 12.44          | 13.27 | 14.05 | 14.77 | 15.48 |       |       |        |   |   |   |
|           |                   | LO | 30             | -15.40         | -5.10 | -0.30 | 2.70  | 5.50  |       |       |        |   |   |   |
|           |                   |    | 40             | -9.60          | -0.40 | 4.10  | 7.20  | 10.20 |       |       |        |   |   |   |
|           |                   |    | 50             | -1.20          | 5.90  | 9.40  | 12.10 | 15.00 |       |       |        |   |   |   |
| ZFI81KQE  | TF7<br>TFC<br>TFD | Q  | 30             | 17.37          | 20.58 | 24.75 | 29.80 | 35.61 |       |       |        |   |   |   |
|           |                   |    | 40             | 16.52          | 19.63 | 23.63 | 28.41 | 33.88 |       |       |        |   |   |   |
|           |                   |    | 50             | 15.33          | 18.39 | 22.26 | 26.82 | 32.00 |       |       |        |   |   |   |
|           |                   | P  | 30             | 10.23          | 10.99 | 11.69 | 12.33 | 12.94 |       |       |        |   |   |   |
|           |                   |    | 40             | 12.30          | 13.17 | 13.98 | 14.73 | 15.45 |       |       |        |   |   |   |
|           |                   |    | 50             | 14.83          | 15.82 | 16.74 | 17.61 | 18.45 |       |       |        |   |   |   |
|           |                   | LO | 30             | -15.40         | -5.10 | -0.30 | 2.70  | 5.50  |       |       |        |   |   |   |
|           |                   |    | 40             | -9.60          | -0.40 | 4.10  | 7.20  | 10.20 |       |       |        |   |   |   |
|           |                   |    | 50             | -1.20          | 5.90  | 9.40  | 12.10 | 15.00 |       |       |        |   |   |   |
| ZFI96KQE  | TR7<br>TRC<br>TRD | Q  | 30             | 21.40          | 25.60 | 30.90 | 37.50 | 45.70 | 55.50 | 67.20 | 81.10  |   |   |   |
|           |                   |    | 40             | 20.30          | 24.80 | 30.00 | 36.10 | 43.30 | 51.80 | 61.80 | 73.40  |   |   |   |
|           |                   |    | 50             | 16.60          | 21.70 | 28.30 | 34.10 | 40.60 | 48.00 | 56.50 | 66.30  |   |   |   |
|           |                   | P  | 30             | 13.00          | 13.65 | 14.30 | 15.05 | 15.85 | 16.80 | 17.90 | 19.15  |   |   |   |
|           |                   |    | 40             | 16.05          | 16.85 | 17.65 | 18.40 | 19.20 | 20.10 | 21.00 | 22.10  |   |   |   |
|           |                   |    | 50             | 20.30          | 21.40 | 21.90 | 22.70 | 23.60 | 24.40 | 25.20 | 26.10  |   |   |   |
|           |                   | LO | 30             | -6.40          | 0.90  | 5.70  | 8.40  | 9.70  | 9.90  | 9.30  | 8.00   |   |   |   |
|           |                   |    | 40             | 2.80           | 4.70  | 8.00  | 11.40 | 14.20 | 16.30 | 17.60 | 18.20  |   |   |   |
|           |                   |    | 50             | 19.30          | 13.50 | 13.20 | 15.70 | 19.10 | 22.30 | 25.10 | 27.10  |   |   |   |
| ZFI122KQE | TR7<br>TRC<br>TRD | Q  | 30             | 27.01          | 32.29 | 38.98 | 47.31 | 57.54 | 69.93 | 84.71 | 102.13 |   |   |   |
|           |                   |    | 40             | 25.63          | 31.29 | 37.84 | 45.51 | 54.57 | 65.26 | 77.84 | 92.54  |   |   |   |
|           |                   |    | 50             | 20.92          | 27.41 | 35.62 | 42.97 | 51.17 | 60.50 | 71.18 | 83.48  |   |   |   |
|           |                   | P  | 30             | 15.86          | 16.63 | 17.45 | 18.34 | 19.34 | 20.48 | 21.81 | 23.35  |   |   |   |
|           |                   |    | 40             | 19.58          | 20.55 | 21.49 | 22.44 | 23.43 | 24.49 | 25.65 | 26.96  |   |   |   |
|           |                   |    | 50             | 24.75          | 26.13 | 26.66 | 27.71 | 28.72 | 29.72 | 30.76 | 31.87  |   |   |   |
|           |                   | LO | 30             | -6.40          | 0.90  | 5.70  | 8.40  | 9.70  | 9.90  | 9.30  | 8.00   |   |   |   |
|           |                   |    | 40             | 2.80           | 4.70  | 8.00  | 11.40 | 14.20 | 16.30 | 17.60 | 18.20  |   |   |   |
|           |                   |    | 50             | 19.30          | 13.50 | 13.20 | 15.70 | 19.10 | 22.30 | 25.10 | 27.00  |   |   |   |
| ZFI140KQE | TR7<br>TRC<br>TRD | Q  | 30             | 31.00          | 36.90 | 44.50 | 54.00 | 65.80 | 80.00 | 97.00 | 117.00 |   |   |   |
|           |                   |    | 40             | 29.20          | 35.50 | 43.00 | 51.80 | 62.20 | 74.50 | 88.90 | 106.00 |   |   |   |
|           |                   |    | 50             | 23.90          | 32.80 | 40.40 | 48.80 | 58.20 | 68.90 | 81.20 | 95.40  |   |   |   |
|           |                   | P  | 30             | 17.15          | 18.10 | 19.00 | 19.95 | 21.00 | 22.20 | 23.60 | 25.20  |   |   |   |
|           |                   |    | 40             | 21.20          | 22.30 | 23.40 | 24.40 | 25.40 | 26.50 | 27.80 | 29.20  |   |   |   |
|           |                   |    | 50             | 26.90          | 27.70 | 29.00 | 30.10 | 31.10 | 32.20 | 33.30 | 34.50  |   |   |   |
|           |                   | LO | 30             | -8.50          | -0.50 | 4.40  | 7.20  | 8.40  | 8.40  | 7.70  | 6.40   |   |   |   |
|           |                   |    | 40             | 1.80           | 4.20  | 7.50  | 10.70 | 13.40 | 15.30 | 16.50 | 16.90  |   |   |   |
|           |                   |    | 50             | 18.40          | 13.10 | 12.90 | 15.20 | 18.40 | 21.60 | 24.20 | 26.10  |   |   |   |

## Notes:

1. Q for capacity, P for power. Units in kW; LO for liquid out temperature in °C
2. All ZF\*KQE values are rated at return gas temperature: 20°C and max subcooling
3.   20K Superheat

# Technical data

| Compressor model                                |           |              |                        | Liquid injection    |                |                |                |                                     |                |                |             |                   |             |             |             |             |       |
|---|-----------|--------------|------------------------|---------------------|----------------|----------------|----------------|-------------------------------------|----------------|----------------|-------------|-------------------|-------------|-------------|-------------|-------------|-------|
|   |           |              |                        | ZF06<br>KQE         | ZF08<br>KQE    | ZF09<br>KQE    | ZF11<br>KQE    | ZF13<br>KQE                         | ZF15<br>KQE    | ZF18<br>KQE    | ZF25<br>KQE | ZF28<br>KQE       | ZF34<br>KQE | ZF41<br>KQE | ZF49<br>KQE | ZF54<br>KQE |       |
| Nominal horsepower                              |           |              | HP                     | 2                   | 2.5            | 3              | 3.5            | 4                                   | 5              | 6              | 7.5         | 9                 | 10          | 13          | 15          | 17          |       |
| Displacement                                    |           |              | cc/rev                 | 34.0                | 42.0           | 46.2           | 57.2           | 67.1                                | 82.6           | 98.0           | 122.9       | 144.4             | 167.5       | 203.0       | 243.7       | 277.8       |       |
| Motor type                                      | 50Hz      | 380-420V-3ph |                        | TFD                 | TFD            | TFD            | TFD            | TFD                                 | TFD            | TFD            | TFD         | TFD               | TFD         | TFD         | TFD         | TFD         |       |
|   |           | 200V-3ph     |                        | TF5                 | TF5            | TF5            | TF5            | TFC                                 | TFC            | TFC            | TFC         | TFC               | TFC         | TFC         | TFC         | TFC         |       |
|   | 60Hz      | 460V-3ph     |                        | TFD                 | TFD            | TFD            | TFD            | TFD                                 | TFD            | TFD            | TFD         | TFD               | TFD         | TFD         | TFD         | TFD         |       |
|   |           | 208-230V-3ph |                        | TF5                 | TF5            | TF5            | TF5            | TFC                                 | TFC            | TFC            | TFC         | TFC               | TFC         | TFC         | TFC         | TFC         |       |
|   |           | 380-400V-3ph |                        | NA                  | NA             | NA             | NA             | TF7                                 | TF7            | TF7            | TF7         | TF7               | TF7         | TF7         | TF7         | TF7         |       |
|   |           | 208-230V-1ph |                        | PFV                 | PFV            | PFV            | PFV            | PFV                                 | PFV            | NA             | NA          | NA                | NA          | NA          | NA          | NA          |       |
| Locked rotor<br>current (LRA)                   | 50Hz      | TFD          | Amps                   | 26.0                | 32.0           | 40.0           | 46.0           | 51.5                                | 64.0           | 74.0           | 102.0       | 121.4             | 118.0       | 139.0       | 168.0       |             |       |
|   |           | TFC          |                        | 56.0                | 70.0           | 83.0           | 87.0           | 94.0                                | 122.0          | 171.0          | 223.0       | 197.9             | 220.0       | 248.0       | 338.7       | 423.0       |       |
|   | 60Hz      | TFD          | Amps                   | 27.0                | 31.0           | 39.0           | 44.0           | 49.5                                | 75.0           | 75.0           | 99.0        | 121.4             | 125.0       | 125.0       | 139.0       | 185.0       |       |
|   |           | TFC          |                        | 55.0                | 63.0           | 77.0           | 88.0           | 99.0                                | 123.0          | 156.0          | 224.0       | 199.0             | 239.0       | 248.0       | 338.7       | 423.0       |       |
|   |           | TF7          |                        | NA                  | NA             | NA             | NA             | 57.0                                | 64.0           | 70.0           | 119.6       | 106.6             | 145.0       | 145.0       | 220.0       | 220.0       |       |
|   |           | PFV          |                        | 61.0                | 73.0           | 88.0           | 109.0          | 129.0                               | 169.0          | NA             | NA          | NA                | NA          | NA          | NA          | NA          |       |
| Maximum<br>operating<br>current (MOC)           | 50Hz      | TFD          | Amps                   | 5.0                 | 6.0            | 6.0            | 7.1            | 8.0                                 | 10.0           | 12.5           | 13.7        | 16.8              | 25.0        | 29.0        | 30.0        | 31.0        |       |
|   |           | TFC          |                        | 10.0                | 12.0           | 13.0           | 14.5           | 16.0                                | 22.0           | 25.0           | 28.8        | 38.7              | 51.4        | 57.7        | 67.9        | 66.0        |       |
|   | 60Hz      | TFD          | Amps                   | 5.0                 | 6.0            | 6.0            | 7.1            | 8.0                                 | 10.0           | 12.5           | 13.7        | 16.8              | 25.0        | 29.0        | 30.0        | 31.0        |       |
|   |           | TFC          |                        | 10.0                | 12.0           | 13.0           | 14.5           | 16.0                                | 22.0           | 25.0           | 28.8        | 38.7              | 51.4        | 57.7        | 67.9        | 66.0        |       |
|   |           | TF7          |                        | NA                  | NA             | NA             | NA             | 10.0                                | 12.0           | 14.0           | 17.4        | 20.9              | 23.3        | 27.6        | 40.6        | 39.6        |       |
|   |           | PFV          |                        | 17.1                | 21.2           | 20.2           | 24.7           | 30.3                                | 40.0           | NA             | NA          | NA                | NA          | NA          | NA          | NA          |       |
| Maximum<br>continuous<br>current (MCC)          | 50Hz      | TFD          | Amps                   | 6.0                 | 7.0            | 6.5            | 8.0            | 10.0                                | 12.0           | 12.5           | 16.6        | 20.1              | 25.0        | 27.0        | 28.3        | 40.0        |       |
|   |           | TFC          |                        | 13.0                | 13.5           | 13.5           | 16.5           | 18.5                                | 23.5           | 28.5           | 36.3        | 42.6              | 52.0        | 59.0        | 71.0        | 82.2        |       |
|   | 60Hz      | TFD          | Amps                   | 6.0                 | 7.0            | 7.0            | 9.0            | 10.0                                | 12.5           | 12.5           | 16.6        | 20.1              | 25.0        | 27.0        | 28.3        | 40.0        |       |
|   |           | TFC          |                        | 13.0                | 13.5           | 13.5           | 17.0           | 18.5                                | 26.5           | 30.5           | 37.4        | 42.6              | 52.0        | 59.0        | 71.0        | 82.2        |       |
|   |           | TF7          |                        | NA                  | NA             | NA             | NA             | 11.5                                | 15.9           | 17.7           | 19.9        | 23.8              | 28.6        | 30.4        | 40.5        | 44.4        |       |
|   |           | PFV          |                        | 19.0                | 23.0           | 23.0           | 25.5           | 35.0                                | 38.5           | NA             | NA          | NA                | NA          | NA          | NA          | NA          |       |
| Rated load<br>current<br>(RLA=MCC/1.4)          | 50Hz      | TFD          | Amps                   | 4.3                 | 5.0            | 4.6            | 5.7            | 7.1                                 | 8.6            | 8.9            | 11.9        | 14.4              | 17.9        | 19.3        | 20.2        | 28.6        |       |
|   |           | TFC          |                        | 9.3                 | 9.6            | 9.6            | 11.8           | 13.2                                | 16.8           | 20.4           | 25.9        | 30.4              | 37.1        | 42.1        | 50.7        | 58.7        |       |
|   | 60Hz      | TFD          | Amps                   | 4.3                 | 5.0            | 5.0            | 6.4            | 7.1                                 | 8.9            | 8.9            | 11.9        | 14.4              | 17.9        | 19.3        | 20.2        | 28.6        |       |
|   |           | TFC          |                        | 9.3                 | 9.6            | 9.6            | 12.1           | 13.2                                | 18.9           | 21.8           | 26.7        | 30.4              | 37.1        | 42.1        | 50.7        | 58.7        |       |
|   |           | TF7          |                        | NA                  | NA             | NA             | NA             | 8.2                                 | 11.4           | 12.6           | 14.2        | 17.0              | 20.4        | 21.7        | 28.9        | 31.7        |       |
|   |           | PFV          |                        | 13.6                | 16.4           | 16.4           | 18.2           | 25.0                                | 27.5           | NA             | NA          | NA                | NA          | NA          | NA          | NA          |       |
| Rated load<br>current<br>(RLA=<br>MCC/1.56)     | 50Hz      | TFD          | Amps                   | 3.8                 | 4.5            | 4.2            | 5.1            | 6.4                                 | 7.7            | 8.0            | 10.6        | 12.9              | 16.0        | 17.3        | 18.1        | 25.6        |       |
|   |           | TFC          |                        | 8.3                 | 8.7            | 8.7            | 10.6           | 11.9                                | 15.1           | 18.3           | 23.3        | 27.3              | 33.3        | 37.8        | 45.5        | 52.7        |       |
|   | 60Hz      | TFD          | Amps                   | 3.8                 | 4.5            | 4.5            | 5.8            | 6.4                                 | 8.0            | 8.0            | 10.6        | 12.9              | 16.0        | 17.3        | 18.1        | 25.6        |       |
|   |           | TFC          |                        | 8.3                 | 8.7            | 8.7            | 10.9           | 11.9                                | 17.0           | 19.6           | 24.0        | 27.3              | 33.3        | 37.8        | 45.5        | 52.7        |       |
|   |           | TF7          |                        | NA                  | NA             | NA             | NA             | 7.4                                 | 10.2           | 11.3           | 12.8        | 15.3              | 18.3        | 19.5        | 26.0        | 28.5        |       |
|   |           | PFV          |                        | 12.2                | 14.7           | 14.7           | 16.3           | 22.4                                | 24.7           | NA             | NA          | NA                | NA          | NA          | NA          | NA          |       |
| Winding resistance at<br>25°C                   |           |              | TFD                    | Ohm                 | 7.150          | 5.940          | 4.830          | 4.030                               | 3.640          | 2.750          | 2.270       | 1.719             | 1.625       | 1.236       | 1.236       | 1.086       | 0.776 |
|   |           |              | TFC                    |                     | 1.790          | 1.460          | 1.230          | 0.995                               | 0.911          | 0.686          | 0.562       | 0.391             | 0.367       | 0.309       | 0.277       | 0.215       | 0.194 |
|   |           |              | TF7                    |                     | NA             | NA             | NA             | NA                                  | 2.780          | 2.232          | 1.920       | 1.196             | 1.062       | 0.853       | 0.853       | 0.562       | 0.562 |
|   |           |              | PFV                    |                     | 2.280<br>1.010 | 1.720<br>0.833 | 1.460<br>0.691 | 1.280<br>0.540                      | 0.779<br>0.432 | 0.605<br>0.329 | NA          | NA                | NA          | NA          | NA          | NA          | NA    |
| Connection size                                 |           |              |                        | Rotalock connection |                |                |                |                                     |                |                |             |                   |             |             |             |             |       |
|   | Suction   | in           | 1 1/4                  | 1 1/4               | 1 1/4          | 1 1/4          | 1 1/4          | 1 1/4                               | 1 1/4          | 1 1/4          | 1 1/4       | 1 1/4             | 1 3/4       | 1 3/4       | 1 3/4       | 1 3/4       |       |
|   | Discharge |              | 1                      | 1                   | 1              | 1              | 1              | 1                                   | 1              | 1 1/4          | 1 1/4       | 1 1/4             | 1 1/4       | 1 1/4       | 1 1/4       |             |       |
|   | Injection |              | 11/16                  | 11/16               | 11/16          | 11/16          | 11/16          | 11/16                               | 11/16          | 11/16          | 11/16       | 1                 | 1           | 1           | 1           |             |       |
|   |           |              |                        | Brazing connection  |                |                |                |                                     |                |                |             |                   |             |             |             |             |       |
|   | Suction   | in           | 7/8                    | 7/8                 | 7/8            | 7/8            | 7/8            | 7/8                                 | 7/8            | 7/8            | 7/8         | 1 3/8             | 1 3/8       | 1 3/8       | 1 3/8       |             |       |
|   | Discharge |              | 1/2                    | 1/2                 | 1/2            | 1/2            | 1/2            | 1/2                                 | 1/2            | 3/4            | 3/4         | 7/8               | 7/8         | 7/8         | 7/8         |             |       |
|   | Injection |              | 11/16 ( Rotalock only) |                     |                |                |                |                                     |                |                |             | 1 (Rotalock only) |             |             |             |             |       |
| Outline<br>dimension                            | Length    | mm           | 246                    | 246                 | 246            | 246            | 246            | 246                                 | 246            | 246            | 246         | 280               | 280         | 280         | 280         |             |       |
|   | Width     |              | 246                    | 246                 | 246            | 246            | 257            | 257                                 | 257            | 257            | 280         | 280               | 280         | 280         |             |             |       |
|   | Height    |              | 369                    | 391                 | 391            | 405            | 442            | 442                                 | 442            | 442            | 451         | 534               | 534         | 552         | 552         |             |       |
| Sight glass fitting thread                      |           |              | in                     | 1 1/4"-12UNF        |                |                |                | 1 1/4"-12UNF                        |                |                |             | 1 1/4"-12UNF      |             |             |             |             |       |
| Oil quantity                                    |           |              | L                      | 1.3                 | 1.5            | 1.5            | 1.5            | 1.9                                 | 1.9            | 1.9            | 1.9         | 1.9               | 3.4         | 3.4         | 3.4         | 3.4         |       |
| Net weight                                      |           |              | kg                     | 25                  | 27             | 27             | 29             | 39                                  | 39             | 39             | 39          | 40                | 63          | 63          | 66          | 66          |       |
| Terminal box IP grade                           |           |              |                        | IP21                |                |                |                | IP21 (Except ZF28KQE-TFC with IP54) |                |                |             | IP54              |             |             |             |             |       |
| Crankcase heater power                          |           |              | W                      | 70                  |                |                |                | 70                                  |                |                |             | 90                |             |             |             |             |       |
| Mounting parts Installation size<br>(hole size) |           |              | mm                     | 190 x 190 (Ø19)     |                |                |                |                                     |                |                |             |                   |             |             |             |             |       |

# Technical data

| Compressor model                                |           |              | Liquid injection   |              |              |                                      |              |              |              |              |              |              |              |              |                       |               |               |
|---|-----------|--------------|--|--------------|--------------|--------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------------|---------------|---------------|
|   |           |              | ZFI09<br>KNE   | ZFI11<br>KNE | ZFI13<br>KNE | ZFI20<br>KQE                         | ZFI23<br>KQE | ZFI26<br>KQE | ZFI36<br>KQE | ZFI39<br>KQE | ZFI50<br>KQE | ZFI59<br>KQE | ZFI68<br>KQE | ZFI81<br>KQE | ZFI96<br>KQE          | ZFI122<br>KQE | ZFI140<br>KQE |
| Nominal horsepower                              |           | HP           | 2  | 2.5          | 3            | 4                                    | 5            | 6            | 7.5          | 9            | 10           | 13           | 15           | 17           | 25                    | 30            | 40            |
| Displacement                                    |           | cc/rev       | 34.5   | 41.0         | 46.0         | 67.1                                 | 82.6         | 98.0         | 122.9        | 144.4        | 167.5        | 203.0        | 243.7        | 277.8        | 349.4                 | 444.5         | 502.6         |
| Motor type                                      | 50Hz      | 380-420V-3ph | TFD  | TFD          | TFD          | TFD                                  | TFD          | TFD          | TFD          | TFD          | TFD          | TFD          | TFD          | TFD          | TRD                   | TRD           | TRD           |
|   |           | 200V-3ph     | TF5  | TF5          | TF5          | TFC                                  | TFC          | TFC          | TFC          | TFC          | TFC          | TFC          | TFC          | TFC          | TRC                   | TRC           | TRC           |
|   |           | 220-240-1ph  | PFZ  | PFZ          | PFZ          | NA                                   | NA           | NA           | NA           | NA           | NA           | NA           | NA           | NA           | NA                    | NA            | NA            |
|   | 60Hz      | 460V-3ph     | TFD  | TFD          | TFD          | TFD                                  | TFD          | TFD          | TFD          | TFD          | TFD          | TFD          | TFD          | TFD          | TRD                   | TRD           | TRD           |
|   |           | 208-230V-3ph | TF5  | TF5          | TF5          | TFC                                  | TFC          | TFC          | TFC          | TFC          | TFC          | TFC          | TFC          | TFC          | TRC                   | TRC           | TRC           |
|   |           | 380-400V-3ph | TF7  | TF7          | TF7          | TF7                                  | TF7          | TF7          | TF7          | TF7          | TF7          | TF7          | TF7          | TF7          | TR7                   | TR7           | TR7           |
| Locked rotor<br>current (LRA)                   | 50Hz      | T*D          | 41.6   |              | 46.9         | 64.0                                 | 74.0         | 74.0         | 102.0        | 121.4        | 118.0        | 118.0        | 139.0        | 168.0        | 246.5                 | 333.2         | 333.2         |
|   |           | T*C          |  |              |              | 135.0                                | 163.4        | 172.0        | 223.0        | 197.9        | 220.0        | 248.0        | 338.7        | 423.0        | 659.5                 | 659.5         | 659.5         |
|   |           | PFZ          | 79.0   |              | 73.1         | NA                                   | NA           | NA           | NA           | NA           | NA           | NA           | NA           | NA           | NA                    | NA            | NA            |
|   | 60Hz      | T*D          | 41.6   |              | 46.9         | 62.0                                 | 75.0         | 70.0         | 99.0         | 121.4        | 125.0        | 125.0        | 139.0        | 185.0        | 272.9                 | 330.1         | 330.1         |
|   |           | T*C          |  |              |              | 123.0                                | 170.9        | 156.0        | 224.0        | 199.0        | 239.0        | 248.0        | 338.7        | 423.0        | 657.1                 | 657.1         | 657.1         |
|   |           | T*7          |  |              |              | 64.0                                 | 94.3         | 70.0         | 119.6        | 106.6        | 145.0        | 145.0        | 220.0        | 220.0        | 317.3                 | 399.7         | 399.7         |
| Maximum<br>operating<br>current (MOC)           | 50Hz      | T*D          | 5.6  |              | 7.0          | 9.0                                  | 12.4         | 13.7         | 16.0         | 18.1         | 25.0         | 29.0         | 30.0         | 31.0         | 41.5                  | 53.6          | 56.3          |
|   |           | T*C          |  |              |              | 18.0                                 | 23.6         | 26.0         | 36.7         | 37.2         | 51.4         | 57.7         | 67.9         | 66.0         | 81.4                  | 101.6         | 112.6         |
|   |           | PFZ          | 14.5   |              | 18.5         | NA                                   | NA           | NA           | NA           | NA           | NA           | NA           | NA           | NA           | NA                    | NA            | NA            |
|   | 60Hz      | T*D          | 5.5  |              | 7.2          | 9.0                                  | 12.4         | 13.7         | 16.0         | 18.1         | 25.0         | 29.0         | 30.0         | 31.0         | 41.5                  | 53.6          | 56.3          |
|   |           | T*C          |  |              |              | 18.0                                 | 26.5         | 26.0         | 36.7         | 37.2         | 51.4         | 57.7         | 67.9         | 66.0         | 81.4                  | 101.6         | 112.6         |
|   |           | T*7          |  |              |              | 12.2                                 | 15.2         | 16.3         | 18.9         | 20.5         | 23.3         | 27.6         | 40.6         | 39.6         | 49.0                  | 61.2          | 64.3          |
| Maximum<br>continuous<br>current (MCC)          | 50Hz      | T*D          | 8.1  |              | 10.3         | 12.0                                 | 13.6         | 13.0         | 16.6         | 20.3         | 25.0         | 27.0         | 28.3         | 40.0         | 52.6                  | 68.1          | 65.6          |
|   |           | T*C          |  |              |              | 24.0                                 | 24.8         | 28.5         | 35.3         | 42.6         | 52.0         | 59.0         | 71.0         | 82.2         | 120.0                 | 130.3         | 130.8         |
|   |           | PFZ          | 24.7   |              | 24.7         | NA                                   | NA           | NA           | NA           | NA           | NA           | NA           | NA           | NA           | NA                    | NA            | NA            |
|   | 60Hz      | T*D          | 8.6  |              | 10.3         | 12.0                                 | 14.0         | 13.0         | 18.5         | 20.3         | 25.0         | 27.0         | 28.3         | 40.0         | 50.1                  | 64.8          | 69.2          |
|   |           | T*C          |  |              |              | 24.0                                 | 25.5         | 30.5         | 38.2         | 42.6         | 52.0         | 59.0         | 71.0         | 82.2         | 112.2                 | 132.7         | 142.3         |
|   |           | T*7          |  |              |              | 14.0                                 | 17.9         | 17.5         | 20.3         | 24.3         | 28.6         | 30.4         | 40.5         | 44.4         | 71.3                  | 76.3          | 76.7          |
| Rated load<br>current<br>(RLA=<br>MCC/1.4)      | 50Hz      | T*D          | 5.8  |              | 46.9         | 8.6                                  | 9.7          | 9.3          | 11.9         | 14.5         | 17.9         | 19.3         | 20.2         | 28.6         | 37.6                  | 48.6          | 46.9          |
|   |           | T*C          |  |              |              | 17.1                                 | 17.7         | 20.4         | 25.2         | 30.4         | 37.1         | 42.1         | 50.7         | 58.7         | 85.7                  | 93.1          | 93.4          |
|   |           | PFZ          | 17.6   |              | 46.9         | NA                                   | NA           | NA           | NA           | NA           | NA           | NA           | NA           | NA           | NA                    | NA            | NA            |
|   | 60Hz      | T*D          | 6.1  |              | 7.4          | 8.6                                  | 10.0         | 9.3          | 11.9         | 14.5         | 17.9         | 19.3         | 20.2         | 28.6         | 35.8                  | 46.3          | 49.4          |
|   |           | T*C          |  |              |              | 17.1                                 | 18.2         | 21.8         | 27.3         | 30.4         | 37.1         | 42.1         | 50.7         | 58.7         | 80.1                  | 94.8          | 101.6         |
|   |           | T*7          |  |              |              | 10.0                                 | 12.8         | 12.5         | 14.5         | 17.4         | 20.4         | 21.7         | 28.9         | 31.7         | 50.9                  | 54.5          | 54.8          |
| Rated load<br>current<br>(RLA=<br>MCC/1.56)     | 50Hz      | T*D          | 5.2  |              | 6.6          | 7.7                                  | 8.7          | 8.3          | 10.6         | 13.0         | 16.0         | 17.3         | 18.1         | 25.6         | 26.8                  | 43.7          | 42.1          |
|   |           | T*C          |  |              |              | 15.4                                 | 15.9         | 18.3         | 22.6         | 27.3         | 33.3         | 37.8         | 45.5         | 52.7         | 76.9                  | 83.5          | 83.8          |
|   |           | PFZ          | 15.8   |              | 15.8         | NA                                   | NA           | NA           | NA           | NA           | NA           | NA           | NA           | NA           | NA                    | NA            | NA            |
|   | 60Hz      | T*D          | 5.5  |              | 6.6          | 7.7                                  | 9.0          | 8.3          | 10.6         | 13.0         | 16.0         | 17.3         | 18.1         | 25.6         | 32.1                  | 41.5          | 44.4          |
|   |           | T*C          |  |              |              | 15.4                                 | 16.3         | 19.6         | 24.5         | 27.3         | 33.3         | 37.8         | 45.5         | 52.7         | 71.9                  | 85.1          | 91.2          |
|   |           | T*7          |  |              |              | 9.0                                  | 11.5         | 11.2         | 13.0         | 15.6         | 18.3         | 19.5         | 26.0         | 28.5         | 45.7                  | 48.9          | 49.2          |
| Winding resistance at<br>25°C                   |           | T*D          | 5.209 <sup>1</sup><br>5.209 <sup>2</sup><br>6.252 <sup>3</sup> |              | 2.750        | 2.270                                | 2.270        | 1.719        | 1.625        | 1.236        | 1.236        | 1.086        | 0.776        | 0.581        | 0.361                 | 0.361         |               |
|   |           | T*C          |  |              | 0.690        | 0.501                                | 0.560        | 0.391        | 0.367        | 0.309        | 0.277        | 0.215        | 0.194        | 0.091        | 0.091                 | 0.091         |               |
|   |           | T*7          |  |              | 2.232        | 1.640                                | 1.920        | 1.196        | 1.062        | 0.853        | 0.853        | 0.562        | 0.562        | 0.250        | 0.250                 | 0.250         |               |
|   |           | PFZ          | 1.717<br>1.053   |              |              | NA                                   | NA           | NA           | NA           | NA           | NA           | NA           | NA           | NA           | NA                    | NA            | NA            |
| Connection<br>size                              |           |              | Rotalock connection  |              |              |                                      |              |              |              |              |              |              |              |              |                       |               |               |
|   | Suction   | in           | NA   | NA           | NA           | 1 1/4                                | 1 1/4        | 1 1/4        | 1 1/4        | 1 1/4        | 1 3/4        | 1 3/4        | 1 3/4        | 1 3/4        | 2 1/4                 | 2 1/4         | 2 1/4         |
|   | Discharge |              | NA   | NA           | NA           | 1                                    | 1            | 1            | 1 1/4        | 1 1/4        | 1 1/4        | 1 1/4        | 1 1/4        | 1 3/4        | 1 3/4                 | 1 3/4         |               |
|   | Injection |              | NA   | NA           | NA           | 1                                    | 1            | 1            | 1            | 1            | 1            | 1            | 1            | 1            | 1                     | 1             | 1             |
|   |           |              | Brazing connection   |              |              |                                      |              |              |              |              |              |              |              |              |                       |               |               |
|   | Suction   | in           | 3/4  | 3/4          | 3/4          | 7/8                                  | 7/8          | 7/8          | 7/8          | 7/8          | 1 3/8        | 1 3/8        | 1 3/8        | 1 3/8        | 1 5/8                 | 1 5/8         | 1 5/8         |
|   | Discharge |              | 1/2  | 1/2          | 1/2          | 1/2                                  | 1/2          | 1/2          | 3/4          | 3/4          | 7/8          | 7/8          | 7/8          | 7/8          | 1 3/8                 | 1 3/8         | 1 3/8         |
| Injection                                       | 3/8       |              | 3/8  | 3/8          | 1/2          | 1/2                                  | 1/2          | 1/2          | 1/2          | 5/8          | 5/8          | 5/8          | 5/8          | 3/4          | 3/4                   | 3/4           |               |
| Outline<br>dimension                            | Length    | mm           | 229  | 229          | 229          | 246                                  | 246          | 246          | 246          | 246          | 328          | 328          | 328          | 328          | 448                   | 448           | 448           |
|   | Width     |              | 229  | 229          | 229          | 257                                  | 257          | 257          | 257          | 257          | 297          | 297          | 297          | 297          | 409.3                 | 409.3         | 409.3         |
|   | Height    |              | 396  | 396          | 396          | 442                                  | 442          | 442          | 442          | 451          | 534          | 534          | 552          | 552          | 715                   | 715           | 715           |
| Sight glass fitting thread                      |           | in           | 1 1/4"-12UNF   |              |              | 1 1/4"-12UNF                         |              |              |              |              | 1 1/4"-12UNF |              |              |              | 1 3/4" x 12UNF        |               |               |
| Oil quantity                                    |           | L            | 0.86   | 0.86         | 0.86         | 1.9                                  | 1.9          | 1.9          | 1.9          | 1.9          | 3.4          | 3.4          | 3.4          | 3.4          | 6.3                   | 6.3           | 6.3           |
| Net weight                                      |           | kg           | 23   | 23           | 24           | 39                                   | 39           | 39           | 39           | 40           | 63           | 63           | 66           | 66           | 176.9                 | 179.2         | 179.2         |
| Terminal box IP grade                           |           |              | IP21   |              |              | IP21 (Except ZFI39KQE-TFC with IP54) |              |              |              |              | IP54         |              |              |              | IP56                  |               |               |
| Crankcase heater power                          |           | W            | 33   |              |              | 70                                   |              |              |              |              | 90           |              |              |              | 150                   |               |               |
| Mounting parts Installation size<br>(hole size) |           | mm           | 190.5 x 190.5 (Ø19)  |              |              | 190.5 x 190.5 (Ø19)                  |              |              |              |              |              |              |              |              | 266.7 x 266.7 (Ø22.6) |               |               |

Notes: <sup>1</sup> T1-T2, <sup>2</sup> T2-T3, <sup>3</sup> T3-T1

# Enhanced Vapor Injection (EVI) control kits

## Introduction

The EVI control kit of ZFI compressor is intended to control vapor injection, maintain a safe discharge temperature, and provide intelligent diagnosis and protection.

The EVI control system includes a new generation of Copeland electronics module (smart control module), an EXV valve and 3 temperature sensors as the main component.

In vapor injection application, the EXV valve is driven by sensors mounted near the heat exchanger and attempts to maintain the vapor outlet sensor 5K higher than the vapor inlet. The system will switch to discharge temperature control if vapor injection is insufficient to maintain a safe discharge temperature. If the discharge temperature becomes dangerously high, the system will stop the compressor, turn on an LED alarm, and trigger a voltage free alarm relay contact. The compressor can auto reset, but not lockout.

Copeland provides customer vapor injection control kits with 1.8m or 4.5m wire lengths in a bundle package.

| Vapor injection control kits       |                                    |                      |  |
|------------------------------------|------------------------------------|----------------------|--|
| Part numbers with 1.8m wire length | Part numbers with 4.5m wire length | Apply for ZFI models | EXV valve orifice size (Identification code) |
| 562-0471-01                        | 562-0471-02                        | ZFI09-ZFI26          | Ø1.3mm (TS113C03)                            |
| 562-0471-03                        | 562-0471-04                        | ZFI36-ZFI39          | Ø1.65mm (TS116C03)                           |
| 562-0471-05                        | 562-0471-06                        | ZFI50-ZFI59          | Ø1.65mm (TS116C03)                           |
| 562-0471-07                        | 562-0471-08                        | ZFI68-ZFI81          | Ø1.8mm (TS118C03)                            |
| 562-0460-00                        | 562-0460-01                        | ZFI96-ZFI140         | Ø2.4mm (TS124C03)                            |

## EVI control module

The next generation of Copeland's compressor electronics module presents a breakthrough in innovation, by providing advanced diagnostics, intelligent protection and communications that enhances compressor performance and reliability. The module assists contractors or service providers in the troubleshooting of commercial refrigeration systems by providing valuable information to help diagnose issues quickly and accurately, significantly reducing costly costly downtimes.

The module includes 2 design versions for different product platforms.

The ZB150-ZB250, ZFI96-ZFI140 large scroll compressors are equipped with this module. The module (Plus 5 type 571-0106-00) is installed in the compressor electrical box. Copeland scroll compressors equipped with this electronic module will have a "R" in the electrical code. An example, ZFI122KQE-TRD.

The liquid injection scroll ZSI06-ZSI21 and the vapor injection scroll compressor ZFI09-ZFI81 could use this module (Plus 4 type 571-0170) via its accessory kits package.



Scan to download  
Smart Control Module  
User Manual

## Dip-switch setting

Bit 1 dip-switch is used for selecting compressor discharge temperature control target. Bit 2 is enable or disable for oil level control. The combination of Bit 3 and Bit 4 is for injection control mode and vapor injection superheat target.



### Plus 5 Module: 571-0106-00

| Location | Bit 1  | Bit 2                           | Bit 3  | Bit 4 |
|----------|--|---------------------------------|--|-------|
| OFF      | Discharge port temperature control target at 120°C (OFF) | Disable oil level control (OFF) | Disable injection (ON-OFF)<br>Liquid Injection (ON-ON)<br>Vapor Injection 5K Superheat (OFF-OFF)<br>Vapor Injection 10K Superheat (OFF-ON) |       |
| ON       | Discharge line temperature control target at 110°C (ON)  | Enable oil level control (ON)   |  |       |

### Plus 4 Module: 571-0107-00

| Location | Bit 1  | Bit 2                           | Bit 3  | Bit 4 |
|----------|--|---------------------------------|--|-------|
| OFF      | Discharge line temperature control target at 110°C (OFF) | Disable oil level control (OFF) | Disable Injection (ON-OFF)<br>Liquid Injection (ON-ON)<br>Vapor Injection 5K Superheat (OFF-OFF)<br>Vapor Injection 10K Superheat (OFF-ON) |       |
| ON       | Discharge line temperature control target at 95°C (ON)   | Enable oil level control (ON)   |  |       |

## Temperature sensors

The EVI control system includes 3 temperature sensors. Please ensure all sensors are mounted in the correct locations, fastened, and insulated properly.

The discharge temperature sensor should be installed approximately 178mm (7 inches) from discharge tube outlet. If a service valve is installed at the discharge tube, the sensor should be located 127mm (5 inches) from the valve braze.

The vapor-in sensor is connected to the pipe between the EXV and PHE. The vapor-out sensor is connected to the pipe from the PHE to the compressor vapor injection port. The 2 sensors share the same pin connector but with 2 lead wires. Don't make the vapor-in and vapor-out sensor location reversed.

The large scroll ZFI96-140 compressor is equipped with a discharge port temperature (DPT) sensor inside in scroll casting.



DLT Sensor



Vapor In/Out Sensor

| Part Number                              | Sensor                                    | Resistance value vs. temperature   | Open            | Short         |
|--|---|--|-----------------|---------------|
| 543-0371-00 (1.8m)<br>543-0371-01 (4.5m) | Discharge temperature (DLT) sensor        | 351.6 k $\Omega$ @0 °C<br>100.0 k $\Omega$ @25 °C<br>5.8 k $\Omega$ @100°C | >1000k $\Omega$ | <400 $\Omega$ |
| 043-0285-00 (1.8m)<br>043-0285-01 (4.5m) | Vapor in/out temperature (VIT/VOT) sensor | 28.1 k $\Omega$ @0 °C<br>10.0 k $\Omega$ @25 °C<br>0.9 k $\Omega$ @100 °C  | >500k $\Omega$  | <500 $\Omega$ |



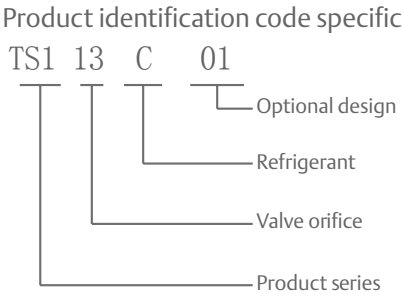
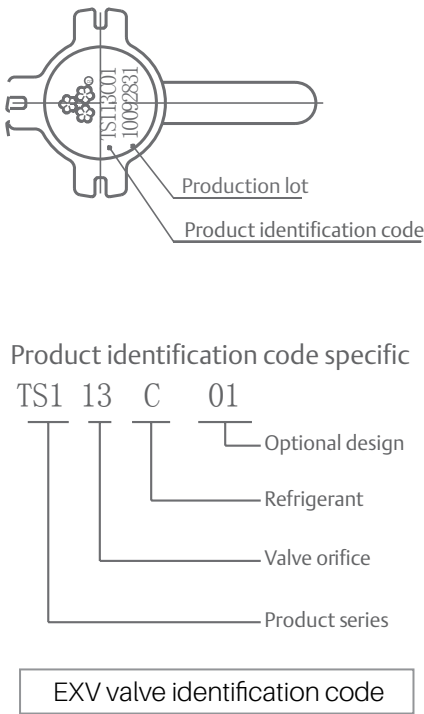
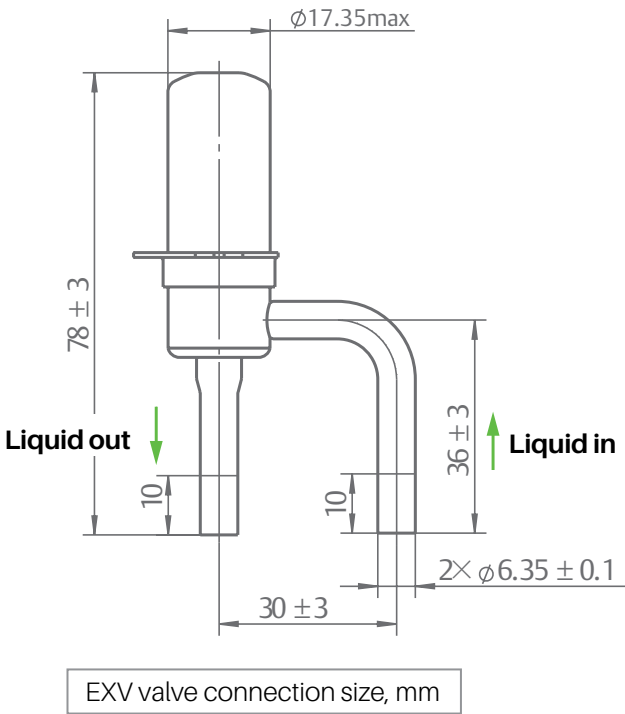
Electronic expansion valve (EXV)

The EXV contains an EXV-valve and EXV-coil, lead wire length is 1.8m and 4.5m, the valve size includes Ø1.3mm, Ø1.65mm, Ø1.8mm and Ø2.4mm depending on system size, applied to different ZFI models.

The liquid refrigerant should pass from the bending tube and flow out from the straight tube. Please weld the filter before the EXV provided along with the kits

| EXV valve   | Orifice size |
|-------------|--------------|
| 010-0240-00 | Ø1.3mm       |
| 010-0240-01 | Ø1.65mm      |
| 010-0240-02 | Ø1.8mm       |
| 010-0240-03 | Ø2.4mm       |

| EXV coil    | Wire length |
|-------------|-------------|
| 023-0111-00 | 1.8m        |
| 023-0111-01 | 4.5m        |

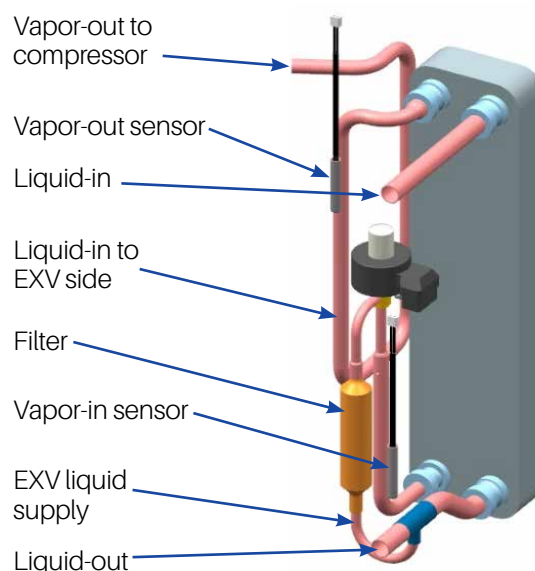


## Plate heat exchanger (PHE) and liquid line temperature

Mount plate heat exchanger in the vertical position and oriented correctly. Ensure that sensors are located correctly as well.

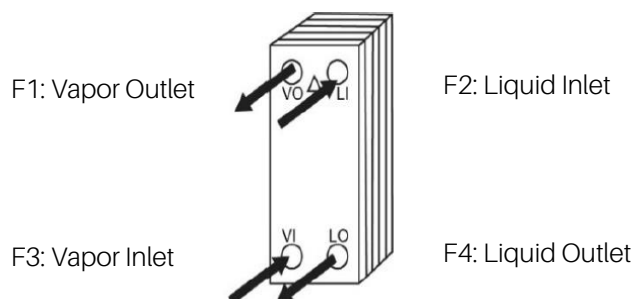
ZFI vapor injection compressors can deliver very cold liquid with economizer cycle. The sub-cooling of liquid line calls for these recommendations:

1. Liquid line pipe connecting the economizer to the evaporator expansion valve should be well-insulated separately.
2. The lower liquid line temperature can increase the evaporator valve capacities. Please follow the valve manufacturer's recommended liquid temperature correction factors for proper selection of evaporator expansion valve. Refer to product catalogue or select software for liquid line temperature.



Example of PHE assembly with downstream liquid supply

## PHE piping size and flow direction

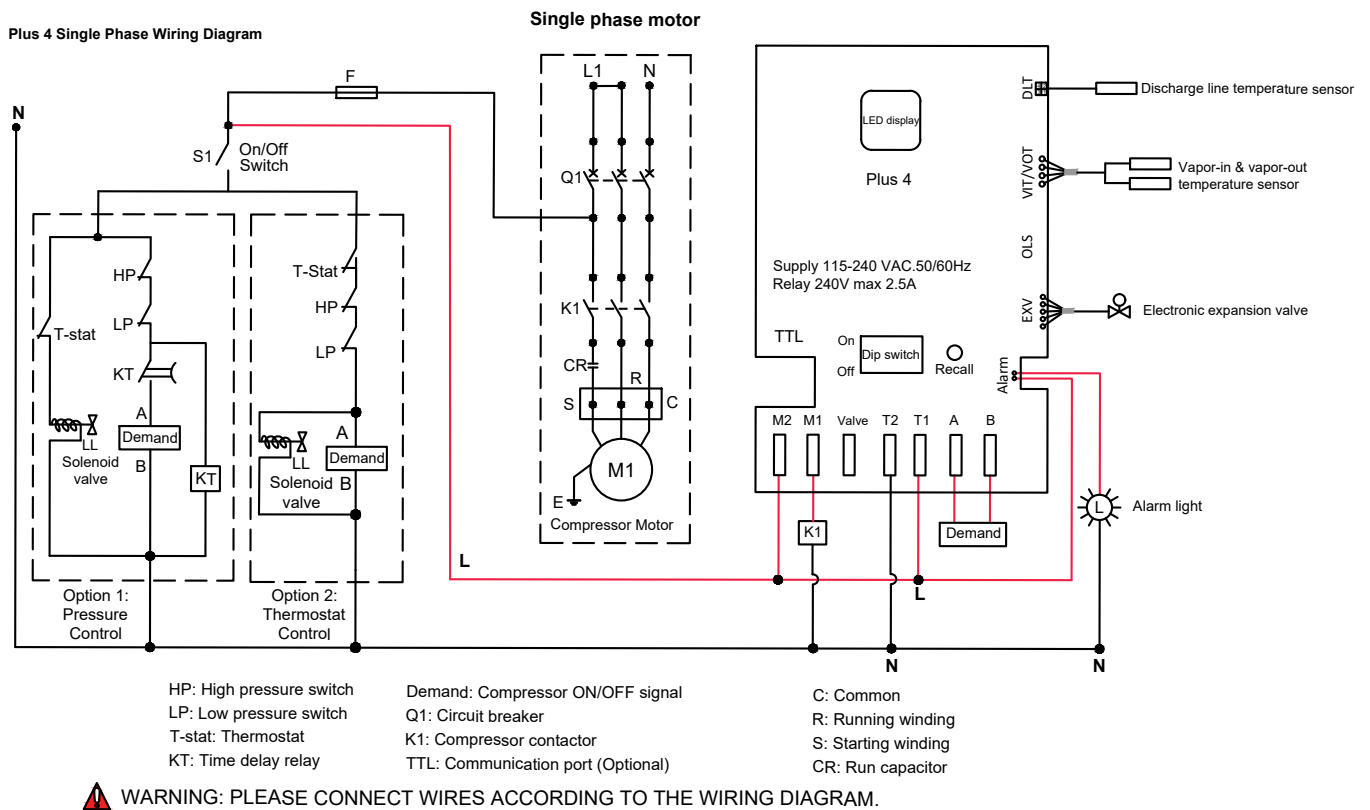


| Compressor model     | Part number<br>(Copeland) | PHE model<br>(SWEP) | F1              | F3             | F2              | F4               |
|----------------------|---------------------------|---------------------|-----------------|----------------|-----------------|------------------|
|                      |                           |                     | Vapor<br>outlet | Vapor<br>inlet | Liquid<br>inlet | Liquid<br>outlet |
| ZFI09,11,13KNE       | 067-0098-00               | BX4TH x 10          | Ø9.65           | Ø9.65          | Ø12.8           | Ø12.8            |
| ZFI20,23,26,36,39KQE | 067-0091-00               | BX4TH x 14          | Ø9.65           | Ø9.65          | Ø12.8           | Ø12.8            |
| ZFI50, 59KQE         | 067-0092-00               | BX4TH x 20          | Ø9.65           | Ø9.65          | Ø19.2           | Ø19.2            |
| ZFI68, 81KQE         | 067-0093-00               | BX4TH x 24          | Ø9.65           | Ø9.65          | Ø19.2           | Ø19.2            |
| ZFI96, 122, 140KQE   | 067-0067-00               | B10TH x 40          | Ø19.2           | Ø19.2          | Ø19.2           | Ø19.2            |

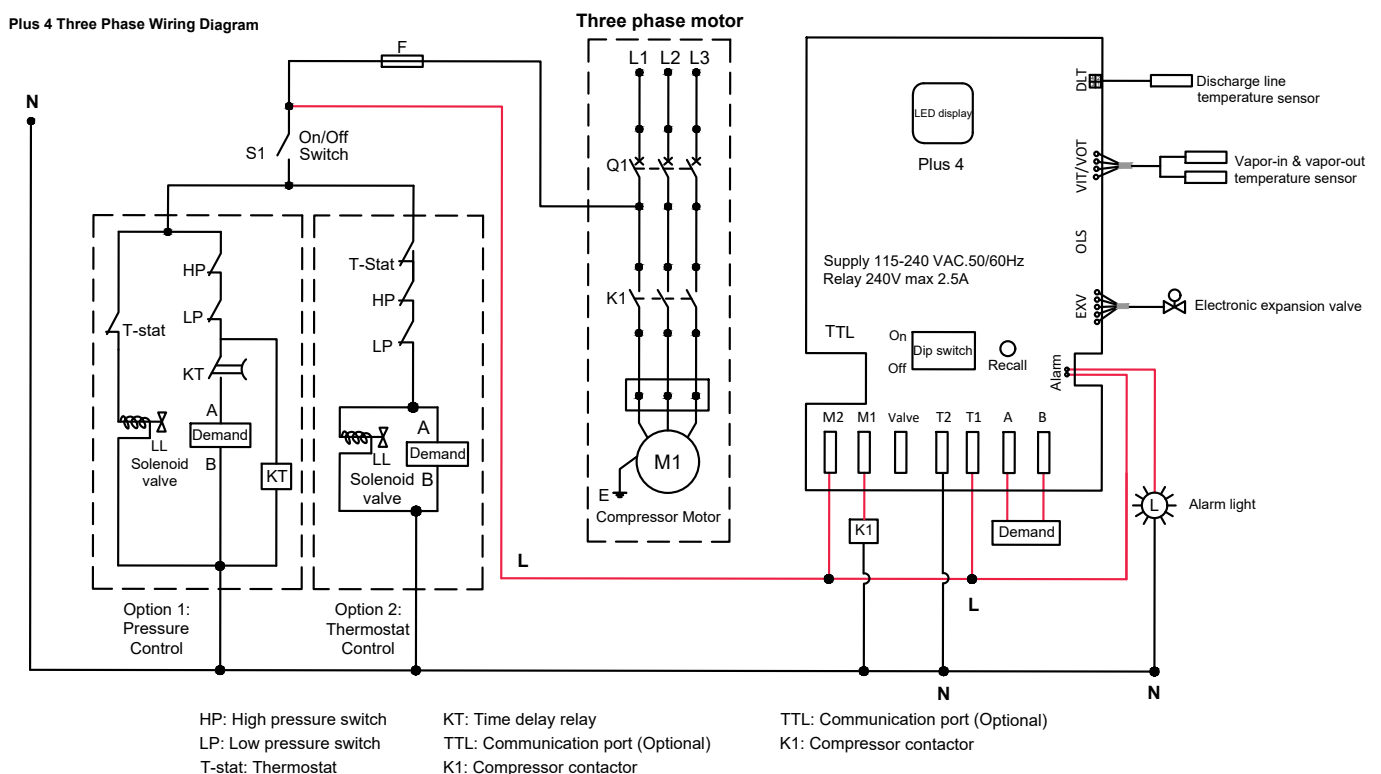
Unit: mm

## Wiring diagram

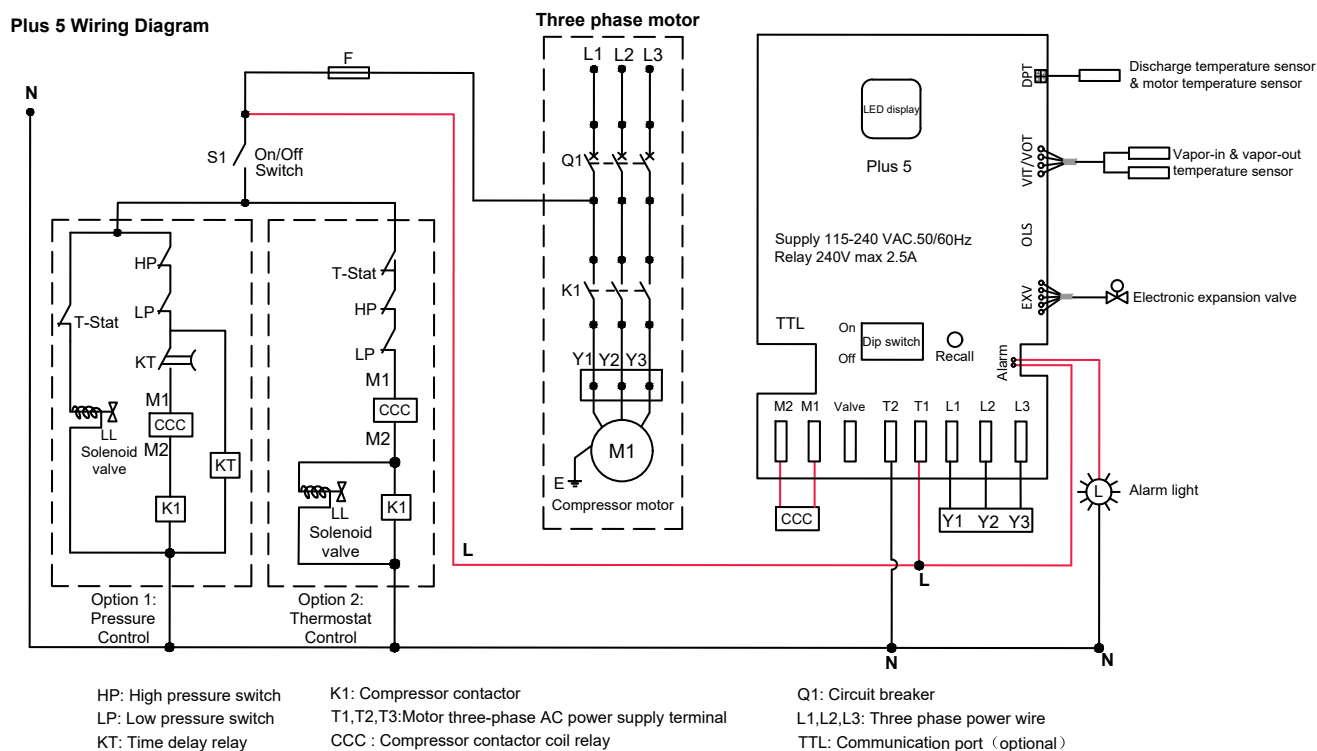
### ZFI09-ZFI16KNE single phase compressor (plus 4 module)



### ZFI09-ZFI81 three phase compressor (plus 4 module)



## ZFI96-ZFI140 three phase compressor (plus 5 module)

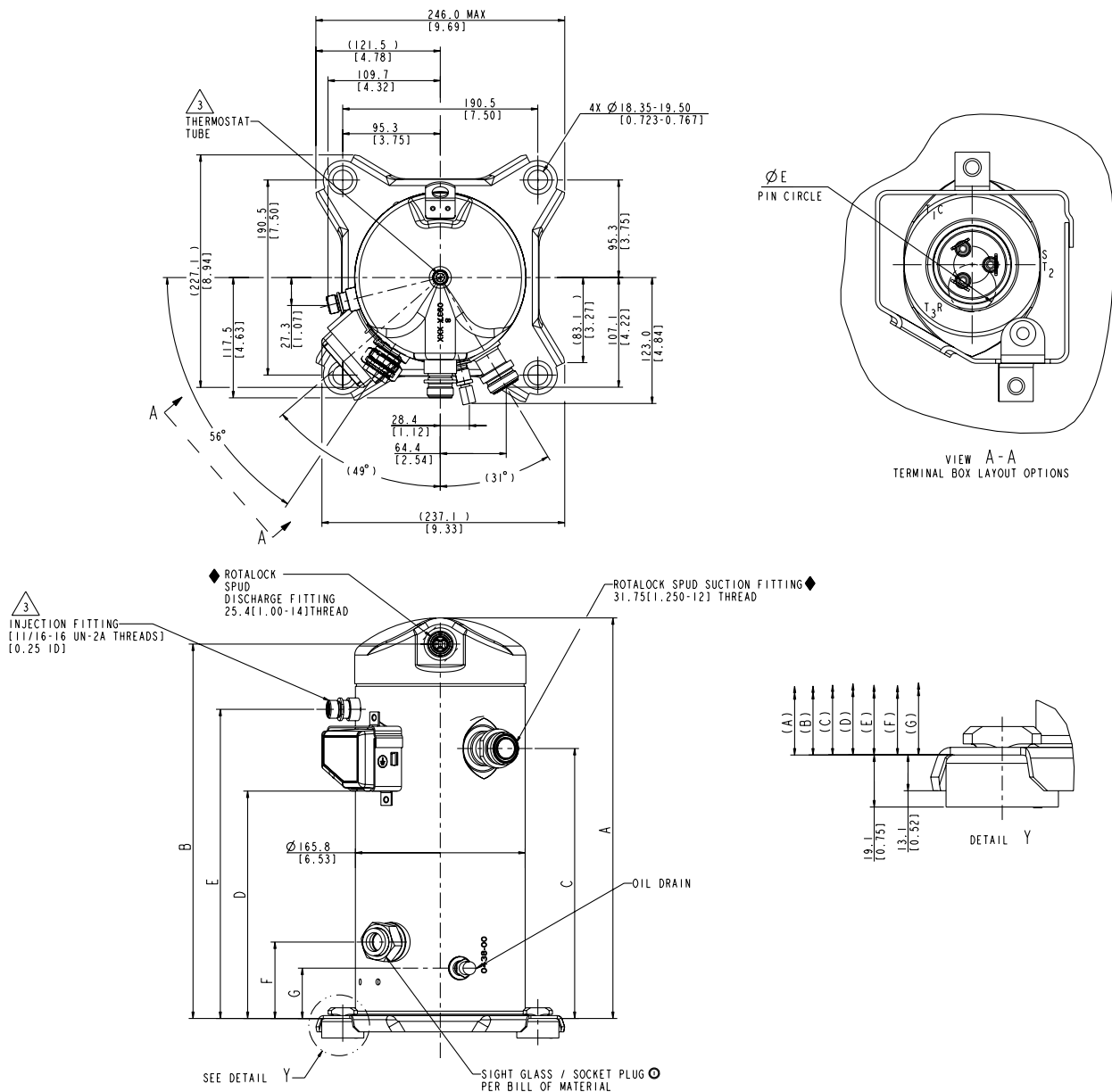


**WARNING: PLEASE CONNECT WIRES ACCORDING TO THE WIRING DIAGRAM.**

## Dimensional drawings

### ZF06KQE - ZF11KQE (BOM 551)

Rotalock connection



| Model number | mm[in]           |                  |                  |                 |                  |                |                |
|--------------|------------------|------------------|------------------|-----------------|------------------|----------------|----------------|
|              | A±3.0            | B                | C                | D±3.0           | E                | F              | G              |
| ZF06KQE      | 368.7<br>[14.52] | 343.1<br>[13.51] | 243.8<br>[9.60]  | 202.2<br>[7.96] | 279.4<br>[11.00] | 68.9<br>[2.71] | 43.4<br>[1.70] |
| ZF08KQE      | 391.3<br>[15.41] | 365.7<br>[14.40] | 263.7<br>[10.38] | 222.1<br>[8.74] | 302.0<br>[11.88] | 74.6<br>[2.93] | 49.1<br>[1.93] |
| ZF09KQE      | 391.3<br>[15.41] | 365.7<br>[14.40] | 263.7<br>[10.38] | 222.1<br>[8.74] | 302.0<br>[11.88] | 74.6<br>[2.93] | 49.1<br>[1.93] |
| ZF11KQE      | 405.0<br>[15.94] | 379.4<br>[14.94] | 276.4<br>[10.88] | 234.8<br>[9.24] | 315.7<br>[12.42] | 74.6<br>[2.93] | 49.1<br>[1.93] |

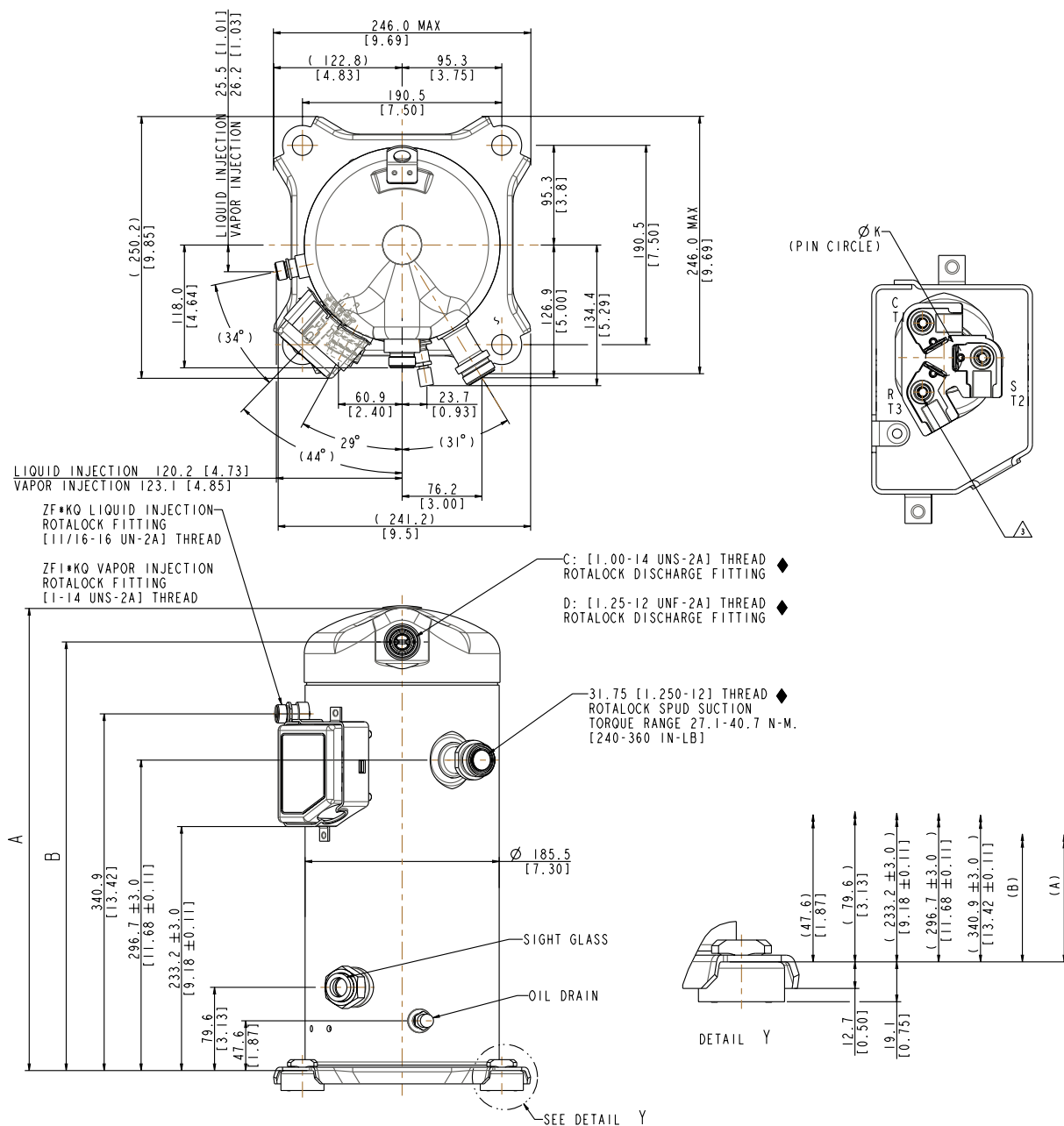
#### Notes:

- (1) All tolerances  $\pm 1.5\text{mm}$  [0.06in] unless otherwise specified
- (2) Due to accumulated assembly tolerances, the listed components may vary from the mounting holes. All fittings:  $\pm 3.0\text{mm}$  [0.12in]
- (3) Tube ends must be plugged
- (4) All units are in mm[inch]

## Dimensional drawings

### ZF13KQE - ZF28KQE (BOM 551)

#### Rotalock connection



| Model number | mm (in)          |                  | Discharge fitting |
|--------------|------------------|------------------|-------------------|
|              | A±3.0            | B±3.0            |                   |
| ZF13KQE      | 442.0<br>[17.40] | 409.6<br>[16.13] | C                 |
| ZF15KQE      |                  |                  |                   |
| ZF18KQE      |                  |                  |                   |
| ZF25KQE      |                  |                  |                   |
| ZF28KQE      | 451.0<br>[17.76] | 418.6<br>[16.48] | D                 |

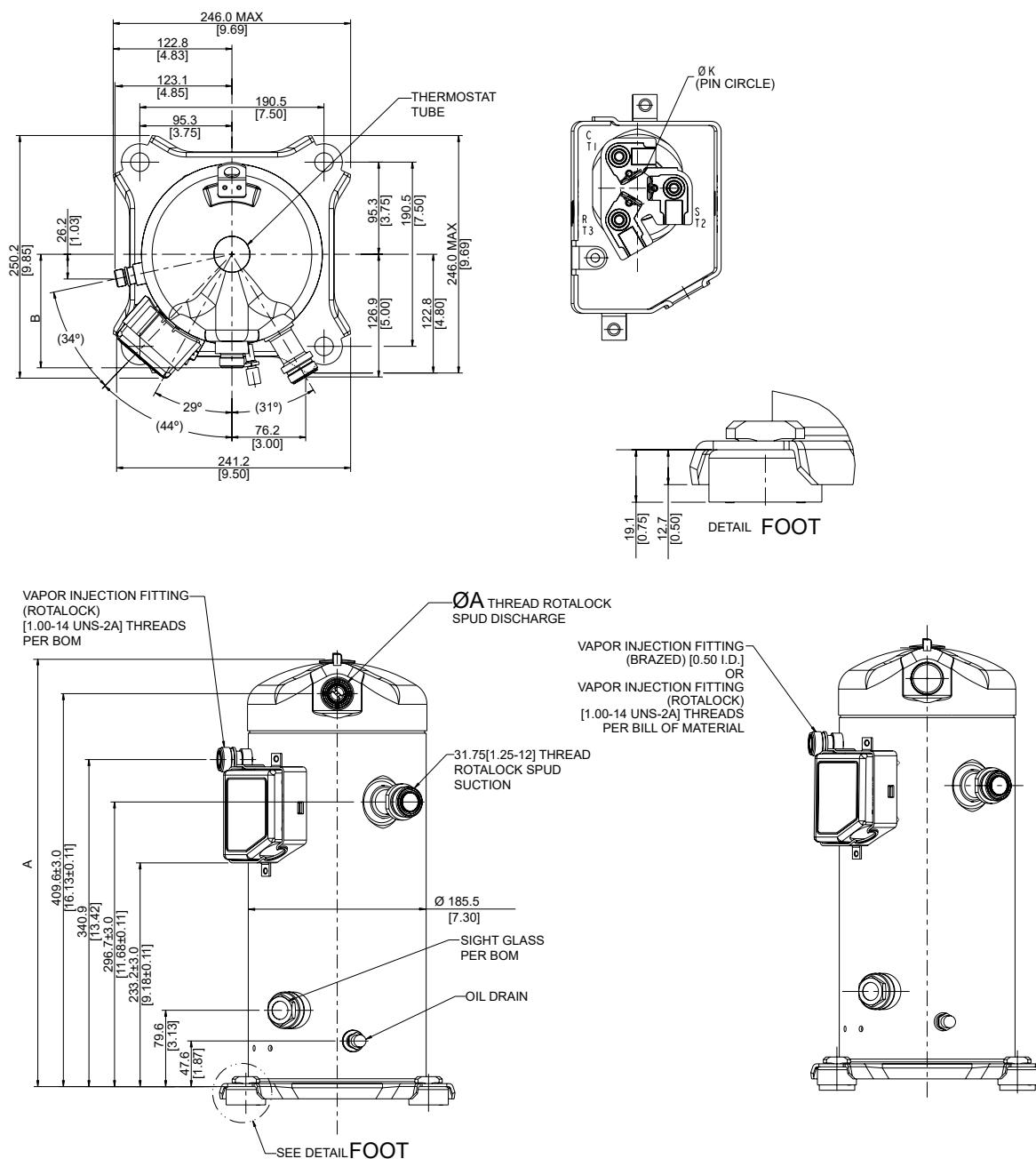
#### Notes:

- (1) All tolerances ± 1.5mm [0.06in] unless otherwise specified
- (2) Due to accumulated assembly tolerances, the listed components may vary from the mounting holes. All fittings: ± 3.0mm [0.12in]
- (3) Tube ends must be plugged
- (4) All units are in mm [inch]

## Dimensional drawings

### ZFI20KQE - ZFI39KQE (BOM 552)

Rotalock connection



| Model number | mm (in)          |                  | Discharge fitting |
|--------------|------------------|------------------|-------------------|
|              | A±3.0            | B                |                   |
| ZFI20KQE     | 442.0<br>[17.40] | 409.6<br>[16.13] | C                 |
| ZFI23KQE     |                  |                  |                   |
| ZFI26KQE     |                  |                  |                   |
| ZFI36KQE     |                  |                  | D                 |
| ZFI39KQE     | 451.0<br>[17.76] | 418.6<br>[16.48] | D                 |

#### Notes:

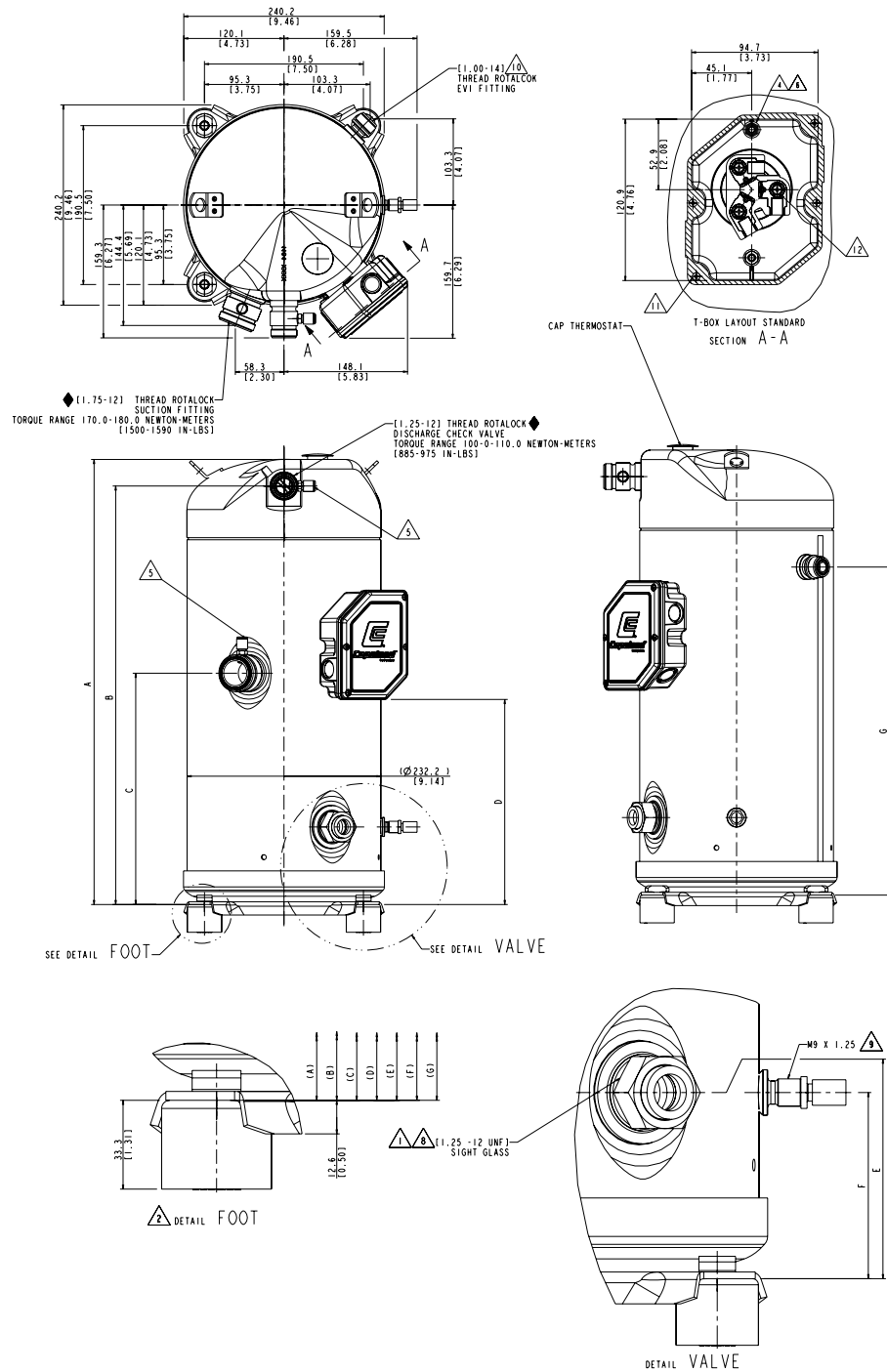
- (1) All tolerances  $\pm 1.5\text{mm}$  [0.06in] unless otherwise specified
- (2) Due to accumulated assembly tolerances, the listed components may vary from the mounting holes. All fittings:  $\pm 3.0\text{mm}$  [0.12in]
- (3) Tube ends must be plugged
- (4) All units are in mm[inch]



## Dimensional drawings

**ZF34KQE - ZF54KQE (BOM 564/567)**

## Rotalock connection



| Model number | mm (in) |         |         |         |        |        |         |
|--------------|---------|---------|---------|---------|--------|--------|---------|
|              | A       | B       | C       | D       | E      | F      | G       |
| ZF34KQE      | 533.6   | 501.8   | 277.3   | 245.7   | 93.0   | 93.0   | 393.3   |
| ZF41KQE      | [21.0]  | [19.75] | [10.91] | [9.67]  | [3.66] | [3.66] | [15.49] |
| ZF49KQE      | 551.5   | 519.5   | 295.0   | 263.6   | 92.6   | 92.6   | 441.0   |
| ZF54KQE      | [21.7]  | [20.45] | [11.61] | [10.37] | [3.64] | [3.64] | [16.18] |

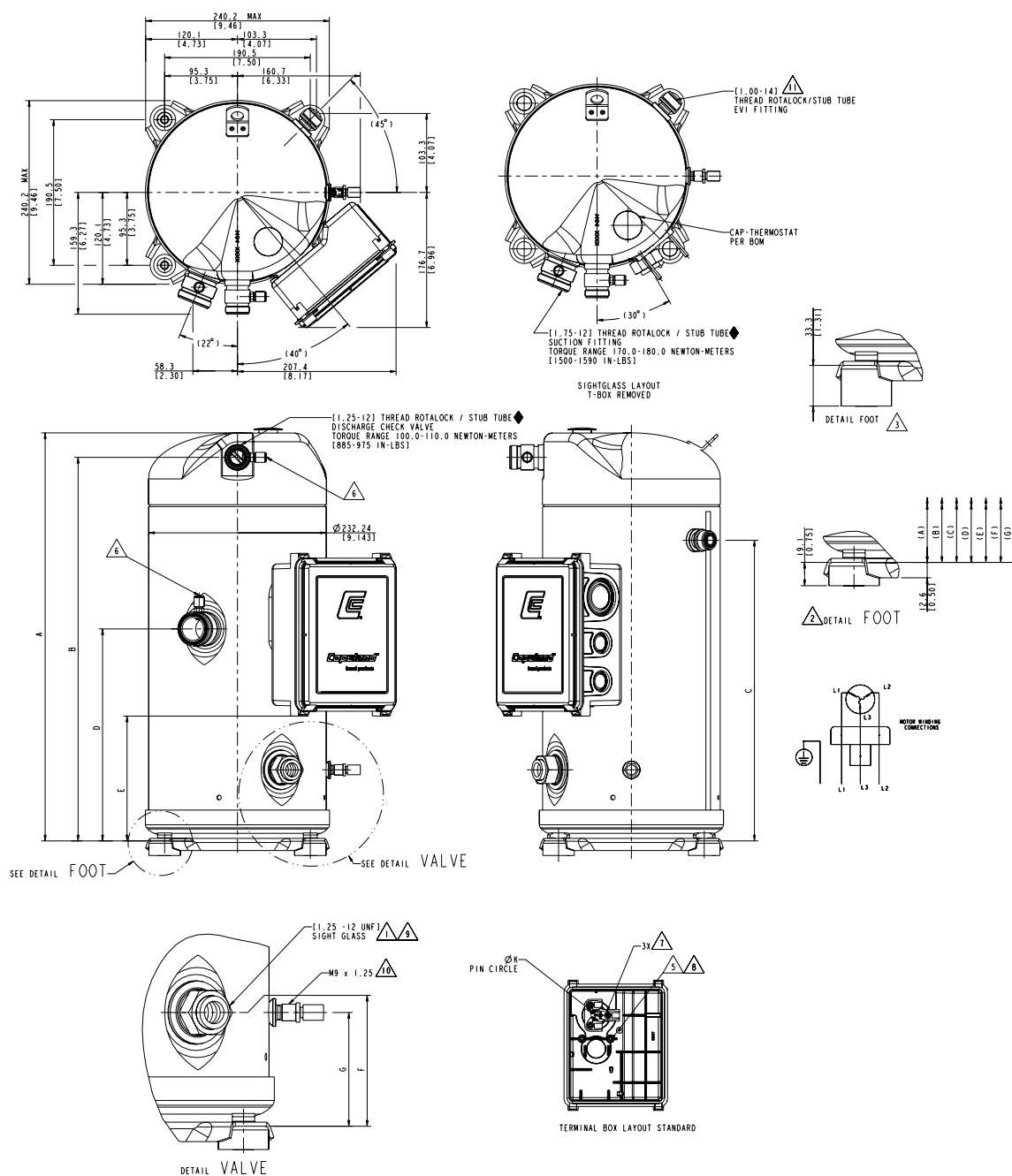
Notes:

- (1) All tolerances  $\pm 1.5\text{mm}$  [0.06in] unless otherwise specified  
(2) Due to accumulated assembly tolerances, the listed components may vary from the mounting holes. All fittings:  $\pm 3.0\text{mm}$  [0.12in]  
(3) Tube ends must be plugged  
(4) All units are in mm[inch]

# Dimensional drawings

## ZFI50KQE - ZFI81KQE (BOM 564/567)

### Rotalock connection



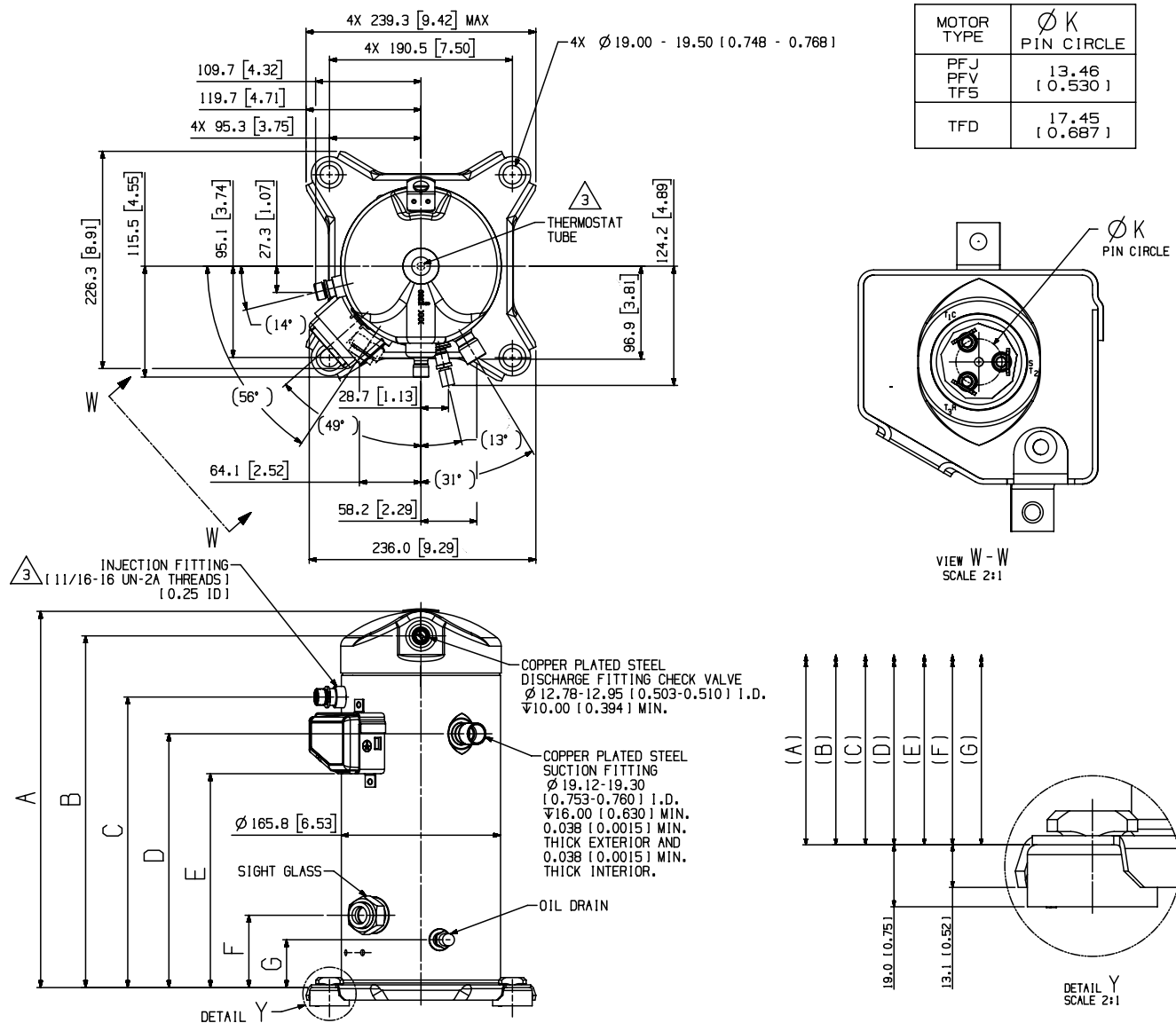
| Model number | mm (in) |         |         |         |        |        |        | ØK      |
|--------------|---------|---------|---------|---------|--------|--------|--------|---------|
|              | A       | B       | C       | D       | E      | F      | G      |         |
| ZFI50KQE     | 533.6   | 501.8   | 393.3   | 277.3   | 163.3  | 93.0   | 93.0   | 17.45   |
| ZFI59KQE     | [21.01] | [19.76] | [15.48] | [10.92] | [6.43] | [3.66] | [3.66] | [0.687] |
| ZFI68KQE     | 551.5   | 519.5   | 411.0   | 295.0   | 163.3  | 92.6   | 92.6   | 20.70   |
| ZFI81KQE     | [21.71] | [20.45] | [16.18] | [11.61] | [6.43] | [3.64] | [3.64] | [0.815] |

#### Notes:

- (1) All tolerances  $\pm 1.5\text{mm}$  [0.06in] unless otherwise specified
- (2) Due to accumulated assembly tolerances, the listed components may vary from the mounting holes. All fittings:  $\pm 3.0\text{mm}$  [0.12in]
- (3) Tube ends must be plugged
- (4) All units are in mm[inch]

Dimensional drawings

ZF06KQE - ZF11KQE (BOM 550)  
Stub tube connection



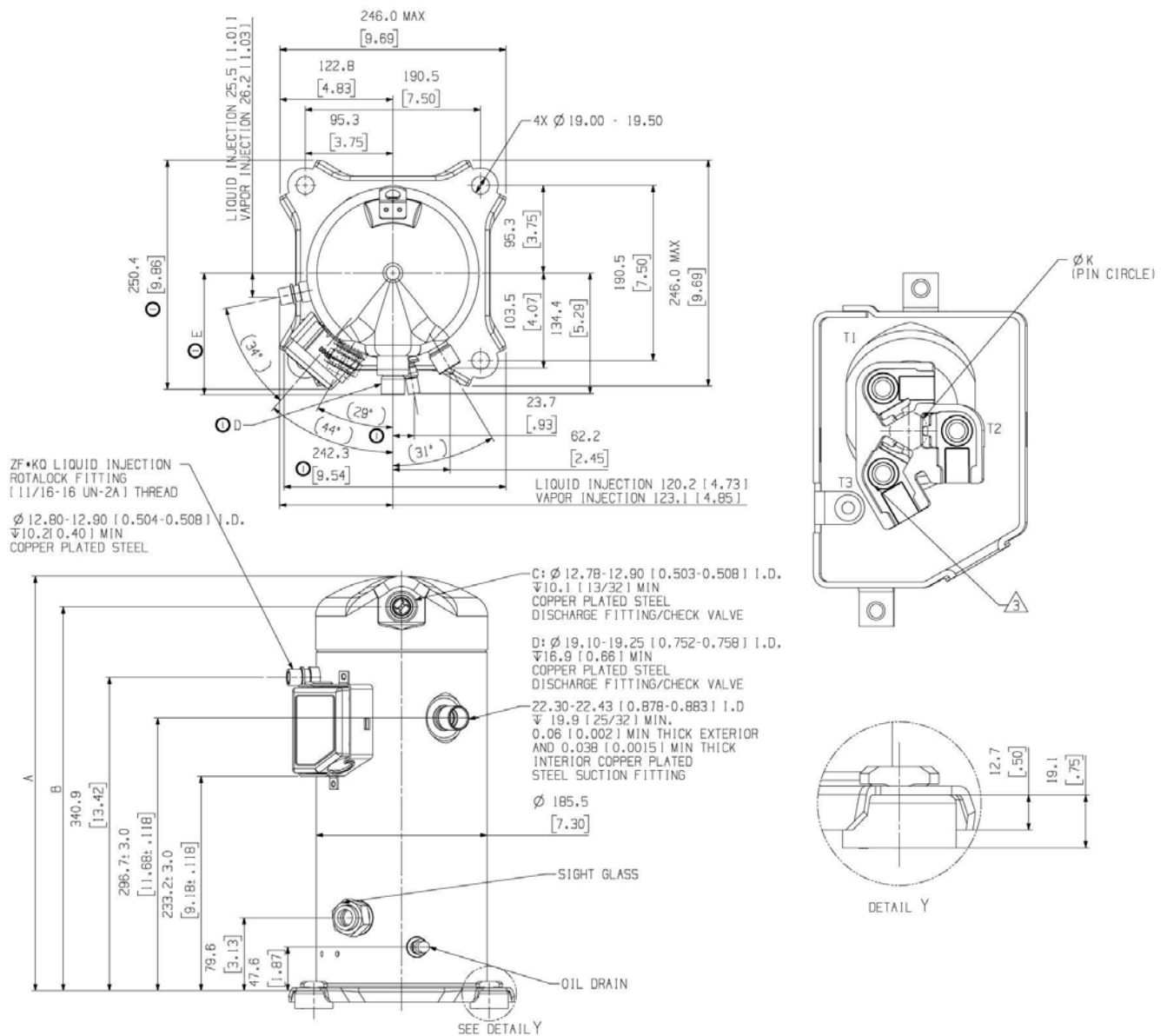
| Model number       | mm (in)          |                  |                  |                  |                 |                |                |
|--------------------|------------------|------------------|------------------|------------------|-----------------|----------------|----------------|
|                    | A                | B                | C                | D                | E               | F              | G              |
| ZF06KQE            | 369.9<br>[14.56] | 343.8<br>[13.54] | 280.0<br>[11.02] | 244.5<br>[9.62]  | 202.9<br>[7.99] | 69.6<br>[2.74] | 44.1<br>[1.74] |
| ZF08KQE<br>ZF09KQE | 392.5<br>[15.45] | 366.4<br>[14.42] | 302.6<br>[11.91] | 264.4<br>[10.41] | 222.8<br>[8.77] | 75.3<br>[2.96] | 49.8<br>[1.96] |
| ZF11KQE            | 406.3<br>[16.00] | 380.1<br>[14.96] | 316.4<br>[12.46] | 277.1<br>[10.91] | 235.5<br>[9.27] | 75.3<br>[2.96] | 49.8<br>[1.96] |

Notes:  
(1) All tolerances ± 1.5mm [0.06in] unless otherwise specified  
(2) Due to accumulated assembly tolerances, the listed components may vary from the mounting holes. All fittings: ± 3.0mm [0.12in]  
(3) Tube ends must be plugged  
(4) All units are in mm[inch]

## Dimensional drawings

### ZF13KQE - ZF28KQE (BOM 550)

Stub tube connection



| Model number | mm (in)          |                  | Discharge fitting |
|--------------|------------------|------------------|-------------------|
|              | A±3.0            | B±3.0            |                   |
| ZF13KQE      | 442.0<br>[17.40] | 409.6<br>[16.13] | C                 |
| ZF15KQE      |                  |                  |                   |
| ZF18KQE      |                  |                  |                   |
| ZF25KQE      |                  |                  | D                 |
| ZF28KQE      | 451.0<br>[17.76] | 418.6<br>[16.48] | D                 |

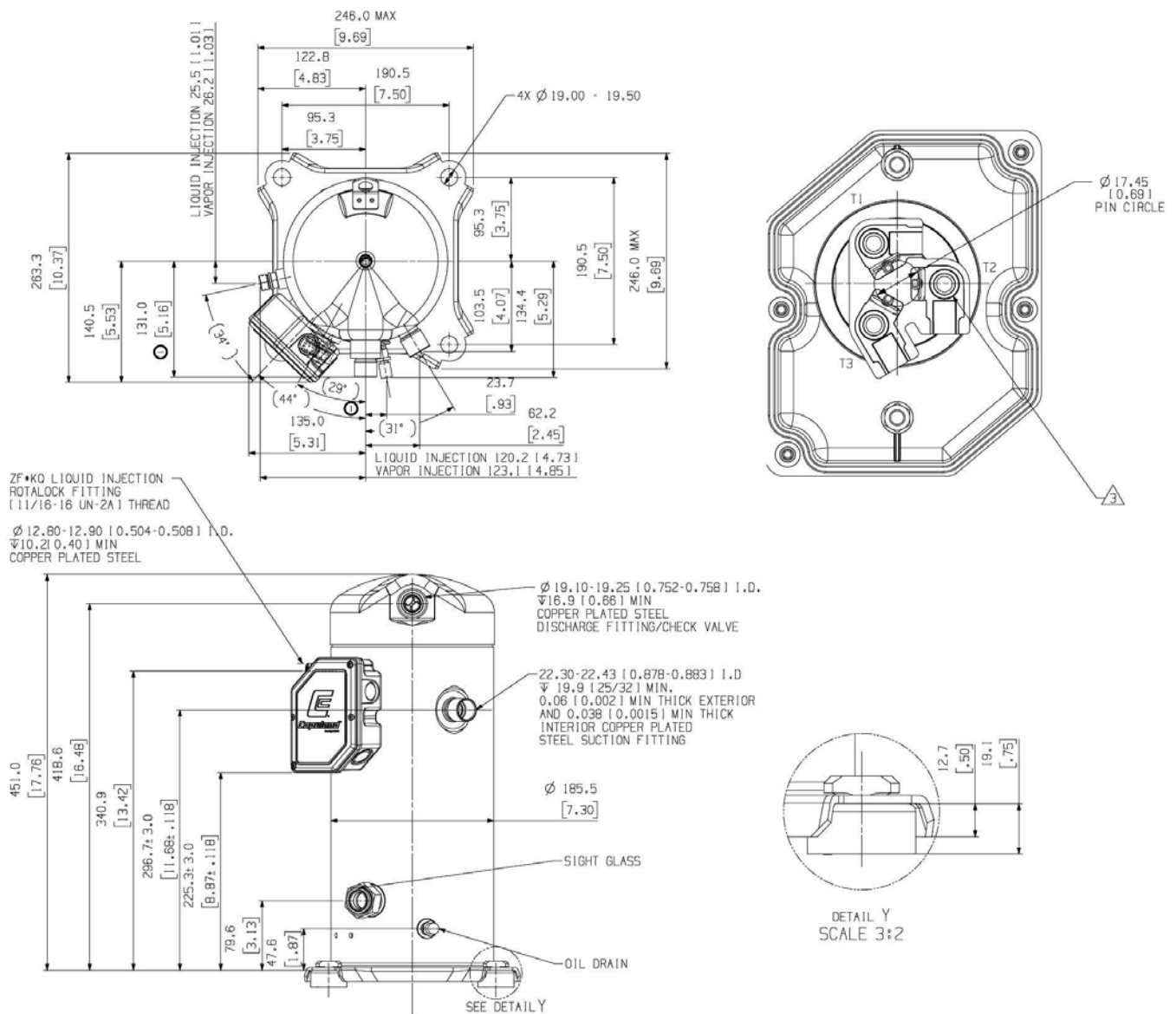
#### Notes:

- (1) All tolerances ± 1.5mm [0.06in] unless otherwise specified
- (2) Due to accumulated assembly tolerances, the listed components may vary from the mounting holes. All fittings: ± 3.0mm [0.12in]
- (3) Tube ends must be plugged
- (4) All units are in mm[inch]

## Dimensional drawings

### ZF28KQE-TFC and ZFI39KQE-TFC (BOM 580)

Stub tube connection



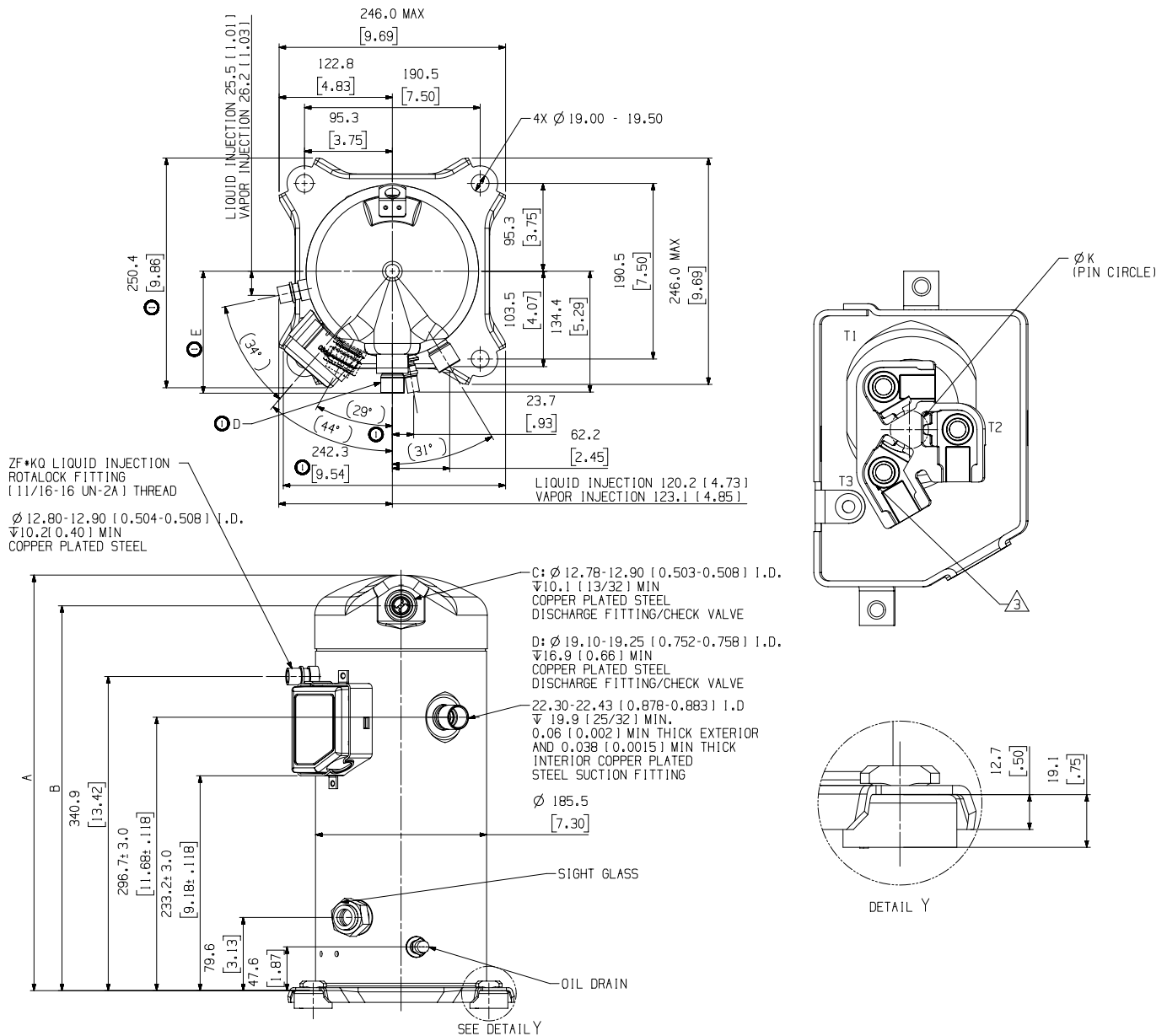
#### Notes:

- (1) All tolerances ± 1.5mm [0.06in] unless otherwise specified
- (2) Due to accumulated assembly tolerances, the listed components may vary from the mounting holes. All fittings: ± 3.0mm [0.12in]
- (3) Tube ends must be plugged
- (4) All units are in mm[inch]

# Dimensional drawings

## ZFI20KQE - ZFI39KQE (BOM 550)

Stub tube connection



| Model number | mm (in)          |                  | Discharge fitting |
|--------------|------------------|------------------|-------------------|
|              | A±3.0            | B                |                   |
| ZFI20KQE     | 442.0<br>[17.40] | 409.6<br>[16.13] | C                 |
| ZFI23KQE     |                  |                  |                   |
| ZFI26KQE     |                  |                  | D                 |
| ZFI36KQE     |                  |                  |                   |
| ZFI39KQE     | 451.0<br>[17.76] | 418.6<br>[16.48] | D                 |

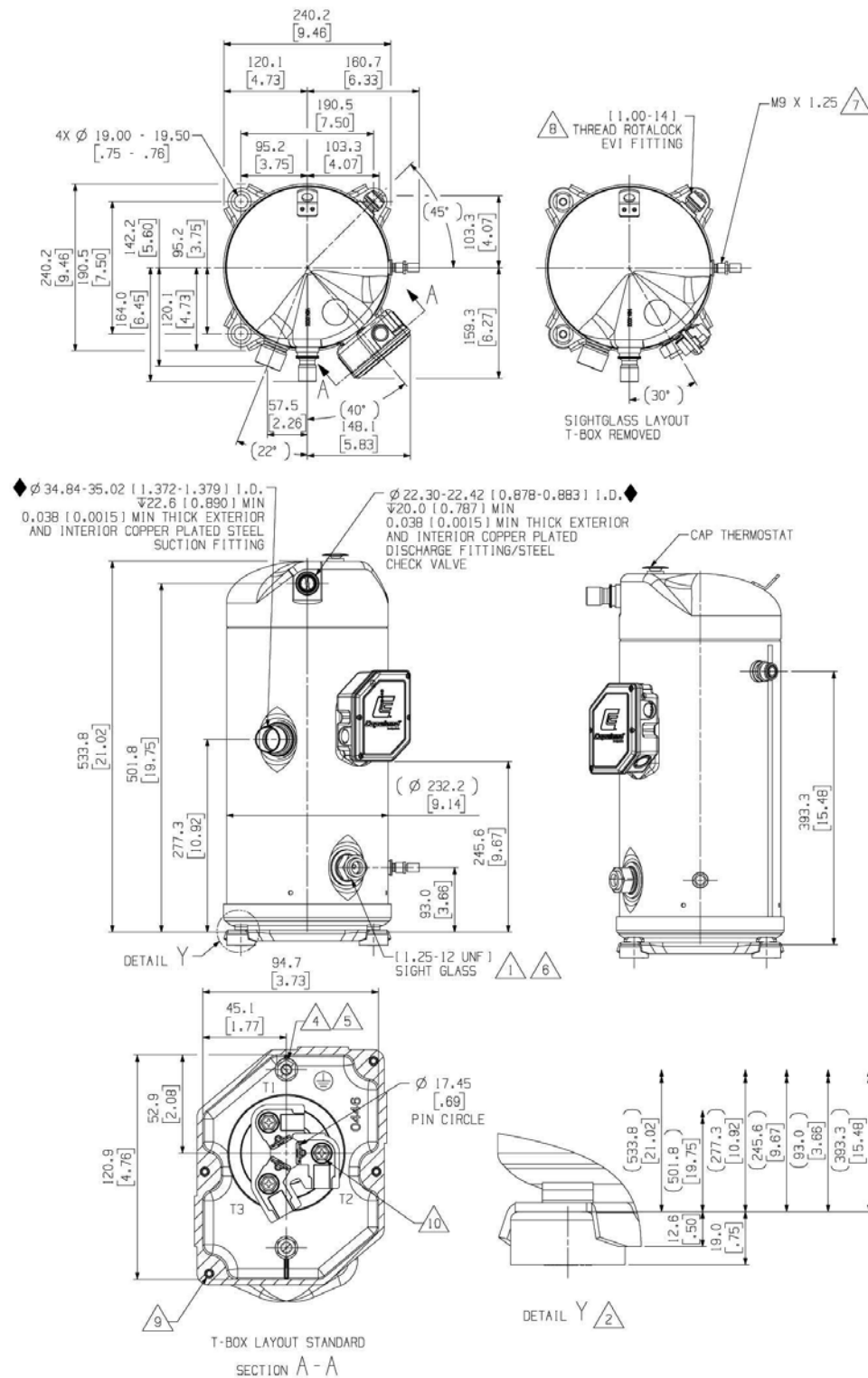
### Notes:

- (1) All tolerances ± 1.5mm [0.06in] unless otherwise specified
- (2) Due to accumulated assembly tolerances, the listed components may vary from the mounting holes. All fittings: ± 3.0mm [0.12in]
- (3) Tube ends must be plugged
- (4) All units are in mm [inch]

## Dimensional drawings

### ZF34KQE - ZF41KQE (BOM 554)

Stub tube connection



#### Notes:

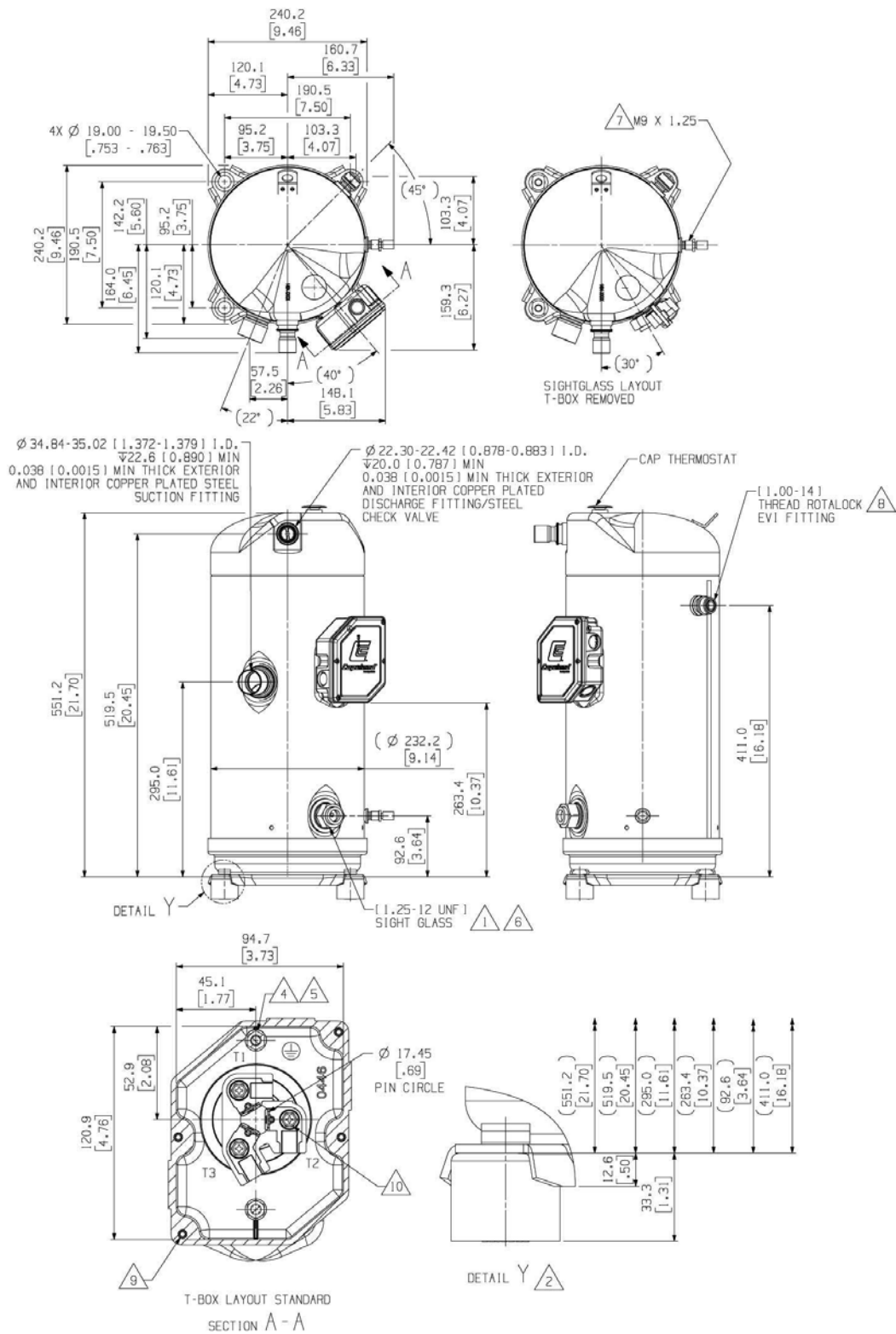
- (1) All tolerances  $\pm 1.5\text{mm}$  [0.06in] unless otherwise specified
- (2) Due to accumulated assembly tolerances, the listed components may vary from the mounting holes. All fittings:  $\pm 3.0\text{mm}$  [0.12in]
- (3) Tube ends must be plugged
- (4) All units are in mm[inch]



## Dimensional drawings

### ZF49/54KQE-TFD/TF7 (BOM 554)

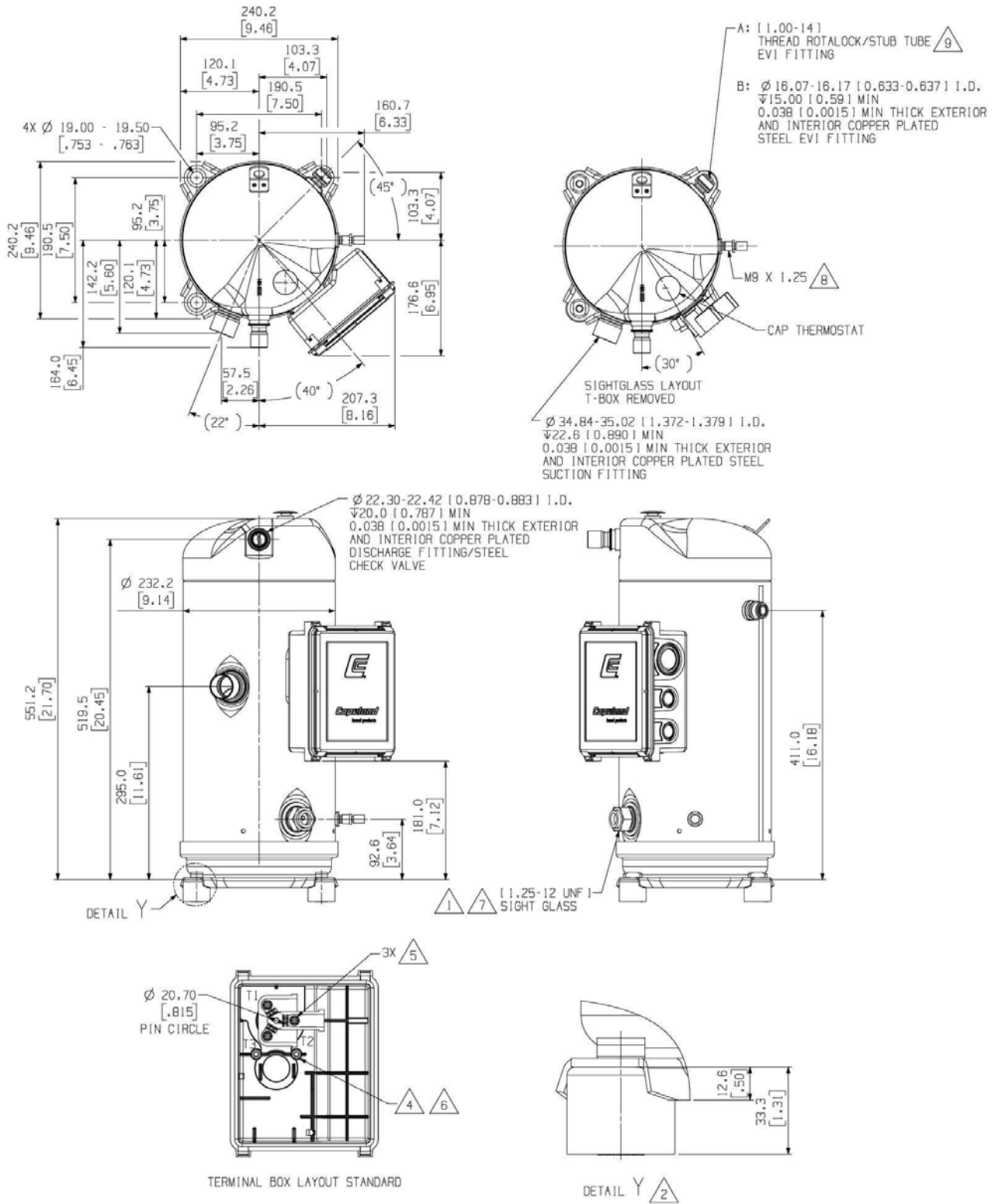
Stub tube connection



## Dimensional drawings

### ZF49/54KQE-TFC and ZFI68/81KQE-TFC (BOM 554)

Stub tube connection



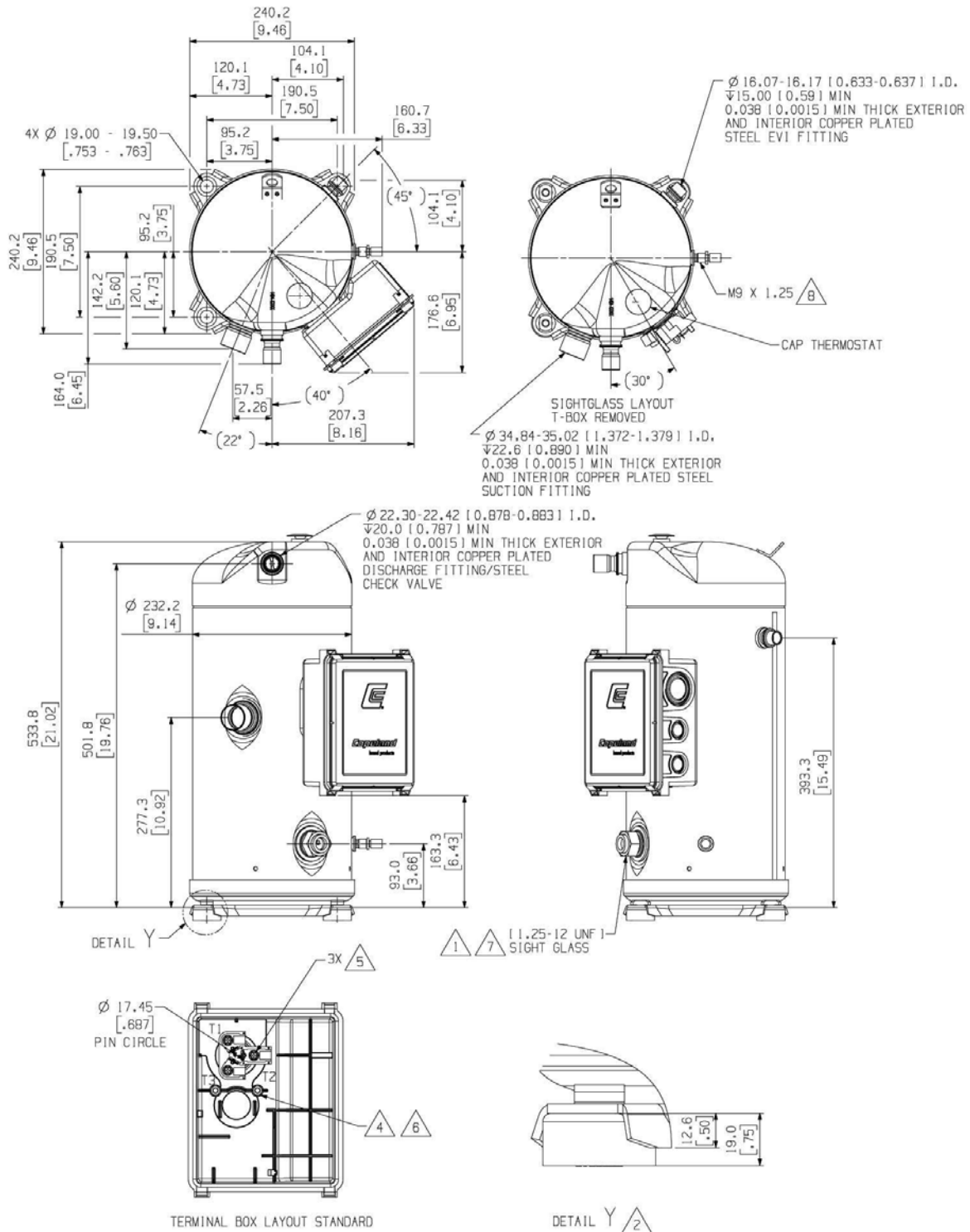
#### Notes:

- (1) All tolerances  $\pm 1.5\text{mm}$  [0.06in] unless otherwise specified
- (2) Due to accumulated assembly tolerances, the listed components may vary from the mounting holes. All fittings:  $\pm 3.0\text{mm}$  [0.12in]
- (3) Tube ends must be plugged
- (4) All units are in mm[inch]

## Dimensional drawings

### ZFI50KQE - ZFI59KQE (BOM 554)

Stub tube connection



#### Notes:

- (1) All tolerances  $\pm 1.5\text{mm}$  [0.06in] unless otherwise specified
- (2) Due to accumulated assembly tolerances, the listed components may vary from the mounting holes. All fittings:  $\pm 3.0\text{mm}$  [0.12in]
- (3) Tube ends must be plugged
- (4) All units are in mm[inch]

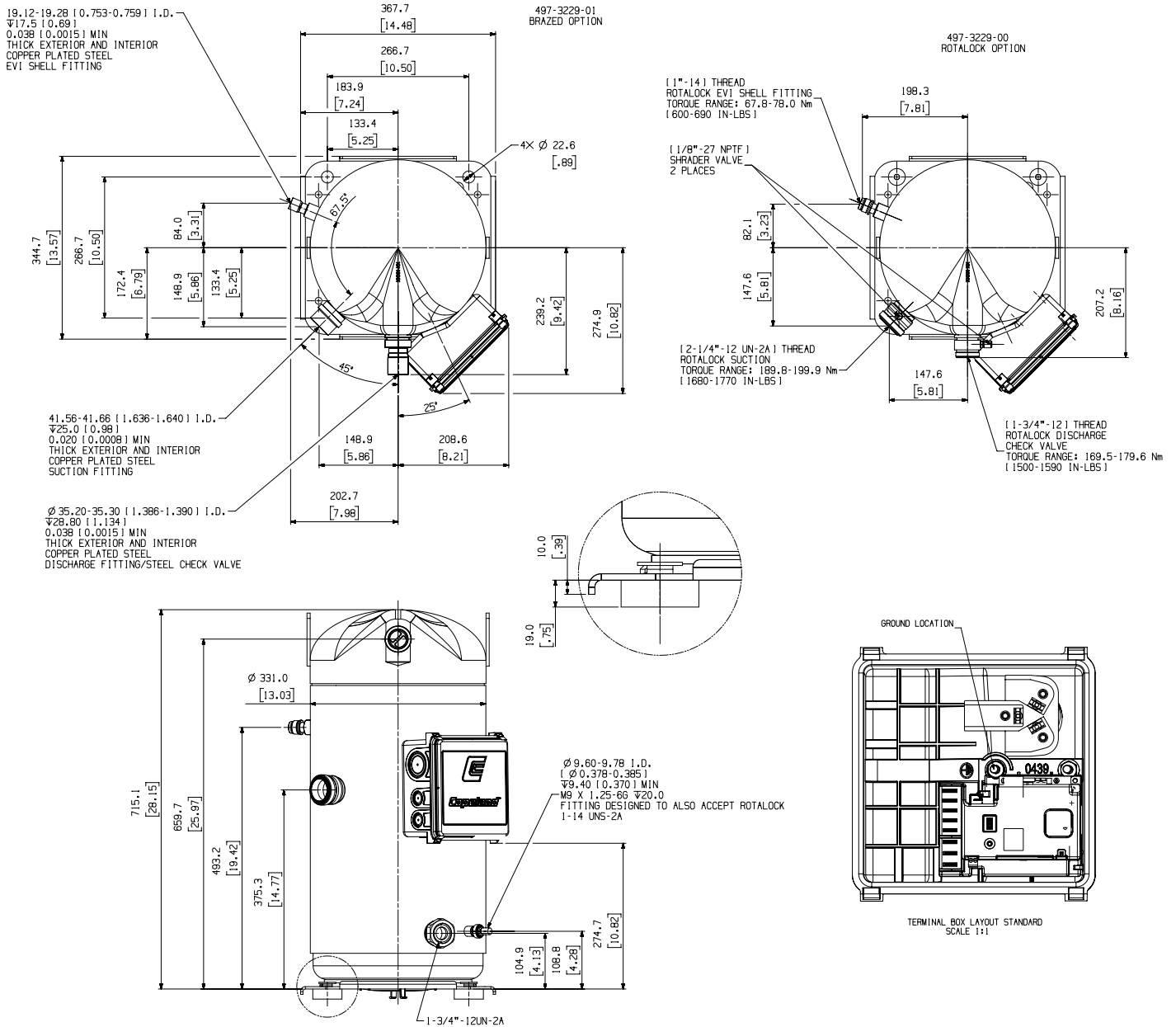
## Stub tube connection



# Dimensional drawings

## ZFI96/122/140KQE-TRD/TR7/TRC (BOM522/523)

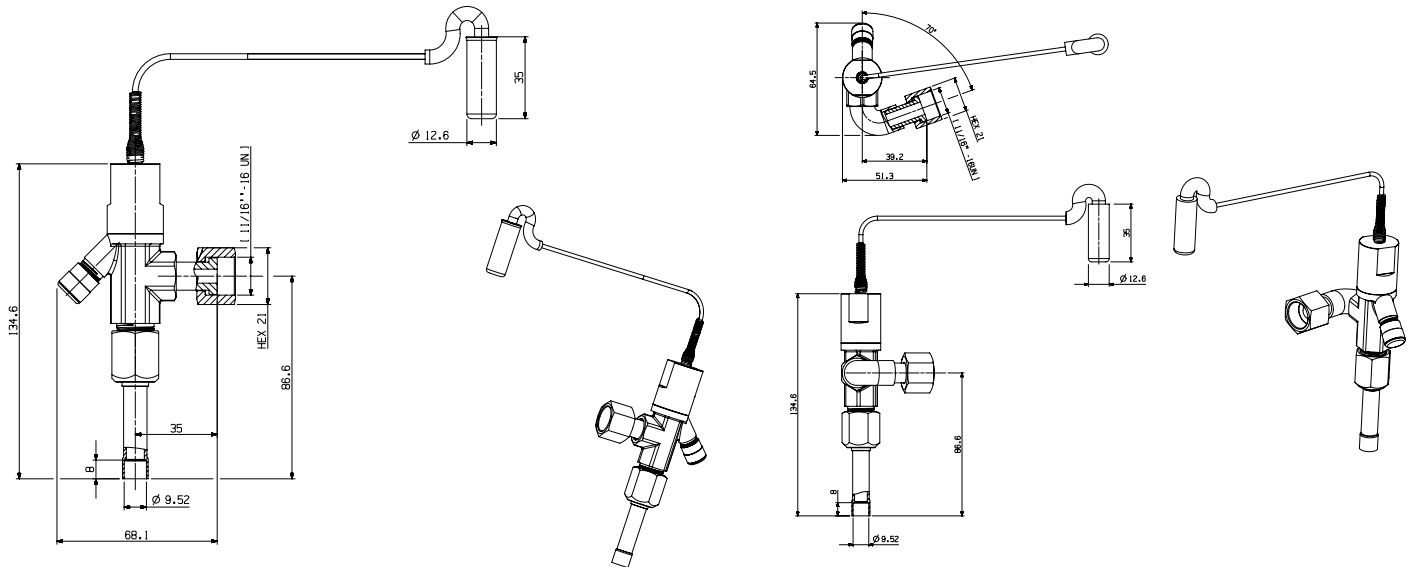
Stub tube / Rotolock connection



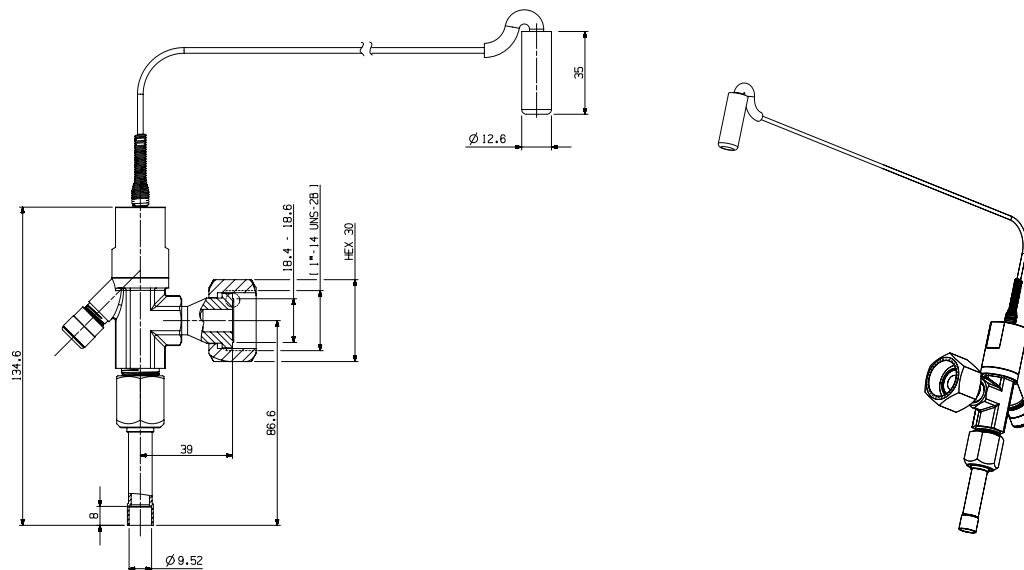
## Dimensional drawings

### DTC Valve prints

#### ZF06-28



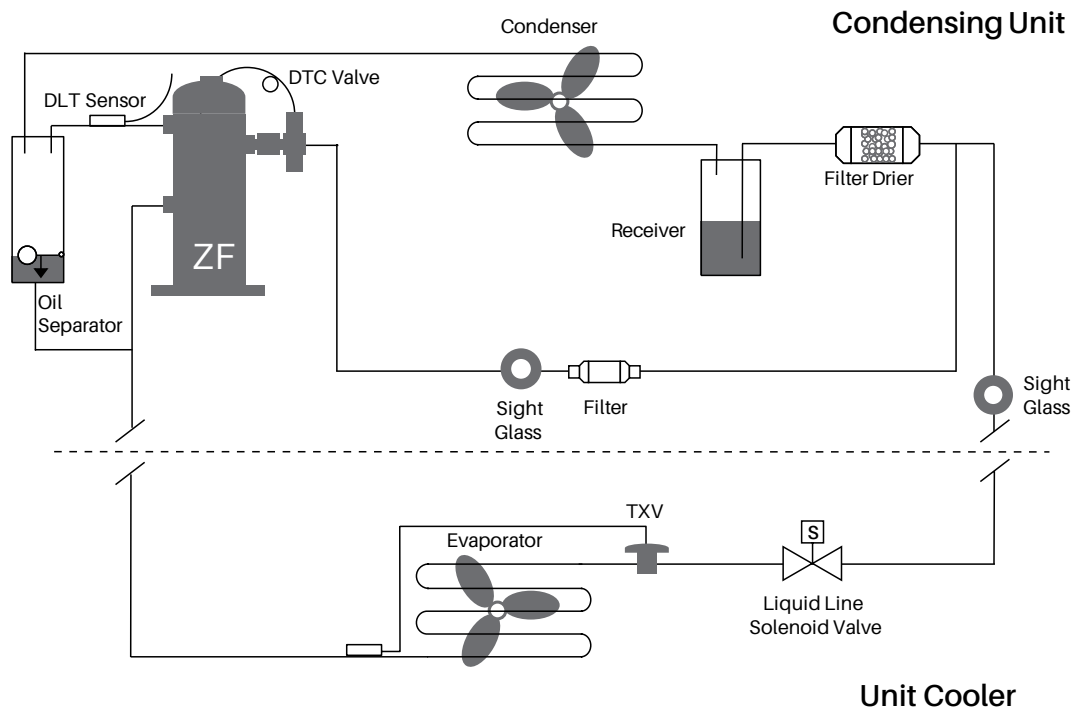
#### ZF34-54



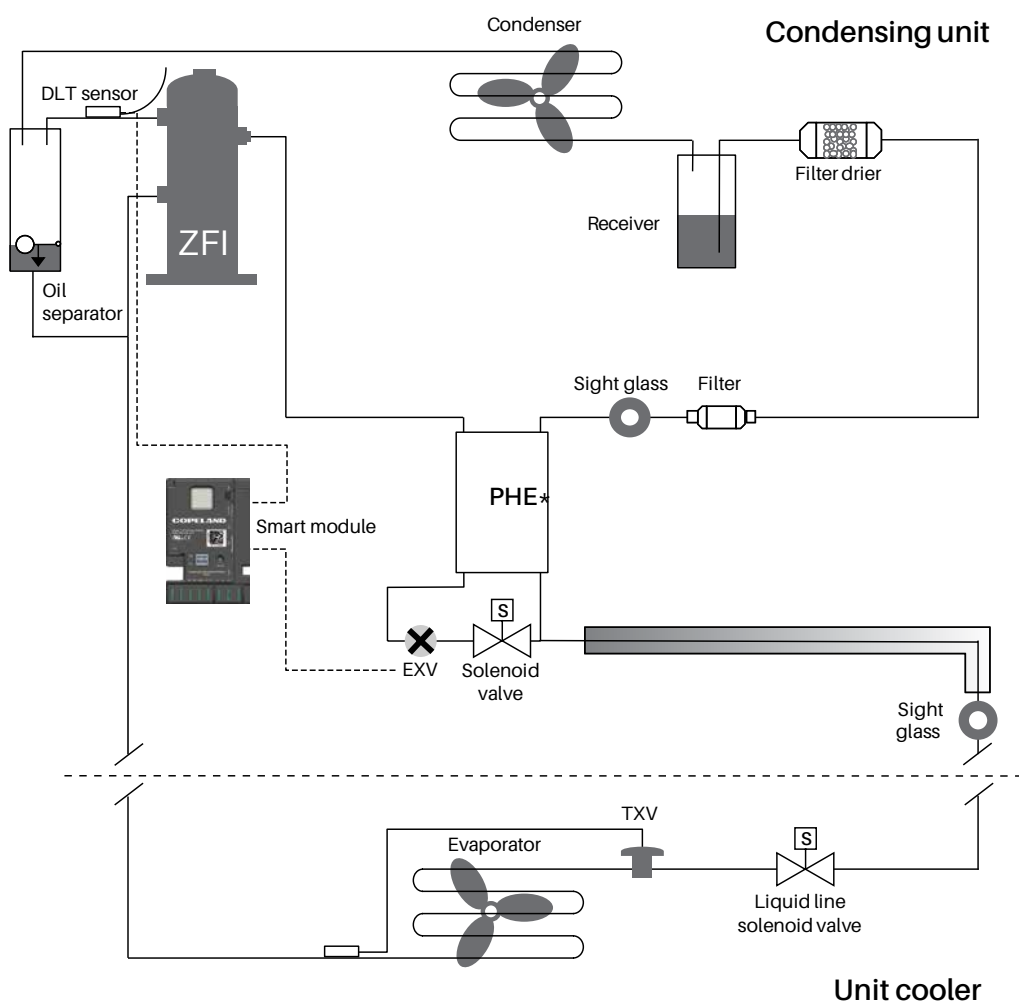
**Note:** Unit is mm

Schematic diagram

Liquid injection schematic



Vapor injection schematic



\*PHE: Plate heat exchanger



## Available models - ZF liquid injection

| Motor  | ZF Liquid injection models |                 |                     |        |
|--|----------------------------|-----------------|---------------------|--------|
|  | Rotalock                   | Stub tube       | Manufacturing plant | Status |
| TFD<br>380-420V-3ph-50Hz;<br>460V-3ph-60Hz   | ZF06KQE-TFD-551            | ZF06KQE-TFD-550 | Thailand            | Active |
|  | ZF08KQE-TFD-551            | ZF08KQE-TFD-550 | Thailand            | Active |
|  | ZF09KQE-TFD-551            | ZF09KQE-TFD-550 | Thailand            | Active |
|  | ZF11KQE-TFD-551            | ZF11KQE-TFD-550 | Thailand            | Active |
|  | ZF13KQE-TFD-551            | ZF13KQE-TFD-550 | Thailand            | Active |
|  | ZF15KQE-TFD-551            | ZF15KQE-TFD-550 | Thailand            | Active |
|  | ZF18KQE-TFD-551            | ZF18KQE-TFD-550 | Thailand            | Active |
|  | ZF25KQE-TFD-551            | ZF25KQE-TFD-550 | Thailand            | Active |
|  | ZF28KQE-TFD-551            | ZF28KQE-TFD-550 | Thailand            | Active |
|  | ZF34KQE-TFD-564            | ZF34KQE-TFD-554 | Thailand            | Active |
|  | ZF41KQE-TFD-564            | ZF41KQE-TFD-554 | Thailand            | Active |
|  | ZF49KQE-TFD-564            | ZF49KQE-TFD-554 | Thailand            | Active |
|  | ZF54KQE-TFD-564            | ZF54KQE-TFD-554 | Thailand            | Active |
|  | ZF06KQE-TF5-551            | ZF06KQE-TF5-550 | Thailand            | Active |
| TF5<br>200-220V-3ph-50Hz;<br>200-230V-3ph-60Hz<br><br>TFC<br>200V-3ph-50Hz;<br>208-230V-3ph-60Hz | ZF08KQE-TF5-551            | ZF08KQE-TF5-550 | Thailand            | Active |
|  | ZF09KQE-TF5-551            | ZF09KQE-TF5-550 | Thailand            | Active |
|  | ZF11KQE-TF5-551            | ZF11KQE-TF5-550 | Thailand            | Active |
|  | ZF13KQE-TFC-551            | ZF13KQE-TFC-550 | Thailand            | Active |
|  | ZF13KQE-TFC-551            | ZF13KQE-TFC-550 | Thailand            | Active |
|  | ZF15KQE-TFC-551            | ZF15KQE-TFC-550 | Thailand            | Active |
|  | ZF18KQE-TFC-551            | ZF18KQE-TFC-550 | Thailand            | Active |
|  | ZF25KQE-TFC-551            | ZF25KQE-TFC-550 | Thailand            | Active |
|  | ZF28KQE-TFC-591            | ZF28KQE-TFC-580 | Thailand            | Active |
|  | ZF34KQE-TFC-564 / 567      | ZF34KQE-TFC-554 | Thailand            | Active |
|  | ZF41KQE-TFC-564 / 567      | ZF41KQE-TFC-554 | Thailand            | Active |
|  | ZF49KQE-TFC-564 / 567      | ZF49KQE-TFC-554 | Thailand            | Active |
|  | ZF54KQE-TFC-564 / 567      | ZF54KQE-TFC-554 | Thailand            | Active |
|  | ZF13KQE-TF7-551            | ZF13KQE-TF7-550 | Thailand            | Active |
| TF7<br>380V-3ph-60Hz   | ZF15KQE-TF7-551            | ZF15KQE-TF7-550 | Thailand            | Active |
|  | ZF18KQE-TF7-551            | ZF18KQE-TF7-550 | Thailand            | Active |
|  | ZF25KQE-TF7-551            | ZF25KQE-TF7-550 | Thailand            | Active |
|  | ZF28KQE-TF7-551            | ZF28KQE-TF7-550 | Thailand            | Active |
|  | ZF34KQE-TF7-564 / 567      | ZF34KQE-TF7-554 | Thailand            | Active |
|  | ZF41KQE-TF7-564 / 567      | ZF41KQE-TF7-554 | Thailand            | Active |
|  | ZF49KQE-TF7-564 / 567      | ZF49KQE-TF7-554 | Thailand            | Active |
|  | ZF54KQE-TF7-564 / 567      | ZF54KQE-TF7-554 | Thailand            | Active |
|  | ZF06KQE-PFV-551            | ZF06KQE-PFV-550 | Thailand            | Active |
| PFV<br>200V-1ph-50Hz;<br>208-230V-1ph-60Hz   | ZF08KQE-PFV-551            | ZF08KQE-PFV-550 | Thailand            | Active |
|  | ZF09KQE-PFV-551            | ZF09KQE-PFV-550 | Thailand            | Active |
|  | ZF11KQE-PFV-551            | ZF11KQE-PFV-550 | Thailand            | Active |
|  | ZF13KQE-PFV-551            | ZF13KQE-PFV-550 | Thailand            | TBD    |
|  | ZF15KQE-PFV-551            | ZF15KQE-PFV-550 | Thailand            | TBD    |

**Note:** Please select the right BOMs when ZFI50-81 models are used in Rack application, BOM554/564 for OMB and 567 for OM3.

## Available models - ZFI vapor injection

| Motor  | ZFI Vapor injection models |                   |                     |        |
|--|----------------------------|-------------------|---------------------|--------|
|  | Rotalock                   | Stub tube         | Manufacturing plant | Status |
| TFD/TRD<br>380-420V-3ph-50Hz;<br>460V-3ph-60Hz | NA                         | ZFI09KNE-TFD-558  | Suzhou, China       | Active |
|  | NA                         | ZFI11KNE-TFD-558  | Suzhou, China       | Active |
|  | NA                         | ZFI13KNE-TFD-558  | Suzhou, China       | Active |
|  | NA                         | ZFI16KNE-TFD-558  | Suzhou, China       | TBD    |
|  | NA                         | ZFI19KNE-TFD-558  | Suzhou, China       | TBD    |
|  | NA                         | ZFI23KNE-TFD-558  | Suzhou, China       | TBD    |
|  | NA                         | ZFI26KNE-TFD-558  | Suzhou, China       | TBD    |
|  | NA                         | ZFI30KNE-TFD-558  | Suzhou, China       | TBD    |
|  | ZFI20KQE-TFD-552           | ZFI20KQE-TFD-550  | Thailand            | Active |
|  | ZFI23KQE-TFD-552           | ZFI23KQE-TFD-550  | Thailand            | Active |
|  | ZFI26KQE-TFD-552           | ZFI26KQE-TFD-550  | Thailand            | Active |
|  | ZFI36KQE-TFD-552           | ZFI36KQE-TFD-550  | Thailand            | Active |
|  | ZFI39KQE-TFD-552           | ZFI39KQE-TFD-550  | Thailand            | Active |
|  | ZFI50KQE-TFD-564 / 567     | ZFI50KQE-TFD-554  | Thailand            | Active |
|  | ZFI59KQE-TFD-564 / 567     | ZFI59KQE-TFD-554  | Thailand            | Active |
|  | ZFI68KQE-TFD-564 / 567     | ZFI68KQE-TFD-554  | Thailand            | Active |
|  | ZFI81KQE-TFD-564 / 567     | ZFI81KQE-TFD-554  | Thailand            | Active |
|  | ZFI96KQE-TRD-523           | ZFI96KQE-TRD-522  | Suzhou, China       | Active |
|  | ZFI122KQE-TRD-523          | ZFI122KQE-TRD-522 | Suzhou, China       | Active |
|  | ZFI140KQE-TRD-523          | ZFI140KQE-TRD-522 | Suzhou, China       | Active |
| TFC/TRC<br>200V-3ph-50Hz;<br>208-230V-3ph-60Hz | ZFI20KQE-TFC-552           | ZFI20KQE-TFC-550  | Thailand            | Active |
|  | ZFI23KQE-TFC-552           | ZFI23KQE-TFC-550  | Thailand            | Active |
|  | ZFI26KQE-TFC-552           | ZFI26KQE-TFC-550  | Thailand            | Active |
|  | ZFI36KQE-TFC-552           | ZFI36KQE-TFC-550  | Thailand            | Active |
|  | ZFI39KQE-TFC-592           | ZFI39KQE-TFC-580  | Thailand            | Active |
|  | ZFI50KQE-TFC-564 / 567     | ZFI50KQE-TFC-554  | Thailand            | Active |
|  | ZFI59KQE-TFC-564 / 567     | ZFI59KQE-TFC-554  | Thailand            | Active |
|  | ZFI68KQE-TFC-564 / 567     | ZFI68KQE-TFC-554  | Thailand            | Active |
|  | ZFI81KQE-TFC-564 / 567     | ZFI81KQE-TFC-554  | Thailand            | Active |
|  | ZFI96KQE-TRC-523           | ZFI96KQE-TRC-522  | Suzhou, China       | Active |
|  | ZFI122KQE-TRC-523          | ZFI122KQE-TRC-522 | Suzhou, China       | Active |
|  | ZFI140KQE-TRC-523          | ZFI140KQE-TRC-522 | Suzhou, China       | Active |

**Note:** Please select the right BOMs when ZFI50-81 models are used in Rack application, BOM554/564 for OMB and 567 for OM3.

## Available models - ZFI vapor injection (cont.)

| Motor                    | ZFI Vapor injection models |                   |                     |        |
|--------------------------|----------------------------|-------------------|---------------------|--------|
|                          | Rotalock                   | Stub tube         | Manufacturing plant | Status |
| TF7/TR7<br>380V-3ph-60Hz | ZFI20KQE-TF7-552           | ZFI20KQE-TF7-550  | Thailand            | Active |
|                          | NA                         | ZFI23KQE-TF7-550  | Thailand            | Active |
|                          | ZFI26KQE-TF7-552           | ZFI26KQE-TF7-550  | Thailand            | Active |
|                          | ZFI36KQE-TF7-552           | ZFI36KQE-TF7-550  | Thailand            | Active |
|                          | ZFI39KQE-TF7-552           | ZFI39KQE-TF7-550  | Thailand            | Active |
|                          | ZFI50KQE-TF7-564 / 567     | ZFI50KQE-TF7-554  | Thailand            | Active |
|                          | ZFI59KQE-TF7-564 / 567     | ZFI59KQE-TF7-554  | Thailand            | Active |
|                          | ZFI68KQE-TF7-564 / 567     | ZFI68KQE-TF7-554  | Thailand            | Active |
|                          | ZFI81KQE-TF7-564 / 567     | ZFI81KQE-TF7-554  | Thailand            | Active |
|                          | ZFI96KQE-TR7-523           | ZFI96KQE-TR7-522  | Suzhou, China       | Active |
|                          | ZFI122KQE-TR7-523          | ZFI122KQE-TR7-522 | Suzhou, China       | Active |
|                          | ZFI140KQE-TR7-523          | ZFI140KQE-TR7-522 | Suzhou, China       | Active |
| PFZ<br>220-240V-1ph-50Hz | NA                         | ZFI09KNE-PFZ-558  | Suzhou, China       | Active |
|                          | NA                         | ZFI11KNE-PFZ-558  | Suzhou, China       | TBD    |
|                          | NA                         | ZFI13KNE-PFZ-558  | Suzhou, China       | Active |
|                          | NA                         | ZFI16KNE-PFZ-558  | Suzhou, China       | TBD    |

**Note:** Please select the right BOMs when ZFI50-81 models are used in Rack application, BOM554/564 for OMB and 567 for OM3.

## Available models - ZFJ digital vapor Injection

| Motor  | ZFJ Digital Vapor injection models |                  |                     |                           |
|--|------------------------------------|------------------|---------------------|---------------------------|
|  | Rotalock                           | Stub tube        | Manufacturing plant | Status                    |
| TFD<br>380-420V-3ph-50Hz;<br>460V-3ph-60Hz     | ZFJ20KQE-TFD-552                   | ZFJ20KQE-TFD-550 | Thailand            | Active                    |
|  | ZFJ26KQE-TFD-552                   | ZFJ26KQE-TFD-550 | Thailand            | Active                    |
|  | ZFJ36KQE-TFD-552                   | ZFJ36KQE-TFD-550 | Thailand            | Active                    |
| TF5<br>200-220V-3ph-50Hz;<br>200-230V-3ph-60Hz | ZFJ20KQE-TF5-552                   | ZFJ20KQE-TF5-550 | Thailand            | 552 Prototype /550 Active |
|  | ZFJ26KQE-TF5-552                   | ZFJ26KQE-TF5-550 | Thailand            | Prototype                 |
|  | ZFJ36KQE-TF5-552                   | ZFJ36KQE-TF5-550 | Thailand            | Active                    |
| TF7<br>380V-3ph-60Hz                           | ZFJ20KQE-TF7-552                   | ZFJ20KQE-TF7-550 | Thailand            | 552 Prototype /550 Active |
|  | ZFJ26KQE-TF7-552                   | ZFJ26KQE-TF7-550 | Thailand            | Prototype                 |
|  | ZFJ36KQE-TF7-552                   | ZFJ36KQE-TF7-550 | Thailand            | Active                    |

## Available models - Large ZFI bundle solution

| Bundle P/N  | Compressor        | EVI Control Kits | PHE         | Manufacturing plant |
|-------------|-------------------|------------------|-------------|---------------------|
| 998-L000-00 | ZFI122KQE-TRD-523 | 562-0460-00      | 067-0067-00 | Suzhou, China       |
| 998-L000-01 | ZFI122KQE-TR7-523 | 562-0460-00      | 067-0067-00 | Suzhou, China       |
| 998-L000-02 | ZFI122KQE-TRC-523 | 562-0460-00      | 067-0067-00 | Suzhou, China       |
| 998-L000-04 | ZFI96KQE-TRD-523  | 562-0460-00      | 067-0067-00 | Suzhou, China       |
| 998-L000-05 | ZFI96KQE-TR7-523  | 562-0460-00      | 067-0067-00 | Suzhou, China       |
| 998-L000-06 | ZFI96KQE-TRC-523  | 562-0460-00      | 067-0067-00 | Suzhou, China       |
| 998-L000-07 | ZFI140KQE-TRD-523 | 562-0460-00      | 067-0067-00 | Suzhou, China       |
| 998-L000-08 | ZFI140KQE-TR7-523 | 562-0460-00      | 067-0067-00 | Suzhou, China       |
| 998-L000-09 | ZFI140KQE-TRC-523 | 562-0460-00      | 067-0067-00 | Suzhou, China       |
| 998-L000-10 | ZFI96KQE-TRD-522  | 562-0460-00      | 067-0067-00 | Suzhou, China       |
| 998-L000-11 | ZFI122KQE-TRD-522 | 562-0460-00      | 067-0067-00 | Suzhou, China       |
| 998-L000-12 | ZFI140KQE-TRD-522 | 562-0460-00      | 067-0067-00 | Suzhou, China       |
| 998-L000-13 | ZFI96KQE-TR7-522  | 562-0460-00      | 067-0067-00 | Suzhou, China       |
| 998-L000-14 | ZFI122KQE-TR7-522 | 562-0460-00      | 067-0067-00 | Suzhou, China       |
| 998-L000-15 | ZFI140KQE-TR7-522 | 562-0460-00      | 067-0067-00 | Suzhou, China       |
| 998-L000-16 | ZFI96KQE-TRC-522  | 562-0460-00      | 067-0067-00 | Suzhou, China       |
| 998-L000-17 | ZFI122KQE-TRC-522 | 562-0460-00      | 067-0067-00 | Suzhou, China       |
| 998-L000-18 | ZFI140KQE-TRC-522 | 562-0460-00      | 067-0067-00 | Suzhou, China       |

**Note:** 998-L000-XX bundle solution includes compressor, EVI control kits and plate heat exchanger

## ZF06-54 Accessory list

| Item | Parts                              | Part Number | Description  | Liquid Injection Models |         |         |         |         |         |         |         |         |         |         |         |         | Source             |
|------|------------------------------------|-------------|--|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------------------|
|      |                                    |             |  | ZF06KQE                 | ZF08KQE | ZF09KQE | ZF11KQE | ZF13KQE | ZF15KQE | ZF18KQE | ZF25KQE | ZF28KQE | ZF34KQE | ZF41KQE | ZF49KQE | ZF54KQE |                    |
| 1    | Mounting Kits for Single Unit      | 527-0116-00 | Mounting for single, 35-45 durometer, 1.45"OD, 0.44"ID, 0.75"Height  | std.                    | std.    | std.    | std.    | std.    | std.    | std.    | std.    | std.    | std.    | std.    | -       | -       | Suzhou or Thailand |
|      | Mounting Kits for Single Unit      | 527-0210-00 | Mounting for single, 55-65 durometer, 1.62"OD, 0.44"ID, 1.75"Height  | -                       | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       | std.    | std.    | Suzhou or Thailand |
|      | Mounting Kits for Rack Unit        | 527-0157-00 | High Durometer(60-70) Mounting for Rack, 1.62"OD, 0.44"ID, 1.16"Height   | -/1                     | -/1     | -/1     | -/1     | -/1     | -/1     | -/1     | -/1     | -/1     | -       | -       | -       | -       | Suzhou             |
|      | Mounting Kits for Rack Unit        | 998-0178-00 | Hard Mounting for Rack, 1.87"OD, 0.69"ID, 0.31"Height  | -                       | -       | -       | -       | -       | -       | -       | -       | -       | -/1     | -/1     | -/1     | -/1     | US                 |
| 2    | Crankcase Heater                   | 018-0095-04 | Crankcase Heater, 240V, 70W, 48"(120cm) Lead length, 48"(120cm) Ground wire  | 1/-                     | 1/-     | 1/-     | 1/-     | 1/-     | 1/-     | 1/-     | 1/-     | 1/-     | -       | -       | -       | -       | US                 |
|      | Crankcase Heater                   | 018-0095-05 | Crankcase Heater, 480V, 70W, 48"(120cm) Lead length, 48"(120cm) Ground wire  | -/1                     | -/1     | -/1     | -/1     | -/1     | -/1     | -/1     | -/1     | -/1     | -       | -       | -       | -       | US                 |
|      | Crankcase Heater                   | 018-0091-22 | Crankcase Heater, 240V, 90W, 48"(120cm) Lead length, 48"(120cm) Ground wire  | -                       | -       | -       | -       | -       | -       | -       | -       | -       | 1/-     | 1/-     | 1/-     | 1/-     | US                 |
|      | Crankcase Heater                   | 018-0091-23 | Crankcase Heater, 480V, 90W, 48"(120cm) Lead length, 48"(120cm) Ground wire  | -                       | -       | -       | -       | -       | -       | -       | -       | -       | -/1     | -/1     | -/1     | -/1     | US                 |
| 3    | DTC Kits                           | 510-0875-01 | DTC Valve 120°C, 11/16", Liquid line Ø9.52mm (ALCO 802504)   | 1/-                     | 1/-     | 1/-     | 1/-     | 1/-     | 1/-     | 1/-     | 1/-     | 1/-     | -       | -       | -       | -       | EUR                |
|      | DTC Kits                           | 510-0875-02 | DTC Valve 120°C, 11/16" with 70° Outlet, Liquid line Ø9.52mm (ALCO 802506)   | -/1                     | -/1     | -/1     | -/1     | -/1     | -/1     | -/1     | -/1     | -/1     | -       | -       | -       | -       | EUR                |
|      | DTC Kits                           | 510-0875-00 | DTC Valve 120°C, 1", Liquid line Ø9.52mm (ALCO 802505)   | -                       | -       | -       | -       | -       | -       | -       | -       | -       | 1       | 1       | 1       | 1       | EUR                |
|      | DTC Kits                           | 510-0989-00 | DTC Valve 90°C, 11/16", Liquid line Ø9.6mm Braze   | 1/-                     | 1/-     | 1/-     | 1/-     | 1/-     | 1/-     | 1/-     | 1/-     | 1/-     | -       | -       | -       | -       | Suzhou             |
|      | DTC Kits                           | 510-0997-00 | DTC Valve 121°C, 11/16", Liquid line Ø9.6mm Braze  | -/1                     | -/1     | -/1     | -/1     | -/1     | -/1     | -/1     | -/1     | -/1     | -       | -       | -       | -       | Suzhou             |
|      | DTC Kits                           | 510-0993-00 | DTC Valve 121°C, 1", Liquid line Ø9.6mm Braze  | -                       | -       | -       | -       | -       | -       | -       | -       | -       | 1       | 1       | 1       | 1       | Suzhou             |
| 4    | Discharge Line Thermostat          | 085-0248-00 | Discharge line thermostat with clip (8409496), 130°C, 5/8" clip  | 1                       | 1       | 1       | 1       | 1       | 1       | 1       | 1       | 1       | -       | -       | -       | -       | EUR                |
|      | Discharge Line Thermostat          | 085-0227-00 | Discharge Line Thermostat with clip (8615262), 130°C, 7/8" clip  | -                       | -       | -       | -       | -       | -       | -       | -       | -       | 1       | 1       | 1       | 1       | EUR                |
| 5    | Suction & Discharge Valve Kits     | 998-5100-48 | Suction & Discharge Valve with Seal (1 1/4"-12 Thread to 7/8" Sweat Suction Valve, 1"-14 Thread to 1/2" Sweat Discharge Valve)       | 1                       | 1       | 1       | 1       | 1       | 1       | 1       | -       | -       | -       | -       | -       | -       | US                 |
|      | Suction & Discharge Valve Kits     | 998-5100-62 | Suction & Discharge Valve with Seal (1 1/4"-12 Thread to 7/8" Sweat Suction Valve, 1 1/4"-12 Thread to 3/4" Sweat Discharge Valve)   | -                       | -       | -       | -       | -       | -       | -       | 1       | 1       | -       | -       | -       | -       | US                 |
|      | Suction & Discharge Valve Kits     | 998-5100-27 | Suction & Discharge Valve with Seal (1 3/4"-12 Thread to 1 3/8" Sweat Suction Valve, 1 1/4"-12 Thread to 7/8" Sweat Discharge Valve) | -                       | -       | -       | -       | -       | -       | -       | -       | -       | 1       | 1       | 1       | 1       | US                 |
| 6    | Adapter Injection Rotalock to Stub | 534-0072-00 | Adapter Injection Rotalock to Stub (11/16" Thread to 1/2" ID Sweat)  | 1                       | 1       | 1       | 1       | 1       | 1       | 1       | 1       | 1       | -       | -       | -       | -       | Suzhou             |
|      | Adapter Suction Rotalock to Stub   | 998-0034-13 | Adapter Suction Rotalock to Stub (1 3/4"-12 Thread to 1 3/8" Sweat)  | -                       | -       | -       | -       | -       | -       | -       | -       | -       | 1       | 1       | 1       | 1       | US                 |
|      | Adapter Discharge Rotalock to Stub | 998-0034-08 | Adapter Discharge Rotalock to Stub (1 1/4"-12 Thread to 7/8" Sweat)  | -                       | -       | -       | -       | -       | -       | -       | -       | -       | 1       | 1       | 1       | 1       | US                 |
|      | Adapter Injection Rotalock to Stub | 998-0034-18 | Adapter Injection Rotalock to Stub (1"-14 Thread to 1/2" ID Sweat)   | -                       | -       | -       | -       | -       | -       | -       | -       | -       | 1       | 1       | 1       | 1       | US                 |

**Notes:** Standard: Included in the compressor

## ZFI09-140 Accessory list

| Item | Parts                          | Part Number | Description  | Vapor Injection Models |          |          |          |          |          |          |          |          |          |          |          |          |           |           |                    | Source |
|------|--------------------------------|-------------|--|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|--------------------|--------|
|      |                                |             |  | ZFI09KNE               | ZFI11KNE | ZFI13KNE | ZFI20KQE | ZFI23KQE | ZFI26KQE | ZFI36KQE | ZFI39KQE | ZFI50KQE | ZFI59KQE | ZFI68KQE | ZFI81KQE | ZFI96KQE | ZFI122KQE | ZFI140KQE |                    |        |
| 1    | Mounting Kits for Single Unit  | 527-0044-15 | Mounting for single, 30-35 durometer, 1.45"OD, 0.44"ID, 0.75"Height  | std.                   | std.     | std.     | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -         | -         | Suzhou             |        |
|      | Mounting Kits for Single Unit  | 527-0116-00 | Mounting for single, 35-45 durometer, 1.45"OD, 0.44"ID, 0.75"Height  | -                      | -        | -        | std.     | std.     | std.     | std.     | std.     | std.     | std.     | -        | -        | -        | -         | -         | Suzhou or Thailand |        |
|      | Mounting Kits for Single Unit  | 527-0210-00 | Mounting for single, 55-65 durometer, 1.62"OD, 0.44"ID, 1.75"Height  | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -        | std.     | std.     | -        | -         | -         | Suzhou or Thailand |        |
|      | Mounting Kits for Single Unit  | 527-0175-02 | Mounting for single, 40 durometer, 2.17"OD, 0.50"ID, 0.75"Height   | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | std.     | std.      | std.      | Suzhou             |        |
|      | Mounting Kits for Rack Unit    | 527-0157-00 | High Durometer(60-70) Mounting for Rack, 1.62"OD, 0.44"ID, 1.16"Height   | -                      | -        | -        | -/1      | -/1      | -/1      | -/1      | -/1      | -        | -        | -        | -        | -        | -         | -         | Suzhou             |        |
|      | Mounting Kits for Rack Unit    | 998-0178-00 | Hard Mounting for Rack, 1.87"OD, 0.69"ID, 0.31"Height  | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -/1      | -/1      | -/1      | -/1      | -         | -         | US                 |        |
| 2    | Crankcase Heater               | 018-0112-02 | Crankcase Heater, 240V, 33W, 80cm Lead length  | 1                      | 1        | 1        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -         | -         | Suzhou             |        |
|      | Crankcase Heater               | 018-0095-04 | Crankcase Heater, 240V, 70W, 48"(120cm) Lead length, 48"(120cm) Ground wire  | -                      | -        | -        | 1/-      | 1/-      | 1/-      | 1/-      | 1/-      | -        | -        | -        | -        | -        | -         | -         | US                 |        |
|      | Crankcase Heater               | 018-0095-05 | Crankcase Heater, 480V, 70W, 48"(120cm) Lead length, 48"(120cm) Ground wire  | -                      | -        | -        | -/1      | -/1      | -/1      | -/1      | -/1      | -        | -        | -        | -        | -        | -         | -         | US                 |        |
|      | Crankcase Heater               | 018-0091-22 | Crankcase Heater, 240V, 90W, 48"(120cm)Lead length, 48"(120cm) Ground wire   | -                      | -        | -        | -        | -        | -        | -        | -        | 1/-      | 1/-      | 1/-      | 1/-      | -        | -         | -         | US                 |        |
|      | Crankcase Heater               | 018-0091-23 | Crankcase Heater, 480V, 90W, 48"(120cm)Lead length, 48"(120cm) Ground wire   | -                      | -        | -        | -        | -        | -        | -        | -        | -/1      | -/1      | -/1      | -/1      | -        | -         | -         | US                 |        |
|      | Crankcase Heater               | 018-0091-09 | Crankcase Heater, 240V, 140W,71cm Lead length, 71cm Ground wire  | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | 1        | 1         | 1         | US                 |        |
| 3    | Plate Heat Exchanger           | 067-0098-00 | Plate Heat Exchanger BX4TH x10   | 1                      | 1        | 1        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -         | -         | Suzhou             |        |
|      | Plate Heat Exchanger           | 067-0091-00 | Plate Heat Exchanger BX4TH x14   | -                      | -        | -        | 1        | 1        | 1        | 1        | 1        | -        | -        | -        | -        | -        | -         | -         | Suzhou             |        |
|      | Plate Heat Exchanger           | 067-0092-00 | Plate Heat Exchanger BX4TH x20   | -                      | -        | -        | -        | -        | -        | -        | -        | 1        | 1        | -        | -        | -        | -         | -         | Suzhou             |        |
|      | Plate Heat Exchanger           | 067-0093-00 | Plate Heat Exchanger BX4TH x24   | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -        | 1        | 1        | -        | -         | -         | Suzhou             |        |
|      | Plate Heat Exchanger           | 067-0067-00 | Plate Heat Exchanger B10TH x40   | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | 1        | 1         | 1         | Suzhou             |        |
| 4    | Suction & Discharge Valve Kits | 998-5100-48 | Suction & Discharge Valve with Seal (1 1/4" -12 Thread to 7/8" Sweat Suction Valve, 1'-14 Thread to 1/2" Sweat Discharge Valve)      | -                      | -        | -        | 1        | 1        | 1        | -        | -        | -        | -        | -        | -        | -        | -         | -         | US                 |        |
|      | Suction & Discharge Valve Kits | 998-5100-62 | Suction & Discharge Valve with Seal (1 1/4" -12 Thread to 7/8" Sweat Suction Valve, 1 1/4"-12 Thread to 3/4" Sweat Discharge Valve)  | -                      | -        | -        | -        | -        | -        | 1        | 1        | -        | -        | -        | -        | -        | -         | -         | US                 |        |
|      | Suction & Discharge Valve Kits | 998-5100-27 | Suction & Discharge Valve with Seal (1 3/4"-12 Thread to 1 3/8" Sweat Suction Valve, 1 1/4"-12 Thread to 7/8" Sweat Discharge Valve) | -                      | -        | -        | -        | -        | -        | -        | -        | 1        | 1        | 1        | 1        | -        | -         | -         | US                 |        |
|      | Discharge Service Valve        | 998-0510-46 | Discharge Service Valve Kits, 1-3/4" Thread to 1-3/8" Sweat  | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | 1        | 1         | 1         | US                 |        |
|      | Suction Service Valve          | 998-0510-68 | Suction Service Valve Kits, 2-1/4" Thread to 1-5/8" sweat  | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | 1        | 1         | 1         | US                 |        |

Notes: 1 or -1 : Option to choose either one

## ZFI09-140 Accessory list

| Item | Parts                                | Part Number | Description  | Vapor Injection Models |          |          |          |          |          |          |          |          |          |          |          |          |           |           | Source |
|------|--------------------------------------|-------------|--|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|--------|
|      |                                      |             |  | ZFI09KNE               | ZFI11KNE | ZFI13KNE | ZFI20KQE | ZFI23KQE | ZFI26KQE | ZFI36KQE | ZFI39KQE | ZFI50KQE | ZFI59KQE | ZFI68KQE | ZFI81KQE | ZFI96KQE | ZFI122KQE | ZFI140KQE |        |
| 5    | Adapter Suction Rotalock to Stub     | 998-0034-13 | Adapter Suction Rotalock to Stub (1 3/4"-12 Thread to 1 3/8" Sweat)                              | -                      | -        | -        | -        | -        | -        | -        | -        | 1        | 1        | 1        | 1        | -        | -         | -         | US     |
|      | Adapter Discharge Rotalock to Stub   | 998-0034-08 | Adapter Discharge Rotalock to Stub (1 1/4"-12 Thread to 7/8" Sweat)                              | -                      | -        | -        | -        | -        | -        | -        | -        | 1        | 1        | 1        | 1        | -        | -         | -         | US     |
|      | Adapter Injection Rotalock to Stub   | 998-0034-18 | Adapter Injection Rotalock to Stub (1"-14 Thread to 1/2" ID Sweat)                               | -                      | -        | -        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1         | 1         | US     |
|      | Adapter - Discharge Rotalock to Stub | 934-0002-00 | Fitting adapter kits, discharge, 1-3/4"-12UN rotalock to 1-3/8" ID stub tube                     | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | 1        | 1         | 1         | US     |
|      | Adapter - Suction Rotalock to Stub   | 934-0002-01 | Fitting adapter kits, suction, 2-1/4"-12UN rotalock to 1-5/8" ID stub tube                       | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | 1        | 1         | 1         | US     |
| 6    | LI Control Kits                      | 562-0471-00 | Liquid Injection Control Kits with Smart Module Plus 4, Ø1.3mm EXV valve orifice size, 1.8m wire | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -         | -         | Suzhou |
|      | EVI Control Kits                     | 562-0471-01 | EVI Control Kits with Smart Module Plus 4, Ø1.3mm EXV valve orifice size, 1.8m wire              | 1                      | 1        | 1        | 1        | 1        | 1        | -        | -        | -        | -        | -        | -        | -        | -         | -         | Suzhou |
|      | EVI Control Kits                     | 562-0471-02 | EVI Control Kits with Smart Module Plus 4, Ø1.3mm EXV valve orifice size, 4.5m wire              | -/1                    | -/1      | -/1      | -/1      | -/1      | -/1      | -        | -        | -        | -        | -        | -        | -        | -         | -         | Suzhou |
|      | EVI Control Kits                     | 562-0471-03 | EVI Control Kits with Smart Module Plus 4, Ø1.65mm EXV valve orifice size, 1.8m wire             | -                      | -        | -        | -        | -        | -        | 1        | 1        | -        | -        | -        | -        | -        | -         | -         | Suzhou |
|      | EVI Control Kits                     | 562-0471-04 | EVI Control Kits with Smart Module Plus 4, Ø1.65mm EXV valve orifice size, 4.5m wire             | -                      | -        | -        | -        | -        | -        | -/1      | -/1      | -        | -        | -        | -        | -        | -         | -         | Suzhou |
|      | EVI Control Kits                     | 562-0471-05 | EVI Control Kits with Smart Module Plus 4, Ø1.65mm EXV valve orifice size, 1.8m wire             | -                      | -        | -        | -        | -        | -        | -        | -        | 1        | 1        | -        | -        | -        | -         | -         | Suzhou |
|      | EVI Control Kits                     | 562-0471-06 | EVI Control Kits with Smart Module Plus 4, Ø1.65mm EXV valve orifice size, 4.5m wire             | -                      | -        | -        | -        | -        | -        | -        | -        | -/1      | -/1      | -        | -        | -        | -         | -         | Suzhou |
|      | EVI Control Kits                     | 562-0471-07 | EVI Control Kits with Smart Module Plus 4, Ø1.8mm EXV valve orifice size, 1.8m wire              | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -        | 1        | 1        | -        | -         | -         | Suzhou |
|      | EVI Control Kits                     | 562-0471-08 | EVI Control Kits with Smart Module Plus 4, Ø1.8mm EXV valve orifice size, 4.5m wire              | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -        | -/1      | -/1      | -        | -         | -         | Suzhou |
|      | EVI Control Kits                     | 562-0460-00 | EVI Control Kits, Ø2.4mm EXV valve orifice size, 1.8m wire                                       | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | 1        | 1         | 1         | Suzhou |
|      | EVI Control Kits                     | 562-0460-01 | EVI Control Kits, Ø2.4mm EXV valve orifice size, 4.5m wire                                       | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -/1      | -/1       | -/1       | Suzhou |
| 7    | DLT Sensor                           | 543-0317-00 | DLT Sensor, 1800mm wire length   | 1                      | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | -        | -         | -         | Suzhou |
|      | DLT Sensor                           | 543-0317-01 | DLT Sensor, 4500mm wire length   | -/1                    | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -        | -         | -         | Suzhou |
| 8    | Vapor in/out Sensor                  | 043-0285-00 | Vapor In/out Sensor, 1800mm wire length  | 1                      | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1         |           | Suzhou |
|      | Vapor in/out Sensor                  | 043-0285-01 | Vapor In/out Sensor, 4500mm wire length  | -/1                    | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1       |           | Suzhou |
| 9    | EXV Filter                           | 013-0212-00 | EXV Filter, Liquid In Ø8.65mm ID, Liquid Out Ø6.5mm ID, 100 mesh                                 | 1                      | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1         | 1         | Suzhou |
| 10   | EXV-Coil                             | 023-0111-00 | EXV-Coil, 1796mm wire length   | 1                      | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1         | 1         | Suzhou |
|      | EXV-Coil                             | 023-0111-01 | EXV-Coil, 4500mm wire length   | -/1                    | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1      | -/1       | -/1       | Suzhou |

Notes: 1 or -/1 : Option to choose either one



## ZFI09-140 Accessory list

| Item | Parts                       | Part Number | Description   | Vapor Injection Models |          |          |          |          |          |          |          |          |          |          |          |          |           |           | Source |
|------|-----------------------------|-------------|---|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|--------|
|      |                             |             |   | ZFI09KNE               | ZFI11KNE | ZFI13KNE | ZFI20KQE | ZFI23KQE | ZFI26KQE | ZFI36KQE | ZFI39KQE | ZFI50KQE | ZFI59KQE | ZFI68KQE | ZFI81KQE | ZFI96KQE | ZFI122KQE | ZFI140KQE |        |
| 11   | EXV-Valve                   | 010-0240-00 | EXV valve, Ø1.3mm orifice size(TS113C0x), 2*Ø6.35mm OD  | 1                      | 1        | 1        | 1        | 1        | 1        | -        | -        | -        | -        | -        | -        | -        | -         | -         | Suzhou |
|      | EXV-Valve                   | 010-0240-01 | EXV valve, Ø1.65mm orifice size(TS116C0x), 2*Ø6.35mm OD | -                      | -        | -        | -        | -        | -        | 1        | 1        | 1        | 1        | -        | -        | -        | -         | -         | Suzhou |
|      | EXV-Valve                   | 010-0240-02 | EXV valve, Ø1.8mm orifice size(TS118C0x), 2*Ø6.35mm OD  | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -        | 1        | 1        | -        | -         | -         | Suzhou |
|      | EXV-Valve                   | 010-0240-03 | EXV valve, Ø2.4mm orifice size(TS124C0x), 2*Ø6.35mm OD  | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | 1        | 1         | 1         | Suzhou |
| 12   | Cable gland                 | 036-1868-00 | Cable Gland - Single hole                               | -                      | -        | -        | -        | -        | -        | -        | -        | 1        | 1        | 1        | 1        | 1        | 1         | 1         | Suzhou |
|      | Cable gland                 | 036-1869-00 | Cable Gland - 7 holes                                   | -                      | -        | -        | -        | -        | -        | -        | -        | 1        | 1        | 1        | 1        | 1        | 1         | 1         | Suzhou |
| 13   | Tube for sensor             | 028-3998-00 | Tube for sensor   | 3                      | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3         | 3         | Suzhou |
| 14   | Spring clip                 | 032-0962-00 | Spring clip   | 3                      | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3         | 3         | Suzhou |
| 15   | Bolts group                 | 521-0355-00 | Bolts, 3pcs   | 1                      | 1        | 1        | 1        | 1        | 1        | 1        | 1        | -        | -        | -        | -        | -        | -         | -         | Suzhou |
| 16   | Smart Control Module Plus 4 | 571-0107-00 | Smart Control Module, Plus 4 For Standard Scroll        | 1                      | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | -        | -         | -         | Suzhou |
|      | Smart Control Module Plus 5 | 571-0106-00 | Smart Control Module, Plus 5 For Large Scroll           |                        |          |          | -        | -        | -        | -        | -        | -        | -        | -        | -        | std.     | std.      | std.      | Suzhou |
| 17   | Module Bracket              | 074-1855-00 | Module Bracket  | 1                      | 1        | 1        | 1        | 1        | 1        | 1        | 1        | -        | -        | -        | -        | -        | -         | -         | Suzhou |
| 18   | Pin Connector Group         | 521-0398-00 | Pin Connector Group                                     | 1                      | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1         | 1         | Suzhou |
| 19   | Sound Jacket                | 505-1501-02 | Sound Jacket Kits for ZFI50KQE, ZFI59KQE                | -                      | -        | -        | -        | -        | -        | -        | -        | 1        | 1        | -        | -        | -        | -         | -         | Suzhou |
|      | Sound Jacket                | 505-1501-00 | Sound Jacket Kits for ZFI68KQE, ZFI81KQE                | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -        | 1        | 1        | -        | -         | -         | Suzhou |
|      | Sound Jacket                | 505-1512-02 | Sound Jacket Kits for ZFI96KQE, ZFI122KQE, ZFI140KQE    | -                      | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | 1        | 1         | 1         | Suzhou |

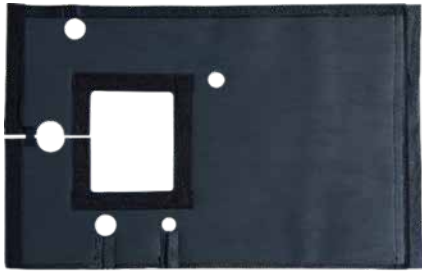
**Notes:** 1 or -/1 : Option to choose either one

## Sound jacket

Copeland has developed a new sound jacket for noise sensitive applications. It is designed to be factory mounted by the equipment manufacturers or to be easily installed on site.

The sound jacket perfectly fits Copeland scroll refrigeration compressors from 7 to 40 HP including "Summit" and "Large Refrigeration Scroll" series compressors. The sound jacket provides an overall sound attenuation of 6 to 8 dB(A) making Copeland scroll compressors the lowest noise solution currently available in the market.

It contains 3 pieces in one carton box, including shell cover, top cap cover and terminal box cover.



Shell cover



Top cap cover



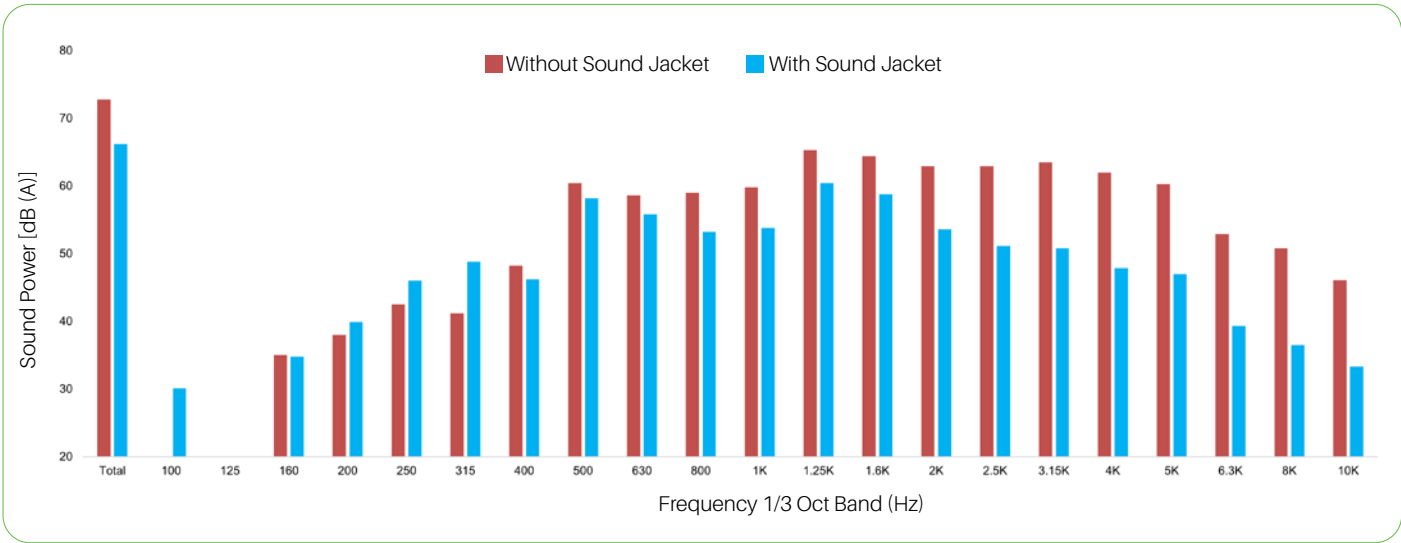
Terminal box cover



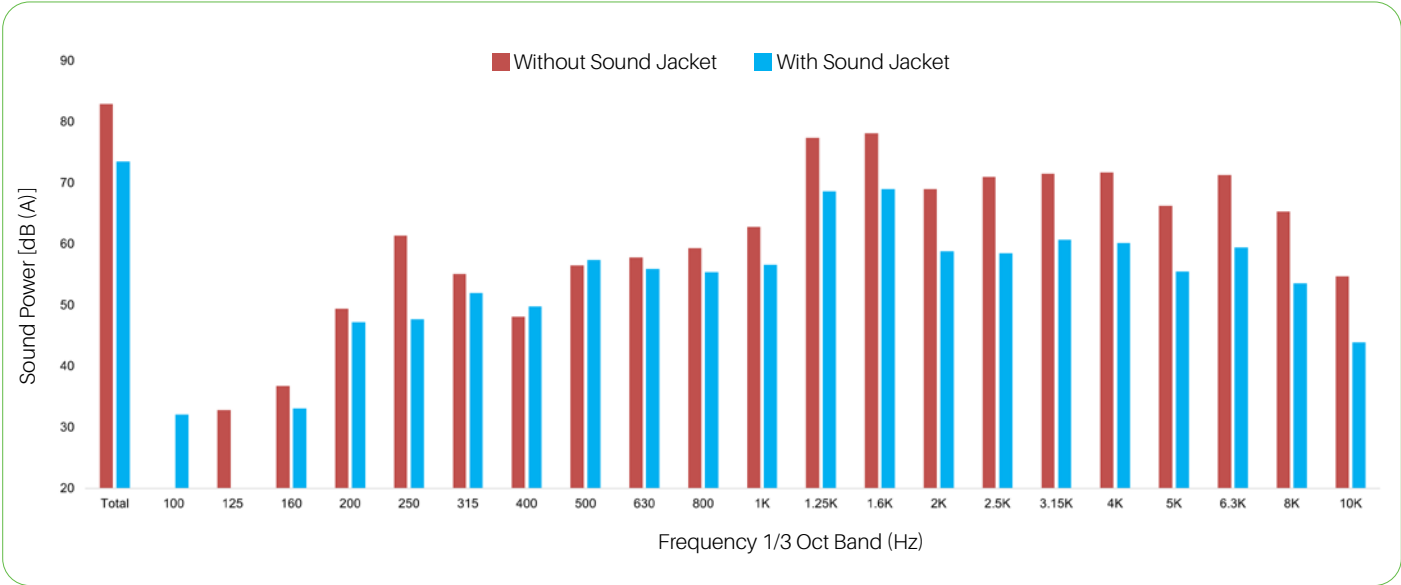
Scroll compressor with and without sound jacket

Example: Sound power with and without sound jacket

ZB88 Medium temp scroll example



ZFI68 Low temp scroll example



Customer order part number

| Platform                   | Part number | Applied models                  | Source |
|----------------------------|-------------|---------------------------------|--------|
| Summit                     | 505-1501-04 | ZB58KQ/E                        | Suzhou |
|                            | 505-1501-03 | ZB66KQ/E, ZB76KQ/E, ZB88KQ      |        |
|                            | 505-1501-01 | ZB95KQ/E, ZB114KQ/E (TW* motor) |        |
|                            | 505-1501-06 | ZB95KQ/E, ZB114KQ/E (TF* motor) |        |
|                            | 505-1501-05 | ZB130KQ/E                       |        |
|                            | 505-1501-02 | ZFI50KQE, ZFI59KQE              |        |
|                            | 505-1501-00 | ZFI68KQE, ZFI81KQE              |        |
| Large Refrigeration Scroll | 505-1512-00 | ZB150KQ/E                       |        |
|                            | 505-1512-01 | ZB190KQ/E, ZB220KQ/E            |        |
|                            | 505-1512-02 | ZFI96KQE, ZFI122KQE, ZFI140KQE  |        |

## ***General information***

Technical data are correct at the time of printing. Updates may occur, and should you need confirmation of a specific value, please contact Copeland stating clearly the information required.

Copeland cannot be held responsible for errors in capacities, dimensions, etc., stated herein. Products, specifications and data in this literature are subject to change without notice.

The information given herein is based on data and tests which Copeland believes to be reliable and which are in accordance with today's technical knowledge. It is intended for use by persons having the appropriate technical knowledge and skill, at their own discretion and risk. Our products are designed and adapted for fixed locations. For mobile applications, failures may occur.

The suitability for this has to be assured from the plant manufacturer, which may include making appropriate tests.

### ***Note:***

The components listed in this catalogue are not released for use with caustic, poisonous or flammable substances. Copeland cannot be held responsible for any damage caused by using these substances.



## ***About Copeland***

Copeland, a global provider of sustainable climate solutions, combines category-leading brands in compression, controls, software and monitoring for heating, cooling and refrigeration. With best-in-class engineering and design and the broadest portfolio of modulated solutions, we're not just setting the standard for compressor leadership; we're pioneering its evolution. Combining our technology with our smart energy management solutions, we can regulate, track and optimize conditions to help protect temperature-sensitive goods over land and sea, while delivering comfort in any space. Through energy-efficient products, regulation-ready solutions and expertise, we're revolutionizing the next generation of climate technology for the better.

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